BULL TROUT FINAL CRITICAL HABITAT JUSTIFICATION: RATIONALE FOR WHY HABITAT IS ESSENTIAL, AND DOCUMENTATION OF OCCUPANCY

U.S. Fish & Wildlife Service
Idaho Fish and Wildlife Office, Boise, Idaho
Pacific Region, Portland, Oregon

September 2010

Table of Contents

List of Figures

List of Tables

Abbreviations, Acronyms, and Units of Measure

BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CBBTTAT	Clearwater Basin Bull Trout Recovery Advisory Team
CBI	Clearwater Biostudies, Inc
cfs	cubic feet per second
CHSU	Critical Habitat Subunit
CHU	Critical Habitat Unit
CSKT	Confederated Salish and Kootenai Tribes
DNA	deoxyribonucleic acid
DPS	distinct population segments
ESA	Endangered Species Act
EWEB	Eugene Water and Electric Board
FERC	Federal Energy Regulatory Commission
FLIR	forward looking infrared
FMO	foraging, migration, and overwintering
ha	hectare
IDFG	Idaho Department of Fish and Game
in	inches
km	kilometer
LLID	Longitude Latitude Identification
mi	miles
NMFS	National Marine Fisheries Service
NPS	National Park Service
ODFW	Oregon Department of Fish and Wildlife
ONP	Olympic National Park
PCE	primary constituent elements
RU	Recovery Unit
SACO	*Salvelinus confluentus*
SR	spawning and rearing
USGS	U. S. Geological Survey
WDFW	Washington Department of Fish and Wildlife

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Introduction

Table of Contents

INTRODUCTION

The U.S. Fish & Wildlife Service (Service) has prepared this document to support the rationale for why bull trout habitats are essential for the conservation of the species and therefore should be designated as critical habitat and to document the basis for identifying habitat occupancy by bull trout.

We have organized the document by six draft Recovery Units (RUs), 32 Critical Habitat Units (CHUs), and 78 Critical Habitat Subunits (CHSUs) (see text below for more detail).

Rationale for why habitat is essential may be applied across an entire watershed, a portion of a watershed, or an individual stream reach or water body segment, depending on the refinement and quality of available data. Similarly, scientific observations of bull trout occupancy may be documented only broadly within a watershed or specifically within a stream reach, depending on available data.

The text portion of this document captures a broader rationale for why habitat is essential at the level of the 32 CHUs and 78 CHSUs. Appendix 1 captures rationale for why each of the 118 core areas is or is not essential. Tables 1-97 in the 32 CHU chapters below outline occupancy as specifically as possible for each of more than 3,500 water body segments and, if available, any specific rationale for why that segment is essential. However, in the majority of cases, there is no stream-specific rationale and the reader is referred back to the text for the entire CHSU. Also, the same citation of occupancy may be frequently repeated for individual stream reaches if that is the only citation that provides documentation across a broad area.

Method for Determining Critical Habitat

The Service met internally on July 6–7, 2009 to develop specific guidance for identifying bull trout critical habitat consistent with Service policies. We evaluated six possible approaches and determined to *designate all habitat important to the conservation (i.e., recovery) of the species*. This approach would provide broad added protection for occupied habitats necessary for recovery and a significant regulatory tool for protecting important unoccupied habitats and help focus recovery actions on those habitats of greatest importance for recovery.

In addition, the Service broadly considered status and threats of bull trout across six draft recovery units (see below) consistent with seven guiding principles for bull trout conservation (also see below). We determined that in some portions of the bull trout range, status was sufficiently weak and threats sufficiently high (e.g., low numbers of individuals or populations and poor habitat quality, such as in the Klamath River Basin) that protecting all occupied habitat and some unoccupied habitat may be necessary to achieve recovery. In other areas, status was sufficiently strong and threats low (e.g., portions of the Clark Fork and Kootenai CHUs) that protecting most occupied and relatively less unoccupied habitat may be necessary to achieve recovery. Two key habitat use types for bull trout are spawning and rearing habitat and foraging, migration, and overwintering (FMO) habitat. Much unoccupied habitat designated for protection is in FMO habitat and is intended to ensure connectivity among existing, currently isolated bull trout populations. Our proposal for designating critical habitat and our geographic-specific rationales below, reflect this broad evaluation.

Six Recovery Units are Essential

Bull trout are listed under the Endangered Species Act (ESA) as "Threatened" throughout the coterminous United States, primarily due to habitat threats. In 2008, the Service completed a 5-year review (Service 2008h) of bull trout status and concluded in part that the Service should reevaluate the number of bull trout Distinct Population Segments (DPSs) and consider reclassifying bull trout into separate DPSs. The Service subsequently recommended not immediately pursuing reclassification due to time and cost constraints. Instead, the Service used four relevant factors under two of the three criteria in its 1996 DPS policy to identify the following six draft RUs (Figure 1):

- Coastal Recovery Unit
- Klamath Recovery Unit
- Mid-Columbia Recovery Unit
- Upper Snake Recovery Unit
- Columbia Headwaters Recovery Unit
- Saint Mary Recovery Unit

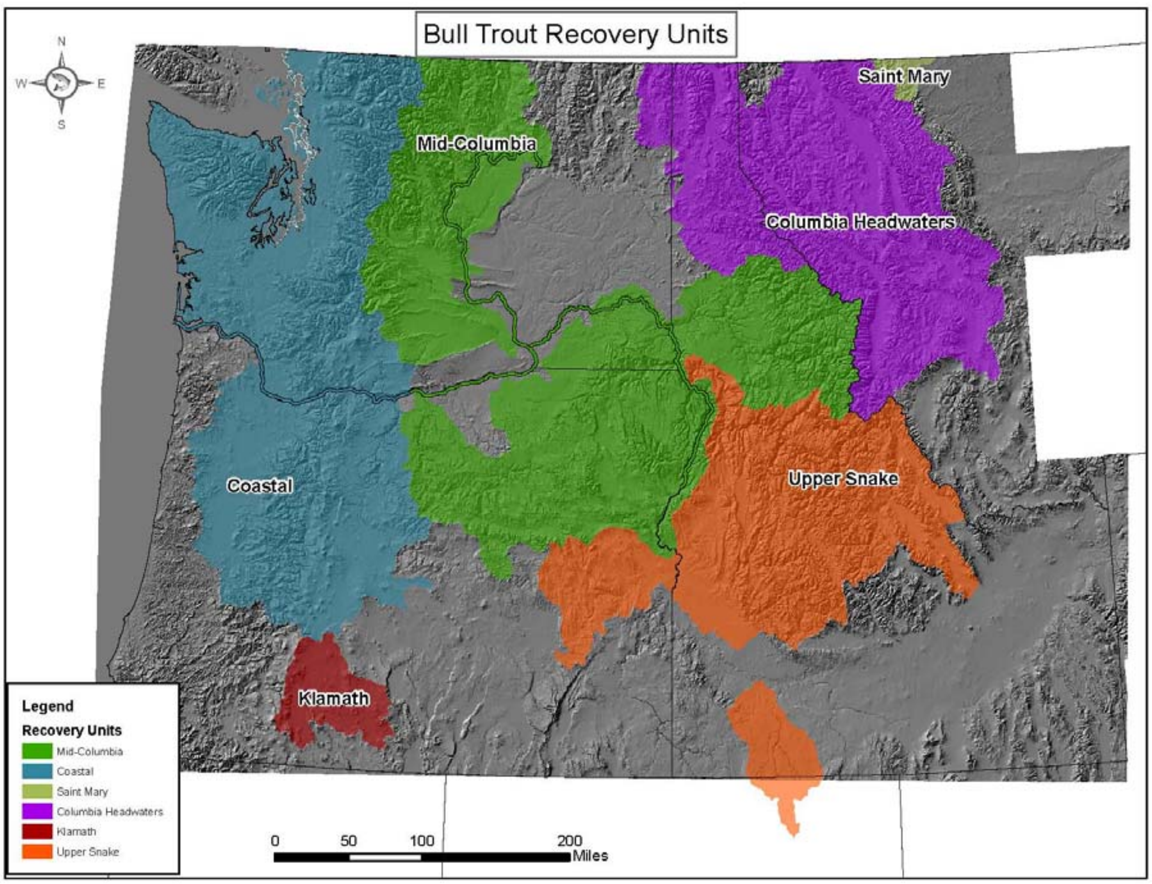

Figure 1. Six draft bull trout recovery units in the Pacific Northwest of the United States

Based on meeting these four relevant factors from two of the criteria in the DPS policy, the Service concluded that conserving each RU was essential for the conservation of the listed entity as a whole because of their individual value as defined by the policy criteria. The two criteria and four factors that were relevant to evaluating bull trout recovery units were:

Discreteness: A population segment of a vertebrate species may be considered discrete if:

1. It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.

Significance: If a population segment is considered discrete under the above condition, its biological and ecological significance will then be considered in light of Congressional guidance that the authority to list DPSs be used "sparingly" while encouraging the conservation of genetic diversity. In carrying out this examination, the Services considered available scientific evidence of the DPS's importance to the taxon to which it belonged. This consideration included, but was not limited to, the following:

1. Persistence of the DPS in an ecological setting unusual or unique for the taxon,
2. Evidence that loss of the DPS would result in a significant gap in the range of a taxon,
3. Evidence that the DPS differed markedly from other populations of the species in its genetic characteristics.

The Service then developed a rule set for each of the four factors for evaluating each potential RU against these four factors. This rule set included

1. Markedly Separate
    a. Divergence measured by mitochondrial or microsatellite deoxyribonucleic acid (DNA)—*Low, Medium, High*
    b. Isolation from nearest population—*Low, Medium, High*
    c. Life-history difference
2. Ecological Setting
    a. Life-history strategy
    b. Species assemblage
    c. Ecological zone
3. Significant Gap
    a. Loss of population throughout any major drainage basins (Puget Sound, Klamath, Saint Mary) or major portion of the Columbia Basin (lower Columbia, Snake, middle Columbia, Kootenai/Clark Fork)
4. Differs Markedly
    a. Divergence measured by mitochondrial or microsatellite DNA—*Low, Medium, High*
    b. Shared evolutionary future

Subsequent to identifying these six RUs using the approach outlined above, we evaluated each RU and determined that they fulfilled the need to ensure a resilient (protect large areas of high-quality habitat), redundant (protect multiple populations), and representative (protect diverse genetic and life-history aspects) distribution of bull trout populations throughout the range of the listed entity. We also found them to be consistent with the seven guiding principles (below). For each RU, we determined why it should be considered a separate RU and justified why it was essential based on the following rationale:

Coastal Recovery Unit

The Coastal RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the four RUs east of the Cascade Range and at the microsatellite DNA level from the Klamath RU; in the Olympic Peninsula and Puget Sound areas, they are almost completely isolated from other RUs and are partially isolated from other RUs in the lower Columbia River; some populations within this RU exhibit amphidromous (move to and from salt water from fresh water) life history form; they co-occur with Dolly varden (*Salvelinus malma*) in the northern portion of the RU and coastal populations of anadromous salmonids elsewhere; they occur in a coastal climate and vegetative condition west of the Cascade Range, different from the four RUs to the east; loss of this RU would result in a significant gap in the range of bull trout; and the entire RU has or could have a shared evolutionary future by migrating among populations over long periods of time.

Klamath Recovery Unit

The Klamath RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the four RUs east of the Cascade Range and at the microsatellite DNA level from the Coastal RU; they are highly isolated from all other RUs; populations currently persist almost solely in a resident life history form (though migratory forms would likely reoccur given suitable habitat conditions); they co-occur with species not found in other RUs, such as indigenous suckers (*Catostomus* spp.); they occur in a relatively warmer and drier inland climate that is different from the Coastal RU and farther south than most other inland populations; loss of this RU would result in a significant gap in the range of bull trout; and the entire RU has or could have a shared evolutionary future by migrating among populations over long periods of time.

Mid-Columbia Recovery Unit

The Mid-Columbia RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the two recovery units west of the Cascade Range and at the microsatellite DNA level from the three other RUs east of the Cascade Range; they are mostly isolated from other RUs due to distance and partial dispersal barriers, including the Columbia Gorge downstream and Hells Canyon and ancient waterfalls in the upper Columbia River basin upstream; they co-occur with anadromous Columbia River basin salmonids similar to the Upper Snake RU but different from the other RUs; they occur inland in a lower elevation climate and different vegetative conditions than the two RUs west of the Cascade Range and three RUs upstream closer to the Continental Divide; loss of this RU would result in a significant gap in the range of bull trout; and the entire RU has or could have a shared evolutionary future by migrating among populations over long periods of time.

Upper Snake Recovery Unit

The Upper Snake RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the two RUs west of the Cascade Range and at the microsatellite DNA level from the three RUs east of the Cascade Range; they are mostly isolated from other RUs in the headwaters of the Snake River basin due to distance in the lower Salmon River and a partial dispersal barrier in Hells Canyon; they co-occur with anadromous Columbia River basin salmonids similar to the Mid-Columbia RU but different from the other RUs; they occur inland in a lower elevation climate and different vegetative condition than the two RUs west of the Cascade Range and three RUs upstream closer to the Continental Divide; loss of this RU would result in a significant gap in the range of bull trout; and the entire RU has or could have a shared evolutionary future by migrating among populations over long periods of time.

Columbia Headwaters Recovery Unit

The Columbia Headwaters RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the two RUs west of the Cascade Range and at the microsatellite DNA level from the three other RUs east of the Cascade Range; they are mostly isolated from other RUs in the headwaters of the Columbia River basin by ancient waterfalls downstream; most populations occur in the adfluvial migratory form; they evolved in the absence of anadromous salmonids; they occur inland in a cooler and drier climate and different vegetative conditions than the two RUs west of the Cascade Range and the Mid-Columbia RU; loss of this RU would result in a significant gap in the range of bull trout; and populations within each of three different, isolated watersheds have or could have a shared evolutionary future by migrating among populations over long periods of time.

Saint Mary Recovery Unit

The Saint Mary RU is essential to the conservation of bull trout because populations are significantly different at the mitochondrial DNA level from the two RUs west of the Cascade Range and at the microsatellite DNA level from the three other RUs east of the Cascade Range; they are highly isolated east of the Continental Divide from all other RUs to the west; they evolved in the presence of lake trout (*Salvelinus namaycush*) and other species found only east of the Continental Divide; they occur inland in a cooler and drier climate and different vegetative conditions than the two RUs west of the Cascade Range and the Mid-Columbia RU; loss of this RU would result in a significant gap in the range of bull trout; and the entire RU has or could have a shared evolutionary future by migrating among populations over long periods of time.

Seven Guiding Principles for Bull Trout Conservation

To identify those habitats within each RU essential to the conservation of bull trout, the Service used the Four Biological Indicators (distribution, abundance, trend, and connectivity) derived from the 2002 and 2004 bull trout draft recovery plans (Service 2002a, Service 2004a, Service 2004b) and seven newly developed “Guiding Principles” to help ensure conservation of bull trout and their habitat identified below. The Service developed Appendix 1 evaluating bull trout core areas and FMO habitat in each of six recovery units using the seven guiding principles for bull trout conservation. Using the four criteria below, the Service then identified occupied habitat with primary constituent elements (PCEs) and unoccupied habitat that are essential for bull trout conservation within each RU. These habitats are designated as critical habitat.

Four Biological Indicators

1. Distribution
2. Abundance
3. Trend
4. Connectivity

Seven Guiding Principles:

1. Conserve opportunity for diverse life-history expression
2. Conserve opportunity for genetic diversity
3. Ensure bull trout are distributed across representative habitats
4. Ensure sufficient connectivity among populations
5. Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)
6. Consider threats (e.g., climate change)
7. Ensure sufficient redundancy in conserving population units

Four criteria for focusing habitat protection were developed and applied by the Service to identify those habitats essential to the conservation of bull trout:

1. Map bull trout habitat occupancy for each RU; evaluate all habitats to determine how they may be essential to the conservation of the species.
2. Where there may be more occupied habitat than necessary to achieve recovery, prioritize critical habitat designations on the following:
    - *i.* **Emphasize** areas as essential to those local populations and/or spawning and rearing streams of **highest conservation value** such as:
        1. Largest areas or populations
        2. Most highly connected populations
        3. Areas that are that can contribute to bull trout conservation
        4. Areas with highest conservation potential (e.g., quantity or quality of PCEs)
    - *ii.* **Emphasize** as essential those core areas of **highest conservation value** such as:
        1. Largest areas or populations
        2. Most highly connected populations
        3. Areas that are that can contribute to bull trout conservation
        4. Areas with highest conservation potential (e.g., quantity or quality of PCEs)

   iii. **Emphasize** essential FMO habitats of **highest conservation value**, such as:

      1. Habitats that connect populations and core areas

      2. Habitat that enhances the conservation of a core area or local population

3. Identify any unoccupied habitat essential for bull trout conservation using the guidance above.
4. Evaluate each RU to ensure that the seven guiding principles are met and sufficient critical habitat has been identified to ensure the conservation of bull trout at that scale.

Thirty-two Critical Habitat Units and Seventy-eight Subunits Contribute to Conservation

We identified 32 CHUs (Figure 2) and 78 CHSUs within each of the 6 RUs (Figure 1) throughout the range of bull trout based on distribution, connectivity, and proximity among populations.

- Coastal Recovery Unit

1. Olympic Peninsula
   1.1. Dungeness River
   1.2. Elwha River
   1.3. Hoh River
   1.4. Queets River
   1.5. Quinault River
   1.6. Skokomish River
   1.7. Hood Canal
   1.8. Strait of Juan de Fuca
   1.9. Pacific Coast
   1.10. Chehalis River/Grays Harbor
2. Puget Sound
   2.1. Chilliwack River
   2.2. Nooksack River
   2.3. Lower Skagit River
   2.4. Upper Skagit River
   2.5. Stillaguamish River
   2.6. Samish River
   2.7. Snohomish–Skykomish River
   2.8. Lake Washington
   2.9. Lower Green River
   2.10. Lower Nisqually River
   2.11. Chester Morse Lake
   2.12. Puyallup River
   2.13. Puget Sound Marine
3. Lower Columbia River Basins
   3.1. Lewis River

- 3.2. Klickitat River
- 3.3. White Salmon River

4. Upper Willamette River
5. Hood River
6. Lower Deschutes River
7. Odell Lake
8. Mainstem Lower Columbia River

- Klamath Recovery Unit

9. Klamath River Basin
    - 9.1. Upper Klamath Lake
    - 9.2. Sycan River
    - 9.3. Upper Sprague River

- Mid-Columbia Recovery Unit

10. Upper Columbia River Basins
    - 10.1. Methow River
    - 10.2. Chelan River
    - 10.3. Entiat River
    - 10.4. Wenatchee River
11. Yakima River
12. John Day River
    - 12.1. Lower Mainstem John Day River
    - 12.2. North Fork John Day River
    - 12.3. Middle Fork John Day River
    - 12.4. Upper Mainstem John Day River
13. Umatilla River
14. Walla Walla River Basin
    - 14.1. Walla Walla River
    - 14.2. Touchet River
15. Lower Snake River Basins
    - 15.1. Tucannan River
    - 15.2. Asotin Creek
16. Grande Ronde River
17. Imnaha River
18. Sheep and Granite Creeks
19. Hells Canyon Complex
    - 19.1. Indian Creek
    - 19.2. Pine Creek
    - 19.3. Wildhorse River
20. Powder River Basin
21. Clearwater River
    - 21.1. Middle–Lower Fork Clearwater River
    - 21.2. South Fork Clearwater River
    - 21.3. Selway River
    - 21.4. Lochsa River (and Fish Lake)
    - 21.5. North Fork Clearwater River (and Fish Lake)

22. Mainstem Upper Columbia River
23. Mainstem Snake River

- Upper Snake Recovery Unit

24. Malheur River Basin
25. Jarbidge River Basin
26. Southwest Idaho River Basins
    - 26.1. Weiser River
    - 26.2. Squaw Creek
    - 26.3. North Fork Payette River
    - 26.4. Middle Fork Payette River
    - 26.5. Upper South Fork Payette River
    - 26.6. Deadwood River
    - 26.7. Arrowrock Reservoir
    - 26.8. Anderson Ranch Reservoir
27. Salmon River Basin
    - 27.1. Little-Lower Salmon
    - 27.2. South Fork Salmon River
    - 27.3. Middle Salmon River–Chamberlain River
    - 27.4. Middle Fork Salmon River
    - 27.5. Middle Salmon–Panther River
    - 27.6. Lake Creek
    - 27.7. Opal Lake
    - 27.8. Lemhi River
    - 27.9. Pahsimeroi River
    - 27.10. Upper Salmon River
28. Little Lost River

- Columbia Headwaters Recovery Unit

29. Coeur d'Alene River Basin
30. Kootenai River Basin
    - 30.1. Kootenai River
    - 30.2. Lake Koocanusa
31. Clark Fork River Basin
    - 31.1. Priest Lakes
    - 31.2. Lake Pend Oreille
    - 31.3. Lower Clark Fork River
    - 31.4. Middle Clark Fork River
    - 31.5. Upper Clark Fork River
    - 31.6. Bitterroot River
    - 31.7. Rock Creek
    - 31.8. Blackfoot River
    - 31.9. Clearwater River and Lakes
    - 31.10. Flathead Lake, Flathead River and Headwater Lakes
    - 31.11. Swan River
    - 31.12. South Fork Flathead River and Hungry Horse Reservoir

- Saint Mary Recovery Unit

  32. Saint Mary River Basin

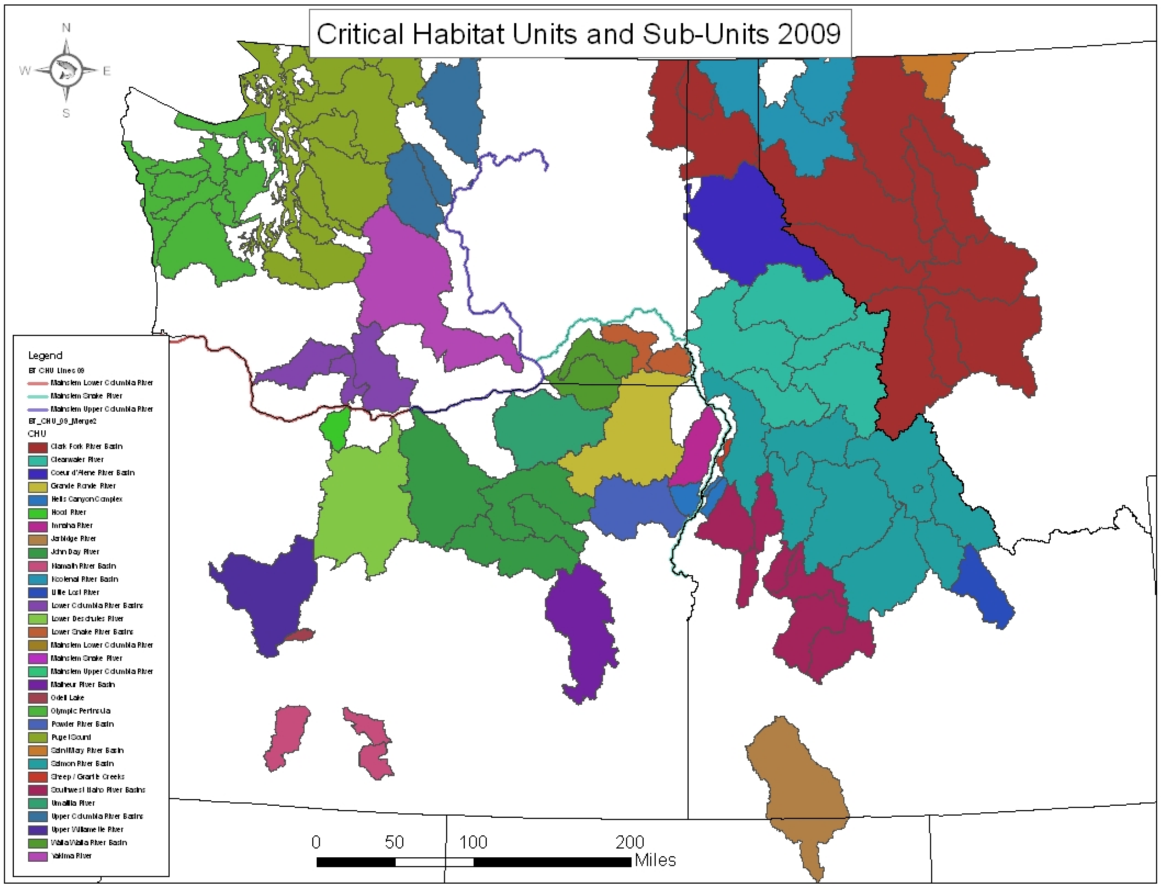

Figure 2. Thirty-two bull trout Critical Habitat Units.

Bull Trout Habitat Occupancy

We determined individually that each of the 32 CHUs and 78 CHSUs are essential for the conservation of the species based on the rationales outlined below that are consistent with the seven guiding principles. For all units we used the best data available to inform our rationale for why it is essential; for some units fewer data were available than for others. Bull trout occupied many habitats at the time of listing that include some or all of the nine PCEs. There is additional habitat not occupied at the time of listing that may be essential for recovery, and is designated as critical habitat by the Service. Tables 1-97 list over 3,500 specific water bodies organized by RU, CHU, and CHSU and includes the following site-specific information: name; location; occupancy status with citations; and any water body-specific rationale, if available.

Evaluation Tables

The following definitions can be important for understanding the tables included:

Occupied

Presence of bull trout documented within approximately the last four bull trout generations (roughly 20 years), or within approximately the last eight generations (roughly 40 years) if information suggests they could still be present but no significant survey effort has been made to detect them within approximately the past 20 years, throughout similarly suitable and connected habitat contiguous with the point of documentation.

Unoccupied

Areas where bull trout occurred but their presence has not been documented within approximately the last 20 years where significant survey effort has been expended throughout portions of suitable habitat that would detect bull trout if present.

Presumed

Bull trout may be present based on historical, anecdotal, or evidential information including factors such as likely suitable habitat adjacent to occupied habitat.

Rule set for “presumed”:

1. Waterbody does not meet the definition of "occupied"; and
2. Waterbody is connected to a waterbody that meets the definition of "occupied"; and
3. Waterbody likely is accessible to bull trout with habitat conditions comparable to the "connected-occupied" waterbody, including at least seasonal habitat conditions adequate to support bull trout; and
4. Waterbody is mapped at the 100k level

For the three “occupancy” definitions above:

Presence: Indication of a population of bull trout, such as: evidence of reproduction, detection of multiple adult bull trout within a year, or of individual bull trout over multiple years, in potentially suitable habitat.

Significant survey effort: Defined by Service field biologists based on scientific parameters including: frequency of effort, effectiveness of techniques, amount of area, quality of habitat, and timing of sampling.

Spawning and Rearing habitat (SR)

Stream reaches and the associated watershed areas that provide all habitat components necessary for spawning and juvenile rearing for a local bull trout population. Spawning and rearing habitat generally supports multiple year classes of juveniles of resident or migratory fish and may also support subadults and adults from local populations of resident bull trout.

Foraging, Migrating, and Overwintering habitat (FMO)

Relatively large streams and mainstem rivers, including lakes or reservoirs, estuaries, and nearshore environments, where subadult and adult migratory bull trout forage, migrate, mature, or overwinter. This habitat is typically downstream from spawning and rearing habitat and contains all the physical elements to meet critical overwintering, spawning migration, and subadult and adult rearing needs. Although use of foraging, migrating, and overwintering habitat by bull trout may be seasonal or very brief (as in some migratory corridors), it is a critical habitat component.

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 1. Coastal Recovery Unit—Olympic Peninsula Critical Habitat Unit

Table of Contents

Chapter 1. Olympic Peninsula Critical Habitat Unit

The Olympic Peninsula CHU is essential for maintaining bull trout distribution within this unique geographic region of the RU. Watersheds on the Olympic Peninsula drain to marine waters in the Hood Canal, Strait of Juan de Fuca, and the Pacific Ocean. Sixty major glaciers still cover the Olympic Mountains, providing sources of cold water to the glacially fed rivers on the Olympic Peninsula. The Olympic Peninsula supports one of the few temperate rain forests in the world, much of which is contained within the Olympic National Park, which is also designated as a World Biosphere Reserve and World Heritage Site.

This CHU is essential for maintaining distribution of the amphidromous life history form within the Coastal RU, which is rare across the geographic range of this species. It is not only essential for maintaining this life history form within this RU, but within its coterminous range. It is one of only two CHUs that contain the amphidromous life history form. See Appendix 1 for more information.

The Olympic Peninsula CHU is located in northwestern Washington. Bull trout populations inhabiting the Olympic Peninsula comprise the coastal component of the Coastal–Puget Sound population. The unit includes approximately 1,292.9 km (803.4 mi) of stream, 3,366.2 ha (8,318.1 ac) of lake surface area, and 673.8 km (418.7 mi) of marine shoreline designated as critical habitat. This CHU is bordered by Hood Canal to the east, Strait of Juan de Fuca to the north, the Pacific Ocean to the west, and the Lower Columbia River Basins and Puget Sound CHUs to the south. It extends across portions of Grays Harbor, Clallam, Mason, Pacific, and Jefferson Counties. All of the major river basins initiate from the Olympic Mountains. The Olympic Peninsula CHU is divided into 10 CHSUs. Although delta areas and small islands are difficult to map and may not be specifically identified by name, included within the critical habitat proposal are delta areas where streams form sloughs and braids and the nearshore of small islands found within the designated marine areas. The State of Washington has assigned most streams a stream catalog number. Typically, if an unnamed stream or stream with no official U.S. Geological Survey name is designated for critical habitat within the Puget Sound CHU, the stream catalog number is provided for reference. In those cases where tributary streams do not have a catalog number, they are referred to as “unnamed” or a locally accepted name is used.

1.1. Dungeness River Critical Habitat Subunit

The Dungeness River CHSU is essential to bull trout conservation because it represents the core amphidromous population of bull trout within the Strait of Juan de Fuca. Its sympatric distribution with Dolly Varden suggests this CHSU may represent a key climate change refugium for the species due to Dolly Varden’s presumed colder water requirements. Extensive portions of the headwater habitat are within protected areas (Olympic National Park and Buckhorn Wilderness) (see Appendix 1 for more detailed information).

The Dungeness CHSU includes the Dungeness River, its primary tributary the Gray Wolf, and associated tributaries. The Dungeness River is located in the northeastern portion of the Olympic Peninsula and flows from its headwaters in the Olympic Mountains to Dungeness Bay in the Strait of Juan de Fuca. Approximately 64.0 km (39.8 mi) of stream is being designated as critical habitat in the Dungeness River basin.

The following water bodies are included in this CHSU (see Table 1):

(A) The Dungeness River from its confluence with the Strait of Juan de Fuca upstream 31.2 km (19.4 mi) to an impassable barrier provides foraging and overwintering habitat downstream of the Canyon Creek confluence and spawning and rearing habitat for the Dungeness River local population upstream of Canyon Creek. The Dungeness River also serves as a corridor to the Strait of Juan de Fuca for fluvial and amphidromous bull trout from the Dungeness River and Gray Wolf River. The following tributaries from their mouths upstream to presumed extent of suitable habitat or an impassable barrier provide tributary foraging and overwintering habitat: Matriotti Creek upstream 1.8 km (1.1 mi); Hurd Creek upstream 0.8 km (0.5 mi); and Canyon Creek upstream 13.2 km (8.2 mi). Canyon Creek also provides potential spawning and rearing habitat for the Dungeness River local population. Gold Creek from its mouth upstream 0.8 km (0.5 mi) to an impassible slide contains spawning and rearing habitat for the Dungeness River local population.

(B) The Gray Wolf River from its mouth upstream 15.1 km (9.4 mi) to its confluence with Cameron Creek and its tributary, Cameron Creek, from its mouth upstream 1.1 km (0.7 mi) to a natural barrier provide spawning and rearing habitat for the Gray Wolf River local population.

Table 1. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Dungeness River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Dungeness River	Gray Wolf River	WA	Bull trout redds documented in 2002 (Cooper, in litt. 2002).	Grey Wolf River provides essential habitat used for spawning and rearing in the Grey Wolf River local population. It is essential for maintaining distribution, abundance, and productivity.	1231105 479767
Olympic Peninsula—Dungeness River	Dungeness River	WA	Documented use by adult and subadult in surveys 1995-2000 (Chan in litt. 2001; WDFW 1998; Peters, in litt. 1995).	This segment of the Dungeness River provides essential foraging and overwintering habitat for subadult and adult bull trout as well as provides essential connectivity between Dungeness River and Gray Wolf local populations and the Straits of Juan de Fuca. It is important to the seasonal habitat needs, survival, and growth of individual migratory fish.	1231331 481508.1
Olympic Peninsula—Dungeness River	Dungeness River	WA	Multiple age classes documented in surveys (Chan in litt. 2001; Peters, in litt. 1995).	This segment of the Dungeness River provides essential habitat used for spawning and rearing in the Dungeness River local population. It is essential for maintaining distribution, abundance, and productivity. It also provides essential connectivity between Dungeness River and Gray Wolf local populations and the Straits of Juan de Fuca.	1231331 481508.2
Olympic Peninsula—Dungeness River	Canyon Creek	WA	Although the WDFW hatchery currently has a seasonal barrier to Canyon Creek in place, the barrier is being addressed and passage should be restored. Canyon Creek was a productive salmon stream, has habitat historically occupied by coho, pink, chum, and Chinook salmon, and has habitat suitable for bull trout (OPRT, in litt. 2003a).	Although definitive data on bull trout presence are lacking for this stream, available information suggests that Canyon Creek will provide foraging habitat once it is accessible to salmon and bull trout. Restoring passage at Canyon Creek is a high priority recovery task. Once passage is restored and salmon and steelhead re-colonize the creek, Canyon Creek will contribute to restoring the overall abundance of bull trout in the core area. It is the one remaining high quality stream located in the lower Dungeness and thus provides important FMO habitat, as well as potentially SR habitat for the Dungeness River local population.	1231375 480241
Olympic Peninsula—Dungeness River	Hurd Creek	WA	Bull trout have been documented at Dungeness River Hatchery outlet in recent years (B. Freymond, *in litt.* 2003). Hurd Creek provides significant high quality tributary rearing and refuge habitat for salmonids (WSCC 1999). Hurd Creek is a productive salmon and trout stream, and presumed an important forage and overwintering stream for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Hurd Creek also provides refuge from seasonal turbid, high flows in the mainstem Dungeness River. Hurd Creek contributes to maintaining the current distribution and abundance of bull trout in the Dungeness River core area.	123142 4481241

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Dungeness River	Cameron Creek	WA	U.S. Forest Service radio tracked bull trout into this system (Ogg, pers. comm. 2004).	Cameron Creek provides essential habitat used for spawning and rearing in the Grey Wolf River local population. It is essential for maintaining distribution, abundance, and productivity.	1232418 479164
Olympic Peninsula—Dungeness River	Gold Creek	WA	Bull trout documented in Gold Creek during WDFW salmon surveys (Ogg, in litt. 2004). Historically accessible to RM 1.5. Following mass wasting and slides it is currently only accessible to anadromous and fluvial bull trout in the lower 0.5 mi. Gold Creek is above the elevation used to delineate presumed SR based on known spawning sites west of the Cascades (WDOE 2002).	The draft recovery chapter identifies the mainstem Dungeness R. and associated tributaries (Canyon and Gold Creeks) as one local population. Gold Creek provides essential habitat used for spawning and rearing in the Grey Wolf River local population. It is essential for maintaining distribution, abundance, and productivity. It is also a productive coho and pink salmon stream and is essential for providing forage habitat used by migratory bull trout.	1230913 479415
Olympic Peninsula—Dungeness River	Matriotti Creek	WA	Currently accessible to anadromous and fluvial bull trout. A productive salmon stream, and presumed important refugia, forage and overwintering stream for bull trout. Sampling of this stream has been insufficient to document the presence of bull trout.	Although definitive data on bull trout presence are lacking for this stream, available information suggests that Matriotti Creek is essential for providing forage habitat in reaches used by anadromous salmonids and accessible to bull trout. It is essential for its contribution to maintaining and restoring the overall abundance of bull trout in the core area. It is one of few significant FMO tributaries in the lower Dungeness River.	1231400 481357

1.2. Elwha River Critical Habitat Subunit

The Elwha River CHSU is essential to bull trout conservation because it represents one of only two populations of bull trout within the Strait of Juan de Fuca. It is essential for population redundancy in this region and expansion of the amphidromous life history form once the Elwha Dams are removed. This CHSU may represent a key climate change refugium for the species due to the extensive glacially influenced habitat and protected nature of the upper watershed (Olympic National Park) (see Appendix 1 for more detailed information).

The Elwha River originates on the south and east sides of Mount Olympus, flows south, and then turns northward before entering the Strait of Juan de Fuca. The Elwha River flows through two reservoirs: Lake Mills and Lake Aldwell. The river basin is largely contained within Olympic National Park. Approximately 109 km (67.7 mi) of stream are being designated as critical habitat in the Elwha River basin.

The following water bodies are included in this CHSU (see Table 2):

(A) The Elwha River from its confluence with the Strait of Juan de Fuca upstream 62.4 km (38.8 mi) to an impassable barrier, including its future channel under the current area of inundation for Lake Aldwell and Lake Mills, provides foraging and overwintering habitat below its confluence with Stukey Creek and spawning and rearing habitat for the Elwha River local population upstream of Stukey Creek. Dam removal planned to begin in 2011 will eliminate Lake Aldwell and Lake Mills and restore the Elwha River to its former channel. It is this historical river channel, currently inundated by these lakes, that is designated critical habitat. Little River from its mouth upstream 4.7 km (2.9 mi) to a natural barrier provides FMO habitat and potential spawning and rearing habitat. The following tributaries from their mouths upstream to natural barriers provide tributary foraging habitat: Madison Creek upstream 1.0 km (0.6 mi); Hughes Creek upstream 0.3 km (0.2 mi); and Griff Creek upstream 0.8 km (0.5 mi). The following tributaries from their mouths upstream to a natural barrier provide spawning and rearing habitat for the Elwha River local population: Sege Creek upstream 0.3 km (0.2 mi); Boulder Creek upstream 0.8 km (0.5 mi); Hurricane Creek upstream 0.3 km (0.2 mi); Wolf Creek upstream 0.3 km (0.2 mi); Cat Creek upstream 5.0 km (3.1 mi); Fitzhenry Creek upstream 0.3 km (0.2 mi); Haggerty Creek upstream 0.5 km (0.3 mi); Long Creek upstream 3.2 km (2.0 mi); Idaho Creek upstream 0.5 km (0.3 mi); Lillian River upstream 2.9 km (1.8 mi); Windfall Creek upstream 0.3 km (0.2 mi); Prescott Creek upstream 0.3 km (0.2 mi); McCartney Creek upstream 0.3 km (0.2 mi); Stoney Creek upstream 0.3 km (0.2 mi); Lost River upstream 0.8 km (0.5 mi); Goldie River upstream 14.3 km (8.9 mi); Hayes River upstream 2.4 km (1.5 mi); Leitha Creek upstream 1.1 km (0.7 mi); Godkin Creek upstream 1.6 km (1.0 mi); Buckinghorse Creek upstream 1.0 km (0.6 mi); and Delabarre Creek upstream 1.3 km (0.8 mi).

The Elwha and Glines Canyon Dams are scheduled to be removed, beginning in 2011 (NPS in litt. 2009, p. 1), resulting in restoration of connectivity and anadromous salmonids and increased abundance of bull trout. Because suitable spawning habitat is present, following dam removal, as abundance increases in the Elwha core area, it is expected that Little River will be used for spawning and rearing. Little River has been identified by the Olympic Peninsula Recovery Unit Team as a potential local population necessary for recovery in the Elwha core area. Following dam removal, it is expected that the bull trout amphidromous life history form will be restored in the Elwha River, prey base will be increased as salmon recolonize the River, and bull trout abundance will increase, resulting in greater use of accessible tributaries.

Table 2. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Elwha River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Hayes River	WA	Adult bull trout have been detected (Brenkman et al. 2008).	Hayes River provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1234526 478080
Olympic Peninsula—Elwha River	Leitha Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine, connected to other bull trout rearing streams, and presumed used by bull trout, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234588 477690
Olympic Peninsula—Elwha River	Godkin Creek	WA	Adult and juvenile bull trout have been detected (Brenkman et al. 2008)	Godkin Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1234638 477600

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Lost River	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234671 478618
Olympic Peninsula—Elwha River	Stony Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234675 478707
Olympic Peninsula—Elwha River	Goldie River	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234683 478397
Olympic Peninsula—Elwha River	McCartney Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234696 478783

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Buckinghorse Creek	WA	Juvenile bull trout have been detected (Brenkman et al. 2008).	Buckinghorse Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1234815 477466
Olympic Peninsula—Elwha River	Prescott Creek	WA	Documented multiple age classes of bull trout by ONP in 1960. No other sampling has occurred since that date (Brenkman and Meyer, in litt. 2001).	Prescott Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1234896 479031
Olympic Peninsula—Elwha River	Slate Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234901 477437
Olympic Peninsula—Elwha River	Windfall Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1234939 479120

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Delabarre Creek	WA	Documented multiple age classes of bull trout by ONP in 1995 (Brenkman and Meyer in litt. 2001).	Delabarre Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1235260 477347
Olympic Peninsula—Elwha River	Lillian River	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235264 479310
Olympic Peninsula—Elwha River	Idaho Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235425 479451
Olympic Peninsula—Elwha River	Elwha River	WA	Bull trout documented throughout the Elwha R, both between and below the dams (J. Chan, in litt. 2001; Morrill and McHenry 1995; McHenry, in litt. 2002; Hiss and Wunderlich 1994).	This segment of the Elwha River provides essential foraging and overwintering habitat for subadult and adult bull trout as well as provides essential connectivity for recovery of the fluvial and anadromous life history form. It is important to the seasonal habitat needs, survival, and growth of individual migratory fish. It is essential for maintaining the distribution of migratory bull trout as well as for its contribution to maintaining and restoring the overall abundance of bull trout in the core area. Prior to construction of Elwha and Glines Canyon Dams the Elwha River was one of the major salmon-producing rivers in Washington.	1235577 481507.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Elwha River	WA	Bull trout documented throughout the upper Elwha River mainstem to headwaters (Brenkman and Meyer 2001, ONP, in litt. 2001; Brenkman et al. 2008). Habitat is pristine, connected to other bull trout rearing streams. Currently it is used by fluvial bull trout, and will be accessible to anadromous bull trout once the Elwha dams are removed, which is scheduled to begin in 2011.	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Elwha River provides essential habitat used for spawning and rearing in the Elwha River local population. It is essential for maintaining distribution, abundance, and productivity. This segment also provides essential connectivity among local population tributaries and for recovery of the fluvial and anadromous life history forms. Prior to construction of Elwha and Glines Canyon Dams the Elwha R was one of the major salmon-producing rivers in Washington.	1235577 481507.2
Olympic Peninsula—Elwha River	Long Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235592 479507
Olympic Peninsula—Elwha River	Haggerty Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235742 479565
Olympic Peninsula—Elwha River	Little River	WA	Bull trout documented in 1998 (ONP, in litt. 2001). Temperatures are suitable for bull trout SR (McHenry, in litt. 2003).	Little River is essential for its contribution to maintaining or restoring the overall abundance of bull trout in the Elwha core area. It has been identified as a potential local population necessary for recovering distribution and abundance of bull trout in this core area. Both dams on the Elwha River are scheduled for removal and it is anticipated that both anadromous salmon and bull trout will be restored to the Elwha River. Prior to construction of Elwha and Glines Canyon Dams the Elwha River was one of the major salmon-producing rivers in Washington.	1235762 480631

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Fitzhenry Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235879 479673
Olympic Peninsula—Elwha River	Madison Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout.	Although definitive data on bull trout presence are lacking for this stream, available information suggests that it will be recolonized by anadromous salmonids, including bull trout, following dam removal. In addition, it will provide bull trout an important opportunity for refuge between Lake Aldwell and Lake Mills during dam removal. The Elwha dam is scheduled for removal, which will restore connectivity for anadromous salmonids to Madison Creek and increase the forage base for bull trout, thus it is essential for its contribution to maintaining and restoring the overall abundance of bull trout in the core area. Prior to construction of Elwha and Glines Canyon Dams the Elwha River was one of the major salmon-producing rivers in Washington.	1235902 480420
Olympic Peninsula—Elwha River	Wolf Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235917 479744

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Cat Creek	WA	Adult and juvenile bull trout have been detected (Brenkman et al. 2008).	Cat Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1235918 479731
Olympic Peninsula—Elwha River	Hurricane Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1235925 479755
Olympic Peninsula—Elwha River	Griff Creek	WA	Bull trout documented in 1994 (Morrill and McHenry 1995).	Griff Creek provides essential foraging and overwintering habitat used by fluvial and adfluvial bull trout in the core area, and thus it is essential for maintaining the existing distribution and abundance of this population. In addition, it will provide bull trout an important opportunity for refuge between Lake Aldwell and Lake Mills during dam removal. The Elwha dam is scheduled for removal, which will restore connectivity for anadromous salmonids to Griff Creek and increase the forage base for bull trout, thus it is essential for its contribution to maintaining and restoring the overall abundance of bull trout in the core area. Prior to construction of Elwha and Glines Canyon Dams the Elwha R was one of the major salmon-producing rivers in Washington.	1235934 480234

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Elwha River	Hughes Creek	WA	Bull trout documented in 1994 (Morrill and McHenry 1995).	Hughes Creek provides essential foraging and overwintering habitat used by fluvial and adfluvial bull trout in the core area, and thus it is essential for maintaining the existing distribution and abundance of this population. In addition, it will provide bull trout an important opportunity for refuge between Lake Aldwell and Lake Mills during dam removal. The Elwha dam is scheduled for removal, which will restore connectivity for anadromous salmonids to Hughes Creek and increase the forage base for bull trout, thus it is essential for its contribution to maintaining and restoring the overall abundance of bull trout in the core area. Prior to construction of Elwha and Glines Canyon Dams the Elwha R was one of the major salmon-producing rivers in Washington.	1235935 480251
Olympic Peninsula—Elwha River	Boulder Creek	WA	Multiple age classes of bull trout detected (Brenkman et al. 2008).	Boulder Creek provides essential habitat within the Elwha River local population. This stream is entirely within the ONP and access for surveys to document spawning is extremely difficult. It is unknown whether spawning currently occurs in this creek, however, it does provide suitable habitat for both bull trout spawning and rearing use. Following dam removal this population is anticipated to expand to meet recovered abundance, therefore it is essential to maintaining and increasing distribution and abundance of bull trout within the Elwha River local population.	1235993 479834
Olympic Peninsula—Elwha River	Sege Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout rearing streams. May currently be used for SR, or will be once the Elwha dams are removed, which is scheduled to begin in 2011 (OPRT, in litt. 2003a).	The mainstem Elwha River and associated tributaries upstream from Stukey Creek have been identified as a single local population. Although definitive data on bull trout presence are lacking for this stream, available information indicates the habitat is pristine and will provide accessible rearing habitat. Productivity within this stream should increase following dam removal and restoration of anadromous salmonids.	1236025 479866

1.3. Hoh River Critical Habitat Subunit

The Hoh River CHSU is essential to bull trout conservation because it maintains the northernmost population of amphidromous bull trout along the Pacific Coast of the Olympic Peninsula and may represent the stronghold for the three Washington coast populations of bull trout. This CHSU may represent a key climate change refugium for the species due to the extensive glacially influenced habitat. Extensive portions of the headwater habitat are within a protected area (Olympic National Park) (see Appendix 1 for more detailed information).

The Hoh River flows westward from its headwaters in the Baily Range and the north slope of Mount Olympus in Olympic National Park to its confluence with the Pacific Ocean. Approximately 158.0 km (98.1 mi) of stream is being designated as critical habitat in the Hoh River basin. The following water bodies are included in this CHSU (see Table 3):

(A) The Hoh River from its confluence with the Pacific Ocean upstream 80.6 km (50.1 mi) to an impassable barrier provides foraging and overwintering habitat below its confluence with the South Fork Hoh River and spawning and rearing habitat for the Hoh River local population upstream of the South Fork Hoh River. The Hoh River also serves as a key migration corridor for amphidromous bull trout moving to and from the Pacific Ocean. The following tributaries from their mouths upstream to impassable barriers or headwaters provide tributary FMO habitat: Nolan Creek upstream 12.6 km (7.8 mi); Winfield Creek upstream 9.3 km (5.8 mi); and Owl Creek upstream 6.3 km (3.9 mi). The following tributaries from their mouths upstream to impassable barriers or headwaters provide tributary spawning and rearing habitat for the Hoh River local population: Twin Creek upstream 0.6 km (0.4 mi); Twin Creek's tributary, East Twin Creek, upstream 1.0 km (0.6 mi); unnamed tributary (stream catalog number 0509) upstream 4.5 km (2.8 mi); Snider Creek upstream 0.6 km (0.4 mi); Taft Creek upstream 2.2 km (1.4 mi); Mount Tom Creek upstream 8.0 km (5.0 mi); Cougar Creek upstream 0.8 km (0.5 mi); unnamed tributary (stream catalog number 0527) upstream 0.8 km (0.5 mi); Clide Creek upstream 2.1 km (1.3 mi); OGS Creek upstream 0.2 km (0.1 mi); Hoh Creek upstream 0.8 km (0.5 mi); Slide Creek upstream 1.3 km (0.8 mi); and unnamed tributary (stream catalog number 0542) upstream 0.3 km (0.2 mi). Recent radio telemetry studies have documented bull trout throughout the Hoh River, which provides spawning, rearing, and FMO habitat.

(B) South Fork Hoh River from its confluence with the mainstem Hoh River upstream 24.9 km (15.5 mi) provides spawning and rearing habitat for the South Fork Hoh River local population. The South Fork Hoh River also serves as a key migration corridor for fluvial and amphidromous bull trout moving to and from FMO habitat in the mainstem Hoh River and Pacific Ocean.

Table 3. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Hoh River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hoh River	Unnamed trib. (#0542)	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. It is a productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	This unnamed tributary provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1237173 478831
Olympic Peninsula—Hoh River	Slide Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. It is a productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	Slide Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1237470 478754
Olympic Peninsula—Hoh River	Hoh Creek	WA	Bull trout detected in 1995 ONP surveys (ONP, in litt 2001). Currently accessible to anadromous and fluvial bull trout. Productive salmon and steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	Hoh Creek provides spawning and rearing habitat for anadromous and fluvial fish from the Hoh River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP and habitat is pristine.	1237526 478769
Olympic Peninsula—Hoh River	OGS Creek	WA	SR documented in 1999 by ONP (Brenkman and Meyer 1999).	OGS Creek provides spawning and rearing habitat for anadromous and fluvial fish from the Hoh River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP and habitat is pristine.	1237678 478781

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hoh River	Clide Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. It is a productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	This unnamed tributary provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1237969 478715
Olympic Peninsula—Hoh River	Unnamed trib. (#0527)	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. It is a productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	This unnamed tributary provides rearing and possibly spawning habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1238153 478681
Olympic Peninsula—Hoh River	Cougar Creek	WA	SR documented in 1999 by ONP (Brenkman and Meyer 1999).	Cougar Creek provides spawning and rearing habitat for anadromous and fluvial fish from the Hoh River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP and habitat is pristine.	1238531 478675
Olympic Peninsula—Hoh River	Mount Tom Creek	WA	Bull trout detected in this creek during 1995 ONP surveys (ONP, in litt. 2001). Currently accessible to anadromous and fluvial bull trout. It is a productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	Mount Tom Creek provides rearing and possibly spawning habitat for anadromous and fluvial fish from Hoh River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine.	1238872 478684
Olympic Peninsula—Hoh River	Taft Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. Productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	Taft Creek provides rearing habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1239411 478578

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hoh River	Snider Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. Productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	Snider Creek provides rearing habitat for anadromous and fluvial fish from Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1239664 478418
Olympic Peninsula—Hoh River	Unnamed trib. (#0509)	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. Productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout spawning, rearing, and foraging streams.	This unnamed tributary provides rearing habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential to maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1239804 478306
Olympic Peninsula—Hoh River	Twin Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. Productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout foraging streams.	Twin Creek provides rearing habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1239872 478311
Olympic Peninsula—Hoh River	East Twin Creek	WA	Sampling of this stream has been insufficient to document the presence of bull trout. Currently accessible to anadromous and fluvial bull trout. Productive salmon/steelhead stream. Habitat is suitable and connected to other bull trout foraging streams.	East Twin Creek provides rearing habitat for anadromous and fluvial fish from the Hoh River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1239895 478333

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hoh River	South Fork Hoh River	WA	SR documented in 1999 by ONP (Brenkman and Meyer 1999)	South Fork Hoh River provides spawning and rearing habitat for anadromous and fluvial fish from the Hoh River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Hoh River local population. It also provides essential connectivity between South Fork Hoh River and Hoh River local populations and the Pacific Ocean. This stream is entirely within the ONP and habitat is pristine.	1240218 478197
Olympic Peninsula—Hoh River	Owl Creek	WA	Sampling of this section of the stream has been insufficient to document the presence of bull trout. Although habitat is currently rated poor due to impacts from land management activities, bull trout were historically documented in Owl Creek (McLeod 1944), it has significant volume (> 20 cfs), and it is used by coho, steelhead, and fall chinook (WSCC 2000).	Although definitive data on current bull trout presence are lacking for this stream, Owl Creek is a productive salmon stream used by steelhead, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Owl Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1240777 478054
Olympic Peninsula—Hoh River	Winfield Creek	WA	Bull trout historically documented in this stream (McLeod 1944). Recent sampling of this section of the stream has been insufficient to document the presence of bull trout. It has significant volume (>20 cfs) and is occupied by coho, steelhead, and fall chinook for SR. (WSCC 2000)	Although definitive data on current bull trout presence are lacking for this stream, Winfield Creek is a productive salmon stream used by steelhead, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Winfield Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1242313 478102

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hoh River	Nolan Creek	WA	Documented bull trout presence in 2002 (McMillan, in litt. 2002).	Nolan Creek is a productive salmon stream used by steelhead, coho, chum and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Nolan Creek contributes to maintaining distribution and overall abundance of bull trout in the core area.	1243427 477516
Olympic Peninsula—Hoh River	Hoh River	WA	Documented juvenile, subadult and adult bull trout captured during angling by ONP 1998-99 (Brenkman and Meyer 1999). The Hoh is considered to have historically contained the largest bull trout population on the Washington coast (WDFW 1998).	This segment of the Hoh River provides essential habitat for foraging and overwintering by subadult and adult migratory bull trout as well as providing essential connectivity between Hoh R, its tributaries, local populations, and the Pacific Ocean. It is important to the seasonal habitat needs, survival, and growth of individual migratory fish. It is essential for maintaining the distribution and overall abundance of bull trout in the core area.	1244372 477506.1
Olympic Peninsula—Hoh River	Hoh River	WA	SR documented in 1999 by ONP (Brenkman and Meyer 1999).	This segment of the Hoh River provides essential habitat used for spawning and rearing in the Hoh River local population. It is essential for maintaining distribution, abundance, and productivity. It also provides essential connectivity between Hoh River and South Fork Hoh River local populations and the Pacific Ocean.	1244372 477506.2

1.4. Queets River Critical Habitat Subunit

The Queets River CHSU is essential to bull trout conservation because it represents part of the core distribution of amphidromous bull trout along the Washington coast and is vital for population redundancy. Extensive portions of the habitat are within protected areas (Olympic National Park) (see Appendix 1 for more detailed information).

The Queets River flows west from its headwaters in Mount Queets, Bear Pass, and Mount Barnes in the Olympic Mountains to its confluence with the Pacific Ocean. The majority of the upper watershed is within Olympic National Park, including the lower mainstem Queets River corridor. Major tributaries include the Sams, Salmon, and Clearwater Rivers. Approximately 236.0 km (146.6 mi) of stream is being designated as critical habitat in the Queets River basin. The following water bodies are included in this CHSU (see Table 4):

(A) The Queets River from its confluence with the Pacific Ocean upstream 78.5 km (48.8 mi) to an impassable barrier provides foraging and overwintering habitat below its confluence with Tshletshy Creek and spawning and rearing habitat for the Queets River local population upstream of Tshletshy Creek. The Queets River also serves as a key migration corridor for amphidromous bull trout moving to and from the Pacific Ocean. The following tributaries from their mouths upstream to impassable barriers or headwaters provide tributary FMO habitat: Clearwater River upstream 59.2 km (36.8 mi); Salmon River upstream 21.2 km (13.2 mi); Matheny Creek upstream 28.5 km (17.7 mi); Sams River upstream 15.3 km (9.5 mi); and Tshletshy Creek upstream 21.2 km (13.2 mi). The following tributaries from their mouths upstream to impassable barriers or headwaters provide tributary spawning and rearing habitat for the Queets River local population: Harlow Creek upstream 1.9 km (1.2 mi); Bob Creek upstream 1.1 km (0.7 mi); Paradise Creek upstream 1.1 km (0.7 mi); Alta Creek upstream 2.2 km (1.4 mi); Hee Hee Creek upstream 0.5 km (0.3 mi); and Hee Haw Creek upstream 5.3 km (3.3 mi). Although bull trout surveys have not been specifically conducted in these spawning and rearing tributaries due to the extremely difficult human access, these streams are used by anadromous salmonids, indicating the presence of forage for bull trout and seasonal accessibility. Bull trout spawning has been observed in the upper Queets River above its confluence with Tshletshy Creek (Gross 2002, pp. 9, 13).

Table 4. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Queets River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Queets River	Hee Haw Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	Hee Haw Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1236898 477371
Olympic Peninsula—Queets River	Hee Hee Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	Hee Hee Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1237378 477119
Olympic Peninsula—Queets River	Alta Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	Alta Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1237546 476986
Olympic Peninsula—Queets River	Paradise Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	Paradise Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1238140 476938

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Queets River	Bob Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. Productive salmon/steelhead stream.	Bob Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1238544 476896
Olympic Peninsula—Queets River	Harlow Creek	WA	Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	Harlow Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the Queets River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1238876 476852
Olympic Peninsula—Queets River	Tshletshy Creek	WA	Historical record of bull trout occupying Tshletshy Creek (McLeod 1944). Recent sampling of this stream has been insufficient to document the presence of bull trout. Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream. The river is above the 500 ft elevation criteria used to delineate presumed SR based on known spawning sites west of the Cascades (WDOE 2002).	Although definitive data on current bull trout presence are lacking for this stream, Tshletshy Creek is a productive salmon stream used by steelhead, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Tshletshy Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1239233 476661

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Queets River	Sams River	WA	Subadult bull trout documented in 2000 (Chan, in litt. 2001). Chinook, steelhead, and coho spawn and rear in Sams River. The river is above the 500 ft. elevation used to delineate presumed SR based on known spawning sites west of the Cascades (WDOE 2002).	Sams River is a productive salmon stream used by steelhead, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Sams River is essential to maintaining distribution and overall abundance of bull trout in the core area.	1240120 476245
Olympic Peninsula—Queets River	Matheny Creek	WA	Adult bull trout documented in 2002 (Banish, in litt. 2002).	Matheny Creek is a productive salmon stream used by steelhead, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Matheny Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1241133 475763
Olympic Peninsula—Queets River	Salmon River	WA	Recent reports of individual bull trout throughout the Salmon River (Ging, in litt. 2003; Harke, in litt. 2003).	Salmon River is a productive salmon stream used by steelhead, coho, chum and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Salmon River is essential to maintaining distribution and overall abundance of bull trout in the core area.	1242189 475565

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Queets River	Clearwater River	WA	A 300 mm bull trout documented in 1993 (Peters, in litt. 2001).	Clearwater River is a productive salmon stream used by steelhead, coho, chum and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Clearwater River is essential to maintaining distribution and overall abundance of bull trout in the core area.	1242909 475461
Olympic Peninsula—Queets River	Queets River	WA	Multiple age classes of bull trout have been documented throughout the Queets River from 1977-2005 (Quinault Indian Nation, in litt. 2005; Brenkman and Meyer 1999; Quinault Indian Nation, in litt. 2002).	This segment of the Queets River provides habitat used for foraging and overwintering by subadult and adult bull trout, as well as providing connectivity between Queets River, its tributaries, the upper Queets River local population, and the Pacific Ocean. It is important to the seasonal habitat needs, survival, and growth of individual migratory fish. It is essential for maintaining distribution and overall abundance of bull trout in the core area.	1243536 475442.1
Olympic Peninsula—Queets River	Queets River	WA	Spawning documented by WDFW in 2001 (Gross, in litt. 2002). Habitat is pristine and connected to other bull trout foraging, migration, and rearing streams, and is within the home watershed of the Queets River bull trout local population. It is a productive salmon/steelhead stream.	This segment of the Queets River provides spawning and rearing habitat for anadromous and fluvial fish from the Queets River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Queets River local population. It also provides essential connectivity between the Queets River, its tributaries, and the Pacific Ocean. This stream is entirely within the ONP and habitat is largely pristine.	1243536 475442.2

1.5. Quinault River Critical Habitat Subunit

The Quinault River CHSU is essential to bull trout conservation because it maintains the southernmost population of amphidromous bull trout along the Pacific Coast. Its sympatric distribution with Dolly Varden suggests this CHSU may represent a key climate change refugium for the species due to Dolly Varden's presumed colder water requirements. Extensive portions of the headwater habitat are within protected areas (Olympic National Park and Colonel Bob Wilderness) (see Appendix 1 for more detailed information).

The Quinault River originates in the Olympic Mountains and flows west, passing through Lake Quinault before flowing to the Pacific Ocean. The watershed above Lake Quinault is within Olympic National Park with the remaining watershed largely encompassed by the Quinault Indian Reservation. The Quinault River CHSU includes the mainstem Quinault River, North Fork Quinault River, tributaries, and Lake Quinault. Approximately 148.0 km (92.0 mi) of stream and 1,445.0 ha (3,570.6 ac) of lake surface area are being designated as critical habitat in the Quinault River basin. The following water bodies are included in this CHSU (see Table 5):

(A) The Quinault River from its confluence with the Pacific Ocean upstream 108.4 km (67.4 mi) to an impassable barrier provides foraging and overwintering habitat below its confluence with North Fork Quinault River and spawning and rearing habitat for the Quinault River local population upstream of North Fork Quinault River. The Quinault River also serves as a key migration corridor for bull trout moving to and from Lake Quinault and/or the Pacific Ocean. The area of inundation for Lake Quinault (1,434.0 ha (3,543.5 ac)) provides key FMO habitat for the migratory life history forms within the CHSU. The following tributaries from their mouths upstream to impassable barriers provide tributary spawning and rearing habitat for the Quinualt River local population: Graves Creek upstream 1.0 km (0.6 mi); Fire Creek upstream 0.5 km (0.3 mi); O'Neil Creek upstream 1.1 km (0.7 mi); Noname Creek upstream 0.5 km (0.3 mi); Ignar Creek upstream 0.3 km (0.2 mi); and Pyrites Creek upstream 0.6 km (0.4 mi).

(B) Cook Creek from its mouth upstream 7.6 km (4.7 mi) to its headwaters, Irely Lake (11.0 ha (27.2 ac)); Irely Creek from its mouth upstream 0.2 km (0.1 mi) to outlet of Irely Lake; and Big Creek from its mouth upstream 11.3 km (7.0 mi) to its confluence with Irely Creek provide tributary FMO habitat for the migratory life history forms. Irely Creek and Big Creek provide bull trout connectivity between Irely Lake and the Quinault River.

(C) North Fork Quinault River from its confluence with the Quinault River upstream 17.2 km (10.7 mi) to an impassable barrier and its tributary, Rustler Creek, upstream 4.5 km (2.8 mi) to an impassable barrier provide spawning and rearing habitat for the North Fork Quinault River local population. The North Fork Quinault River also serves as a key migration corridor for bull trout moving to and from Lake Quinault and the Pacific Ocean.

Table 5. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Quinault River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Quinault River	Pyrites Creek	WA	Juvenile bull trout were documented in 1995 (ONP, in litt. 2001). Little or no sampling has been done since that time. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Pyrites Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinault River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1234316 476393
Olympic Peninsula—Quinault River	Ignar Creek	WA	Juvenile bull trout were documented in 1995 (ONP, in litt. 2001). Little or no sampling has been done since that time. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Ignar Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinault River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1234322 476389
Olympic Peninsula—Quinault River	Noname Creek	WA	Little or no sampling has been done in this tributary. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Noname Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinault River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1234503 476258

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Quinault River	O'Neil Creek	WA	Juvenile bull trout were documented in 1995 (ONP, in litt. 2001). Little or no sampling has been done since that time. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	O'Neil Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinualt River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1234704 476157
Olympic Peninsula—Quinault River	Fire Creek	WA	Little or no sampling has been done in this tributary. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Fire Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinualt River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1235242 475981
Olympic Peninsula—Quinault River	Graves Creek	WA	Little or no sampling has been done in this tributary. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Graves Creek provides rearing, and possibly spawning habitat for anadromous and fluvial fish from the North Fork Quinault River local population. Although definitive data on current bull trout use of this stream are lacking, best available information suggests that the stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinualt River local population. This stream is entirely within the ONP, habitat is pristine, and access for surveys to document use is extremely difficult.	1235710 475744
Olympic Peninsula—Quinault River	Rustler Creek	WA	Bull trout were documented in 1995 (ONP, in litt. 2001). Little or no sampling has been done since that time. Habitat is pristine and connected to the upper Quinault River. Bull trout are believed to spawn in the upper Quinault River. The recovery team identified this tributary as presumed SR habitat, and as part of the Quinault River local population (OPRT, in litt. 2003c).	Rustler Creek provides spawning and rearing habitat for anadromous and fluvial fish from the North Fork Quinault River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinault River local population. This creek is entirely within the ONP and habitat is pristine.	1236152 476171

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Quinault River	North Fork Quinault River	WA	The NF Quinault was snorkel surveyed in 1994 from its mouth to the confluence with Kimta Creek by Olympic National Park (Meyer and Averill, in litt. 1994). Bull trout were documented throughout this area.	The NF Quinualt River provides spawning and rearing habitat for anadromous and fluvial fish from the North Fork Quinault River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the North Fork Quinault River local population. It also provides essential connectivity between the Quinault River, its tributaries, its local populations, and the Pacific Ocean. This river segment is entirely within the ONP and habitat is pristine.	1236659 475403
Olympic Peninsula—Quinault River	Irely Creek	WA	Bull trout documented by ONP in Irely Lake in 1993 (Brenkman, in litt. 2003a). Irely Creek provides bull trout from the Quinault River access to Irely Lake. Sampling of this stream has been insufficient to further document the presence of bull trout.	Irely Creek is a tributary to Big Creek, and provides access to Irely Lake. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Irely Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1236784 475647
Olympic Peninsula—Quinault River	Big Creek	WA	Bull trout historically documented in Big Creek (McLeod 1944). Little or no recent sampling has been done in this tributary. However, bull trout documented in Irely Lake (Brenkman, in litt. 2003a) indicates ongoing use of this creek to access the lake system.	Big Creek is a productive salmon stream used by steelhead, sockeye, chum, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Big Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1237732 475177
Olympic Peninsula—Quinault River	Cook Creek	WA	Bull trout documented in 2000 and 2002 at hatchery electronic weir (Craig, in litt. 2003; Zajac, in litt. 2002).	Cook Creek is a productive salmon stream used by steelhead, chum, coho and Chinook salmon. The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Cook Creek is essential to maintaining distribution and overall abundance of bull trout in the core area.	1240607 473709

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Quinault River	Quinault River	WA	Multiple age classes have been documented throughout the river since 1995 (ONP, in litt. 2001).	This segment of the Quinault River provides habitat used for foraging and overwintering by subadult and adult bull trout, as well as providing connectivity between Quinault River, its tributaries, its local populations, and the Pacific Ocean. It is important to the seasonal habitat needs, survival, and growth of individual migratory fish. It is essential for maintaining distribution and overall abundance of bull trout in the core area.	1242991 473493.1
Olympic Peninsula—Quinault River	Quinault River	WA	Juvenile, subadult and adult bull trout have been documented since 1995 (ONP, in litt. 2001). Habitat is sufficient to support a local population in the upper Quinault and associated tributaries (OPRT, in litt. 2003c).	This segment of the Quinualt River provides spawning and rearing habitat for anadromous and fluvial fish from the Quinault River local population. This stream is essential for maintaining the current distribution and abundance of bull trout within the Quinault River local population. It also provides essential connectivity between the Quinault River, its tributaries, its local populations, and the Pacific Ocean. This river segment is entirely within the ONP and habitat is largely pristine.	1242991 473493.2
Olympic Peninsula—Quinault River	Irely Lake	WA	Bull trout documented by ONP in Irely Lake in 1993 (Brenkman, in litt. 2003a). Sampling of this lake since that time has been insufficient to further document the presence of bull trout.	Irely Lake is a productive lake system supporting coho salmon and cutthroat trout. The recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Irely Lake is essential to maintaining distribution and overall abundance of bull trout in the Quinault River core area.	1236742 475652
Olympic Peninsula—Quinault River	Quinault Lake	WA	Bull trout have been documented both above and below Quinault Lake (WDFW 1998; Ostwald, in litt. 2003).	Lake Quinault is a productive lake used by sockeye, steelhead, coho and Chinook salmon. The recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout. Lake Quinault is essential to maintaining distribution and overall abundance of bull trout, as well as allowing for the expression of diverse life history forms in the Quinault River core area.	1238690 474752

1.6. Skokomish River Critical Habitat Subunit

The Skokomish River CHSU is essential to bull trout conservation because it represents the only natal distribution of bull trout within the Hood Canal region of the Olympic Peninsula. Portions of the headwater habitat are within a protected area (Olympic National Park) (see Appendix 1 for more detailed information).

For the next five CHSUs, nearshore marine waters are essential for access to foraging habitat in watersheds that are not believed to have spawning populations. While in marine waters, bull trout appear to primarily occupy estuarine and nearshore habitats and feed on a variety of prey items, especially small marine fish such as herring, surf smelt, and sandlance (Goetz et al. 2004, p. 105–114). It is likely these waters are also used as refuge from high flows in the natal rivers. Although the extent of bull trout use in these waters and their independent tributaries are not well known, information for Puget Sound and Pacific Ocean nearshore marine use indicates that bull trout with access to marine waters use them to access prey base in both marine and independent freshwater tributaries. Independent tributaries that flow directly to marine waters are not expected to provide spawning habitat but do provide essential foraging and overwintering habitat for bull trout outside their natal watersheds. Nearshore marine habitat is also essential for connectivity to and between these independent tributaries. Although use of FMO habitat may be seasonal or brief, it is nonetheless a critical element for migratory bull trout to persist (Lohr et al. 2001, p. 204). The current distribution data most likely under-represent the amount of occupied marine shoreline due to the depressed status of these populations, the seasonal and temporal variability in migratory behavior, and the difficulty of sampling in large estuarine and marine environments. As bull trout in these CHSUs recover and increase in abundance, it is expected that FMO habitat use of marine waters will also increase.

The North Fork Skokomish River and the South Fork Skokomish River headwaters originate in the Olympic Mountains and flow eastward to join at the Skokomish River, which then flows into the southernmost portion of Hood Canal. The North Fork Skokomish River flows through Lake Cushman and Lake Kokanee before meeting with the South Fork Skokomish River. Approximately 119.0 km (73.9 mi) of stream and 1,623.0 ha (4,010.5 ac) of lake surface area are being designated as critical habitat in the Skokomish basin. The following water bodies are included in this CHSU (see Table 6):

(A) The Skokomish River from its confluence with Hood Canal upstream 13.8 km (8.6 mi) to its confluence with the North Fork Skokomish River and South Fork Skokomish River provides FMO habitat, including a migratory corridor from Hood Canal to the North and South Fork Skokomish Rivers. The following tributaries from their confluence with the Skokomish River upstream to natural barriers or headwaters provide foraging, overwintering, and seasonal subadult rearing habitat in the lower Skokomish River: Nalley Slough upstream 0.8 km (0.5 mi); Skobob Creek upstream 3.5 km (2.2 mi); Purdy Creek upstream 2.1 km (1.3 mi); and Rickert Springs upstream 0.5 km (0.3 mi).

(B) The South Fork Skokomish River from its confluence with the Skokomish River upstream 40.2 km (25.0 mi) provides FMO habitat in reaches downstream of its confluence with Brown Creek and spawning and rearing habitat for the South Fork Skokomish River local population upstream of Brown Creek. Vance Creek from its mouth upstream 13.2 km (8.2 mi) and the Vance Creek remnant side channel 1.4 km (0.9 mi) provides foraging and overwintering habitat. Brown Creek from its mouth upstream 8.5 km (5.3 mi) provides spawning and rearing habitat for the Brown Creek potential local population. The following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat for the South Fork Skokomish River local population: Lebar Creek upstream 1.9 km (1.2 mi); Cedar Creek upstream 0.5 km (0.3 mi); Pine Creek upstream 1.1 km (0.7 mi); and Church Creek upstream 0.6 km (0.4 mi).

(C) North Fork Skokomish River from its confluence with the Skokomish River upstream 13.5 km (8.4 mi) ending at Lower Cushman Dam, and Lake Cushman (1,623.0 ha (4,010.5 ac)) formed by Upper Cushman Dam, provide foraging and overwintering habitat and connectivity with the mainstem Skokomish River for the North Fork Skokomish River local population. An unnamed tributary (stream catalog number 0100) from its mouth upstream 0.6 km (0.4 mi) to natural barrier and McTaggert Creek from its mouth upstream 5.8 km (3.6 mi) to USFS Road 2340-200 provide tributary foraging habitat in the lower North Fork Skokomish River. The segment of the North Fork Skokomish River from Lake Cushman upstream 7.6 km (4.7 mi) to a natural barrier provides spawning and rearing habitat for the local population. The following tributaries from their mouths upstream to natural barriers or gradient breaks also provide spawning and rearing habitat: Elk Creek upstream 1.3 km (0.8 mi) and Slate Creek upstream 1.6 km (1.0 mi). Lake Kokanee, formed by Lower Cushman Dam, is not being designated as critical habitat because implementation of the Federal Energy Regulatory Commission license for the Cushman Project is expected to result in construction of trap-and-haul fish passage facilities (City of Tacoma et al. 2009, p. 38). These facilities will restore connectivity between lower and upper North Fork Skokomish Rivers but will bypass the inundated 3.7 km (2.3 mi) long Lake Kokanee section.

Table 6. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Skokomish River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	Purdy Creek	WA	E. Jouper, WDFW George Adams Hatchery manager, observed bull trout in hatchery ponds on Purdy Creek as recently as 1997 (Ogg, in litt. 2003a).	Purdy Creek provides foraging and overwintering habitat presumed to be used by fluvial fish from local bull trout populations elsewhere in the core area, and thus it is essential for maintaining the existing distribution of migratory bull trout. Because it provides forage habitat in reaches used by anadromous salmonids and is accessible to bull trout, it is essential for its contribution to maintaining or restoring the overall abundance of bull trout in the core area.	1231602 473072
Olympic Peninsula—Skokomish River	Nalley Slough	WA	Currently accessible to fluvial and anadromous bull trout. Nalley Slough is a side channel of the Skokomish River, and is entirely within tidal influence. A productive salmon and steelhead stream, and likely important forage and overwintering stream for bull trout. Sampling of this stream has been insufficient to document the presence of bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. Nalley Slough provides important rearing, migration and staging conditions for juvenile and adult salmonids. As much as 40-50% of the summer flow of the Skokomish River is routed down this channel (Ereth, in litt. 2003b).	1231300 473284
Olympic Peninsula—Skokomish River	Skokomish River	WA	Currently occupied by migratory bull trout (WDFW 2002). Forest Service personnel have captured or observed use by adult and subadult bull trout (Ogg and Stutsman 2002).	Mainstem Skokomish River provides essential habitat used for foraging and overwintering by subadult and adult fluvial and anadromous bull trout as well as providing critical connectivity between NF & SF Skokomish Rivers and Hood Canal. It is essential to the seasonal habitat needs, survival, and growth of individual migratory fish within the core area.	1231163 473387
Olympic Peninsula—Skokomish River	Skobob Creek	WA	In 2002 bull trout were documented (Ereth, in litt. 2003a).	Skobob Creek provides foraging and overwintering habitat and thus it is essential for maintaining the existing distribution of migratory bull trout within the core area. Because it provides forage habitat in reaches used by anadromous salmonids and is accessible to bull trout, it is essential for its contribution to maintaining or restoring the overall abundance of bull trout in the core area.	1231307 473279

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	Richert Spring	WA	Olympic National Forest radio-tracked fluvial bull trout into this spring (OPRT, in litt. 2003a).	Richert Springs provides foraging and overwintering habitat used by fluvial fish, and is therefore essential for maintaining the existing distribution of these migratory bull trout. Because it provides forage habitat in reaches used by anadromous salmonids and accessible to bull trout, it is essential for its contribution to maintaining and restoring the overall abundance of bull trout in the Skokomish core area.	1232184 473204
Olympic Peninsula—Skokomish River	Vance Creek Remenant Channel	WA	Currently accessible to anadromous and fluvial bull trout. A productive summer and winter salmon stream, and likely important forage stream for bull trout. Sampling of this stream has been insufficient to document the presence of bull trout. Remenant Channel is connected to Vance Creek during freshets, but is connected to Swift Creek perennially. The area maintains flow and relatively deep cool water in the summer (Ereth, in litt. 2003b).	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. Thus Vance Creek remnant channel contributes to maintaining or restoring the overall abundance of bull trout in the Skokomish core area.	1232319 473157
Olympic Peninsula—Skokomish River	McTaggert Creek	WA	Currently accessible to anadromous and fluvial bull trout. A productive coho, chum and steelhead stream, and likely important forage and overwintering stream for bull trout. Sampling of this stream, and the lower NF Skokomish River, has been insufficient to document the presence of bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible and productive habitat occupied by anadromous salmonids that can provide a forage base for bull trout. McTaggert Creek is the only major tributary to the lower NF Skokomish River. It is anticipated that bull trout seasonal use of McTaggert Creek will increase once anadromous salmon are restored to the upper NF Skokomish River basin under the recent FERC relicensing agreement. It will provide essential FMO habitat that contributes to maintaining or restoring the overall distribution and abundance of bull trout in the Skokomish core area.	1232339 473629

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	North Fork Skokomish River (Lower)	WA	Bull trout have been observed in lower NF Skokomish River (Ereth, in litt. 2003c).	This segment of the NF Skokomish River provides habitat used for foraging and overwintering by subadult and adult bull trout as well as providing connectivity between NF, SF and mainstem Skokomish Rivers, and Hood Canal. It is essential to the seasonal habitat needs, survival, and growth of migratory fish. Stream temperatures and substrate are suitable for juvenile bull trout rearing, and subadult and adult foraging. It is essential for restoring full connectivity between the SF Skokomish River and NF Skokomish River local populations, maintaining the existing distribution of bull trout, as well as for its contribution to maintaining or restoring the overall abundance of bull trout in the core area.	1232376 473154.1
Olympic Peninsula—Skokomish River	North Fork Skokomish River (Upper)	WA	Known to be used by substantial numbers of adfluvial fish migrating to and from Lake Cushman (WDFW 1998; Brenkman 1998).	This segment of the NF Skokomish River is essential for providing for the seasonal habitat needs, survival and growth of individual fish from NF Skokomish River local population. It is essential for maintaining existing distribution of migratory bull trout and provides part of the critical migratory corridor between spawning and rearing areas used by the local population and FMO habitat in Lake Cushman, and in the future, lower Skokomish River and possibly Hood Canal.	1232376 473154.3
Olympic Peninsula—Skokomish River	Vance Creek	WA	A juvenile (5 in.) bull trout was captured in lower Vance Creek during fish surveys conducted in January 2009 (Peters, in litt. 2009).	It is essential for providing forage habitat for bull trout in reaches used by anadromous salmonids. The recent "juvenile" bull trout observation indicates Vance Creek may also be essential as spawning and rearing habitat for the SF Skokomish local population.	1232376 473164
Olympic Peninsula—Skokomish River	Unnamed trib. (#0100)	WA	Currently accessible to anadromous and fluvial bull trout. A productive coho stream, and likely important forage and overwintering stream for bull trout. Sampling of this stream, and the lower NF Skokomish River, has been insufficient to document the presence of bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. This unnamed tributary (stream catalog #0100) contributes to maintaining or restoring the overall abundance of bull trout in the Skokomish core area.	1232412 473350
Olympic Peninsula—Skokomish River	South Fork Skokomish River	WA	U.S. Forest Service documented use by juvenile and subadult bull trout (Ogg and Stutsman 2002).	This segment of the SF Skokomish River is essential for providing forage habitat in reaches used by migratory bull trout. Brown Creek is also essential for maintaining the distribution, as well as for its contribution to maintaining and restoring the overall abundance, of bull trout in the Skokomish core area.	1232525 473170.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	South Fork Skokomish River	WA	Bull trout spawning has been documented throughout this area from 2000-2002 (Ogg, in litt. 2003b).	This segment of the SF Skokomish River is within the home watershed of the SF Skokomish local population. It is thus essential for maintaining connectivity and existing distribution of this population, as well as for its contribution to maintaining or restoring the overall abundance of bull trout in the core area.	1232525 473170.2
Olympic Peninsula—Skokomish River	Brown Creek	WA	Possible redd observed in 2000; suitable SR habitat (Ogg and Stutsman 2002).	Brown Creek is essential for maintaining the existing distribution of this population as well as for its contribution to increasing overall abundance of bull trout in the core area. Habitat, including stream temperature, is suitable for bull trout spawning (Ogg, in litt. 2003c). As the Skokomish core area recovers and abundance is increased, it is presumed that bull trout will spawn in Brown Creek and establish a local population. There are only two identified local populations in the Skokomish core area, putting the core area at high risk of extirpation. Brown Creek has been identified as a potential local population necessary for recovery in Skokomish core area.	1233177 474115
Olympic Peninsula—Skokomish River	Lebar Creek	WA	Juvenile and subadult bull trout have been documented in the lower reaches (Ogg, in litt. 2003b).	Lebar Creek provides known FMO habitat within the home watershed of the SF Skokomish local population and may contain habitat suitable for bull trout spawning. It is essential for maintaining distribution of bull trout within this watershed, and possibly expanding spawning distribution if a local population can be established.	1233287 474174
Olympic Peninsula—Skokomish River	Elk Creek	WA	Bull trout fry and redds observed in 1996 by Olympic National Park biologists (Brenkman and Meyer, in litt. 2001).	Elk Creek provides essential habitat used for spawning and rearing in the NF Skokomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1233296 475147
Olympic Peninsula—Skokomish River	Slate Creek	WA	Bull trout fry observed in 1996 by ONP biologists (Brenkman and Meyer, in litt. 2001).	Slate Creek provides essential habitat used for spawning and rearing in the NF Skokomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1233351 475211

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	Cedar Creek	WA	Currently accessible to anadromous and fluvial bull trout. Sampling of this stream has been insufficient to document the presence of bull trout. Habitat is suitable and connected to other bull trout foraging, overwintering, and rearing streams (Ogg, in litt. 2003b). Occupied by steelhead trout and other forage fish.	Cedar Creek is a productive salmonid stream and the draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. Although definitive data on bull trout presence are lacking for this stream, available information suggests that the habitat is essential for maintaining and increasing the abundance of bull trout within the home watershed of the SF Skokomish River local population.	1234016 474429
Olympic Peninsula—Skokomish River	Pine Creek	WA	Juvenile and subadult bull trout have been documented in the anadromous reaches (Ogg, in litt. 2003b). Occupied by steelhead trout and other forage fish.	Pine Creek is within the home watershed of the SF Skokomish River local population. It contains essential habitat for juvenile rearing and potentially spawning. It is essential to maintaining the existing distribution of bull trout within this local population.	1234157 474461
Olympic Peninsula—Skokomish River	Church Creek	WA	Bull trout spawning has been documented throughout this area from 2000-2002 (Ogg, in litt. 2003b).	Church Creek is within the home watershed of the SF Skokomish River local population. It contains essential habitat for spawning and juvenile rearing. It is essential to maintaining the existing distribution of bull trout within this local population as well as for its contribution to maintaining or restoring the overall abundance of bull trout in the Skokomish core area.	1234496 474612
Olympic Peninsula—Skokomish River	North Fork Skokomish River (Upper)	WA	Known to be used by substantial numbers of adfluvial fish migrating to and from Lake Cushman (WDFW 1998; Brenkman 1998).	This segment of the NF Skokomish River is essential for providing for the seasonal habitat needs, survival and growth of individual fish from NF Skokomish River local population. It is essential for maintaining existing distribution of migratory bull trout and provides part of the critical migratory corridor between spawning and rearing areas used by the local population and FMO habitat in Lake Cushman, and in the future, lower Skokomish River and possibly Hood Canal.	1232376 473154.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Skokomish River	Lake Cushman	WA	Numerous records by Olympic National Park biologists and law enforcement documenting recent use by adult and subadult bull trout (Brenkman and Meyer in litt. 2001).	Lake Cushman provides foraging and overwintering habitat used by subadult and adult bull trout as well as provides connectivity between the NF Skokomish River local population and the rest of the core area. It is important to the seasonal habitat needs, survival, and growth of the migratory life history form. There is an abundant prey base within the lake identified as important freshwater forage for bull trout. It is essential for maintaining the existing distribution of bull trout, as well as for its contribution to maintaining or restoring the overall abundance of bull trout in the Skokomish River core area. In the future, it will provide part of the critical migratory corridor between spawning and rearing areas used by the local population and FMO habitat in the lower Skokomish River and possibly Hood Canal.	1232549 474703

1.7. Hood Canal Critical Habitat Subunit

Hood Canal Marine CHSU is essential to bull trout conservation and for recovering the amphidromous life history form in the Hood Canal region of the Olympic Peninsula. It contains essential FMO habitat for the expression of the amphidromous life history form (see Appendix 1 for more detailed information).

Hood Canal is a large fjord located on the western side of Puget Sound between Kitsap and Olympic Peninsulas. The estuarine and nearshore marine waters of the southern and western boundaries of Hood Canal provide foraging and migration habitat for amphidromous bull trout outside of freshwater core areas. Approximately 171 km (106 mi) of nearshore marine habitat in Hood Canal is being designated as critical habitat. The following water bodies are included in this CHSU (see Table 7):

(A) Approximately 171.0 km (106.3 mi) of nearshore marine habitat on the southern and western borders of Hood Canal from an unnamed tributary south of Union River to the entrance to Fisherman's Harbor on the southern border of Toandos Peninsula is designated as critical habitat. Amphidromous bull trout have been documented in estuaries and lower rivers of Hood Canal, including the Quilcene, Dosewallips, Duckabush, and Hamma Hamma Rivers on the western side of Hood Canal (U.S. Commission on Fish and Fisheries, in litt. 1913, p. 1; McLeod 1944, p. 148; Hilgert, in litt. 2000; Meyer and Hamstreet, in litt. 2001, p. 4). It is unlikely these rivers provide spawning and rearing habitat but they have abundant prey base and may provide important foraging and overwintering habitats for amphidromous bull trout originating from the Skokomish River CHSU.

Table 7. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Hood Canal Marine CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Hood Canal Marine	Hood Canal Marine	WA	In the 1980s bull trout were observed in reaches accessible to salmon in west Hood Canal tributary rivers, including the Quilcene, Hamma Hamma, Dosewallips, and Duckabush (Hilgert, in litt. 2000). Spawning is not believed to occur in these rivers, and bull trout presumably migrate through Hood Canal to reach these tributary rivers. Recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (Brenkman and Corbett 2005).	See "Olympic Peninsula CHU" justification text, above	M-OP-MR-01

1.8. Strait of Juan de Fuca Critical Habitat Subunit

The Strait of Juan de Fuca CHSU is essential to bull trout conservation and for supporting the expression of the amphidromous life history form along the northern extent of the Olympic Peninsula. This CHSU encompasses both marine (Strait of Juan de Fuca) and freshwater (Siebert Creek, Morse Creek, Ennis Creek, and Valley Creek) FMO habitats required for the expression of the amphidromous life history form within the Olympic Peninsula CHU (see Appendix 1 for more detailed information).

The Strait of Juan de Fuca is a large body of water bordering the north end of the Olympic Peninsula and forms the principal outlet for the Georgia Strait and Puget Sound, connecting both to the Pacific Ocean. Approximately 209.2 km (130.0 mi) of nearshore marine habitat in the Strait of Juan de Fuca, and 28.2 km (17.6 mi) of independent streams draining into it are designated as critical habitat. The following water bodies are included in this CHSU: (see Table 8)

(A) Nearshore marine habitat on the southern boundary of the Strait of Juan de Fuca for 209.2 km (130.0 mi) from its eastern boundary at Cape George to its western boundary at Pillar Point provides key marine foraging and migration habitat for the amphidromous life history form from the Dungeness and Elwha CHSUs. Siebert Creek from its confluence with the Strait of Juan de Fuca upstream 10.1 km (6.3 mi) to its confluence with an unnamed tributary (stream catalog number 0175); Morse Creek from its confluence with the Strait of Juan de Fuca upstream 7.9 km (4.9 mi) to a natural barrier; Ennis Creek from its confluence with the Strait of Juan de Fuca upstream 8.0 km (5.0 mi) to a natural barrier; and Valley Creek from its confluence with the Strait of Juan de Fuca upstream 2.2 km (1.4 mi) to upper extent of anadromous salmon use, provide FMO habitat for amphidromous bull trout outside of freshwater core areas. Subadult bull trout have been documented in these tributaries, indicating they are used for seasonal foraging and overwintering by the amphidromous life history form. Use of these independent tributaries to the Strait of Juan de Fuca requires migration by bull trout from their natal rivers through the marine waters of the Strait of Juan de Fuca.

Table 8. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Strait of Juan de Fuca CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Strait of Juan de Fuca	Siebert Creek	WA	Currently accessible to anadromous bull trout. Documented observation in 1999 (Freudenthal, in litt. 2000).	Siebert Creek has been identified as part of the Straits of Juan de Fuca FMO habitat, and is identified in the recovery plan as providing an important contribution to foraging habitat for anadromous bull trout. This habitat is identified in the recovery plan as providing an important contribution to the forage base and connectivity of anadromous bull trout in the Strait of Juan de Fuca. Siebert is one of very few freshwater streams outside of the Elwha River and Dungeness River core areas known to be used by bull trout. Recent radio telemetry studies have demonstrated that anadromous bull trout spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). Siebert Creek is considered essential for maintaining overall distribution and abundance of anadromous bull trout in the Dungeness and Elwha core areas.	1232885 481207
Olympic Peninsula—Strait of Juan de Fuca	Morse Creek	WA	Currently accessible to anadromous bull trout. Morse Creek has potentially suitable SR habitat in its upper reaches. A large bull trout was documented in Morse Creek in the late 1980s (WDFW 1998). Sampling of this stream has been insufficient to document the current presence or abundance of bull trout. Habitat is suitable and connected to occupied bull trout foraging areas.	Morse Creek has been identified as part of the Straits of Juan de Fuca FMO habitat, and is identified in the recovery plan as providing an important contribution to foraging habitat for anadromous bull trout. This habitat is identified in the recovery plan as providing an important contribution to the forage base and connectivity of anadromous bull trout in the Strait of Juan de Fuca. Siebert Creek is one of very few freshwater streams outside of the Elwha River and Dungeness River core areas known to be used by bull trout. Recent radio telemetry studies have demonstrated that anadromous bull trout spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). Morse Creek is considered essential for maintaining overall distribution and abundance of anadromous bull trout in the Dungeness and Elwha core areas.	1233496 481176

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Strait of Juan de Fuca	Ennis Creek	WA	Currently accessible to anadromous bull trout. Bull trout captured in WDFW smolt trap on Ennis Creek in 1999 (Cooper, in litt. 2003).	Ennis Creek has been identified as part of the Straits of Juan de Fuca FMO habitat, and is identified in the recovery plan as providing an important contribution to foraging habitat for anadromous bull trout. This habitat is identified in the recovery plan as providing an important contribution to the forage base and connectivity of anadromous bull trout in the Strait of Juan de Fuca. Ennis Creek is one of very few freshwater streams outside of the Elwha River and Dungeness River core areas known to be used by bull trout. Recent radio telemetry studies have demonstrated that anadromous bull trout spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). Ennis Creek is considered essential for maintaining overall distribution and abundance of anadromous bull trout in the Dungeness and Elwha core areas.	1234042 481167
Olympic Peninsula—Strait of Juan de Fuca	Valley Creek	WA	Bull trout use recently detected using radio telemetry. Subadult bull trout observed in May 2006 (Ogg, in litt. 2006).	Valley Creek's use by bull trout has only recently been identified. It is part of the Straits of Juan de Fuca FMO habitat, and is identified in the recovery plan as providing an important contribution to foraging habitat for anadromous bull trout. Valley Creek is in close proximity to the Dungeness core area, and recent radio telemetry studies demonstrate anadromous bull trout spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). The lower reach of this stream and its associated riparian area has been severely degraded as a result of residential and urban development so there is some uncertainty regarding the level of use by anadromous bull trout and degree of importance for recovery. However, it is considered essential for recovery at this time because of the connectivity it provides among Straits of Jaun de Fuca FMO habitat between the Dungeness and Elwha core areas.	1234372 481222

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Strait of Juan de Fuca	Strait of Juan de Fuca Marine	WA	Bull trout have been observed in a number of independent drainages to the Strait of Juan de Fuca, including Bell, Siebert, Morse and Ennis Creeks (Mongillo 1993; Freudenthal, in litt. 2001; WDFW 1998; Cooper, in litt. 2003). It is presumed that spawning does not occur in these independent drainages based on low elevation and the professional judgment of the Olympic Peninsula Bull Trout Recovery Team. The Strait of Juan de Fuca provides connectivity between known core areas and these independent drainages. Recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt 2003b; Brenkman and Corbett 2005). Although bull trout have not been documented west of the Elwha River, telemetry studies on the Olympic Peninsula have documented bull trout migrating from natal streams 32 miles (from Hoh River to Raft River) through marine waters to freshwater streams (Corbett, in litt. 2004).	See "Olympic Peninsula CHU" justification text, above	M-OP-MR-02

1.9. Pacific Coast Critical Habitat Subunit

The Pacific Coast CHSU is essential to bull trout conservation and for supporting the expression of the amphidromous life history form along the coastal region of the Olympic Peninsula. This CHSU encompasses both marine (Pacific Ocean) and freshwater (Goodman Creek, Mosquito Creek, Cedar Creek, Steamboat Creek, Kalaloch Creek, Raft River, Moclips River, Joe Creek, and Copalis River) FMO habitats required for the expression of the amphidromous life history form within the Olympic Peninsula CHU (see Appendix 1 for more detailed information).

Bull trout can be found throughout the eastern nearshore waters of the Pacific Ocean from Goodman Creek south to Grays Harbor. Approximately 151 km (93.8 mi) of nearshore marine habitat on the Pacific Coast, and 103.0 km (64.0 mi) of independent streams draining into the Pacific Ocean are designated as critical habitat. The following water bodies are included in this CHSU (see Table 9):

(A) Nearshore marine habitat on the western coast of the Pacific Ocean for 150.0 km (93.8 mi) from its northern boundary at the mouth of an unnamed tributary (stream catalog number 0089) to its southern boundary at the mouth of Grays Harbor at the jetty on Point Brown provides key marine foraging and migration habitat for the amphidromous life history form from the Hoh, Queets, and Quinault CHSUs. The following independent tributaries to the Pacific Ocean provide essential foraging and overwintering habitat outside of core areas for the amphidromous life history form: Goodman Creek from its confluence with the Pacific Ocean upstream 17.3 km (10.8 mi) to its confluence with an unnamed tributary (stream catalog number 0413); Mosquito Creek upstream from its confluence with the Pacific Ocean upstream 11.1 km (6.9 mi) to a natural barrier; Cedar Creek from its confluence with the Pacific Ocean upstream 6.8 km (4.2 mi) to its headwaters; Steamboat Creek from its confluence with the Pacific Ocean upstream 5.3 km (3.3 mi) to a natural barrier; Kalaloch Creek from its confluence with the Pacific Ocean upstream 6.3 km (3.9 mi) to its confluence with West Fork Kalaloch Creek; Raft River from its confluence with the Pacific Ocean upstream 12.9 km (8.0 mi) to its confluence with South Fork Raft River; Moclips River upstream from its confluence with the Pacific Ocean upstream 11.3 km (7.0 mi) to a natural barrier; Joe Creek upstream from its confluence with the Pacific Ocean upstream 5.8 km (3.6 mi) to a natural barrier; and Copalis River upstream from its confluence with the Pacific Ocean upstream 25.6 km (15.9 mi) to a natural barrier. Subadult and adult bull trout have been documented in these tributaries, indicating these streams are used for essential foraging and overwintering by the amphidromous life history form. Use of these independent tributaries to the Pacific Ocean requires migration by bull trout from their natal rivers through the marine waters of the Pacific Ocean.

Table 9. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Pacific Coast CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Pacific Coast	Pacific Coast Marine	WA	Bull trout have been observed in a number of independent drainages to the Pacific Ocean, including Goodman, Cedar, Steamboat, Klalloch, and Joe creeks, and Moclips and Copalis rivers, as well as in Grays Harbor (Mongillo 1993; Potter, in litt. 2003; Freymond, in litt. 2001; Brenkman and Corbett, in litt. 2003b; and WDFW 1998). It is presumed that spawning does not occur in these independent drainages or in Grays Harbor tributaries based on low elevation and the professional judgment of the Olympic Peninsula Bull Trout Recovery Team. The Pacific Ocean provides the only connectivity between known core areas and these independent drainages. Recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b), and have been documented to migrate 32 miles through marine waters from natal stream to FMO freshwater river.	See "Olympic Peninsula CHU" justification text, above	M-OP-MR-03
Olympic Peninsula—Pacific Coast	Copalis River	WA	Bull trout documented in lower river in 2001 (Brenkman, in litt. 2003c)	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Copalis River is in close proximity to the Queets and Quinault core areas and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1241801 471333

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Pacific Coast	Joe Creek	WA	Bull trout are common in the lower river in December when the coho are spawning (Potter, in litt. 2003).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Joe Creek is in close proximity to the Queets and Quinault core areas and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1242023 472064
Olympic Peninsula—Pacific Coast	Moclips River	WA	Bull trout reported in anadromous reach (WDFW 1998).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Moclips River is in close proximity to the Queets and Quinault core areas and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1242189 472478

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Pacific Coast	Raft River	WA	Bull trout documented in Raft River during 2003 radio telemetry study (Corbett, in litt. 2004).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Raft River is in close proximity to the Hoh, Queets, and Quinault core areas and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1243414474624
Olympic Peninsula—Pacific Coast	Kalaloch Creek	WA	Bull trout documented in Kalaloch Creek (Freymond, in litt. 2003), and radio tagged bull trout from Hoh River tracked to Kalaloch Creek (Brenkman in litt. 2003b). Habitat is suitable and connected to occupied bull foraging areas downstream, and supports runs of coho, chum and chinook salmon.	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Kalaloch Creek also provides key overwintering refugia habitat. It is in close proximity to the Hoh and Queets core areas and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett, in litt. 2003b). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1243741476072

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Pacific Coast	Steamboat Creek	WA	Hoh River radio tagged fish detected in 2003 in Steamboat Creek (Brenkman, in litt. 2003b).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Steamboat Creek also provides key overwintering refugia habitat. It is in close proximity to the Hoh core area and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1244031 476785
Olympic Peninsula—Pacific Coast	Cedar Creek	WA	Three adult size bull trout caught in December 2002 (Freymond, in litt. 2003). Hoh River radio tagged fish detected in 2003 in Cedar Creek (Brenkman, in litt. 2003b).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Cedar Creek also provides key overwintering refugia habitat. It is in close proximity to the Hoh core area and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005).	1244148 477119

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Pacific Coast	Mosquito Creek	WA	Historic records of bull trout being seasonally abundant in Mosquito Creek (McLeod 1944). No recent surveys for bull trout have been conducted.	Although definitive recent data on bull trout presence are lacking for this stream, Mosquito Creek is a productive salmon stream used by coho, chum and steelhead. Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. Mosquito Creek is in close proximity to the Hoh core area and recent radio telemetry studies indicate that anadromous bull trout often spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1244807 477985
Olympic Peninsula—Pacific Coast	Goodman Creek	WA	Adult bull trout caught by hook and line in the mid-1990s. (Freymond, in litt. 2001).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. Goodman Creek is in close proximity to the Hoh core area and recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1245117 478247

1.10. Chehalis River / Grays Harbor Critical Habitat Subunit

The Chehalis River / Grays Harbor CHSU is essential to bull trout conservation and for supporting the expression of the amphidromous life history form along the Pacific Coast. This CHSU includes Grays Harbor, Humptulips River, and the Chehalis River and several of its major tributaries (Wishkah River, Wynoochee River, Satsop River) The Chehalis River system is the second largest river basin in Washington, providing the primary freshwater FMO habitat (outside of core areas) for the amphidromous life history form from Washington coast core areas. Grays Harbor is the key connection between the Pacific Ocean and freshwater FMO habitats within the Chehalis River basin and Humptulips River drainage for Washington coast core areas (see Appendix 1 for more detailed information).

The Chehalis River forms the second largest River basin in Washington. It flows west to its confluence with Grays Harbor. Bull trout have been documented throughout the Chehalis River downstream from Garrard Creek and in Grays Harbor. Bull trout do not appear to spawn in the Grays Harbor/Chehalis River basin and these fish probably originate from core areas north of the basin (Jeanes and Morello 2006, p. 57). Approximately 143.0 km (88.8 mi) of nearshore marine habitat in Grays Harbor and 327 km (203.1 mi) of rivers draining into Grays Harbor are designated as critical habitat. The following water bodies are included in this CHSU (see Table 10):

(A) Nearshore marine habitat of Grays Harbor upstream 142.5 km (88.6 mi) from its mouth at the Pacific Ocean, north to jetty at Point Brown, south to jetty at Point Chehalis, including the extent of tidal influence, and east to the Chehalis River, provides key marine foraging and migration habitat for the amphidromous life history form from the Hoh, Queets, and Quinault CHSUs. Humptulips River from its confluence with Grays Harbor upstream 44.9 km (27.9 mi) to its confluence with East and West Forks Humptulips River and Wishkah River from its confluence with Grays Harbor upstream 54.4 km (33.8 mi) to a natural barrier provide freshwater foraging and overwintering habitat for amphidromous bull trout. Bull trout are not known to spawn in either the Wishkah or Humptulips River basins, and so bull trout observed in these systems likely originate from the core areas north of Grays Harbor.

(B) Chehalis River from its mouth at Grays Harbor upstream 75.6 km (47.0 mi) to its confluence with Garrard Creek and Wynoochee River upstream 81.9 km (50.9 mi) to the Wynoochee Dam provide freshwater foraging and overwintering habitat for amphidromous bull trout. Bull trout have been observed entering these rivers following salmon and steelhead spawning runs and during smolt out-migrations. The Chehalis and Wynoochee Rivers provide FMO habitat and are accessible from the marine waters of Grays Harbor. Use of these streams requires migration by bull trout from their natal rivers through the marine waters of the Pacific Ocean and Grays Harbor.

(C) Satsop River upstream 10.1 km (6.3 mi) to its confluence with West Fork Satsop River and West Fork Satsop River upstream 60.2 km (37.4 mi) to a natural barrier provide freshwater foraging and overwintering habitat for amphidromous bull trout. Although there are no recent observations of bull trout in the Satsop River, historically bull trout were regularly observed in the Satsop, West Fork Satsop, and Canyon Rivers. These rivers are accessible from marine waters and provide, at least seasonally, important foraging and overwintering habitat. The Satsop River may have historically supported a natal population since water temperatures within the basin are suitable for all bull trout life-history stages.

Table 10. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Olympic Peninsula—Chehalis River/Grays Harbor CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Chehalis River/Grays Harbor	Satsop River	WA	Fall and winter bull trout use documented (Keizer 1990). Bull trout abundant in the 1960s (Webster, in litt. 2001). Bull trout have not been documented in the Satsop River since the mid-1970s. The Satsop River is an accessible and productive salmon stream.	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Satsop River is identified as part of the Lower Chehalis/Grays Harbor FMO habitat. Recent acoustic telemetry studies indicate that anadromous bull trout, from as far away as the Hoh core area, spend significant time within the Grays Harbor and Chehalis system (Jeanes and Morello 2006). This is believed to be the only tributary system within the Chehalis River Basin that likely supported a population of bull trout historically. The recovery team identified the Satsop drainage as a potential core area that bull trout may reoccupy when habitat is adequately restored.	1234803 469786
Olympic Peninsula—Chehalis River/Grays Harbor	West Fork Satsop River	WA	Large bull trout were relatively abundant in the WF Satsop River during the 1960s (Webster, in litt. 2001). Bull trout have not been documented in the Satsop River since the mid-1970s. USFS report identifies the WF Satsop River as having bull trout (USFS, in litt. 1990a). The WF Satsop River is an accessible and productive salmon stream. Water temperatures in the WF Satsop River are suitable for SR bull trout (Ogg, in litt. 2003d).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Satsop River is identified as part of the Lower Chehalis/Grays Harbor FMO habitat. Recent acoustic telemetry studies indicate that anadromous bull trout, from as far away as the Hoh core area, spend significant time within the Grays Harbor and Chehalis system (Jeanes and Morello 2006). This is believed to be the only tributary system within the Chehalis River Basin that likely supported a population of bull trout historically. The recovery team identified the Satsop drainage as a potential core area that bull trout may reoccupy when habitat is adequately restored.	1235243 470354

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Chehalis River/Grays Harbor	Wynoochee River	WA	Adult and subadult bull trout have been documented in this reach of the Wynoochee River (Keizer 1990; Hooper, in litt. 2004; Metzger, in litt. 2009).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Wynoochee River is identified as part of the Lower Chehalis/Grays Harbor FMO habitat. Recent acoustic telemetry studies indicate that anadromous bull trout, from as far away as the Hoh core area, spend significant time within the Grays Harbor and Chehalis system (Jeanes and Morello 2006). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1236063 469616
Olympic Peninsula—Chehalis River/Grays Harbor	Wishkah River	WA	Hennings Washington Fishing Guide (Keizer 1990) states that "Dolly Varden come into the river in September and October, following a small run of coho". Recent report of a bull trout captured at RM 22.8 while angling (Ereth, in litt. 2002).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Wishkah River is identified as part of the Lower Chehalis/Grays Harbor FMO habitat. Recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (OPRT, in litt. 2003b; Brenkman and Corbett 2005). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1238065 469728

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Chehalis River/Grays Harbor	Chehalis River	WA	Numerous historic observations and collections (1974-2000) of native char in the Chehalis River to the confluence of Garrard Creek (Keizer 1990; Brix 1974; Simenstad et al. 2001). Most recent data is from seining efforts conducted by the Army Corps of Engineers in the lower river between 2002 to 2004 (Jeanes and Morello 2006). Chehalis River is a productive salmon stream with large numbers of smolts seasonally.	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the management unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Chehalis River is identified as part of the Lower Chehalis/Grays Harbor FMO habitat. Recent acoustic telemetry studies indicate that anadromous bull trout, from as far away as the Hoh core area, spend significant time within the Grays Harbor and Chehalis system (Jeanes and Morello 2006). It is identified as providing necessary connectivity among FMO habitats for anadromous bull trout.	1238225 469619
Olympic Peninsula—Chehalis River/Grays Harbor	Humptulips River	WA	Bull trout observed upstream from the confluence of Stevens Creek in June 1995 (N. Dachtler, in litt. 2001), and in the lower mainstem (Fransen, pers. comm. 2005; Fransen, in litt. 2006)	Although spawning has not been documented in any tributary to Grays Harbor or the lower Chehalis R, there has been little effort to document such use. However, the bull trout habitat in this region likely represents the current southern-most distribution of its coastal range. As such, bull trout utilizing Grays Harbor and its tributaries are important in maintaining the full genetic diversity and evolutionary potential of the species (B. Rieman, USFS, in litt. 2003). The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat occupied by anadromous salmonids that can provide a forage base for bull trout. The Humptulips River is identified as part of the Lower Chehalis River/Grays Harbor FMO habitat. This habitat is identified in the recovery plan as providing a necessary contribution to the forage base and connectivity of anadromous bull trout.	1240375 470618

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Olympic Peninsula—Chehalis River/Grays Harbor	Grays Harbor Marine	WA	Numerous historic observations and collections (1966-2000) of native char in Grays Harbor. Most recent data is from beach seining efforts conducted by the Army Corps of Engineers in 2002 (Jeanes et al. 2003; Jeanes and Morello 2006). Recent radio telemetry studies indicate that anadromous bull trout may spend significant time outside their core area (Brenkman and Corbett, in litt. 2003a, 2003b).	Grays Harbor nearshore habitat and independent river estuaries provide essential fresh-salt water conversion zones and feeding grounds for juvenile salmonids produced in these tributary rivers. Grays Harbor and its tributaries are inhabited by chinook and coho salmon and cutthroat and steelhead trout. Abundant forage fish also are present in Grays Harbor (Penttila, in litt. 2004). The draft recovery chapter explicitly identifies, as essential and biologically important, accessible habitat that provides a forage base for anadromous bull trout. Grays Harbor is identified as part of the Lower Chehalis/Grays Harbor FMO habitat and provides essential connectivity between the known coastal core areas and drainages that provide FMO habitat for anadromous bull trout outside of core areas. Grays Harbor is essential for maintaining distribution and abundance of anadromous bull trout in the coastal region of the Olympic Peninsula Management Unit.	M-OP-MR-04

Chapter 2. Coastal Recovery Unit—Puget Sound Critical Habitat Unit

Chapter 2. Puget Sound Critical Habitat Unit

The Puget Sound CHU is essential for maintaining bull trout distribution within this unique geographic region of the RU. Puget Sound is a fjord-like estuary that covers an area of approximately 2,330 square kilometers (km^2) (900 square miles (mi^2)), including 3,700 kilometers (km) (2,300 miles(mi)) of nearshore marine coastline. It was designated as an "Estuary of National Significance" by the U.S. Environmental Protection Agency in 1988.

This CHU is essential for maintaining distribution of the amphidromous life history form within the Coastal RU, which is rare across this species geographic range. It is not only essential for maintaining this life history form within this RU but within its coterminous range. It is one of only two CHUs that contain the amphidromous life history form. See Appendix 1 for more detailed information.

The Puget Sound CHU includes approximately 2,737.3 km (1,700.8 mi) of streams; 17,890.5 ha (44,208.3 ac) of lake surface area; and 911.9 km (566.6 mi) of marine shoreline designated as critical habitat. The CHU is bordered by the Cascade Range to the east, Puget Sound to the west, Lower Columbia River Basins and Olympic Peninsula CHUs to the south, and the U.S.–Canada border to the north. The CHU extends across Whatcom, Skagit, Snohomish, King, Pierce, Thurston, and Island Counties. The major river basins initiate from the Cascade Range and flow west, discharging into Puget Sound, with the exception of the Chilliwack River system, which flows northwest into British Columbia, discharging into the Fraser River. The Puget Sound CHU is divided into 13 CHSUs.

2.1. Chilliwack River Critical Habitat Subunit

The Chilliwack River CHSU is essential to bull trout conservation because it represents unique geographic distribution within the RU, and supports multiple migratory life history forms. Chilliwack Lake and significant portions of its headwaters are in protected areas (North Cascades National Park, Chilliwack Ecological Reserve, and Chilliwack Lake Provincial Park) (see Appendix 1 for more detailed information).

The Chilliwack River system is a transboundary watershed flowing northwest into British Columbia, Canada, where it discharges into the Fraser River. The Chilliwack River CHSU includes only those portions of this transboundary system that are within the United States. The Bull Trout Draft Recovery Plan (Service 2004a, vol. 1, p. 27) describes the Chilliwack River core area as including portions of the Sumas River and Chilliwack River and its tributaries contained within the United States. A total of approximately 50 km (31 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 11):

(A) The Chilliwack River from the U.S.–Canada border upstream approximately 18.8 km (11.7 mi) to the limit of accessible headwater habitat at its confluence with Copper Creek and the following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat for the local population: Bear Creek upstream 0.5 km (0.3 mi); Indian Creek upstream 1.6 km (1.0 mi); Brush Creek upstream 0.5 km (0.3 mi); and Easy Creek upstream 0.8 km (0.5 mi).

Little Chilliwack River from its confluence with the Chilliwack River upstream approximately 6.4 km (4.0 mi) to its headwaters and its tributary Little Fork from its mouth upstream approximately 3.2 km (2.0 mi) to its headwaters provide spawning and rearing habitat for migratory bull trout and the local population. These streams are within North Cascades National Park, so habitat remains essentially in pristine condition.

(B) Depot Creek from the U.S.–Canada border upstream 2.7 km (1.7 mi) to the limit of accessible headwater habitat provides spawning and rearing habitat for migratory bull trout in the local population.

(C) Silesia Creek from the U.S.–Canada border upstream approximately 15.3 km (9.5 mi) to the limit of accessible headwater habitat provides spawning and rearing habitat for migratory bull trout in the local population.

Table 11. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Chilliwack River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Chilliwack River	Depot Creek	WA	Bull trout SR has been recorded within the British Columbia reaches with accessible habitat recorded to the border (Nelson and Caverhill 1999; M.A. Whelen and Associates Ltd. and TSSHRC 1996). Although no surveys have been conducted in the U.S. reaches, habitat is accessible to migratory bull trout.	Depot Creek provides essential habitat used for spawning and rearing in the Depot Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213329 490000
Puget Sound—Chilliwack River	Bear Creek	WA	Juvenile bull trout observed in Chilliwack River near the creek mouth in the mid-70s during the last survey of this stream (Glesne, in litt. 1993). Bear Creek is within the North Cascades National Park, so habitat remains essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1213871 489654
Puget Sound—Chilliwack River	Indian Creek	WA	Bull trout observed in 1998 (Doyle et al. in litt. 2000). Juvenile bull trout observed in the mid-70s during last survey of this stream (Glesne, in litt. 1993). Indian Creek is within the North Cascades National Park, so habitat remains essentially in pristine condition.	Indian Creek provides essential habitat used for spawning and rearing in the Chilliwack River local population. It is essential for maintaining distribution, abundance, and productivity.	1213972 489471
Puget Sound—Chilliwack River	Little Chilliwack River	WA	Juvenile bull trout observed in the mid-70s during last survey of this stream (Glesne, in litt. 1993). Stream is within the North Cascades National Park, so habitat remains essentially in pristine condition.	Little Chilliwack River provides essential habitat used for spawning and rearing in the Little Chilliwack River local population. It is essential for maintaining distribution, abundance, and productivity.	1214074 489925
Puget Sound—Chilliwack River	Chilliwack River	WA	National Park Service surveys detected bull trout in the mainstem river of this adfluvial population in 1998 and 1999, and observed spawning bull trout in 1998 (Doyle et al., in litt. 2000). A 1998 Chilliwack Lake angler survey also sampled large numbers of bull trout in Chilliwack Lake (Nelson and Caverhill. 1999), the primary foraging and overwintering habitat located in British Columbia just across the border.	Mainstem Chilliwack River provides habitat used for spawning and rearing. It may also provide riverine foraging habitat for subadult and adult bull trout. It is essential for maintaining distribution, abundance, productivity, and connectivity to FMO habitat (Chilliwack Lake) in BC.	1214101 490000
Puget Sound—Chilliwack River	Brush Creek	WA	Juvenile bull trout observed in the mid-70s during last survey of this stream (Glesne, in litt. 1993). Brush Creek is within the North Cascades National Park, so habitat remains essentially in pristine condition.	Brush Creek provides essential habitat used for spawning and rearing in the Chilliwack River local population. It is essential for maintaining distribution, abundance, and productivity.	1214226 489130
Puget Sound—Chilliwack River	Little Fork Little Chilliwack River	WA	Connected to a known occupied stream. Little Fork is within the North Cascades National Park, so habitat is essentially in pristine condition. No surveys have been conducted to specifically detect bull trout.	Little Fork provides essential habitat used for spawning and rearing in the Little Chilliwack River local population. It is essential for maintaining distribution, abundance, and productivity.	1214264 489798

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Chilliwack River	Easy Creek	WA	Juvenile bull trout observed in the mid-70s during the last survey of this stream (Glesne, in litt. 1993). Easy Creek is within the North Cascades National Park, so habitat remains essentially in pristine condition.	Easy Creek provides essential habitat used for spawning and rearing in the Chilliwack River local population. It is essential for maintaining distribution, abundance, and productivity.	1214574 488888
Puget Sound—Chilliwack River	Silesia Creek	WA	Bull trout SR has been recorded within the British Columbia reaches, with accessible habitat to the border (M.A. Whelen and Associates Ltd. and TSSHRC 1996). Although no surveys have been conducted in the U.S. reaches, habitat is accessible to migratory bull trout.	Silesia Creek provides essential habitat for spawning and rearing, and is an identified local population. It is essential for maintaining distribution, abundance, and productivity.	1216118 489988

2.2. Nooksack River Critical Habitat Subunit

The Nooksack River CHSU is essential to bull trout conservation because it represents the northern most distribution of amphidromous bull trout in Puget Sound. Bull trout's sympatric distribution with Dolly Varden suggests this CHSU may represent a key climate change refugium for the species due to Dolly Varden's presumed colder water requirements. Portions of the headwaters are within protected areas (Mount Baker Wilderness) (see Appendix 1 for more detailed information).

The Nooksack River CHSU is located on the western slopes of the Cascade Range. The Nooksack River system flows west from the Cascade Mountain Range towards Puget Sound, discharging into Bellingham Bay. A total of approximately 377 km (231 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 12):

(A) The Nooksack River from its mouth at Puget Sound upstream approximately 63.7 km (39.6 mi) to its confluence with the North Fork Nooksack River and Middle Fork Nooksack River, including associated sloughs, provides foraging and overwintering habitat and an essential migratory corridor for amphidromous bull trout. Bertrand Creek from its mouth upstream approximately 13.7 km (8.5 mi) to the U.S.–Canadian border; Fishtrap Creek from its mouth upstream approximately 14.5 km (9.0 mi) to the U.S.–Canadian border; Anderson Creek from its mouth upstream approximately 10.3 km (6.4 mi) to the mouth of an unnamed tributary (Washington stream catalog number 0230); and Smith Creek from its mouth upstream 4.3 km (2.7 mi) to the mouth of McCauley Creek are productive salmon streams that provide the primary accessible tributary FMO habitat in the lower Nooksack River.

(B) North Fork Nooksack River from its confluence with the Middle Fork Nooksack River upstream approximately 39.6 km (24.6 mi) to Nooksack Falls provides spawning and rearing habitat upstream of its confluence with Canyon Creek and combined rearing and FMO habitat in its reaches downstream of Canyon Creek. Coal Creek from the mouth upstream 2.1 km (1.3 mi) to natural barrier; Racehorse Creek from its mouth upstream 1.8 km (1.1 mi) to a falls; Kendall Creek from its mouth upstream 4.3 km (2.7 mi) to the outlet of a wetland; and Bear Creek from its mouth upstream 3.7 km (2.3 mi) to the top of a slough complex are productive salmon streams that provide the primary accessible tributary FMO habitat in the North Fork Nooksack River.

The following tributaries from their mouths upstream to natural barriers provide accessible spawning and rearing habitat for the Lower North Fork Nooksack River and Canyon Creek : Maple Creek upstream 2.2 km (1.4 mi); West Slide Creek (stream catalog number 0422) upstream 0.8 km (0.5 mi); Aldrich Creek (stream catalog number 0423) upstream 1.0 km (0.6 mi); unnamed tributary between Boulder and Maple Creeks upstream 0.6 km (0.4 mi); Boulder Creek upstream 2.1 km (1.3 mi); unnamed tributary (stream catalog number 0425) upstream 0.8 km (0.5 mi); McDonald Creek (stream catalog number 0435) upstream 1.4 km (0.9 mi); Wildcat Creek upstream 1.6 km (1.0 mi); and Canyon Creek upstream approximately 5.0 km (3.1 mi) to a barrier falls. The following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat for the Middle North Fork Nooksack River local population: Hedrick Creek upstream 1.3 km (0.8 mi); Cornell Creek upstream 1.6 km (1.0 mi); its tributary, West Cornell Creek, upstream 1.3 km (0.8 mi); Gallop Creek upstream 1.4 km (0.9 mi); and its tributary, Son of Gallop, upstream 0.6 km (0.4 mi).

(C) The following tributaries from their mouths upstream to natural barriers or confluences provide spawning and rearing habitat for the Glacier Creek local population: Glacier Creek upstream approximately 11.1 km (6.9 mi) to the barrier at its confluence with Grouse Creek and the Glacier Creek tributaries—Little Creek upstream approximately 1.1 km (0.7 mi); Davis Creek upstream 0.3 km (0.2 mi); Thompson Creek upstream 3.4 km (2.1 mi); Deep Creek upstream 0.3 km (0.2 mi); unnamed tributary (stream catalog number 0476) upstream 0.5 km (0.3 mi); Coal Creek (upper) upstream 0.3 km (0.2 mi); and Falls Creek upstream 1.3 km (0.8 mi) to its confluence with Lookout Creek.

(D) The following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat for the Upper North Fork Nooksack River local population: Boyd Creek upstream 0.6 km (0.4 mi); Cascade Creek upstream 0.3 km (0.2 mi); Deerhorn Creek upstream 0.3 km (0.2 mi); Fossil Creek upstream 0.5 km (0.3 mi); Ditch Creek upstream 0.3 km (0.2 mi); Chainup Creek upstream 0.5 km (0.3 mi); Deadhorse Creek upstream 0.5 km (0.3 mi); Powerhouse Creek upstream 0.5 km (0.3 mi); and Wells Creek upstream 2.4 km (1.5 mi).

(E) Middle Fork Nooksack River from its confluence with the North Fork Nooksack River upstream approximately 28.5 km (17.7 mi) to a gradient barrier near its confluence with Ridley Creek provides spawning and rearing habitat upstream of Box Canyon and combined spawning, rearing, and FMO habitat in its reaches downstream of Box Canyon. The following tributaries from their mouths upstream to natural barriers all provide combined spawning, rearing, and FMO habitat for the Lower Middle Fork Nooksack River local population: Canyon Creek (Canyon Lake Creek) upstream 3.1 km (1.9 mi); unnamed tributary (stream catalog number 0347) upstream 2.4 km (1.5 mi); an unnamed tributary (stream catalog number 0349) upstream 0.5 km (0.3 mi) to its confluence with another unnamed tributary; Porter Creek upstream 1.4 km (0.9 mi); Peat Bog Creek (stream catalog number 0352) upstream 1.6 km (1.0 mi) to a lower lake outlet; and Bear Creek (stream catalog number 0353) upstream 1.6 km (1.0 mi) to a natural barrier.

(F) The following tributaries from their mouths upstream to natural barriers all provide spawning and rearing habitat for the Upper Middle Fork Nooksack River local population: Clearwater Creek upstream 7.2 km (4.5 mi); Rocky Creek upstream 1.1 km (0.7 mi); an unnamed tributary (stream catalog number 0367) upstream 0.3 km (0.2 mi); Galbraith Creek upstream 0.6 km (0.4 mi); an unnamed tributary (stream catalog number 0371) upstream 0.3 km (0.2 mi); Seymour Creek upstream 0.3 km (0.2 mi); an unnamed tributary (stream catalog number 0374) upstream 0.8 km (0.5 mi); Sister Creek upstream 1.6 km (1.0 mi); Warm Creek upstream 0.8 km (0.5 mi); Wallace Creek upstream 0.3 km (0.2 mi); an unnamed tributary (upstream of Wallace Creek) upstream 0.3 km (0.2 mi); Green Creek upstream 0.8 km (0.5 mi); Rankin Creek upstream 1.0 km (0.6 mi); and Ridley Creek upstream 2.9 km (1.8 mi). Although bull trout have been documented in many of these streams in the past, no recent surveys have been conducted to specifically detect bull trout. Once improved fish passage at Bellingham Diversion (just upstream of Box Canyon) is completed, it is expected that amphidromous bull trout passage will be restored to the upper Middle Fork Nooksack River. In addition, the prey base will increase as salmon recolonize the river, and bull trout abundance will increase, resulting in greater use of accessible tributaries.

(G) South Fork Nooksack River from its confluence with the mainstem Nooksack River upstream approximately 64.4 km (40.0 mi) to its headwaters provides spawning and rearing habitat upstream of Wanlick Creek and combined spawning, rearing, and FMO habitat in its reaches downstream of Wanlick Creek. The following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat and additional FMO habitat for the Lower and Upper South Fork Nooksack River : Hutchinson Creek upstream 9.6 km (6.0 mi); an unnamed tributary (stream catalog number 0265) upstream 1.3 km (0.8 mi); Saxson Creek upstream 0.6 km (0.4 mi); Skookum Creek upstream 3.5 km (2.2 mi); Edfro Creek upstream 0.8 km (0.5 mi); an unnamed tributary (stream catalog number 0284) upstream 0.5 km (0.3 mi); Cavanaugh Creek upstream 1.0 km (0.6 mi); an unnamed tributary (stream catalog number 0290) upstream 0.5 km (0.3 mi); an unnamed tributary (stream catalog number 0291) upstream 1.0 km (0.6 mi); Fobes Creek upstream 0.5 km (0.3 mi); Plumbago Creek upstream 0.8 km (0.5 mi); Deer Creek upstream 1.0 km (0.6 mi); Howard Creek upstream 1.3 km (0.8 mi); McGinnis Creek upstream 0.3 km (0.2 mi); an unnamed tributary (stream catalog number 0315) upstream 0.2 km (0.1 mi); an unnamed tributary (stream catalog number 0316) upstream 0.3 km (0.2 mi); Bear Lake Outlet (stream catalog number 0317) upstream 0.3 km (0.2 mi); Three Lakes outlet (stream catalog number 0319) upstream 0.3 km (0.2 mi); an unnamed tributary (stream catalog number 0320) upstream 1.8 km (1.1 mi); unnamed tributary (stream catalog number 0321) upstream 0.6 km (0.4 mi); an unnamed tributary (downstream of Wanlick Creek) upstream 0.3 km (0.2 mi); Bell Creek upstream 0.5 km (0.3 mi); Elbow Creek/Lake Doreen outlet (stream catalog number 0331) upstream 2.7 km (1.7 mi) to its headwaters; and an unnamed tributary (stream catalog number 0332) upstream 1.0 km (0.6 mi).

(H) Wanlick Creek from the mouth upstream 7.2 km (4.5 mi) to its headwaters and its tributaries; an unnamed tributary (stream catalog number 0323) upstream 0.2 km (0.1 mi); Monument Creek (stream catalog number 0324) upstream 0.8 km (0.5 mi) to a natural barrier; and Loomis Creek upstream 1.6 km (1.0 mi) to its headwaters provide spawning and rearing habitat for the local population.

Table 12. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Nooksack River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Loomis Creek	WA	Adults and juveniles observed (S. Zyskowski, pers comm. 2002, 2003b; Huddle, pers. com., 2003).	Loomis Creek provides essential habitat used for spawning and rearing in the Wanlick Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1215131 486610
Puget Sound—Nooksack River	Wells Creek	WA	Redds observed in 1993 (Huddle, in litt. 1995), and juveniles observed in the early 1990s (FERC 1997).	Wells Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218080 489053
Puget Sound—Nooksack River	Powerhouse Creek	WA	Adults and juveniles observed in the late 1990s during the spawning period (Huddle, pers. comm. 2002b).	Powerhouse Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218143 489075
Puget Sound—Nooksack River	Monument Creek (#0324)	WA	Multiple age classes of juvenile bull trout observed in 2002 (Ecotrust, in litt. 2002).	Monument Creek provides essential habitat used for spawning and rearing in the Wanlick Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218333 486522
Puget Sound—Nooksack River	Deadhorse Creek	WA	Adults and redds observed from 1982 to 2002 (Huddle, in litt. 1995; WDFW and USFS, in litt. 2001, 2002).	Deadhorse Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218369 489040
Puget Sound—Nooksack River	Cascade Creek	WA	Adult observed in 2001, and adults and juveniles observed prior to 2000 (WDFW and USFS, in litt. 2001; Huddle, pers. comm. 2002a,b).	Cascade Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218377 489038
Puget Sound—Nooksack River	Chainup Creek	WA	Spawning observed in the late 1990s (Sahlfeld, pers. comm. 2002).	Chainup Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218391 489083

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Fossil Creek	WA	Juvenile bull trout collected during minnow trapping efforts in June 2004 (Currence 2007). Fossil Creek has not been extensively surveyed for bull trout.	Fossil Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218488 489078
Puget Sound—Nooksack River	Ditch Creek	WA	Adults and juveniles observed in close proximity to creek mouth (Huddle, pers. comm. 2002a,b).	Ditch Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218499 489035
Puget Sound—Nooksack River	Deerhorn Creek	WA	Young of year observed downstream of impassible culvert near natural barrier (Huddle, pers. comm. 2002b).	Deerhorn Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218562 489056
Puget Sound—Nooksack River	Unnamed trib. (#0323)	WA	Currently accessible to SR bull trout. Stream is within the home watershed of a known local population (Wanlick Creek) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218608 486547
Puget Sound—Nooksack River	Boyd Creek	WA	Adults and redds observed in 1992 and 1994 (Huddle, in litt. 1995).	Boyd Creek provides essential habitat used for spawning and rearing in the Upper North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218619 489027
Puget Sound—Nooksack River	Wanlick Creek	WA	An adult bull trout and multiple age classes of juveniles were observed in 2002 below the mouth of "Monument Creek" (Ecotrust, in litt. 2002).	Wanlick Creek provides essential habitat used for spawning and rearing in the Wanlick Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1218760 486443
Puget Sound—Nooksack River	Unnamed trib. downstream Wanlick Ck	WA	Potential bull trout redd recently observed (Salhfeld, pers. comm. 2002). Stream is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218769 486409

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Unnamed trib. (#0321)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218786 486296
Puget Sound—Nooksack River	Unnamed trib. (#0320)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218806 486255
Puget Sound—Nooksack River	Three Lakes Outlet (#0319)	WA	Currently accessible to SR bull trout. Three Lakes Outlet is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Three Lakes Outlet has not been extensively surveyed for bull trout. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218824 486250
Puget Sound—Nooksack River	Ridley Creek	WA	Currently accessible to SR bull trout. Ridley Creek is within the home watershed of a known local population of bull trout. Ridley Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218982 487253
Puget Sound—Nooksack River	Bell Creek	WA	Spawning adults observed in South Fork Nooksack River near Bell Creek in the 1970s (Kraemer, pers. comm. 2002). Bull trout captured in the mainstem near Bell Creek in the 1990s (McGrath, pers. comm. 2003). Stream is within the home watershed of a known local population (Upper South Fork Nooksack River) of bull trout. Bell Creek has not been extensively surveyed for bull trout. Norgore and Anderson (1921) reported native char below the falls. A Dolly Varden population exists above the barrier. This stream is a headwater tributary to the upper South Fork Nooksack River. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218989 486812

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Falls Creek	WA	Adults and redds observed in 1993 and 2002 (Huddle, in litt. 1995; WDFW and USFS, in litt. 2002).	Falls Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219007 488342
Puget Sound—Nooksack River	Unnamed trib. (#0476)	WA	Part of current distribution (WDFW 2002).	This unnamed tributary provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219007 488443
Puget Sound—Nooksack River	Coal Creek (Upper)	WA	Spawning bull trout observed (Huddle, pers. comm. 2002b).	Coal Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219017 488388
Puget Sound—Nooksack River	Deep Creek	WA	Part of current distribution (WDFW 2002).	Deep Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219067 488689
Puget Sound—Nooksack River	Elbow Creek / Lake Doreen Outlet (#0331)	WA	Large adults observed in the mainstem South Fork Nooksack River near the confluence with "Elbow Creek" (S. Zyskowski, pers. comm. 2003b). Currently accessible to SR bull trout. Elbow Creek is within the home watershed of a known local population of bull trout. Elbow Creek has not been extensively surveyed for bull trout. This stream is a headwater tributary to the upper South Fork Nooksack River. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219099 486847
Puget Sound—Nooksack River	Bear Lake Outlet (#0317)	WA	Spawning bull trout observed in accessible reach (Huddle, pers. comm. 2002a). Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	Bear Lake Outlet provides essential habitat used for spawning and rearing in the Lower South Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219106 486073
Puget Sound—Nooksack River	Thompson Creek	WA	Adults and redds observed in 2002 (WDFW and USFS, in litt. 2002).	Thompson Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219133 488788

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Rankin Creek	WA	Juvenile native char reported by Norgore and Anderson (1921). Currently accessible to SR bull trout. Rankin Creek is within the home watershed of a known local population of bull trout. Rankin Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219189 487327
Puget Sound—Nooksack River	Unnamed trib. (#0332)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Upper South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. This stream is a headwater tributary to the upper South Fork Nooksack River. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219200 486839
Puget Sound—Nooksack River	Unnamed trib. (#0316)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219285 486053
Puget Sound—Nooksack River	Davis Creek	WA	Juvenile bull trout observed in mid-1980s (Green, pers. comm. 2003). Davis Creek has not been extensively surveyed for bull trout.	Davis Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219295 488818
Puget Sound—Nooksack River	Little Creek	WA	Spawning bull trout observed in 1981 (Schuett-Hames, in litt.. 1999). Little Creek has not been extensively surveyed for bull trout.	Little Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219327 488842
Puget Sound—Nooksack River	Green Creek	WA	Part of current distribution (WDFW 2002), but no recent data available. Resident size char were observed spawning in the mid-1970s (Kraemer, pers. comm. 2002). Green Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219365 487379
Puget Sound—Nooksack River	Glacier Creek	WA	Adults have been observed in the 1980s (Green, in litt. 1989; FERC 1997; Schuett-Hames, in litt. 1999). Adults and redds observed in tributaries (Thompson Creek and Falls Creek) in 2002.	Glacier Creek provides essential habitat used for spawning and rearing in the Glacier Creek local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219382 488924

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Son of Gallop	WA	Spawning bull trout observed in 1999 (Huddle, pers. comm. 2002a).	Son of Gallop Creek provides essential habitat used for spawning and rearing in the Middle North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219422 488889
Puget Sound—Nooksack River	Gallop Creek	WA	Adult bull trout and redds observed (Huddle, in litt. 1995; Sahlfeld, pers. comm. 2002; Sahlfeld, pers. comm. 2003).	Gallop Creek provides essential habitat used for spawning and rearing in the Middle North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219423 488944
Puget Sound—Nooksack River	Unnamed trib. upstream Wallace Ck	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219455 487419
Puget Sound—Nooksack River	Wallace Creek	WA	Part of current distribution (WDFW 2002), but no recent data available. Juvenile native char collected in the mid-1970s (Kraemer, pers. comm. 2002). Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219497 487447
Puget Sound—Nooksack River	Unnamed trib. (#0315)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219531 486078
Puget Sound—Nooksack River	McGinnis Creek	WA	Currently accessible to SR bull trout. McGinnis Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. McGinnis Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219586 486104
Puget Sound—Nooksack River	West Cornell Creek	WA	Currently accessible to SR bull trout. West Cornell Creek is within the home watershed of a known local population (Middle North Fork Nooksack River) of bull trout. It is a productive salmon stream. West Cornell Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219593 488878

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Howard Creek	WA	Part of current distribution (WDFW 2002). Norgore and Anderson (1921) captured bull trout in the lower reaches. Currently accessible to SR bull trout. Howard Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout. Howard Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219648 486091
Puget Sound—Nooksack River	Cornell Creek	WA	Historically reported use (Norgore and Anderson 1921), although no recent records. Currently accessible to SR bull trout. Cornell Creek is within the home watershed of a known local population (Middle North Fork Nooksack River) of bull trout. Cornell Creek has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219679 488987
Puget Sound—Nooksack River	Hedrick Creek	WA	Adult bull trout observed in lower reach (Huddle, pers. comm. 2002a).	Hendrick Creek provides essential habitat used for spawning and rearing in the Middle North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219697 488988
Puget Sound—Nooksack River	Warm Creek	WA	Multiple age classes observed in 1991 (Johnston, in litt. 1999). Juveniles noted during hydropower prelicensing surveys (FERC 2002). Norgore and Anderson (1921) reported advanced char fry in this stream. Warm Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	Warm Creek provides essential habitat used for spawning and rearing in the Upper Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219773 487555
Puget Sound—Nooksack River	Sister Creek	WA	Part of current distribution (WDFW 2002), but no recent data available. Norgore and Anderson (1921) reported presence of native char in this stream. Sister Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	Sister Creek provides essential habitat for spawning and rearing in the Upper Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219871 487553
Puget Sound—Nooksack River	Canyon Creek	WA	Juvenile and adult bull trout observed as far as barrier (Zyskowski, in litt. 1991; Huddle, pers. comm. 2002a).	The draft recovery chapter identifies Canyon Creek as the only spawning and rearing tributary in the Canyon Creek local population. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219880 489058

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Unnamed trib. (#0374)	WA	Part of current distribution (WDFW 2002), but no recent data available. This unnamed tributary is within the home watershed of a known local population of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219929 487565
Puget Sound—Nooksack River	Rocky Creek	WA	Connected to known occupied stream (Clearwater Creek). Rocky Creek is within the home watershed of a known local population of bull trout. Rocky Creek has not been extensively surveyed for bull trout. Low gradient spawning habitat available. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219957 488094
Puget Sound—Nooksack River	Wildcat Creek	WA	Currently occupied by bull trout (WDFW 2002). Wildcat Creek is within the home watershed of a known local population of bull trout. A juvenile bull trout was collected in the lower reach during minnow trapping surveys in October 2004 (Currence 2007).	Wildcat Creek provides essential habitat used for spawning and rearing in the Lower North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1219996 489091
Puget Sound—Nooksack River	Seymour Creek	WA	Part of current distribution (WDFW 2002), but no recent data available. Seymour Creek is within the home watershed of a known local population of bull trout. Seymour Creek has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220089 487579
Puget Sound—Nooksack River	Unnamed trib. (#0371)	WA	Part of current distribution (WDFW 2002), but no recent data available. This unnamed tributary is within the home watershed of a known local population of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220145 487573
Puget Sound—Nooksack River	McDonald Creek (#0435)	WA	Adult bull trout have been observed (Huddle, pers. comm. 2002a; WDFW 2002). Stream is within the home watershed of a known local population of bull trout. Stream has not been extensively surveyed for bull trout.	McDonald Creek provides essential habitat used for spawning and rearing in the Lower North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1220147 489208

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Galbraith Creek	WA	Part of current distribution (WDFW 2002), but no recent data available. Galbraith Creek is within the home watershed of a known local population of bull trout. Galbraith Creek has not been extensively surveyed for bull trout. Bull trout noted historically (Pautzke 1943). Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220175 487593
Puget Sound—Nooksack River	Unnamed trib. (#0425)	WA	Historically a tributary to Boulder Creek, now mouth is adjacent and immediately down river of Boulder Creek. This unnamed tributary is within the home watershed of a known local population (Lower North Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream. 0.25 miles above culvert barrier is available once the culvert is replaced.	This is an accessible tributary to Boulder Creek. The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220300 489275
Puget Sound—Nooksack River	Unnamed trib. (#0367)	WA	Identified as part of current distribution (WDFW 2002), but no recent data available. This unnamed tributary is within the home watershed of a known local population of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. Currently inaccessible to anadromous salmon due to Bellingham Diversion.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220352 487650
Puget Sound—Nooksack River	Boulder Creek	WA	Part of current SR distribution (WDFW 2002). Juvenile and pre-staging adult bull trout were observed in upper reaches in 1987 (Johnston, in litt. 2000).	The draft recovery chapter identifies Boulder Creek as likely the most important spawning tributary in the Lower North Fork Nooksack River local population. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220361 489247
Puget Sound—Nooksack River	Unnamed trib. downstream Boulder Ck	WA	Connected to known occupied stream (North Fork Nooksack River). This unnamed tributary is within the home watershed of a known local population (Lower North Fork Nooksack River) of bull trout. It is a productive salmon stream. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220443 489259
Puget Sound—Nooksack River	Clearwater Creek	WA	Part of current distribution (WDFW 2002). Subadult or resident fish reported spawning in 1986 (Johnston, in litt. 1999). Currently inaccessible to anadromous salmon due to Bellingham Diversion. Historically reported by Norgore and Anderson (1921).	Clearwater Creek provides essential habitat used for spawning and rearing in the Upper Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1220462 487706

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Aldrich Creek (#0423)	WA	Connected to known occupied stream (North Fork Nooksack River). Aldrich Creek is within the home watershed of a known local population (Lower North Fork Nooksack River) of bull trout. It is a productive salmon stream. Aldrich Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220500 489215
Puget Sound—Nooksack River	West Slide Creek (#0422)	WA	Connected to known occupied stream (North Fork Nooksack River). West Side Creek is within the home watershed of a known local population (Lower North Fork Nooksack River) of bull trout. It is a productive salmon stream. West Side Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220653 489168
Puget Sound—Nooksack River	Maple Creek	WA	Currently occupied by migratory bull trout (Huddle, pers. comm. 2002a; Ecotrust, in litt. 2002). It is a productive salmon stream important for migratory bull trout foraging.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream lies within the Lower North Fork Nooksack local population.	1220779 489121
Puget Sound—Nooksack River	Deer Creek	WA	Young of the year observed off the mouth (Dunphy, pers. comm. 2002). Currently accessible to SR bull trout. Deer Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Deer Creek has not been extensively surveyed for bull trout. It is a productive salmon stream.	Deer Creek provides essential habitat used for spawning and rearing in the Lower South Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1220940 486101
Puget Sound—Nooksack River	Plumbago Creek	WA	Juvenile bull trout have been found in close proximity to the mouth (Dunphy, pers. comm. 2002). Currently accessible to SR bull trout. Plumbago Creek is within the home watershed (Lower South Fork Nooksack River) of known local population of bull trout. Plumbago Creek has not been extensively surveyed for bull trout. Cold summer water temperatures based on FLIR data (Watershed Sciences LLC 2002b), indicates this stream has a high likelihood of supporting SR bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1220958 486117
Puget Sound—Nooksack River	Unnamed trib. (#0265)	WA	Currently accessible to SR bull trout. This is a headwater tributary to Hutchinson Creek. Known steelhead and cutthroat use. This unnamed tributary has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221079 487434

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Fobes Creek	WA	Currently accessible to SR bull trout. Fobes Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Fobes Creek has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221107 486225
Puget Sound—Nooksack River	Unnamed trib. (#0291)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221147 486364
Puget Sound—Nooksack River	Unnamed trib. (#0290)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221152 486348
Puget Sound—Nooksack River	Cavanaugh Creek	WA	Dead adult observed in lower reach in 2002 (Ecotrust, in litt. 2002). Cavanaugh Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Cavanaugh Creek has not been extensively surveyed for bull trout. It is a productive salmon stream.	Cavanaugh Creek provides essential habitat used for spawning and rearing in the Lower South Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1221193 486469
Puget Sound—Nooksack River	Unnamed trib. (#0284)	WA	Currently accessible to SR bull trout. This unnamed tributary is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221201 486496
Puget Sound—Nooksack River	Peat Bog Creek (#0352)	WA	Part of current distribution (WDFW 2002). Peat Bog Creek is within the home watershed of a known local population of bull trout. Peat Bog Creek has not been extensively surveyed for bull trout. It is a productive salmon stream, and important for migratory bull trout foraging.	Peat Bog Creek provides essential habitat used for foraging, and potentially spawning and rearing in the Lower Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area. The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221205 487903

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Bear Creek (#0353)	WA	Connected to a known occupied stream (Middle Fork Nooksack River). Bear Creek is within the home watershed of a known local population of bull trout (Lower Middle Fork Nooksack River). Bear Creek has not been extensively surveyed for bull trout. It is a productive salmon stream, and important for migratory bull trout foraging.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221216 487878
Puget Sound—Nooksack River	Edfro Creek	WA	Currently accessible to SR bull trout. Edfro Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Edfro Creek has not been extensively surveyed for bull trout. Juvenile collected in the late 1970s at the mouth (Kraemer, pers. comm. 2002). It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221254 486609
Puget Sound—Nooksack River	Porter Creek	WA	Part of current distribution (WDFW 2002). Porter Creek is within the home watershed of a known local population of bull trout. Porter Creek has not been extensively surveyed for bull trout.	Porter Creek provides essential habitat used for foraging, and potentially spawning and rearing in the Lower Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1221261 487994
Puget Sound—Nooksack River	Unnamed trib. (#0349)	WA	Part of current distribution (WDFW 2002). This unnamed tributary is within the home watershed of a known local population (Lower Middle Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream, and important for bull trout foraging.	This unnamed tributary provides essential habitat used for foraging, and potentially spawning and rearing in the Lower Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1221294 488125
Puget Sound—Nooksack River	Unnamed trib. (#0347)	WA	Part of current distribution (WDFW 2002). This unnamed tributary is within the home watershed of a known local population (Lower Middle Fork Nooksack River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for bull trout foraging.	This unnamed tributary provides essential habitat used for foraging, and potentially spawning and rearing in the Lower Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area.	1221397 488286
Puget Sound—Nooksack River	Skookum Creek	WA	Part of current distribution (WDFW 2002). Adult bull trout observed in lower reach in late summer around 1990 (Dunphy, pers comm. 2002). Skookum Creek has not been extensively surveyed for bull trout, but has similar temperature profiles to Hutchinson Creek (Watershed Sciences LLC 2002b). It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221404 486705

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Canyon Creek (Canyon Lake Creek)	WA	Part of current distribution (WDFW 2002). Canyon Creek is within the home watershed of a known local population (Lower Middle Fork Nooksack River) of bull trout. Canyon Creek has not been extensively surveyed for bull trout. Native char use was historically reported (Norgore and Anderson 1921; Pautzke 1943).	Canyon "Lake" Creek provides essential habitat used for foraging, and potentially spawning and rearing in the Lower Middle Fork North Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221428 488320
Puget Sound—Nooksack River	Bear Creek	WA	A productive salmon stream likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Bear Creek has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221435 488934
Puget Sound—Nooksack River	Racehorse Creek	WA	Currently occupied by migratory bull trout (WDFW 2002). A productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221443 488886
Puget Sound—Nooksack River	Kendall Creek	WA	Currently occupied by migratory bull trout (Huddle, pers. comm. 2002a). One male and one female bull trout intercepted at Kendal Creek hatchery weir in 2000 (Hammer, in litt. 2003). A productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221475 488869
Puget Sound—Nooksack River	Coal Creek	WA	A productive salmon stream, and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Coal Creek has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221513 488809

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Middle Fork Nooksack River	WA	Juvenile sized bull trout collected in 1993 (STS Heislers Creek Hydro 1994). Adults captured by fisherman in the early 1990s (Huddle, pers. comm. 2002b) and in 2000 (Lee, pers. comm. 2003). Currently inaccessible to anadromous salmon due to Bellingham Diversion.	This segment of the Middle Fork Nooksack River provides essential spawning and rearing, and foraging and migration habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area, and provides essential connectivity between SR habitats and marine FMO habitat.	1221541 488343.2
Puget Sound—Nooksack River	Middle Fork Nooksack River	WA	Pre-spawning adult bull trout observed below diversion dam (Zapel, in litt. 2001), and immediately below Box Canyon (Kraemer, pers. comm. 2002). Juveniles were collected in 2002 (Anchor, in litt. 2002).	This segment of the Middle Fork Nooksack River provides essential spawning and rearing, and foraging and migration habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area, and provides essential connectivity between SR habitats and marine FMO habitat.	1221541 488343.1
Puget Sound—Nooksack River	North Fork Nooksack River	WA	Currently occupied by migratory bull trout (WDFW 2002; Castle, pers. comm. 2003; Lee, pers. comm. 2003). Highly productive salmon areas, and important for seasonal foraging by migratory bull trout (Castle, pers. comm. 2003).	This segment of the North Fork Nooksack River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and marine FMO habitat and indirectly maintaining abundance and productivity.	1221541 488353.1
Puget Sound—Nooksack River	North Fork Nooksack River	WA	Adult bull trout have been captured within a mile of the falls (Sahlfeld, pers. comm., 2002; Sahlfeld, pers. comm., 2003), and observed spawning in side channels (Huddle, pers. comm. 2002b). In October 2003, an adult in spawning colors was captured near confluence with Deadhorse Creek (Currence, in litt. 2003). Norgore and Anderson (1921) captured advanced bull trout fry in backwater areas within 1.5 miles of the falls.	This segment of the North Fork Nooksack River provides essential rearing and spawning habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area, and provides essential connectivity between SR habitats and marine FMO habitat.	1221541 488353.4
Puget Sound—Nooksack River	Saxson Creek	WA	Currently accessible to SR bull trout. Saxson Creek is within the home watershed of a known local population (Lower South Fork Nooksack River) of bull trout. Saxson Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least foraging.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221621 486888

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Hutchinson Creek	WA	Juveniles observed up to RM 5 (Ecotrust, in litt. 2002), and in lower reaches (Maudlin et al. 2002). It is a productive salmon stream.	Hutchinson Creek provides essential habitat used for spawning and rearing in the Lower South Fork Nooksack River local population. It is essential for maintaining distribution, abundance, and productivity of bull trout within the core area. Huchinson Creek is likely the downstream extent of spawning in the South Fork Nooksack River, and therefore critical to maintaining spawning distribution in the core area.	1221779 487070
Puget Sound—Nooksack River	South Fork Nooksack River	WA	Currently occupied by migratory bull trout (WDFW 2002; Maudlin et al. 2002; Lee, pers. comm. 2003).	This segment of the South Fork Nooksack River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and marine FMO habitat and indirectly maintaining abundance and productivity.	1222021 488091.1
Puget Sound—Nooksack River	South Fork Nooksack River	WA	Multiple age classes captured or observed in this reach (WDFW, in litt. 1994; Dunphy, pers. comm. 2002). It is a productive salmon river.	This segment of the South Fork Nooksack River provides essential spawning and rearing, and foraging and migration habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area, and provides essential connectivity between SR habitats and marine FMO habitat	1222021 488091.2
Puget Sound—Nooksack River	Smith Creek	WA	Subadult collected in minnow trap in lower reach (Nooksack Tribe, in litt. 2002). It is a productive salmon stream, and important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs (one of only 5 FMO tributaries greater than 20 cfs in the lower Nooksack River).	1222985 488557
Puget Sound—Nooksack River	Anderson Creek	WA	Currently accessible to anadromous and fluvial bull trout. Adult observed in Nooksack River immediately downstream of mouth (Nooksack Tribe, in litt. 2003). Stream has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs (one of only 5 FMO tributaries greater than 20 cfs in the lower Nooksack River).	1223193 488677

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	Fishtrap Creek	WA	Productive salmon stream and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs (one of only 5 FMO tributaries greater than 20 cfs in the lower Nooksack River).	1225218 489117
Puget Sound—Nooksack River	Bertrand Creek	WA	Productive salmon stream, and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Bertrand Creek has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs (one of only 5 FMO tributaries greater than 20 cfs in the lower Nooksack River).	1225334 489122
Puget Sound—Nooksack River	Nooksack River	WA	Currently occupied by migratory bull trout, with sightings documented throughout the mainstem (WDFW 1998; Lummi Nation, in litt. 2003; Nooksack Tribe, in litt. 2003; Goetz et al. 2007).	Nooksack River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and marine FMO habitat and indirectly maintaining abundance and productivity.	1225982 487712
Puget Sound—Nooksack River	Nooksack River (Slater Slough)	WA	Currently occupied by migratory bull trout, with sightings documented throughout the mainstem (WDFW 1998; Lummi Nation, in litt. 2003; Nooksack Tribe, in litt. 2003; Goetz et al. 2007).	Nooksack River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and marine FMO habitat and indirectly maintaining abundance and productivity.	1225982 487712
Puget Sound—Nooksack River	North Fork Nooksack River	WA	Currently occupied by migratory bull trout (WDFW 2002).	This segment of the North Fork Nooksack River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and marine FMO habitat and maintaining abundance and productivity.	1221541 488353.2
Puget Sound—Nooksack River	North Fork Nooksack River	WA	Bull trout and redds reported in side channels and sloughs (Huddle, in litt. 1995; Dunphy, pers. comm. 2002).	This segment of the North Fork Nooksack River provides essential rearing and spawning habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1221541 488353.3

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Nooksack River	South Fork Nooksack River	WA	Adults have been observed in this reach during recent spawning surveys (WDFW and USFS, in litt. 2002; S. Zyskowski, pers. comm. 2003b). Spawning adults observed in South Fork Nooksack River near Bell Creek in 1970s (Kraemer, pers. comm. 2002).	This segment of the South Fork Nooksack River provides essential spawning and rearing, and foraging and migration habitat for fluvial and anadromous life history forms. It is essential for maintaining the current distribution, abundance, and productivity of bull trout within the core area, and provides essential connectivity between SR habitats and marine FMO habitat	1222021 488091.3

2.3. Lower Skagit River Critical Habitat Subunit

The Lower Skagit River CHSU is essential to bull trout conservation because it represents the stronghold for the amphidromous life history form and the species, within the Coastal RU. This CHSU contains diverse life history forms and represents a significant distribution of the species within the Puget Sound region and the RU. Extensive portions of the habitat are within protected areas (North Cascades National Park, Glacier Peak Wilderness, and Henry Jackson Wilderness) (see Appendix 1 for more detailed information).

The Lower Skagit River CHSU is located on the western slopes of the Cascade Range. The Skagit River system initiates from British Columbia, Canada, and flows southwest into Ross Lake, a transboundary reservoir formed by Ross Dam. Immediately below Ross Dam is Diablo Lake, a reservoir has formed behind Diablo Dam. The Skagit River flows through one more reservoirs (Gorge Lake), formed by Gorge Dam and then continues west, discharging into Skagit Bay of Puget Sound. The Lower Skagit River CHSU includes the mainstem, its major forks, lakes/reservoirs, and associated tributaries downstream of Diablo Dam. A total of approximately 689.0 km (428.1 mi) of stream and 2,842.0 ha (7,023.0 ac) of surface area in three reservoirs is designated as critical habitat. The following water bodies are included in this CHSU (see Table 13):

(A) The Skagit River from its mouth at Puget Sound upstream approximately 142.2 km (88.4 mi) to Diablo Dam, including the North Fork Skagit River (10.3 km (6.4 mi)) and South Fork Skagit River (12.4 km (7.7 mi)) and associated sloughs readily connected to these forks and Puget Sound (Freshwater, Brandstedt, Steamboat, Tom Moore, Deepwater, and Crooked Sloughs), provide foraging and overwintering habitat and an essential migratory corridor for amphidromous bull trout. Rearing habitat occurs upstream of the Skagit River's confluence with the Sauk River. The following tributaries from their mouths upstream to natural or manmade barriers or confluence provide FMO habitat outside of the local population for the Lower Skagit River core area: Nookachamps Creek upstream 19.1 km (11.9 mi) to its confluence with a unnamed tributary (stream catalog number 0261); Gilligan Creek upstream 2.1 km (1.3 mi); Wiseman Creek upstream 2.2 km (1.4 mi); Day Creek upstream 10.8 km (6.7 mi); Jones Creek upstream 2.6 km (1.6 mi); Cumberland Creek upstream 1.9 km (1.2 mi); Alder Creek upstream 3.9 km (2.4 mi) to its confluence with a unnamed tributary (stream catalog number 0360); O'Toole Creek upstream 1.9 km (1.2 mi); Mill Creek upstream 2.7 km (1.7 mi); Grandy Creek upstream 9.2 km (5.7 mi) to the outlet of Grandy Lake; Pressentin Creek upstream 1.8 km (1.1 mi); Finney Creek upstream 19.5 km (12.1 mi); Jackman Creek upstream 2.2 km (1.4 mi); Rocky Creek upstream 1.1 km (0.7 mi); Corkindale Creek upstream 1.6 km (1.0 mi); Diobsud Creek upstream 2.9 km (1.8 mi); and Alma Creek 1 upstream 1.4 km (0.9 mi). The mainstem Skagit River and mouths of listed and unlisted tributaries also provide some post-dispersal rearing habitat.

(B) Goodell Creek from its mouth upstream approximately 15.9 km (9.9 mi) to a gradient barrier provides spawning and rearing habitat for the local population. Newhalem Creek from its mouth upstream 1.0 km (0.6 mi) to a natural barrier provides spawning and rearing habitat for the local population. Gorge Lake (89.0 ha (219.9 ac)) upstream of Gorge Dam provides FMO habitat for the Stetattle Creek local population of adfluvial bull trout. This lake may also provide some juvenile rearing habitat, especially near the mouth of the lake's spawning tributaries.

Stetattle Creek from the mouth upstream approximately 1.3 km (0.8 mi) to a natural barrier provides FMO habitat and spawning and rearing habitat for the local population.

(C) Baker River from its confluence with the Skagit River upstream approximately 18.7 km (11.6 mi) to a natural barrier provides combined spawning and rearing and FMO habitat upstream of its confluence with Baker Lake and FMO habitat in reaches downstream of Baker Lake. Lake Shannon (832.0 ha (2,056.0 ac)) and its associated arms provide FMO habitat, and Baker Lake (1,921.0 ha (4,747.0 ac)) and its associated arms provide FMO habitat for the Baker Lake local population of adfluvial bull trout. Baker Lake may also provide some juvenile rearing habitat, especially near the mouths of the lake's spawning tributaries. Sulphur Creek from its mouth upstream 1.8 km (1.1 mi) to a natural barrier provides the available spawning and rearing habitat for the Sulphur Creek (Lake Shannon) potential local population. The following tributaries from their mouths or confluence upstream to natural barriers provide spawning and rearing habitat for the Baker Lake local population: Park Creek from its confluence with Baker Lake upstream 2.4 km (1.5 mi); Swift Creek from its confluence with Baker Lake upstream 1.6 km (1.0 mi); and the upper Baker River tributaries—Lake Creek upstream 0.8 km (0.5 mi); Sulphide Creek upstream 2.1 km (1.3 mi); Crystal Creek upstream 0.8 km (0.5 mi); Bald Eagle Creek upstream 1.3 km (0.8 mi); and Pass Creek upstream 0.6 km (0.4 mi).

(D) Sauk River from its confluence with the Skagit River upstream approximately 62.6 km (38.9 mi) to its confluence with the North Fork Sauk River and South Fork Sauk River provides combined spawning, rearing, and FMO habitat for the local population in the Sauk River system. White Creek from its mouth upstream 1.3 km (0.8 mi) and Dan Creek from its mouth upstream 4.7 km (2.9 mi) to natural barriers provide FMO habitat. Falls Creek from its mouth upstream 1.4 km (0.9 mi) to a natural barrier and North Fork Sauk River from its confluence with the South Fork Sauk River upstream 1.8 km (1.1 mi) to North Fork Falls provide spawning and rearing habitat for the Forks of Sauk River local population.

(E) Suiattle River from its confluence with the Sauk River upstream approximately 60.8 km (37.8) to a natural barrier provides spawning and rearing habitat upstream of the lower extent of the Upper Suiattle River and combined spawning, rearing, and FMO habitat in its reaches downstream of the lower extent for the local population. Big Creek from its mouth upstream 1.0 km (0.6 mi) to a natural barrier provides combined rearing and foraging habitat. The following tributaries from their mouths upstream to natural barriers, headwaters, or confluences provide spawning and rearing habitat for local bull trout populations: Tenas Creek upstream 2.4 km (1.5 mi); Straight Creek upstream 2.2 km (1.4 mi) and its tributary Black Creek upstream 1.6 km (1.0 mi); Buck Creek upstream 12.2 km (7.6 mi) to its headwaters and its tributary Horse Creek upstream 2.6 km (1.6 mi) to the mouth of its unnamed tributary (stream catalog number 0839); Lime Creek upstream approximately 4.2 km (2.6 mi) to the mouth of Meadow Creek; Downey Creek upstream 10.6 km (6.6 mi) and its tributary Goat Creek upstream 0.6 km (0.4 mi); Sulphur Creek upstream 9.6 km (6.0 mi); Milk Creek upstream 5.1 km (3.2 mi); Canyon Creek upstream 1.3 km (0.8 mi); Vista Creek upstream 1.9 km (1.2 mi); Miners Creek upstream 0.6 km (0.4 mi) to the mouth of an unnamed tributary (stream catalog number 1049); Dusty Creek upstream 5.1 km (3.2 mi) to accessible headwaters; and Small Creek upstream approximately 2.4 km (1.5 mi) to accessible headwaters.

(F) White Chuck River from its confluence with the Sauk River upstream approximately 33.1 km (20.6 mi) to a natural barrier provides spawning and rearing habitat for the Lower White Chuck River and Upper White Chuck River. The following tributaries from their mouths upstream to natural barriers provide spawning and rearing habitat for the Lower White Chuck River local population: Black Oak Creek upstream 1.0 km (0.6 mi); unnamed tributary (stream catalog number 1119) upstream 0.5 km (0.3 mi); Crystal Creek upstream 0.3 km (0.2 mi); Pugh Creek upstream 1.0 km (0.6 mi); Owl Creek upstream 1.0 km (0.6 mi); and Camp Creek upstream 1.6 km (1.0 mi). The following tributaries from their mouths upstream provide spawning and rearing habitat for the Upper White Chuck River local population: Fire Creek upstream 1.0 km (0.6 mi); Fourteenmile Creek upstream 1.9 km (1.2 mi) to its headwaters; Pumice Creek upstream 7.1 km (4.4 mi) to its headwaters; and Glacier Creek upstream 3.2 km (2.0 mi) to accessible headwaters.

(G) South Fork Sauk River from its confluence with the North Fork Sauk River upstream 17.5 km (10.9 mi) to its confluence with Glacier Creek and Seventysix Gulch provides spawning and rearing habitat for the Forks of Sauk River local population downstream of Monte Cristo Lake and for the Upper South Fork Sauk River local population upstream from Monte Cristo Lake. Martin Creek from its mouth upstream 1.6 km (1.0 mi) and Merry Brook Creek from its mouth upstream 0.3 km (0.2 mi) to natural barriers; Bedal Creek from its mouth upstream 5.1 km (3.2 mi) to its headwaters; Chocwick Creek from its mouth upstream 2.6 km (1.6 mi) to its headwaters; and Elliot Creek from its mouth upstream 5.3 km (3.3 mi) to its confluence with its unnamed tributary (stream catalog number 1216) draining Ida Lake all provide spawning and rearing habitat for the Forks of Sauk River local population. The following tributaries from their mouths or confluence upstream to a natural barrier provide spawning and rearing habitat for the Upper South Fork Sauk River local population: Weden Creek upstream 1.9 km (1.2 mi); Seventysix Gulch from its confluence with Glacier Creek upstream 1.6 km (1.0 mi); and Glacier Creek from its confluence with Seventysix Gulch upstream 2.1 km (1.3 mi).

(H) Illabot Creek from its confluence with the Skagit River upstream approximately 22.0 km (13.7mi) to accessible headwaters and its tributaries—Arrow Creek upstream 2.1 km (1.3 mi) to accessible headwaters and Otter Creek upstream 0.2 km (0.1 mi) to natural barriers—provide spawning and rearing habitat for the Illabot Creek local population.

(I) The Cascade River from its confluence with the Skagit River upstream approximately 29.3 km (18.2 mi) to its confluence with the North Fork Cascade River and South Fork Cascade River provides spawning and rearing habitat upstream of the mouth of Hard Creek for the Cascade River local population and combined rearing, foraging, and migration habitat below the mouth of Hard Creek. Jordan Creek upstream 0.8 km (0.5 mi); Boulder Creek upstream 0.6 km (0.4 mi); Marble Creek upstream 2.6 km (1.6 mi); and Sibley Creek upstream 0.6 km (0.4 mi) to natural barriers provide combined rearing, foraging, and migration habitat. Kindy Creek upstream 3.7 km (2.3 mi) to its confluence with Mutchler Creek and Sonny Boy Creek upstream 4.5 km (2.8 mi) to the extent of accessible headwater habitat provide spawning and rearing habitat for the Cascade River local population. South Fork Cascade River from its confluence with the North Fork Cascade River upstream approximately 10.1 km (6.3 mi) to the upper extent of accessible headwater habitat provides spawning and rearing habitat for the South Fork Cascade River local population.

(J) Bacon Creek from its confluence with the Skagit River upstream approximately 13.3 km (8.3 mi) to a natural barrier and its tributary East Fork Bacon Creek from its confluence with Bacon Creek upstream 6.4 km (4.0 mi) to the extent of accessible habitat provide spawning and rearing habitat for the Baker Creek local population.

Table 13. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Lower Skagit River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Park Creek	WA	Three adult and 1 subadult bull trout observed during November 2003 surveys (Greenberg and Appy, in litt. 2003; Appy, pers. comm. 2004).	Park Creek provides essential habitat for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1207147 487511
Puget Sound—Lower Skagit River	Small Creek	WA	Part of current rearing distribution (WDFW 2002). Small Creek has not been extensively surveyed for bull trout.	Small Creek provides essential habitat used for spawning and rearing in the Suaittle River local population. It is essential for maintaining distribution, abundance, and productivity.	1210051 481624
Puget Sound—Lower Skagit River	Dusty Creek	WA	Part of current rearing distribution (WDFW 2002). Dusty Creek has not been extensively surveyed for bull trout.	Dusty Creek provides essential habitat used for spawning and rearing in the Suaittle River local population. It is essential for maintaining distribution, abundance, and productivity.	1210179 481771
Puget Sound—Lower Skagit River	Miners Creek	WA	Part of current rearing distribution (WDFW 2002). Miners Creek has not been extensively surveyed for bull trout.	Miners Creek provides essential habitat used for spawning and rearing in the Suaittle River local population. It is essential for maintaining distribution, abundance, and productivity.	1210298 481866
Puget Sound—Lower Skagit River	Vista Creek	WA	Part of current rearing distribution (WDFW 2002). Vista Creek has not been extensively surveyed for bull trout.	Vista Creek provides essential habitat used for spawning and rearing in the Suaittle River local population. It is essential for maintaining distribution, abundance, and productivity.	1210456 481942
Puget Sound—Lower Skagit River	Canyon Creek	WA	Part of current rearing distribution (WDFW 2002). Canyon Creek has not been extensively surveyed for bull trout.	Canyon Creek provides essential habitat used for spawning and rearing in the Suaittle River local population. It is essential for maintaining distribution, abundance, and productivity.	1210873 482111
Puget Sound—Lower Skagit River	Stetattle Creek	WA	Part of current distribution (WDFW 2002). One subadult bull trout (~250 mm) was observed during snorkel surveys in 2003 (Connor, in litt. 2003c), and six adults were observed in 2004 (Shannon, in litt. 2004). This is currently the only potential SR stream associated with the isolated population within Gorge Lake.	Stetattle Creek provides essential habitat that would be used for spawning and rearing in the Stetattle Creek potential local population. It is essential for maintaining distribution, abundance, and productivity.	1211484 487165
Puget Sound—Lower Skagit River	Goat Creek	WA	Part of current SR distribution (WDFW 2002). Goat Creek is within the home watershed of a known local population of bull trout. Goat Creek has not been extensively surveyed for bull trout.	Goat Creek provides essential habitat used for spawning and rearing in the Downey Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1211559 483282

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Milk Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Milk Creek provides essential habitat used for spawning and rearing in the Milk Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1211616 482214
Puget Sound—Lower Skagit River	South Fork Cascade River	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	South Fork Cascade River provides essential habitat used for spawning and rearing in the South Fork Cascade River local population. It is essential for maintaining distribution, abundance, and productivity.	1211631 484638
Puget Sound—Lower Skagit River	Sulphur Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Sulphur Creek provides essential habitat used for spawning and rearing in the Sulphur Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1211920 482471
Puget Sound—Lower Skagit River	Sonny Boy Creek	WA	Part of current SR distribution (WDFW 2002).	Sonny Boy Creek provides essential habitat used for spawning and rearing in the Cascade River local population. It is essential for maintaining distribution, abundance, and productivity.	1211956 484620
Puget Sound—Lower Skagit River	Glacier Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Glacier Creek provides essential habitat used for spawning and rearing in the Upper South Fork Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1212024 481301
Puget Sound—Lower Skagit River	Kindy Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Kindy Creek provides essential habitat used for spawning and rearing in the Cascade River local population. It is essential for maintaining distribution, abundance, and productivity.	1212069 484635
Puget Sound—Lower Skagit River	Fourteenmile Creek	WA	Connected to a known occupied stream. Fourteenmile Creek is within the home watershed of a known local population of bull trout. Fourteenmile Creek has not been extensively surveyed for bull trout, and is identified as supporting probable spawning (WDFW et al. 1997).	Fourteenmile Creek provides essential habitat used for spawning and rearing in the Upper White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1212211 481404
Puget Sound—Lower Skagit River	Downey Creek	WA	One of the key spawning area indices for the Lower Skagit (Downen 2009).	Downey Creek provides essential habitat used for spawning and rearing in the Downey Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1212235 482585
Puget Sound—Lower Skagit River	Pumice Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Pumice Creek provides essential habitat used for spawning and rearing in the Upper White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1212347 481481

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Fire Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Fire Creek provides essential habitat used for spawning and rearing in the Upper White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1212435 481532
Puget Sound—Lower Skagit River	Newhalem Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002). Pre-spawning adult bull trout have been reported staging in the lower reaches (Kraemer, in litt. 2003b).	Newhalem Creek provides essential habitat used for spawning and rearing in the Newhalem Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1212540 486713
Puget Sound—Lower Skagit River	Sibley Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, likely important for seasonal foraging by migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide important post-dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches.	1212609 485112
Puget Sound—Lower Skagit River	Goodell Creek	WA	One of the key spawning area indices for the Lower Skagit (Downen 2009).	Goodell Creek provides essential habitat used for spawning and rearing in the Goodell Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1212636 486723
Puget Sound—Lower Skagit River	Marble Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide important post-dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches.	1212807 485310
Puget Sound—Lower Skagit River	Horse Creek	WA	Part of current SR distribution (WDFW 2002). Horse Creek is within the home watershed of a known local population of bull trout. Horse Creek has not been extensively surveyed for bull trout.	Horse Creek provides essential habitat used for spawning and rearing in the Buck Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1212850 483133
Puget Sound—Lower Skagit River	Camp Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Camp Creek provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1212911 481588
Puget Sound—Lower Skagit River	Lime Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002). Resident fish primarily exist above RM 0.5.	Lime Creek provides essential habitat used for spawning and rearing in the local population. It is essential for maintaining distribution, abundance, and productivity.	1212919 482521

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Owl Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Owl Creek provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1212993 481635
Puget Sound—Lower Skagit River	Pugh Creek	WA	Part of current SR distribution (WDFW 2002).	Pugh Creek provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1213377 481722
Puget Sound—Lower Skagit River	Buck Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Buck Creek provides essential habitat used for spawning and rearing in the Buck Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213384 482646
Puget Sound—Lower Skagit River	Alma Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream, and important for seasonal foraging by migratory subadult and juvenile bull trout (Kraemer, in litt. 2003c).	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout.	1213613 486004
Puget Sound—Lower Skagit River	Crystal Creek	WA	Part of current SR distribution (WDFW 2002).	Crystal Creek provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1213632 481811
Puget Sound—Lower Skagit River	Boulder Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide important post-dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1213646 485177
Puget Sound—Lower Skagit River	Otter Creek	WA	Part of current rearing distribution (WDFW 2002). Otter Creek has not been extensively surveyed for bull trout. Otter Creek is within the home watershed of a known local population of bull trout.	Otter Creek provides essential habitat used for rearing in the Illabot Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213733 484206
Puget Sound—Lower Skagit River	North Fork Sauk River	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	North Fork Sauk provides essential habitat used for spawning and rearing in the Forks of Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213879 480968

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	South Fork Sauk River	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002). One of the key spawning area indices for the Lower Skagit (Downen 2009).	This segment of the South Fork Sauk River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Upper South Fork Sauk River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1213879 480978.2
Puget Sound—Lower Skagit River	Merry Brook Creek	WA	Part of current SR distribution (WDFW 2002; Kraemer, in litt 2001). Merry Brook Creek has not been extensively surveyed for bull trout.	Merry Brook Creek provides essential habitat used for spawning and rearing in the Forks of the Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213910 480889
Puget Sound—Lower Skagit River	Martin Creek	WA	Currently accessible to SR bull trout (Kraemer, in litt. 2003d). Martin Creek is within the home watershed of a known local population (Upper South Fork Sauk River) of bull trout. Low gradient and presumed to provide good juvenile rearing habitat. Martin Creek has not been extensively surveyed for bull trout. It is a productive salmon stream.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1213918 481008
Puget Sound—Lower Skagit River	Seventysix Gulch	WA	Part of current spawning distribution (WDFW et al. 1997). Seventysix Gulch has not been extensively surveyed for bull trout. Seventysix Gulch is within the home watershed of a known local population of bull trout.	Seventysix Gulch provides essential habitat used for spawning and rearing in the Upper South Fork Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213921 479865
Puget Sound—Lower Skagit River	Glacier Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Glacier Creek provides essential habitat used for spawning and rearing in the Upper South Fork Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213921 479875
Puget Sound—Lower Skagit River	Bacon Creek	WA	One of the key spawning area indices for the Lower Skagit (Downen 2009).	Bacon Creek provides essential habitat used for spawning and rearing in the Bacon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213936 485856
Puget Sound—Lower Skagit River	Bedal Creek	WA	Part of current SR distribution (WDFW 1998; WDFW 2002). Bedal Creek has not been extensively surveyed for bull trout.	Bedal Creek provides essential habitat used for spawning and rearing in the Forks of the Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213939 480797
Puget Sound—Lower Skagit River	Arrow Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002). Arrow Creek has not been extensively surveyed for bull trout. Arrow Creek is within the home watershed of a known local population of bull trout.	Arrow Creek provides essential habitat used for spawning and rearing in the Illabot Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213946 484233

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Straight Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Straight Creek provides essential habitat used for spawning and rearing in the Straight Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1213972 482724
Puget Sound—Lower Skagit River	Chocwick Creek	WA	Bull trout fry have been documented in this stream (Kraemer, in litt. 2003d). WDFW et al. (1997) identified this stream as supporting probable spawning.	Cochwich Creek provides essential habitat used for spawning and rearing in the Forks of the Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1213986 480739
Puget Sound—Lower Skagit River	Black Creek	WA	Part of current SR distribution (WDFW 2002). Black Creek is within the home watershed of a known local population of bull trout. Black Creek has not been extensively surveyed for bull trout.	Black Creek provides essential habitat used for spawning and rearing in the Straight Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1214011 482593
Puget Sound—Lower Skagit River	Diobsud Creek	WA	Two adult bull trout observed in about September 1991 (Castle, pers. comm. 2003). Identified as part of current distribution (WDFW 2002). It is a productive salmon stream providing foraging habitat important for migratory bull trout, and may provide some post dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1214111 485590
Puget Sound—Lower Skagit River	Elliott Creek	WA	Part of current rearing distribution (WDFW 2002; Kraemer, in litt 2001). Elliott Creek has not been extensively surveyed for bull trout. Elliott Creek is within the home watershed of a known local population of bull trout. WDFW et al. (1997) identified this stream as supporting probable spawning.	Elliot Creek provides essential habitat used for spawning and rearing in the Forks of the Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1214145 480567
Puget Sound—Lower Skagit River	Jordan Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide important post-dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1214210 485219
Puget Sound—Lower Skagit River	Unnamed trib. (#1119)	WA	Part of current SR distribution (WDFW 2002).	This unnamed creek (#1119) provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1214291 481813

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Cascade River	WA	Part of current distribution (WDFW 2002). Mainstem corridor maintains connectivity of two local populations.	This segment of the Cascade River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1214292 485242.1
Puget Sound—Lower Skagit River	Cascade River	WA	Part of current SR distribution (WDFW 2002).	This segment of the Cascade River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Cascade River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1214292 485242.2
Puget Sound—Lower Skagit River	East Fork Bacon Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	East Fork Bacon Creek provides essential habitat used for spawning and rearing in the Bacon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1214331 486612
Puget Sound—Lower Skagit River	Falls Creek	WA	Part of current rearing distribution (WDFW 2002).	Falls Creek provides essential habitat used for rearing in the Forks of Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1214361 481484
Puget Sound—Lower Skagit River	Weden Creek	WA	Part of current rearing distribution (WDFW 2002). Weden Creek has not been extensively surveyed for bull trout. Weden Creek is within the home watershed of a known local population of bull trout, and has been identified as supporting probable spawning (WDFW et al. 1997).	Weden Creek provides essential habitat used for spawning and rearing in the Upper South Fork Sauk River local population. It is essential for maintaining distribution, abundance, and productivity.	1214382 480031
Puget Sound—Lower Skagit River	Tenas Creek	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	Tenas Creek provides essential habitat used for spawning and rearing in the Tenas Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1214384 483237
Puget Sound—Lower Skagit River	Black Oak Creek	WA	Part of current rearing distribution (WDFW 2002).	Black Oak Creek provides essential habitat used for spawning and rearing in the Lower White Chuck River local population. It is essential for maintaining distribution, abundance, and productivity.	1214488 481769

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Big Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide post dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1214499 483453
Puget Sound—Lower Skagit River	Pass Creek	WA	Part of current SR distribution (WDFW 2002). Juvenile bull trout identified during electrofishing surveys in 1992 and 2006 (R2 Resource Consultants 2003; Small et al. 2008).	Pass Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1214570 488109
Puget Sound—Lower Skagit River	Bald Eagle Creek	WA	Part of current SR distribution (WDFW 2002). Bull trout observed at base of falls in 2001 (R2 Resource Consultants 2003), and juveniles collected in 2006 (Small et al. 2008).	Bald Eagle Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1214641 488002
Puget Sound—Lower Skagit River	White Chuck River	WA	Part of current SR distribution (WDFW 2002). Mainstem corridor maintains connectivity of the Upper White Chuck River local population.	This segment of the White Chuck River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Lower White Chuck River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1214713 481729
Puget Sound—Lower Skagit River	Corkindale Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1214845 485046
Puget Sound—Lower Skagit River	Rocky Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1214938 485006

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Crystal Creek	WA	Part of current SR distribution (WDFW 2002).	Crystal Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1215013 487871
Puget Sound—Lower Skagit River	Illabot Creek	WA	One of the key spawning area indices for the Lower Skagit (Downen 2009).	Illabot Creek provides essential habitat used for spawning and rearing in the Illabot Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1215300 484962
Puget Sound—Lower Skagit River	Illabot Creek	WA	One of the key spawning area indices for the Lower Skagit (Downen 2009).	Illabot Creek provides essential habitat used for spawning and rearing in the Illabot Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1215300 484962
Puget Sound—Lower Skagit River	Sulphide Creek	WA	Part of current SR distribution (WDFW 2002). Two adults observed at confluence, and one in the creek, in 2001 (R2 Resource Consultants 2003).	Sulphide Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1215317 487773
Puget Sound—Lower Skagit River	Lake Creek	WA	Part of current SR distribution (WDFW 2002).	Lake Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1215447 487623
Puget Sound—Lower Skagit River	Suiattle River	WA	Part of current distribution (WDFW 2002). Mainstem corridor maintains connectivity of eight local populations.	This segment of the Suaittle River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1215477 483300.1
Puget Sound—Lower Skagit River	Dan Creek	WA	Part of current distribution (WDFW 2002). Accessible foraging habitat important for migratory bull trout, and may provide some post-dispersal rearing habitat.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. Lower reaches of this stream likely provide important post-dispersal rearing habitat due to its close proximity to known spawning and rearing streams or reaches. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1215499 482979

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	White Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1215515 483976
Puget Sound—Lower Skagit River	Sauk River	WA	Part of current distribution (WDFW 2002).	This segment of the Sauk River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1216038 484817.1
Puget Sound—Lower Skagit River	Sauk River	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002).	This segment of the Sauk River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Forks of the Sauk River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1216038 484817.2
Puget Sound—Lower Skagit River	Swift Creek	WA	Numerous juveniles caught below natural barrier (S. Zyskowski, pers. com., 2003a).	Swift Creek provides essential habitat used for spawning and rearing in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity.	1216483 487256
Puget Sound—Lower Skagit River	Sulphur Creek (Lake Shannon)	WA	Determined to be a local population in 2005, based on additional survey effort (R2 Resource Consultants and PSE 2006). Recent genetic information indicates this population is distinguishable from the upper Baker River local population (Small et al. 2008).	Sulphur Creek provides essential habitat used for spawning and rearing in the Sulphur Creek local population. It is essential for maintaining distribution, abundance, and productivity. One of only 2 local populations in the Baker River system.	1216981 486482
Puget Sound—Lower Skagit River	Jackman Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1217204 485229

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Baker River	WA	Part of current SR distribution (WDFW 2002). Juvenile and adult bull trout consistently observed in this reach. Staging and/or spawning adults have been observed near the area of Bald Eagle Creek (WDFW et al. 1997) and Sulphide Creek (R2 Resource Consultants 2003).	Baker River provides essential habitat used for spawning and rearing, and potentially foraging and overwintering in the Baker Lake local population. It is essential for maintaining distribution, abundance, and productivity. This segment of the Baker River is essential for directly maintaining connectivity between SR habitats and lake and marine FMO habitat.	1217353 485339.2
Puget Sound—Lower Skagit River	Finney Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout.	1218455 485240
Puget Sound—Lower Skagit River	Pressentin Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218509 485182
Puget Sound—Lower Skagit River	Grandy Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218793 485183
Puget Sound—Lower Skagit River	Mill Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218863 485124
Puget Sound—Lower Skagit River	O'Toole Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1219162 485137

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Alder Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1219543 485193
Puget Sound—Lower Skagit River	Cumberland Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1219923 485180
Puget Sound—Lower Skagit River	Jones Creek	WA	Subadult captured during electrofishing in September 1992 (WDFW et al. 1997). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1220520 485238
Puget Sound—Lower Skagit River	Day Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1220653 485192
Puget Sound—Lower Skagit River	Wiseman Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221337 485066

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Gilligan Creek	WA	Currently accessible to foraging bull trout. It is a productive salmon stream, and likely important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221350 484872
Puget Sound—Lower Skagit River	Nookachamps Creek	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Subadult bull trout was captured by WDFW in the tributary, Lake Creek, approximately one mile above Big Lake in summer of 1994 (BrennanDubbs, in litt. 2005).	The draft recovery chapter explicitly identifies as essential and biologically important, accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1222956 484712
Puget Sound—Lower Skagit River	Skagit River	WA	Part of current distribution (WDFW 2002). Multiple age classes observed throughout reach (WDFW et al. 1997, 1998).	This segment of the Skagit River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223661 483874.2
Puget Sound—Lower Skagit River	South Fork Skagit River	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223669 482919
Puget Sound—Lower Skagit River	North Fork Skagit River	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1224718 483640
Puget Sound—Lower Skagit River	Swinomish Channel	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-01

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	South Fork Skagit River (Tom Moore Slough)	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223669 482919
Puget Sound—Lower Skagit River	South Fork Skagit River (Freshwater Slough)	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223669 482919
Puget Sound—Lower Skagit River	Skagit River	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223661 483874.1
Puget Sound—Lower Skagit River	Baker River	WA	Part of current distribution (WDFW 2002). Bull trout are captured each year and transported above the dams to Baker Lake (WDFW 1998). It is a productive salmon stream important for seasonal foraging by migratory bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is essential to maintaining connectivity between the Baker Lake local population and the rest of the core area and marine foraging habitats).	1217353 485339.1
Puget Sound—Lower Skagit River	Suiattle River	WA	Part of current SR distribution (WDFW 2002).	This segment of the Suaittle River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Upper Suaittle River local population. It is essential for maintaining distribution, abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1215477 483300.2
Puget Sound—Lower Skagit River	Suiattle River	WA	Part of current distribution (WDFW 2002). Mainstem corridor maintains connectivity of eight local populations.	This segment of the Suaittle River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1215477 483300.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	White Chuck River	WA	Part of current SR distribution (WDFW 2002).	This segment of the White Chuck River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Upper White Chuck River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1214713 481729.2
Puget Sound—Lower Skagit River	South Fork Sauk River	WA	Part of current SR distribution (WDFW et al. 1997; WDFW 2002). Mainstem corridor maintains connectivity of the Upper South Fork Sauk River local population.	This segment of the South Fork Sauk River provides essential spawning and rearing habitat for fluvial and anadromous forms in the Forks of the Sauk River local population. It is essential for maintaining abundance and productivity and maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1213879 480978.1
Puget Sound—Lower Skagit River	South Fork Skagit River (Steamboat Slough)	WA	Adults and subadults are consistently observed and captured in this reach (WDFW 1998).	This segment of the Skagit River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223669 482919
Puget Sound—Lower Skagit River	Baker Lake	WA	Part of current distribution (WDFW 2002). Primary foraging and overwintering habitat for Baker Lake local population.	Baker Lake provides essential foraging and overwintering habitat for the Baker Lake local population, and may also provide important rearing habitat. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1216421 487078
Puget Sound—Lower Skagit River	Gorge Lake	WA	Part of current distribution (WDFW 2002). Accessible foraging and overwintering habitat important for the adfluvial bull trout within this section of the Skagit River system. Bull trout are incidentally captured by recreational lake anglers (Connor, in litt. 2003c; Shannon, in litt. 2004).	Gorge Lake provides essential foraging and overwintering habitat for the Stetattle Creek local population and for bull trout entrained from Diablo Reservoir, and may also provide important rearing habitat. Should passage be provided around Gorge Dam, Gorge Lake will be essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine habitat. It is currently essential for indirectly maintaining abundance and productivity.	1211751 487061

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Skagit River	Lake Shannon	WA	Part of current distribution (WDFW 2002). Bull trout have been caught in the lake near the mouths of tributaries (Huddle, pers. com. 2003). Twenty-seven bull trout have been captured and tagged in the lake between 2002-2004 (R2 Resource Consultants and Puget Sound Energy 2005).	Lake Shannon provides the primary foraging and overwintering habitat for the Sulphur Creek local population, and may also provide important rearing habitat. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1217233 485870

2.4. Upper Skagit River Critical Habitat Subunit

The Upper Skagit River CHSU is essential to bull trout conservation because it represents a significant portion of the distribution of bull trout in Puget Sound. Bull trout's sympatric distribution with Dolly Varden suggests this CHSU may represent a key climate change refugium for the species due to Dolly Varden's presumed colder water requirements. Core area habitats are largely within protected areas (North Cascades National Park and Pasayten Wilderness) (see Appendix 1 for more detailed information).

The Upper Skagit River CHSU is located on the upper western slopes of the Cascade Range. The Skagit River system initiates in British Columbia, Canada, and flows southwest into Ross Lake, a transboundary reservoir formed by Ross Dam. Immediately downstream of Ross Dam is Diablo Lake, a reservoir formed behind Diablo Dam. These reservoirs provide FMO habitat for adfluvial populations. A number of smaller tributaries feed into Ross Lake providing the spawning and rearing habitat for that portion of the population within the United States, whereas the upper Skagit River and its tributaries provide the spawning and rearing habitat in Canada. The Upper Skagit River CHSU includes Diablo Lake and its tributaries and only those portions of Ross Lake and its associated tributaries within the United States. The following water bodies are included in this CHSU (see Table 14):

(A) Diablo Lake (325.0 ha (803.1 ac)) and Ross Lake (4,643.0 ha (11,473.1 ac)) provide FMO habitat for adfluvial bull trout in the Upper Skagit River core area. Deer Creek from Diablo Lake upstream 1.0 km (0.6 mi) to a gradient change is anticipated to provide spawning and rearing habitat for the potential local population established in Deer Creek. Bull trout were observed spawning in this stream in 1976 (Glesne, in litt. 1993, p. 1). Roland Creek from Ross Lake upstream 2.4 km (1.5 mi) to a gradient barrier provides additional foraging and subadult rearing habitat; Pierce Creek from Ross Lake upstream 1.0 km (0.6 mi) to a natural barrier provides spawning and rearing habitat for the Pierce Creek local population; and Devil Creek from Ross Lake upstream 2.4 km (1.5 mi) to a natural barrier provides additional foraging and subadult rearing habitat. Big Beaver Creek from Ross Lake upstream 17.9 km (11.1 mi) to its confluence with Luna Creek (location of gradient barrier) and its tributary McMillan Creek upstream 1.6 km (1.0 mi) to gradient barrier; Little Beaver Creek from Ross Lake upstream approximately 20.8 km (12.9 mi) to a gradient barrier just upstream of its confluence with Pass Creek; and Silver Creek from Ross Lake upstream approximately 7.1 km (4.4 mi) to a gradient barrier all provide spawning and rearing habitat for the Big Beaver Creek, Little Beaver Creek, and Silver Creek , respectively.

(B) Thunder Creek from Diablo Lake upstream approximately 15.9 km (9.9 mi) to its confluence with West Fork Thunder Creek and its tributaries—McAllister Creek upstream 9.6 km (6.0 mi) and Fisher Creek upstream 12.2 (7.6 mi) to presumed gradient barriers—provides spawning and rearing habitat for the Thunder Creek local population.

(C) Ruby Creek from Ross Lake upstream 6.8 km (4.2 mi) to its confluence with Granite and Canyon Creeks, and its tributary Granite Creek upstream 8.5 km (5.3 mi) to a gradient barrier provide spawning and rearing habitat for the local population. Panther Creek upstream approximately 11.3 km (7.0 mi) to its confluence with Gabriel Creek (location of gradient barrier) provides spawning and rearing habitat for the Ruby Creek local population.

(D) Canyon Creek upstream 14.5 km (9.0 mi) to a gradient barrier located approximately 1.6 km (1.0 mi) above its confluence with North Fork Canyon Creek and its tributaries—Slate Creek upstream 1.0 km (0.6 mi) and North Fork Canyon Creek upstream 0.8 km (0.5 mi) to gradient barriers—provide spawning and rearing habitat for the Ruby Creek local population.

(E) Lightning Creek from Ross Lake upstream 17.7 km (11.0 mi) to the U.S.–Canadian border and its tributaries—Three Fools Creek upstream 10.1 km (6.3 mi) to its confluence with Castle Creek and Trouble Creek forks (location of a gradient barrier); Three Fools Creek's tributary, Cinnamon Creek, upstream 3.0 km (2.0 mi) to presumed gradient barrier; and Freezeout Creek upstream 3.0 km (2.0 mi) to presumed gradient barrier—provide spawning and rearing habitat for the Lightning Creek local population.

Table 14. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Upper Skagit River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Upper Skagit River	North Fork Canyon Creek	WA	Juvenile and subadult bull trout observed during snorkel surveys in 2001 (USFS 2002c). Prespawning adult bull trout have been observed in Canyon Creek approximately 500 feet below the confluence with the North Fork (USFS 2002c). NF Canyon Creek is within the Pasayten Wilderness, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1207915 487680
Puget Sound—Upper Skagit River	Slate Creek	WA	Part of current rearing distribution (WDFW 2002). Prespawning adults observed near confluence with Slate Creek (USFS, in litt. 1997; Hopkins, pers. comm. 2002). No bull trout observed above waterfall at RM 0.6 during limited snorkel surveys (USFS, in litt. 2010a).	Slate Creek provides essential habitat used for spawning and rearing in the Ruby Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1207946 487571
Puget Sound—Upper Skagit River	Cinnamon Creek	WA	Connected to known occupied stream (Three Fools Creek). Cinnamon Creek is within the home watershed of a known local population (Lightning Creek) of bull trout. This creek has not been extensively surveyed for bull trout. Cinnamon Creek is within the Pasayten Wilderness, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1209144 488915
Puget Sound—Upper Skagit River	Canyon Creek	WA	Part of current rearing distribution (WDFW 2002). Prespawning adults observed above confluence with Slate Creek (Hopkins, pers. comm. 2002), and below confluence with North Fork Canyon Creek (USFS in litt. 2002c). Canyon Creek has not been extensively surveyed for bull trout.	Canyon Creek provides essential habitat used for spawning and rearing in the Ruby Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1209164 487070
Puget Sound—Upper Skagit River	Granite Creek	WA	Part of current rearing distribution (WDFW 2002). Juveniles observed during snorkel and electrofishing surveys (USFS 1998c; Molesworth, pers. comm., 2002). No bull trout observed above waterfall at RM 5.3 (USFS, in litt. 2010a).	Granite Creek provides essential habitat used for spawning and rearing in the Ruby Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1209164 487080

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Upper Skagit River	Freezeout Creek	WA	Connected to known occupied stream (Lightning Creek). Freezeout Creek is within the home watershed of a known local population (Lightning Creek) of bull trout. This creek has not been extensively surveyed for bull trout. Freezeout Creek is within the Pasayten Wilderness, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1209690 489565
Puget Sound—Upper Skagit River	Three Fools Creek	WA	Part of current rearing distribution (WDFW 2002). High densities of juveniles observed in upper reaches (Hopkins, pers. comm. 2002).	Three Fools Creek provides essential habitat used for spawning and rearing in the Lightning Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1209730 488905
Puget Sound—Upper Skagit River	Panther Creek	WA	Part of current rearing distribution (WDFW 2002). Panther Creek has not been extensively surveyed for bull trout.	Panther Creek provides essential habitat used for spawning and rearing in the Ruby Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1209748 487079
Puget Sound—Upper Skagit River	Lightning Creek	WA	Part of current rearing distribution (WDFW 2002). Spawning adfluvial bull observed in lower 2 miles, and high densities of juveniles observed in upper reaches (USFS, in litt. 2002c).	Previously identified as one of the primary spawning streams for bull trout in the Ross Lake system (Johnston 1989). Lightning Creek provides essential habitat used for spawning and rearing in the Lightning Creek local population. It is essential for maintaining distribution, abundance, and productivity. Lightning Creek provides essential habitat used for spawning and rearing in the Lightning Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210269 488709
Puget Sound—Upper Skagit River	Roland Creek	WA	Currently accessible to adfluvial bull trout. Stream hasn't been extensively surveyed for bull trout, but habitat similar to other bull trout tributaries to Ross Lake. A single subadult bull trout observed in 2002 during rainbow trout broodstock collection efforts (Connor, in litt. 2003d). This is a productive spawning stream for adfluvial population of rainbow trout, which are believed to be the primary forage fish for bull trout in the upper Skagit River system (Connor *in litt.* 2003b).	The draft recovery chapter identifies these accessible tributary streams as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area. Roland Creek likely provides essential habitat used for subadult rearing.	1210271 487618

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Upper Skagit River	Devils Creek	WA	Juveniles/subadults observed at the mouth (Connor *in litt.* 2003a).	The draft recovery chapter identifies these accessible tributary streams as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area. Devils Creek provides essential habitat used for subadult rearing.	1210422 488253
Puget Sound—Upper Skagit River	Big Beaver Creek	WA	Part of current SR distribution (WDFW 2002). Previously identified as one of the primary spawning streams for bull trout in the Ross Lake system (Johnston 1989). Adult adfluvial bull trout observed staging in this system.	Big Beaver Creek provides essential habitat used for spawning and rearing in the Big Beaver Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210446 487725
Puget Sound—Upper Skagit River	Ruby Creek	WA	Part of current SR distribution (WDFW 2002; Connor *in litt.* 2003a). Ruby Creek drainage was previously identified as one of the primary spawning areas for bull trout in the Ross Lake system (Johnston 1989). Adfluvial adults observed during snorkel surveys conducted in 2000 (USFS, in litt 2000b).	Ruby Creek provides essential habitat used for spawning and rearing in the Ruby Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210461 487369
Puget Sound—Upper Skagit River	Fisher Creek	WA	Connected to known occupied stream (Thunder Creek). Fisher Creek is within the home watershed of a known local population of bull trout. This creek has not been extensively surveyed for bull trout. Fisher Creek is within the North Cascades National Park, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1210492 486030
Puget Sound—Upper Skagit River	McAllister Creek	WA	Connected to known occupied stream (Thunder Creek). McAllister Creek is within the home watershed of a known local population of bull trout. This creek has not been extensively surveyed for bull trout. McAllister Creek is within the North Cascades National Park, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1210554 486229
Puget Sound—Upper Skagit River	Pierce Creek	WA	Young of year bull trout observed during snorkeling surveys in 1999 (Connor *in litt.* 2003a).	Pierce Creek provides essential habitat used for spawning and rearing in the Pierce Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210597 487735
Puget Sound—Upper Skagit River	Little Beaver Creek	WA	Part of current rearing distribution (WDFW 2002). Adult adfluvial bull trout observed staging in this system.	Little Beaver Creek provides essential habitat used for spawning and rearing in the Little Beaver Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210637 489118

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Upper Skagit River	Silver Creek	WA	Part of current rearing distribution (WDFW 2002). Adult adfluvial bull trout observed staging in this system.	Silver Creek provides essential habitat used for spawning and rearing in the Silver Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1210920 489719
Puget Sound—Upper Skagit River	Thunder Creek	WA	Part of current SR distribution (WDFW 2002; S. Zyskowski, in litt. 2002; Connor *in litt.* 2003a).	Thunder Creek provides essential habitat used for spawning and rearing in the Thunder Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1211054 487115
Puget Sound—Upper Skagit River	Deer Creek	WA	Spawning native char observed in 1976 (Glesne, in litt. 1993). Deer Creek has not been extensively surveyed for bull trout. Only other potential independent spawning tributary to Diablo Lake.	Deer Creek would provide essential habitat used for spawning and rearing in the Deer Creek potential local population, if it were successfully reestablished. It would be essential for its contribution to distribution, abundance, and productivity of bull trout within the core area, especially the Diablo Lake system.	1211154 487118
Puget Sound—Upper Skagit River	McMillan Creek	WA	Connected to known occupied stream (Big Beaver Creek). McMillan Creek is within the home watershed of a known local population (Big Beaver Creek) of bull trout. This creek has not been extensively surveyed for bull trout. McMillan Creek is within the North Cascades National Park, so habitat is essentially in pristine condition.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1211917 488146
Puget Sound—Upper Skagit River	Diablo Lake	WA	Primary foraging and overwintering habitat for Thunder Creek local population. Large char frequently caught by anglers (Downen, pers. comm. 2002; Zyskowski, in litt. 2003).	Diablo Lake provides essential foraging and overwintering habitat for the Thunder Creek local population and Deer Creek potential local population, and may also provide important rearing habitat. It is essential for maintaining abundance and productivity, and connectivity among local populations.	1211050 487077
Puget Sound—Upper Skagit River	Ross Lake	WA	Primary foraging and overwintering habitat for all local populations connected to Ross lake in U.S. and British Columbia. Adults recently collected for U.S./Canada cooperative telemetry project (Jesson et al., in litt 2002). It is a productive reservoir supporting abundant adfluvial rainbow trout population, as well as smaller populations of whitefish and cutthroat trout (Connor *in litt.* 2003b).	Ross Lake provides essential foraging and overwintering habitat for 14 (7 in U.S. and 7 in British Columbia) local populations, and may also provide important rearing habitat, within the Upper Skagit core area. It is essential for maintaining abundance and productivity.	1210536 488685

2.5. Stillaguamish River Critical Habitat Subunit

The Stillaguamish River CHSU is essential to bull trout conservation because it represents part of the core distribution of amphidromous bull trout in Puget Sound. Bull trout's sympatric distribution with Dolly Varden suggests this CHSU may represent a key climate change refugium for the species due to Dolly Varden's presumed colder water requirements. A small section of the river's headwaters is within a protected area (Boulder River Wilderness) (see Appendix 1 for more detailed information).

The Stillaguamish River CHSU is located on the western slopes of the Cascade Range and includes the mainstem Stillaguamish River; its two major forks, the North and South Forks; and their associated tributaries. The Stillaguamish River system flows west from the Cascade Mountain Range towards Puget Sound, discharging into Port Susan Bay at the north end of Camano Island. A total of approximately 362.0 km (224.9 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 15):

(A) The Stillaguamish River from its mouth at Puget Sound (including the South (1.8 km (1.1 mi)) and West (1.9 km (1.2 mi)) Passes) upstream approximately 35.8 km (22.9 mi) through Hat Slough (3.9 km (2.4 mi)) to its confluence with the North Fork Stillaguamish River and South Fork Stillaguamish River and its associated sloughs (South Slough and Cook Slough) and its tributary, Pilchuck Creek, upstream 17.7 km (11.0 mi) to a natural barrier provide foraging and overwintering habitat and an essential migratory corridor for amphidromous bull trout.

(B) North Fork Stillaguamish River from its confluence with the South Fork Stillaguamish River upstream approximately 60.7 km (37.7 mi) to a natural barrier provide rearing, foraging, and overwintering habitat for the North Fork Stillaguamish River local population downstream from Boulder River and spawning and rearing habitat for that population upstream of Boulder River. The North Fork Stillaguamish River also provides an essential migratory corridor for amphidromous bull trout. Brooks Creek from its mouth upstream 1.6 km (1.0 mi) and Rollins Creek from its mouth upstream 1.9 km (1.2 mi) to natural barriers provide primary accessible tributary FMO habitat in the North Fork Stillaguamish River. Boulder River upstream 8.2 km (5.1 mi) to a natural barrier provides spawning and rearing habitat for the North Fork Stillaguamish River local population. The following tributaries from their mouths or confluence upstream to natural barriers also provide spawning and rearing habitat for the North Fork Stillaguamish River local population: an unnamed tributary (stream catalog number 0241) upstream 1.3 km (0.8 mi); an unnamed tributary (stream catalog number 0242) upstream 0.8 km (0.5 mi); an unnamed tributary (stream catalog number 0243) upstream 2.1 km (1.3 mi); French Creek upstream 4.8 km (3 mi); Segelson Creek upstream 3.2 km (2.0 mi); and Moose Creek upstream 2.9 km (1.8 mi). Squire Creek from its mouth upstream 12.7 km (7.9 mi) provides rearing, foraging, migration habitat, and potentially spawning habitat.

(C) Deer Creek from its confluence with the North Fork Stillaguamish River upstream 30.1 km (18.7 mi) to a natural barrier provides combined spawning, rearing, foraging, and migration habitat for the Deer Creek local population. Little Deer Creek upstream 8.0 km (5.0 mi) and Higgins Creek upstream 7.9 km (4.9 mi) to accessible headwaters provides spawning and rearing habitat for the local population. Bull trout have been documented in Deer Creek and Higgins Creek.

(D) South Fork Stillaguamish River from its confluence with the North Fork Stillaguamish River upstream approximately 80.1 km (49.8 mi) to accessible headwaters provides spawning and rearing habitat upstream of Wiley Creek and foraging and overwintering habitat downstream of Wiley Creek. It also provides an essential migratory corridor for amphidromous bull trout. Jim Creek upstream 19.6 km (12.2 mi) to Cub Creek provides some FMO habitat outside of local population for the Stillaguamish River core area. The South Fork Stillaguamish River and mouths of listed and unlisted tributaries also provide some post-dispersal rearing habitat. The following tributaries from their mouths upstream to a natural barrier provide spawning and rearing habitat for the local population: Schweitzer Creek upstream 1.1 km (0.7 mi); Long Creek upstream 1.1 km (0.7 mi); Boardman Creek upstream 4.5 km (2.8 mi); Gordon Creek upstream 2.7 km (1.7 mi); Mallardy Creek upstream 1.9 km (1.2 mi); Blackjack Creek upstream 1.3 km (0.8 mi); Bender Creek upstream 0.8 km (0.5 mi); Silver Gulch upstream 0.8 km (0.5 mi); Deer Creek upstream 1.6 km (1.0 mi); Coal Creek upstream 1.6 km (1.0 mi); Beaver Creek upstream 1.6 km (1.0 mi); Big Four Creek upstream 1.1 km (0.7 mi); Perry Creek upstream 2.6 km (1.6 mi); Buck Creek upstream 0.8 km (0.5 mi); and Palmer Creek upstream 1.1 km (0.7 mi).

(E) Canyon Creek from its confluence with the South Fork Stillaguamish River upstream 17.9 km (11.1 mi) to its confluence with the North and South Forks provides FMO habitat below the unnamed tributary (stream catalog number 0365) and spawning and rearing habitat for the South Fork Canyon Creek local population upstream of this unnamed tributary. An unnamed tributary (stream catalog number 0364) from its mouth upstream 1.0 km (0.6 mi) to a natural barrier; an unnamed tributary (stream catalog number 0365) from its mouth upstream 1.0 km (0.6 mi) to a natural barrier; North Fork Canyon Creek from its confluence with the South Fork Stillaguamish River upstream 0.8 km (0.5 mi) to a natural barrier; and South Fork Canyon Creek from its confluence with the North Fork Stillaguamish River upstream 2.6 km (1.6 mi) to a natural barrier just upstream of Saddle Creek all provide spawning and rearing habitat for the local population.

Table 15. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Stillaguamish River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Buck Creek	WA	Part of current SR distribution based on recent surveys (Downen, in litt. 2003).	Buck Creek provides essential habitat used for spawning and rearing in the South Fork Stillaguamish River local population. It is essential for maintaining distribution, abundance, and productivity.	1214802 480450
Puget Sound—Stillaguamish River	Palmer Creek	WA	Part of current SR distribution (WDFW 2002; Downen, in litt. 2003).	Palmer Creek provides essential habitat used for spawning and rearing in the South Fork Stillaguamish River local population. It is essential for maintaining distribution, abundance, and productivity.	1214815 480453
Puget Sound—Stillaguamish River	Perry Creek	WA	Part of current SR distribution based on recent surveys (Downen, in litt. 2003).	Perry Creek provides essential habitat used for spawning and rearing in the South Fork Stillaguamish River local population. It is essential for maintaining distribution, abundance, and productivity.	1215140 480630
Puget Sound—Stillaguamish River	Big Four Creek	WA	Juvenile and subadult bull trout captured during U.S. Forest Service outmigrant trapping efforts in 2002 and 2003 (Chang, in litt. 2003). Big Four Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215225 480716
Puget Sound—Stillaguamish River	Beaver Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Beaver Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Beaver Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215256 480774
Puget Sound—Stillaguamish River	Coal Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Coal Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Coal Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215393 480850

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Deer Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Deer Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Deer Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215543 480837
Puget Sound—Stillaguamish River	Silver Gulch	WA	Connected to occupied stream (South Fork Stillaguamish River). Silver Gulch is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Silver Gulch has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215693 480786
Puget Sound—Stillaguamish River	Bender Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Bender Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Bender Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215891 480710
Puget Sound—Stillaguamish River	Blackjack Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Blackjack Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Blackjack Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216295 480618
Puget Sound—Stillaguamish River	Mallardy Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Mallardy Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Mallardy Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216538 480702
Puget Sound—Stillaguamish River	Gordon Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Gordon Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Gordon Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216713 480707

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Boardman Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Boardman Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Boardman Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216802 480700
Puget Sound—Stillaguamish River	Squire Creek	WA	Adult-sized bull trout observed in the late 1980s (Castle, pers. comm. 2003). Connected to known occupied stream (North Fork Stillaguamish River). Squire Creek is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. Squire Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216838 482795
Puget Sound—Stillaguamish River	Long Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Long Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Long Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216899 480737
Puget Sound—Stillaguamish River	Schweitzer Creek	WA	Connected to occupied stream (South Fork Stillaguamish River). Schweitzer Creek is within the home watershed of a known local population (South Fork Stillaguamish River) of bull trout. Schweitzer Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216979 480741
Puget Sound—Stillaguamish River	Moose Creek	WA	Connected to known occupied stream (North Fork Stillaguamish River). Moose Creek is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. Moose Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216983 482769

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Segelsen Creek	WA	Connected to known occupied stream (North Fork Stillaguamish River). Segelsen Creek is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. Segelsen Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1217137 482806
Puget Sound—Stillaguamish River	French Creek	WA	Connected to known occupied stream (North Fork Stillaguamish River). French Creek is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. French Creek has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1217553 482825
Puget Sound—Stillaguamish River	Unnamed trib. (#0243)	WA	Connected to known occupied stream (North Fork Stillaguamish River). This unnamed tributary is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1217703 482859
Puget Sound—Stillaguamish River	Unnamed trib. (#0242)	WA	Connected to known occupied stream (North Fork Stillaguamish River). This unnamed tributary is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1217709 482864
Puget Sound—Stillaguamish River	Unnamed trib. (#0241)	WA	Connected to known occupied stream (North Fork Stillaguamish River). This unnamed tributary is within the home watershed of a known local population (North Fork Stillaguamish River) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1217795 482837
Puget Sound—Stillaguamish River	Boulder River	WA	Part of current SR distribution (WDFW 2002). Adult bull trout observed spawning in this system (Service 2004a). No extensive juvenile surveys have been conducted.	Boulder River provides essential habitat used for spawning and rearing in the North Fork Stillaguamish River local population. It is essential for maintaining distribution, abundance, and productivity.	1217856 482824

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Higgins Creek	WA	Juveniles observed in 2000 and 2002 (USFS and NPS, in litt. 2003). Dolly Varden recently discovered upstream of natural barrier (DeHann, in litt. 2009), indicating this stream provides possible temperature refugia habitat for bull trout.	Higgins Creek provides essential habitat used for spawning and rearing in the Upper Deer Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1218062 483622
Puget Sound—Stillaguamish River	North Fork Canyon Creek	WA	Part of current SR distribution (WDFW 2002). No extensive spawning or juvenile surveys have been conducted.	North Fork Canyon Creek provides essential habitat used for spawning and rearing in the Canyon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1218158 481580
Puget Sound—Stillaguamish River	South Fork Canyon Creek	WA	Part of current SR distribution (WDFW 2002). No extensive spawning or juvenile surveys have been conducted.	South Fork Canyon Creek provides essential habitat used for spawning and rearing in the Canyon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1218158 481590
Puget Sound—Stillaguamish River	Rollins Creek	WA	Productive salmon stream, and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout.	1218353 482808
Puget Sound—Stillaguamish River	Little Deer Creek	WA	Connected to known occupied stream (Deer Creek). This is an accessible headwater tributary to the Upper Deer Creek local population of bull trout. Little Deer Creek has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218683 483868
Puget Sound—Stillaguamish River	Unnamed trib. (#0365)	WA	Connected to occupied stream (Canyon Creek). This unnamed tributary is within the home watershed of a known local population (Canyon Creek) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218880 481242
Puget Sound—Stillaguamish River	Unnamed trib. (#0364)	WA	Connected to occupied stream (Canyon Creek). This unnamed tributary is within the home watershed of a known local population (Canyon Creek) of bull trout. This unnamed tributary has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219015 481232

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Brooks Creek	WA	Productive salmon stream, and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Accessible post-dispersal rearing habitat downstream of local populations.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1219097 482769
Puget Sound—Stillaguamish River	Deer Creek	WA	Juveniles and spawning adults observed in upstream tributaries to this stream (Downen, in litt. 2003).	Deer Creek provides essential habitat used for spawning and rearing, foraging, and migration in the Upper Deer Creek local population. It is essential for maintaining distribution, abundance, and productivity, and connectivity between SR habitats and freshwater and marine FMO habitat.	1219314 482681
Puget Sound—Stillaguamish River	Deer Creek	WA	Juveniles and spawning adults observed in upstream tributaries to this stream (Downen, in litt. 2003).	Deer Creek provides essential habitat used for spawning and rearing, foraging, and migration in the Upper Deer Creek local population. It is essential for maintaining distribution, abundance, and productivity, and connectivity between SR habitats and freshwater and marine FMO habitat.	1219314 482681
Puget Sound—Stillaguamish River	Canyon Creek	WA	Part of current SR distribution (WDFW 2002). Isolated observations of spawning migratory-sized bull trout.	Canyon Creek provides essential habitat used for spawning and rearing in the Canyon Creek local population. It is essential for maintaining distribution, abundance, and productivity and connectivity between SR habitats and freshwater and marine FMO habitat.	1219692 480976
Puget Sound—Stillaguamish River	Canyon Creek	WA	Part of current SR distribution (WDFW 2002). Isolated observations of spawning migratory-sized bull trout.	Canyon Creek provides essential habitat used for spawning and rearing in the Canyon Creek local population. It is essential for maintaining distribution, abundance, and productivity and connectivity between SR habitats and freshwater and marine FMO habitat.	1219692 480976
Puget Sound—Stillaguamish River	Jim Creek	WA	A productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1220764 481847

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	North Fork Stillaguamish River	WA	Part of current distribution (WDFW 2002). Adult anadromous and fluvial bull trout observed in this system (Pess, in litt. 2003).	This segment of the North Fork Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482038.1
Puget Sound—Stillaguamish River	North Fork Stillaguamish River	WA	Part of current rearing distribution (WDFW 2002). Adult anadromous and fluvial bull trout observed in this system (Pess, in litt. 2003). Accessible post-dispersal rearing habitat downstream of local populations.	This segment of the North Fork Stillaguamish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482038.3
Puget Sound—Stillaguamish River	South Fork Stillaguamish River	WA	Part of current SR distribution (WDFW 2002). Major spawning area recently located above mouth of Palmer Creek, and juveniles identified during electrofishing surveys (Downen, in litt. 2003). No extensive juvenile surveys have been conducted. It is a productive salmon and steelhead stream.	This segment of the South Fork Stillaguamish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482048.2
Puget Sound—Stillaguamish River	South Fork Stillaguamish River	WA	Part of current SR distribution (WDFW 2002). Major spawning area recently located above mouth of Palmer Creek, and juveniles identified during electrofishing surveys (Downen, in litt. 2003). No extensive juvenile surveys have been conducted. It is a productive salmon and steelhead stream.	This segment of the South Fork Stillaguamish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482048.2
Puget Sound—Stillaguamish River	Pilchuck Creek	WA	Productive salmon stream, and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1222246 482085

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	Cook Slough	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222452 481950
Puget Sound—Stillaguamish River	Stillaguamish River	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223515 482361
Puget Sound—Stillaguamish River	South Slough	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222642 482059
Puget Sound—Stillaguamish River	South Pass	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223847 482256
Puget Sound—Stillaguamish River	West Pass	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223956 482502
Puget Sound—Stillaguamish River	Hat Slough	WA	Part of current distribution (WDFW 2002). Anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1223609 481974

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Stillaguamish River	North Fork Stillaguamish River	WA	Part of current rearing distribution (WDFW 2002). Adult anadromous and fluvial bull trout observed in this system (Pess, in litt. 2003).	This segment of the North Fork Stillaguamish River provides essential rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482038.2
Puget Sound—Stillaguamish River	South Fork Stillaguamish River	WA	Part of current distribution (WDFW 2002). Adult anadromous and fluvial bull trout observed in this system (WDFW 1998).	This segment of the South Fork Stillaguamish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221262 482048.1

2.6. Samish River Critical Habitat Subunit

The Samish River CHSU is of secondary importance relative to CHSUs containing natal populations but it provides important FMO habitat (outside of core areas) essential to the amphidromous life history form (see Appendix 1 for more detailed information).

The Samish River CHSU is located in the Puget Sound lowlands with its headwaters in the broad, flat valley floor above the city of Wickersham, Washington. The Samish River system flows southwest towards Puget Sound, discharging into Samish Bay. The Samish River CHSU includes the Samish River; its major tributary, Friday Creek; and other associated tributaries. The amphidromous bull trout using this productive salmon system are likely from several core areas within Puget Sound (e.g., Nooksack, Lower Skagit, and Stillaguamish Rivers). A total of approximately 38.3 km (23.8 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 16):

(A) The Samish River from the mouth at Puget Sound upstream 38.3 km (23.8 mi) to an unnamed tributary (stream catalog number 0079) provides FMO habitat for amphidromous bull trout outside of currently delineated core areas in the Puget Sound CHU.

Table 16. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Samish River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Samish River	Samish River	WA	Anadromous bull trout were incidentally captured by fisherman during the 1970s (Kraemer, in litt. 2003b; Castle, pers. comm. 2003), 1980s (Toba, pers. comm. 2003), and more recently (Peterson, pers. comm. 2004; Barkdull, pers. comm. 2009). It is a productive salmon stream important for seasonal foraging by anadromous bull trout, and possibly overwintering (Burley, in litt. 1997).	Waterbodies used by anadromous bull trout, but currently lying outside of designated core areas, are essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1224558 485551

2.7. Snohomish–Skykomish River Critical Habitat Subunit

The Snohomish–Skykomish River CHSU is essential to bull trout conservation because it represents the second stronghold for the amphidromous life history form within the Coastal RU. It also represents part of the core distribution of amphidromous bull trout in Puget Sound. Extensive portions of the habitat are within protected areas (Henry Jackson Wilderness, Wild Sky Wilderness, and Alpine Lakes Wilderness) (see Appendix 1 for more detailed information).

The Snohomish–Skykomish River CHSU is located on the western slopes of the Cascade Range and includes the mainstem Snohomish River; the lower Snoqualmie River; the mainstem Skykomish River and its two major forks, the North and South Forks; and associated tributaries accessible to bull trout. The Snohomish–Skykomish River system flows west from the Cascade Mountain Range towards Puget Sound, discharging into Possession Sound near the city of Everett, Washington. A total of 455.0 km (282.7 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 17):

(A) The Snohomish River from its mouth at Puget Sound upstream 32.3 km (20.1 mi) to its confluence with the Skykomish and Snoqualmie Rivers—including Ebey, Steamboat, and Union Sloughs—provide foraging and overwintering habitat and an essential migratory corridor for amphidromous bull trout. Pilchuck River upstream 57.1 km (35.5 mi) to a natural barrier provides FMO habitat in the lower reaches of the Snohomish River.

(B) Snoqualmie River from its mouth upstream approximately 63.2 km (39.3 mi) to Snoqualmie Falls; Tolt River upstream 13.5 km (8.4 mi) to its confluence with the North Fork Tolt River and South Fork Tolt River; North Fork Tolt River upstream 6.1 km (3.8 mi) to a natural barrier; and South Fork Tolt River upstream 13.0 km (8.1 mi) to a natural barrier all provide FMO habitat for the Snohomish–Skykomish Rivers core area.

(C) The following tributaries upstream from their mouths or confluence provide FMO habitat for the Snohomish–Skykomish Rivers core area: Skykomish River from its confluence with the Snohomish and Snoqualmie Rivers upstream 46.7 km (29.0 mi) to its confluence with the North Fork Skykommish River and South Fork Skykomish River; Elwell Creek upstream 4.0 km (2.5 mi) to its confluence with Youngs Creek; McCoy Creek upstream 2.6 km (1.6 mi) to a natural barrier; Sultan River upstream 15.6 km (9.7 mi) to Everett Diversion Dam; Wallace River upstream 14.3 km (8.9 mi) to Wallace Falls; and Proctor Creek upstream 1.9 km (1.2 mi) to a natural barrier. The Skykomish River provides an essential migratory corridor for amphidromous bull trout.

(D) The following tributaries from their mouths upstream to natural barriers or falls provide spawning and rearing habitat for the North Fork Skykomish River local population and extended rearing habitat for the Salmon Creek local population in the Snohomish–Skykomish Rivers core area: North Fork Skykomish River upstream approximately 30.6 km (19.0 mi) to a natural barrier falls located between Goblin and Quartz Creeks; Lewis Creek upstream 1.6 km (1.0 mi); Bitter Creek upstream 0.3 km (0.2 mi); Snowslide Gulch upstream 0.3 km (0.2 mi); Trout Creek upstream 5.9 km (3.7 mi); Excelsior Creek upstream 0.8 km (0.5 mi); Silver Creek upstream 4.8 km (3.0 mi); West Cady Creek upstream 1.1 km (0.7 mi); and Goblin Creek upstream 0.6 km (0.4 mi). Salmon Creek upstream 4.0 km (2.5 mi) to a natural barrier and South Fork Salmon Creek upstream 0.8 km (0.5 mi) to a natural barrier provide spawning and rearing habitat for the local population. Troublesome Creek upstream approximately 5.1 km (3.2 mi) to a natural barrier provides spawning and rearing habitat for the Troublesome Creek local population upstream of the anadromous barrier (at a point upstream 0.4 km (0.25 mi)) and additional spawning and rearing habitat for the North Fork Skykomish River local population downstream of the anadromous barrier. The North Fork Skykomish River also provides an essential migratory corridor for amphidromous bull trout.

(E) South Fork Skykomish River from its confluence upstream approximately 31.5 km (19.6 mi) to its confluence with the Tye and Foss Rivers provides FMO habitat. The South Fork Skykomish River also provides an essential migratory corridor for amphidromous bull trout. The following tributaries provide spawning and rearing habitat from their mouths upstream to natural barriers or falls for the South Fork Skykomish River local population in the Snohomish–Skykomish Rivers core area: Index Creek upstream 1.6 km (1.0 mi); Money Creek upstream 5.6 km (3.5 mi); Beckler River upstream 19.6 km (12.2 mi); and its tributary, the Tye River, upstream 7.2 (4.5 mi). Miller River upstream 5.6 km (3.5 mi) to its confluence with West Fork Miller River and East Fork Miller River also provides rearing habitat for the local population. Bull trout recently have been documented spawning in the Beckler River. It is expected that as amphidromous bull trout increase in abundance, greater use of these streams and other accessible tributaries to the South Fork Skykomish and Beckler Rivers will occur.

(F) Foss River upstream 6.9 km (4.3 mi) to its confluence with the East Fork Foss River and West Fork Foss River provides foraging and overwintering habitat and potentially rearing habitat for the South Fork Skykomish River local population. It also provides an essential migratory corridor for amphidromous bull trout. East Fork Foss River upstream 1.6 km (1.0 mi) to a natural barrier and West Fork Foss River upstream 3.2 km (2.0 mi) to a natural barrier provide spawning and rearing habitat for the South Fork Skykomish River local population. It is expected that as amphidromous bull trout increase in abundance, greater use of these streams and other accessible tributaries will occur.

Table 17. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Snohomish–Skykomish Rivers CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	Rapid River	WA	Connected to occupied stream (Beckler River). Rapid River is within the home watershed of a known local population (South Fork Skykomish River) of bull trout. Rapid River has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1212922 478034
Puget Sound—Snohomish–Skykomish Rivers	East Fork Foss River	WA	Part of current SR distribution (WDFW 2002)	East Fork Foss River provides essential habitat used for spawning and rearing in the South Fork Skykomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1212925 476527
Puget Sound—Snohomish–Skykomish Rivers	West Fork Foss River	WA	Subadult bull trout collected at RM 0.75 in August 2004 (Arrigoni, in litt. 2004). WF Foss River has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1212925 476537
Puget Sound—Snohomish–Skykomish Rivers	Foss River	WA	Part of current distribution (WDFW 2002). Adults must migrate through this reach to access upstream spawning areas.	This segment of the Foss River provides essential, rearing, foraging, and migration habitat for fluvial and anadromous life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Snohomish-Skykomish River core area. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1213055 477054
Puget Sound—Snohomish–Skykomish Rivers	Tye River	WA	Connected to occupied stream (South Fork Skykomish River). Tye River is within the home watershed of a known local population of bull trout. Tye River has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1213055 477064
Puget Sound—Snohomish–Skykomish Rivers	Goblin Creek	WA	Part of current SR distribution (WDFW 2002). Contains part of the spawning index reach for the Snohomish-Skykomish River system.	Goblin Creek provides essential habitat used for spawning and rearing in the North Fork Skykomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1213074 479187

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	West Cady Creek	WA	Part of current SR distribution (WDFW 2002). Contains part of the spawning index reach for the Snohomish-Skykomish River system.	West Cady Creek provides essential habitat used for spawning and rearing in the North Fork Skykomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1213182 478994
Puget Sound—Snohomish–Skykomish Rivers	Beckler River	WA	Part of recent expansion of SR distribution within the system (Kraemer, in litt. 2003a).	Beckler River provides essential habitat used for spawning and rearing in the South Fork Skykomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1213388 477152
Puget Sound—Snohomish–Skykomish Rivers	Miller River	WA	Connected to occupied stream (South Fork Skykomish River). Stream is within the home watershed of a known local population (South Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1213930 477194
Puget Sound—Snohomish–Skykomish Rivers	Troublesome Creek	WA	Part of current SR distribution (WDFW 1998; WDFW 2002), primarily resident forms above river mile 0.25. Stream located primarily in Henry Jackson Wilderness.	Troublesome Creek provides essential habitat used for spawning and rearing in the Troublesome Creek local population and part of the North Fork Skykomish River local population. It is essential for maintaining distribution, abundance, and productivity.	1214029 478970
Puget Sound—Snohomish–Skykomish Rivers	Money Creek	WA	Connected to occupied stream (South Fork Skykomish River). Stream is within the home watershed of a known local population (South Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1214252 477289
Puget Sound—Snohomish–Skykomish Rivers	Silver Creek	WA	Connected to occupied stream (North Fork Skykomish River). Stream is within the home watershed of a known local population (North Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1214351 478970
Puget Sound—Snohomish–Skykomish Rivers	Salmon Creek	WA	Part of current SR distribution (WDFW 2002). Pre-spawn adult bull trout observed in this system near the confluence with South Fork Salmon Creek (David Evans and Associates and R2 Resources Consultants 1998a).	Salmon Creek provides essential habitat used for spawning and rearing in the Salmon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1214575 478798

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	South Fork Salmon Creek	WA	Part of current SR distribution (WDFW 2002).	South Fork Salmon Creek provides essential habitat used for spawning and rearing in the Salmon Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1214749 479057
Puget Sound—Snohomish–Skykomish Rivers	Index Creek	WA	Connected to occupied stream (South Fork Skykomish River). Stream is within the home watershed of a known local population (South Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1214801 477663
Puget Sound—Snohomish–Skykomish Rivers	Trout Creek	WA	Juvenile observed in 1998 (David Evans and Associates and R2 Resource Consultants 1998b). Stream is within the home watershed of a known local population of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1214866 478644
Puget Sound—Snohomish–Skykomish Rivers	Excelsior Creek	WA	Connected to occupied stream (North Fork Skykomish River). Stream is within the home watershed of a known local population (North Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1214903 478641
Puget Sound—Snohomish–Skykomish Rivers	Snowslide Gulch	WA	Connected to occupied stream (North Fork Skykomish River). Stream is within the home watershed of a known local population (North Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215019 478578
Puget Sound—Snohomish–Skykomish Rivers	Bitter Creek	WA	Connected to occupied stream (North Fork Skykomish River). Stream is within the home watershed of a known local population (North Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215072 478403
Puget Sound—Snohomish–Skykomish Rivers	Lewis Creek	WA	Connected to occupied stream (North Fork Skykomish River). Stream is within the home watershed of a known local population (North Fork Skykomish River) of bull trout. Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215244 478236

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	North Fork Skykomish River	WA	Part of current distribution (WDFW 2002). Contains primary part of the spawning index reach for the Snohomish-Skykomish River system (WDFW 1998). Rearing juveniles and subadults can be found throughout this segment.	This segment of the North Fork Skykomish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Snohomish-Skykomish River core area. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1215779478133
Puget Sound—Snohomish–Skykomish Rivers	North Fork Skykomish River	WA	Part of current distribution (WDFW 2002). Contains primary part of the spawning index reach for the Snohomish-Skykomish River system (WDFW 1998). Rearing juveniles and subadults can be found throughout this segment.	This segment of the North Fork Skykomish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Snohomish-Skykomish River core area. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1215779478133
Puget Sound—Snohomish–Skykomish Rivers	South Fork Skykomish River	WA	Part of current distribution (WDFW 2002). Migratory bull trout have been transported above Sunset Falls since 1958. An average of 50 adults is transported above Sunset Falls on an annual basis. Ninety adults were passed in 2002 (Kraemer, in litt. 2003a).	This segment of the South Fork Skykomish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Snohomish-Skykomish River core area. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1215779478143
Puget Sound—Snohomish–Skykomish Rivers	South Fork Skykomish River	WA	Part of current distribution (WDFW 2002). Migratory bull trout have been transported above Sunset Falls since 1958. An average of 50 adults is transported above Sunset Falls on an annual basis. Ninety adults were passed in 2002 (Kraemer, in litt. 2003a).	This segment of the South Fork Skykomish River provides essential spawning, rearing, foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Snohomish-Skykomish River core area. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat.	1215779478143
Puget Sound—Snohomish–Skykomish Rivers	Proctor Creek	WA	Productive salmon stream likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1216445478354

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	Wallace River	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1217938 478591
Puget Sound—Snohomish–Skykomish Rivers	Sultan River	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218192 478598
Puget Sound—Snohomish–Skykomish Rivers	North Fork Tolt River	WA	Part of current distribution (WDFW 2002). Adult observed near river mile 2.2 in fall of 1999 (KCDNR 2000; Glasgow, in litt 2005b). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218201 476960
Puget Sound—Snohomish–Skykomish Rivers	South Fork Tolt River	WA	Part of current distribution (WDFW 2002). Adults observed between river mile 3.2 and 5.2 in late 1990s during snorkel surveys (KCDNR 2000). Single bull trout observed at river mile 3.9 in September 2000, and another observed at river mile 5.0 in August 2002 (Glasgow, in litt. 2005b). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218201 476970
Puget Sound—Snohomish–Skykomish Rivers	McCoy Creek	WA	Productive salmon stream likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218236 478484

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	Elwell Creek	WA	Productive salmon stream likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1218516 478386
Puget Sound—Snohomish–Skykomish Rivers	Tolt River	WA	Part of current distribution (WDFW 2002). Bull trout observed in both its forks in 1990s (KCDNR 2000; Glasgow, in litt. 2005a). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1219256 476406
Puget Sound—Snohomish–Skykomish Rivers	Snoqualmie River	WA	Part of current distribution (WDFW 2002). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1220450 478301
Puget Sound—Snohomish–Skykomish Rivers	Skykomish River	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Skykomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1220450 478302
Puget Sound—Snohomish–Skykomish Rivers	Pilchuck River	WA	Part of current distribution (WDFW 2002). Acoustical tagged adult recaptured February 2003 at RM 3.5 by angler (Starkes, in litt. 2003). Adult bull trout observed in lower river reach in September 2003 (Meacham, in litt. 2003). It is a productive salmon stream important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1220899 479044
Puget Sound—Snohomish–Skykomish Rivers	Snohomish River	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222080 480202

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Snohomish–Skykomish Rivers	Steamboat Slough	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221506 480015
Puget Sound—Snohomish–Skykomish Rivers	Steamboat Slough	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221506 480015
Puget Sound—Snohomish–Skykomish Rivers	Snohomish River	WA			1222080 480202
Puget Sound—Snohomish–Skykomish Rivers	Ebey Slough	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221521 480088

2.8. Lake Washington Critical Habitat Subunit

The Lake Washington CHSU is of secondary importance relative to CHSUs containing natal populations but it provides important FMO habitat (outside of core areas) essential to the amphidromous life history form (see Appendix 1 for more detailed information).

The Lake Washington CHSU lies within central Puget Sound. Lake Washington is connected to Puget Sound by the Lake Washington Ship Canal, which flows into Salmon Bay through the Ballard Locks system in Seattle. The Lake Washington CHSU includes Lake Washington, Cedar and Sammamish Rivers, and associated tributaries. It does not include the upper Cedar River basin above Cedar Falls. This productive salmon system supports bull trout FMO habitat for amphidromous bull trout outside of currently designated core areas. The bull trout using this system are likely from several core areas within Puget Sound in close proximity to this system (e.g., Stillaguamish and Snohomish–Skykomish Rivers) and perhaps from core areas further away. A total of approximately 9,288.0 ha (22,951.1 ac) of lake surface area is designated as critical habitat. The following water bodies are included in this CHSU (see Table 18):

(A) Lake Washington (8,869.0 ha (21,915.7 ac)), including the Ship Canal and Lake Union (419.0 ha (1,035.3 ac)) between the Ballard Locks and Lake Washington, provides FMO habitat for amphidromous bull trout. Bull trout have been documented in various areas of Lake Washington and in the fish ladder at Ballard Locks (KCDNR 2000, p. 20; Berge, in litt. 2003, p. 1).

Table 18. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Lake Washington CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lake Washington	Lake Union	WA	Observations have been noted in the lake and below the Ballard Locks since the 1980s (KCDNR 2000). Most recent captures were adult individuals collected by a gillnet in January 2003 (Berge, H. in litt. 2003) and March 2005 (Overman, in litt. 2005).	The recovery chapter identifies these waterbodies used by anadromous bull trout as essential to maintaining the current distribution, abundance, and productivity of bull trout within the Puget Sound Management Unit. These waterbodies provide essential and biologically important accessible habitat occupied by anadromous salmonids and other fish species which provide an important forage base for anadromous bull trout.	1223305 476416
Puget Sound—Lake Washington	Lake Washington	WA	Observations have been noted in the lake and below the Ballard Locks since the 1980s (KCDNR 2000). Most recent captures were adult individuals collected by a gillnet in January 2003 (Berge, H. in litt. 2003) and March 2005 (Overman, in litt. 2005).	The recovery chapter identifies these waterbodies used by anadromous bull trout as essential to maintaining the current distribution, abundance, and productivity of bull trout within the Puget Sound Management Unit. These waterbodies provide essential and biologically important accessible habitat occupied by anadromous salmonids and other fish species which provide an important forage base for anadromous bull trout.	1222454 476194
Puget Sound—Lake Washington	Ship Canal (Chittendon Locks)	WA	Observations have been noted in the lake and below the Ballard Locks since the 1980s (KCDNR 2000). Most recent captures were adult individuals collected by a gillnet in January 2003 (Berge, H. in litt. 2003) and March 2005 (Overman, in litt. 2005).	The recovery chapter identifies these waterbodies used by anadromous bull trout as essential to maintaining the current distribution, abundance, and productivity of bull trout within the Puget Sound Management Unit. These waterbodies provide essential and biologically important accessible habitat occupied by anadromous salmonids and other fish species which provide an important forage base for anadromous bull trout. This waterbody is the key corridor for anadromous bull trout migrating to and from Lake Washington.	1223785 476596

2.9. Lower Green River Critical Habitat Subunit

The Lower Green River CHSU is of secondary importance relative to CHSUs containing natal populations but it provides important FMO habitat (outside of core areas) essential to the amphidromous life history form (see Appendix 1 for more detailed information).

The Lower Green River CHSU includes the Duwamish and Green Rivers and associated tributaries below Tacoma's Headworks Diversion Dam. The Green River is a productive salmon system, initiating in the Cascade Range and flowing west into Howard Hansen Reservoir. It is free flowing below the City of Tacoma's Headworks Diversion Dam (located approximately 7.2 km (4.5 mi) downstream of Howard Hansen Dam), eventually becoming the Duwamish River before discharging into Elliott Bay. This system supports FMO habitat for amphidromous bull trout. The amphidromous bull trout using this system are likely from several core areas within Puget Sound in close proximity to this system (e.g., Puyallup and Snohomish–Skykomish Rivers) and perhaps even from core areas further away. Historical accounts (Suckley and Cooper 1860, pp. 342–343) suggest that bull trout were much more abundant in the Green River and likely used this system for spawning and rearing in the past. However, past changes made to the drainage basin (permanent redirection of the White River into the Puyallup River Basin and the Cedar River into the Lake Washington Basin) have likely influenced the level of use. A total of 99.8 km (62.0 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 19):

(A) Duwamish River from the mouth at Puget Sound (including the East and West Waterways) upstream 21.1 km (13.1 mi) to the Black River and the Green River from its confluence with the Black River upstream 78.7 km (48.9 mi) to the City of Tacoma's Headworks Diversion Dam provide FMO habitat for amphidromous bull trout.

Table 19. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Lower Green River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Green River	Green River	WA	Currently occupied by anadromous bull trout (KCDNR 2000; Berge and Mavros 2001). It is a productive salmon stream important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1222505 474752
Puget Sound—Lower Green River	Duwamish River	WA	Currently occupied by anadromous bull trout (Shannon, in litt. 2001, 2003). Lower river reach of productive salmon system important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1222800 474993
Puget Sound—Lower Green River	West Duwamish Waterway	WA	Currently occupied by anadromous bull trout (Shannon, in litt. 2001, 2003). Lower river reach of productive salmon system important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1223588 475856
Puget Sound—Lower Green River	Duwamish Waterway	WA	Currently occupied by anadromous bull trout (Shannon, in litt. 2001, 2003). Lower river reach of productive salmon system important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1223588 475856

2.10. Lower Nisqually River Critical Habitat Subunit

The Lower Nisqually River CHSU is of secondary importance relative to CHSUs containing natal populations but provides important FMO habitat for the amphidromous life history form, especially in southern Puget Sound. It is important for future recovery efforts (i.e., recolonization or reintroduction) as amphidromous populations increase in abundance (see Appendix 1 for more detailed information).

The Lower Nisqually River CHSU includes the Nisqually River and associated tributaries below La Grande Dam. The Nisqually River system, fed primarily by the glaciers of Mount Rainier, flows west to Alder Lake and through Alder and La Grande Dams before discharging into Puget Sound at the Nisqually River delta at the Nisqually National Wildlife Refuge. The Nisqually River system supports FMO habitat for amphidromous bull trout. The amphidromous bull trout currently observed in this system, and those likely to use this system in the future, are believed to be from other core areas within Puget Sound (e.g., Puyallup and Snohomish–Skykomish Rivers). A total of approximately 64.0 km (39.7 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 20):

(A) The Nisqually River from its mouth at Puget Sound upstream 64.5 km (40.1 mi) to La Grande Dam provides FMO habitat for amphidromous bull trout. Although bull trout are now rarely observed in the Nisqually River (WDFW 1998, p. 117; John Barr, Nisqually Tribe, pers. comm. 2003; Ellings, in litt. 2004, p. 1), historical accounts (Suckley and Cooper 1860, pp. 342–343) suggest that bull trout were much more abundant and likely used this system for spawning and rearing in the past. It is expected that amphidromous bull trout use of the Nisqually River will increase significantly as bull trout populations recover in the Puyallup River core area.

Table 20. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Lower Nisqually River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Lower Nisqually River	Nisqually River	WA	Currently occupied by anadromous bull trout. A migratory adult was observed in a tributary (Clear Creek) to the lower reach in late 1990s (Barr, pers. comm., 2003). The most recent observation was a capture of a 179 mm subadult in the lower Nisqually River in July 2004 (Ellings, in litt. 2004). This is a productive salmon stream believed important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining and increasing the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1226913471008
Puget Sound—Lower Nisqually River	Nisqually River	WA	Currently occupied by anadromous bull trout. A migratory adult was observed in a tributary (Clear Creek) to the lower reach in late 1990s (Barr, pers. comm., 2003). The most recent observation was a capture of a 179 mm subadult in the lower Nisqually River in July 2004 (Ellings, in litt. 2004). This is a productive salmon stream believed important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining and increasing the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1226913471008
Puget Sound—Lower Nisqually River	Nisqually River	WA	Currently occupied by anadromous bull trout. A migratory adult was observed in a tributary (Clear Creek) to the lower reach in late 1990s (Barr, pers. comm., 2003). The most recent observation was a capture of a 179 mm subadult in the lower Nisqually River in July 2004 (Ellings, in litt. 2004). This is a productive salmon stream believed important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining and increasing the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1226913471008

2.11. Chester Morse Lake Critical Habitat Subunit

Chester Morse Lake CHSU is essential to bull trout conservation because it represents the natural expression of a rare life history form within the RU. Its isolated status provides potential refuge for the species from any threat that would largely affect amphidromous populations in the RU. The core area is encompassed by a municipal watershed managed under the Cedar River Watershed Habitat Conservation Plan so habitat is largely protected (see Appendix 1 for more detailed information).

The Chester Morse Lake CHSU is located in the upper Cedar River watershed above a natural migration barrier, lower Cedar Falls. This is a municipal watershed, providing the major source of water for the city of Seattle and surrounding communities within King County. The Chester Morse Lake CHSU includes Chester Morse Lake and its major tributaries, the Cedar and Rex Rivers, and a number of their associated tributaries. It also includes several minor tributaries to Chester Morse Lake. A total of approximately 26.0 km (16.1 mi) of stream and 798.0 ha (1,971.2 ac) of lake surface area is designated as critical habitat. The following water bodies are included in this CHSU (see Table 21):

(A) Chester Morse Lake (716.0 ha (1,769.3 ac)) includes Masonry Pool (82.0 ha (202.6 ac)) and the main lake. Chester Morse Lake provides the primary FMO habitat for a local population of adfluvial bull trout. The lake shoreline also supports juvenile rearing, especially near the mouths of the spawning tributaries. Rack Creek from its confluence with Chester Morse Lake upstream 0.8 km (0.5 mi) to a natural barrier provides spawning and rearing habitat for the local population. Shotgun Creek from its confluence with Chester Morse Lake upstream 0.5 km (0.3 mi) to a natural barrier provides spawning and rearing habitat for the local population.

(B) The following tributaries from their mouths or confluence upstream to natural barriers or confluences provide spawning and rearing habitat: Cedar River from its confluence with Chester Morse Lake upstream 12.9 km (8.0 mi) to its confluence with the North Fork Cedar River and South Fork Cedar River, including slough and side channel habitat in the lower River; an unnamed tributary (stream catalog number 0439) upstream 0.2 km (0.1 mi); North Fork Cedar River from its confluence with the South Fork Cedar River upstream 1.1 km (0.7 mi); and South Fork Cedar River from its confluence with the North Fork Cedar River upstream 1.3 km (0.8 mi) to a manmade barrier.

(C) Rex River from its confluence with Chester Morse Lake upstream 5.0 km (3.1 mi) to a natural barrier and its tributaries—Cabin Creek upstream 1.3 km (0.8 mi) to a natural barrier and Lindsay Creek upstream 0.5 km (0.3 mi) to a natural barrier—provide spawning and rearing habitat for the Chester Morse Lake local population in the Chester Morse Lake core area. Boulder Creek from its confluence with the Rex River upstream 2.4 km (1.5 mi) to a natural barrier provides spawning and rearing habitat for the local population.

Table 21. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Chester Morse Lake CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Chester Morse Lake	North Fork Cedar River	WA	Part of current SR distribution (SPU 2009). Juveniles observed up to the falls (City of Seattle 2000).	North Fork Cedar River provides essential habitat used for rearing and potentially spawning in the Cedar River local population. It is essential for maintaining distribution, abundance, and productivity.	1215199473134
Puget Sound—Chester Morse Lake	South Fork Cedar River	WA	Part of current SR distribution (SPU 2009). Juveniles observed up to the USGS weir which constitutes a seasonal fish passage barrier.	South Fork Cedar River provides essential habitat used for rearing and potentially spawning in the Cedar River local population. It is essential for maintaining distribution, abundance, and productivity.	1215199473144
Puget Sound—Chester Morse Lake	Unnamed trib. (#0439)	WA	Part of current SR distribution (SPU 2009).	This unnamed tributary provides essential habitat used for rearing and potentially spawning in the Cedar River local population. It is essential for maintaining distribution, abundance, and productivity.	1215338473253
Puget Sound—Chester Morse Lake	Lindsay Creek	WA	Part of current SR distribution (SPU 2009).	Lindsay Creek provides essential habitat used for rearing and potentially spawning in the Rex River local population. It is essential for maintaining distribution, abundance, and productivity.	1216595473508
Puget Sound—Chester Morse Lake	Cabin Creek	WA	Part of current SR distribution (SPU 2009).	Cabin Creek provides essential habitat used for spawning and rearing in the Rex River local population. It is essential for maintaining distribution, abundance, and productivity.	1216827473671
Puget Sound—Chester Morse Lake	Boulder Creek	WA	Part of current SR distribution (SPU 2009).	Boulder Creek provides essential habitat used for spawning and rearing in the Boulder Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1216871473708
Puget Sound—Chester Morse Lake	Rex River	WA	Part of current SR distribution, making up one of two primary spawning areas (WDFW 1998; SPU 2009).	This segment of the Rex River provides essential, spawning, rearing, foraging, and migration habitat for adfluvial life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Chester Morse Lake core area. It is essential for directly maintaining connectivity between SR habitats and freshwater (river and lake) FMO habitat.	1216970473867

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Chester Morse Lake	Shotgun Creek	WA	Part of current SR distribution (SPU 2009). Bull trout use was limited to a few 100 meters from the mouth of the reservoir, with sporadic SR use in the past. Removal of barrier culvert in 2001 is anticipated to significantly increase usable SR habitat.	Shotgun Creek would provide essential habitat used for spawning and rearing in the Shotgun Creek local population, if it were successfully reestablished. It would be essential for its contribution to distribution, abundance, and productivity of bull trout within the core area.	1217007 473878
Puget Sound—Chester Morse Lake	Rack Creek	WA	Part of current SR distribution (SPU 2009). Consistent, but low level of spawning annually in accessible reach.	Rack Creek provides essential habitat used for spawning and rearing in the Rack Creek local population. It is essential for maintaining distribution, abundance, and productivity.	1217159 473973
Puget Sound—Chester Morse Lake	Cedar River	WA	Part of current SR distribution, making up one of two primary spawning areas (WDFW 1998; SPU 2009). Multiple age classes observed annually within this reach.	This segment of the Cedar River provides essential spawning, rearing, foraging, and migration habitat for adfluvial life history forms. It is essential to maintaining the current distribution, abundance, and productivity of bull trout within the Chester Morse Lake core area. It is essential for directly maintaining connectivity between SR habitats and freshwater (river and lake) FMO habitat.	1222590 476452.2
Puget Sound—Chester Morse Lake	Chester Morse Lake	WA	Part of current distribution (City of Seattle 2000 and SPU 2009). Primary foraging and overwintering habitat for Chester Morse Lake local population of adfluvial bull trout.	Chester Morse Lake and Masonry Pool provide essential foraging and overwintering habitat for the Cedar River, Rex River, Boulder Creek, and Rack Creek local populations, and Shotgun Creek potential local population, and also provides additional rearing habitat for these local populations. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater FMO habitat and indirectly maintaining abundance and productivity.	1216935 473885
Puget Sound—Chester Morse Lake	Masonry Pool	WA	Part of current distribution (City of Seattle 2000 and SPU 2009). Primary foraging and overwintering habitat for Chester Morse Lake local population of adfluvial bull trout.	Chester Morse Lake and Masonry Pool provide essential foraging and overwintering habitat for the Cedar River, Rex River, Boulder Creek, and Rack Creek local populations, and Shotgun Creek potential local population, and also provides additional rearing habitat for these local populations. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater FMO habitat and indirectly maintaining abundance and productivity.	1217365 474103

2.12. Puyallup River Critical Habitat Subunit

The Puyallup River CHSU is essential to bull trout conservation because it represents the southernmost distribution of amphidromous bull trout in Puget Sound, supports multiple life history expressions, and may represent a key climate change refugium for the species due to the extensive glacially influenced habitat. Extensive portions of the habitat are within a protected area (Mount Rainier National Park) (see Appendix 1 for more detailed information).

The Puyallup River CHSU is located on the western slopes of the Cascade Range. The Puyallup River system is fed primarily by the glaciers of Mount Rainier and flows west, discharging into Puget Sound at Commencement Bay adjacent to the city of Tacoma, Washington. The Puyallup River CHSU includes the Puyallup River and its two major tributary systems, the White River and Carbon River, and their associated tributaries accessible to bull trout. A total of approximately 415.0 km (257.9 mi) of stream is designated as critical habitat. The following water bodies are included in this CHSU (see Table 22):

(A) The Puyallup River from its mouth at Puget Sound upstream approximately 74.3 km (46.2 mi) to its confluence with the North and South Puyallup Rivers provides FMO habitat. It also provides an essential migratory corridor for amphidromous bull trout. The Puyallup River tributaries, Kapowsin Creek upstream 4.8 km (3.0 mi) and Niesson Creek upstream 3.9 km (2.4 mi) to natural barriers, provide FMO habitat for the lower Puyallup River. The following upper Puyallup River tributaries from their mouths upstream provide spawning and rearing habitat for the Upper Puyallup and Mowich Rivers local population: Deer Creek upstream 4.5 km (2.8 mi) to a natural barrier; Swift Creek upstream 1.0 km (0.6 mi) to a natural barrier; South Puyallup River from its confluence with the North Puyallup River upstream 8.0 km (5.0 mi) to its headwaters and its tributary, St. Andrews Creek, upstream 0.3 km (0.2 mi) to Larrupin Falls; and North Puyallup River upstream 6.4 km (4.0 mi) to its headwaters.

(B) Mowich River from its confluence with the Puyallup River upstream 12.1 km (7.5 mi) to its confluence with the North and South Mowich Rivers and North Mowich River upstream 1.6 km (1.0 mi) and South Mowich River upstream 6.6 km (4.1 mi) to their headwaters provide spawning and rearing habitat for the Upper Puyallup and Mowich Rivers' local populations.

(C) Carbon River from its confluence with the Puyallup River upstream approximately 49.0 km (31.0 mi) to accessible headwaters near the mouth of Spukwush Creek provides spawning and rearing habitat for the Carbon River local population upstream of the top of canyon reach near Fairfax Bridge and FMO habitat downstream of the top of canyon reach near Fairfax Bridge. The Carbon River provides an essential migratory corridor for amphidromous bull trout. South Prairie Creek from its mouth upstream 24.1 km (15.0 mi) to a natural barrier provides the primary tributary FMO habitat for the local population. The following tributaries from their mouths upstream to natural barriers or falls provide spawning and rearing habitat for the local population: Poch Creek upstream 0.8 km (0.5 mi); Tolmie Creek upstream 0.8 km (0.5 mi); June Creek upstream 1.1 km (0.7 mi); Falls Creek upstream 1.6 km (1.0 mi); Ranger Creek upstream 0.6 km (0.4 mi) to Ranger Falls; Chenuis Creek upstream 0.2 km (0.1 mi) to Chenuis Falls; an unnamed tributary (just upstream of Chenius Creek) upstream 0.5 km (0.3 mi); Ipsut Creek upstream 1.1 km (0.7 mi) to Isput Falls; and an unnamed tributary (stream catalog number 0565) upstream 0.2 km (0.1 mi).

(D) White River from its confluence with Puyallup River upstream approximately 116.2 km (72.2 mi) to the mouth of Inter Fork provides FMO habitat downstream of its confluence with the Clearwater River and combined rearing and FMO habitat, and potentially spawning habitat, upstream of its confluence. Huckleberry Creek from its mouth upstream 11.4 km (7.1 mi) to a natural barrier provides productive tributary FMO habitat. The following tributaries from their mouths upstream to natural barriers or headwaters provide spawning and rearing habitat for the White River local population: Buck Creek upstream 0.8 km (0.5 mi); Doe Creek upstream 1.6 km (1.0 mi); Silver Creek upstream 0.8 km (0.5 mi); Silver Springs (near Silver Creek) upstream 0.3 km (0.2 mi); an unnamed tributary (stream catalog number 0336) upstream 0.5 km (0.3 mi); Sunrise Creek upstream 0.5 km (0.3 mi); Crystal Creek upstream 0.3 km (0.2 mi); an unnamed tributary ((left bank (LB) 1 upstream of Crystal Creek) upstream 0.3 mi (0.2 mi); an unnamed tributary (LB2 upstream of Crystal Creek) upstream 0.3 km (0.2 mi); an unnamed tributary (right bank (RB) upstream of Crystal Creek) upstream 0.2 km (0.1 mi); Parallel Creek upstream 1.0 km (0.6 mi); Klickitat Creek upstream 0.3 km (0.2 mi); an unnamed tributary (stream catalog number 0364) upstream 0.5 km (0.3 mi); Shaw Creek upstream 1.8 km (1.1 mi); Discovery Creek upstream 1.0 km (0.6 mi); Fryingpan Creek upstream 3.2 km (2.0 mi) to accessible headwaters; and Wright Creek upstream 0.2 km (0.1 mi). Clearwater River from its confluence with the White River upstream 10.4 km (6.5 mi) to a natural barrier provides productive FMO habitat.

(E) Greenwater River from its confluence with the White River upstream 20.1 km (12.5 mi) provides FMO habitat for migratory bull trout and provides connectivity with tributaries that may support spawning and rearing habitat important for recovery once restored.

(F) The following tributaries from their mouths or confluence upstream to natural barriers provide spawning and rearing habitat for the West Fork White River local population: West Fork White River from its confluence with the White River upstream 25.7 km (16.0 mi); Hazzard Creek upstream 0.8 km (0.5 mi); an unnamed tributary (stream catalog number 0194) upstream 0.8 km (0.5 mi); Viola Creek upstream 1.9 km (1.2 mi); Wrong Creek upstream 3.2 km (2.0 mi); Cripple Creek upstream 0.8 km (0.5 mi); an unnamed tributary (stream catalog number 0214) upstream 0.8 km (0.5 mi); an unnamed tributary (stream catalog number 0217) upstream 0.2 km (0.1 mi); an unnamed tributary (stream catalog number 0219) upstream 0.3 km (0.2 mi); Van Horn Creek upstream 0.2 km (0.1 mi); an unnamed tributary (stream catalog number 0234) upstream 0.8 km (0.5 mi); its unnamed tributary (stream catalog number 0226) upstream 0.3 km (0.2 mi); and Lodi Creek upstream 2.9 km (1.8 mi) to Afi Falls.

Table 22. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Puyallup River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Parallel Creek	WA	Spawning bull trout were detected by a radio telemetry project conducted in 2006 by the Puyallup Tribe (Ladley et al. 2007), as well by subsequent spawning surveys in 2008 (Marks in litt. 2009).	Parallel Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1213253 465439
Puget Sound—Puyallup River	Discovery Creek	WA	One of the current bull trout spawning index areas in the White River local population surveyed by the Puyallup Tribe (Marks, in litt. 2009). Bull trout spawning first detected in 2007 (Marks, in litt. 2009).	Discovery Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1213411 465400
Puget Sound—Puyallup River	Unnamed trib. (#0219)	WA	Recently confirmed as bull trout spawning stream during survey efforts conducted by the Puyallup Tribe (Marks, in litt. 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the West Fork White River local population. It is essential for maintaining distribution, abundance, and productivity.	1214216 465923
Puget Sound—Puyallup River	Silver Creek	WA	Spawning bull trout were detected by a radio telemetry project conducted in 2006 by the Puyallup Tribe (Ladley et al. 2007), as well by subsequent stream surveys conducted in 2008 (Marks, in litt. 2009).	Silver Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity. It is only one of two spawning areas for bull trout that have been located outside of Mt Rainier National Park (Ladley et al. 2007).	1215289 469993
Puget Sound—Puyallup River	Silver Springs	WA	Part of current distribution (WDFW 2002). Adult bull trout and redds observed annually, with only two redds observed in 2008 (Marks, in litt. 2009).	Silver Springs provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity. It is only one of two spawning areas for bull trout that have been located outside of Mt Rainier National Park (Ladley et al. 2007).	1215314 469975
Puget Sound—Puyallup River	Doe Creek	WA	Connected to occupied stream (White River). Stream is within the home watershed of a known local population (Upper White River) of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215519 470281
Puget Sound—Puyallup River	Buck Creek	WA	Connected to occupied stream (White River). Stream is within the home watershed of a known local population (Upper White River) of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215542 470286

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Shaw Creek	WA	One of the current bull trout spawning index areas in the White River local population surveyed by the Puyallup Tribe (Marks, in litt. 2009).	Shaw Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215669 469003
Puget Sound—Puyallup River	Huckleberry Creek	WA	A large adult migratory bull trout observed in 1989, during pre-spawn migration period (Stagner, pers. comm. 2003). Stream is within the home watershed of a known local population of bull trout. Stream has not been extensively surveyed for bull trout. Upper reaches are within the Mount Rainier National Park so habitat is relatively pristine. However, no bull trout spawners were tracked moving into this system during recent radio telemetry surveys conducted in the White River (Ladley et al. 2007).	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1215848 470793
Puget Sound—Puyallup River	Fryingpan Creek	WA	Part of current distribution (MRNP 2009). Young of year and juvenile bull trout observed in 1993 (MRNP, in litt. 2001). One of the current bull trout spawning index areas in the White River local population surveyed by the Puyallup Tribe (Marks, in litt. 2009).	Fryingpan Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1216006 468910
Puget Sound—Puyallup River	West Fork White River	WA	Part of current distribution (MRNP 2009). Juvenile and subadult bull trout captured during electrofishing surveys in 1993 (WDFW 1998).	This segment of the White River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and maintaining abundance and productivity.	1216181 471251
Puget Sound—Puyallup River	Greenwater River	WA	Part of current distribution (WDFW 2002). In early 1990s, an adult migratory bull trout observed during summer snorkel survey (Stagner, pers. comm., 2003). Bull trout were also observed in August 1991 between river mile 3 and 4 during USFS surveys (USFS, in litt. 1991). Adult bull trout observed at approximately river mile 11.7 in June 2004 (Schuett-Hames, in litt. 2004). However, no bull trout spawners were tracked moving into this system during recent radio telemetry surveys conducted in the White River (Ladley et al. 2007).	The Greenwater River provides foraging, migration, and overwintering habitat, but recent telemetry efforts indicate it is unlikely to continue to provide spawning habitat for fluvial and anadromous life history forms as previously proposed. However, it is believed to provide essential FMO habitat for the migratory life history form utilizing the White River system. It is also essential for maintaining the opportunity for migratory bull trout (either the remnant population or recolonizers) to use potential tributary spawning and rearing habitats in the Greenwater system and migrate to FMO habitats in the mainstem White River and Puget Sound.	1216586 471586

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Hazzard Creek	WA	Connected to occupied stream (West Fork White River). Stream is within the home watershed of a known local population (West Fork White River) of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216797 470777
Puget Sound—Puyallup River	Unnamed trib. (#0194)	WA	Connected to occupied stream (West Fork White River). Stream is within the home watershed of a known local population (West Fork White River) of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216814 470716
Puget Sound—Puyallup River	Cripple Creek	WA	Juvenile bull trout observed during USFS survey conducted in August 1981(USFS, in litt. 1982). Cold water temperatures were noted, 8 C at top of reach and 12 C at the mouth.	Cripple Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1216920 470484
Puget Sound—Puyallup River	Wrong Creek	WA	Connected to occupied stream (West Fork White River). Stream is within the home watershed of a known local population (West Fork White River) of bull trout. Stream has not been extensively surveyed for bull trout, but in close proximity to known rearing distribution. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216930 470494
Puget Sound—Puyallup River	Viola Creek	WA	Connected to occupied stream (West Fork White River). Stream is within the home watershed of a known local population (West Fork White River) of bull trout. Stream has not been extensively surveyed for bull trout, but in close proximity to known rearing distribution. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1216933 470520
Puget Sound—Puyallup River	Lodi Creek	WA	Juvenile bull trout observed during surveys in 2000 (MRNP, in litt. 2001).	Lodi Creek provides essential habitat used for spawning and rearing in the West Fork White River local population. It is essential for maintaining distribution, abundance, and productivity.	1217047 469600
Puget Sound—Puyallup River	Unnamed trib. (#0234)	WA	Young of year and juvenile bull trout observed during surveys in 2000 (MRNP, in litt. 2001).	This unnamed tributary provides essential habitat used for spawning and rearing in the West Fork White River local population. It is essential for maintaining distribution, abundance, and productivity.	1217124 469651
Puget Sound—Puyallup River	Ipsut Creek	WA	Part of current distribution (MRNP 2009). Bull trout were noted to be present in this stream in 1966 (Drake 1995). Small subadult sized bull trout observed in 1995 (Samora, in litt. 1998).	Isput Creek provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1218321 469795

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Clearwater River	WA	Part of current distribution (WDFW 2002). An adult bull trout observed in fall of 1998 (Nelson, in litt. 2003). It is a productive salmon stream important for seasonal foraging by migratory bull trout. However, no bull trout spawners were tracked moving into this system during recent radio telemetry surveys conducted in the White River (Ladley et al. 2007).	This segment of the Clearwater River provides foraging, migration, and overwintering habitat, but recent telemetry efforts indicate it is unlikely to provide spawning habitat for fluvial and anadromous life history forms as previously proposed. However, it is believed to provide essential FMO habitat for the migratory life history form utilizing the White River system.	1218328 471463
Puget Sound—Puyallup River	Chenuis Creek	WA	Part of current distribution (MRNP 2009). Bull trout were noted to be present in this stream in 1966 (Drake 1995). Juvenile and subadult bull trout observed in 1995 (Samora, in litt. 1998).	Chenuis Creek provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1218423 469924
Puget Sound—Puyallup River	Ranger Creek	WA	Part of current distribution (MRNP 2009). Bull trout were noted to be present in this stream in 1966 (Drake 1995). Juvenile and subadult bull trout observed in 1995 (Samora, in litt. 1998), and redds observed in 2000 (Marks et al. 2002).	Ranger Creek provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1218529 469967
Puget Sound—Puyallup River	South Mowich River	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009; Wright, pers. comm. 2009).	This segment of the South Mowich River provides essential spawning and rearing, habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1218940 469164
Puget Sound—Puyallup River	Tolmie Creek	WA	Connected to occupied stream (Carbon River). Stream is within the home watershed of a known local population (Carbon River) of bull trout, near identified mainstem spawning distribution (WDFW 2002). Stream has not been extensively surveyed for bull trout, but in close proximity to known spawning distribution. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219426 469905
Puget Sound—Puyallup River	North Puyallup River	WA	Connected to occupied stream (South Puyallup River). Stream is within the home watershed of a known local population (Upper Puyallup and Mowich Rivers) of bull trout. Habitat is accessible but has not been surveyed by the NPS (Wright, in litt. 2009).	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219494 468640
Puget Sound—Puyallup River	South Puyallup River	WA	Part of current distribution (MRNP 2009). Large juvenile or subadult observed in 1993 (Samora, in litt. 1998).	South Puyallup River provides essential habitat used for spawning and rearing in the Upper Puyallup and Mowich Rivers' local population. It is essential for maintaining distribution, abundance, and productivity.	1219494 468650

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Poch Creek	WA	Connected to occupied stream (Carbon River). Stream is within the home watershed of a known local population (Carbon River) of bull trout, and near identified mainstem spawning distribution (WDFW 2002). Stream has not been extensively surveyed for bull trout. It is a productive salmon stream important for at least seasonal foraging by migratory bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219578 469940
Puget Sound—Puyallup River	Swift Creek	WA	Part of current distribution (WDFW 2002). Stream is within the home watershed of a known local population of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219625 468704
Puget Sound—Puyallup River	Deer Creek	WA	Part of current distribution (WDFW 2002). Stream is within the home watershed of a known local population of bull trout. Stream has not been extensively surveyed for bull trout.	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219729 468734
Puget Sound—Puyallup River	Mowich River	WA	Currently occupied by migratory bull trout (WDFW 2002). Subadult bull trout observed near the confluence of the North and South Mowich Rivers in 2000 (MRNP, in litt. 2001). Populations of bull trout have been fragmented above and below the confluence of the Mowich and Puyallup Rivers for nearly 100 years by Electron Diversion Dam. Anadromous passage was restored in October 2000.	This segment of the Mowich River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1220296 469007
Puget Sound—Puyallup River	Niesson Creek	WA	Productive salmon stream and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. This is one of only a few significant FMO tributaries to the mainstem Puyallup River available to bull trout.	1220449 469126

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Kapowsin Creek	WA	Productive salmon stream and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs. This is one of only a few significant FMO tributaries to the mainstem Puyallup River available to bull trout.	1222034 470316
Puget Sound—Puyallup River	Carbon River	WA	Currently occupied by migratory bull trout (WDFW 2002). Several individuals caught by anglers in early October 2003 near Orting (Reynolds, pers comm. 2003).	This segment of the Carbon River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222316 471303.1
Puget Sound—Puyallup River	White River	WA	Currently occupied by migratory bull trout (WDFW 2002). An average of 25 migratory individuals are annually passed upstream over Buckley Diversion, 41 bull trout were passed in 2002 (USACOE, in litt. 2003) and 49 and 45 in 2003 and 2004, respectively (USACOE, in litt. 2005).	This segment of the White River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222573 471997.1
Puget Sound—Puyallup River	White River	WA	Part of current distribution (WDFW 2002; MRNP 2009). Juvenile and subadult bull trout captured between river mile 43 and 53 during electrofishing surveys in 1993 (WDFW 1998). Subadults and adults have been targeted by anglers in this reach (Herzog 1993).	This segment of the White River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and maintaining abundance and productivity.	1222573 471997.3
Puget Sound—Puyallup River	Puyallup River	WA	Currently occupied by migratory bull trout (WDFW 2002).	This segment of the Puyallup River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1224252 472685.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Puyallup River	WA	Part of current distribution (WDFW 2002). Spawning and juvenile rearing use in extreme lower reaches.	This segment of the Puyallup River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1224252 472685.2
Puget Sound—Puyallup River	St. Andrews Creek	WA	Part of current distribution (WDFW 2002). Advanced juvenile or subadult observed in 1993 near mouth (Samora, in litt. 1998). Bull trout use confirmed during survey efforts conducted by National Park Service (Wright, pers. comm. 2009).	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1219201 468375
Puget Sound—Puyallup River	North Mowich River	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009; Wright, pers. comm. 2009).	The draft recovery chapter identifies these accessible tributary streams within local populations as essential to maintaining the current distribution, abundance, and productivity of bull trout within the core area.	1218940 469154
Puget Sound—Puyallup River	June Creek	WA	A pair of spawning adults (15-17 inches long) was observed in October of 2005 (Rudolph, in litt. 2005). Fish access was recently restored above a blocking culvert (Wright, pers. comm. 2009), and bull trout use was confirmed above this point during recent survey efforts conducted by National Park Service (MRNP 2009)	June Creek provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1219119 469968
Puget Sound—Puyallup River	Falls Creek	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	Falls Creek provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1218733 469999
Puget Sound—Puyallup River	Unnamed trib. upstream Chenius Ck	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1218423 469925
Puget Sound—Puyallup River	Unnamed trib. (#0565)	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the Carbon River local population. It is essential for maintaining distribution, abundance, and productivity.	1217918 469614
Puget Sound—Puyallup River	Unnamed trib. (#0217)	WA	Young of year and juvenile bull trout observed during surveys in 2000 (MRNP, in litt. 2001).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1217037 469929

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Unnamed trib. (#0226)	WA	Young of year and juvenile bull trout observed during surveys in 2000 (MRNP, in litt. 2001).	This unnamed tributary provides essential habitat used for spawning and rearing in the West Fork White River local population. It is essential for maintaining distribution, abundance, and productivity.	1217103 469619
Puget Sound—Puyallup River	Unnamed trib. upstream of (#0214)	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1216996 469968
Puget Sound—Puyallup River	Unnamed trib. (#0336)	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215405 469765
Puget Sound—Puyallup River	Sunrise Creek	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	Sunrise Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215386 469715
Puget Sound—Puyallup River	Crystal Creek	WA	Part of current distribution (MRNP 2009). Juvenile bull trout observed in 2000 (MRNP, in litt. 2001).	Crystal Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215365 469286
Puget Sound—Puyallup River	Unnamed trib. (LB1) upstream of Crystal Ck	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215438 469252
Puget Sound—Puyallup River	Unnamed trib. (LB2) upstream of Crystal Ck	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215432 469232
Puget Sound—Puyallup River	Unnamed trib. (RB) upstream of Crystal Creek	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215418 469196
Puget Sound—Puyallup River	Klickitat Creek	WA	One of the current bull trout spawning index areas in the White River local population surveyed by the Puyallup Tribe (Marks, in litt. 2009). A peak count of 13 adults and 14 redds were observed in 2008. Juveniles also observed in pools and lateral habitats during surveys (MRNP, in litt. 2001; Marks et al. 2002).	Klickitat Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215484 469083

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Unnamed trib. (#0364)	WA	Juvenile bull trout observed in 2000 (MRNP, in litt. 2001). One of the current bull trout spawning index areas in the White River local population surveyed by the Puyallup Tribe (Marks, in litt. 2009).	This unnamed tributary provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1215593 469046
Puget Sound—Puyallup River	Wright Creek	WA	One of the current bull trout spawning index areas in the White River local population surveyed by Puyallup Tribe (Marks, in litt. 2009).	This tributary to Fryingpan Creek provides essential habitat used for spawning and rearing in the White River local population. It is essential for maintaining distribution, abundance, and productivity.	1216140 468781
Puget Sound—Puyallup River	Carbon River	WA			1222316 471303.1
Puget Sound—Puyallup River	White River	WA	Part of current distribution (WDFW 2002).	This segment of the White River provides essential foraging, migration, and overwintering habitat, and potentially rearing habitat for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222573 471997.2
Puget Sound—Puyallup River	Van Horn Creek	WA	Bull trout use confirmed during survey efforts conducted by National Park Service (MRNP 2009).	Van Horn Creek provides essential habitat used for spawning and rearing in the West Fork White River local population. It is essential for maintaining distribution, abundance, and productivity.	1217167 469774
Puget Sound—Puyallup River	South Prairie Creek	WA	Very productive salmon stream and likely important for seasonal foraging by migratory bull trout. Currently accessible to anadromous and fluvial bull trout.	The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for bull trout. This stream is also included as a shoreline under the Washington State's Shoreline Management Act, since its mean annual flow is greater than 20 cfs.	1221544 470981
Puget Sound—Puyallup River	Carbon River	WA	Part of current SR distribution (Samora, in litt. 1997; MRNP 2009). Adult and subadult bull trout observed during night snorkel surveys (Craig, in litt. 2000).	This segment of the Carbon River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222316 471303.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puyallup River	Carbon River	WA	Part of current SR distribution (Samora, in litt. 1997; MRNP 2009). Adult and subadult bull trout observed during night snorkel surveys (Craig, in litt. 2000).	This segment of the Carbon River provides essential rearing, foraging, migration, and overwintering habitat, and potentially spawning for fluvial and anadromous life history forms. It is essential for directly providing and maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1222316 471303.2

2.13. Puget Sound Marine Critical Habitat Subunit

The Puget Sound Marine CHSU is essential to bull trout conservation and for supporting the expression of the amphidromous life history form in the Puget Sound region. It contains essential FMO habitat required for the expression of the amphidromous life history form within the Puget Sound CHU (see Appendix 1for more detailed information).

The estuarine and marine waters of Puget Sound provide foraging and migration habitat for amphidromous bull trout outside of freshwater core areas. Amphidromous bull trout use nearshore habitat along the eastern shore of Puget Sound from the U.S.–Canadian border south to the Nisqually River delta. Bull trout have also been documented using the nearshore habitat of islands along this eastern shore, especially in the northern part of the sound. The extent of bull trout use along the western Puget Sound shoreline is not well known, but available information suggests it is used to a much lesser degree than the eastern shore. The current distribution data for bull trout most likely under represent the amount of occupied marine nearshore habitat due to the depressed status of some amphidromous bull trout populations; the seasonal and temporal variability in their migratory behavior; and perhaps most importantly, the difficulty of sampling for subadult and adult life stages in large estuarine and marine environments. The Puget Sound Marine CHSU includes the estuarine and nearshore areas along Puget Sound shorelines. A total of approximately 911 km (566 mi) of marine and estuarine shoreline is designated as critical habitat. The following water bodies are included in this CHSU (see Table 23):

(A) The eastern shoreline of Puget Sound (208.2 km (129.4 mi)) from the U.S.–Canadian border to Harbor Park (Fidalgo Island), and from Sares Head (Fidalgo Island) to Nisqually Head at the southern end of the Nisqually River delta—including associated bays and estuaries and Swinomish Channel (10.5 km (6.5 mi))—provide important marine foraging and migration habitat for amphidromous bull trout.

(B) The shorelines of Lummi Island (eastern shoreline from Village Point to Carter Point) (21.6 km (13.4 mi)); Portage Island (12.9 km (8.0 mi)); Guemes Island (eastern shoreline from Southeast Point to Clark Point) (9.8 km (6.1 mi)); Whidbey Island (eastern shoreline from north end of West Beach to Possession Point) (146.6 km (91.1 mi)); Hope Island (4.0 km (2.5 mi)); Goat Island (2.9 km (1.8 mi)); Ika Island (3.7 km (2.3 mi)); Gedney Island (6.8 km (4.2 mi)); and Vashon Island (southeastern shoreline from northeast Summerhurst to Neill Point) (26.2 km (16.3 mi)) all provide marine foraging and migration habitat for amphidromous bull trout. Bull trout have been documented in nearshore areas around Lummi, Whidbey, and Ika Islands. The remaining identified island shorelines are presumed occupied based on their proximity to known occupied areas, documented use along similar shorelines, and forage fish availability.

Table 23. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Puget Sound—Puget Sound Marine CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puget Sound Marine	Eastern Shoreline Puget Sound (North)	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-01
Puget Sound—Puget Sound Marine	Eastern Shoreline Puget Sound (South)	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-01
Puget Sound—Puget Sound Marine	Eastern Shorline Lummi Island	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-02
Puget Sound—Puget Sound Marine	Portage Island	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-03
Puget Sound—Puget Sound Marine	Eastern Shoreline Whidbey Island	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-05
Puget Sound—Puget Sound Marine	East Duwamish Waterway	WA	Currently occupied by anadromous bull trout (Shannon, in litt. 2001, 2003). Lower river reach of productive salmon system important for seasonal foraging by anadromous bull trout.	The draft recovery chapter identifies this waterbody used by anadromous bull trout, but currently lying outside of designated core areas, as essential to maintaining the current distribution, abundance, and productivity of bull trout within the recovery unit. The draft recovery chapter explicitly identifies as essential and biologically important accessible habitat occupied by anadromous salmonids which provide an important forage base for anadromous bull trout.	1223430475891
Puget Sound—Puget Sound Marine	Eastern Shoreline Guemes Island	WA	Shoreline in close proximity to known occupied shorelines and accessible to anadromous bull trout. See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Has not been specifically surveyed for bull trout. Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-04

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puget Sound Marine	Hope Island	WA	Shoreline in close proximity to known occupied shorelines and accessible to anadromous bull trout. See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Has not been specifically surveyed for bull trout. Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-06
Puget Sound—Puget Sound Marine	Goat Island	WA	Shoreline in close proximity to known occupied shorelines and accessible to anadromous bull trout. See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Has not been specifically surveyed for bull trout. Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-07
Puget Sound—Puget Sound Marine	Gedney Island	WA	Shoreline in close proximity to known occupied shorelines and accessible to anadromous bull trout. See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Has not been specifically surveyed for bull trout. Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-08
Puget Sound—Puget Sound Marine	Southeastern Shoreline Vashon Island	WA	Shoreline in close proximity to known occupied shorelines and accessible to anadromous bull trout. See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Has not been specifically surveyed for bull trout. Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-09
Puget Sound—Puget Sound Marine	Ika Island	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).		M-PS-MR-10
Puget Sound—Puget Sound Marine	Union Slough	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221901 480344

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Puget Sound—Puget Sound Marine	Steamboat Slough	WA	Currently occupied by migratory bull trout (WDFW 1998; Goetz, in litt. 2003).	This segment of the Snohomish River provides essential foraging, migration, and overwintering habitat for fluvial and anadromous life history forms. It is essential for directly maintaining connectivity between SR habitats and freshwater and marine FMO habitat and indirectly maintaining abundance and productivity.	1221506 480015
Puget Sound—Puget Sound Marine	Eastern Shoreline Whidbey Island	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-05
Puget Sound—Puget Sound Marine	Eastern Shoreline Puget Sound (South)	WA	See point distribution map of marine observations in Puget Sound (Service, in litt. 2005a). Includes important forage fish spawning areas (WDFW 2000), which bull trout are known to target (WDFW et al. 1997).	See "Puget Sound CHU" justification text, above	M-PS-MR-01

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 3. Coastal Recovery Unit—Lower Columbia River Basins Critical Habitat Unit

Chapter 3. Lower Columbia River Basins Critical Habitat Unit

The Lower Columbia River Basins CHU is essential for maintaining bull trout distribution within this unique geographic region of the Coastal RU. It is also essential for maintaining broad distribution of the migratory life history form within the lower Columbia River basin that may still have the potential to re-express amphidromy. See Appendix 1 for more detailed information.

The Lower Columbia River Basins CHU consists of portions of the Lewis, White Salmon, and Klickitat Rivers and associated tributaries in southwestern and south-central Washington. The CHU extends across Clark, Cowlitz, Klickitat, Skamania, and Yakima Counties. Approximately 360.9 km (224.3 mi) of stream and 4,856.1 ha (11,999.7 ac) of reservoir surface area are designated as critical habitat. There are three bull trout local population in the Lewis River watershed and one in the Klickitat River watershed.

3.1. Lewis River Critical Habitat Subunit

The Lewis River CHSU is essential to bull trout conservation because it has one of the most abundant populations in the lower Columbia region of the RU. A recent Federal Energy Regulatory Commission (FERC) settlement agreement will provide future connectivity to the mainstem Columbia River (see Appendix 1 for more detailed information).

The Lewis River CHSU is located along the southern slopes of Mount Saint Helens. The Lewis River system flows southwest from the Cascade Range, passing through a series of reservoirs (Swift Creek Reservoir, Yale Lake, and Lake Merwin) before flowing into the mainstem Columbia River. Designated critical habitat in the Lewis River CHSU covers approximately 98.0 km (61.0 mi) of stream and 5,050 ha (12,480 ac) of lake surface area. The following water bodies are included in this CHSU (see Table 24):

(A) The lower Lewis River from its confluence with the Columbia River upstream 31.4 km (19.5 mi) to Merwin Dam provides important foraging and overwintering habitat and connectivity to the Columbia River, especially once fish passage at Merwin, Yale, and Swift Dams is fully restored. Restoring connectivity among local population and to the Columbia River is necessary to maintain opportunities for genetic exchange, counter founder effects (extreme genetic drift that occurs when a new population is based on only a few individuals), and provide migratory bull trout access to additional foraging and overwintering habitat.

(B) Merwin Reservoir (1,548.3 ha (3,825.9 ac)), which inundates approximately 23.8 km (14.8 mi) of the Lewis River, provides foraging and overwintering habitat to allow maturation of bull trout trapped below Yale Dam until they can be transported to Cougar Creek as spawners. The reservoir will also serve as a key migration corridor for migratory bull trout moving to and from the Columbia River once fish passage has been restored.

(C) Yale Lake (1,457.5 ha (3,601.6 ac)) which inundates approximately 21.4 km (13.3 mi) of the Lewis River, and Lewis River's Swift bypass reach from Yale Lake upstream 4.3 km (2.7 mi) to the confluence of the Swift No. 1 spillway channel and Upper Release Point channel, provide essential foraging and overwintering habitat to support the Cougar Creek local population and to allow bull trout from the Pine Creek and Rush Creek local population that are trapped below Swift Dam to mature until they can be transported upstream to Swift Creek Reservoir. The reservoir will also serve as a key migration corridor for migratory bull trout moving to and from the upper and lower reservoirs and the Columbia River once fish passage has been restored. Cougar Creek from its confluence with Yale Lake upstream 3.0 km (1.9 mi) to a lava tube barrier provides the only spawning and rearing habitat for the Cougar Creek local population.

(D) Swift Creek Reservoir (1,850.3 ha (4,572.2 ac)), which inundates approximately 18.5 km (11.5 mi) of the Lewis River, provides essential foraging and overwintering habitat to support the Pine Creek and Rush Creek . The reservoir will also serve as a key migration corridor for migratory bull trout moving to and from the lower reservoirs and the Columbia River once fish passage has been restored. Swift Creek from the end of the Swift Arm segment of the reservoir upstream 0.5 km (0.3 mi) to a barrier falls and Drift Creek from its mouth upstream 2.6 km (1.6 mi) to a natural barrier provide tributary foraging and overwintering habitat in the Swift Creek Reservoir for the two bull trout local population that spawn in Rush and Pine Creeks.

(E) Upper Lewis River from the eastern edge of Swift Creek Reservoir upstream 21.1 km (13.1 mi) to Lower Lewis River Falls provides rearing, foraging, and migration habitat for the Pine Creek and Rush Creek . The Muddy River from its mouth upstream 14.2 km (8.8 mi) to its confluence with Clear Creek provides essential foraging and overwintering habitat to support the Pine Creek and Rush Creek. The Muddy River was severely impacted by the eruption of Mount Saint Helens, which largely eliminated bull trout use of this stream for many years. However, bull trout's renewed use of this stream has recently been documented and is expected to increase as habitat conditions continue to improve.

(F) Pine Creek from its confluence with the Lewis River upstream 11.7 km (7.3 mi) to its headwaters provides spawning and rearing habitat for the Pine Creek local population. It also serves as a key migration corridor between spawning and rearing tributary habitats and downstream FMO habitats in the Lewis River CHSU. The following tributaries from their mouths upstream to natural barriers or headwaters provide spawning and rearing habitat for the Pine Creek local population: unnamed tributary (P7 stream) upstream 1.1 km (0.7 mi); unnamed tributary (P8 stream) upstream 4.8 km (3.0 mi); and unnamed tributary (P10 stream) upstream 1.0 km (0.6 mi).

(G) Rush Creek from its confluence with the Lewis River upstream 2.9 km (1.8 mi) to a barrier falls provides the only spawning and rearing habitat for the Rush Creek local population.

Table 24. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Columbia River Basins—Lewis River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Lewis River	Rush Creek	WA	Migrating adults use Rush Creek (Faler and Bair 1996, Lesko 2002). Bull trout migrating into Rush Creek included 78 percent, 56 percent, and 60 percent of radio-tagged individuals in 1990, 1991, and 1994 respectively (Faler and Bair 1996).	Rush Creek is essential because it currently provides the most important spawning and rearing habitat for bull trout in the Lower Columbia Management Unit. This habitat is necessary for the long-term persistence of this local population, which is the most likely source for local population refounding.	1219365 460747
Lower Columbia River Basins—Lewis River	Muddy River	WA	Five adult bull trout were observed during snorkel surveys in August 2008 (J. Byrne, pers comm. 2009).	Prior to the 1980 eruption of Mt. St. Helens, bull trout were known to occur in the Muddy River (WDG 1957). This eruption has resulted in long-term impacts to the system's water quality and only recently have bull trout been redetected within the system. The number of bull trout using this system appears to be increasing (J. Byrne, pers comm. 2009). Given its historic and current use, and anadromous salmon recovery efforts within the Lewis River system, the Muddy River likely provides essential FMO habitat for recovery of Lewis River bull trout.	1220053 460695
Lower Columbia River Basins—Lewis River	Pine Creek	WA	Migrating adults have been documented using Pine Creek (Faler and Bair 1996, Lesko 2002). Bull trout migrating into Pine Creek included 11 percent, 31 percent, and 20 percent of radio-tagged individuals in 1990, 1991, and 1994 respectively (Faler and Bair 1996).	Pine Creek is essential as it is one of only two tributaries providing spawning and rearing habitat for Swift Creek Reservoir bull trout. Pine Creek is one of the largest local populations in the Lower Columbia Management Unit. Pine Creek is a major bull trout spawning stream due to larger substrate, cold water, and high water velocity.	1220157 460714
Lower Columbia River Basins—Lewis River	Unnamed trib. ('P7')	WA	WDFW electrofished a juvenile bull trout in this tributary in 2006 (Doyle in litt 2009a,b). Seven juvenile bull trout (94.0-177.8 mm (3.7-7.0 in)) were electrofished in 1989 (R. Lucas, WDFW, pers. comm. 1998). Although specific S/R areas have not been identified, PacifiCorps and Cowlitz County PUD (2000) describe this tributary as having very good salmonid habitat.	This specific tributary to Pine Creek was not identified in the draft recovery plan; however, P7 provides essential spawning and rearing habitat for the Pine Creek local population.	1220580 460924
Lower Columbia River Basins—Lewis River	Unnamed trib. ('P8')	WA	Thirty juvenile bull trout were captured via electrofishing and 20 bull trout redds observed in 2008 (WDFW in litt 2009)	This specific tributary to Pine Creek was not identified in the draft recovery plan; however, P8 provides essential spawning and rearing habitat for the Pine Creek local population.	1220623 461037

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Lewis River	Unnamed trib. ('P10')	WA	Juvenile bull trout were captured just upstream of the mouth of this tributary in 2006 (Cook et al. 2009).	This specific tributary to Pine Creek was not identified in the draft recovery plan; however, P10 provides essential spawning and rearing habitat for the Pine Creek local population.	1220762 461197
Lower Columbia River Basins—Lewis River	Swift Creek	WA	A total of 22 adult-size bull trout were encountered during snorkel and angling surveys conducted between July and September of 2007 (Doyle 2008). A subadult bull trout (182 mm) was recently documented within the system during electrofishing surveys (Doyle in litt. 2009b), which indicates Swift Creek may also provide SR habitat.	Bull trout were only recently (2006) detected in this tributary to Swift Reservoir (Doyle 2008). It has not yet been determined if the bull trout observed in this stream represent a new local population. Although no spawning and rearing habitat has been located yet within Swift Creek, it does provide essential FMO habitat for the Swift Creek Reservoir bull trout.	1221914 460625
Lower Columbia River Basins—Lewis River	Cougar Creek	WA	Part of the current distribution. Adult adfluvial bull trout observed annually returning to Cougar Creek (Service 2002a). Twenty-nine bull trout redds where observed in 2008 (Doyle in litt 2009a,b).	Cougar Creek is occupied and is essential as it is the only tributary providing spawning and rearing habitat for the Cougar Creek local population of bull trout in Yale Lake.	1222887 460502
Lower Columbia River Basins—Lewis River	Lewis River (Lower)	WA	Bull trout are occasionally documented below Merwin Dam. There have been two verified sightings below Merwin Dam and anecdotal reports of bull trout caught in the lower reaches of the Lewis River. An occasional bull trout has been captured in the ladder at the hatchery below the dam; the last known capture was in 1992 (PacifiCorp and Cowlitz County PUD 2001, Service 2002a).	The lower mainstem Lewis River will provide FMO habitat when fish passage at Merwin, Yale, and Swift Dams is restored. Restoring connectivity among local populations and to the Columbia River is necessary to maintain opportunities for genetic exchange, local population refounding, and access to additional FMO habitat (Rieman and McIntyre 1993; Service 2002a). Reestablishing connectivity within the Columbia River basin will require restoration of Lewis River bull trout's access to the Columbia River for foraging, migrating, and overwintering. Providing access to adequate riverine FMO habitats will be necessary to maintain fluvial forms in the Lewis River basin.	1227824 458504.1
Lower Columbia River Basins—Lewis River	Lewis River (Swift bypass)	WA	Part of the current distribution. Bull trout have been routinely observed in the Swift bypass reach on an annual basis since 2004 (WDFW, in litt. 2010).	The Lewis River Swift bypass reach provides additional FMO habitat for bull trout upstream of Yale Dam. This reach may also be important for supporting connectivity between Yale and Swift Reservoirs depending on where future fish passage facilities are located. Reestablishing connectivity within the Columbia River basin will require restoration of Lewis River bull trout's access to the Columbia River for foraging, migrating, and overwintering. Providing access to adequate riverine FMO habitats will be necessary to maintain fluvial forms, and in this case possibly adfluvial forms, in the Lewis River basin.	1227824 458504.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Lewis River	Lewis River (Upper)	WA	Part of the current distribution. An adult bull trout was found at the base of the lower falls in Summer 2001 (Frank Shrier, PacifiCorp, pers. comm. 2002, Service 2002a).	Upper Lewis River is essential as it is currently occupied FMO habitat and provides connectivity with spawning and rearing habitat in Pine and Rush Creeks for two of the three local populations in the core area.	1227824 458504.3
Lower Columbia River Basins—Lewis River	Drift Creek	WA	Two subadult bull trout (greater than 250 mm) were captured during electrofishing surveys of a 200 meter reach of Drift Creek in 2009 (J. Byrne, pers comm. 2009).	Drift Creek is believed to provide important tributary FMO habitat for subadult bull trout. Subadult use of non-natal tributaries to Swift Creek Reservoir appears to be limited to only a few streams. Given the number of bull trout recently observed in the short reach that was surveyed, Drift Creek is believed to provide habitat essential for recovery of Swift Creek Reservoir bull trout.	1220767 460500
Lower Columbia River Basins—Lewis River	Lake Merwin	WA	Adult bull trout, apparently attempting to migrate upstream, have been observed in the Yale Dam tailrace. From 1995 to 2008, 65 bull trout have been captured at the Yale Dam tailrace and transported to the mouth of Cougar Creek (Doyle in litt. 2009a,b). Bull trout transported to Cougar Creek from Lake Merwin as spawners probably have contributed significantly to the spawning population, ranging from 7 percent in 2002 to 28 percent in 1995. However, there were no Lake Merwin spawners released into Cougar Creek in 1999 or 2001 (Lesko 2003). In 1999 six bull trout (ranging from 14 to 28 inches (362 to 715 millimeters) were marked and released back into the tailrace (Lesko 2000). No bull trout were captured or seen in the tailrace in 2001 (Lesko 2002). In 2008, 15 bull trout were caught and transported (Doyle in litt. 2009a).	Lake Merwin provides essential FMO habitat to allow bull trout trapped below Yale Dam to mature until they are transported to Cougar Creek as spawners. Lake Merwin would also provide FMO habitat for a local population if one could be established in one of its tributary streams. Currently, there are no known spawning tributaries to Lake Merwin. This reservoir also provides a part of the critical migratory corridor between upstream spawning and rearing areas and FMO habitat within the mainstem Lewis and Columbia Rivers.	1224661 459772
Lower Columbia River Basins—Lewis River	Swift Reservoir	WA	Part of the current distribution. Adult adfluvial bull trout observed annually returning to Rush and Pine Creeks (Service 2002a).	Swift Reservoir is essential as it provides FMO habitat for the adfluvial life history form in the Rush and Pine Creek local populations, two of only three local populations in the Lewis Core Area. This reservoir also provides a part of the critical migratory corridor between these spawning and rearing areas and FMO habitat within the mainstem Lewis and Columbia Rivers.	1221143 460556

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Lewis River	Yale Lake	WA	Part of the current distribution. Adult adfluvial bull trout observed annually returning to Cougar Creek (Service 2002a).	Yale Lake is essential as it provides the only FMO habitat for the Cougar Creek local population. A 3.2-mi (5.2-km) power canal diverts water from the Swift Number 1 tailrace downstream to the Swift Number 2 powerhouse, resulting in the bypass of the old river channel (Swift bypass reach). This reservoir provides a part of the critical migratory corridor between the spawning and rearing areas used by the Rush and Pine Creek local populations and FMO habitat within the mainstem Lewis and Columbia Rivers.	1223121 460121

3.2. Klickitat River Critical Habitat Subunit

The Klickitat River CHSU is essential to bull trout conservation because the headwater resident population represents a possible refugium for the species in the lower Columbia region. Of the three CHSUs in the Lower Columbia River Basins CHU, The Klickitat River CHSU is the only undammed system with access for fluvial bull trout (see Appendix 1 for more detailed information).

The Klickitat River originates from the southeastern slope of Mount Adams and flows south to the Columbia River, below the Dalles Dam (the upper Klickitat River watershed flows largely through Yakama Indian lands). Designated critical habitat in the Klickitat River CHSU covers approximately 135.0 km (83.8 mi) of stream. The West Fork Klickitat River, and its tributaries within the Yakama Indian Reservation, supports the only known bull trout local population in the Klickitat drainage. The following water bodies are included in this CHSU (see Table 25):

(A) Klickitat River from its confluence with the Columbia River upstream 103.3 km (64.2 mi) to Castile Falls provides foraging and overwintering habitat for migratory bull trout, maintaining connectivity with the Columbia River. The West Fork Klickitat River from its confluence with the Klickitat River upstream 0.5 km (0.3 mi) to a waterfall at the junction of Little Muddy Creek and Fish Lake Stream provides foraging and overwintering habitat for bull trout. From the waterfall upstream 8.3 km (5.1 mi) it provides spawning and rearing habitat for the West Fork Klickitat River local population isolated above the falls.

(B) The following tributaries from their mouths upstream to stream confluences or natural barriers provide spawning and rearing habitat for the West Fork Klickitat River local population: Little Muddy Creek upstream 1.9 km (1.2 mi) to its confluence with Crawford Creek; Clearwater Creek upstream 0.3 km (0.2 mi); Trappers Creek upstream 2.7 km (1.7 mi); Fish Lake Stream upstream 10.0 km (6.2 mi) to its confluence with Two Lakes Stream; an unnamed tributary that joins with Fish Lake Stream upstream 6.9 km (4.3 mi); and Two Lakes Stream upstream 1.3 km (0.8 mi).

Table 25. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Columbia River Basins—Klickitat River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Klickitat River	West Fork Klickitat River	WA	Part of the current distribution (WDFW 2002), both upstream and downstream of falls. Resident form uses habitat upstream of the falls, fluvial form uses habitat below.	West Fork Klickitat River below the falls at RM 0.3 (rkm 0.5) provides essential FMO habitat for bull trout in the mainstem Klickitat River; and essential spawning and rearing habitat for the resident bull trout population located in the West Fork Klickitat River and tributaries above the falls. West Fork Klickitat River and its tributaries are essential for bull trout recovery because this is currently the only known local population in the Klickitat Core Area.	1212458462416
Lower Columbia River Basins—Klickitat River	West Fork Klickitat River	WA	Part of the current distribution (WDFW 2002), both upstream and downstream of falls. Resident form uses habitat upstream of the falls, fluvial form uses habitat below.	West Fork Klickitat River below the falls at RM 0.3 (rkm 0.5) provides essential FMO habitat for bull trout in the mainstem Klickitat River; and essential spawning and rearing habitat for the resident bull trout population located in the West Fork Klickitat River and tributaries above the falls. West Fork Klickitat River and its tributaries are essential for bull trout recovery because this is currently the only known local population in the Klickitat Core Area.	1212458462416
Lower Columbia River Basins—Klickitat River	Klickitat River	WA	The historical distribution and current status of bull trout in the Klickitat Core Area are unknown (WDFW 1998). Fluvial, in addition to resident bull trout, may still persist in the system. Bull trout have been reported from the mouth of the Klickitat River and in the mainstem near Leidl Bridge and Castile Falls. Four bull trout (up to approximately 10 inches (in) (254 millimeters (mm)) were observed in the mainstem above the confluence with the West Fork Klickitat River during snorkel and electrofishing surveys in 1990 and 1995 (WDFW 1998). None were found in the mainstem Klickitat River above the west fork confluence during 2001 surveys (Thiesfeld et al. 2001). There are no barriers to prevent bull trout migration from the Columbia River (WDFW 1998). Castile Falls, a series of 11 waterfalls with a total elevational drop of approximately 80 ft (24 m), may be a barrier for upstream migration of bull trout on the mainstem Klickitat.	This section of the mainstem is currently occupied FMO habitat and is essential for maintaining connectivity with the Columbia River. It is unknown at this time if upper reaches may also provide some spawning and rearing habitat for the fluvial life history form.	1212934456914

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Klickitat River	Fish Lake Stream	WA	There are historical records of bull trout in Fish Lake Stream (Byrne et al. 2000). In the 1960s, bull trout were collected upstream of the confluence with Two Lakes Stream, and in Fish Lake (Steve Thiesfeld, WDFW, pers. comm. 2002). Although no bull trout were detected in Fish Lake Stream in the 2000 or 2001 surveys, bull trout were detected in Two Lakes Stream, which flows into Fish Lake Stream downstream of Fish Lake, and in an unnamed tributary to Fish Lake Stream (Byrne et al. 2000; Thiesfeld et al. 2001). It is likely that bull trout may be found in Fish Lake Stream.	This tributary to West Fork Klickitat River is essential because it is currently occupied by bull trout and provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213118 462751
Lower Columbia River Basins—Klickitat River	Little Muddy Creek	WA	Eleven juvenile and subadult bull trout (eight less than and three greater than 6 in (150 mm) in length were observed above the confluence with Clearwater Creek during night snorkeling in 2000. The average density was 0.4 bull trout/100 square meters. Bull trout were not detected at a sample site near Crawford Creek (Byrne et al. 2000). In 2001, one bull trout (7 in (170 mm) was electrofished above the confluence with Trappers Creek in 2001. Bull trout could be further upstream, as no obvious barriers were observed (Thiesfeld et al. 2001).	This tributary to West Fork Klickitat River is essential because it provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213118 462761
Lower Columbia River Basins—Klickitat River	Clearwater Creek	WA	Bull trout were observed from the confluence to the first falls in 2000 and 2001 surveys. The nearly vertical falls are 19-26 ft (6-8 m) high; no bull trout were found above the falls (Thiesfeld et al. 2001). Ninety-four juvenile and subadult bull trout (45 less than and 49 greater than 6 in (150 mm)) (2.6 bull trout/100 m2 average density) were observed in the 2000 survey (Byrne et al. 2000).	This tributary to Little Muddy Creek is essential because it provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213273 462758
Lower Columbia River Basins—Klickitat River	Trappers Creek	WA	Trappers Creek has historical bull trout records. Nine bull trout were electroshocked and 51 bull trout (45 less than and 49 greater than 6 in (150 mm), with an average density of 6.7 bull trout/328 ft (100 m), were observed during night snorkeling in 2000. In 2001, 28 bull trout were observed below the falls during night snorkeling; none were observed above the falls (Thiesfeld et al. 2001).	This tributary to Little Muddy Creek is essential because it provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213316 462790
Lower Columbia River Basins—Klickitat River	Unnamed trib. - off Fish Lake Stream	WA	Six juvenile and subadult bull trout (111-174 mm) were electrofished at RM 1.5 (rkm 2.4) in 2001 survey (Thiesfeld et al. 2001).	This tributary to Fish Lake Stream is essential because it provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213591 463312

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—Klickitat River	Two Lakes Stream	WA	Two subadult bull trout (greater than 150 mm) were seen during night snorkeling in the 2001 survey. None were seen above the falls (Thiesfeld et al. 2001).	This tributary to Fish Lake Stream is essential because it provides spawning and rearing habitat for the resident local population in the West Fork Klickitat River complex.	1213694463427

3.3. White Salmon River Critical Habitat Subunit

The White Salmon River CHSU is of secondary importance relative to existing core areas but provides essential habitat necessary for future recovery efforts (i.e., reintroduction or natural recolonization of the fluvial life history form) once Condit Dam is removed. Existing conditions appear to provide only limited FMO habitat (see Appendix 1 for more detailed information).

The White Salmon River originates from the southwestern slope of Mount Adams and flows south to the Columbia River (Bonneville Pool). On the White Salmon River, the Condit Dam currently forms Northwestern Lake, but the anticipated removal of Condit Dam would result in elimination of the reservoir and restoration of the White Salmon River to its former River channel. The White Salmon River is a historical bull trout locality, but no recent spawning has been observed in this drainage. Although the habitat above Condit Dam is currently considered unoccupied, habitat conducive to spawning and early rearing for bull trout likely exists in the upper White Salmon River and its tributaries above the dam (Silver et al. 2009, pp. 1–3). The White Salmon River is anticipated to be important in future bull trout recovery efforts due to its cold water source, particularly given the anticipated effects of climate change. Although uncertainties exist regarding recolonization or reintroduction within the White Salmon River, this habitat is believed to be essential to successfully reestablish a population within this system. It is anticipated that a population within this river system would contribute to maintaining distribution and increasing abundance of the migratory life history form within the Lower Columbia River Basins CHU of the Coastal Recovery Unit. Designated critical habitat in this CHSU consists of approximately 42.0 km (26.0 mi) of stream. The following water bodies are included in this CHSU (see Table 26):

(A) The White Salmon River will provide an important connectivity corridor to the Columbia River when fish passage at Condit Dam is restored. The historical river channel currently inundated by Northwestern Lake, the 2.4 km (1.5 mi) long reservoir behind Condit Dam, will provide a key piece of the migratory corridor to support the reestablishment of a fluvial population of bull trout in the upper watershed. The removal of Condit Dam will eliminate Northwestern Lake and restore the White Salmon River to its former channel. White Salmon River from the upper edge of Northwestern Lake upstream to Big Brother/Little Brother Falls is also suitable foraging and overwintering habitat and a key piece of the migratory corridor for potential bull trout spawning and rearing tributaries. Critical habitat being designated in this rule includes the White Salmon River from its confluence with the Columbia River upstream approximately 26.1 km (16.2 mi) to Big Brother/Little Brother Falls.

(B) Patch modeling by Silver et al. (2009, pp. 1–3) also identified a number of currently unoccupied tributary systems as areas conducive for bull trout spawning and early rearing. Additional review of potential patches indicated that only a subset of these Creeks would likely maintain persistent year-round water flow (Whitesel, pers. comm. 2009). After taking into account patch size, patch distribution, likely future patch habitat condition based on current landownership patterns, and accessibility to migratory bull trout, the following tributaries from their mouths upstream to natural barriers or headwaters are currently unoccupied but anticipated to provide potential spawning and rearing habitat to establish a local population(s) within the White Salmon River under bull trout recovery: Buck Creek upstream 11.1 km (6.9 mi) and Phelps Creek upstream 4.0 km (2.5 mi).

Table 26. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Columbia River Basins—White Salmon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—White Salmon River	White Salmon River	WA	The White Salmon River drainage is an historic locality, but the historic distribution of bull trout in the basin is unknown. Sightings of bull trout in the White Salmon River are rare; there have been only two documented occurrences of bull trout in the basin above Condit Dam since 1986 (WDFW 1998). More recent surveys have not documented bull trout in the mainstem White Salmon River or tributaries above Northwestern Lake (WDFW 1998; Byrne et al. 2000; Thiesfeld et al. 2001; Silver et al. 2009). Although no occupied SR habitat has been identified, the White Salmon River contains potential bull trout spawning habitat in the upper reaches above Condit Dam (WDFW 1998; Silver et al. 2009). Thiesfeld et al. (2001) identified at least eight unnamed spring-fed tributaries large enough to support bull trout upstream of Cascade Creek, which enters the White Salmon River above Trout Lake Creek; while recent bull trout patch delineation by Silver et al. (2009), identified at least 11 patches that were conducive for supporting bull trout spawning and early rearing.	White Salmon River above Condit Dam will provide FMO habitat and a key connectivity corridor for potential spawning and rearing tributaries. Currently, Condit Dam forms Northwestern Lake; however, the important habitat for bull trout and other salmonids is restricted to the mainstem (historic channel) of the river. The White Salmon River is anticipated to be important in future recovery efforts, especially under climate change, due to its cold water source. Although there are remaining uncertainties regarding reintroduction/recolonization within this system, it is currently considered essential for recovery as a cold water refugia and connectivity corridor for reestablishing the core area to maintain distribution of the migratory life history form within the lower Columbia River region of the Coastal RU.	1215213 457226.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—White Salmon River	White Salmon River	WA	The White Salmon River drainage is an historic locality, but the historic distribution of bull trout in the basin is unknown. Sightings of bull trout in the White Salmon River are rare; there have been only two documented occurrences of bull trout in the basin above Condit Dam since 1986 (WDFW 1998). More recent surveys have not documented bull trout in the mainstem White Salmon River or tributaries above Northwestern Lake (WDFW 1998; Byrne et al. 2000; Thiesfeld et al. 2001; Silver et al. 2009). Although no occupied SR habitat has been identified, the White Salmon River contains potential bull trout spawning habitat in the upper reaches above Condit Dam (WDFW 1998; Silver et al. 2009). Thiesfeld et al. (2001) identified at least eight unnamed spring-fed tributaries large enough to support bull trout upstream of Cascade Creek, which enters the White Salmon River above Trout Lake Creek; while recent bull trout patch delineation by Silver et al. (2009), identified at least 11 patches that were conducive for supporting bull trout spawning and early rearing.	White Salmon River above Condit Dam will provide FMO habitat and a key connectivity corridor for potential spawning and rearing tributaries. The White Salmon River is also anticipated to provide spawning and rearing habitat above the confluence with Cascade Creek for a population that is either reintroduced or naturally becomes reestablished. Currently, Condit Dam forms Northwestern Lake; however, the important habitat for bull trout and other salmonids is restricted to the mainstem (historic channel) of the river. The White Salmon River is anticipated to be important in future recovery efforts, especially under climate change, due to its cold water source. Although there are remaining uncertainties regarding reintroduction/recolonization within this system, it is currently considered essential for recovery as a cold water refugia and connectivity corridor for reestablishing the core area to maintain distribution of the migratory life history form within the lower Columbia River region of the Coastal RU.	1215213 457226.1
Lower Columbia River Basins—White Salmon River	White Salmon River	WA	The White Salmon River drainage is an historic locality, but the historic distribution of bull trout in the basin is unknown. Sightings of bull trout in the White Salmon River are rare; there have been only two documented occurrences of bull trout in the basin above Condit Dam since 1986 (WDFW 1998). More recent surveys have not documented bull trout in the mainstem White Salmon River or tributaries above Northwestern Lake (WDFW 1998; Byrne et al. 2000; Thiesfeld et al. 2001; Silver et al. 2009). Although no occupied SR habitat has been identified, the White Salmon River contains potential bull trout spawning habitat in the upper reaches above Condit Dam (WDFW 1998; Silver et al. 2009). Thiesfeld et al. (2001) identified at least eight unnamed spring-fed tributaries large enough to support bull trout upstream of Cascade Creek, which enters the White Salmon River above Trout Lake Creek; while recent bull trout patch delineation by Silver et al. (2009), identified at least 11 patches that were conducive for supporting bull trout spawning and early rearing.	White Salmon River above Condit Dam will provide FMO habitat and a key connectivity corridor for potential spawning and rearing tributaries. Currently, Condit Dam forms Northwestern Lake; however, the important habitat for bull trout and other salmonids is restricted to the mainstem (historic channel) of the river. The White Salmon River is anticipated to be important in future recovery efforts, especially under climate change, due to its cold water source. Although there are remaining uncertainties regarding reintroduction/recolonization within this system, it is currently considered essential for recovery as a cold water refugia and connectivity corridor for reestablishing the core area to maintain distribution of the migratory life history form within the lower Columbia River region of the Coastal RU.	1215213 457226.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Columbia River Basins—White Salmon River	Buck Creek	WA	Patch modeling by Silver et al. (2009) identified this creek system as one of the areas conducive for bull trout spawning and early rearing. Additional review of potential patches, indicated that Buck Creek would likely maintain persistent year-round water flows (Whitesel, pers. comm. 2009).	This tributary to White Salmon River is essential because it is anticipated to provide spawning and rearing habitat for a potential local population within the White Salmon River core habitat. Buck Creek will likely be essential for reestablishing the core area to maintain distribution of the migratory life history form within the lower Columbia River region of the Coastal RU.	1215137 457810
Lower Columbia River Basins—White Salmon River	Phelps Creek	WA	Patch modeling by Silver et al. (2009) identified this creek system as one of the areas conducive for bull trout spawning and early rearing. Additional review of potential patches indicated that Phelps Creek would likely maintain persistent year-round water flows (Whitesel, pers. comm. 2009).	This tributary to White Salmon River is essential because it is anticipated to provide spawning and rearing habitat for a potential local population within the White Salmon River core habitat. Phelps Creek will likely be essential for reestablishing the core area to maintain distribution of the migratory life history form within the lower Columbia River region of the Coastal RU.	1215170 458815

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 4. Coastal Recovery Unit—Upper Willamette River Critical Habitat Unit

Chapter 4. Upper Willamette River Critical Habitat Unit

The Upper Willamette CHU is essential to bull trout conservation because it is the only CHU west of the Cascade Range in western Oregon, is among the farthest south and west populations in the range of the species, is a long distance via waterways to the next nearest populations, probably has been functionally isolated for a long time, and is genetically distinguishable. Bull trout were likely fluvial historically but now include several local populations that have adopted an adfluvial life history strategy due to the presence of impassable dams and large reservoirs. The one remaining fluvial local population is the mainstem McKenzie local population. Local populations in the McKenzie River are not robust and thus, the maintenance and recovery of this along with other local populations in the core area, and the reestablishment of bull trout in historical habitat elsewhere in and outside the core area, are likely required for long-term persistence.

The four local populations in the McKenzie and Middle Fork Willamette rivers have been isolated from each other due to the construction and operation of impassable dams. Connecting each of these local populations is important for future connectivity and long-term persistence. Connectivity between local populations in the McKenzie River Subbasin is expected over the next decade due to fish passage modifications planned for Trail Bridge Dam (mainstem McKenzie River) and Cougar Dam (South Fork McKenzie River). The majority of the McKenzie and Middle Fork Willamette rivers provide suitable bull trout spawning and rearing, foraging, migrating and overwintering habitats. Provided connectivity is restored in the near future, the habitat contained in the final rule is likely sufficient to support population viability in the Upper Willamette Core Area (see Appendix 1 for more detailed information).

The Willamette River Basin, situated in northwestern Oregon, is a major tributary of the Columbia River, and enters the Columbia River. It drains an area of approximately 31,080 km^2, almost one-eighth of Oregon's total area and part or all of ten counties. It is bounded on the north by the Columbia River and on the east, south and west by the summits of the Cascade Range, the Calapooia Mountains, and the Coast Range, respectively. The north-south length of the basin is about 240 kilometers and its average east-west width is about 120 kilometers. Principal streams of the basin head at elevations of 1,830 meters and higher in the bordering Cascades. In higher elevations of the Cascade Range where bull trout occur, precipitation ranges from 229 to 356 centimeters and snowfall is heavy with considerable snowpack accumulation. Major tributaries of the Willamette River include the Clackamas, Tualatin, Molalla, Yamhill, Santiam, Calapooia, Mary's, Long Tom, McKenzie, Middle Fork Willamette, and Coast Fork Willamette rivers. This unit is located primarily within Lane County, but also extends into Linn County.

Bull trout currently occur in the McKenzie and Middle Fork Willamette rivers and occurred historically in the Santiam and Clackamas rivers, all of which originate in the Cascade Mountains. The Willamette River Basin is currently composed of one core area, the Upper Willamette Core Area and includes the McKenzie and Middle Fork Willamette rivers, and one core habitat, the Clackamas Core Habitat. Critical habitat is not designated in the Clackamas River Core Habitat because this area is designated for a reintroduction of bull trout under 10(j) of the ESA (experimental non-essential designation) which by law does not allow for the designation of critical habitat (74 FR 65045). The Santiam subbasin also had historic bull trout populations, but is not considered core habitat.

There are three bull trout local populations in the McKenzie River subbasin and one bull trout local population in the Middle Fork Willamette River subbasin. All four local populations are identified as essential for bull trout recovery in the Service's Draft Bull Trout Recovery Plan (Service 2002). With the exception of a short reach of the mainstem Willamette River and the mainstem Middle Fork Willamette River (including reservoirs) below Hills Creek Dam, segments designated as critical habitat are occupied by bull trout, and are essential to supporting populations in the Coastal Recovery Unit.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. Conserve opportunity for diverse life-history expression – Bull trout in the Upper Willamette Core Area were likely fluvial historically but now include several local populations that have adopted an adfluvial life history strategy due to the presence of impassable dams and large reservoirs. The one remaining fluvial local population is the Mainstem McKenzie local population. There is no evidence that a bull trout resident life history expression existed in the core area, nor was there a natural adfluvial life history expression. Over the next decade, fish passage projects in the McKenzie River Subbasin are expected to provide opportunities for each local population to return to their historical fluvial life history expression.

2. Conserve opportunity for genetic diversity – Ardren et al., (2010, p. 26) conducted a genetic analysis of 75 bull trout populations across the species' range in the United States. Their findings, which were consistent with other broad-scale genetic analyses of bull trout and (Spruell et al., 2003) indicated a high level of genetic distinction among local populations of bull trout. These results indicate that gene flow rarely occurs among the major river basins.

Genetic analyses by Ardren et al. (2010, p. 62) and Spruell et al. (2003, p. 23) indicate that the local populations that comprise the Upper Willamette Core Area are part of the Coastal Recovery Unit (evolutionary lineage) but are unique since they share alleles with Klamath River bull trout. Although Ardren et al. (2010, p. 26) highlighted the high level of genetic distinction among local bull trout populations, Spruell et al. (2003, p. 23) suggested among Coastal lineage local populations there is a wide amount of variation relative to that observed among the other major evolutionary lineages in the Snake and Columbia basins. Within the Coastal Recovery Unit, the Willamette populations were unique from those found in neighboring basins such as the Deschutes, Lewis and Hood rivers.

3. Ensure bull trout are distributed across representative habitats – Bull trout that comprise the Upper Willamette Core Area represent the southern and western extreme of the bull trout's range. Habitats at the edge of a species range are often marginal. While some habitat within the core area is highly suitable for bull trout (e.g., the McKenzie and its cold groundwater dominated tributaries) other habitats are less suitable and may prove marginal given habitat degradation and impending climate change (e.g., Middle Fork Willamette River). However, local populations in the McKenzie River are not robust and thus the maintenance and recovery of other local populations in the core area, and the reestablishment of bull trout in historical habitat elsewhere in and outside the core area, are likely required for long-term persistence.

4. Ensure sufficient connectivity among populations – The four local populations in the McKenzie and Middle Fork Willamette rivers have been isolated from each other due to the construction and operation of impassable dams. The critical habitat designation connects each of these local populations and thus emphasizes the importance of future connectivity for long-term persistence. Connectivity between local populations in the McKenzie River Subbasin is expected over the next decade due to fish passage modifications planned for Trail Bridge Dam (mainstem McKenzie River) and Cougar Dam (South Fork McKenzie River). A trap and haul collection facility for upstream passage at Cougar Dam became operational in 2010.

5. Ensure sufficient habitat to support population viability (e.g., abundance, trend indices) - This critical habitat designation encompasses the majority of the McKenzie and Middle Fork Willamette rivers that are deemed suitable for bull trout spawning and rearing and for foraging, migrating and overwintering. Provided connectivity is restored in the near future, the habitat contained in the designation is likely sufficient to support population viability in the Upper Willamette Core Area.

6. Consider threats (e.g., climate change) – As noted above in #3, bull trout in this core area persist at the edge of the species' range. Inherently, populations at the edge of their natural range are often more vulnerable to threats, natural or otherwise. Climate change will impact bull trout throughout its range but will likely have greater impacts in those habitats that are marginal for the species. In the Upper Willamette Core Area the McKenzie River, due to its abundance of groundwater fed tributaries, may be less vulnerable than the Middle Fork Willamette which does not contain as much cold groundwater dominated flow. Another significant threat, low population size, continues to threaten several of the local populations in this core area although recent efforts to implement conservation actions and rehabilitation programs are proving successful.

7. Ensure sufficient redundancy in conserving population units – Bull trout have been extirpated from a large portion of their previous habitat in the Willamette Basin (e.g., Clackamas River, North Santiam River, South Santiam River, and portions of the Middle Fork Willamette River). Efforts are underway to further reestablish bull trout in the Middle Fork Willamette River, and to investigate reintroduction in other subbasins that have been subject to extirpations, namely the Clackamas River. Although the overall trend in the Upper Willamette Core Area is stable, there are not enough bull trout, or local populations, to ensure redundancy. Overall recovery of bull trout in the Willamette Basin will require additional conservations actions to benefit existing local populations and implementation of actions to reintroduce bull trout to areas in the Willamette Basin that were historically occupied and which contain currently suitable habitat.

The following water bodies are included in this CHU (see Table 27)

Willamette River from its confluence with the McKenzie River upstream 19 km (11.8 mi) to its confluence with the Middle Fork Willamette River is FMO habitat. This segment provides for the future maintenance of the migratory life history form of bull trout that is essential to the long-term conservation of the species and is essential for providing future connectivity between the McKenzie River and Middle Fork Willamette River local populations. Occupancy is unknown; however, an adult bull trout was captured near the confluence of the Willamette and McKenzie rivers in March 1999 by the Oregon Department of Fish and Wildlife (Ziller and Taylor 2000, p. 9). This habitat is essential to provide connectivity between local populations in the two major subbasins associated with the Upper Willamette Core Area.

McKenzie River Subbasin

The McKenzie subbasin drains an area of about 3367 km^2, comprising about 11 percent of the Willamette Basin; more than 80 percent of the subbasin is in Lane County, with the remainder in Linn County. Currently, three bull trout local populations exist: 1) McKenzie River and tributaries above Trail Bridge Dam including Trail Bridge Reservoir (Trail Bridge local population) 2) McKenzie River and tributaries downstream of Trail Bridge Dam (Mainstem McKenzie local population); and 3) South Fork McKenzie River and tributaries above Cougar Dam (South Fork McKenzie local population).

McKenzie River and side channels from its confluence with the Willamette River upstream 123.8 km (76.9 mi) to Trail Bridge Dam contains essential foraging, migratory and overwintering habitat for the local bull trout population in the McKenzie River and tributaries below Trail Bridge Dam. Most of the Mainstem McKenzie local population occurs upstream of Leaburg Dam although a small number of adult and subadult bull trout are documented ascending Leaburg Dam annually in the Spring and Summer providing evidence of FMO use in the lower McKenzie River (Ziller and Taylor 2000, p. 9; ODFW, in litt. 2008b).

McKenzie River from its confluence with Trail Bridge Reservoir upstream approximately 1.8 (1.1 miles) is utilized for spawning and rearing for the Trail Bridge local population (USFS 2009e, p. 4-6).

Trail Bridge Reservoir is a 23.3 ha (57.6 ac) reservoir on the McKenzie River and is the primary overwintering (FMO) habitat for adults and subadults from the Trail Bridge local population. Due to the close proximity to spawning areas in the mainstem McKenzie River upstream of Trail Bridge Reservoir and in Sweetwater Creek (direct tributary to the reservoir), Trail Bridge Reservoir also serves as an important rearing area for juvenile bull trout (USFS 2009e, p. 4-6).

Smith River from its confluence with Trail Bridge Reservoir upstream 1.0 km (0.6 mi) to Smith River Dam is utilized as FMO for the Trail Bridge local population. Under current conditions bull trout have been observed seasonally in the lower portion of Smith River below Smith River Dam. Increased flows in this reach will likely increase and improve conditions for bull trout in the near future under Eugene Water and Electric Board’s new license from FERC (Stillwater Sciences 2006, p. 58).

Sweetwater Creek from its confluence with Trail Bridge Reservoir upstream 1.0 km (0.6 mi) to a natural barrier is spawning and rearing habitat. Sweetwater Creek provides one of only two spawning areas for bull trout associated with the Trail Bridge Reservoir local population (the other being the mainstem McKenzie River upstream of Trail Bridge Reservoir). From 2006-2008, Sweetwater Creek averaged 20 redds (USFS 2009e, p. 10).

Carmen-Smith Spawning Channel from its confluence with the McKenzie River upstream approximately 0.3 kilometers (0.2 miles) serves as spawning and rearing habitat. It is located just downstream of Trail Bridge Dam and includes the Chinook salmon spawning channel constructed by Eugene Water and Electric Board (EWEB) for mitigation of fish habitat impacts from construction and operation of the Carmen-Smith Hydroelectric Project. Several bull trout redds have been observed in this reach in recent years (USFS 2009e, p. 11).

South Fork McKenzie River from its confluence with the McKenzie River below Cougar Dam upstream 26.1 km (16.3 mi) to Roaring River is FMO habitat. This segment includes the South Fork McKenzie River below Cougar Dam and above Cougar Reservoir up to Roaring River. The South Fork McKenzie River below Cougar Dam provides quality foraging, migration and overwintering habitat for adult and subadult bull trout from the Mainstem McKenzie local population and for bull trout from above Cougar Dam (South Fork McKenzie local population) that are occasionally entrained through Cougar Dam turbines or regulating outlets. The quality of habitat has improved in recent years due largely to the return to normative stream temperatures from operation of temperature control beginning at Cougar Dam in 2005 (Service 2007, p. 27-28). A fish collection facility at the base of Cougar Dam is operable as of 2010 and will provide a means of capturing and transferring bull trout to habitat above Cougar Dam. The critical habitat segment above Cougar Dam provides high quality foraging, migration and overwintering habitat for the South Fork McKenzie River local population of bull trout.

> *Roaring River* from its confluence with the South Fork McKenzie River upstream 4.2 km (2.6 miles) is utilized for spawning and rearing by the South Fork McKenzie River local population. Roaring River is a large spring-fed stream which provides the only known spawning habitat for the South Fork McKenzie local population of bull trout. Redd counts in 2007 totaled 54 and 41 in 2008 (USFS 2009e).

Cougar Reservoir with 559.9 ha (1,383.5 ac) surface area at full pool is FMO habitat. Intensive monitoring of the South Fork McKenzie River local population by ODFW indicates Cougar Reservoir provides essential foraging, migratory and overwintering habitat for adult, subadult and older juvenile bull trout (Service 2007, p. 26). A majority of adult and subadult bull trout from this local population utilize the reservoir (and the lower half mile of the East Fork McKenzie River) to stage for spawning from fall through spring prior to migrating upstream into the South Fork McKenzie River.

East Fork South Fork McKenzie River from its confluence with Cougar Reservoir upstream 0.8 km (0.5 mi) is foraging, migration and overwintering habitat. Use is seasonal based on water temperatures and reservoir elevations that influence accessibility.

Blue River from its confluence with the McKenzie River upstream 2.8 km (1.7 mi) to Blue River Dam is occupied seasonally and utilized as FMO habitat.

Horse Creek including side channels, from its confluence with the McKenzie River upstream 14.2 kilometers (8.9 miles) to Separation Creek is used for foraging, migration and overwintering by the Mainstem McKenzie local population. A 95mm bull trout was seined by ODFW during the summer of 2009 in a side channel of Horse Creek at RM 7.0 (K. Kenaston, pers. comm. 2009).

> *East Fork Horse Creek* including side channels, from its confluence with Horse Creek upstream 0.7 kilometers (0.4 miles) is used for foraging, migration and overwintering by the Mainstem McKenzie local population.

> *West Fork Horse Creek* including side channels, from its confluence with Horse Creek upstream 2.8 kilometers (1.7 miles) is used for foraging, migration and overwintering by the Mainstem McKenzie local population.

Lost Creek from the McKenzie River confluence upstream 6.2 km (3.9 miles) to White Branch Creek provides spawning and rearing habitat for the Mainstem McKenzie local population. Although spawning has not been documented, seasonal use has been reported and suitable habitat exists and it is possible that limited spawning may be occurring (D. Bickford, USFS Willamette National Forest, pers. comm. 2010).

> *White Branch Creek* from its confluence with Lost Creek upstream 1.3 km (0.8 miles) to approximately the road 242 crossing provides spawning and rearing habitat for the Mainstem McKenzie local population. Although spawning has not been documented,

seasonal use has been reported and suitable habitat exists and it is possible that limited spawning may be occurring (D. Bickford, USFS Willamette National Forest, pers. comm. 2010).

Deer Creek from its confluence with the McKenzie River upstream for 2.2 km (1.4 miles) is FMO habitat for the Mainstem McKenzie River local population. It is possible bull trout utilize habitat farther upstream as no barriers inhibit upstream migration, however, they have not been documented beyond 2.2 km (1.4 RM) upstream of the mouth.

Olallie Creek from its confluence with the McKenzie River upstream 2.1 km (1.3 mi) to a natural barrier is spawning and rearing habitat. Olallie Creek is one of only three known spawning and early juvenile rearing areas for bull trout from the Mainstem McKenzie River local population, the other two being Anderson Creek and the spawning channel immediately below Trail Bridge Dam in the mainstem McKenzie River. Olallie Creek has averaged 13 redds a year between 2003 and 2007 (USFS 2009e, p. 10).

Anderson Creek from its confluence with the McKenzie River upstream 3.1 km (1.9 mi) to a natural barrier is spawning and rearing habitat. Anderson Creek is the primary tributary utilized for spawning and rearing by the Mainstem McKenzie River local bull trout population. From 2000 to 2007 Anderson Creek averaged approximately 60 redds a year (USFS 2009e, p.10).

Middle Fork Willamette River Subbasin

The Middle Fork Willamette subbasin covers 3496 km^2, or about 11 percent of the Willamette Basin; 94 percent of the subbasin is in Lane County, 6 percent in Douglas County. Historic distribution in the Middle Fork Willamette subbasin likely included the mainstem Middle Fork Willamette, North Fork of the Middle Fork Willamette, Salt Creek, Swift Creek, and Staley Creek. Today bull trout are only known to exist in the Middle Fork Willamette River and tributaries above Hills Creek Dam as a result of a relocation project where fry from Anderson Creek in the McKenzie River were placed in multiple tributaries and springs above Hills Creek Dam (ODFW 2007b, p.1). Currently the population is estimated to be less than 20 adults (ODFW 2007b, p. 8).

Middle Fork Willamette River from its confluence with the Willamette River upstream 48 km (29.8 mi) to Hills Creek Dam is unoccupied FMO habitat. It is considered an essential migratory corridor for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Connectivity Criteria contained in the Willamette River Recovery Unit Chapter of the draft recovery plan (Service 2002a, p. v11-v12) includes connectivity between local populations within the Upper Willamette Core Area. Connecting the local population in the Middle Fork Willamette River above Hills Creek Dam with local populations in the McKenzie River will require fish passage at all three dams owned and operated by the Corps of Engineers in the Middle Fork Willamette River (Dexter, Lookout Point, Hills Creek dams). The feasibility of fish passage at these facilities will be assessed in the near future as required by biological opinions issued by the Service and by NMFS in 2008 (Service 2008g, NMFS 2008).

Middle Fork Willamette River from the top of Hills Creek Reservoir upstream 27.2 km (16.9 miles) to Swift Creek is utilized as FMO habitat and from the confluence of Swift Creek 5.1 km (3.1 miles) to approximately Paddy's Valley provides for the spawning and rearing habitat for the Middle Fork Willamette River local population. The majority of documented spawning occurs in small springs adjacent to the Middle Fork Willamette River but some spawning has been documented in the mainstem Middle Fork Willamette River itself. The majority of documented spawning occurs in small springs adjacent to the Middle Fork Willamette River (e.g., Chuckle and Iko springs) but some spawning has been documented in the mainstem Middle Fork Willamette River as well (ODFW 2007b, p. 21). The majority of the subadult and adult bull trout population in the Middle Fork Willamette is thought to utilize Hills Creek Reservoir for overwintering and foraging.

Dexter Reservoir, (343.4 ha (848.5 ac) is unoccupied FMO habitat and essential for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Connectivity Criteria contained in the Willamette River Recovery Unit Chapter of the draft recovery plan (Service 2002a, p. v11-v12) includes connectivity between local populations within the Upper Willamette Core Area. Connecting the local population in the Middle Fork Willamette River above Hills Creek Dam with local populations in the McKenzie River will require fish passage at all three dams owned and operated by the Corps of Engineers in the Middle Fork Willamette River (Dexter, Lookout Point, Hills Creek dams). The feasibility of fish passage at these facilities will be assessed in the near future as required by biological opinions issued by the Service and by NMFS in 2008 (Service 2008g, NMFS 2008).

Lookout Point Reservoir, (1,615.8 ha (3,992.6 ac) is unoccupied FMO habitat and essential for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Connectivity Criteria contained in the Willamette River Recovery Unit Chapter of the draft recovery plan (Service 2002a, p. v11-v12) includes connectivity between local populations within the Upper Willamette Core Area. Connecting the local population in the Middle Fork Willamette River above Hills Creek Dam with local populations in the McKenzie River will require fish passage at all three dams owned and operated by the Corps of Engineers in the Middle Fork Willamette River (Dexter, Lookout Point, Hills Creek dams). The feasibility of fish passage at these facilities will be assessed in the near future as required by biological opinions issued by the Service and by NMFS in 2008 (Service 2008g, NMFS 2008).

Hills Creek Reservoir (1,059.2 ha (2,617.4 ac) provides essential foraging, migratory and overwintering habitat for adult, subadult and older juvenile bull trout. A majority of adult and subadult bull trout from the local population utilize the reservoir from fall through spring prior to migrating upstream into the Middle Fork Willamette River (ODFW 2007b, p. 19).

Swift Creek from its confluence with the Middle Fork Willamette River upstream 14.7 km (9.1 miles) to its headwaters is spawning and rearing habitat. Swift Creek was used by bull trout historically based on 1960 field notes from a fish eradication project prior to filling Hills Creek Reservoir (ODFW 2007b, p. 35-38). Consequently, and in associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Swift Creek. The transplanted fish have been documented rearing in these habitats but spawning has not yet been observed.

> *Bear Creek* from its confluence with Swift Creek upstream 3.2 km (2 miles) is spawning and rearing habitat. Bear Creek was used by bull trout historically based on 1960 field notes from a fish eradication project prior to filling Hills Creek Reservoir (ODFW 2007b,

p. 35-38). Consequently, and in associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Bear Creek. The transplanted fish have been documented rearing in these habitats but spawning has not yet been observed.

Indigo Springs from its confluence with the Middle Fork Willamette River upstream 0.5 km (0.3 mi) is spawning and rearing habitat. Associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Indigo Springs. Indigo Springs is a cold-water spring that likely contained historical spawning and rearing habitat for bull trout prior to construction of a road crossing that created a fish passage barrier. Bull trout are currently rearing in this habitat and it is anticipated that a new fish friendly culvert and restored side-channel, completed in 2009, will allow bull trout to access spawning and rearing habitat in the upper half of the stream segment (USFS 2009e, p. 9).

Table 27. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Upper Willamette River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Anderson Creek	OR	Anderson Creek from its confluence with the McKenzie River upstream 3.1 km (1.9 mi) to a natural barrier is spawning and rearing habitat. Anderson Creek is the primary tributary utilized for spawning and rearing by the Mainstem McKenzie River local bull trout population. From 2000 to 2007 Anderson Creek averaged approximately 60 redds a year (USFS 2009e, p.10).	See text for this CHU	1220453 442625
Upper Willamette River—None	Bear Creek	OR	Bear Creek from its confluence with Swift Creek upstream 3.2 km (2 miles) is spawning and rearing habitat. Bear Creek was used by bull trout historically based on 1960 field notes from a fish eradication project prior to filling Hills Creek Reservoir (ODFW 2007b, p. 35-38). Consequently, and in associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Bear Creek. The transplanted fish have been documented rearing in these habitats but spawning has not yet been observed.	See text for this CHU	1222435 435439
Upper Willamette River—None	Blue River	OR	Blue River from its confluence with the McKenzie River upstream 2.8 km (1.7 mi) to Blue River Dam is occupied seasonally and utilized as FMO habitat.	See text for this CHU	1223436 441532
Upper Willamette River—None	Carmen-Smith Spawning Channel	OR	Carmen-Smith Spawning Channel from its confluence with the McKenzie River upstream approximately 0.3 kilometers (0.2 miles) serves as spawning and rearing habitat. It is located just downstream of Trail Bridge Dam and includes the Chinook salmon spawning channel constructed by Eugene Water and Electric Board (EWEB) for mitigation of fish habitat impacts from construction and operation of the Carmen-Smith Hydroelectric Project. Several bull trout redds have been observed in this reach in recent years (USFS 2009e, p. 11).	See text for this CHU	1220520 442710

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Deer Creek	OR	Currently occupied by foraging and overwintering adults and subadults from the McKenzie River Population (Ziller and Taylor 2000). It is likely bull trout exist farther upstream as no barriers inhibit their movement; however, they have not been documented beyond 2.2 km (1.4 RM) upstream of the mouth.	See text for this CHU	1220576 442407
Upper Willamette River—None	Deer Creek	OR	Deer Creek from its confluence with the McKenzie River upstream for 2.2 km (1.4 miles) is FMO habitat for the Mainstem McKenzie River local population. It is possible bull trout utilize habitat farther upstream as no barriers inhibit upstream migration, however, they have not been documented beyond 2.2 km (1.4 RM) upstream of the mouth.	See text for this CHU	1220576 442407
Upper Willamette River—None	East Fork Horse Creek	OR	East Fork Horse Creek including side channels, from its confluence with Horse Creek upstream 0.7 kilometers (0.4 miles) is used for foraging, migration and overwintering by the Mainstem McKenzie local population.	See text for this CHU	1221788 441756
Upper Willamette River—None	East Fork South Fork McKenzie River	OR	East Fork South Fork McKenzie River from its confluence with Cougar Reservoir upstream 0.8 km (0.5 mi) is foraging, migration and overwintering habitat. Use is seasonal based on water temperatures and reservoir elevations that influence accessibility.	See text for this CHU	1222353 441153
Upper Willamette River—None	Horse Creek	OR	Horse Creek including side channels, from its confluence with the McKenzie River upstream 14.2 kilometers (8.9 miles) to Separation Creek is used for foraging, migration and overwintering by the Mainstem McKenzie local population. A 95mm bull trout was seined by ODFW during the summer of 2009 in a side channel of Horse Creek at RM 7.0 (K. Kenaston pers. comm., 2009).	See text for this CHU	1221750 441703

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Indigo Creek	OR	Indigo Springs from its confluence with the Middle Fork Willamette River upstream 0.5 km (0.3 mi) is spawning and rearing habitat. Associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Indigo Springs. Indigo Springs is a cold-water spring that likely contained historical spawning and rearing habitat for bull trout prior to construction of a road crossing that created a fish passage barrier. Bull trout are currently rearing in this habitat and it is anticipated that a new fish friendly culvert and restored side-channel, completed in 2009, will allow bull trout to access spawning and rearing habitat in the upper half of the stream segment (USFS 2009e, p. 9).	See text for this CHU	1222682 434954

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	McKenzie River	OR	The McKenzie subbasin drains an area of about 3367 km^2, comprising about 11 percent of the Willamette Basin; more than 80 percent of the subbasin is in Lane County, with the remainder in Linn County. Currently, three bull trout local populations exist: 1) McKenzie River and tributaries above Trail Bridge Dam including Trail Bridge Reservoir (Trail Bridge local population) 2) McKenzie River and tributaries downstream of Trail Bridge Dam (Mainstem McKenzie local population); and 3) South Fork McKenzie River and tributaries above Cougar Dam (South Fork McKenzie local population). McKenzie River and side channels from its confluence with the Willamette River upstream 123.8 km (76.9 mi) to Trail Bridge Dam contains essential foraging, migratory and overwintering habitat for the local bull trout population in the McKenzie River and tributaries below Trail Bridge Dam. Most of the Mainstem McKenzie local population occurs upstream of Leaburg Dam although a small number of adult and subadult bull trout are documented ascending Leaburg Dam annually in the Spring and Summer providing evidence of FMO use in the lower McKenzie River (Ziller and Taylor 2000, p. 9; ODFW, in litt. 2008b). McKenzie River from its confluence with Trail Bridge Reservoir upstream approximately 1.8 (1.1 miles) is utilized for spawning and rearing for the Trail Bridge local population (USFS 2009e, p. 4-6).	See text for this CHU	1230673 441173

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Middle Fork Willamette River	OR	Bull trout are only known to exist in the Middle Fork Willamette River and tributaries above Hills Creek Dam as a result of a relocation project where fry from Anderson Creek in the McKenzie River were placed in multiple tributaries and springs above Hills Creek Dam (ODFW 2007a, p.1). Currently the population is estimated to be less than 20 adults (ODFW 2007a, p. 8). Middle Fork Willamette River from its confluence with the Willamette River upstream 48 km (29.8 mi) to Hills Creek Dam is unoccupied FMO habitat. It is considered an essential migratory corridor for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Middle Fork Willamette River from the top of Hills Creek Reservoir upstream 27.2 km (16.9 miles) to Swift Creek is utilized as FMO habitat and from the confluence of Swift Creek 5.1 km (3.1 miles) to approximately Paddy's Valley provides for the spawning and rearing habitat for the Middle Fork Willamette River local population. The majority of documented spawning occurs in small springs adjacent to the Middle Fork Willamette River but some spawning has been documented in the mainstem Middle Fork Willamette River itself. The majority of documented spawning occurs in small springs adjacent to the Middle Fork Willamette River (e.g., Chuckle and Iko springs) but some spawning has been documented in the mainstem Middle Fork Willamette River as well (ODFW 2007a, p. 21). The majority of the subadult and adult bull trout population in the Middle Fork Willamette is thought to utilize Hills Creek Reservoir for overwintering and foraging.	See text for this CHU	1230144 440225

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Olallie Creek	OR	Olallie Creek from its confluence with the McKenzie River upstream 2.1 km (1.3 mi) to a natural barrier is spawning and rearing habitat. Olallie Creek is one of only three known spawning and early juvenile rearing areas for bull trout from the Mainstem McKenzie River local population, the other two being Anderson Creek and the spawning channel immediately below Trail Bridge Dam in the mainstem McKenzie River. Olallie Creek has averaged 13 redds a year between 2003 and 2007 (USFS 2009e, p. 10).	See text for this CHU	1230144 440225.2
Upper Willamette River—None	Roaring River	OR	Roaring River from its confluence with the South Fork McKenzie River upstream 4.2 km (2.6 miles) is utilized for spawning and rearing by the South Fork McKenzie River local population. Roaring River is a large spring-fed stream which provides the only known spawning habitat for the South Fork McKenzie local population of bull trout. Redd counts in 2007 totaled 54 and 41 in 2008 (USFS 2009e).	See text for this CHU	1230144 440225.3
Upper Willamette River—None	Smith River	OR	Smith River from its confluence with Trail Bridge Reservoir upstream 1.0 km (0.6 mi) to Smith River Dam is utilized as FMO for the Trail Bridge local population. Under current conditions bull trout have been observed seasonally in the lower portion of Smith River below Smith River Dam. Increased flows in this reach will likely increase and improve conditions for bull trout in the near future under Eugene Water and Electric Board's new license from FERC (Stillwater Sciences 2006, p. 58).	See text for this CHU	1220407 442574

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	South Fork Mckenzie River	OR	South Fork McKenzie River from its confluence with the McKenzie River below Cougar Dam upstream 26.1 km (16.3 mi) to Roaring River is FMO habitat. This segment includes the South Fork McKenzie River below Cougar Dam and above Cougar Reservoir up to Roaring River. The South Fork McKenzie River below Cougar Dam provides quality foraging, migration and overwintering habitat for adult and subadult bull trout from the Mainstem McKenzie local population and for bull trout from above Cougar Dam (South Fork McKenzie local population) that are occasionally entrained through Cougar Dam turbines or regulating outlets. The quality of habitat has improved in recent years due largely to the return to normative stream temperatures from operation of temperature control beginning at Cougar Dam in 2005 (Service 2007, p. 27-28). A fish collection facility at the base of Cougar Dam is operable as of 2010 and will provide a means of capturing and transferring bull trout to habitat above Cougar Dam. The critical habitat segment above Cougar Dam provides high quality foraging, migration and overwintering habitat for the South Fork McKenzie River local population of bull trout.	See text for this CHU	1220916 439554
Upper Willamette River—None	Sweetwater Creek	OR	Sweetwater Creek from its confluence with Trail Bridge Reservoir upstream 1.0 km (0.6 mi) to a natural barrier is spawning and rearing habitat. Sweetwater Creek provides one of only two spawning areas for bull trout associated with the Trail Bridge Reservoir local population (the other being the mainstem McKenzie River upstream of Trail Bridge Reservoir). From 2006-2008, Sweetwater Creek averaged 20 redds (USFS 2009e, p. 10).	See text for this CHU	1220489 442768

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Swift Creek	OR	Swift Creek from its confluence with the Middle Fork Willamette River upstream 14.7 km (9.1 miles) to its headwaters is spawning and rearing habitat. Swift Creek was used by bull trout historically based on 1960 field notes from a fish eradication project prior to filling Hills Creek Reservoir (ODFW 2007b, p. 35-38). Consequently, and in associated with the Middle Fork Willamette Bull Trout Rehabilitation Project, ODFW and the USFS have been transplanting fry and wild captive-reared bull trout juveniles from Anderson Creek on the McKenzie River to various habitats in the Middle Fork Willamette River, including Swift Creek. The transplanted fish have been documented rearing in these habitats but spawning has not yet been observed.	See text for this CHU	1222958 441593
Upper Willamette River—None	West Fork Horse Creek	OR	West Fork Horse Creek including side channels, from its confluence with Horse Creek upstream 2.8 kilometers (1.7 miles) is used for foraging, migration and overwintering by the Mainstem McKenzie local population.	See text for this CHU	1220443 442794
Upper Willamette River—None	Willamette River	OR	Willamette River from its confluence with the McKenzie River upstream 19 km (11.8 mi) to its confluence with the Middle Fork Willamette River is FMO habitat. This segment provides for the future maintenance of the migratory life history form of bull trout that is essential to the long-term conservation of the species and is essential for providing future connectivity between the McKenzie River and Middle Fork Willamette River local populations. Occupancy is unknown; however, an adult bull trout was captured near the confluence of the Willamette and McKenzie rivers in March 1999 by the Oregon Department of Fish and Wildlife (Ziller and Taylor 2000, p. 9). This habitat is essential to provide connectivity between local populations in the two major subbasins associated with the Upper Willamette Core Area.	See text for this CHU	1223003 435020

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Cougar Reservoir	OR	Cougar Reservoir with 559.9 ha (1,383.5 ac) surface area at full pool is FMO habitat. Intensive monitoring of the South Fork McKenzie River local population by ODFW indicates Cougar Reservoir provides essential foraging, migratory and overwintering habitat for adult, subadult and older juvenile bull trout (Service 2007, p. 26). A majority of adult and subadult bull trout from this local population utilize the reservoir (and the lower half mile of the East Fork McKenzie River) to stage for spawning from fall through spring prior to migrating upstream into the South Fork McKenzie River.	See text for this CHU	1222070 441720
Upper Willamette River—None	Dexter Reservoir	OR	Dexter Reservoir, (343.4 ha (848.5 ac) is unoccupied FMO habitat and essential for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Connectivity Criteria contained in the Willamette River Recovery Unit Chapter of the draft recovery plan (Service 2002a, p. v11-v12) includes connectivity between local populations within the Upper Willamette Core Area. Connecting the local population in the Middle Fork Willamette River above Hills Creek Dam with local populations in the McKenzie River will require fish passage at all three dams owned and operated by the Corps of Engineers in the Middle Fork Willamette River (Dexter, Lookout Point, Hills Creek dams). The feasibility of fish passage at these facilities will be assessed in the near future as required by biological opinions issued by the Service and by NMFS in 2008 (Service 2008g, NMFS 2008).	See text for this CHU	1227618 456580
Upper Willamette River—None	Hills Creek Reservoir	OR	Hills Creek Reservoir (1,059.2 ha (2,617.4 ac) provides essential foraging, migratory and overwintering habitat for adult, subadult and older juvenile bull trout. A majority of adult and subadult bull trout from the local population utilize the reservoir from fall through spring prior to migrating upstream into the Middle Fork Willamette River (ODFW 2007b, p. 19).	See text for this CHU	1222300 441004

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	Lookout Point Reservoir	OR	Lookout Point Reservoir, (1,615.8 ha (3,992.6 ac) is unoccupied FMO habitat and essential for future connectivity between local populations in the Middle Fork Willamette River Subbasin and local populations in the McKenzie River Subbasin. Connectivity Criteria contained in the Willamette River Recovery Unit Chapter of the draft recovery plan (Service 2002a, p. v11-v12) includes connectivity between local populations within the Upper Willamette Core Area. Connecting the local population in the Middle Fork Willamette River above Hills Creek Dam with local populations in the McKenzie River will require fish passage at all three dams owned and operated by the Corps of Engineers in the Middle Fork Willamette River (Dexter, Lookout Point, Hills Creek dams). The feasibility of fish passage at these facilities will be assessed in the near future as required by biological opinions issued by the Service and by NMFS in 2008 (Service 2008g, NMFS 2008).	See text for this CHU	1227887 439150
Upper Willamette River—None	Trail Bridge Reservoir	OR	Trail Bridge Reservoir is a 23.3 ha (57.6 ac) reservoir on the McKenzie River and is the primary overwintering (FMO) habitat for adults and subadults from the Trail Bridge local population. Due to the close proximity to spawning areas in the mainstem McKenzie River upstream of Trail Bridge Reservoir and in Sweetwater Creek (direct tributary to the reservoir), Trail Bridge Reservoir also serves as an important rearing area for juvenile bull trout (USFS 2009e, p. 4-6).	See text for this CHU	1224274 436714
Upper Willamette River—None	Lost Creek	OR	Lost Creek from the McKenzie River confluence upstream 6.2 km (3.9 miles) to White Branch Creek provides spawning and rearing habitat for the Mainstem McKenzie local population. Although spawning has not been documented, seasonal use has been reported and suitable habitat exists and it is possible that limited spawning may be occurring (D. Bickford, pers. comm. 2010).	See text for this CHU	1220673 441894

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Willamette River—None	White Branch Creek	OR	White Branch Creek from its confluence with Lost Creek upstream 1.3 km (0.8 miles) to approximately the road 242 crossing provides spawning and rearing habitat for the Mainstem McKenzie local population. Although spawning has not been documented, seasonal use has been reported and suitable habitat exists and it is possible that limited spawning may be occurring (D. Bickford, pers. comm. 2010).	See text for this CHU	1220302 441665

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 5. Coastal Recovery Unit—Hood River Critical Habitat Unit

Chapter 5. Hood River Critical Habitat Unit

The Hood River CHU includes the mainstem Hood River and three major tributaries: Clear Branch Hood River, West Fork Hood River, and East Fork Hood River. Portions of the mainstem Columbia River utilized as FMO by Hood River bull trout are discussed in the Lower Columbia River Mainstem CHU section of this document.

The Hood River CHU, located on the western slopes of the Cascades Mountains in northwest Oregon, lies entirely within Hood River County, Oregon. Currently there are two local populations (Clear Branch Hood River above Clear Branch Dam and Hood River and tributaries below Clear Branch Dam) identified as essential to the conservation and recovery (Service 2002a, pg. 7) of bull trout. Also identified are additional areas, including the West Fork Hood River and tributaries, where establishing additional local populations is essential for bull trout recovery. Bull trout in the Hood River CHU are believed to be at substantial risk, numbering less than 100 adult fish and emphasizing the need to establish additional local populations (ODFW 2007a, pg. 12-13).

Critical habitat within the Hood River Basin includes the mainstem Hood River and two major tributaries: the Middle Fork Hood River, and the West Fork Hood River. Although the recovery unit includes the Sandy River, which is known to be occupied based on recent sightings, there is insufficient information at present to identify local populations, or describe bull trout habitat use in the Sandy River subbasin, therefore, no critical habitat is designated.

Seven Guiding Principles Framework for Critical Habitat designation:

1. *Conserve opportunity for diverse life-history expression* – The Hood River bull trout population contains both adfluvial and fluvial life history types. Because of the Hood River bull trout's unique genetic diversity (see #2 below), it is likely that before passage barriers were present, the population had a unique fluvial life history strategy connecting widely divergent habitats across a broad geographic range. The Hood River habitat may have served as an important connectivity area for highly fluvial fish from both the coastal and Snake River/upper Columbia River groupings of bull trout (Spruell et al., 2003).

2. *Conserve opportunity for genetic diversity*- Genetic analysis of Hood River bull trout indicate that the population is uniquely different from others in the coastal grouping of bull trout (Spruell et al., 2003). Hood River bull trout contain an allele the is absent from other populations in the coastal linage and is found with high frequency in Snake River and Upper Columbia River populations suggesting that colonizers from both the Snake and Upper Columbia have contributed to the Hood River population. The preservation of this unique genotype provides significant opportunity for genetic diversity.

3. *Ensure bull trout are distributed across representative habitats* – Bull trout in the Hood river basin occupy a unique environment that is naturally stochastic. The glaciers that form some of the rivers fluctuate dramatically in diurnal cycles in flow, turbidity, and temperature. The unique ability of Hood River bull trout to adapt to this unpredictable environment separates and differentiates them from other bull trout in the coastal lineage of bull trout and represents a unique habitat type.

4. *Ensure sufficient connectivity among populations* –As discussed in #2 above, the Hood River bull trout are unique in that they possess alleles from both the Snake and Upper Columbia River

basins. It is likely that colonizers from both the costal grouping of bull trout and the Snake/Upper Columbia River contributed to the population. The presence of this unique set of alleles may also suggest that the Hood River serves as an important connectivity habitat among divergent (both genetically and geographically) populations.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* – Over 90 percent of the Hood River bull trout population is contained in Clear Branch above Laurance Lake. The amount of habitat above the lake is very limited, 2.1 miles. It is not likely that this population will be recovered with such limited habitat. Several significant efforts are underway that will restore passage at several major barriers that will increase the available amount of habitat by orders of magnitude. Once passage is restored, bull trout will be able to access the West Fork Hood River (and tributaries), the East Fork Hood River, the mainstem Hood River, and the mainstem Columbia River that connects to other basins containing bull trout (Deschutes River, Klickitat River, Little White Salmon River, Lewis River). The Hood River bull trout population may be one of the most recoverable bull trout populations in Oregon.

6. *Consider threats (e.g., climate change)*- Although many, if not most threats to Hood River bull trout are being actively rectified, but the stochastic nature of glacial outbursts and habitat altering flow events will continue to significantly alter Middle Fork Hood River Tributaries. This significant habitat altering events will likely be exacerbated by any future effects from climate change. The West Fork Hood River basin is significantly less stochastic and will serve an important role as an alternative or refugia habitat.

7. *Ensure sufficient redundancy in conserving population units* – Because there are so few bull trout populations on the west side of the Cascade range in Oregon, little redundancy exists. The Hood River population is necessary to provide what little redundancy exists.

The following water bodies are included in this CHU (see Table 28)

Hood River from the Columbia River upstream 23.7 km (14.7 mi) to its confluence with the east and middle forks provides FMO habitat, as well as connectivity with the mainstem Columbia River.

Currently, this segment is known to be occupied, and provides foraging, migration, and overwintering (FMO) habitat, as well as connectivity with the mainstem Columbia River. Improving fish passage and diversion screening (Recovery Tasks 1.2.3 and 1.2.6) is identified to assist maintaining and improving habitat conditions in this segment (Service 2002a, pg. 43).

East Fork Hood River from the confluence of the Hood River upstream 3.6 km (2.4 mi) is FMO habitat. This segment is essential due to being currently occupied and providing potential spawning/rearing habitat and FMO habitat for the Hood River local population (ODFW 2007a).

Middle Fork Hood River from its confluence with the Hood River upstream 15.4 km (9.6 mi) to its confluence with Coe Branch provides spawning and rearing habitat for the Hood River local population. This segment is essential due to being currently occupied and providing spawning/rearing habitat and FMO habitat for the Hood River local population.

Tony Creek from its confluence with the Middle Fork Hood River upstream approximately 12.5 km (7.75 mi) where a 12-foot falls is a barrier to fish passage. Salmonids were observed in this reach during a 1996 USFS stream survey. The Draft Recovery Plan (Service 2002a) states that a radio-tagged bull trout was tracked in Tony Creek in 1998. Since 1998, fish passage at a Tony Creek diversion has been modified. Biologists from the Confederated Tribes of the Warm

Springs observed two adult bull trout in Tony Creek on 10/7/09. One was a redd at RM 0.4 and one was by the Tony Creek diversion at RM 0.7 (USFS in litt. 2010b).

Bear Creek from the Middle Fork Hood River confluence upstream approximately 7.75 miles, where a 12-foot falls is a barrier to fish passage. The lower 1.3 km (0.8 mi) to its confluence with an unnamed tributary is occupied and provides spawning and rearing habitat for the Hood River local population. The creek above this unnamed tributary is unoccupied FMO habitat. It is essential due to being occupied near the confluence of Bear Creek and Middle Fork Hood River (although occupancy is variable) and providing spawning and rearing habitat for the Hood River local population. The Draft Recovery Plan (Service 2002a) states that a radio-tagged bull trout was tracked in Tony Creek in 1998. Since 1998, fish passage at a Tony Creek diversion has been improved. Biologists from the Confederated Tribes of the Warm Springs observed two adult bull trout in Tony Creek on October 7, 2009. One was a redd at RM 0.4 and one was by the Tony Creek diversion at RM 0.7 (USFS in litt. 2010b).

Elliot Branch from the Middle Fork Hood River confluence upstream 1.3 km (0.8 mi) to a passable diversion is occupied and provides spawning and rearing habitat for the Hood River local population.

Coe Branch from the Middle Fork Hood River confluence upstream 3.9 km (2.4 mi) to its confluence with near Compass Creek is occupied, provides spawning/rearing habitat for the Hood River local population, and provides FMO habitat between spawning and rearing habitat in Compass Creek and the Middle Fork Hood River.

> **Compass Creek** from the confluence with Coe Branch upstream 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat for the Hood River local population.

Clear Branch from the confluence with the Middle Fork Hood River upstream 1.4 km (0.9 mi) to Clear Branch Dam provides FMO and spawning and rearing habitat. Clear Branch above Laurance Lake upstream 5.0 km (3.1 mi) to the confluence with two unnamed tributaries (near 45-foot impassable falls) is occupied habitat providing spawning and rearing habitat for the Clear Branch local population. This segment is known occupied and essential for providing migration and spawning and rearing habitat to the Clear Branch local population. Nearly the entire population of bull trout within the Hood River basin is contained within this tributary of the Hood River.

Unnamed Creek from the confluence with Clear Branch upstream 0.15 km (0.09 mi) provides SR habitat to the Clear Branch local population. Nearly the entire population of bull trout within the Hood River basin is contained within this tributary of the Hood River.

Laurance Lake, with a surface area of 37 ha (91 ac), provides rearing habitat for the Clear Branch local population. Laurance Lake is used for FMO and some rearing, with spawning occurring upstream in Clear Branch Hood River and also Pinnacle Creek. This segment is known occupied and essential for providing rearing habitat and FMO habitat to the Clear Branch local population.

> **Pinnacle Creek** from the confluence with Laurance Lake upstream 3.25 km (2.02 mi) to a gradient barrier is occupied and provides spawning and rearing habitat for the Clear Branch local population.

West Fork Hood River from the Hood River confluence upstream 23.2 km (14.4 mi) to the confluence with Elk and McGee Creeks provides potential FMO habitat. The West Fork Hood

River is considered unoccupied at this time, but sightings from trap information and radio-tracking efforts in 2007 were documented at the fish ladder on Punchbowl Falls (Service 2002a, pg. 9 and ODFW 2007a, pg 8.). This habitat is essential for establishing additional reproducing local population(s) in the West Fork Hood River, which is essential to the long-term conservation of the species and is identified as an action needed to recovery Hood River bull trout (recovery criteria #1, expand present distribution into suitable habitat in the core area, and tasks 1.2.7 and 3.1.5; Service 2002a, pg. 36, 43, 46). We believe the West Fork Hood River watershed (including the West Fork Hood River, Lake Branch, Divers Creek, Laurel Creek, Red Hill Creek, and Elk Creek) is necessary for population expansion and should be designated as critical habitat. The Hood Recovery Unit Team has identified the West Fork Hood River as essential to recovery of bull trout and is considered a potential local population in the recovery plan. The plan recognizes that in a recovered condition the Hood River Core Area will include up to four local populations, including the West Fork Hood River. Currently bull trout numbers are severely depressed. Although accurate bull trout adult abundance estimates for the Hood River Core have only recently become available, the total number of bull trout adults is approximately 100 (ODFW 2007a, pg 12-13). This low adult abundance in the Hood River Core Area places it at high risk from genetic drift. It is likely that both of the two local populations is currently at risk from inbreeding depression given the overall low abundance within the core area and constitutes a serious threat to their long term persistence. Recovery is expected within existing population complexes, and through expansion to other areas, such as the West Fork Hood River, as recovery progresses. There have been sightings of bull trout in the West Fork Hood River, one at Punchbowl falls in 1963, one in a smolt trap at the mouth of Lake Branch in 1997, and radio-tracking efforts detected bull trout in 2007, ODFW 2007a, pg 8). Based on temperature observations from U.S. Forest Service (USFS 1996c pg. 5-56) suitable bull trout habitat is present in the West Fork Hood River mainstem and bull trout were historically distributed in a short reach of the West Fork Hood River (Buchanan et al. 1997, pg. 47). Current bull trout use of the West Fork Hood River is thought to be primarily for foraging, migration, and overwintering.

Lake Branch from the confluence with the West Fork Hood River upstream 4.2 km (2.6 mi) to its confluence with Laurel Creek is unoccupied FMO habitat. Establishing additional local population(s) in the West Fork Hood River is identified as an action necessary to achieve recovery. Lake Branch would serve as potential FMO habitat linking Laurel and Divers Creeks, both identified by the U.S. Forest Service (USFS 1996c, pg. 5-56) as having suitable water temperatures to provide spawning habitat. The draft recovery plan identified establishing addition local populations within the core area as a recovery objective (see tasks 1.2.7 and 3.1.5).

> **Laurel Creek** from the Lake Branch confluence upstream approximately 5.8 km (3.6 mi) to an impassable falls at its headwaters is essential to provide potential FMO habitat for supporting additional local populations in this core area (Service 2002a pg. 36). Current occupancy is unknown.

Red Hill Creek from the West Fork Hood River confluence upstream approximately 5.5 km (3.4 mi) to an impassable falls at its headwaters is essential to provide FMO habitat to support additional local populations, which will be essential to recovery. Current occupancy is unknown. (Service 2002a pg. 36) and tasks 1.2.7 and 3.1.5 (Service 2002a, pg.43, 46).

Elk Creek from the West Fork Hood River confluence upstream 6.6 km (4.1 mi) to its headwaters at a bedrock waterfall barrier provides potential FMO habitat to support a local population that is identified in the Draft Recovery Plan as essential to achieving recovery(Service 2002a pg. 36) and tasks 1.2.7 and 3.1.5 (Service 2002a, pg.43,46). Current occupancy is unknown.

Jones Creek from the West Fork Hood River confluence upstream approximately 1.5 miles where stream gradient increases provides (unoccupied) potential FMO habitat. Salmonids were observed from the mouth to RM 1.5 in a 2000 USFS stream survey. There are two barrier waterfalls at RM 2.75 (22 feet and 23 feet high, respectively). The 7-day maximum temperature at the mouth was below 13 degrees C. Jones Creek also has some of the best habitat in the upper West Fork Hood River (USFS, in litt., 2010b).

McGee Creek from the West Fork Hood River confluence upstream approximately 3.5 miles, where a high gradient cascading riffle may limit fish passage upstream (USFS 1996c). This creek provides (unoccupied) potential FMO habitat. There are no barriers to fish passage in McGee Creek up to this point. It has some of the best habitat in the upper West Fork Hood River and the average 7-day temperature was 11.2 degrees C (USFS 1996c; USFS, in litt. 2010b).

Table 28. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Hood River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hood River—None	Bear Creek	OR	Bear Creek from the Middle Fork Hood River confluence upstream approximately 7.75 miles, where a 12-foot falls is a barrier to fish passage. The lower 1.3 km (0.8 mi) to its confluence with an unnamed tributary is occupied and provides spawning and rearing habitat for the Hood River local population. The creek above this unnamed tributary is unoccupied FMO habitat. It is essential due to being occupied near the confluence of Bear Creek and Middle Fork Hood River (although occupancy is variable) and providing spawning and rearing habitat for the Hood River local population. The Draft Recovery Plan (Service 2002a) states that a radio-tagged bull trout was tracked in Tony Creek in 1998. Since 1998, fish passage at a Tony Creek diversion has been improved. Biologists from the Confederated Tribes of the Warm Springs observed two adult bull trout in Tony Creek on October 7, 2009. One was a redd at RM 0.4 and one was by the Tony Creek diversion at RM 0.7 (USFS, in litt. 2010b).	See text for this CHU	1226816 438721
Hood River—None	Clear Branch	OR	Clear Branch from the confluence with the Middle Fork Hood River upstream 1.4 km (0.9 mi) to Clear Branch Dam provides FMO and spawning and rearing habitat. Clear Branch above Laurance Lake upstream 5.0 km (3.1 mi) to the confluence with two unnamed tributaries (near 45-foot impassable falls) is occupied habitat providing spawning and rearing habitat for the Clear Branch local population. This segment is known occupied and essential for providing migration and spawning and rearing habitat to the Clear Branch local population. Nearly the entire population of bull trout within the Hood River basin is contained within this tributary of the Hood River.	See text for this CHU	1220481 442769
Hood River—None	Coe Branch	OR	Coe Branch from the Middle Fork Hood River confluence upstream 3.9 km (2.4 mi) to its confluence with near Compass Creek is occupied, provides spawning/rearing habitat for the Hood River local population, and provides FMO habitat between spawning and rearing habitat in Compass Creek and the Middle Fork Hood River.	See text for this CHU	1216303 454986

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hood River—None	Compass Creek	OR	Compass Creek from the confluence with Coe Branch upstream 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat for the Hood River local population.	See text for this CHU	1216684 454340
Hood River—None	East Fork Hood River	OR	East Fork Hood River from the confluence of the Hood River upstream 3.6 km (2.4 mi) is FMO habitat. This segment is essential due to being currently occupied and providing potential spawning/rearing habitat and FMO habitat for the Hood River local population (ODFW 2007a).	See text for this CHU	1216272 455754
Hood River—None	Elk Creek	OR	Elk Creek from the West Fork Hood River confluence upstream 6.6 km (4.1 mi) to its headwaters at a bedrock waterfall barrier provides potential FMO habitat to support a local population that is identified in the Draft Recovery Plan as essential to achieving recovery(Service 2002a pg. 36) and tasks 1.2.7 and 3.1.5 (Service 2002a, pg.43,46). Current occupancy is unknown.	See text for this CHU	1217818 454562
Hood River—None	Elliot Creek	OR	Elliot Creek from the Middle Fork Hood River confluence upstream 1.3 km (0.8 mi) to a passable diversion is occupied and provides spawning and rearing habitat for the Hood River local population.	See text for this CHU	1216272 455754.1
Hood River—None	Hood River	OR	Hood River from the Columbia River upstream 23.7 km (14.7 mi) to its confluence with the east and middle forks provides FMO habitat, as well as connectivity with the mainstem Columbia River. Currently, this segment is known to be occupied, and provides foraging, migration, and overwintering (FMO) habitat, as well as connectivity with the mainstem Columbia River. Improving fish passage and diversion screening (Recovery Tasks 1.2.3 and 1.2.6) is identified to assist maintaining and improving habitat conditions in this segment (Service 2002a, pg. 43).	See text for this CHU	1217818 454562

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hood River—None	Jones Creek	OR	Jones Creek from the West Fork Hood River confluence upstream approximately 1.5 miles where stream gradient increases provides (unoccupied) potential FMO habitat. Salmonids were observed from the mouth to RM 1.5 in a 2000 USFS stream survey. There are two barrier waterfalls at RM 2.75 (22 feet and 23 feet high, respectively). The 7-day maximum temperature at the mouth was below 13 degrees C. Jones Creek also has some of the best habitat in the upper West Fork Hood River (USFS, in litt., 2010b).	See text for this CHU	1217820 454620
Hood River—None	Lake Branch	OR	Lake Branch from the confluence with the West Fork Hood River upstream 4.2 km (2.6 mi) to its confluence with Laurel Creek is unoccupied FMO habitat. Establishing additional local population(s) in the West Fork Hood River is identified as an action necessary to achieve recovery. Lake Branch would serve as potential FMO habitat linking Laurel and Divers Creeks, both identified by the U.S. Forest Service (USFS 1996c, pg. 5-56) as having suitable water temperatures to provide spawning habitat. The draft recovery plan identified establishing addition local populations within the core area as a recovery objective (see tasks 1.2.7 and 3.1.5).	See text for this CHU	1217031 455483
Hood River—None	Laurel Creek	OR	Laurel Creek from the Lake Branch confluence upstream approximately 5.8 km (3.6 mi) to an impassable falls at its headwaters is essential to provide potential FMO habitat for supporting additional local populations in this core area (Service 2002a pg. 36). Current occupancy is unknown.	See text for this CHU	1217031 455483.1
Hood River—None	Middle Fork Hood River	OR	Middle Fork Hood River from its confluence with the Hood River upstream 15.4 km (9.6 mi) to its confluence with Coe Branch provides spawning and rearing habitat for the Hood River local population. This segment is essential due to being currently occupied and providing spawning/rearing habitat and FMO habitat for the Hood River local population.	See text for this CHU	1217031 455483.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hood River—None	McGee Creek	OR	McGee Creek from the West Fork Hood River confluence upstream approximately 3.5 miles, where a high gradient cascading riffle may limit fish passage upstream (1997 USFS stream survey). This creek provides (unoccupied) potential FMO habitat. There are no barriers to fish passage in McGee Creek up to this point. It has some of the best habitat in the upper West Fork Hood River and the average 7-day temperature was 11.2 degrees C (USFS 1996c; USFS 2010b).	See text for this CHU	1217818 454561
Hood River—None	Pinnacle Creek	OR	Pinnacle Creek from the confluence with Laurance Lake upstream 3.25 km (2.02 mi) to a gradient barrier is occupied and provides spawning and rearing habitat for the Clear Branch local population.	See text for this CHU	1217430 455392
Hood River—None	Red Hill Creek	OR	Red Hill Creek from the West Fork Hood River confluence upstream approximately 5.5 km (3.4 mi) to an impassable falls at its headwaters is essential to provide FMO habitat to support additional local populations, which will be essential to recovery. Current occupancy is unknown. (Service 2002a pg. 36) and tasks 1.2.7 and 3.1.5 (Service 2002a, pg.43, 46).	See text for this CHU	1216272 455753
Hood River—None	Tony Creek	OR	Tony Creek from its confluence with the Middle Fork Hood River upstream approximately 12.5 km (7.75 mi) where a 12-foot falls is a barrier to fish passage. Salmonids were observed in this reach during a 1996 USFS stream survey. The Draft Recovery Plan (Service 2002a), states that a radio-tagged bull trout was tracked in Tony Creek in 1998. Since 1998, fish passage at a Tony Creek diversion has been modified. Biologists from the Confederated Tribes of the Warm Springs observed two adult bull trout in Tony Creek on 10/7/09. One was a redd at RM 0.4 and one was by the Tony Creek diversion at RM 0.7 (USFS, in litt. 2010b).	See text for this CHU	1216390 455534
Hood River—None	UNNAMED - off Clear Branch	OR	Unnamed Creek from the confluence with Clear Branch upstream 0.15 km (0.09 mi) provides SR habitat to the Clear Branch local population. Nearly the entire population of bull trout within the Hood River basin is contained within this tributary of the Hood River.	See text for this CHU	1216459 454629
Hood River—None	West Fork Hood River	OR	West Fork Hood River from the Hood River confluence upstream 23.2 km (14.4 mi) to the confluence with Elk and McGee Creeks provides potential FMO habitat. The	See text for this CHU	1217699 454830

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			West Fork Hood River is considered unoccupied at this time, but sightings from trap information and radio-tracking efforts in 2007 were documented at the fish ladder on Punchbowl Falls (Service 2002a, pg. 9 and ODFW 2007a, pg 8.). This habitat is essential for establishing additional reproducing local population(s) in the West Fork Hood River, which is essential to the long-term conservation of the species and is identified as an action needed to recovery Hood River bull trout (recovery criteria #1, expand present distribution into suitable habitat in the core area, and tasks 1.2.7 and 3.1.5; Service 2002a, pg. 36, 43, 46). We believe the West Fork Hood River watershed (including the West Fork Hood River, Lake Branch, Divers Creek, Laurel Creek, Red Hill Creek, and Elk Creek) is necessary for population expansion and should be designated as critical habitat. The Hood Recovery Unit Team has identified the West Fork Hood River as essential to recovery of bull trout and is considered a potential local population in the recovery plan. The plan recognizes that in a recovered condition the Hood River Core Area will include up to four local populations, including the West Fork Hood River. Currently bull trout numbers are severely depressed. Although accurate bull trout adult abundance estimates for the Hood River Core have only recently become available, the total number of bull trout adults is approximately 100 (ODFW 2007a, pg 12-13). This low adult abundance in the Hood River Core Area places it at high risk from genetic drift. It is likely that both of the two local populations is currently at risk from inbreeding depression given the overall low abundance within the core area and constitutes a serious threat to their long term persistence. Recovery is expected within existing population complexes, and through expansion to other areas, such as the West Fork Hood River, as recovery progresses. There have been sightings of bull trout in the West Fork Hood River, one at Punchbowl falls in 1963, one in a smolt trap at the mouth of Lake Branch in 1997, and radio-tracking efforts detected bull trout in 2007 (ODFW 2007a, pg 8). Based on temperature observations from U.S. Forest Service (USFS 1996c pg. 5-56) suitable bull trout habitat is present in the West Fork Hood River mainstem and bull		

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			trout were historically distributed in a short reach of the West Fork Hood River (Buchanan et al. 1997, pg. 47). Current bull trout use of the West Fork Hood River is thought to be primarily for foraging, migration, and overwintering.		
Hood River—None	Laurance Lake	OR	Laurance Lake, with a surface area of 37 ha (91 ac), provides rearing habitat for the Clear Branch local population. Laurance Lake is used for FMO and some rearing, with spawning occurring upstream in Clear Branch Hood River and also Pinnacle Creek. This segment is known occupied and essential for providing rearing habitat and FMO habitat to the Clear Branch local population.	See text for this CHU	1217006 454477

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 6. Coastal Recovery Unit—Lower Deschutes River Critical Habitat Unit

Chapter 6. Lower Deschutes River Critical Habitat Unit

The Lower Deschutes River CHU is essential to the conservation of bull trout because populations here are genetically diverse; have diverse life history expressions including fluvial, adfluvial, and resident populations with extensive connectivity within and outside the CHU; and are the most robust in this part of the Mid-Columbia RU. The Deschutes River basin contains a variety of representative habitats, including high Cascade headwater streams, glacially fed streams, spring systems, lake habitat, and mainstem river habitat. Maintaining and recovering these populations will ensure conservation of adaptations to these unique habitats, and adequate redundancy within this basin and relative to adjacent core areas (e.g., Hood River, John Day River, etc.). Protecting and maintaining all five of the Deschutes River basin's bull trout populations will help ensure the long-term viability of these bull trout by protecting a geographically widespread distribution of unique but related bull trout (see Appendix 1 for more detailed information).

The Lower Deschutes River Critical Habitat Unit is located in Wasco, Sherman, Jefferson, Deschutes, and Crook counties in central Oregon. The Deschutes River basin contains a variety of representative habitats including high Cascade headwater streams, glacially fed streams, spring systems, lakes, and mainstem river habitat. The Confederated Tribes of the Warm Springs Reservation (CTWS) own lands in this CHU.

There are five known local populations in the lower Deschutes River basin. These are: 1) Warm Springs River; 2) Shitike Creek; 3) Whitewater River; 4) Jefferson Creek - Candle Creek Complex; and, 5) Jack Creek – Canyon Creek – Heising Spring Complex. The Bull Trout Draft Recovery Plan (Service 2002a, p. 32) states the persistence of five or more populations is needed for species' recovery. The five bull trout populations in the Deschutes CHU have diverse life history expressions including fluvial, adfluvial, and resident populations. While two of the five populations have adult abundance of several hundred adults, three populations have smaller adult counts of less than one hundred adults. The Deschutes River basin's Metolius River bull trout populations are the largest in Oregon. The five year average from 2005 to 2009 for Metolius River basin bull trout is 1,554 adults. The Metolius River populations are large enough to permit anglers in Lake Billy Chinook to retain one bull trout per day over 610 millimeters (24 inches) long. These populations have also been selected as donor stock for use in bull trout reintroduction efforts in the Clackamas River basin.

These populations are connected by migratory corridors in the Metolius and mainstem Deschutes rivers. These connections are essential to restore and maintain the metapopulation structure. Connectivity between these populations and the Columbia River also provides opportunity to connect the Deschutes River to other populations in the Coastal Conservation Unit. Thus, the entire occupied area is essential. The Deschutes River basin's bull trout populations have a wide genetic diversity. The five populations have maintained their unique character and attributes (DeHann et al. 2008, p. 10); the Whitewater River population in particular shows unique genetic diversity. Protecting and maintaining all five of the Deschutes River basin's bull trout populations will help ensure the long-term viability of these bull trout by protecting a geographically wide spread distribution of unique but related bull trout. Maintaining and recovering these diverse populations within this unit will ensure conservation of the bull trout adapted to unique high desert and Cascade habitats. The Bull Trout Draft Recovery Plan states the persistence of five or more populations is needed for bull trout recovery.

The Deschutes River Critical Habitat Unit includes: 1) the mainstem Deschutes River from its confluence with Columbia River upstream to the Pelton Reregulating dam; 2) the mainstem Deschutes River from Lake Billy Chinook to Big Falls; 3) Warm Springs River; 4) Shitike Creek; 5) Trout Creek; 6) Crooked River from its confluence with Lake Billy Chinook upstream to Highway 97; 7) Metolius River basin consisting of the mainstem Metolius River, Street Creek, Whitewater River, Jefferson Creek and an un-named tributary, Candle Creek, Abbot Creek, Canyon Creek and its un-named tributaries, Jack Creek, Heising Spring, Lake Creek and its tributaries (including Link Creek, Suttle Lake and Blue Lake); and 8) Whychus Creek upstream to the USFS 6360 road crossing.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* - The five bull trout populations in the Lower Deschutes River basin have diverse life history expressions. The Confederated Tribes of the Warm Springs Reservation (CTWS) bull trout population in the Shitike Creek and Warm Springs River are fluvial. Adults forage, migrate, and overwinter in the mainstem Deschutes River, while spawning and rearing (SR) occurs in tributary streams. The three Metolius Populations are adfluvial. While the Canyon- Jack-Heising Spring complex and Jefferson-Candle Creek spawners have similar spawning timings, the Whitewater River bull trout have very different life histories associated with the glacially fed character of this spawning stream. Several populations may also have resident life histories.

2. *Conserve opportunity for genetic diversity* - The Lower Deschutes River basin's bull trout population have a wide genetic diversity. Genetic analysis suggests that while populations have exchanged genetic material, the five populations have maintained their unique character and attributes (DeHann et al. 2008, p. 10). The Whitewater River population in particular shows unique genetic diversity.

3. *Ensure bull trout are distributed across representative habitats* - The Deschutes River basin bull trout occupy a range of habitats representative of Oregon's high desert. These include diverse habitats such as high Cascades headwater streams, glacially fed streams, and spring systems. Maintaining and recovering these populations will ensure that the Service is protecting populations that are adapted to these unique habitats.

4. *Ensure sufficient connectivity among populations* - The five Deschutes River populations are connected by migratory corridors in the Metolius River and mainstem Deschutes River. These corridors are essential to restore and maintain metapopulation structure for these populations. Passage at the Pelton Round Butte hydro project dams is being addressed as part of the project's 2004 Federal Energy Regulatory Commission license.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* - Deschutes River bull trout depend on a variety of habitats to complete their life history and maintain population viability. Bull trout spawning habitat is unique in character and limited in abundance. Protecting spawning and rearing habitat, migratory corridors, and foraging areas is essential to ensure long-term viability of the Deschutes River bull trout populations. Designated Deschutes CH includes the known spawning, rearing, and foraging habitats, as well as migratory corridors needed to connect populations.

6. *Consider threats (e.g., climate change)* - Threats such as catastrophic fire, invasive species of fish, and climate change can all adversely affect bull trout populations. Protecting the Deschutes

River five populations will ensure the long-term viability of these populations by a geographically wide spread distribution of unique but related bull trout populations. The spring-fed hydrology of the Deschutes River spawning areas may help to mitigate the effects of increasing temperatures and reduced snowpack associated with climate change.

7. *Ensure sufficient redundancy in conserving population units* **-** Protecting and maintaining all five of the Deschutes River basin's bull trout populations will ensure adequate redundancy in the Deschutes. While two of the five populations have adult population of several hundred adults, three populations have smaller adult counts of less than one hundred. Threats to some of the smaller populations could result in their extirpation. Thus, it is essential maintain all the existing populations in the event of some population loss.

The following water bodies are included in this CHU (see Table 29)

Deschutes River from the confluence with the Columbia River at km 329.8 (mi 204.5) to Big Falls at km 212 (mi 131.5) is FMO habitat for fluvial bull trout (Buchanan et al. 1997, p. 57). This mainstem reach is important FMO habitat for local populations and as connectivity to essential Columbia River FMO habitat and adjacent core areas. It does not include the section of river and reservoir between Round Butte and the Reregulating dams because the area does not provide suitable bull trout habitat nor is there volitional passage through the dams. Upstream and downstream trap and haul of fish around Round Butte, Pelton, and Reregulation dams will be operational in February 2010 in order to provide passage for bull trout. A study conducted by the CTWS found that Deschutes River bull trout migrated from the Deschutes into the Columbia River (J. Graham, pers. comm., 2008). The Deschutes River provides connectivity between all five of the Deschutes River populations. This metapopulation structure is similar to the structure that has historically existed in the Deschutes. Lake Billy Chinook also provides connectivity, and is also important FMO habitat for three of the five populations.

Deschutes River from the confluence with the Columbia River at km 329.8 (mi 204.5) to Big Falls at km 212 (mi 131.5) is FMO habitat for bull trout, excluding the Deschutes River to its midpoint from the Pelton Reregulation Dam at RM 100.5 downstream to the CTWS boundary at about RM 69.2.

> Trout Creek from its confluence with the Deschutes River at km 146 (mi 87.5) upstream 3.3 km (2.1 mi) is FMO habitat.

Shitike Creek from its confluence with the Deschutes River at river km 155.04 (mi 96.12) upstream 32.0 km (19.2 mi) is FMO habitat and upstream 12.4 km (7.5 mi) to its source is SR habitat. Shitike Creek contains a local population. Shitike Creek is identified as a local population in the Bull Trout Draft Recovery Plan (Service 2002a, p. 7). This is one of two Deschutes River fluvial populations. Like the Warm Springs River population, it provides important life history and geographic diversity. Though this population is slightly larger than the Shitike Creek population, it is also vulnerable to natural population variations and negative effects from habitat modification or drought conditions (Burchell 2007, p. 12).

Warm Springs River from its confluence with the Deschutes River at km 134.22 (mi 83.22) upstream 45.1 km (27.1 mi) is FMO habitat and SR habitat extends 25.0 km (15.01 mi) upstream. The Warm Springs River is identified as a local population in the Bull Trout Draft Recovery Plan (Service 2002a, p. 7). This population is important because it is one the two fluvial populations in the Deschutes River, and provides important life history and geographic diversity. It is a relatively small population, and thus is potentially more vulnerable to natural population variation and negative effects from habitat modification or drought conditions (Burchell 2007, p. 12).

> *Bunch Grass Creek* is SR habitat from its confluence with the Warm Springs River upstream 10.07 km (6.24 mi) to its source at Cold Springs. The Warm Springs River contains a local population.

Lake Billy Chinook (1543.06 ha; 3812.96 ac) is a reservoir on the Deschutes River and is essential FMO habitat. Lake Billy Chinook provides important foraging and overwintering habitat for three adfluvial bull trout populations that spawn in the Metolius River basin and connectivity between the Deschutes, Metolius, and Crooked Rivers. Critical habitat includes the reservoir to the ordinary high water elevations and normal operating pool elevations, respectively. The Oregon Department of Fish and Wildlife permits angling and harvest of bull trout in Lake Billy Chinook. This area of critical habitat provides several important functions for bull trout. Fish passage at this reservoir's Round Butte Dam will be operational in February, 2010. Because this fish passage structure will prevent any fish from passing downstream of Round Butte Dam into Lake Simtutus or the Reregulation Reservoir, no critical habitat is designated in these reservoirs.

Street Creek from its confluence with Lake Billy Chinook upstream 4.6 km (2.8 mi) is occupied FMO habitat (mostly rearing). This area is important because it allows bull trout in Lake Billy Chinook to disperse out of the reservoir, which decreases the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).

Crooked River from its confluence with Lake Billy Chinook upstream to the Highway 97 Bridge provides FMO habitat. The Crooked River from its confluence with Lake Billy Chinook at km 189.85 (mi 117.7) upstream 1.7 km (1.18 mi) to Opal Springs Dam is occupied FMO habitat. From Opal Springs dam upstream 17.9 km (11.1 mi) to the Highway 97 bridge crossing is unoccupied potential FMO habitat. Few records of bull trout have been made, but cold water springs along the length of Crooked River Gorge, provides suitable habitat for bull trout. Because numerous large, cold springs enter this section of the Crooked River, the habitat is currently suitable for cold-water salmonids (Torgersen 2007, p. 17) such as bull trout. Fish passage was not provided when the Opal Springs Dam was enlarged in 1983, making the Dam an impassable barrier to upstream movement (Buchanan et al. 1997, p. 58). The Bull Trout Draft Recovery Plan (Service 2002a, p. 41) calls for restoring connectivity and opportunities for migration in Crooked River by constructing upstream fish passage at Opal Springs Dam (task 1.2.4). This area is important because it would allow bull trout in Lake Billy Chinook to disperse out of the reservoir, which would decrease the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).

Metolius River from its confluence with Lake Billy Chinook at km 195.3 (121.1 mi) upstream 37.8 km (23.5 mi) to its confluence with Jack Creek is occupied FMO habitat. The Metolius River upstream of Jack Creek 7.4 km (4.6 mi) to the springs at its source is occupied SR habitat (Buchanan et al. 1997, p. 61). This area is important as a migratory corridor for three of the five Deschutes River's bull trout populations, and allows exchange of individuals and genetic material between these three populations. The upper reaches also provide some SR habitat, and are considered to be part of the Jack Creek-Canyon Creek-Heising Spring-Upper Metolius River population. The Metolius River adfluvial populations are significantly larger than the Warm Spring River and Shitike Creek populations, and represent an important source of individual fish and genetic diversity for the Deschutes River basin.

Whitewater River from its confluence with the Metolius River at km 9.2 (5.7 mi) upstream 19.4 km (12.0 mi) to its source is SR habitat (Buchanan et al. 1997, p. 58). Whitewater River contains a local population (Service 2002a, p. 7). This area is important due to its unique physical habitat and genetically unique bull trout. The river is glacially fed, unlike the spring-fed systems that support other Metolius River bull trout populations. These bull trout are also genetically unique from other Metolius and Deschutes basin bull trout (DeHann et al. 2008, p. 10), due in part to their unusual physical habitat.

Candle Creek from its confluence with the Metolius River at km 25.7 (mi 15.9) upstream 6.26 km (3.9 mi) to Cabot Creek is SR habitat. This area is essential because it supports a significant number of spawning bull trout, and also provides important rearing habitat. Candle Creek is one of two streams that make up one of the three Metolius River bull trout populations.

Jefferson Creek from its confluence with the Metolius River at km 25.5 (mi 15.8) upstream 10.2 km (6.3 mi) to its confluence with an un-named tributary is SR habitat (Buchanan et al. 1997, p. 61). This area is important because it supports a significant number of spawning bull trout, and also provides important rearing habitat. Jefferson Creek is one of two streams that make up one of the three Metolius River bull trout populations.

> *Unnamed tributary* to Jefferson Creek at km 10.4 (mi 6.5) upstream 1.1 km (0. 0.7 mi) to its source is FMO habitat (Buchanan et al. 1997, p. 61).

Abbot Creek from its confluence with the Metolius River at km 26.29 (mi 16.30) upstream 5.44 km (3.38 mi) to its source spring on the south east side of Abbot Butte is occupied rearing habitat (Buchanan et al. 1997, p. 61). Abbot Creek is important rearing habitat for bull trout in the area of the Jefferson Creek-Candle Creek population.

Canyon Creek from its confluence with the Metolius River at km 36.1 (mi 22.4) upstream 9.1 km (5.6 mi) to U.S. Forest Service (USFS) Road 1235 is SR habitat. Canyon Creek, together with Roaring Creek, support a large number of spawning bull trout.

> *Unnamed tributary* to Canyon Creek (east of and parallel to Brush Creek) upstream 3.3 km (2.1 mi) is SR habitat. This is essential habitat to the Canyon / Roaring creek population.
>
> *Brush Creek* from its confluence with Canyon Creek at km 1.5 (mi 0.9), upstream 6.2 km (3.9 mi) to Forest Service Road 1230 is SR habitat. This is essential habitat to the Canyon / Roaring creek population.
>
> *Roaring Creek* from its confluence with Canyon Creek at km 3.9 (mi 2.4) upstream 2.9 km (1.8 miles) to its headwater springs; is SR habitat. Canyon Creek, together with Roaring Creek, support a large number of spawning bull trout.
>
> > Unnamed tributary to Roaring Creek (west of Roaring Creek) 1.0 km (0.6 mi) to the intersection of Forest Service roads 1260 and 1230 is SR habitat. This is essential habitat to the Canyon / Roaring creek population.

Unnamed tributary to Roaring Creek (north of and parallel to Roaring Creek) upstream 0.6 km (0.4 mi) to the source springs is FMO habitat. This is essential habitat to the Canyon / Roaring creek population.

Unnamed tributary to Roaring Creek (west of Roaring Creek) upstream 0.33 km (0.2 mi) is FMO habitat. This is essential habitat to the Canyon / Roaring creek population.

Jack Creek upstream from its confluence with the Metolius River at km 37.3 (mi 23.1) upstream 7.6 km (4.7 mi) to its source springs is SR habitat (N. Dachtler, pers. comm., 2009). This area provides important spawning and rearing habitat, and supports a significant element of the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex. This complex has the largest number of spawning bull trout in the Deschutes River basin.

Unnamed tributary to Jack Creek has 0.1 km (0.1 mi) is SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.

Unnamed tributary to the unnamed tributary to Jack Creek has 0.1 km (0.03 mi) of SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.

Unnamed tributary to Jack Creek has 0.2 km (0.1 mi) of SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.

Heising Spring upstream from its confluence with the Metolius River near the mouth of Jack Creek upstream 0.4 km (0.2 mi) to its source is SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex. This area is important as part of the overall spawning complex. It is a large, low-gradient assemblage of cold springs, and provides unique spawning and rearing habitat directly adjacent to the mainstem Metolius River.

Lake Creek and its tributaries from its confluence with the Metolius River contains FMO and SR habitat. The Lake Creek stream system is composed of a reverse dendritic pattern. As Lake Creek flows downstream it splits into the North Fork, Middle Fork and South Fork. The South Fork and Middle Fork flow back together again to become the mainstem Lake Creek before entering the Metolius River.

The North Fork is an unoccupied canal that flows 4.82 km (3.0 mi) before reaching Spring Creek, and is not critical habitat. The North Fork is separated from Spring Creek by an impassable dam.

Spring Creek from the confluence with Lake Creek, upstream 1.0 km (0.6 mi) of occupied SR habitat.

Middle Fork Lake Creek from its confluence with the Metolius River at km 42.3 (mi 26.2) upstream 6.2 km (3.9 mi) to Lake Creek is unoccupied potential FMO habitat.

South Fork Lake Creek from its confluence with Middle Fork Lake Creek at km 2.5 (mi 1.5) upstream 4.1 km (2.5 mi) to Lake Creek is unoccupied potential FMO habitat.

Lake Creek from its confluence with Middle and South Forks Lake Creek upstream 2.4 km (1.5 mi) to Suttle Lake is unoccupied potential FMO habitat. These streams are identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Though it is too warm to support spawning, the Lake

Creek system could provide important rearing and FMO habitat for bull trout. Overall, this area provides important potential FMO and SR habitat for Metolius River basin bull trout.

Suttle Lake (104.83 ha; 259.04 ac) is unoccupied potential FMO habitat although two juvenile bull trout have been observed in the lower reaches of Lake Creek (a tributary to Suttle Lake). It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. There has been one observation of two juvenile bull trout in the lower reaches of Lake Creek (J. Lovtang, pers. comm., 2009).

Link Creek from Suttle Lake, upstream 0.9 km (0.6 mi) to Blue Lake is unoccupied potential FMO habitat. It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Link Creek flows out of Blue Lake into Suttle Lake, which is also a natural lake. Link Creek is historic bull trout spawning habitat (Buchanan et al. 1997, p. 58), and may have supported a later spawning bull trout population than other Metolius spawning areas. This is because Link Creek water temperatures do not fall below 10 C until mid-October (ODEQ 2001, no page number, information is from website http://deq12.deq.state.or.us/lasar2). Overall, this area provides important potential FMO and SR habitat for Metolius River basin bull trout.

Blue Lake (22.3 hectares; 55.2 acres) is unoccupied potential FMO habitat. It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Blue Lake is a unique, deep, cold natural lake fed by springs.

Whychus Creek from its confluence with the Deschutes River at km 195.8 (mi 121.4) upstream 2.4 kilometers (1.5 mi) past Alder Spring at km 2.4 (mi 1.5) and upstream to the USFS 6360 road crossing at km 9.2 (mi 5.5) is FMO habitat. The Bull Trout Draft Recovery Plan calls for restoring connectivity and opportunities for migration by securing instream flows in Whychus Creek. This area is important because it would allow bull trout in Lake Billy Chinook to disperse out of the reservoir, which would decrease the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).

Table 29. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Deschutes River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Abbot Creek	OR	Abbot Creek from its confluence with the Metolius River at km 26.29 (mi 16.30) upstream 5.44 km (3.38 mi) to its source spring on the south east side of Abbot Butte is occupied rearing habitat (Buchanan et al. 1997, p. 61). Abbot Creek is important rearing habitat for bull trout in the area of the Jefferson Creek-Candle Creek population.	See text for this CHU	1216335 456049
Lower Deschutes River—None	Brush Creek	OR	Brush Creek from its confluence with Canyon Creek at km 1.5 (mi 0.9) upstream 6.2 km (3.9 mi) to Forest Service Road 1230 is SR habitat. This is essential habitat to the Canyon / Roaring creek population.	See text for this CHU	1216654 454600
Lower Deschutes River—None	Bunch Grass Creek	OR	Bunch Grass Creek is SR habitat from its confluence with the Warm Springs River upstream 10.07 km (6.24 mi) to its source at Cold Springs. The Warm Springs River contains a local population.	See text for this CHU	1216205 445703
Lower Deschutes River—None	Candle Creek	OR	Candle Creek from its confluence with the Metolius River at km 25.7 (mi 15.9) upstream 6.26 km (3.9 mi) to Cabot Creek is SR habitat. This area is essential because it supports a significant number of spawning bull trout, and also provides important rearing habitat. Candle Creek is one of two streams that make up one of the three Metolius River bull trout populations.	See text for this CHU	1216588 445040
Lower Deschutes River—None	Canyon Creek	OR	Canyon Creek from its confluence with the Metolius River at km 36.1 (mi 22.4) upstream 9.1 km (5.6 mi) to U.S. Forest Service (USFS) Road 1235 is SR habitat. Canyon Creek, together with Roaring Creek, support a large number of spawning bull trout.	See text for this CHU	1216440 449870

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Crooked River	OR	Crooked River from its confluence with Lake Billy Chinook upstream to the Highway 97 Bridge provides FMO habitat. The Crooked River from its confluence with Lake Billy Chinook at km 189.85 (mi 117.7) upstream 1.7 km (1.18 mi) to Opal Springs Dam is occupied FMO habitat. From Opal Springs dam upstream 17.9 km (11.1 mi) to the Highway 97 bridge crossing is unoccupied potential FMO habitat. Few records of bull trout have been made, but cold water springs along the length of Crooked River Gorge, provides suitable habitat for bull trout. Because numerous large, cold springs enter this section of the Crooked River, the habitat is currently suitable for cold-water salmonids (Torgersen et al. 2007, p. 17) such as bull trout. Fish passage was not provided when the Opal Springs Dam was enlarged in 1983, making the Dam an impassable barrier to upstream movement (Buchanan et al. 1997, p. 58). The Bull Trout Draft Recovery Plan (Service 2002a, p. 41) calls for restoring connectivity and opportunities for migration in Crooked River by constructing upstream fish passage at Opal Springs Dam (task 1.2.4). This area is important because it would allow bull trout in Lake Billy Chinook to disperse out of the reservoir, which would decrease the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).	See text for this CHU	1212676 445778

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Deschutes River	OR	Deschutes River from the confluence with the Columbia River at km 329.8 (mi 204.5) to Big Falls at km 212 (mi 131.5) is FMO habitat for fluvial bull trout (Buchanan et al. 1997, p. 57). This mainstem reach is important FMO habitat for local populations and as connectivity to essential Columbia River FMO habitat and adjacent core areas. It does not include the section of river and reservoir between Round Butte and the Reregulating dams because the area does not provide suitable bull trout habitat nor is there volitional passage through the dams. Upstream and downstream trap and haul of fish around Round Butte, Pelton, and Reregulation dams will be operational in February 2010 in order to provide passage for bull trout. A study conducted by the CTWS found that Deschutes River bull trout migrated from the Deschutes into the Columbia River (J. Graham, pers. comm., 2008). The Deschutes River provides connectivity between all five of the Deschutes River populations. This metapopulation structure is similar to the structure that has historically existed in the Deschutes. Lake Billy Chinook also provides connectivity, and is also important FMO habitat for three of the five populations. Deschutes River from the confluence with the Columbia River at km 329.8 (mi 204.5) to Big Falls at km 212 (mi 131.5) is FMO habitat for bull trout, excluding the Deschutes River to its midpoint from the Pelton Reregulation Dam at RM 100.5 downstream to the CTWS boundary at about RM 69.2.	See text for this CHU	1209151 456389
Lower Deschutes River—None	Heising Spring	OR	Heising Spring upstream from its confluence with the Metolius River near the mouth of Jack Creek upstream 0.4 km (0.2 mi) to its source is SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex. This area is important as part of the overall spawning complex. It is a large, low-gradient assemblage of cold springs, and provides unique spawning and rearing habitat directly adjacent to the mainstem Metolius River.	See text for this CHU	1212676 445778.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Jack Creek	OR	Jack Creek upstream from its confluence with the Metolius River at km 37.3 (mi 23.1) upstream 7.6 km (4.7 mi) to its source springs is SR habitat (N. Dachtler, pers. comm., 2009). This area provides important spawning and rearing habitat, and supports a significant element of the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex. This complex has the largest number of spawning bull trout in the Deschutes River basin.	See text for this CHU	1209151 456389.1
Lower Deschutes River—None	Jefferson Creek	OR	Jefferson Creek from its confluence with the Metolius River at km 25.5 (mi 15.8) upstream 10.2 km (6.3 mi) to its confluence with an un-named tributary is SR habitat (Buchanan et al. 1997, p. 61). This area is important because it supports a significant number of spawning bull trout, and also provides important rearing habitat. Jefferson Creek is one of two streams that make up one of the three Metolius River bull trout populations.	See text for this CHU	1216480 444935
Lower Deschutes River—None	Lake Creek	OR	Lake Creek and its tributaries from its confluence with the Metolius River contains FMO and SR habitat. The Lake Creek stream system is composed of a reverse dendritic pattern. As Lake Creek flows downstream it splits into the North Fork, Middle Fork and South Fork. The South Fork and Middle Fork flow back together again to become the mainstem Lake Creek before entering the Metolius River. The North Fork is an unoccupied canal that flows 4.82 km (3.0 mi) before reaching Spring Creek, and is not critical habitat. The North Fork is separated from Spring Creek by an impassable dam.	See text for this CHU	1217028 444362
Lower Deschutes River—None	Lake Creek	OR	Lake Creek from its confluence with Middle and South Forks Lake Creek upstream 2.4 km (1.5 mi) to Suttle Lake is unoccupied potential FMO habitat. These streams are identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Though it is too warm to support spawning, the Lake Creek system could provide important rearing and FMO habitat for bull trout. Overall, this area provides important potential FMO and SR habitat for Metolius River basin bull trout.	See text for this CHU	1217028 444362

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Link Creek	OR	Link Creek from Suttle Lake, upstream 0.9 km (0.6 mi) to Blue Lake is unoccupied potential FMO habitat. It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Link Creek flows out of Blue Lake into Suttle Lake, which is also a natural lake. Link Creek is historic bull trout spawning habitat (Buchanan et al. 1997, p. 58), and may have supported a later spawning bull trout population than other Metolius spawning areas. This is because Link Creek water temperatures do not fall below 10 C until mid-October (ODEQ 2001, no page number, information is from website http://deq12.deq.state.or.us/lasar2). Overall, this area provides important potential FMO and SR habitat for Metolius River basin bull trout.	See text for this CHU	1216200 445766
Lower Deschutes River—None	Metolius River	OR	Metolius River from its confluence with Lake Billy Chinook at km 195.3 (121.1 mi) upstream 37.8 km (23.5 mi) to its confluence with Jack Creek is occupied FMO habitat. The Metolius River upstream of Jack Creek 7.4 km (4.6 mi) to the springs at its source is occupied SR habitat (Buchanan et al. 1997, p. 61). This area is important as a migratory corridor for three of the five Deschutes River's bull trout populations, and allows exchange of individuals and genetic material between these three populations. The upper reaches also provide some SR habitat, and are considered to be part of the Jack Creek-Canyon Creek-Heising Spring-Upper Metolius River population. The Metolius River adfluvial populations are significantly larger than the Warm Spring River and Shitike Creek populations, and represent an important source of individual fish and genetic diversity for the Deschutes River basin.	See text for this CHU	1212861 445954
Lower Deschutes River—None	Middle Fork Lake Creek	OR	Middle Fork Lake Creek from its confluence with the Metolius River at km 42.3 (mi 26.2) upstream 6.2 km (3.9 mi) to Lake Creek is unoccupied potential FMO habitat.	See text for this CHU	1212861 445954.1
Lower Deschutes River—None	Roaring Creek	OR	Roaring Creek from its confluence with Canyon Creek at km 3.9 (mi 2.4) upstream 2.9 km (1.8 miles) to its headwater springs; is SR habitat. Canyon Creek, together with Roaring Creek, support a large number of spawning bull trout.	See text for this CHU	1212861 445954.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Shitike Creek	OR	Shitike Creek from its confluence with the Deschutes River at river km 155.04 (mi 96.12) upstream 32.0 km (19.2 mi) is FMO habitat and upstream 12.4 km (7.5 mi) to its source is SR habitat. Shitike Creek contains a local population. Shitike Creek is identified as a local population in the Bull Trout Draft Recovery Plan (Service 2002a, p. 7). This is one of two Deschutes River fluvial populations. Like the Warm Springs River population, it provides important life history and geographic diversity. Though this population is slightly larger than the Shitike Creek population, it is also vulnerable to natural population variations and negative effects from habitat modification or drought conditions (Burchell 2007, p. 12).	See text for this CHU	1212285 447619
Lower Deschutes River—None	South Fork Lake Creek	OR	South Fork Lake Creek from its confluence with Middle Fork Lake Creek at km 2.5 (mi 1.5) upstream 4.1 km (2.5 mi) to Lake Creek is unoccupied potential FMO habitat.	See text for this CHU	1212285 447619.3
Lower Deschutes River—None	Spring Creek	OR	Spring Creek from the confluence with Lake Creek upstream 1.0 km (0.6 mi) of occupied SR habitat.	See text for this CHU	1212285 447619.4
Lower Deschutes River—None	Street Creek	OR	Street Creek from its confluence with Lake Billy Chinook upstream 4.6 km (2.8 mi) is occupied FMO habitat (mostly rearing). This area is important because it allows bull trout in Lake Billy Chinook to disperse out of the reservoir, which decreases the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).	See text for this CHU	1216610 444417
Lower Deschutes River—None	Trout Creek	OR	Trout Creek from its confluence with the Deschutes River at km 146 (mi 87.5) upstream 3.3 km (2.1 mi) is FMO habitat.	See text for this CHU	1216425 444567
Lower Deschutes River—None	Unnamed tributary of Canyon Creek	OR	Unnamed tributary to Canyon Creek (east of and parallel to Brush Creek) upstream 3.3 km (2.1 mi) is SR habitat. This is essential habitat to the Canyon / Roaring creek population.	See text for this CHU	1214510 446002
Lower Deschutes River—None	Unnamed tributary of Jack Creek	OR	Unnamed tributary to Jack Creek has 0.1 km (0.1 mi) is SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.	See text for this CHU	1217227 444766

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Unnamed tributary of Jack Creek	OR	Unnamed tributary to the unnamed tributary to Jack Creek has 0.1 km (0.03 mi) of SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.	See text for this CHU	1217217 444763
Lower Deschutes River—None	Unnamed tributary of Jack Creek	OR	Unnamed tributary to Jack Creek has 0.2 km (0.1 mi) of SR habitat that is essential habitat to the Jack Creek-Canyon Creek-Heising Spring-Metolius spawning complex.	See text for this CHU	1217217 444764
Lower Deschutes River—None	Unnamed tributary of Jefferson Creek	OR	Unnamed tributary to Jefferson Creek at km 10.4 (mi 6.5) upstream 1.1 km (0. 0.7 mi) to its source is FMO habitat (Buchanan et al. 1997, p. 61).	See text for this CHU	1217217 444764
Lower Deschutes River—None	Unnamed tributary of Roaring Creek	OR	Unnamed tributary to Roaring Creek (west of Roaring Creek) 1.0 km (0.6 mi) to the intersection of Forest Service roads 1260 and 1230 is SR habitat. This is essential habitat to the Canyon / Roaring creek population.	See text for this CHU	1216986 445166
Lower Deschutes River—None	Unnamed tributary of Roaring Creek	OR	Unnamed tributary to Roaring Creek (north of and parallel to Roaring Creek) upstream 0.6 km (0.4 mi) to the source springs is FMO habitat. This is essential habitat to the Canyon / Roaring creek population.	See text for this CHU	1216986 445213
Lower Deschutes River—None	Unnamed tributary of Roaring Creek	OR	Unnamed tributary to Roaring Creek (west of Roaring Creek) upstream 0.33 km (0.2 mi) is FMO habitat. This is essential habitat to the Canyon / Roaring creek population.	See text for this CHU	1216999 445164
Lower Deschutes River—None	Warm Springs River	OR	Warm Springs River from its confluence with the Deschutes River at km 134.22 (mi 83.22) upstream 45.1 km (27.1 mi) is FMO habitat and SR habitat extends 25.0 km (15.01 mi) upstream. The Warm Springs River is identified as a local population in the Bull Trout Draft Recovery Plan (Service 2002a, p. 7). This population is important because it is one the two fluvial populations in the Deschutes River, and provides important life history and geographic diversity. It is a relatively small population, and thus is potentially more vulnerable to natural population variation and negative effects from habitat modification or drought conditions (Burchell 2007, p. 12).	See text for this CHU	1210605 448640

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Whitewater River	OR	Whitewater River from its confluence with the Metolius River at km 9.2 (5.7 mi) upstream 19.4 km (12.0 mi) to its source is SR habitat (Buchanan et al. 1997, p. 58). Whitewater River contains a local population (Service 2002a, p. 7). This area is important due to its unique physical habitat and genetically unique bull trout. The river is glacially fed, unlike the spring-fed systems that support other Metolius River bull trout populations. These bull trout are also genetically unique from other Metolius and Deschutes basin bull trout (DeHann et al. 2008, p. 10), due in part to their unusual physical habitat.	See text for this CHU	1214766 449698.3
Lower Deschutes River—None	Whychus Creek	OR	Whychus Creek from its confluence with the Deschutes River at km 195.8 (mi 121.4) upstream 2.4 kilometers (1.5 mi) past Alder Spring at km 2.4 (mi 1.5) and upstream to the USFS 6360 road crossing at km 9.2 (mi 5.5) is FMO habitat. The Bull Trout Draft Recovery Plan calls for restoring connectivity and opportunities for migration by securing instream flows in Whychus Creek. This area is important because it would allow bull trout in Lake Billy Chinook to disperse out of the reservoir, which would decrease the potential for population loss from cannibalism. Cannibalism can have significant effects on populations, particularly when other forage species are not available (Beauchamp and Shepard 2008, p. 6).	See text for this CHU	1214766 449698.4
Lower Deschutes River—None	Blue Lake	OR	Blue Lake (22.3 hectares; 55.2 acres) is unoccupied potential FMO habitat. It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. Blue Lake is a unique, deep, cold natural lake fed by springs.	See text for this CHU	1215457 446697

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Deschutes River—None	Lake Billy Chinook	OR	Lake Billy Chinook (1543.06 ha; 3812.96 ac) is a reservoir on the Deschutes River and is essential FMO habitat. Lake Billy Chinook provides important foraging and overwintering habitat for three adfluvial bull trout populations that spawn in the Metolius River basin and connectivity between the Deschutes, Metolius, and Crooked rivers. Critical habitat includes the reservoir to the ordinary high water elevations and normal operating pool elevations, respectively. The Oregon Department of Fish and Wildlife permits angling and harvest of bull trout in Lake Billy Chinook. This area of critical habitat provides several important functions for bull trout. Fish passage at this reservoir's Round Butte Dam will be operational in February, 2010. Because this fish passage structure will prevent any fish from passing downstream of Round Butte Dam into Lake Simtutus or the Reregulation Reservoir, no critical habitat is designated in these reservoirs.	See text for this CHU	1213645 445891
Lower Deschutes River—None	Suttle Lake	OR	Suttle Lake (104.83 ha; 259.04 ac) is unoccupied potential FMO habitat although two juvenile bull trout have been observed in the lower reaches of Lake Creek (a tributary to Suttle Lake). It is identified as a recovery need in the Bull Trout Draft Recovery Plan as a potential local population in historic habitat. There has been one observation of two juvenile bull trout in the lower reaches of Lake Creek (J. Lovtang, pers. comm., 2009).	See text for this CHU	1214318 445887

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 7. Coastal Recovery Unit—Odell Lake Critical Habitat Unit

Chapter 7. Odell Lake Critical Habitat Unit

The Odell Lake Critical Habitat Unit lies entirely within the Deschutes National Forest in Klamath County and includes Odell Lake, Trapper Creek, Crystal Creek, Odell Creek, Unnamed Tributary #1 to Odell Creek, and Maklaks Creek. Odell Lake contains only one bull trout population, which has been isolated from the Deschutes River populations by a lava flow that impounded Odell Creek and formed Davis Lake approximately 5,500 years ago. Odell Lake is the only natural adfluvial bull trout population in Oregon. Naturally adfluvial bull trout populations are less abundant than fluvial bull trout range-wide, and therefore Odell Lake supports an important and limited life history expression.

Bull trout distribution and abundance are limited within the Odell Lake/Odell Creek sub-watersheds. According to fish survey data and incidental catch information gathered between 1994 and 2008, current bull trout distribution in the Odell Lake watershed includes Odell Lake, Trapper Creek, Odell Creek and two of its tributaries (i.e., Unnamed Tributary #1 and Maklaks Creek) (USFS 2004), an occasional bull trout in Davis Lake (S. Marx, pers. comm. 2000), one occurrence in Fire Creek (also referred to as Hemlock Creek) (USFS 2003b), and one occurrence in Crystal Creek (USFS *in litt*., 2005a).

Little is known about the life history of the Odell Lake population (USFS and BLM 1999b). Bull trout historically spawned in Crystal Creek (OSGC 1948). However, only one juvenile bull trout has been observed in recent years (USFS *in litt*. 2005a). Most of the spawning occurs in Trapper Creek. Bull trout are occasionally encountered in Odell Creek, and recent observations of juvenile bull trout in Maklaks Creek and Unnamed Tributary #1, indicate that spawning is occurring either in Odell Creek or these two tributaries to Odell Creek. It is believed that bull trout are likely outmigrating from the lake, downstream into Odell Creek to spawn. Bull trout that migrate downstream to spawn are unique, range-wide. Another unique life history expression may be occurring in Odell Lake bull trout. During the fall while monitoring kokanee, ODFW has incidentally caught large, ripe females near the outlet of the lake near Sunset Cove. This area of the lake is a terminal moraine where cold water upwelling occurs. It has been speculated that some bull trout may be spawning in this area of the lake. There is no evidence of shoal spawning bull trout range-wide. Therefore, if shoal spawning is occurring in Odell Lake bull trout, it is a unique situation. Bull trout have also been observed in Davis Lake near the outlet of Odell Creek in a few rare instances.

The Odell Lake bull trout population is the southernmost population in the Coastal Recovery Unit. Genetic analysis of Odell Lake bull trout indicate that the population is uniquely different from others in the Deschutes River Basin due to nearly 6,000 years of isolation, resulting from a lava flow (Ardren, DeHaan, and O'Reilly 2007). The population has persisted despite the length of time that it has been isolated.

To recover bull trout in the Odell Lake Recovery Unit, it has been determined that it is essential to maintain current distribution and expand bull trout into at least one additional stream , (*e.g*., Crystal Creek) and increase the population to at least 200 spawning adults (Service 2002a). Odell Creek and its tributaries, and Crystal Creek provide the best opportunities for additional bull trout spawning areas. Additionally, there are 6.3 miles of unoccupied bull trout habitat on the upper end of Trapper Creek that are currently occupied by brook trout. This segment of stream could provide excellent habitat for bull trout if brook trout were to be eradicated. Ideally, bull trout would be restored into more than one additional stream.

Because of the small size of this population and its isolation, expansion of its range into any potential bull trout habitat would assist in recovery, stabilizing or increasing trends in abundance, and reduce the risk of extirpation. Therefore, all occupied and potential habitat is critical habitat.

Fire Creek and Davis Lake are not suitable for bull trout and bull trout occurrence is rare. Fire Creek is a naturally very low flow stream where one juvenile bull trout was found in a small pool near the outlet of the lake. Highway 58 crosses Fire Creek and there is little suitable habitat for bull trout upstream of the road. Bull trout may forage in Davis Lake in the winter, but otherwise the lake is shallow and warm most of the year and has an abundance of non native fish such as smallmouth bass. The lake does not provide suitable habitat for them year around nor have bull trout been found in tributaries to Davis Lake in recent years other than Odell Creek. Thus, we have determined it is not essential to bull trout conservation.

Odell Lake is approximately 1,387 ha (3,427 ac) in surface area within the lake shoreline as depicted on a 1:24,000 scale map and provides FMO habitat for this adfluvial bull trout population. Odell Lake is utilized as foraging, migratory, and overwintering habitat in the lakeshoreline areas, and possibly limited SR. Odell Lake is a large, high elevation lake with an average depth of 40 meters (130 feet) and a maximum depth of 86 meters (282 feet) (Johnson et al. 1985). Because the entire Odell Lake Recovery Unit population is dependent on Odell Lake for foraging and overwintering, habitat designation as critical habitat and maintenance and improvement of habitat conditions and fish populations is essential for recovery of this unit. Little is known about this adfluvial bull trout population life history or population size, and information is primarily limited to survey information in Trapper Creek and angler catch records in Odell Lake. Angler observations of bull trout incidentally caught have increased since the harvest of bull trout was prohibited since 1992 (Buchanan et al. 1997) Incidental catch estimates ranged from 0 to 30, average 15 between 1996 and 1999 (Service 2002a). During the fall while monitoring kokanee, ODFW has incidentally caught large, ripe females near the outlet of Odell Lake near Sunset Cove (T. Wise, pers. Comm. 2009). Bull trout, mountain whitefish, and redband trout are native to Odell Lake. Odell Lake also contains lake trout (introduced in the early 1900's), rainbow trout (first stocked in 1926), kokanee salmon (stocked 1950-1971 and 1981-83), and tui chub (stocked before 1940) (Fies et al. 1996). Some of these species may provide a forage base for bull trout. However, competition with other species is one of the threats to this population. Odell Lake supports a large fishery, and one threat to the bull trout population is from incidental harvest, and catch and release related mortality (Fies et al. 1996). Approximately 38 kilometers of tributary streams flow into Odell Lake, the largest being Trapper Creek. Surface water temperatures rarely exceed 20 °C and range to 4 °C at deeper levels year-round. The lake surface occasionally freezes (USFS 1999g; USFS and BLM 1999b). Lake pH levels consistently exceed state standards of 8.5 (USFS 1999g). Chlorophyll *a* levels are of potential concern, and increased levels are related to eutrophication of the lake due to recreational use, shore line developments, and septic systems (Johnson et al. 1985; USFS 1999g). Developments on Odell Lake include five Forest Service campgrounds and a resort at each end of the lake. There are about 70 private homes on the lake under permit from the Forest Service (Fies et al. 1996). Many of the tributaries to Odell Lake are spring-fed from the Cascade Mountains. Spring-fed rivers are particularly important in that climate change may result in warming waters. High elevation habitats such as Odell Lake offer areas of cooler water year round and provide foraging opportunities for the population. Odell Lake and Odell Creek are essential for maintaining connectivity between local populations of bull trout in Trapper Creek and the Maklaks Creek and Unnamed Tributary #1.

Trapper Creek provides SR habitat from its mouth at the confluence with Odell Lake upstream 6.2 km (3.9 mi) at the confluence of two spring-fed tributaries that form its headwaters. A portion of the creek, above RK 0.7 (RM 1.1) is within wilderness. The lower 1.3 km (0.8 miles) of Trapper Creek is the only known spawning area for the Odell Lake CHU bull trout. Fifteen years of red surveys and adult trapping data indicate that adult numbers are low. From 1998 to 2008, redd counts in Trapper Creek have averaged approximately 9 redds, ranging from 0 to 24 redds counted (ODFW *in litt.* 2008a). Adult bull trout trapping, conducted by ODFW and USFS during 1999 and 2000, captured 48 and 39 adult bull trout, respectively, in Trapper Creek (USFS 2003b). Night snorkel surveys in 2009 counted the maximum (i.e., 298) number of juvenile bull trout since surveys began in 1996 (USFS *in litt.* 2009f). A mark and recapture of bull trout within the lower 1.3 kilometers (0.8 mile) of Trapper Creek in 2005, yielded a juvenile (≥ 80 mm) population estimate of 163 ± 32 (Moore 2005). The number of adult spawning bull trout in the Odell Lake/Odell Creek sub-watersheds is estimated to be below 100 individuals. The primary threats to this population are incidental angling mortality, competition with other fish species, hybridization with brook trout, and limited habitat availability. Depending on success of establishment of other bull trout spawning areas in the recovery unit, this area may need to provide habitat for many of the 200 to 800 spawning adults specified as needed for recovery (Service 2002a). Although bull trout have not been found in Trapper Creek upstream of the falls at RK 1.3, the falls may not be a barrier since it is not vertical and it appears that bull trout may be able to pass it. Spawning gravels are found upstream of the falls (USFS 1996b), and could provide an area for expansion of the population, to help achieve recovery criteria (Service 2002a).

Crystal Creek from its mouth at the confluence with Odell Lake approximately 3.6 km (2.23 mi) to its headwater springs provides FMO habitat. It is in wilderness upstream of RK 1.1 (RM 0.7). Records indicate that Crystal Creek was the primary spawning area for bull trout in the late 1940's. Bull trout numbers may have been depleted by unlimited harvest which was allowed until 1950, poaching, or loss of suitable habitat (OSGC 1948; Fies et al. 1996). A single juvenile bull trout was observed in Crystal Creek in 2006 during electroshocking fish surveys. Since 1994, several red surveys have occurred in Crystal Creek, but none have been verified as bull trout redds (USFS 1999b). At RK 0.5 (RM 0.3) there is a railroad culvert that is not a barrier to larger fish but may impede passage for juvenile salmonids (USFS 1999b). Water temperatures in Crystal Creek remain cold throughout the summer months. Water temperatures in 1994 and 1999, did not exceed 7 °C (USFS 1999b). The lower 0.8 km of stream contains excellent rearing habitat for fish, since it is low gradient, has extensive pool formation, and an abundant large wood supply (USFS and BLM 1999b). Spawning gravels in Crystal Creek are less than ideal due to the source material in the watershed, the gradient alteration created by the culvert at the railroad crossing, and fill material at the railroad crossing (USFS 1999b). The spawning gravels and the jump and rest pool at the culvert crossing were improved in 1994 (USFS 1999b). Crystal Creek may offer one of the better opportunities for establishment of a spawning bull trout population to meet the recovery criteria of expanding to at least one additional spawning stream. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to bull trout. Efforts have been taken or are outlined in the Recovery Plan to address other habitat concerns in Crystal Creek (Service 2002a).

Odell Creek from its confluence with Odell Lake downstream 12.36 km (7.68 mi) to its confluence with outlet at Davis Lake is FMO habitat. Odell Creek also provides a connection between local populations of bull trout in Trapper Creek/Odell Lake and the Maklaks/Unnamed

Tributary #1 complex. The stream is managed as Late Successional Reserve and Riparian Reserve (USFS and BLM 1999b). Historically bull trout, redband trout and mountain whitefish were present in Odell Creek (Fies et al. 1996). Bull trout have been observed in Odell Creek sporadically in recent years. An adult bull trout was observed in Odell Creek on November 1, 1998 about 100 yards below the outlet of Odell Lake and appeared to be feeding on the eggs of spawning kokanee salmon (USFS 1998d). Two bull trout were reportedly caught by anglers in the same area in 1989 (Goetz 1991). During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile was observed below McCord Cabin Spring and one juvenile bull trout was observed at its confluence with Tributary #1 (Powers, in litt. 2005). Two juvenile bull trout were observed in lower Odell Creek, prior to a wood placement project (USFS 2004). The most recent observations of bull trout previous to these sightings were made by Satterthwaite (1979) during snorkel surveys on Odell Creek. Satterthwaite observed low numbers (0-5 per 100 ft) of 30 - 45 cm bull trout in pools from river kilometer 0.0 to 1.8 and 2.8 to 5.1 (river miles 0.0 to 1.1 and 1.75 to 3.2). Redband trout were the most abundant fish species observed in Odell Creek (USFS 1998d). Brook trout have also been found in Odell Creek (Goetz 1991). Redband trout and kokanee have been observed spawning in Odell Creek (USFS 1998d). There are no records of bull trout spawning in Odell Creek (USFS 1998d). Summer water temperatures are warm at the upper end of Odell Creek because it is fed by Odell Lake surface water. Maximum and mean temperatures near the outlet of Odell Lake were 25.2 °C and 17.6 °C (77.4 °F and 63.7 °F), respectively (USFS 1998d). Maklaks Creek, two other large unnamed spring fed tributaries and several other small unnamed spring-fed tributaries were found to contribute approximately 50% of the flow during low summer flow. This helps cool the water where it enters Davis Lake by an average of 10.8 °F during the summer of 1998 (USFS 1998d). At 0.8 kilometers up from Davis Lake or 10.9 kilometers down from Odell Lake in 1998, the maximum temperature was 20.2 °C (68.4 °F) and the mean was 11.6 °C (52.9 °F). The mostly spring fed nature of Odell Creek helps keep flows relatively stable throughout the year (USFS 1998d). Habitat is complex, deep pools are common, wood density high, and there are 60 side channels (USFS 1998d). Gravel and cobble are the most common substrate types, and spawning gravels are available (USFS 1998d). Odell Creek contains many primary constituent elements and is necessary to maintain the current distribution of bull trout, to provide a migratory corridor, and potentially provide additional spawning habitat to meet recovery criteria (Service 2002a).

Unnamed Tributary #1 to Odell Creek is spawning and rearing habitat from its mouth on Odell Creek (~1 km upstream of Maklaks Creek) upstream 2.6 km (1.6 mi) to a large spring. Flow downstream of RK 0.6 (RM 0.4) was 21.5 cfs and upstream of RK 0.6 was 1.3 cfs in June, 1999. Because it is a spring fed stream, temperatures are cool and the maximum recorded in 1999 was 5 °C in the lower reach and 18 °C upstream of RK 0.6. This source of cool water is also important in cooling Odell Creek and Davis Lake. During presence-absence electrofishing surveys in 2003, a single bull trout was observed. In 2004, snorkel surveys counted eighteen juvenile bull trout (USFS 2004). Other fish species found include redband trout and brook trout (USFS 1999c). Substrate downstream of RK 0.6 is a mix of mostly sand then gravels and cobbles. Upstream of RK 0.6 sand dominated with small amounts of gravel. Stream cover is complex with a mix of pools, wood, and undercut banks (USFS 1999c). Overall habitat conditions appear favorable for bull trout. Recovery criteria specify expanding the spawning population to at least one other stream and increasing overall abundance of this population. Unnamed

Tributary #1 is a potential stream for expansion. Brook trout presence would be a concern, but the brook trout are currently mostly in the upper part of this stream.

Maklaks Creek is spawning and rearing habitat from its mouth on Odell Creek upstream 2.7 km (1.7 mi) to the convergence of several small spring-fed tributaries. During presence-absence electrofishing surveys in July 2003, a juvenile bull trout was observed in Maklaks Creek (USFS 2003c) along with ten rainbow trout. Fish rearing habitat in the creek is excellent; however no fish were found in electrofishing efforts at units throughout the stream in 1990 (USFS 2003c). One rainbow trout and 4 brook trout were observed during electrofishing surveys in 1997 (USFS 2003c). Temperatures are cool, regulated by springs and are suitable for bull trout. Continuous water temperature data were recorded near the mouth of Maklaks Creek during 2002 and 2003 and at the 4668 road crossing in 1994. The highest temperature recorded was 6.9 °C during July of 1994. Monthly average water temperatures from June to September 2003 ranged from 4.7 to 5.0 °C (USFS 2003c). This source of cool water is important in cooling Odell Creek. Gradient ranges from 3% at the mouth to 6% at the headwaters. Habitat is mostly riffle dominated with boulders. Woody debris is likely at near natural conditions for this stream (USFS 2003c). The area could provide spawning and rearing habitat for bull trout. At the time of the stream survey in 2003, the culvert under road 4668 was considered a barrier to fish passage (USFS 2003c) but was replaced in 2007.

Table 30. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Odell Lake CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	Crystal Creek	OR	Crystal Creek from its mouth at the confluence with Odell Lake approximately 3.6 km (2.23 mi) to its headwater springs provides FMO habitat. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to the conservation of bull trout. A single juvenile bull trout was observed in Crystal Creek in 2006 during presence–absence fish surveys. Establishing an appropriate additional spawning population in the area at Crystal Creek is essential to the long-term conservation of the species and this core area. The stream is entirely within the Deschutes National Forest and is in wilderness upstream of RK 1.1 (RM 0.7). Records indicate that Crystal Creek was the primary spawning area for bull trout in the late 1940's. Bull trout numbers may have been depleted by unlimited harvest which was allowed until 1950, poaching, or loss of suitable habitat (OSGC 1948; Fies et al. 1996). A single juvenile bull trout was observed in Crystal Creek in 2006, during electroshocking fish surveys. Since 1994, several redd surveys have occurred in Crystal, but none have been verified as bull trout redds (USFS 1999b). At RK 0.5 (RM 0.3) there is a railroad culvert that is not a barrier to larger fish but may impede passage for juvenile salmonids (USFS 1999b). At RK 1.1 (RM 0.7) in the wilderness, there was a small dam which was used by the railroad to divert water for power production. However, the dam was removed by the Forest Service in 2003. Water temperatures in Crystal Creek remain cold throughout the summer months. Water temperatures in 1994 and 1999 did not exceed 7 °C (USFS 1999b). The lower 0.8 kilometer of stream contains excellent rearing habitat for fish, since it is low gradient, has extensive pool formation, and an abundant large wood supply (USFS and BLM 1999b). Spawning gravels in Crystal Creek are less than ideal due to the source material in the watershed, the gradient alteration created by the culvert at the railroad crossing, and fill material at the railroad crossing (USFS 1999b). The spawning gravels and the jump and rest pool	See text for this CHU	1214318 445887

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			at the culvert crossing were improved in 1994 (USFS 1999b). Crystal Creek may offer one of the better opportunities for establishment of a spawning bull trout population to meet the recovery criteria of expanding to at least one additional spawning stream. Crystal Creek historically supported bull trout spawning and maintains many of the habitat elements essential to bull trout. Efforts have been taken or are outlined in the Recovery Plan to address other habitat concerns in Crystal Creek (Service 2002a).		
Odell Lake—None	Maklaks Creek	OR	Maklaks Creek is spawning and rearing habitat from its mouth on Odell Creek upstream 2.7 km (1.7 mi) to the convergence of several small spring-fed tributaries. A juvenile bull trout was observed in this stream during presence–absence electrofishing surveys in 2003. The stream is in the Deschutes National Forest. During presence-absence electrofishing surveys in 2003, a juvenile bull trout was observed in Maklaks Creek (USFS 2004). Fish rearing habitat in the creek is excellent; however no fish were found in electrofishing efforts at units throughout the stream in 1990 (USFS 1990b). One rainbow trout was found in night snorkel efforts and 1 rainbow trout and 4 brook trout in electrofishing surveys in 1997 (USFS in litt., 2003c). Temperatures are cool, regulated by springs and are suitable for bull trout. On September 5, 1990, flow at the mouth was 19 cfs, water temperature at the mouth was 5.5 °C, and at the headwaters it was 4.5 °C (USFS 1990b). In 1994 temperatures were continually monitored and the maximum was 6.9 °C (USFS in litt.2003c). This source of cool water is also important in cooling Odell Creek. Gradient ranges from 3% at the mouth to 6% at the headwaters. Habitat is mostly riffle dominated with boulders. Although in 1990 surveys few gravels and few macroinvertebrates were noted (USFS 1990b). The area could provide spawning and rearing habitat for bull trout (N. Dachtler, pers. comm. 2002b). A culvert and a few small falls were not considered capable of restricting fish movement (USFS 1990b).	See text for this CHU	1217409 444216
Odell Lake—None	Odell Creek	OR	Odell Creek from its confluence with Odell Lake downstream 12.36 km (7.68 mi) to its confluence with	See text for this CHU	1220237 435808

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			Davis Lake provides connectivity between the known spawning population of bull trout in Trapper Creek and a spawning population of bull trout in two tributaries to Odell Creek: Maklaks Creek and Unnamed Tributary #1. Although redds have not been observed in Odell Creek, it provides spawning and rearing habitat where cold water tributaries enter the creek. Odell Creek also provides FMO habitat for bull trout that is essential to the long-term conservation of the species. During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile bull trout was observed below McCord Cabin Spring, and another was observed at its confluence with Unnamed Tributary #1. Two juvenile bull trout were observed in lower Odell Creek prior to a wood placement project. The stream is entirely within the Deschutes National Forest and is managed as Late Successional Reserve and Riparian Reserve (USFS and BLM 1999b). Historically bull trout, redband trout and mountain whitefish were present in Odell Creek (Fies et al. 1996). Bull trout have been observed in Odell Creek sporadically in recent years. An adult bull trout was sighted in Odell Creek on November 1, 1998, about 100 yards below the outlet of Odell Lake and appeared to be feeding on the eggs of spawning kokanee salmon (USFS 1998d). Two bull trout were reportedly caught by anglers in the same area in 1989 (Goetz 1991). During snorkel surveys in Odell Creek in 2003, two bull trout were observed below its confluence with Maklaks Creek, one juvenile was observed below McCord Cabin Spring and one juvenile bull trout was observed at its confluence with Tributary #1 (Powers, P. pers. comm. 2005). Two juvenile bull trout were observed in lower Odell Creek, prior to a wood placement project (USFS 2002a). The most recent observations of bull trout previous to these sightings were made by Satterthwaite (1979) during snorkel surveys on Odell Creek. Satterthwaite observed low numbers (0-5 per 100 ft) of 30 - 45 cm bull trout in pools from river kilometer 0.0 to 1.8 and 2.8 to 5.1 (river miles 0.0 to 1.1 and 1.75 to 3.2). Redband trout were the most abundant fish species observed in Odell Creek (USFS 1998d). Brook trout have also been found in Odell Creek (Goetz		

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			1991). Redband trout and kokanee have been observed spawning in Odell Creek (USFS 1998d). There are no records of bull trout spawning in Odell Creek (USFS 1998d). Summer water temperatures are warm at the upper end of Odell Creek because it is fed by Odell Lake surface water. Maximum and mean temperatures near the outlet of Odell Lake were 25.2 °C and 17.6 °C (77.4 °F and 63.7 °F), respectively (USFS 1998d). Maklaks Creek, two other large unnamed spring-fed tributaries and several other small unnamed spring fed tributaries were found to contribute approximately 50% of the flow during low summer flow. This helps cool the water where it enters Davis Lake by an average of 10.8 °F during the summer of 1998 (USFS 1998d). At 0.8 kilometers up from Davis Lake or 10.9 kilometers down from Odell Lake in 1998 the maximum temperature was 20.2 °C (68.4 °F) and the mean was 11.6 °C (52.9 °F). The mostly spring fed nature of Odell Creek helps keep flows relatively stable throughout the year (USFS 1998d). Habitat is complex, deep pools were common, wood density high, and there were 60 side channels (USFS 1998d). Gravel and cobble were the most common substrate types, and spawning gravels were available (USFS 1998d). The presence of many primary constituent elements needed by bull trout, and the documented use of Odell Creek by bull trout justify its designation as critical habitat. It provides a migratory corridor from the primary area for the population in Odell Lake to Odell Creek and its tributaries. This habitat is needed to maintain the current distribution of bull trout, to provide a migratory corridor, and may be an additional spawning area to meet recovery criteria (Service 2002a).		
Odell Lake—None	Trapper Creek	OR	Trapper Creek provides SR habitat from its mouth at the confluence with Odell Lake upstream 6.2 km (3.9 mi) at the confluence of two spring-fed tributaries that form its headwaters. Trapper Creek is the only tributary to Odell Lake where bull trout redds have been observed. Trapper Creek is the primary spawning and rearing tributary to Odell Lake. Spawning is documented within the lower 1.0 km (0.6 mi) of Trapper Creek, and potential spawning and rearing habitat occurs 5.2 km (3.3 mi) upstream above the	See text for this CHU	1220475 435846

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
			falls is. Trapper Creek is entirely within the Deschutes National Forest, and upstream of RK 0.7 (RM 1.1) it is within wilderness. This population utilizes the lower 1.3 kilometers (0.8 miles) of Trapper Creek between the mouth and a 2.3 meter falls. Fifteen years of red surveys and adult trapping data indicate that adult spawner numbers are low. From 1998 to 2008, redd counts in Trapper Creek have averaged approximately 9 redds, ranging from 0 to 24 redds counted. (ODFW *in Litt*. 2008a). Adult bull trout trapping, conducted by ODFW and USFS during 1999 and 2000, captured 48 and 39 adult bull trout, respectively, in Trapper Creek (Dachtler 2002). Night snorkel surveys in 2009 counted the maximum (i.e., 298) number of juvenile bull trout since surveys began in 1996. A mark and recapture of bull trout within the lower 1.3 kilometers (0.8 mile) of Trapper Creek in 2005, yielded a juvenile (≥ 80 mm) population estimate of 163 ± 32 (Moore 2005). The number of adult spawning bull trout in the Odell Lake/Odell Creek sub-watersheds is estimated to be below 100 individuals. The primary threats to this population are incidental angling mortality, competition with other fish species, hybridization with brook trout, and limited habitat availability. Because the lower 1.3 kilometers of Trapper Creek is the only known spawning area for the Odell Lake bull trout, it is critical that it be designated as critical habitat and that all efforts are taken to maintain and improve the habitat and population conditions. Depending on success of establishment of other bull trout spawning areas in the recovery unit, this area may need to provide habitat for many of the 200 to 800 adult bull trout specified as needed for recovery (Service 2002a). Although bull trout have not been found in Trapper Creek upstream of the falls at RK 1.3, the falls may not be a barrier since it is not vertical and it appears that bull trout may be able to pass it (N. Dachtler, pers. comm. 2002a). Spawning gravels are found upstream of the falls (USFS 1996b), and could provide an area for expansion of the population to help achieve recovery criteria (Service 2002a).		

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	UNNAMED Creek #1 - off Odell Creek	OR	Unnamed Tributary #1 to Odell Creek is spawning and rearing habitat from its mouth on Odell Creek (~1 km upstream of Maklaks Creek) upstream 2.6 km (1.6 mi) to a large spring. The Draft Recovery Plan specifies expanding the spawning population to at least one other stream and increasing overall abundance of this population. Unnamed Tributary #1 is a stream for potential bull trout population expansion. A single juvenile bull trout was observed in this stream during presence–absence electrofishing surveys in 2003 and 18 juvenile bull trout were counted during a snorkel survey in 2004. The stream is in the Deschutes National Forest. This spring fed tributary provides a source of cool water that is essential in cooling Odell Creek and Davis Lake. During presence-absence electrofishing surveys in 2003, a single bull trout was observed. In 2004, snorkel surveys counted eighteen juvenile bull trout (USFS 2004). Other fish species found snorkeling below RK 0.6 were 80% redband trout and 20% brook trout, whereas in electrofishing upstream of RK 0.6 all fish were brook trout (USFS 1999c). Substrate downstream of RK 0.6 was a mix of mostly sand then gravels and cobbles. Upstream of RK 0.6 sand dominated with small amounts of gravel. Stream cover was complex with a mix of pools, wood, and undercut banks (USFS 1999c). Brook trout currently occur in the upper part of this stream.	See text for this CHU	1220475 435846.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Odell Lake—None	Odell Lake	OR	Odell Lake is approximately 1,387 ha (3,427 ac) in surface area within the lake shoreline as depicted on a 1:24,000 scale map and provides FMO habitat for this adfluvial bull trout population. Odell Lake is utilized as foraging, migratory, and overwintering habitat in the lake shoreline areas, and possibly limited SR. Odell Lake is a large, high elevation lake that provides the primary foraging, migratory and overwintering habitat for the Odell Lake Recovery Unit population. Because the entire Odell Lake Recovery Unit population is dependent on Odell Lake for foraging and overwintering, habitat designation as critical habitat and maintenance and improvement of habitat conditions and fish populations is essential for recovery of this unit. Additionally, many of the tributaries to Odell Lake are spring-fed from the Cascade Mountain Range. Spring-fed rivers are particularly important in that climate change may result in warming waters. High elevation habitats such as Odell Lake offer areas of cooler water year round and provide foraging opportunities for the population. This is particular important as the climate warms. Odell Lake and Odell Creek are essential for maintaining connectivity among bull trout in Trapper Creek and the Maklaks Creek and Unnamed Tributary #1.	See text for this CHU	1220475 435846.3

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 8. Coastal Recovery Unit —Mainstem Lower Columbia River Critical Habitat Unit

Chapter 8. Mainstem Lower Columbia River Critical Habitat Unit

The Columbia River, from the Pacific Ocean upstream to John Day Dam, is essential for maintaining bull trout distribution and provides essential FMO habitat for extant tributary populations of bull trout in the Lewis, Hood, Klickitat, and Deschutes Rivers and connectivity between these core areas, as well as facilitates the potential reestablishment of a population within the White Salmon River. Connectivity from the Pacific Ocean and upriver allows for the opportunity for amphidromous and fluvial life history expressions and genetic exchange and diversity, which are essential to the recovery unit.

The entire reach, from the Columbia River mouth to John Day Dam, is considered essential and included in designated critical habitat because (1) it is or could potentially be used as FMO habitat by bull trout from tributaries; (2) quality habitat containing several primary constituent elements exists during the FMO period for bull trout; and (3) inclusion of this area in critical habitat reflects two Recovery Objectives, maintaining stable or increasing trends in abundance (indirectly by providing for the needs of migratory forms) and restoring and maintaining suitable habitat conditions for bull trout life history stages (see Appendix 1 for more detailed information).

The Columbia River from the Pacific Ocean upstream to the John Day Dam provides essential FMO habitat for extant tributary populations of bull trout in the Lewis, Hood, Klickitat, and Deschutes rivers and connectivity between these core areas, as well as facilitating the potential reestablishment of a population within the White Salmon River. This CHU is located in the states of Oregon and Washington. It includes Clatsop, Columbia, Multnomah, Hood River, Wasco, and Sherman Counties in Oregon and Pacific, Wahkiakum, Cowlitz, Clark, Skamania, and Klickitat Counties in Washington.

Lands from the mouth of the Columbia River to the John Day Dam are under a mix of private, State, and Federal ownership. National wildlife refuges are present at several locations along the river. The Columbia River Gorge National Scenic Area is 133.5 km (83.0 mi) in length and extends from the mouth of the Sandy River to the confluence of the Deschutes River. Management of this area is under jurisdiction of the U.S. Forest Service and Columbia Gorge Commission, a regional commission of local, State, and Federal interests.

This unit includes two Federal dams, Bonneville and The Dalles, between the mouth and John Day Dam. They are operated by the Army Corps of Engineers and form reservoirs in the Columbia River. River flows in the Columbia River upstream and downstream from the dams is affected by operations for hydropower, navigation, flood control, and anadromous fish migration. The Columbia River is free flowing downstream from Bonneville Dam and is tidally influenced.

The connectivity from the Pacific Ocean and upriver allows for the opportunity for amphidromous and fluvial life history expressions and genetic exchange and diversity which is essential to the Coastal Recovery Unit, which includes the Coastal Puget Sound (Washington) and lower Columbia River bull trout populations below the John Day Dam. This critical habitat includes the free flowing reaches of the Columbia River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively. Major tributaries include the Cowlitz, Kalama, Willamette, Lewis, Sandy, Wind, White Salmon, Hood and Klickitat, and Deschutes rivers.

The Coastal Recovery Unit which was delineated using primarily genetic data. The upstream boundary is the John Day Dam because the John Day River fish are grouped with the Middle Columbia River Recovery Unit populations. It is recognized that bull trout between the two recovery units may intermix in the river, but the dam serves as a recognizable landmark on the landscape, thus it is being used as a marker between the two units. There are nearly fixed allelic differences between inland and coastal bull trout (Spruell et al. 2003). The Hood River (Clear Branch) and Deschutes River (Shitike River) bull trout both have the inland and coastal alleles (Spruell et al. 2003). Migratory bull trout use the mainstem corridors which are essential for maintaining gene flow between core areas and allow for re-colonizing areas where local populations have been extirpated by stochastic events.

Sections of the Columbia River within this reach of the critical habitat are either presently used by bull trout, or are unknown and have historically been used by bull trout for foraging, overwintering, and migration. Habitat in the Lower Columbia River is presently considered to be suitable for foraging, overwintering, and migration. At present, bull trout populations in this CHU are somewhat disconnected from each other and at low levels. However, with improved population status and increased connectivity, this river section will provide important FMO habitat much like it currently serves in areas upriver and will also be essential for maintaining connectivity and for providing for the expression of historic migratory life history forms in the lower Columbia region of the Coastal Recovery Unit. While summer temperatures may preclude bull trout use, suitable temperatures and availability of forage do exist in fall, winter, and spring months. Bull trout are known to migrate large distances for foraging opportunities even for short periods of time.

Current bull trout presence in the lower mainstem Columbia River may reflect the strength of the local populations within tributaries and the presence of suitable migration corridors between the tributaries and the Columbia River. There are fewer occurrences of bull trout in the Columbia River where poorer habitat conditions in tributaries have passage barriers and / or reduced populations (Willamette, Lewis, Hood, Klickitat, and Deschutes rivers). Greater use of the mainstem Columbia River would be expected through implementation of bull trout recovery plans as habitat conditions improve and populations increase. The Columbia River in the lower section is very large. It is difficult to sample and detect bull trout when their presence is in low numbers, they occur perhaps only for brief periods to forage, and efficient sampling methods have not been developed.

Downstream passage for juvenile anadromous fish is provided by fish passage facilities, by spilling water over dam spillways, or traveling through the powerhouse. Bonneville and John Day dams have fish screen and bypass facilities for juvenile anadromous salmonids. During the summer, fish that are collected at juvenile fish facilities at McNary Dam are transported by barge or truck and released at a site downstream from Bonneville Dam. It is uncertain if the juvenile fish facilities are effectively passing bull trout because these structures were designed for juvenile anadromous salmon and steelhead. Bull trout have been observed in the fish ladders at Bonneville and The Dalles dams. Bull trout have never been officially recorded on Corps of Engineers fish ladder counts even though fish counters may have observed them. Past records at the Lower Columbia River dams may not accurately represent bull trout passage because adult fish counts and juvenile fish monitoring cease after October 31 and fish counters have not been instructed to record bull trout sightings.

Several primary constituent elements (PCE) are present in the lower Columbia River. Water temperatures throughout the designated critical habitat reach of the Columbia River remains within the range of -2 C to 21 C during the fall, winter, and spring when bull trout are foraging, overwintering, and migrating in the mainstem river. Water temperatures typically exceed this criterion during August and September. The 10-year average maximum daily water temperatures at Bonneville and John Day dam forebays are lower than 21 C except from early August to early September.

The mainstem Columbia River including the reservoirs provides an abundant food source for migratory bull trout during the fall, winter, and spring. Forage fish such as juvenile salmon and steelhead, whitefish, sculpins (family Cottidae), suckers (family Catostomidae), and minnows (family Cyprinidae) that are present throughout the Columbia River have been collected. The Lower Columbia River Estuary partnership identifies 78 fish species in the lower Columbia River, though a recent study identified that 36 are non-native species. In addition, large numbers of hatchery raised salmon and steelhead are released into the Columbia River system annually and provides an abundant source of prey for bull trout.

Bull trout presence has been documented in the Columbia River and in tributaries (Figure 3). However, the mainstem Columbia River has not been designated as a core area because no known spawning occurs in the mainstem that supports its own local population. There also remains a level of uncertainty about the use of the mainstem Columbia River by fluvial bull trout and is a primary research need that was identified in the draft bull trout recovery plans (Service 2002a).

Recovery of tagged bull trout in the Bonneville Pool that originated from the Hood River (Gray 2007) has shown that bull trout are using the mainstem reach of the lower Columbia River. Recent radio-tagging information regarding bull trout migrations to the mainstem (BioAnalyst 2009) may apply to other areas or reaches within the Columbia River basin where such tagging studies have not been conducted, but where bull trout have been documented or where bull trout use is expected. Such reaches would include the Columbia River downstream from Bonneville Dam.

The following water bodies are included in this CHU (see Table 31)

Columbia River from the Pacific Ocean upstream 347.0 km (215.6 mi) to the John Day Dam provides FMO habitat for extant tributary populations of bull trout in the Lewis, Hood, Klickitat, and Deschutes Rivers and connectivity between these core areas, as well as facilitating the potential reestablishment of a population within the White Salmon River. Critical habitat includes the free-flowing reaches of the Columbia River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively. Historic records have documented bull trout or Dolly Varden passing the fish ladder at Bonneville Dam and in the lower Columbia River (Figure 3). Bull trout have been reported from the lower reaches of the Kalama and Lewis rivers (J. Byrne, pers. comm. 2009) and Sandy River. Bull trout are present in two major tributaries that enter the Bonneville Pool reach of the Columbia River, the Hood and Klickitat rivers. Movement of bull trout between the Hood River and Columbia River have been documented by recovery of fish on the Columbia River, which were previously tagged at Powerdale Dam in the lower Hood River. Tagged fish were captured at Drano Lake (the

Columbia River backwater at the mouth of the Little White Salmon River) and Coberg Beach (Gray 2007*)*. The Deschutes River is the only major tributary entering Columbia River between The Dalles and John Day dams. Fluvial bull trout are known to migrate down the Deschutes River to the Columbia River. See Figure 3.

Figure 3: Bull Trout Observations Lower Columbia River (Service 2010)

Year	Date	Number of Bull Trout	Who Documented	Where	Notes
1890	Unknown	Unknown	Fishwheels	Lower Columbia River	Donaldson, I.J., and F.K. Cramer. 1971. Fishwheels of the Columbia. Portland, Oregon: Binfords and Mort.
1941	3/3/1941	1	ACOE	WA ladder	Downstream passage of 1 "Dolly Varden"
1947	3/8/1947	1	ACOE	Bradford Island	Dolly Varden trapped and positively ID'd at Bradford Island
1960	Unknown	Unknown	NMFS	Jones Beach and estuary	Pers. Comm. Rob Nielson URS consulting: ACOE 2001 BA for channel dredging has the following reference: "Published literature does not document the presence of bull trout in the lower Columbia River; however, information from a NMFS biologist indicates that sampling crews occasionally caught bull trout at Jones Beach and in the estuary in the 1960s and 1970s".
1970	Unknown	Unknown	NMFS	Jones Beach and estuary	see 1960 above
1982	8/28/1982	1+	ACOE	Bradford Island	Possible BT at Bradford Island - remarks of unusual long thin fish with some Chinook characteristics, thinner than a coho, bright, tail more forked than a chinook.
1986	9/11/1986	1	ACOE	Bradford Island	Dolly Varden passed Bradford Island in the morning
1993	Unknown	1	WDFW	Chehalis/Grays Harbor	WDFW Stock / Status Report. http://wdfw.wa.gov/webmaps/salmonscape/sasi/full_stock_rpts/8348.pdf
1994	5/8/1994	1	ACOE	WA ladder	Remarks said possibly Dolly Varden
1994	7/24/1994	1	ACOE	Bradford Island	Dolly Varden - remarks said spots were black

Year	Date	Number of Bull Trout	Who Documented	Where	Notes
1995	1995-1996 winter	1	ACOE	The Dalles Dam ladder	Bob Cordie collected a 8-10 inch BT in the east ladder at The Dalles Dam when it was dewatered in December or January of the 1995-96 winter
1998	5/10/1998	1	WDFW - Northern Pikeminnow fisher	Bonneville Reservoir	Northern pikeminnow Sport-Reward. Harvested.
1998	5/24/1998	1	WDFW - Northern Pikeminnow fisher	Bonneville Reservoir	Northern pikeminnow Sport-Reward. Harvested.
1998	6/15/1998	1	WDFW - Northern Pikeminnow fisher	Bonneville Reservoir	Northern pikeminnow Sport-Reward. Catch-and-release.
1998	6/16/1998	1	WDFW - Northern Pikeminnow fisher	Bonneville Reservoir	Northern pikeminnow Sport-Reward. Catch-and-release.
1998	Unknown	2	WDFW	Mouth of Klickitat River	Tribal gillnet
1999	November	1	Kevin May	Sandy River - Oxbow Park	Captured and released, photo documentation
1999	December	1	ODFW	Sandy River	Marmot Dam
2000	April	1	WDFW	Drano River	Recreational fisher. One floy tagged bull trout (from Hood River) harvested.

Year	Date	Number of Bull Trout	Who Documented	Where	Notes
2000	May	1	WDFW - Northern Pikeminnow fisher	Mouth of Klickitat River	Pike Minnow Sport Fishery. 1 bull trout, size undocumented
2000	May	1	Pikeminnow fisher	Mouth of Klickitat River	Pikeminnow sport-reward fishermen reported the catch-and-release of one bull trout/Dolly Varden at the mouth of the Klickitat River
2001	Unknown	1	Public comment	Nemah River - Willapa Bay	A public comment in 2003 (via email from Jeri Wood) from someone who reported catching a large bull trout in the Nemah River which drains into Willapa Bay in 2001
2002	1/23/2002	1	Randy Hageman	Sandy River	Photo documentation
2002	5/27/2002	1	ACOE?	John Day Dam by-pass facility	John Day Dam smolt by-pass facility. 1 bull trout, approx. 9", captured, photographed and released.
2002	3/28/2002	7	Consultants to ACOE	Upper Gray's Harbor - Chehlis River	Native char were captured between sites 5 and 9 (Jeanes et al. 2003). Two char were captured during the day sampling, and five at night. Char catch was equally distributed between ebb and flood tidal stages. Fish captured during beach seine surveys conducted in Upper Gray's Harbor, Washington, 2002. 3/7/02 – 2 at night and 2 during day. 3/14/02 – 3 at night. 284-330mm fork length.
2005	5/23/2005	1	PSFMC	Mouth of Hamilton Creek	Tom Freisen and Jim Koloszar. Captured at night, approx. 5' of water, ¼ to ½ mile East mouth of Drano Lake. N 45° 42.590"; W 121° 37.831".

Year	**Date**	**Number of Bull Trout**	**Who Documented**	**Where**	**Notes**
2005	August	1	Recreational fisher	Lower end of Hamilton Island (below Bonneville Dam)	Caught and released. Recreational Fisher, Don Howard. 1 bull trout approx. 381mm.
2005	6/20/2005	1	WDFW	Near Cascade Locks	Possible bull trout sighting by Northern Pikeminnow fisher near cascade Locks. Slender salmonid looking fish swimming in shallows with distinct white lateral spotting. Reporting party has verifiable bull trout knowledge.
2005	4/14/2010	1	ODFW	east of the mouth of Drano Lake	Gray 2007. ODFW Northern Pikeminnow Electro shocking Crew, Tom Freisen and Jim Koloszar. Captured at night, approx. 5‘ of water, ¼ to ½ mile East mouth of Drano Lake. N 45° 42.590”; W 121° 37.831”.
2005	Unknown	5	BPA report	Bonneville Dam - Powerhouse 2	Monitoring of Downstream Salmon and Steelhead at Federal Hydroelectric Facilities – 2005 Annual Report- Prepared By Rick D. Martinson, Gregory M. Kovalchuk, Dean Ballinger for BPA
2005	3/21/2005	1	PSFMC	Bonneville Dam Smolt By-pass Facility	Dean Ballinger, PSMFC. Captured during night shift. Caudal tail damage. No exterior markings. Released into downstream bypass. 1 adult, 390 mm.
2006	5/3/2006	1	WDFW	Drano Lake	Gray 2007. WDFW bull trout project. Captured with 2” small mesh gill net between 2200 and 2330 hour. 1 immature adfluvial, 303 mm.
Unknown	Unknown	Unknown	WDFW	Lower Kalama River	Jim Byrne WDFW pers. Comm. Byrne, Jim, Washington Department of Fish and Wildlife. March 5, 2002, telephone conversation with Marv Yoshinaka, Service, regarding Bull trout occurrences in lower Columbia River tributaries.
Unknown	Unknown	Unknown	WDFW	Mouth of Lewis River	Jim Byrne WDFW / Frank Shrier, PacificCorp pers. Comm.

Year	Date	Number of Bull Trout	Who Documented	Where	Notes
2010	Jan/Feb 2010	2	WDFW	Dog Creek Falls	Steven Gray WDFW pers. comm. "There was a sighting in January/February 2010 by one of our creel samplers in the Bonneville Pool, Tom Mallery; he said he saw a couple of 18 – 24" cuts or dollies working old redds below the splash pool below Dog Creek Falls; he saw them over the course of 2 weeks and he is a person I have complete confidence in knowing a char from any other species. He never handled them or was able to get pictures to truly confirm the sighting though. His e-mail is attached for reference."

Table 31. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Mainstem Lower Columbia River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Mainstem Lower Columbia River—None	Columbia River	WA	Columbia River from the Pacific Ocean upstream 347.0 km (215.6 mi) to the John Day Dam provides FMO habitat for extant tributary populations of bull trout in the Lewis, Hood, Klickitat, and Deschutes Rivers and connectivity between these core areas, as well as facilitating the potential reestablishment of a population within the White Salmon River. Critical habitat includes the free-flowing reaches of the Columbia River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively. Historic records have documented bull trout or Dolly Varden passing the fish ladder at Bonneville Dam and in the lower Columbia River (Figure 1). Bull trout have been reported from the lower reaches of the Kalama and Lewis rivers (J. Byrne, pers. comm. 2009) and Sandy River. Bull trout are present in two major tributaries that enter the Bonneville Pool reach of the Columbia River, the Hood and Klickitat rivers. Movement of bull trout between the Hood River and Columbia River have been documented by recovery of fish on the Columbia River, which were previously tagged at Powerdale Dam in the lower Hood River. Tagged fish were captured at Drano Lake (the Columbia River backwater at the mouth of the Little White Salmon River) and Coberg Beach (Gray 2007). The Deschutes River is the only major tributary entering Columbia River between The Dalles and John Day dams. Fluvial bull trout are known to migrate down the Deschutes River to the Columbia River. See Figure 1 in CHU text of documented observations (Service 2010).	See text for this CHU	1240483 462464

Chapter 9. Klamath Recovery Unit—Klamath River Basin Critical Habitat Unit

Chapter 9. Klamath River Basin Critical Habitat Unit

Please refer to the RU section above that describes why the Klamath River Basin CHU is essential and see Appendix 1 for more detailed information.

The Klamath River Basin CHU is located in south-central Oregon and includes three CHSUs: (1) Upper Klamath Lake CHSU; (2) Sycan River CHSU; and (3) Upper Sprague River CHSU. Total designated critical habitat in this unit includes 445.2 km (276.6 mi) of streams and 3,775.5 ha (9,329.5 ac) of lake surface area.

9.1. Upper Klamath Lake Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it is needed to maintain redundancy in local population numbers. Only two populations (Sun Creek and Threemile Creek) remain in this CHSU out of seven local populations in all three CHSUs combined, placing the Upper Klamath Lake CHSU populations at an increased risk of extirpation. These local populations likely face greater risk because they are not interconnected. Extirpation of local populations in the Upper Klamath Lake CHSU has occurred in recent times. Populations in this CHSU are genetically differentiated from those in the other two CHSUs in the Klamath River Basin CHU. Among all three CHSUs in the Klamath RU, genetic variation is lowest in this CHSU. The two local populations have been isolated from habitat fragmentation and have experienced population bottlenecks. As such, currently unoccupied habitat is needed to restore connectivity among local populations and is designated as critical habitat. This unoccupied critical habitat includes canals, which now provide the only means of connectivity as migratory corridors.

The Service has designated West and Sevenmile Canals as critical habitat because they will provide connectivity between recovered local populations. West Canal intercepts the flows from Cherry, Threemile, Crane, and Fourmile Creeks and provides a corridor of connectivity between these streams. Before the creation of West Canal, these streams likely connected directly with FMO habitat in the Upper Klamath and Agency Lakes. Sevenmile Canal is the redirected, channelized lower reaches of Sevenmile Creek and also provides a connectivity corridor between streams supporting isolated local populations of bull trout. Therefore, these canals, although artificial, now represent aquatic habitat important to bull trout recovery.

Because isolation and habitat fragmentation resulting from migratory barriers have negatively affected bull trout by (1) reducing geographical distribution; (2) increasing the probability of losing individual local populations; (3) increasing the probability of hybridization with introduced brook trout; (4) reducing the potential for movements in response to developmental, foraging, and seasonal habitat requirements; and (5) reducing reproductive capability by eliminating the larger, more fecund migratory form from many subpopulations, restoring connectivity and the frequency of occurrence of the migratory form will be an important factor in providing for bull trout recovery (see Appendix 1 for more detailed information).

The Upper Klamath Lake CHSU is comprised of Upper Klamath Lake, Agency Lake, and their immediate major and minor tributaries within Klamath County. Designated critical habitat includes 163.1 km (101.4 mi) of stream in 15 reaches and 3775.5 ha (9329.5 ac) of lake in the Upper Klamath Lake CHSU.

The following water bodies are included in this CHSU (also see Table 32):

(A) The entire 3,775.5 ha (9,329.5 ac) of Agency Lake is unoccupied but is expected to provide FMO habitat that is considered essential to the conservation of bull trout.

(B) Sun Creek from Sun Falls downstream 9.6 km (5.9 mi) to the lower limit of bull trout distribution provides spawning and rearing habitat for a local population. An unoccupied reach of Sun Creek below bull trout distribution downstream 9.3 km (5.8 mi) to its confluence is expected to provide essential spawning and rearing habitat.

(C) An unoccupied reach of Annie Creek from its confluence with the Wood River upstream 17.5 km (10.9 mi) to Annie Falls is expected to provide essential spawning and rearing habitat.

(D) An unoccupied reach of Sevenmile Creek from its confluence with Sevenmile Canal upstream 11.8 km (7.3 mi) is expected to provide FMO habitat. An unoccupied reach of Sevenmile Creek from the upper limit of FMO habitat upstream 8.7 km (5.4 mi) to Sevenmile Marsh is expected to provide spawning and rearing habitat.

(E) An unoccupied reach of Threemile Creek from its confluence with Crane Creek upstream 6.0 km (3.8 mi) to the lower limit of bull trout distribution is expected to provide spawning and rearing habitat; and the lower limit of bull trout distribution upstream 2.5 km (1.6 mi) to the upper limit of permanent water provides spawning and rearing habitat.

(F) An unoccupied reach of Crane Creek from its confluence with Threemile Creek upstream 1.8 km (1.1 mi) to its confluence with West Canal is expected to provide FMO habitat.

(G) An unoccupied reach of Fourmile Creek from its origin downstream 3.8 km (2.4 mi) to its confluence with West Canal is expected to provide FMO habitat.

(H) An unoccupied reach of Cherry Creek from its confluence with Fourmile Creek upstream 14.8 km (9.2 mi) to the upper limit of permanent water is expected to provide spawning and rearing habitat.

(I) An unoccupied reach of Sevenmile Canal from its confluence with Agency Lake upstream 9.9 km (6.1 mi) to its confluence with West Canal and Sevenmile Creek is expected to provide FMO habitat.

(J) An unoccupied reach of West Canal from its confluence with Agency Lake upstream 16.7 km (10.4 mi) to its confluence with Sevenmile Canal is expected to provide FMO habitat.

(K) An unoccupied reach of the Wood River from its confluence with Agency Lake upstream 31.2 km (19.4 mi) to its source springs is expected to provide FMO habitat.

(L) An unoccupied reach of Crooked Creek from its confluence with the Wood River upstream 14.5 km (9.0 mi) to its source is expected to provide spawning and rearing habitat.

(M) An unoccupied reach of Fort Creek from its confluence with the Wood River upstream 5.0 km (3.1 mi) to its source is expected to provide spawning and rearing habitat.

Table 32. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Klamath River Basin–Upper Klamath Lake CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Klamath Lake	Annie Creek	OR	Bull trout were historically present in Annie Creek (D. Hering, CLNP pers. comm. 2009)	This unoccupied reach of Annie Creek is expected to provide SR habitat. Annie Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219896 427215.1
Klamath River Basin–Upper Klamath Lake	Annie Creek	OR	Bull trout were historically present in Annie Creek (D. Hering, CLNP, pers. comm. 2009)	This unoccupied reach of Annie Creek is expected to provide SR habitat. Annie Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219896 427215.2
Klamath River Basin–Upper Klamath Lake	Cherry Creek	OR	Bull trout were historically present in Cherry Creek, but are now believed to be extirpated (Service 2002a, p. 10).	This unoccupied reach of Cherry Creek is expected to provide SR habitat. Cherry Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1220692 426275
Klamath River Basin–Upper Klamath Lake	Crane Creek	OR	Bull trout have not been documented from this creek though they may have historically used it. This creek provides a connectivity corridor between streams, supporting isolated local populations of bull trout.	This unoccupied reach of Crane Creek is expected to provide FMO habitat and is important for resurrecting migratory forms of bull trout in the Upper Klamath Lake core area and re-establishing connectivity between recovered populations of bull trout in Cherry, Threemile, and Sevenmile Creeks.	1220515 426375
Klamath River Basin–Upper Klamath Lake	Crooked Creek	OR	Bull trout have not been documented from this creek though they may have used it historically. This is a tributary to the Wood River, which was formerly occupied (Dambacher et al. 1992, p. 30).	An unoccupied reach of Crooked Creek is expected to provide SR habitat. Crooked Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219457 425985
Klamath River Basin–Upper Klamath Lake	Fort Creek	OR	Bull trout were historically present in Fort Creek (Cavendar 1978; Buchanan et al. 1997, p. 26; C. Bienz, pers. comm. 2009), but are now extirpated.	This unoccupied reach of Fort Creek is expected to provide SR habitat. Fort Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219797 426720
Klamath River Basin–Upper Klamath Lake	Fourmile Creek	OR	Bull trout have not been documented from this creek though they may have used it historically. This creek provides a connectivity corridor between streams supporting isolated local populations of bull trout.	This unoccupied reach of Fourmile Creek is expected to provide FMO habitat. Fourmile Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219837 425320.1
Klamath River Basin–Upper Klamath Lake	Fourmile Creek	OR	Bull trout have not been documented from this creek though they may have used it historically. This creek provides a connectivity corridor between streams supporting isolated local populations of bull trout.	This unoccupied reach of Fourmile Creek is expected to provide FMO habitat. Fourmile Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1219837 425320.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Klamath Lake	Sevenmile Canal	OR	Bull trout were historically present in Sevenmile Creek, but are now believed to be extirpated (Cope 1879; Service 2002a, ch. 2).	This unoccupied reach of Sevenmile Canal is expected to provide FMO habitat.	1219525 425737
Klamath River Basin–Upper Klamath Lake	Sevenmile Creek	OR	Bull trout were historically present in Sevenmile Creek, but are now believed to be extirpated (Cope 1879; Service 2002a, ch. 2).	This unoccupied reach of Sevenmile Creek is expected to provide FMO habitat. Sevenmile Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1220516 426463.1
Klamath River Basin–Upper Klamath Lake	Sevenmile Creek	OR	Bull trout were historically present in Sevenmile Creek, but are now believed to be extirpated (Cope 1879; Service 2002a, ch. 2).	This unoccupied reach of Sevenmile Creek is expected to provide SR habitat. Sevenmile Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1220516 426463.2
Klamath River Basin–Upper Klamath Lake	Sun Creek	OR	This unoccupied portion of Sun Creek was likely occupied by bull trout (Dambacher et al. 1992).	This unoccupied reach of Sun Creek is expected to provide SR habitat. This portion of Sun Creek has been identified for restoration as described in the draft recovery plan (Service 2002a, ch. 2).	1220087 427344.2
Klamath River Basin–Upper Klamath Lake	Sun Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by the Crater Lake National Park, (Hering and Buktenica 2008) and from 2009 snorkel surveys (D. Hering, pers. comm.2009).	Sun Creek is essential as it currently provides SR habitat for this local population of bull trout.	1220087 427344.1
Klamath River Basin–Upper Klamath Lake	Threemile Creek	OR	Most recently confirmed presence of bull trout documented by electrofishing in 2009 (R. Smith, ODFW, pers. comm.), and snorkel surveys in 2009 (N. Banish, personal observation).	This tributary in the Upper Klamath Lake CHSU is essential because it is currently occupied by bull trout and provides SR habitat for the resident local population.	1220659 426418.1
Klamath River Basin–Upper Klamath Lake	Threemile Creek	OR	This unoccupied portion of Threemile Creek was likely occupied by bull trout (Buchanan et al. 1997).	This unoccupied reach of Threemile Creek is expected to provide SR habitat. This portion of Threemile Creek has been identified for restoration as described in the draft recovery plan (Service 2002a, ch. 2).	1220659 426418.2
Klamath River Basin–Upper Klamath Lake	Threemile Creek	OR	This unoccupied portion of Threemile Creek was likely occupied by bull trout (Buchanan et al. 1997).	This unoccupied reach of Threemile Creek is expected to provide SR habitat. This portion of Threemile Creek has been identified for restoration as described in the draft recovery plan (Service 2002a, ch. 2).	1220659 426418.3
Klamath River Basin–Upper Klamath Lake	West Canal	OR	Bull trout are currently (or were historically) present in tributary streams that empty into West Canal (i.e., Threemile and Cherry creeks; (Service 2002a, ch. 2)). West Canal intercepts the flows from Threemile, Cherry, Crane, and Fourmile creeks and provides a corridor of connectivity between these streams.	This unoccupied reach of West Canal is expected to provide FMO habitat.	1220504 426465

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Klamath Lake	Wood River	OR	The Wood River was historically occupied by bull trout (Dambacher et al. 1992; Buchanan et al. 1997), but is now believed to be extirpated.	This unoccupied reach of the Wood River is expected to provide FMO habitat. This portion of the Wood River has been identified for restoration as described in the draft recovery plan (Service 2002a, ch. 2).	1219445 425983
Klamath River Basin–Upper Klamath Lake	Agency Lake	OR	Bull trout have not been documented from Agency Lake though they may have used it historically (OCAFS 1993). This lake would provide a connectivity corridor between local populations of bull trout and a productive foraging area. For instance, Agency Lake supports adfluvial redband trout (NRC 2004) that are able to grow quite large (640mm; Behnke 1992), evidently based on the abundant forage base.	Agency Lake is unoccupied but is expected to provide FMO habitat. Agency Lake is critically important for restoring migratory forms of bull trout in the Upper Klamath Lake CHSU, and reestablishing connectivity between recovered local populations of bull trout.	1219641 425408

9.2. Sycan River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it is needed to maintain redundancy in local population numbers. Only one local population (Long Creek) remains in this CHSU out of seven local populations in all three CHSUs combined, placing the Sycan River CHSU population at an increased risk of extirpation. The local population in this CHSU likely faces greater risk because it is the only remaining local population. Other local populations in the Sycan River CHSU have been extirpated. This CHSU's local population is genetically differentiated from those in the other two CHSUs. This CHSU also is essential in that bull trout in this CHSU exhibit resident and fluvial life histories, which are important for representing diverse life history expression in the Klamath RU. Migratory bull trout are able to grow larger than their resident counterparts, resulting in greater fecundity and higher reproduction potential. Migratory life history forms also have been shown to be important for population persistence and resilience (see Appendix 1 for more detailed information).

The Sycan River CHSU comprises the Sycan Marsh and its tributaries and the Sycan River and its tributaries in Klamath and Lake Counties. Designated critical habitat includes 138.9 km (86.3 mi) of stream in 10 reaches in the Sycan River CHSU. The following water bodies are included in this CHSU (see Table 33):

(A) Long Creek from its confluence with the Sycan River upstream 36.7 km (22.8 mi) provides FMO habitat; Long Creek from the upper limit of FMO habitat upstream 4.4 km (2.7 mi) to its source provides spawning and rearing habitat.

(B) An unnamed tributary to Long Creek from its confluence with Long Creek upstream 0.5 km (0.3 mi) to a natural barrier provides spawning and rearing habitat.

(C) An unoccupied reach of Calahan Creek from its confluence with Long Creek upstream 11.3 km (7.0 mi) to its source is expected to provide spawning and rearing habitat.

(D) An unoccupied reach of Coyote Creek from its terminus within Sycan Marsh upstream 15.4 km (9.6 mi) to the upper limit of permanent water is expected provide spawning and rearing habitat.

(E) An unoccupied reach of the Sycan River from its confluence with Long Creek upstream 48.3 km (30 mi) to its confluence with Rock Creek is expected provide FMO habitat and from the upper limit of possible FMO habitat upstream 11.7 km (7.3 mi) to its origin is expected to provide spawning and rearing habitat.

(F) An unoccupied reach of the South Fork Sycan River from its confluence with the Sycan River upstream 4.1 km (2.6 mi) to its origin is expected to provide spawning and rearing habitat.

(G) An unoccupied reach of Rifle Creek from its confluence with the Sycan River upstream 4.0 km (2.5 mi) to its origin is expected to provide spawning and rearing habitat.

(H) An unoccupied reach of Boulder Creek from its confluence with the Sycan River upstream 2.5 km (1.5 mi) to its headwaters is expected to provide spawning and rearing habitat.

Table 33. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Klamath River Basin–Sycan River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Sycan River	Boulder Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the Sycan River, which was formerly occupied (Light et al. 1996).	This unoccupied reach is expected to provide SR habitat for an additional local population. Boulder Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1207843 426598
Klamath River Basin–Sycan River	Calahan Creek	OR	Bull trout are believed to be extirpated from Calahan Creek (Service 2002a, ch. 2). The last documentation of bull trout was from 1993 (Light et al. 1996).	Calahan Creek is expected to provide SR habitat. Calahan Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1212668 428377
Klamath River Basin–Sycan River	Coyote Creek	OR	Bull trout were historically present in Coyote Creek (Light et al. 1996; Service 2002a, ch. 2), but are now believed to be extirpated.	This unoccupied reach of Coyote Creek is expected to provide SR habitat. Coyote Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1211088 428621.1
Klamath River Basin–Sycan River	Long Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by U.S. Forest Service (USFS in litt. 2009g, p. 2), and from a 2009 snorkel event (M. Raade, pers. comm. 2009; L. Schultz, pers. comm.2009). Currently occupied by fluvial bull trout (C. Bienz, pers. comm. 2009).	This tributary to the Sycan River is essential because it is currently occupied by bull trout, and provides FMO habitat for the resident local population.	1211600 427263.1
Klamath River Basin–Sycan River	Long Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by U.S. Forest Service (USFS in litt. 2009g, p. 2), and from a 2009 snorkel event (M. Raade, pers. comm. 2009; L. Schultz, pers. comm.2009).	This tributary to the Sycan River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1211600 427263.2
Klamath River Basin–Sycan River	Long Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by U.S. Forest Service (USFS in litt. 2009g, p. 2), and from a 2009 snorkel event (M. Raade, pers. comm. 2009; L. Schultz, pers. comm. 2009). Currently occupied by fluvial bull trout (C. Bienz, pers. comm. 2009).	This tributary to the Sycan River is essential because it is currently occupied by bull trout, and provides FMO habitat for the resident local population.	1211600 427263.3
Klamath River Basin–Sycan River	Long Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by U.S. Forest Service (USFS in litt. 2009g), and from a 2009 snorkel event (M. Raade, pers. comm. 2009; L. Schultz, pers. comm.2009). Currently occupied by fluvial bull trout (C. Bienz, pers. comm. 2009).	This tributary to the Sycan River is essential because it is currently occupied by bull trout, and provides FMO habitat for the resident local population.	1211600 427263.4

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Sycan River	Long Creek	OR	Most recent confirmed presence of bull trout in 2008 documented by U.S. Forest Service (USFS in litt. 2009g), and from a 2009 snorkel event (M. Raade, pers. comm. 2009; L. Schultz, pers. comm. 2009). Currently occupied by fluvial bull trout (C. Bienz, pers. comm. 2009).	This tributary to the Sycan River is essential because it is currently occupied by bull trout, and provides FMO habitat for the resident local population.	1211600 427263.5
Klamath River Basin–Sycan River	Long Creek	OR	Bull trout have not been documented from this reach of Long creek, though they may have used it historically. This is a tributary to the Sycan River, portions of which were previously occupied by bull trout (ODFW 1968; Light et al. 1996, p.30; Buchanan et al. 1997, p. 29).	This unoccupied reach of Long Creek is essential because it is expected to provide FMO habitat for the resident local population.	1211600 427263.6
Klamath River Basin–Sycan River	Coyote Creek	OR	Bull trout were historically present in Coyote Creek (Light et al. 1996, p. 31; Service 2002a, p. 13), but are now believed to be extirpated.	This unoccupied reach of Coyote Creek is expected to provide SR habitat. Coyote Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1211088 428621.2
Klamath River Basin–Sycan River	Rifle Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the Sycan River, which was formerly occupied (Light et al. 1996, p. 30).	This unoccupied reach is expected to provide SR habitat for an additional local population. Rifle Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208809 426935
Klamath River Basin–Sycan River	South Fork Sycan River	OR	The Sycan River was historically occupied by bull trout (ODFW 1968; Light et al. 1996, p. 30; Buchanan et al. 1997, p. 29).	This unoccupied reach of the South Fork Sycan River is expected to provide SR habitat. The SF Sycan River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1207944 426631
Klamath River Basin–Sycan River	Sycan River	OR	The Sycan River was historically occupied by bull trout (ODFW 1968; Light et al. 1996, p. 30; Buchanan et al. 1997, p. 29).	This unoccupied reach of the Sycan River is expected to provide FMO habitat. The Sycan River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1212872 424605.1
Klamath River Basin–Sycan River	Sycan River	OR	The Sycan River was historically occupied by bull trout (ODFW 1968; Light et al. 1996, p. 30; Buchanan et al. 1997, p. 29).	This unoccupied reach of the Sycan River is expected to provide SR habitat. The Sycan River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1212872 424605.2
Klamath River Basin–Sycan River	Sycan River	OR	The Sycan River was historically occupied by bull trout (ODFW 1968; Light et al. 1996, p. 30; Buchanan et al. 1997, p. 29).	This unoccupied reach of the Sycan River is expected to provide FMO habitat. The Sycan River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1212872 424605.3

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Sycan River	Sycan River	OR	The Sycan River was historically occupied by bull trout (ODFW 1968; Light et al. 1996, p. 30; Buchanan et al. 1997, p. 29).	This unoccupied reach of the Sycan River is expected to provide FMO habitat. The Sycan River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1212872 424605.4
Klamath River Basin–Sycan River	Unnamed Tributary of Long Creek	OR	Most recent confirmed presence of bull trout documented by ODFW in 2005 (B. Tinniswood, ODFW, pers. comm.).	This tributary to Long Creek is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1213194 429185

9.3. Upper Sprague River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it is needed to maintain redundancy in local population numbers. Five local populations (Boulder Creek, Dixon Creek, Deming Creek, Leonard Creek, and Brownsworth Creek) remain in this CHSU out of seven local populations in all three CHSUs combined, placing the Upper Sprague River CHSU at an intermediate risk of extinction. These local populations likely face a higher risk because not all are interconnected. Populations in this CHSU are genetically differentiated from those in the other two CHSUs. This CHSU also is essential in that bull trout in this CHSU exhibit resident and fluvial life histories, which are important for representing diverse life history expression in the Klamath RU. Migratory bull trout are able to grow larger than their resident counterparts, resulting in greater fecundity and higher reproduction potential. Migratory life history forms also have been shown to be important for population persistence and resilience (see Appendix 1 for more detailed information).

The Upper Sprague River CHSU comprises the drainages of the North Fork Sprague River and South Fork Sprague River and their tributaries in Klamath and Lake Counties. Designated critical habitat includes 145.1 km (90.1 mi) of stream in 18 reaches in the Upper Sprague River CHSU. The following water bodies are included in this CHSU (see Table 34):

(A) The North Fork Sprague River from Forest Road 3411 upstream 5.6 km (3.5 mi) to Boulder Creek provides FMO habitat; an unoccupied reach of the North Fork Sprague River from its confluence with Boulder Creek upstream 29.8 km (18.6 mi) to the limit of permanent water is expected to provide additional FMO habitat.

(B) An unoccupied reach of Gearhart Creek from its confluence with the North Fork Sprague River upstream 9.0 km (5.6 mi) to Gearhart Marsh is expected to provide spawning and rearing habitat.

(C) An unoccupied reach of Hole Creek from its confluence with Gearhart Creek upstream 3.3 km (2.0 mi) to the upper limit of permanent water is expected to provide spawning and rearing habitat.

(D) An unoccupied reach of Nottin Creek from its confluence with Gearhart Creek upstream 5.3 km (3.3 mi) to the upper limit of permanent water is expected to provide spawning and rearing habitat.

(E) An unoccupied reach of School Creek from its confluence with the North Fork Sprague River upstream 7.0 km (4.3 mi) to its origin is expected to provide spawning and rearing habitat.

(F) An unoccupied reach of Dead Cow Creek from its confluence with the North Fork Sprague River upstream 6.6 km (4.1 mi) is expected to provide spawning and rearing habitat.

(G) An unoccupied reach of Gold Creek from its confluence with Dead Cow Creek upstream 2.9 km (1.8 km) is expected to provide spawning and rearing habitat.

(H) Boulder Creek from its confluence with the North Fork Sprague River upstream 7.7 km (4.8 mi) to its origin provides spawning and rearing habitat.

(I) Dixon Creek from its confluence with Boulder Creek upstream 2.2 km (1.4 mi) to its origin provides spawning and rearing habitat.

(J) An unnamed tributary to Dixon Creek from its confluence with Dixon Creek upstream 0.9 km (0.5 mi) to its origin provides spawning and rearing habitat.

(K) Deming Creek from its confluence with Anderson Field upstream 7.8 km (4.8 mi) to its headwaters provides spawning and rearing habitat.

(L) Brownsworth Creek from its confluence with the South Fork Sprague River upstream 13.4 km (8.3 mi) to the upper limit of permanent water provides spawning and rearing habitat.

(M) Leonard Creek from its confluence with Brownsworth Creek upstream 6.8 km (4.2 mi) to its source provides spawning and rearing habitat.

(N) An unoccupied reach of the South Fork Sprague River from its confluence with Brownsworth Creek upstream 21.7 km (13.5 mi) to its confluence with Camp Creek is expected to provide FMO habitat. An unoccupied reach of the South Fork Sprague River from its confluence with Camp Creek upstream 5.6 km (3.5 mi) to its origin is expected to provide spawning and rearing habitat.

(O) An unoccupied reach of Camp Creek from its confluence with the South Fork Sprague River upstream 5.0 km (3.1 mi) to its origin is expected to provide spawning and rearing habitat.

(P) An unoccupied reach of Corral Creek from its confluence with the South Fork Sprague River upstream 4.5 km (2.8 mi) to its origin is expected to provide spawning and rearing habitat.

Table 34. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Klamath River Basin–Upper Sprague River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Sprague River	Boulder Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 4).	This tributary to the NF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1209522 425167.1
Klamath River Basin–Upper Sprague River	Boulder Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 4).	This tributary to the NF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1209522 425167.2
Klamath River Basin–Upper Sprague River	Boulder Creek	OR	Presence of bull trout not confirmed from this reach, though it is presumed they use it at some time during the year.	This presumed reach of Boulder Creek is expected to provide FMO habitat as bull trout may use it during the winter or as a migratory corridor between the NF Sprague River and SR habitat in Boulder Creek.	1209522 425167.3
Klamath River Basin–Upper Sprague River	Brownsworth Creek	OR	Brownsworth Creek was sampled in 2007 to collect bull trout fin clips for a genetics study, and was the last electrofishing effort (Service in litt. 2008i, p. 4). Snorkel spot check surveys also have documented bull trout in 2009 (T. Smith, USFS, pers. comm.). This unoccupied reach is directly upstream of the occupied reach.	This tributary to the SF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1209141 423918.1
Klamath River Basin–Upper Sprague River	Brownsworth Creek	OR	Bull trout were collected from Brownsworth Creek in 2007 to gather fin clips for a genetics study, and was the last electrofishing effort (Service in litt. 2008i, p. 4). Snorkel spot check surveys also have documented bull trout in 2009 (T. Smith, USFS, pers. comm.).	This tributary to the SF Sprague River is essential because it is upstream of currently occupied habitat for the resident local population.	1209141 423918.2
Klamath River Basin–Upper Sprague River	Camp Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the SF Sprague River, which likely was formerly occupied (Goetz 1989, p. 7; Buchanan et al. 1997, p. 29).	Camp Creek is expected to provide SR habitat. Camp Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1207947 424449
Klamath River Basin–Upper Sprague River	Corral Creek	OR	Bull trout have not been documented from this creek though they may have used it historically. This is a tributary to the SF Sprague River, which likely was formerly occupied (Goetz 1989, p. 7; Buchanan et al. 1997, p. 29).	Corral Creek is expected to provide SR habitat. Corral Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1207826 424549

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Sprague River	Dead Cow Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of Dead Cow Creek is expected to provide SR habitat. Dead Cow Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208366 425898
Klamath River Basin–Upper Sprague River	Deming Creek	OR	Bull trout were last sampled in Deming Creek in 2005 (Moore 2006, p. 4). Deming Creek contains the largest abundance of bull trout in the Upper Sprague River CHSU.	This tributary to the SF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1210743 424272.1
Klamath River Basin–Upper Sprague River	Deming Creek	OR	Bull trout were last sampled in Deming Creek in 2005 (Moore 2006, p. 4). Deming Creek contains the largest abundance of bull trout in the Upper Sprague River CHSU.	This tributary to the SF Sprague River is essential because it is upstream of currently occupied habitat for the resident local population.	1210743 424272.2
Klamath River Basin–Upper Sprague River	Dixon Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 8).	This tributary to the NF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1209383 425176.1
Klamath River Basin–Upper Sprague River	Dixon Creek	OR	Presence of bull trout not confirmed from this reach, though it is presumed they use it at some time during the year.	This presumed reach of Dixon Creek is expected to provide FMO habitat as bull trout may use it during the winter or as a migratory corridor between Boulder Creek and S/R habitat in Dixon Creek.	1209383 425176.2
Klamath River Basin–Upper Sprague River	Gearhart Creek	OR	Bull trout have not been documented from this creek though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of Gearhart Creek is expected to provide SR habitat. Gearhart Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208868 425658
Klamath River Basin–Upper Sprague River	Gold Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of Gold Creek is expected to provide SR habitat. Gold Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208194 425895

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Sprague River	Hole Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of Hole Creek is expected to provide SR habitat. Hole Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208699 425673
Klamath River Basin–Upper Sprague River	Leonard Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 11).	This tributary to the NF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1208678 424133.1
Klamath River Basin–Upper Sprague River	Leonard Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 11).	This tributary to the NF Sprague River is essential because it is currently occupied by bull trout, and provides SR habitat for the resident local population.	1208678 424133.2
Klamath River Basin–Upper Sprague River	Leonard Creek	OR	Presence of bull trout not confirmed from this reach, though it is presumed they use it at some time during the year.	This presumed reach of Leonard Creek is expected to provide FMO habitat as bull trout may use it during the winter, or as a migratory corridor between the SF Sprague River and S/R habitat in Leonard Creek.	1208678 424133.3
Klamath River Basin–Upper Sprague River	North Fork Sprague River	OR	A portion of the NF Sprague River is used as FMO habitat for fluvial fish (Service 2002a, p. 15). The NF Sprague River was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	The North Fork Sprague River is essential as it is expected to provide FMO habitat for fluvial bull trout.	1211099 424386.1
Klamath River Basin–Upper Sprague River	North Fork Sprague River	OR	A portion of the NF Sprague River is used as FMO habitat for fluvial fish (Service 2002a, p. 15). The NF Sprague River was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	The North Fork Sprague River is essential as it currently provides FMO habitat for fluvial bull trout.	1211099 424386.2
Klamath River Basin–Upper Sprague River	Nottin Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of Nottin Creek is expected to provide SR habitat. Nottin Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208711 425696
Klamath River Basin–Upper Sprague River	School Creek	OR	Bull trout have not been documented from this creek, though they may have used it historically. This is a tributary to the NF Sprague River, portions of which are occupied by bull trout (Service 2002a, p. 15), and was likely occupied to a larger extent historically (Buchanan et al. 1997, p. 29).	An unoccupied reach of School Creek is expected to provide SR habitat. School Creek has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1208468 426039

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Klamath River Basin–Upper Sprague River	South Fork Sprague River	OR	The SF Sprague River was likely formerly occupied (Goetz 1989, p. 7; Buchanan et al. 1997, p. 29).	This unoccupied reach of the South Fork Sprague River is expected to provide FMO habitat. The SF Sprague River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1211099 424385.1
Klamath River Basin–Upper Sprague River	South Fork Sprague River	OR	The SF Sprague River was likely formerly occupied (Goetz 1989, p. 7; Buchanan et al. 1997, p. 29).	This unoccupied reach of the South Fork Sprague River is expected to provide SR habitat. The SF Sprague River has been identified as a potential stream for reestablishment efforts as described in the draft recovery plan (Service 2002a, ch. 2).	1211099 424385.2
Klamath River Basin–Upper Sprague River	Unnamed Tributary of Dixon Creek	OR	Most recently confirmed presence of bull trout documented by Hartill and Jacobs (2007, p. 10).	This tributary to Dixon Creek is essential because it is currently occupied by bull trout and provides SR habitat for the resident local population.	1209312 425229

Chapter 10. Mid-Columbia Recovery Unit—Upper Columbia River Basins Critical Habitat Unit

Chapter 10. Upper Columbia River Basins Critical Habitat Unit

The Upper Columbia River Basins CHU includes the entire drainages of three CHSUs in central and north-central Washington on the east slopes of the Cascade Range and east of the Columbia River between Wenatchee, Washington, and the Okanogan River drainage: (1) Wenatchee River CHSU in Chelan County; (2) Entiat River CHSU in Chelan County; and (3) Methow River CHSU in Okanogan County. The Upper Columbia River Basins CHU also includes the Lake Chelan and Okanogan basins which historically provided spawning and rearing and FMO habitat and currently the Chelan Basin is essential and provides for FMO habitat to support migratory bull trout in this CHU. No critical habitat is proposed in the Okanogan River at this time. Bull trout have been recently observed in the Okanogan River near Osoyoos Lake, but it is unclear if it is essential habitat and what role this drainage may play in recovery. A total of 1,074.9 km (667.9 mi) of streams and 1,033.2 ha (2,553.1 ac) of lake surface area in this CHU are proposed as critical habitat to provide for spawning and rearing, FMO habitat to support three core areas essential for conservation and recovery.

10.1 Methow River Critical Habitat Subunit

The Methow River CHSU supports adfluvial, fluvial, and resident life history forms of bull trout and includes the mainstem Methow River and tributaries from its confluence with the Columbia River (at 843.0 km (523.5 mi)) to its headwaters at the crest of the Cascade Range. The Methow drainage is located on the eastern slopes of the Cascade Range in north-central Washington. The Methow River drains east into the Columbia River near the town of Pateros, Washington. The Methow River supports both two of three allucustrine populations (populations that live in lakes and migrate downstream to spawn in a lake outlet) in the CHU: one in Black Lake within the Chewuch drainage and one in the Lost River where they spawn both above and below the lakes. Populations of bull trout in this CHSU rely heavily on migratory corridors to and from the Columbia River. A total of 558.3 km (346.9 mi) of streams and a surface area of 46.5 ha (114.7 ac) for four lakes is proposed for designation and provide for spawning and rearing and FMO habitat for the Methow local population.

The following water bodies are included in this CHSU (Table 35):

(A) The Methow River from its confluence with the Columbia River upstream 83.6 km (52.0 mi) to its confluence with the Chewuch River provides FMO habitat and from that point upstream 55.5 km (34.5 mi) to the Lost River it provides spawning and rearing habitat. From that point upstream, the Methow River turns into the West Fork Methow. The West Fork Methow from the confluence of the Methow River and the Lost River upstream 8.7 km (5.4 mi) to a barrier falls provides spawning and rearing habitat. Robinson Creek from its confluence with the Methow River upstream 1.6 km (1.0 mi) to 10ft high falls; Rattlesnake Creek from its confluence with the Methow River upstream 0.5 km (0.3 mi) to a barrier falls; and Trout Creek from its confluence with the Methow River upstream 11.5 km (7.2 mi) to its headwaters provide spawning and rearing habitat.

(B) Gold Creek from its confluence with the Methow River upstream 1.8 km (1.1 mi) to the confluence of North Fork Gold Creek and South Fork Gold Creek provides FMO habitat. North Fork Gold Creek from its confluence with the North Fork upstream 8.3 km (5.1 mi) to it headwaters; Foggy Dew Creek from its confluence with the North Fork Gold Creek upstream 10.1 km (6.3 mi) to a substantial falls; and Crater Creek from its confluence with North Fork

Gold Creek upstream 4.7 km (2.9 mi) to a 40 ft barrier falls provide spawning and rearing habitat.

(C) Beaver Creek from its confluence with the Methow River upstream 20.9 km (13.0 mi) to its confluence with Lightening Creek provides FMO habitat and from that point upstream 1.6 km (1.0 mi) to a series of falls provides spawning and rearing habitat. Lightening Creek from its confluence with Beaver Creek upstream 0.40 km (0.25 mi) to a barrier falls provides spawning and rearing habitat. Blue Buck Creek from its confluence with Beaver Creek upstream 9.7 km (6.0 mi) to its headwaters provide spawning and rearing habitat.

(D) The Twisp River from its confluence with the Methow River upstream 47.5 km (29.5 mi), approximately 1/4 mile above Roads End Campground at a 15ft high falls. Twisp Rivers provides spawning and rearing habitat. Little Bridge Creek from its confluence with the Twisp River upstream 15.8 km (9.8 mi) to its headwaters; Buttermilk Creek from its confluence with the Twisp River upstream 4.1 km (2.5 mi) to the East and West Forks Buttermilk Creek; the East Fork of Buttermilk Creek from its confluence with Buttermilk Creek upstream 4.8 km (3.5 mi) to 3.5rm to a series of falls; and the West Fork Buttermilk Creek from its confluence with Buttermilk Creek upstream 14.6 km (9.0 mi) to its headwaters provide spawning and rearing habitat. Reynolds Creek from its confluence with the Twisp River upstream 0.90 km (0.56 mi) to several large falls; North Creek from its confluence with the Twisp River upstream 0.97 km (0.6 mi) to a 8ft barrier falls; War Creek from its confluence with the Twisp River upstream 1.9 km (1.2 mi) to barrier falls; and South Creek from its confluence with the Twisp River upstream 3.3 km (2.0 mi) provide spawning and rearing habitat. Additionally, the lower portions of the mainstem Twisp River provide for connectivity for bull trout to forage and migrate between the Twisp River system and the Methow and Columbia Rivers

(E) The Chewuch River from its confluence with the Methow River upstream 18.6 km (11.6 mi) to Eightmile Creek provides FMO habitat and from that point upstream to a 25 ft barrier falls at 39.0 km (25.2 mi) it provides spawning and rearing habitat. Eightmile Creek from its confluence with the Chewuck River upstream 22.5 km (14.0 mi) to its headwaters and Lake Creek from its confluence with the Chewuch River upstream 13.4 km (8.4 mi) to a barrier falls above Black Lake provide spawning and rearing habitat. Black Lake (23.8 ha (58.8 ac)) provides FMO habitat for adfluvial and allucustrine life histories. Andrews Creek from its confluence with the Chewuch River upstream 0.08 km (0.5 rm) to a 12 ft. tall barrier falls provides spawning and rearing habitat.

(F) Wolf Creek from its confluence with the Methow River upstream 17.1 km (10.6 mi) to a barrier falls and North Fork Wolf Creek from its confluence with Wolf Creek upstream 8.7 km (5.4 mi) provide spawning and rearing habitat.

(G) Goat Creek from its confluence with the Methow River upstream 20.5 km (12.7 mi) to its headwaters provides spawning and rearing habitat.

(H) Early Winters Creek from its confluence with the Methow River upstream 26.5 km (16.5 mi) to its headwaters provides spawning and rearing habitat. A local population of bull trout occurs 12.9 km (8.0 mi) upstream of the falls at State Highway 20; however, a 35.5 cm (14.0 in) bull trout has been observed upstream of the falls. Also, Cedar Creek from its confluence with Early Winters Creek upstream 3.1 km (1.9 mi) to a 40 ft barrier falls and Huckleberry Creek from its confluence with Cedar Creek upstream 7.0 km (4.4 mi) to its headwaters provide spawning and rearing habitat.

(I) The Lost River from its confluence with the Methow River upstream 36.3 km (22.6 mi) to its headwaters provides spawning and rearing habitat. Monument Creek from its confluence with the Lost River upstream 9.3 km (5.8 mi) to its headwaters and Eureka Creek from its confluence with the Lost River upstream 1.7 km (1.0 mi) provide spawning and rearing habitat for the fluvial life history form. Ptarmigan Creek from its confluence with First Hidden Lake upstream 0.80 km (0.5 mi) to a 50ft falls; Diamond Creek from its confluence with the Lost River upstream 0.9 km (0.5 mi); and Drake Creek from its confluence with the Lost River upstream 0.8 km (0.5 mi) provide spawning and rearing habitat for the adfluvial, allucustrine, and local populations that use Cougar Lake, First Hidden, and Middle Hidden Lakes and the upper streams. Cougar Lake (7.6 ha (18.7 ac)), First Hidden Lake (7.3 ha (18.1 ac)), and Middle Hidden Lake (7.7 ha (19.1 ac)) provide FMO habitat for the adfluvial, allucustrine, and resident life history forms. Additionally, the lower portions of the mainstem Lost River provide forage, overwintering, and connectivity between the Lost River system and the Methow and Columbia Rivers.

Table 35. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Upper Columbia River Basins–Methow River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Methow River	WA	Methow River from the confluence with the Columbia River to its confluence with the Chewuch River is occupied FMO habitat (Molesworth 1997 p. 1; Proebstel et al. 1998 p. 28; BioAnalysts 2004 p. 47-51; Stevenson et al. 2006 p. 14; Stevenson et al. 2007 p. 11, 15; Nelson et al. 2007 p. 18-21; Stevenson et al. 2009 p. 12; Service 2002a,b (recovery plan and proposed Crit Hab rule).	Methow R. contains essential FMO that facilitates bull trout migration between the Columbia River and its local populations (Gold, Beaver, Twisp, Chewuch, Lake Creek, Wolf, Early Winters, Upper Methow, and Gold) in the Methow Core Area. (See text for Methow River CHSU above)	1198933 480501
Upper Columbia River Basins–Methow River	Methow River	WA	Methow River from the confluence with the Chewuch River upstream 55.5 km (34.5 mi) to the Lost River to the confluence with the Lost River is occupied SR habitat (Molesworth 1997 p. 1; Proebstel et al. 1998 28; BioAnalysts 2004 p. 47-51; Stevenson et al. 2006 p. 14; Stevenson et al. 2007 p. 11, 15; Nelson et al. 2007 p. 18-21; Stevenson et al. 2009 p. 12; Service 2002a,b (recovery plan and proposed Crit Hab rule).	The Methow R. contains essential S/R habitat for the upper Methow River local population and other pops in the Core Area. (See text for Methow River CHSU above)	1198933 480501
Upper Columbia River Basins–Methow River	West Fork Methow River	WA	The upper Methow River turns into the West Fork Methow River at the confluence with the Lost River. The West Fork Methow from the confluence with the Lost River to a barrier falls provides the primary SR habitat for the Upper Methow River population, lower Lost River, Trout, Robinson and Rattlesnake Creeks (Molesworth 1997 p. 1; Proebstel et al. 1998 p. 28; BioAnalysts 2004 p. 47-51; Nelson and Nelle 2007 p 6; Nelson et al. 2007 p. 22, 25-26; USFS in litt. 2008 p. 11; Service 2002a,b (recovery plan and proposed Crit Hab rule)).	The West Fork Methow R. contains essential S/R habitat for the upper Methow River local population and other pops in the Core Area. (See text for Methow River CHSU above)	1205105 486513
Upper Columbia River Basins–Methow River	Lightning Creek	WA	Lightening Creek from its confluence with Beaver Creek upstream to a barrier falls at 0.40 km (0.25 mi) is occupied and provides SR habitat (WDFW 1998, p. 345; Service 2002a, p. 20; USGS 2007a (S10 permit report); USGS Comments; B. Fisher - 2010 Proposed Rule Comments; WDFW 2009 (Distribution Map)).	Lightening Creek contains essential spawning and rearing FMO habitat for the Beaver Creek local population. (See text for Methow River CHSU above)	1199982 484508
Upper Columbia River Basins–Methow River	Blue Buck Creek	WA	Blue Buck Creek from its confluence with Beaver Creek upstream to its headwaters is occupied and provides SR habitat (Molesworth 1997 p. 3; Proebstel et al. 1998 p. 20, 78 – hybrid ebxbull; WDFW 1998, p. 345; Service 2002a, p. 20; Cole et al. 2003 p. 8; USGS 2007a (S10 permit report); WDFW 2009 (Distribution Map)).	Blue Buck Creek contains essential spawning and rearing habitat for the Beaver Creek local population. (See text for Methow River CHSU above)	1200041 484863

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Beaver Creek	WA	Beaver Creek from its confluence with the Methow River upstream 20.9 km (13.0 mi) to its confluence with Lightening Creek provides FMO habitat. Habitat connectivity has recently been restored, and currently provides a migratory corridor (Molesworth 1997 p. 3; Proebstel et al. 1998 p. 20, 78 – hybrid ebxbull; WDFW 1998, p. 346; WDFW 2004 p. 349; USFS 2005b; USFS 2008b p. 15; Service 2002a, p. 20; USGS 2007a (S10 permit report); Fisher—2010 (2010 Proposed Rule Comments); WDFW 2009 (Distribution Map); Service 2002a, p. 20).	Beaver Creek is essential FMO for the Beaver Creek local pop, which includes SR habitat in Blue Buck Creek and Lightening Cr, and provides connectivity for future viability. (See text for Methow River CHSU above)	1200653 483267
Upper Columbia River Basins–Methow River	Beaver Creek	WA	Beaver Creek from its confluence with Lightening Creek upstream to a series of falls at 1.6km (1.0 mi) is presumed occupied and provides SR habitat (Molesworth 1997 p. 3; Proebstel et al. 1998 p. 20, 78 – hybrid ebxbull; WDFW 1998, p. 346; WDFW 2004 p. 349; USFS 2005b; USFS 2008b p. 15; Service 2002a, p. 20; USGS 2007a (S10 permit report); Fisher 2010 (2010 Proposed Rule Comments); WDFW 2009 (Distribution Map).	Beaver Creek is essential SR for the Beaver Creek local pop, which includes SR habitat in Blue Buck Creek and Lightening Cr, and provides connectivity for future viability. (See text for Methow River CHSU above)	1200653 483267
Upper Columbia River Basins–Methow River	Gold Creek	WA	Gold Creek from its confluence with the Methow River to the confluence of N. Fork Gold Creek and S. Fork Gold Creek is occupied FMO habitat (Mullan et al. 1992 p. K-413; WDFW 1998 p. 341; Service 2002a, p. 20; USGS 2007a (S10 permit report)).	Gold Creek contains essential FMO habitat for the Gold Creek pop. which has SR in Foggy Dew and Crater Creeks (See text for Methow River CHSU above)	1200941 481881
Upper Columbia River Basins–Methow River	North Fork Gold Creek	WA	North Fork Gold Creek from its confluence with Gold Creek upstream to its headwaters is occupied and provides SR habitat (Mullan et al. 1992 p. D-232; WDFW 1998, p. 341; USFS 2005b; USGS *in litt.* 2007b (xls data); USGS 2007a (S10 permit report)).	N Fork Gold Creek contains essential spawning and rearing habitat for the Gold Cr pop. and is likely used by bull trout from N. Fork, Foggy Dew, and Crater Creeks (See text for Methow River CHSU above)	1201152 481853
Upper Columbia River Basins–Methow River	Twisp River	WA	Twisp River from the confluence with the Methow River upstream to 47.5 km (29.5mi) (~1/4 mile above Roads End Campground) to 15ft high falls is occupied and provides SR habitat (Proebstel et al. 1998 p. 21; WDFW 1998, p. 349; Watershed Sciences 2002a p. 9-11; BioAnalysts 2004 p. 47-50; Nelson 2004 p. 6-9; USFS 2008b p. 8; Nelson et al. 2007 p. 20; Nelson and Nelle 2007 p. 6; Service 2002a, p. 20).	Twisp River contains essential spawning and rearing habitat for the Twisp local population and is used by bull trout that spawn and rear in the mainstem and several tributaries (Little Bridge, Buttermilk, Reynolds, War, North, and South Creeks). (See text for Methow River CHSU above)	1201177 483686

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Lake Creek	WA	Lake Creek from its confluence with the Chewuch River upstream to a barrier falls above Black Lake is occupied and provides SR habitat (Proebstel et al. 1998 p. 32, 77; WDFW 1998, p. 365; Watershed Sciences 2002a, p. 14; USFS 2005b.xlsx 2004 observations by USFS snorkel; USFS 2008b p. 13; Service 2002a, p. 22; Service *in litt* 2009b (Genetic surveys)).	Lake Creek contains essential spawning and rearing habitat for potentially both Lake Creek and the Chewuch populations. It is one of two allucustrine populations in the Upper Columbia CHU (See text for Methow River CHSU above)	1201369 487589
Upper Columbia River Basins–Methow River	Eightmile Creek	WA	Eightmile Creek from its confluence with the Chewuch R upstream to its headwaters provides occupied SR habitat. Adults were observed spawning in 2009 near the mouth and subadults were observed upstream near appprox 7.0 miles (Watershed Sciences 2002a, p. 14; USFS 2005b.xlsx 2004 observations 24” bull by USFS snorkel; USFS 2009d (draft) p. 14; Humling 2009 p. 1; Service 2002a, p. 23; NMFS 2007 p. 129; WDFW 2009 (Distribution Map)).	Eightmile Creek contains essential spawning and rearing habitat for the Chewuch population. (See text for Methow River CHSU above)	1201623 486035
Upper Columbia River Basins–Methow River	Chewuch River	WA	Chewuch River from its confluence with the Methow River upstream to Eightmile Creek is occupied and provides FMO habitat (Watershed Sciences 2002a, p. 12-14; USFS 2005b.xlsx 2000 and 2002 snorkel surveys; Nelson et al. 2007 p32; USFS 2008b p. 14; Service 2002a, p. 22).	Chewuch River contains essential FMO habitat for the Chewuch and Lake Creek populations. (See text for Methow River CHSU above)	1201819 484759
Upper Columbia River Basins–Methow River	Chewuch River	WA	Chewuch River from its confluence with Eightmile Creek upstream 36.8rm to a 25 ft barrier falls is occupied and provides SR habitat (Watershed Sciences 2002a, p. 12-14; USFS 2005b.xlsx 2000 and 2002 snorkel surveys; Nelson et al. 2007 p32; USFS 2008b p. 14; Service 2002a, p. 22).	Chewuch River contains essential spawning and rearing habitat for the Chewuch population. (See text for Methow River CHSU above)	1201819 484759
Upper Columbia River Basins–Methow River	Foggy Dew Creek	WA	Foggy Dew Creek from its confluence with the N. Fork Gold Creek upstream 6.3rm to a substantial falls is occupied and provides SR habitat (WDFW 1998, p. 341; USFS 2005b; USGS *in litt*. 2007b; USFS 2009d (draft) p. 5, 15; Stevenson et al. 2008 p. 20; Service 2002a, p. 20; USGS 2007a (S10 permit report); Fisher 2010 (2010-Proposed Rule Comments).	Foggy Dew Creek contains essential spawning and rearing habitat along with N. Fork Gold and Crater Creeks for the Gold Cr local population (See text for Methow River CHSU above)	1201887 482046
Upper Columbia River Basins–Methow River	Crater Creek	WA	Crater Creek from its confluence with N. Fork Gold Creek upstream 2.9rm to a 40 ft barrier falls is occupied and provides SR habitat (Mullan et al. 1992 p. D-232; Molesworth 1997 p. 3; WDFW 1998, p. 341; USFS 2009d (draft) p. 15; Service 2002a, p. 20; USGS 2007a (S10 permit report), Fisher 2010 (2010-Proposed Rule Comments).	Crater Creek contains essential spawning and rearing habitat along with N. Fork Gold and Foggy Dew Creeks for the Gold Cr local population (See text for Methow River CHSU above)	1202083 482144

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Wolf Creek	WA	Wolf Creek from its confluence with the Methow River upstream to a barrier falls is occupied and provides SR habitat (Mullan et al. 1992 p. 52, D-234, K-413; Molesworth 1997 p. 2; WDFW 1998, p. 369; Nelson and Nelle 2007 p. 6; Nelson et al. 2007 p. 22; USFS 2008b p. 5, 14; Collins et al. 2008 p. 11; Service 2002a, p. 22; Service in litt. 2009b (Genetic Surveys)).	Wolf Creek contains most of the essential spawning and rearing habitat for the Wolf Creek local population (See text for Methow River CHSU above)	1202305 484907
Upper Columbia River Basins–Methow River	Little Bridge Creek	WA	Little Bridge Creek from its confluence to its headwaters is occupied and provides SR habitat for the Twisp River populations (Molesworth 1997 p. 3; WDFW 1998, p. 349; USFS 2005b.xlsx 1992 obs by USFS electrofishing; Service 2002a, p. 20; Service in litt. 2008j (M. Nelson report); USFS 2003a (Stream Survey Report).	Little Bridge Creek provides essential spawning and rearing habitat for the Twisp River local population and is recently reconnected to the Twisp River with a new diversion Structure (See text for Methow River CHSU above)	1202851 483790
Upper Columbia River Basins–Methow River	East Fork Buttermilk Creek	WA	East Fork of Buttermilk Creek from its confluence with Buttermilk Creek upstream 3.5rm to a series of falls is occupied and provides SR habitat (Mullan et al. 1992 p51, D-233, K-413; WDFW 1998, p. 357; USFS 2008b p. 10; B Kelly Ringel pers comm. 2001, 2002 – (PUD tagged BT in E. Fork Buttermilk); Service 2002a, p. 21; Service 2002a, p. 71302).	E. Fork Buttermilk Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1203022 483396
Upper Columbia River Basins–Methow River	West Fork Buttermilk Creek	WA	West Fork Buttermilk Creek from its confluence with Buttermilk Creek upstream 14.6 km (9.0 mi) to its headwaters is occupied and provides SR habitat (Mullan et al. 1992 p50, D-233; Proebstel et al. 1998 p. 23, 77; WDFW 1998, p. 357; Nelson 2004 p. 13; USFS 2008b p. 10; Service 2002a, p. 21; Service 2002a, p. 71302).	W. Fork Buttermilk Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1203022 483406
Upper Columbia River Basins–Methow River	Buttermilk Creek	WA	Buttermilk Creek from its confluence with the Twisp River upstream 4.1 km (2.5 mi) to the East and West Forks Buttermilk Creek is occupied and provides SR habitat (WDFW 1998, p. 357; Watershed Sciences 2002a p. 11; BioAnalysts 2004 p. 49; USFS 2008b p. 9-10; Service 2002a, p. 21; Service 2002a, p. 71302).	Buttermilk Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1203382 483627
Upper Columbia River Basins–Methow River	North Fork Wolf Creek	WA	North Fork Wolf Creek from its confluence with Wolf Creek upstream to its headwaters is occupied and provides SR habitat (Mullan et al. 1992 p. D-234; WDFW 1998, p. 369; Service 2002a, p. 22; Service in litt. 2009b (Genetic Surveys).	N Fork Wolf Creek contains essential spawning and rearing habitat for the Wolf Creek local population (See text for Methow River CHSU above)	1203438 484861

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Goat Creek	WA	Goat Creek from its confluence with the Methow River upstream to its headwater is occupied and provides SR habitat (Mullan et al. 1992 p. 52, D-234, K-415; Molesworth 1997 p. 2; Proebstel et al. 1998 p. 35, 76, 77; WDFW 1998, p. 373; Adelsberger and Nelson 2009 p. 2; Service 2002a, p. 23; Service *in litt.*2009b (Genetic surveys).	Goat Creek provides essential spawning and rearing habitat for the Goat Creek local population. (See text for Methow River CHSU above)	1203780 485742
Upper Columbia River Basins–Methow River	War Creek	WA	War Creek from its confluence with the Twisp River upstream 1.9 km (1.2 mi) to barrier falls is presumed occupied and provides SR habitat (Mullan et al. 1992 p. 51, D-233; USFS 2005b onf_point_05.xlsx - 2003 USFS snorkel surveys 9 bull trout observed. USFS 2008b Survey Report, WDFW 2009 (Distribution Map).	War Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1203949 483614
Upper Columbia River Basins–Methow River	Diamond Creek	WA	Diamond Creek from its confluence with the Lost River upstream 0.9 km (0.5 mi) provides SR habitat for one of three allucustrine populations in the Upper Columbia CHU, which use Cougar Lake, First Hidden, and Middle Hidden Lakes as FMO habitat (WDFW 1998 p. 385, 388; Service *in litt.*2009b (Genetics Surveys); John Crandall, pers com 2010; Bob Jateff, pers comm. WDFW 2009).	Diamond Creek provides essential spawning and rearing habitat for the upper Lost R local population. (See text for Methow River CHSU above)	1204208 488495
Upper Columbia River Basins–Methow River	Early Winters Creek	WA	Early Winters Creek from its confluence with the Methow River upstream to its headwaters is occupied and provides SR habitat (Mullan et al. 1992 p52; Molesworth 1997 p. 2; Proebstel et al. 1998 p. 36, 77; WDFW 1998, p. 377; USFS 2009d (draft p. 12); Service 2002a, p. 24; Service *in litt.*2009b (Genetic Surveys)).	Early Winters Creek provides essential spawning and rearing habitat for the Early Winters local population which has a migratory component and a resident component upstream of falls near rkm 13 (See text for Methow River CHSU above)	1204364 486012
Upper Columbia River Basins–Methow River	Monument Creek	WA	Monument Creek from its confluence with the lower Lost River upstream to its headwaters is occupied and provides SR habitat for the fluvial life history form (Mullan et al. 1992 p. 52, D-235, K-413; Proebstel et al. 1998 p. 39; WDFW 1998 p. 389; Service 2000 (redd surveys); Service 2002a, p. 71302).	Monument Creek is essential spawning and rearing habitat for the Lost R and Upper Methow local populations. It is necessary habitat for the lower Lost R due to subsurface flow just upstream of Monument Creek in the Lost R. (See text for Methow River CHSU above)	1204478 487325
Upper Columbia River Basins–Methow River	Cedar Creek	WA	Cedar Creek from its confluence with Early Winters Creek upstream 3.1 km (1.9 mi) to a 40 ft barrier falls is occupied and provides SR habitat (Mullan et al. 1992 p52, D-234, K-414; WDFW 1998, p. 381; MCRFRO 2008 p. 14; USFS 2009d (draft p. 4, 12); Service 2002a, p. 24).	Cedar Creek provides essential spawning and rearing habitat for the Early Winters local population. (See text for Methow River CHSU above)	1204700 485890

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Huckleberry Creek	WA	Huckleberry Creek from its confluence with Cedar Creek upstream 7.0 km (4.4 mi) to its headwaters is presumed occupied and provides SR habitat in 1993 USFS observed bull trout during snorkel surveys (USFS 2005b onf_point_05.xlsx; USFS in litt 2009d draft p. 12; Service 2002a, p. 24; WDFW 2009 (Distribution Maps)).	Huckleberry Creek provides essential spawning and rearing habitat for the Early Winters local population. (See text for Methow River CHSU above)	1204718 485693
Upper Columbia River Basins–Methow River	Reynolds Creek	WA	Reynolds Creek from its confluence with the Twisp River upstream 0.90 km (0.56 mi) to several large falls to a barrier falls is occupied and provides SR habitat (Mullan et al. 1992 p. D-233; Proebstel et al. 1998 p. 26; WDFW 1998, p. 361; USFS 2005b onf_point_05.xlsx - *1994 and 2001 USFS S*urveys 29 and 27 saco observed; USFS 2008b p. 9; Service 2002a, p. 22; WDFW 2009 (Distribution Map)).	Reynolds Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1204777 484060
Upper Columbia River Basins–Methow River	Ptarmigan Creek	WA	Ptarmigan Creek from its confluence with First Hidden Lake upstream 0.80 km (0.5 mi) to a 50ft falls provides SR habitat for the adfluvial populations that use Cougar Lake, First Hidden, Middle Hidden Lakes, and the upper streams (WDFW 1998 p. 397-400; Molesworth 1997 p. 2; WDFW 2009 (Maps)).	Ptarmigan Creek provides essential spawning and rearing habitat for the upper portion of the Lost R local population located above a partial barrier (subsurface reach) at certain times of the year. (See text for Methow River CHSU above)	1204811 488909
Upper Columbia River Basins–Methow River	Eureka Creek	WA	Eureka Creek from its confluence with the lower Lost River upstream 1.7 km (1.0 mi) is occupied and provides SR habitat for the fluvial life history form (WDFW 1998, p. 389; USFS 2005b; Service 2002a, p. 71302).	Eureka Creek is essential spawning and rearing habitat for the Lost R and Upper Methow local populations. It is necessary habitat for the lower Lost R due to subsurface flow just upstream of Monument Cr in the Lost R. (See text for Methow River CHSU above)	1204908 487000
Upper Columbia River Basins–Methow River		WA	The Lost River from its confluence with the Methow River upstream to its headwaters provides SR habitat USFS found bull trout during 2000 Lost River snorkel survey. (Mullan et al. 1992 p. 52; Proebstel et al. 1998 p. 39; WDFW 1998 p. 387; Molesworth 1997 p. 2; Nelson and Nelle 2007 p. 6; Nelson et al. 2007 p. 16; USFS in litt. 2009d draft p. 5, 15; USFS 2005b onf_point_05.xlsx; Service 2002a, p. 24, Service 2007 (Genetic Surveys)).	Lost River is essential spawning and rearing habitat for the Upper Methow local population in the lower river and for the Lost River local population in the upper river. Both areas are necessary and populations are separate at certain times of the year due to subsurface flows just upstream of Monument Cr near rkm 12.5 in the Lost R. (See text for Methow River CHSU above)	1205105 486503
Upper Columbia River Basins–Methow River	South Creek	WA	South Creek from its confluence with the Twisp River upstream 3.3 km (2.0 mi) is occupied and provides SR habitat (Mullan et al. 1992 p. D-233, K-414; Proebstel et al. 1998 p. 77; USFS 2005b - 2001 USFS saw bulls in South Creek during snorkel survey; USFS 2008b Survey Report, WDFW 2009 (Distribution Map)).	South Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above).	1205277 484377

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Methow River	Robinson Creek	WA	Robinson Creek from its confluence with the Methow River upstream 0.6 km (1.0 mi) to 10ft high falls is occupied and provides SR habitat (USFS 2005b, 1994, and 2003, 4 obs; MCRFRO 2007 p. 16- 1 obs; USFS 2009d (draft p. 12).; Service 2002a, p. 23; Service 2002a, p. 71301).	Robinson Creek contains essential spawning and rearing habitat for the upper Methow local population. (See text for Methow River CHSU above)	1205369 486595
Upper Columbia River Basins–Methow River	North Creek	WA	North Creek from its confluence with the Twisp River upstream to 0.97km (0.6mi) to a 8ft falls is occupied and provides SR habitat (USFS 2005b; USFS 2008b p. 9, up to 63 redds annually; Service in litt. 2008i (Genetics Surveys); WDFW 2009 (Distribution Map).	North Creek provides essential spawning and rearing habitat for the Twisp R local population. (See text for Methow River CHSU above)	1205620 484544
Upper Columbia River Basins–Methow River	Rattlesnake Creek	WA	Rattlesnake Creek from its confluence with the Methow River upstream to a barrier falls is occupied and provides SR habitat (Service 2002a, p. 23; Service 2002a, p. 71301; USFS 2008b (Spawning Surveys).	Rattlenake Creek contains essential spawning and rearing habitat for the Upper Methow local population. (See text for Methow River CHSU above)	1205643 486486
Upper Columbia River Basins–Methow River	Trout Creek	WA	Trout Creek from its confluence with the Methow River upstream to its headwaters is occupied and provide SR habitat (WDFW 1998 p. 405; USFS 2005b; USFS 2008b p. 11; Service 2002a, p. 23; Service 2002a, p. 71301).	Trout Creek contains essential spawning and rearing habitat for the Upper Methow local population. (See text for Methow River CHSU above)	1205982 486398
Upper Columbia River Basins–Methow River	Drake Creek	WA	Drake Creek from its confluence with the Lost River upstream 0.8 km (0.5 mi) provides SR habitat for the allucustrine populations that use Cougar Lake, First Hidden, and Middle Hidden Lakes. (WDFW 1998 p. 388; B. Jateff, pers. comm., 2009).	Drake Creek provides essential spawning and rearing habitat for the upper Lost River local population. (See text for Methow River CHSU above)	1203946 487816
Upper Columbia River Basins–Methow River	Andrews Creek	WA	Andrews Creek from its confluence with the Chewuch River upstream 0.5 rm to a 12 ft. barrier falls is occupied spawning and rearing habitat. (USFS 2006a (.xlsx); WDFW 2009 (Distribution Map); Kelly Ringel *in litt.* 2010).	Andrews Creek provides essential spawning and rearing habitat for the Chewuch River local population. (See text for Methow River CHSU above)	1201071 487819

10.2. Chelan River Critical Habitat Subunit

The Chelan River CHSU supports fluvial life history forms of bull trout and includes the mainstem Chelan River from its confluence with the Columbia River to the dam at Lake Chelan. The Chelan drainage is located on the eastern slopes of the Cascade Range in north-central Washington and drains east into the Columbia River. The Chelan River supports populations in the Upper Columbia River CHU that use the mainstem Columbia River as FMO; these populations of bull trout rely heavily on migratory corridors to and from the Columbia River. A total of approximately 0.82 km (0.51 mi) of streams are proposed for designation as critical habitat and provide cold water refuge and FMO habitat.

The following water bodies are included in this CHSU (Table 36):

(A) The Chelan River from its confluence with the Columbia River upstream approximately 0.82 km (0.51 mi) to a series of barrier cascades provides important water quality and FMO habitat.

Table 36. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Upper Columbia River Basins–Chelan River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Chelan River	Chelan River	WA	The Chelan River from its confluence with the Columbia River upstream approximately 0.82 km (0.51 mi) to a series of barrier cascades in a narrow canyon reach provides important water quality and FMO habitat. (Connor *in litt.*2001; Connor 1999 (R2 Consultants Technical Memo); Chelan PUD 2006 (telemetry report), Service 2006b (Chelan FERC Relicensing BO); Service 2009c (Rocky Reach FERC relicensing BO); Hemstrom 2010 (Chelan PUD 2010 Proposed Rule Comments).	Chelan River contains essential FMO habitat for all pops using the Col. R. from at least 3 Core Areas (i.e., Methow, Entiat, and Wentachee). (See text for Methow River CHSU above)	1199789 478034

10.3. Entiat River Critical Habitat Subunit

The Entiat River CHSU supports populations of fluvial and resident life history forms with the fluvial form relying year round on the mainstem Columbia River for FMO habitat. It includes the mainstem Entiat River and tributaries from its confluence with the Columbia River upstream to its headwaters at the crest of the Cascade Range. The Entiat drainage flows east towards the Columbia Plateau and drains into the Columbia River near the city of Entiat, Washington. A total of 90.9 km (56.5 mi) of streams are proposed for designation as critical habitat and provide for spawning and rearing and FMO habitat.

The following water bodies are included in this CHSU (Table 37)

(A) The Entiat River from its confluence with the Columbia River upstream 25.7 km (16.0 mi) provides FMO, and from that point upstream 21.3 km (13.2 mi) to Entiat Falls provides spawning and rearing habitat. Stormy Creek from its confluence with the Entiat River at upstream 7.8 km (4.8 mi) provides FMO habitat.

(B) The Mad River from its confluence with the Entiat River upstream 31.5 km (19.6 mi) to a barrier cascades provides spawning and rearing habitat. The Mad River provides the majority of the known spawning and rearing habitat in the Entiat CHSU. Tillicum Creek from its confluence with the Mad River upstream 4.7 km (2.9 mi) to a barrier falls provides spawning and rearing habitat.

Table 37. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Upper Columbia River Basins–Entiat River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Entiat River	Entiat River	WA	Entiat River from its confluence with the Columbia River upstream 25.7 km (16.0 mi) to a barrier falls is occupied and provides FMO habitat for the CHSU (Brown 1992 p. 92; WDFW 1998, p. 331; Watershed Sciences 2002a, p. 19-21; BioAnalysts 2004 p. 46, 49-51; Archibald and Johnson 2007 p3; Nelson and Nelle 2008 p22-76; USFS 2008a; Kelly Ringel 2010a p. 8; Service 2002a,b (recovery plan and proposed Crit Hab rule).	Entiat R. contains FMO which is essential to facilitate bull trout migration between the Columbia River and Entiat Core Area which has only two local populations (Mad and upper Entiat Rivers). The Entiat fish use the Columbia River as their primary FMO habitat. (See text for Entiat River CHSU above).	1202169 476606
Upper Columbia River Basins–Entiat River	Entiat River	WA	Entiat River is occupied and provides SR for one of two local populations in the Entiat Core Area (Brown 1992 p. 92; WDFW 1998, p. 331; Watershed Sciences 2002a, p. 19-21; BioAnalysts 2004 p. 46, 49-51; Archibald and Johnson 2007 p3; Nelson and Nelle 2008 p22-76; USFS 2008a; Kelly Ringel 2010a p. 8; Service 2002a,b (recovery plan and proposed Crit Hab rule).	Entiat R. provides spawning and rearing areas and is essential for maintaining the two local populations in the Entiat Core Area (See text for Entiat River CHSU above).	1202169 476606
Upper Columbia River Basins–Entiat River	Mad River	WA	Mad River from its confluence with the Entiat River upstream to a barrier cascades is occupied and provides SR habitat (Brown 1992 p. 93; Proebstel et al. 1998 p. 41-42; WDFW 1998, p. 335; Watershed Sciences 2002a, p. 22-23; BioAnalysts 2004 p. 46, 49-51; Archibald and Johnson 2007 p3; USFS 2008a; Nelson and Nelle 2008 p22-76; Collins et al. 2008 p. 11; Service 2002a, p. 19).	Mad River is one of two local populations in the Entiat Core Area and provides spawning and rearing areas. Because there are only two local populations in the Entiat Core Area, maintenance of habitat and of both populations is important for persistence of bull trout in this core area. (See text for Entiat River CHSU above).	1203622 477359
Upper Columbia River Basins–Entiat River	Tillicum Creek	WA	Tillicum Creek from its confluence with the Mad River upstream 4.7 km (2.9 mi) to a barrier falls provides SR habitat (Brown 1992 p. 62, 79, 93; Watershed Sciences 2002a, p. 23; USFS 2006a wnf_point_stream.xlsx –; Collins et al. 2008 p. 11; Service 2002a, p. 19, Service 2002a, p. 71301; WDFW 2009 (Distribution Map)).	Tillicum Creek provides essential spawning and rearing habitat for the two local populations (Entiat and Mad Rivers) because SR habitat is limited in the Entiat Core Area. (See text for Entiat River CHSU above).	1203928 477475
Upper Columbia River Basins–Entiat River	Stormy Creek	WA	Stormy Creek from its confluence with the Entiat River upstream 7.8 km (4.8 mi) is occupied and provides FMO habitat (Watershed Sciences 2002a, p. 21; USFS 2006b (Stormy Cr Culvert Replacement Project Report); WDFW 2009 (Distribution Map)).	Stormy Creek provides essential spawning and rearing habitat for the two local populations (Entiat and Mad Rivers) because SR habitat is limited in the Entiat Core Area. (See text for Entiat River CHSU above).	1204208 478221

10.4. Wenatchee River Critical Habitat Subunit

This CHSU supports one of the largest populations of bull trout and some of the most connected habitat in the Upper Columbia River Basins CHU. It includes the mainstem Wenatchee River from its confluence with the Columbia River and tributaries up to their headwaters at the crest of the Cascade Range. The Wenatchee drainage flows east and drains into the Columba River at Wenatchee, Washington. It contains adfluvial, fluvial, and resident life history forms and has one of three allucustrine populations in this CHU. Bull trout in this CHU use multiple tributaries to spawn and Lake Wenatchee, multiple tributaries, and the Columbia River as FMO. One of the largest populations, the Chiwawa River) has individuals that migrate upstream to the Lake and back downstream to spawn. Populations of bull trout in this CHSU rely heavily on migratory habitat in Lake Wenatchee and the connectivity to and from the Columbia River for forage and overwintering. A total of 424.9 km (264.0 mi) of streams and 987.6 ha (2,438.4 ac) of surface area from one lake are proposed for designation and provide for spawning and rearing and FMO habitat.

The following water bodies are included in this CHSU (Table 38):

(A) Wenatchee River from its confluence with the Columbia River upstream 86.9 km (54.0 mi) to Lake Wenatchee provides FMO habitat.

(B) Lake Wenatchee (987.6 ha (2,438.4 ac) provides FMO habitat.

(C) Peshastin Creek upstream 17.3 km (10.8 mi) to its confluence with Etienne Creek (previously named Negro Creek) provides spawning and rearing habitat. Ingalls Creek from its confluence with Peshastin Creek upstream 16.3 km (10.1 mi) to a barrier falls and Etienne Creek upstream 13.3 km (8.3 mi) provides spawning and rearing habitat.

(D) Icicle Creek from its confluence with the Wenatchee River upstream 10.9 km (6.7 mi) provides FMO habitat for migratory bull trout. Spawning and rearing habitat occurs from this point upstream 39.4 km (24.5 mi) to a falls just upstream of Trapper Creek. Jack Creek from its confluence with Icicle Creek upstream 11.4 km (7.1 mi) to a barrier falls; French Creek from its confluence with Icicle Creek upstream 8.9 km (5.5 mi) to a barrier falls; and Leland Creek from its confluence with Icicle Creek upstream 8.0 km (5.0 mi) provide spawning and rearing habitat.

(E) Chiwaukum Creek from its confluence with the Wenatchee River upstream 10.5 km (6.5 mi) to a narrow bedrock canyon and series of falls provides spawning and rearing habitat.

(F) Chiwawa River from its confluence with the Wenatchee River upstream 56.0 km (34.8 mi) to a barrier falls provides spawning and rearing habitat for the largest bull trout population in the CHU. Besides supporting a fluvial population, which migrates to the Columbia River, the Chiwawa River supports the only adfluvial and allucustrine population in the Wenatchee CHSU where they migrate between Lake Wenatchee and the Chiwawa River to spawn. Chikamin Creek from its confluence with the Chiwawa River upstream 13.3 km (8.3 mi) to its headwaters; Rock Creek from its confluence with the Chiwawa River upstream 9.3 km (5.8 mi) to a barrier falls; Phelps Creek from its confluence with the Chiwawa River upstream 1.6 km (1.0 mi) to a barrier falls; James Creek from its confluence with the Chiwawa River upstream 0.4 km (0.3 mi) to a gradient barrier; Alpine Creek from its confluence with the Chiwawa River upstream 0.2 km (0.1 mi) to a gradient barrier; and Buck Creek from its confluence with the Chiwawa River upstream 0.6 km (0.4 mi) to a barrier falls provide spawning and rearing habitat. Alder Creek from its confluence with the Chiwawa River upstream 9.3 km (5.8 mi) likely provides FMO habitat.

(G) Nason Creek from its confluence with the Wenatchee River upstream 35.0 km (21.7 mi) to a barrier falls and Mill Creek from its confluence with Nason Creek upstream 1.0 km (0.6 mi) to barrier falls provide spawning and rearing habitat. Henry Creek from its confluence with Nason Creek upstream 1.6 km (1.0 mi) provides FMO habitat.

(H) Little Wenatchee River from its mouth at the upper end of Lake Wenatchee upstream 12.0 km (7.5 mi) to a cascades falls provides spawning and rearing habitat. The Little Wenatchee River also provides valuable foraging habitat due to the presence of spawning sockeye salmon (*Oncorhynchus nerka*) and their progeny. Habitat from the falls upstream 14.1 km (8.8 mi) and the Little Wenatchee River tributary Rainy Creek from its mouth upstream 12.0 km (7.4 mi) provide spawning and rearing for the resident life history form.

(I) White River from its mouth at the upper end of Lake Wenatchee upstream 25.5 km (15.9 mi) to a barrier falls; Canyon Creek from its confluence with the White River upstream 6.3 km (3.9 mi) to its headwaters; the Napeequa River from its confluence with the White River upstream 2.7 km (1.7 mi) to a 15 ft barrier falls; and Panther Creek from its confluence with the White River upstream 1.1 km (0.7 mi) to a barrier falls provide spawning and rearing habitat. The White River mainstem and the Napeequa River also provide valuable foraging habitat due to the presence of spawning sockeye salmon and their progeny.

Table 38. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Upper Columbia River Basins–Wenatchee River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Wenatchee River	Wenatchee River	WA	The Wenatchee River is occupied and provides FMO habitat. Populations rely heavily on the connectivity to the mainstem, Lake Wenatchee, and Columbia River (Watershed Sciences 2002c p. 31-32; Watershed Sciences 2002c p. 6-7; BioAnalysts 2004 p. 44-45, 49-51; Stevenson et al. 2006 p. 13; Stevenson et al. 2008 p. 13; Kelly Ringel and De La Vergne 2010 p. 13-22, 27-28, 67-71; Service, 2002a, p. 71300); Service 2009b p42-74.	The Wenatchee River contains essential FMO for all populations in the core area to support multiple life histories. Bull trout often spend extended time in the river presumably for foraging and refuge. It is used heavily and is a key habitat essential to connecting local population to each other and the Columbia River. (See text for Wenatchee River CHSU above)	1203156 474560
Upper Columbia River Basins–Wenatchee River	Peshastin Creek	WA	Peshastin Creek upstream to its confluence with Etienne Creek (previously known as Negro Creek) is occupied and provides FMO habitat (Brown 1992 p. 94; Cooper and Mallas 2004 p. 15; BioAnalysts 2004 p. 51; MCRFRO 2006 p4; Stevenson et al. 2006 p. 13; Stevenson et al. 2007 p. 14; Stevenson et al. 2008 p. 20, 22; Service 2002a, p. 71300).	Peshastin Creek contains essential FMO habitat for the Peshastin local population. (See text for Wenatchee River CHSU above)	1205732 475578
Upper Columbia River Basins–Wenatchee River	Chiwawa River	WA	Chiwawa River from its confluence with the Wenatchee River to a barrier falls is occupied and provides SR habitat. This is the largest population in the Upper Col R Basin CHU and it is one of three allucustine populations (Brown 1992 p. 91-92; WDFW 1998, p. 285; Watershed Sciences 2002c, p. 28-30; BioAnalysts 2004 p. 49, 51; Miller 2008 p. 7, 17, 45; Raekes 2008, p. 7; Hillman 2009 p. 7-8, 20, 29-32; Kelly Ringel and De La Vergne 2010 p. 13-22, 63, 67; Service 2002a, p. 71300).	Chiwawa River contains essential spawning and rearing habitat for the Chiwawa local population. It contains some of the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. It is one of three allucustrine populations in the Upper Columbia CHU. (See text for Wenatchee River CHSU above)	1206585 477882
Upper Columbia River Basins–Wenatchee River	Ingalls Creek	WA	Ingalls Creek from its confluence with Peshastin Creek upstream to a barrier falls is occupied and provides SR habitat (Brown 1992 p. 94; Kelly Ringel 1997 p. 14; WDFW 1998, p. 285; USFS 2001c p. 8; MCRFRO 2006 p4; Stevenson et al. 2007 p. 14; Service 2008l p. 3; Service 2002a, p. 71300; Service 2007 - Genetic Surveys)).	Ingalls Creek contains the majority of essential spawning and rearing habitat for the Peshastin local population. (See text for Wenatchee River CHSU above)	1206599 474630

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Wenatchee River	Etienne Creek	WA	Etienne Creek (previously known as Negro Creek) is occupied and provides SR habitat. Bull trout were seen in 2005 and 2007 snorkels and an adult tracked in the stream in 2010 (Service, 2002a, p. 71300; USFS 2005b; USFS 2006a (database for location information from Genetic samples collected); USFS 2010a (database for ICEMP.xlsx).	Etienne Creek (previously known as Negro Creek) contains essential spawning and rearing habitat for the Peshastin local population. (See text for Wenatchee River CHSU above)	1206616 474429
Upper Columbia River Basins–Wenatchee River	Alder Creek	WA	Alder Creek from its confluence with the Chiwawa River upstream 9.3 km (5.8 mi) likely provides SR habitat for the Chiwawa populations (Kelly Ringel 2007b p. 2; Hillman 2009 p29; USFS 2006c (Culvert Replacement Project Report – bull trout found during project)).	Alder Creek contains spawning and rearing habitat for the Chiwawa local population. (See text for Wenatchee River CHSU above)	1206645 478449
Upper Columbia River Basins–Wenatchee River	Icicle Creek	WA	Icicle Creek from its confluence with the Wenatchee River upstream 10.9 km (6.7 mi) is occupied and provides FMO habitat for migratory bull trout (WDFW 1998, p. 289; Cappellini 2001 p. 12; Watershed Sciences 2002c, p. 8-10; BioAnalysts 2004 p. 49; Stevenson et al. 2006 p. 13, 22; Stevenson et al. 2007 p. 14; Service 2008l p. 3, 9; Nelson et al. 2009 p. 15; Kelly Ringel and De La Vergne 2010 p. 13, 18-19, 70; USFS *in litt.* 2001c; Service 2002a, p. 71300; Service 2008b (Leavenworth National Fish Hatchery BO)).	Lower Icicle Creek contains essential FMO and rearing habitat for fluvial populations in the lower Wenatchee and potentially the Entiat core area. Radio-tagged bull trout from the Entiat Core Area have been located in the lower Icicle River. Cold water released from high mountain lakes in late summer and wells used by Leavenworth NFH reduce stream temperatures in the lower river. This area is currently used by subadult, adult, and some juvenile bull trout. (See text for Wenatchee River CHSU above)	1206661 475803
Upper Columbia River Basins–Wenatchee River	Icicle Creek	WA	Icicle Creek from 10.9 km (6.7 mi) upstream to a falls just upstream of Trapper Creek is occupied and provides SR habitat for Icicle populations (Kelly Ringel 1997 p. 9; WDFW 1998, p. 289; Watershed Sciences 2002c, p. 8-10; Service 2005b p. 4; Kelly Ringel 2007a p. 9-10; WFC 2007 p.2; Service 2008l p. 3, 9; WFC 2009 p. 1; Nelson et al. 2009 p. 15; Service 2002a, p. 71300; Service 2008b (Leavenworth National Fish Hatchery BO)).	Icicle Creek contains essential spawning and rearing habitat for the Icicle local populations, which supports resident and migratory populations in the lower Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1206661 475803
Upper Columbia River Basins–Wenatchee River	Nason Creek	WA	Nason Creek from its confluence with the Wenatchee River upstream to a barrier falls is occupied and provides SR habitat for the Nason Creek population (Brown 1992 p. 90; WDFW 1998, p. 313; Watershed Sciences 2002c, p. 35-37; Service 2006c (Mill Creek Culvert Replacement BO); Service 2008l p. 3; Collins et al. 2008 p. 36; USFS 2010a.xlsx 2006 and 2008 data; Kelly Ringel and De La Vergne 2010 p. 13-22, 66; Service 2002a, p. 71300).	Nason Creek contains essential spawning and rearing habitat for the Nason local population which supports fluvial/adfluvial populations in the Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1207148 478095

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Wenatchee River	White River	WA	White River from its mouth at Lake Wenatchee upstream to a barrier falls is occupied and provides SR habitat (WDFW 1998, p. 321; Kelly Ringel and De La Vergne 2000 p2, 2001 p3; Kelly Ringel 2010a p. 4; Kelly Ringel 2010b p. 4; Kelly Ringel and De La Vergne 2010 p. 13-22, 64; Service 2002a, p.15; Service 2009b (Genetic Surveys)).	White R. contains essential spawning and rearing habitat for the White River adfluvial local population. It is also foraging habitat for other populations using Lake Wenatchee and is one of two sockeye salmon spawning tributaries to Lake Wenatchee that likely serves as a primary source for prey. (See text for Wenatchee River CHSU above)	1207148 478105
Upper Columbia River Basins–Wenatchee River	Chiwaukum Creek	WA	Chiwaukum Creek from its confluence with the Wenatchee River upstream 6.5rm to a narrow bedrock canyon and series of falls is occupied and provides SR habitat (Brown 1992 p. 95; WDFW 1998, p. 293; Watershed Sciences 2002c, p. 32; Kelly Ringel 2003 p. 5-7; Kelly Ringel 2010a p. 5; Kelly Ringel 2010b p. 5; Kelly Ringel and De La Vergne 2010 p. 13, 16, 18, 69; Service *in litt.* 2004c (SCCSMTG); Service 2002a, p. 16; Service 2002a, p. 71300).	Chiwaukum Creek contains essential spawning and rearing habitat for the Chiwaukum local population, which supports migratory (fluvial) populations in the lower Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1207271 476789
Upper Columbia River Basins–Wenatchee River	Chikamin Creek	WA	Chikamin Creek from its confluence with the Chiwawa River upstream to its headwaters is occupied and provides SR habitat (Brown 1992 p. 92; WDFW 1998, p. 285; Proebstel et al. 1998 p. 78; Watershed Sciences 2002c, p. 30; Raekes 2008, p. 2; Hillman 2009 p. 29-30; Kelly Ringel and De La Vergne 2010 p. 13-14, 63; Service 2002a, p. 71300).	Chikamin Creek contains essential spawning and rearing habitat for the Chiwawa local population which have the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1207296 479037
Upper Columbia River Basins–Wenatchee River	Rock Creek	WA	Rock Creek from its confluence with the Chiwawa River upstream to its headwaters is occupied and provides SR habitat (Brown 1992 p. 92; Proebstel et al. 1998 p. 78; WDFW 1998, p. 285; Watershed Sciences 2002c, p. 30; Raekes 2008, p. 3; Hillman 2009 p. 29-30; Kelly Ringel and DeLaVergne 2010 draft p. 13-14, 63; Service 2002a, p. 71300).	Rock Creek typically supports 100-300 redds and is the stronghold of the Chiwawa River local population which have the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1207945 479629
Upper Columbia River Basins–Wenatchee River	Little Wenatchee River	WA	Little Wenatchee River from its mouth at Lake Wenatchee upstream to a cascades falls, and 14.1 km (8.8 mi) upstream of the falls, is occupied and provides SR habitat (WDFW 1998, p. 317; Kelly Ringel and DeLaVergne 2000 p2, 2001 p3; Watershed Sciences 2002c, p. 33-34; Service 2008l p. 2; Kelly Ringel and DeLa Vergne 2010 p. 13-22, 65; Service 2002a, p. 15).	Little Wenatchee R. contains essential spawning and rearing habitat for the Little Wenatchee adfluvial local population. It is also foraging habitat for other populations using Lake Wenatchee and is one of two sockeye salmon spawning tributaries to Lake Wenatchee. There has been a resident bull trout pop up of the falls, brook trout are present, and recent sightings are limited (See text for Wenatchee River CHSU above)	1208122 478304

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Wenatchee River	Phelps Creek	WA	Phelps Creek from its confluence with the Chiwawa River upstream to a barrier falls is occupied and provides SR habitat (Brown 1992 p. 59, 92; WDFW 1998, p. 285; Raekes 2008, p. 5; Hillman 2009 p. 29-30; Kelly Ringel and DeLa Vergne 2010 p. 13-14, 63; Service 2002a, p. 71300).	Phelps Creek contains essential spawning and rearing habitat for the Chiwawa local population which have the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1208513 480705
Upper Columbia River Basins–Wenatchee River	James Creek	WA	James Creek from its confluence with the Chiwawa River upstream to a gradient barrier is occupied and provides SR habitat for the Chiwawa population (Brown 1992 p. 64; WDFW 1998, p. 285; Service 2002a, p. 71300).	James Creek contains essential spawning and rearing habitat for the Chiwawa local population, which has the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1208564 480774
Upper Columbia River Basins–Wenatchee River	Alpine Creek	WA	Alpine Creek from its confluence with the Chiwawa River upstream to a gradient barrier is occupied and provides SR habitat for the Chiwawa population (Brown 1992 p. 62-64; WDFW 1998, p. 285; Watershed Sciences 2002c, p. 30; Service 2002a, p. 71300).	Alpine Creek contains essential spawning and rearing habitat for the Chiwawa local population, which has the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1208628 480840
Upper Columbia River Basins–Wenatchee River	Buck Creek	WA	Buck Creek from its confluence with the Chiwawa River upstream to a barrier falls is occupied and provides SR habitat for the Chiwawa pop. (Brown 1992 p. 59, 62-64, 92; WDFW 1998, p. 285; Service 2008l p. 2; Raekes 2008, p. 7; Service 2002a, p. 71300;).	Buck Creek contains essential spawning and rearing habitat for the Chiwawa local population, which has the most uniquely complex overwintering areas in the CHU and the population exhibits some of the most diverse movements which have diverse overwintering areas and movements including allucustrine, fluvial, and adfluvial in the Wenatchee CHSU. (See text for Wenatchee River CHSU above)	1208769 481039
Upper Columbia River Basins–Wenatchee River	Canyon Creek	WA	Canyon Creek from its confluence with the White River upstream to its headwaters is occupied and provides SR habitat (Brown 1992 p. 91; WDFW 1998, p. 321; Service 2002a, p.15; WDFW 2009 (Distribution Map).	Canyon Creek contains essential spawning and rearing habitat for the White River adfluvial local population. (See text for Wenatchee River CHSU above)	1208937 479069
Upper Columbia River Basins–Wenatchee River	Napeequa River	WA	Napeequa River from its confluence with the White River upstream 2.7 km (1.7 mi) to a 15 ft to a barrier falls provides rearing habitat and probably provides spawning habitat (Service 2002a, p.15; Service 2002a, p. 71301; WDFW 1998, p. 321; Kelly Ringel 2010b p. 4).	Napeequa R. contains essential rearing and possibly spawning habitat for the White River adfluvial local population. It is also foraging habitat due to the presence of spawning sockeye salmon. (See text for Wenatchee River CHSU above)	1208956 479215

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins–Wenatchee River	Jack Creek	WA	Jack Creek from its confluence with Icicle Creek upstream to a barrier falls is occupied and provides SR habitat for the Icicle populations (Kelly Ringel 1997 p. 12; Service 2005b p. 5; MCRFRO 2007 p. 16; USFS 2010a (ICEMP.xlsx); Service 2002a, p. 71300; WDFW 1998, p. 289).	Jack Creek contains essential spawning and rearing habitat for the Icicle local population which supports resident and fluvial populations in the lower Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1208984476085
Upper Columbia River Basins–Wenatchee River	Panther Creek	WA	Panther Creek from its confluence with the White River upstream 1.1 km (0.7 m) to a barrier falls is occupied and provides SR habitat (Brown 1992 p. 59; WDFW 1998, p. 325; Service 2002a, p.15; Service 2002a, p. 71301; Kelly Ringel 2010a p. 3; Kelly Ringel 2010b p3).	Panther Creek contains essential spawning and rearing habitat for the White River adfluvial local population. (See text for Wenatchee River CHSU above)	1209278479407
Upper Columbia River Basins–Wenatchee River	Rainy Creek	WA	Rainy Creek from its confluence upstream 12.0 km (7.4 mi) was historically occupied and is presumed to be currently occupied, and provides SR habitat (Watershed Sciences 2002c, p34; Service 2002a, p. 15; USFS 2006a (.xlsx); WDFW 2009 (Distribution Map)).	Rainy Creek contains essential spawning and rearing habitat for the resident portion of the upper Little Wenatchee local population. (See text for Wenatchee River CHSU above)	1209544478527
Upper Columbia River Basins–Wenatchee River	French Creek	WA	French Creek from its confluence with Icicle Creek upstream to a barrier falls is occupied and provides SR habitat (Brown 1992 p. 94; WDFW 1998 p. 289; Kelly Ringel and Murphy 1999 p. 5; Nelson et al. 2009 p. 29; USFS 2010a (ICEMP.xlsx); Service 2002a, p. 71300).	French Creek contains essential spawning and rearing habitat for the Icicle local population which supports resident and fluvial populations in the lower Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1209613476281
Upper Columbia River Basins–Wenatchee River	Henry Creek	WA	Henry Creek from its confluence with Nason Creek upstream 1.6 km (1.0 mi) is presumed occupied and provides FMO habitat for the Nason Creek population (WDFW 1998, p. 313; Watershed Sciences 2002c, p. 37; WDFW 2009 Distribution Map).	Henry Creek contains essential FMO habitat for the Nason Creek local population which supports fluvial/adfluvial populations in the Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1209899477681
Upper Columbia River Basins–Wenatchee River	Mill Creek	WA	Mill Creek from its confluence with Nason Creek upstream to a barrier falls is occupied and provides SR habitat for the Nason Creek population (Brown 1992 p. 59; WDFW 1998j, p. 313; Watershed Sciences 2002c, p. 35; Service 2008j p. 3; USFS 2010a (ICEMP.xlsx); Kelly Ringel and DeLa Vergne 2010 p. 13, 17-18, 66; Service 2002a, p. 71301; Service 2006c (Mill Creek Culvert Replacement Project BO); Service *in litt.*2009b (Genetics/Salvage data)).	Mill Creek contains the majority of essential spawning and rearing habitat for the Nason Creek local population which supports fluvial/adfluvial populations in the Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1210102477767

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Upper Columbia River Basins– Wenatchee River	Leland Creek	WA	Leland Creek from its confluence with Icicle Creek upstream 8.0 km (5.0 mi) is occupied and provides SR habitat (Kelly Ringel 1997 p. 8; USFS 2010a (ICEMP.xlsx); Service 2002a, p. 71300; N. Gayeski, Wild Fish Conservancy, pers comm., 2010; Service 2008b (Leavenworth National Fish Hatchery Project BO).	Leland Creek contains essential spawning and rearing habitat for the Icicle local population which supports resident and fluvial populations in the lower Wenatchee Core Area. (See text for Wenatchee River CHSU above)	1210382 476608
Upper Columbia River Basins - Wenatchee River	Lake Wenatchee	WA	Lake Wenatchee is surrounded by private, state and federal lands. Year round use supports the Core Area, and provides for adfluvial and allucustrine life history type (Kelly Ringel and De La Vergne 2010 p. 13-22, 30-40, 66; Service 2002a; Service 2008d (5-Year Review)).	Essential FMO for Chiwawa, White R, Lt Wenatchee, and Nason Cr local populations and provides for one of three allucustrine populations in the Upper Columbia CHU (See text for Wenatchee River CHSU above)	1207779 478226

Chapter 11. Mid-Columbia Recovery Unit Yakima River Basin Critical Habitat Unit

Chapter 11. Yakima River Basin Critical Habitat Unit

The Yakima River CHU supports adfluvial, fluvial, and resident life history forms of bull trout. This CHU includes the mainstem Yakima River and tributaries from its confluence with the Columbia River upstream from the mouth of the Columbia River upstream to its headwaters at the crest of the Cascade Range. The Yakima River CHU is located on the eastern slopes of the Cascade Range in south-central Washington and encompasses the entire Yakima River basin located between the Klickitat and Wenatchee Basins. The Yakima River basin is one of the largest basins in the state of Washington; it drains southeast into the Columbia River near the town of Richland, Washington. The basin occupies most of Yakima and Kittitas Counties, about half of Benton County, and a small portion of Klickitat County. This CHU does not contain any subunits because it supports one core area. A total of 1,177.2 km (731.5 mi) of stream habitat and 6,285.2 ha (15,531.0 ac) of lake and reservoir surface area in this CHU are proposed as critical habitat. One of the largest populations of bull trout (South Fork Tieton River population) in central Washington is located above the Tieton Dam and supports the core area. This CHU supports two potential resident local populations identified in the U.S. Fish and Service's 2008 five year review (Service 2008d, p. 6). For a justification of why this CHU, included CHSUs, or in some cases individual water bodies are proposed as critical habitat, and for documentation of occupancy by bull trout, see Service (2002a pp. 19–20).

The following water bodies are included in this CHSU (Table 39):

(A) The Yakima River from its confluence with the Columbia River upstream 327.1 km (203.4 mi) to Easton Dam provides FMO habitat. Easton Reservoir (33.6 ha (83.0 ac)) provides FMO habitat. The Yakima River from the Easton Diversion Dam upstream 18.8 km (11.7 mi) to Keechelus Dam provides spawning and rearing habitat. Additionally, the Yakima River provides for connectivity to other resident populations located in Keechelus, Kachess, Cle Elum, Rimrock, and Bumping Lake Dams, and the lower Yakima River mainstem provides for forage, overwintering, and connectivity between the upper Yakima River, the Naches, and Columbia Rivers.

Table 39. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Yakima River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Yakima River	WA	Yakima River from the confluence with the Columbia River to Easton Diversion Dam is currently occupied FMO habitat (Service 2002a, p71298; WDFW 1998 (Sassi doc) p. 229; Anderson *in litt.* 2004; G. McMichael *in litt* 2004; Murdock pers. comm. 2007–(hooked bull trout in Yakima R); Anderson and Mizell 2010 (Draft Yakima Radio Telemetry Report).	Yakima R contains FMO habitat that is essential to maintaining connectivity between all local populations within the Core Area for maintaining metapopulation and as well important in maintaining any connection to the Columbia River FMO. (See text for Yakima River Basin CHU above)	1192269 462537
Yakima River–None	Yakima River	WA	Yakima River from the Easton Lake Dam to Keechelus Dam is currently occupied FMO and SR habitat, and supports the Upper Yakima population and other local populations (WDFW 1998; Service 2002a, p. 71298; WDFW 2008; E. Anderson, pers. comm., 2009a (BT snorkel/Redd surveys—found holding upstream of Cabin Creek wetlands); Service 2008l (Redd Survey data); Anderson and Mizell 2010 (Draft Yakima Telemetry Report)).	Yakima R contains essential spawning and rearing habitat for the Upper Yakima local population and potentially any other fish that out migrate and cannot get back upstream of the Kacheelus, Kachess, or Cle Elum Dams for fluvial and adfluvial life history forms within the Core Area. (See text for Yakima River Basin CHU above)	1192269 462537
Yakima River–None	Ahtanum Creek	WA	Ahtanum Creek from its confluence with the Yakima River upstream to its confluence with the N Fork and S Forks is occupied and provides FMO habitat and connectivity (WDFW 1998, p.235; Service 2002a, p. 7; Service 2002a, p.71298; Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	Ahtanum Creek contains essential FMO habitat for the Ahtanum resident/fluvial local population. Ahtanum is the closest local pop. To the Columbia R. in the CHU. (See text for Yakima River Basin CHU above)	1204721 465289
Yakima River–None	Naches River	WA	Naches River from its confluence with the Yakima River upstream 71.8 km (44.6 mi) to its confluence with the Little Naches and Bumping Rivers is occupied and provides FMO habitat and connectivity (WDFW 1998, p. 241; Service 2002a, p. 7; Service 2002a, p.71298; Anderson and Mizell 2010 (Draft Yakima Telemetry Report); WDFW 2009 (Yakima Genetics Report)).	Naches River contains essential FMO habitat for many of the local fluvial populations and is a key connectivity corridor for FMO dispersal. It also provides habitat for several local populations that cannot migrate back upstream over the Bumping or Rimrock Dams and are left to find refugia below (See text for Yakima River Basin CHU above)	1205138 466304
Yakima River–None	Cowiche Creek	WA	Cowiche Creek from its confluence with the Naches River upstream to its confluence with N. Fork Cowiche Creek and S. Fork Cowiche Creek is occupied and provides FMO habitat (WDFW 2009 (Distribution Map)).	Cowiche Creek contains essential FMO habitat in the lowest reach of the Naches R. It will provide refuge from warmer waters for multiple fluvial local populations (See text for Yakima River Basin CHU above)	1205675 466279

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	South Fork Cowiche Creek	WA	South Fork Cowiche Creek from its confluence with the Naches River upstream to its confluence with N. Fork Cowiche Creek and S. Fork Cowiche Creek is occupied and provides FMO habitat (Yakama Nation *in litt.* 2002 Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); E Anderson, pers. comm., 2009b.	S Fork Cowiche Creek contains essential FMO habitat It will provide connectivity to the Yakima River and refuge from warmer waters for multiple fluvial local populations (See text for Yakima River Basin CHU above)	1206808 466479
Yakima River–None	South Fork Cowiche Creek	WA	South Fork Cowiche Creek from its confluence with the Naches River upstream to its confluence with the N. Fork Cowiche Creek is occupied and provides SR habitat (Yakama Nation *in litt.* 2002 (Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); E Anderson, pers. comm., 2009b.	S. Fork Cowichee Creek contains essential spawning and rearing habitat for multiple fluvial local populations. It will provide refuge from warmer waters (See text for Yakima River Basin CHU above)	1206808 466479
Yakima River–None	Taneum Creek	WA	Taneum Creek from its confluence with the Yakima River upstream to its confluence with the N. Fork Taneum Creek and S. Fork Taneum Creek likely provides FMO habitat (W. Meyer *in litt.* 2004 (WDFW Taneum Creek notes)); Service 2002a, p. 50; Service 2002a, p. 71299).	Taneum Creek is essential FMO habitat for the Taneum Creek Potential Local Population as described in the Draft Rec. Plan. It will provide connectivity to the mainstem Yakima for forage and overwintering opportunities (See text for Yakima River Basin CHU above)	1207081 470923
Yakima River–None	Tieton River	WA	Tieton River from its confluence with the Naches River upstream to Tieton Dam provides FMO habitat and connectivity between Naches and Yakima Rivers (WDFW, p.247; Service 2002a, p. 10; Service 2002a, p.71298; WDFW 1998, p. 247; BOR 2006 (Salvage Report for Tieton draw down); Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	Tieton River is essential FMO habitat for key connectivity habitat for fluvial life history forms, necessary for recovery as specified in the Draft Recovery Plan. It also provides important FMO to adfluvial fish that are entrained from several local populations (S. Fork Tieton, Indian, and N Fork Tieton) and cannot migrate above Rimrock dam (See text for Yakima River Basin CHU above)	1207857 467464
Yakima River–None	Teanaway River	WA	Teanaway River from its confluence with the Yakima River upstream to its confluence with the Middle Fork and W. Fork is occupied, and provides FMO and connectivity for the Yakima Core Area (WDFW 1998, p.259; Service 2002a, p.11; Yakima Nation *in litt.*. 2002(Proposed Critical Habitat Rule Comments)).	The Teanaway R mainstem provides for forage and connectivity for migratory pops below the BOR dams to the Yakima River, and is essential for recovery as specified in the Draft Recovery Plan for the Teanaway local population (See text for Yakima River Basin CHU above)	1208336 471670
Yakima River–None	Stafford Creek	WA	Stafford Creek from its confluence with N. Fork Teanaway River upstream 8.0 km (5.0 mi) to its headwaters is presumed occupied and provides SR habitat (Yakama Nation *in litt.* 2002 (Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); Service 2002a, p. 71299).	Stafford Creek contains essential spawning and rearing habitat for the Teanaway local population. (See text for Yakima River Basin CHU above)	1208479 473474

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	North Fork Ahtanum Creek	WA	North Fork Ahtanum Creek from its confluence with Ahtanum Creek upstream 33.3 km (20.7 mi) to its headwaters is occupied and provides SR habitat for the Ahtanum populations (WDFW 1998,p.235); Service 2002a, p. 7; Service 2002a, p.71298; Email, Jennifer Scott, WDFW 2009 (BT Found below N Fork Gage Station); Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	N Fork Ahtanum Creek contains essential spawning and rearing habitat for the resident/fluvial Ahtanum local population. Ahtanum is the closest local pop. to the Columbia R. in the CHU. (See text for Yakima River Basin CHU above)	1208534 465232
Yakima River–None	South Fork Ahtanum Creek	WA	South Fork Ahtanum Creek from its confluence with Ahtanum Creek upstream 23.6 km (14.6 mi) to its headwaters is occupied and provides SR habitat for the Ahtanum populations (WDFW 1998, p. 235; Service 2002a, p. 7; Service 2002a, p.71298; Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	S Fork Ahtanum Creek contains essential spawning and rearing habitat for the resident/fluvial Ahtanum local population. Ahtanum is the closest local pop. to the Columbia R. in the CHU. (See text for Yakima River Basin CHU above)	1208534 465242
Yakima River–None	Jack Creek	WA	Jack Creek from its confluence with the N. Fork Teanaway River upstream 11.0 km (6.8 mi) to its headwaters is occupied and provides SR habitat. New culverts in the N Fork Teanaway Road will facilitate future passage (WDFW 2009 (Distribution Map); Service 2002a, p. 71299; Service 2009d Jack and Jungle Creek Culvert Project BO).	Jack Creek contains essential spawning and rearing habitat for the Teanaway local population and potentially for other populations entrained below BOR dams. (See text for Yakima River Basin CHU above)	1208547 473188
Yakima River–None	Jungle Creek	WA	Jungle Creek from its confluence with the N. Fork Teanaway River upstream 6.4 km (4.0 mi) to its headwaters is occupied and provides SR habitat. New culverts in the N Fork Teanaway Road will facilitate future passage (WDFW 2009 (Distribution Map); Service 2002a, p. 71299; Service 2009d Jack and Jungle Creek Culvert Project BO).	Jungle Creek contains essential spawning and rearing habitat for the Teanaway local population and potentially for other populations entrained below BOR dams. (See text for Yakima River Basin CHU above)	1208551 473329
Yakima River–None	North Fork Teanaway River	WA	North Fork Teanaway River from its confluence with the Teanaway River upstream 29.7 km (18.4 mi) to a barrier falls near its headwaters is occupied and provides SR habitat (Service 2002a, p. 71299; Yakama Nation *in litt.*2002 (Proposed Critical Habitat Rule Comments); Service in litt. 2009b (Spawning Ground and Genetics Surveys)).	N Fork Teanaway R contains essential spawning and rearing habitat for the Teanaway local population. (See text for Yakima River Basin CHU above)	1208768 472513

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Reynolds Creek	WA	Reynolds Creek from its confluence with S. Fork Cowiche Creek upstream 15.8 km (9.8 mi) is occupied and provides SR habitat. (Yakama Nation *in litt*. 2002 (Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); E Anderson, pers. comm., 2009b).	Reynolds Creek contains essential spawning and rearing habitat for local populations that use the Naches River (Rattlesnake, American, and Tieton). It is unknown if the Cowiche is a separate local population. It will provide refuge from warmer waters (See text for Yakima River Basin CHU above)	1208814 466193
Yakima River–None	Middle Fork Teanaway River	WA	M Fork Teanaway River from its confluence with the Teanaway River upstream 25.5 km (15.9 mi) provides FMO and connectivity for the Yakima River (WDFW 1998, p.259; Service 2002a, p.11).	Middle Fork Teanaway provides for FMO habitat to the Teanaway local population, and is essential for recovery as specified in the Draft Recovery Plan (See text for Yakima River Basin CHU above)	1208968 472571
Yakima River–None	Rattlesnake Creek	WA	Rattlesnake Creek from its confluence with the Naches River upstream 40.2 km (25.0 mi) to its headwaters is occupied and provides SR habitat (WDFW 1998, p. 241; Service 2002a, p. 10; Service 2002a, p. 71299; WDFW 2009 (Spawning survey Report)).	The Rattlesnake contains essential spawning and rearing habitat for the Rattlesnake local population and multiple fluvial populations in the Naches below the BOR dams. Lower Rattlesnake Creek also provides for forage and connectivity (See text for Yakima River Basin CHU above)	1209291 468203
Yakima River–None	North Fork Taneaum Creek	WA	North Fork Taneum Creek from its confluence with N. Fork Taneum Creek upstream 19.0 km (11.8 mi) to its headwaters would provide SR habitat (Service 2002a, p. 50; Service 2002a, p. 71299; (Meyer in litt. 2004 (Taneum Cr habitat notes)).	N Fork Taneum Creek is essential spawning and rearing habitat for the Taneum Potential Local as described in the Draft Rec. Plan (See text for Yakima River Basin CHU above)	1209321 471120
Yakima River–None	South Fork Taneaum Creek	WA	South Fork Taneum Creek from its confluence with N. Fork Taneum Creek upstream toT19N, R14E, NE ¼ of Section 36 at a barrier falls would provide SR habitat (Service 2002a, p. 50; Service 2002a, p. 71299; Meyer *in litt.* 2004 (Taneum Cr Habitat notes)).	S Fork Taneum Creek is essential spawning and rearing habitat for the Taneum potential local population as described in the Draft Rec. Plan (See text for Yakima River Basin CHU above)	1209321 471130
Yakima River–None	DeRoux Creek	WA	DeRoux Creek from its confluence with the N. Fork Teanaway River upstream 4.5 km (3.0 mi) near its headwaters is occupied and provides SR habitat (WDFW 1998, p. 259; Service 2002a, p. 11; Service 2002a, p. 71299).	DeRoux Creek contains essential spawning and rearing habitat for the Teanaway local population. (See text for Yakima River Basin CHU above)	1209400 474192
Yakima River–None	Cle Elum River	WA	Cle Elum River from its confluence with the Yakima River upstream to Cle Elum Dam is occupied and provides FMO habitat for the Cle Elum and other populations in the Upper Yakima (WDFW 1998, p. 265; Service 2002a, p. 13; Service 2002a, p. 71299; Service in litt. 2005a (Cle Elum Report)).	Cle Elum River is essential for recovery as specified in the Bull Trout Draft Recovery Plan and provides for connectivity between the upstream Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1209901 471771

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Cle Elum River	WA	Cle Elum River from its confluence with the Cle Elum Reservoir upstream 33.4 km (20.7 mi) to its headwaters is occupied and provides SR habitat for the Cle Elum populations (WDFW 1998, p. 265; Service 2002a, p. 13; Service 2002a, p. 71299; Service in litt. 2005a Cle Elum Report)).	Cle Elum River contains essential spawning and rearing habitat for the Cle Elum/Waptus local populations for recovery as specified in the Bull Trout Draft Recovery Plan and connects the Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1209901 471771
Yakima River–None	Middle Fork Ahtanum Creek	WA	M Fork Ahtanum Creek from its confluence with N. Fork Ahtanum Creek upstream 15.1 km (9.4 mi) to its headwaters is occupied and provides SR habitat for the Ahtanum populations (WDFW 1998, p.235; Service 2002a, p.7; Service 2002a, p.71298).	M Fork Ahtanum Creek contains essential spawning and rearing habitat for the Ahtanum local population. Ahtanum is the closest local pop. To the Columbia R. in the CHU. (See text for Yakima River Basin CHU above)	1210141 465182
Yakima River–None	Rock Creek	WA	Rock Creek from its confluence with S. Fork Cowiche Creek upstream 4.4 km (2.8 mi) is occupied and provides SR habitat (Yakama Nation *in litt.*2002 (Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); E. Anderson pers. comm. 2009b).	Rock Creek contains essential spawning and rearing habitat for local populations that use the Naches River (Rattlesnake, American, and Tieton). It is unknown if the Cowiche is a separate local population. It will provide refuge from warmer waters (See text for Yakima River Basin CHU above)	1210235 465854
Yakima River–None	Fall Creek	WA	Fall Creek from its confluence with Rock Creek upstream 2.1 km (1.3 mi) is occupied and provides SR habitat (Yakama Nation *in litt.* 2002 (Proposed Critical Habitat Rule Comments); WDFW 2009 (Distribution Map); E. Anderson, pers. comm., 2009b).	Fall Creek contains essential spawning and rearing habitat for local populations that use the Naches River (Rattlesnake, American, and Tieton). It is unknown if the Cowiche is a separate local population. It will provide refuge from warmer waters (See text for Yakima River Basin CHU above)	1210366 465863
Yakima River–None	Fortune Creek	WA	Fortune Creek from its confluence with the Cle Elum River upstream 7.2 km (4.5 mi) to its headwaters is occupied and provides SR habitat for the Cle Elum populations (WDFW 1998, p. 265; Service 2002a, p. 13; Service 2002a, p. 71300; Service in litt. 2005a (Cle Elum Report)).	Fortune Creek contains essential spawning and rearing habitat for recovery for Cle Elum/Waptus River local populations. (See text for Yakima River Basin CHU above)	1210459 474775
Yakima River–None	North Fork Rattlesnake Creek	WA	North Fork Rattlesnake from its confluence with Rattlesnake Creek upstream 40.2 km (25.0 mi) to a natural barrier is occupied and provides SR habitat for Rattlesnake populations (WDFW 1998, p.241; Service 2002a, p.10; Service 2002a, p. 71299, Anderson and Mizell 2010 Draft Radio Telemetry Report)).	N. Fork Rattlesnake Creek contains essential spawning and rearing habitat for the Rattlesnake local population and other fluvial populations located below BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1210667 468101

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Waptus River	WA	Waptus River from its confluence with the Cle Elum River upstream to its headwaters is occupied and provides SR habitat for the Cle Elum populations (WDFW 1998, p. 265; Service 2002a, p. 13; Service 2002a, p. 71300; Service in litt. 2005a (Cle Elum Report)).	Waptus River contains essential spawning and rearing habitat for the Cle Elum/Waptus local populations for recovery as specified in the Bull Trout Draft Recovery Plan and will maintain connectivity between the Cle Elum/Waptus River populations and the Yakima River. (See text for Yakima River Basin CHU above)	1210863 474194
Yakima River–None	Bumping River	WA	Bumping River from its confluence with the Naches River upstream to Bumping Dam is occupied and provides FMO habitat connecting upstream populations to the Naches River (WDFW 1998, p. 253; Service 2002a, p. 11; Service 2002a, p. 71299; Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	Bumping River contains essential FMO habitat for recovery as specified in the Draft Recovery Plan for the Bumping and Deep Creek adfluvial/fluvial local populations (See text for Yakima River Basin CHU above).	1210935 469888
Yakima River–None	Bumping River	WA	Bumping River from its confluence with Bumping Reservoir upstream 1.6 km (1.0 mi) is occupied and provides SR habitat (WDFW 1998, p. 253; Service 2002a, p. 11; Service 2002a, p. 71299; K. Reiss pers comm. 2009).	Bumping River contains essential spawning and rearing habitat for recovery as specified in the Draft Recovery Plan for the Bumping and Deep Creek local populations and is one of two spawning areas above the Bumping Dam. (See text for Yakima River Basin CHU above)	1210935 469888
Yakima River–None	Little Naches River	WA	Little Naches River from its confluence with the Naches River upstream to its confluence with S. Fork Little Naches River, a potential local population, provides FMO habitat (WDFW 1998, p. 24; Service 2002a, p. 10; WDFW 2009 (Distribution Maps); Temple in litt. 2010 (Lt Naches Bull trout sighting)).	Little Naches River contains essential FMO habitat for the Little Naches Potential local population, Crow, and other fluvial populations below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1210935 469898
Yakima River–None	Little Naches River	WA	Little Naches River from its confluence with the Naches River upstream to its confluence with S. Fork Little Naches River, a potential local population, provides FMO habitat (WDFW 1998, p. 241; Service 2002a, p. 10; WDFW 2009 (Distribution Maps); Temple in litt. 2010 (Lt Naches Bull trout sighting).	Little Naches River contains essential FMO habitat for the Little Naches Potential local populations, Crow, and other fluvial local populations below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1210935 469898
Yakima River–None	Cooper River	WA	Cooper River from its confluence with the Cle Elum River upstream 12.5 km (7.7 mi) to its headwaters is occupied and provides SR habitat for the Cle Elum populations (Service 2002a, p. 13; Service 2002a, p. 71300; WDFW 1998, p. 265; Service in litt. 2005a (Cle Elum Report)).	Cooper River contains essential spawning and rearing habitat for the Cle Elum/Waptus local Populations for recovery as specified in the Bull Trout Draft Recovery Plan and maintains connectivity for the Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1210983 473905
Yakima River–None	Crow Creek	WA	Crow Creek from its confluence with the Little Naches River upstream to its confluence with Falls Creek contains occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299; Anderson and Mizell 2010 (Draft Radio Telemetry Report).	Crow Creek contains essential spawning and rearing habitat Draft Recovery Plan for the Crow local population and other fluvial populations located below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1211330 470152

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Short And Dirty Creek	WA	Short and Dirty Creek from its confluence with the S. Fork Tieton River upstream 0.2 km (0.1 mi) to a natural barrier is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	Short and Dirty Creeks contain essential spawning and rearing habitat above the Rimrock Dam for S. Fork Teton adfluvial local population, one of the largest populations in the CHU. (See text for Yakima River Basin CHU above)	1211490 466169
Yakima River–None	South Fork Tieton River	WA	South Fork Tieton River, one of the largest pop in the CHU/Recovery Unit, from its confluence with Rimrock Reservoir upstream 26.8 km (16.6 mi) to a natural barrier provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	South Fork Tieton contains essential spawning and rearing habitat for the S Fork Tieton local population as specified in the Draft Recovery Plan which is located above the Rimrock Dam, and for adfluvial populations. This is one of the largest populations in the CHU. (See text for Yakima River Basin CHU above)	1211528 466383
Yakima River–None	American River	WA	American River from its confluence with the Bumping River upstream to its confluence with Morris Creek is occupied and provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Study)).	American River contains essential spawning and rearing habitat for the American local population for recovery as specified in the Draft Recovery Plan and other fluvial populations that become entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1211569 469758
Yakima River–None	Shellneck Creek	WA	Shellneck Creek from its confluence with N. Fork Ahtanum Creek upstream 2.9 km (1.8 mi) to its headwaters is occupied and provides SR habitat (Service 2002a, p. 7; Service 2002a, p.71298; WDFW 1998, p. 235; Anderson and Mizell 2010, (Draft Telemetry Report)).	Shellneck Creek contains essential spawning and rearing habitat for the Ahtanum local population. Ahtanum is the closest local pop. to the Columbia R. in the CHU (See text for Yakima River Basin CHU above)	1211577 465308
Yakima River–None	Hindoo Creek	WA	Hindoo Creek from its confluence with Dog Creek upstream 1.8 km (1.1 mi) to a natural barrier is occupied and provides SR habitat for the Rattlesnake Creek local population (Service 2002a, p.10; Service 2002a, p. 71299; WDFW 1998, p.241; WDFW 2009 (Yakima Genetic Study).	Hindoo Creek contains essential spawning and rearing habitat for the Rattlesnake local population and other fluvial populations located below BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1211629 467850
Yakima River–None	Dog Creek	WA	Dog Creek from its confluence with Rattlesnake Creek upstream to its confluence with Lookout Creek is occupied and provides SR habitat (Service 2002a, p.10; Service 2002a, p.71299); WDFW 1998, p.241; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	Dog Creek contains essential spawning and rearing habitat for the Rattlesnake local population and other fluvial populations located below BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1211675 467868

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	North Fork Tieton River	WA	North Fork Tieton River from its confluence with Rimrock Reservoir to Clear Lake Dam is occupied FMO habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report))	North Fork Tieton contains essential spawning and rearing habitat as specified in the Draft Recovery Plan for the N. Fork Tieton local population which is located above the Rimrock Dam and for other adfluvial populations (Indian and S Fork Tieton. (See text for Yakima River Basin CHU above)	1211714 466430
Yakima River–None	North Fork Tieton River	WA	The N. Fork Tieton River from its confluence with Clear Lake Reservoir upstream 21.0 km (13.0 mi) to a natural barrier is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	North Fork Tieton contains essential spawning and rearing habitat for the N Fork Tieton local population as specified in the Draft Recovery Plan which is located above the Rimrock Dam and for other adfluvial populations in the CHU. (See text for Yakima River Basin CHU above)	1211714 466430
Yakima River–None	Kachess River	WA	Kachess River from its confluence with the Yakima River upstream to Kachess Dam is occupied and provides FMO habitat connecting the fluvial local populations and the Yakima River (Service 2002a, p. 12; Service 2002a, p. 71300; WDFW 1998, p. 271; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	Kachess R. contains essential FMO for recovery as specified in the Draft Recovery Plan for the Upper Yakima local populations, potentially the Teanaway local population and any local populations entrained below the Kachess Dam. (See text for Yakima River Basin CHU above)	1212002 472513
Yakima River–None	Kachess River	WA	Kachess River from its confluence with Kachess Reservoir upstream 3.7 km (2.3 mi) to a natural barrier is occupied and provides SR habitat for adfluvial local populations above the Kachess Dam (Service 2002a, p. 12; Service 2002a, p. 71300; WDFW 1998, p. 271; WDFW 2009 (Spawning Survey Report).	Kachess R. contains essential spawning and rearing habitat for the Kachess local population for recovery as specified in the Draft Recovery Plan for populations above the Kachess Dam. (See text for Yakima River Basin CHU above)	1212002 472513
Yakima River–None	Spruce Creek	WA	Spruce Creek from its confluence with the S. Fork Tieton River upstream 0.8 km (0.5 mi) to a natural barrier is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	Spruce Creek contain essential spawning and rearing habitat for the S Fork Tieton local population, one of the largest adfluvial populations in the CHU. (See text for Yakima River Basin CHU above)	1212182 465906
Yakima River–None	Grey Creek	WA	Grey Creek from its confluence with the S. Fork Tieton River upstream 0.4 km (0.2 mi) to a natural barrier is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	Grey Creek contain essential spawning and rearing habitat for the S Fork Tieton local population for recovery, which is located above the Rimrock Dam, and one of the largest adfluvial populations in the CHU. (See text for Yakima River Basin CHU above)	1212220 465915
Yakima River–None	South Fork Little Naches River	WA	South Fork Little Naches River from its confluence with the Little Naches River upstream 16.0 km (9.9 mi) provides SR habitat for the Little Naches potential local population (Service 2002a, p. 10; WDFW 2009 (Distribution Maps); WDFW 1998, p. 241).	South Fork Little Naches River contains essential spawning and rearing habitat for the Little Naches Potential Local Pop, Crow, and other fluvial local populations located below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1212253 470660

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Little Wildcat Creek	WA	Little Wildcat Creek from its confluence with Rattlesnake Creek upstream 5.7 km (3.6 mi) is occupied and provides SR habitat for the Rattlesnake local population. (Service 2002a, p. 10; Service 2002a, p. 71299; WDFW 1998, p. 241; WDFW 2009 (Distribution maps)).	Little Wildcat Creek contains essential spawning and rearing habitat for the Rattlesnake local population for recovery and potentially other fluvial local populations located below BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1212345 467314
Yakima River–None	Box Canyon Creek	WA	Box Canyon Creek from its confluence with Kachess Reservoir upstream 2.6 km (1.6 mi) to a natural barrier is occupied and provides SR habitat (WDFW 1998, p. 271; Service 2002a, p. 12; Service 2002a, p. 71300; WDFW 2009 (Yakima Genetic Study)).	Box Canyon Creek contains essential spawning and rearing habitat for the adfluvial Box Canyon local population for recovery and as specified in the Draft Recovery Plan and is one of three spawning areas above the Kachess Dam in the Upper Yakima. (See text for Yakima River Basin CHU above)	1212378 473609
Yakima River–None	Mineral Creek	WA	Mineral Creek from its confluence with the Kachess River to 0.52 km (0.32mi) to a series of barrier falls is occupied and provides rearing habitat for the upper Kachess River local population (Service 2002a, p. 12; Service 2002a, p. 71300; WDFW 1998, p. 271; WDFW 2009 (Spawning survey Report)).	Mineral Creek contains essential spawning and rearing habitat for the Kachess River adfluvial local population as specified in the Draft Recovery Plan for and is one of three spawning areas above the Kachess Dam in the Upper Yakima. (See text for Yakima River Basin CHU above)	1212397 474197
Yakima River–None	Indian Creek	WA	Indian Creek, one of the largest populations in the CHU, and Recovery Unit, from its confluence with Rimrock Reservoir upstream 8.3 km (5.2 mi) to a natural barrier provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71298; WDFW 2009 (Yakima Genetic Study)).	Indian Creek contains essential spawning and rearing habitat for the Indian Creek adfluvial local population, as specified in the Draft Recovery Plan, which is above the Rimrock Dam and is one of the largest populations in the CHU. (See text for Yakima River Basin CHU above)	1212474 466391
Yakima River–None	Bear Creek	WA	Bear Creek from its confluence with the S. Fork Tieton River upstream 1.8 km (1.1 mi) to a natural barrier is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	Bear Creek contain essential spawning and rearing habitat for the S Fork Tieton local population, which is located above the Rimrock Dam, one of the largest adfluvial populations in the CHU. (See text for Yakima River Basin CHU above)	1212594 465385
Yakima River–None	North Fork Little Naches River	WA	North Fork Little Naches River from its confluence with the Little Naches River upstream 12.5 km (7.8 mi) provides SR habitat for the Little Naches potential local population (Service 2002a, p. 10; WDFW 2009 (Distribution Maps); WDFW 1998, p.241; Temple *in litt.* 2010 (Lt Naches Bull trout sighting).	N Fork Little Naches River contains essential spawning and rearing habitat for the Little Naches Potential local population, Crow Creek local population, and other fluvial local populations located or entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1212803 470900

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Deep Creek	WA	Deep Creek from its confluence with Bumping Reservoir upstream 5.5 km (3.4 mi) to a natural barrier is occupied and provides SR habitat for the Deep Creek local population. It is the second largest pop in CHU (Service 2002a, p. 11; WDFW 1998, p. 253; Service 2002a, p. 71299).	Deep Creek contains essential spawning and rearing habitat for the Deep Creek and upper Bumping adfluvial local populations, for recovery as specified in the Draft Recovery Plan. It is one of two spawning areas above the Bumping Dam and one of the largest populations in the Yakima CHU. (See text for Yakima River Basin CHU above)	1213183 468501
Yakima River–None	Kettle Creek	WA	Kettle Creek from its confluence with the American River upstream 3.2 km (2.0 mi) to a natural barrier is occupied and provides SR habitat for the American River local population (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010 (Draft Telemetry Report)).	Kettle Creek contains essential spawning and rearing habitat for the American River local population for recovery as specified in the Draft Recovery Plan and other fluvial populations located/entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1213263 469416
Yakima River–None	Union Creek	WA	Union Creek from its confluence with the American River upstream 0.8 km (0.5 mi) to a natural barrier is occupied and provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	Union Creek contains essential spawning and rearing habitat for the American River local population for recovery as specified in the Draft Recovery Plan and other fluvial populations located/entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1213565 469317
Yakima River–None	Cold Creek	WA	Cold Creek from its confluence with Keechelus Reservoir upstream 5.4 km (3.4 mi) is unoccupied but provides quality SR habitat for Gold Creek and other populations using Kacheelus Lake (WDFW 2009 (Distribution Maps); B. Renfro, pers. comm.. 2009).	Cold Creek contains essential spawning and rearing habitat for the Gold Creek local populations and potentially other populations as recovery occurs for the Kacheelus Lake adfluvial populations. (See text for Yakima River Basin CHU above)	1213823 473684
Yakima River–None	Gold Creek	WA	Gold Creek from its confluence with Keechelus Reservoir upstream 11.6 km (7.2 mi) to a natural barrier provides SR habitat for Gold Creek population. A Gold Creek bull trout was located and radio tagged downstream below Keechelus Dam, near the base of Kachess dam (Service 2002a, p. 12; WDFW 1998, p. 277; Service 2002a, p. 71300; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	Gold Creek contains essential spawning and rearing habitat for the Gold Creek local population for recovery as specified in the Draft Recovery Plan which is the only spawning population above Kacheelus Dam. (See text for Yakima River Basin CHU above)	1213844 473900
Yakima River–None	Timber Creek	WA	Timber Creek from its confluence with the American River upstream 0.8 km (0.5 mi) to a natural barrier is occupied and provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299).	Timber Creek contains essential spawning and rearing habitat for the American River local population for recovery as specified in the Draft Recovery Plan and potentially other fluvial pops located/entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1213851 469135

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Unnamed stream	WA	This unnamed Creek above Scatter Creek in the N Fork Tieton R, from its confluence with North Fork Tieton River upstream 1.5 km (0.9 mi) is occupied SR habitat (WDFW 2008 (Spawning Surveys data); J. Krupka pers comm. 2008; K. Reiss pers comm. 2009).	This unnamed Creek contains essential spawning and rearing habitat for the N Fork Tieton local population for recovery for the N Fork Tieton and potentially other Rimrock Reservoir adfluvial populations. (See text for Yakima River Basin CHU above)	1213870 465448
Yakima River–None	Camp Creek	WA	Camp Creek from its confluence with S. Fork Tieton River upstream 2.2 km (1.4 mi) to its headwaters is occupied SR habitat (Service 2002a, p. 10; WDFW 1998, p. 247; Service 2002a, p. 71299).	Camp Creek contain essential spawning and rearing habitat for the S Fork Tieton local population for recovery, which is located above the Rimrock Dam, one of the largest adfluvial populations in the CHU. (See text for Yakima River Basin CHU above)	1212413 465709
Yakima River–None	Oak Creek	WA	Oak Creek from its confluence with the Tieton River upstream 9.3 km (5.8 mi) to its confluence with North Fork Oak Creek provides FMO habitat, and from that point upstream10.5 km (6.5 mi) likely provides SR habitat (WDFW 2009 (Distribution Maps); E. Anderson, Pers. Comm., 2009b; J. Thomas, pers. comm. 2009).	Oak Creek contains essential FMO habitat for the Tieton River populations for recovery. This habitat will provide rearing and FMO habitat for subadult or adults in the Tieton River and will be essential during periods of warm water or water flow management (i.e. During the Flip Flop of the flows between the upper Yakima River and the Naches Rivers), (See text for Yakima CHU above)	1208121 467235
Yakima River–None	American River	WA	American River from its confluence with the Bumping River upstream to its confluence with Morris Creek is occupied and provides SR habitat (Service 2002a, p. 10; WDFW 1998, p. 241; Service 2002a, p. 71299; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010, (Draft Telemetry Report)).	American River contains essential spawning and rearing habitat for the American River local populations for recovery as specified in the Draft Recovery Plan and for potentially other fluvial populations located/entrained below the BOR dams in the Naches R. (See text for Yakima River Basin CHU above)	1211569 469758
Yakima River–None	Little Rattlesnake Creek	WA	Little Rattlesnake Creek from its confluence with Rattlesnake Creek upstream 1.6 km (1.0 mi) to the first unnamed tributary is occupied and provides SR habitat (WDFW 2009 (Distribution maps; E. Anderson pers. comm. 2009b; J. Thomas, pers comm., 2009).	Little Rattlesnake Creek contains essential spawning and rearing habitat for the Rattlesnake and other fluvial local populations located below BOR dams in the Nache River. (See text for Yakima River Basin CHU above)	1209479 468144
Yakima River–None	Quartz Creek	WA	Quartz Creek from its confluence with the Little Naches River upstream 9.7 km (6.0 mi) provides FMO habitat (Service 2002a, p. 10; WDFW 2009 (Distribution Maps); WDFW 1998, p.241; E. Anderson, pers comm., 2009b.	Quartz Creek contains essential FMO for the Little Naches R potential local population and other fluvial populations located below BOR dams in the Nache R. (See text for Yakima River Basin CHU above)	1211339 470167
Yakima River–None	Pileup Creek	WA	Pileup Creek from its confluence with the Little Naches River upstream 8.3 km (5.2 mi) likely provides habitat which is at least FMO habitat. Bull trout have been documented, but spawning has not (Service 2002a, p. 10; WDFW 2009 (Distribution Maps); WDFW 1998, p.241;, E. Anderson, pers comm., 2009b).	Pileup Creek contains essential habitat and it likely provides FMO for the Little Naches R Potential local population and other fluvial populations located below BOR dams in the Nache River. (See text for Yakima River Basin CHU above)	1211816 470449

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River–None	Little Naches River	WA	Little Naches R from its confluence with S. Fork Little Naches River upstream 5.3 km (3.3 mi) likely provides SR habitat for the Little Naches potential population (Service 2002a, p.10; WDFW 2009 (Distribution Maps); WDFW 1998, p.241; Temple in litt. 2010, Anderson and Mizell 2010 - Little Naches Bull trout sighting)).	Little Naches River contains essential spawning and rearing habitat for the Little Naches Potential Local Pop, Crow local population, and other fluvial populations located/entrained below the BOR dams in the Naches River (See text for Yakima River Basin CHU above)	1210935 469898
Yakima River–None	Swauk Creek	WA	Swauk Creek from its confluence with the Yakima River upstream 4.8 km (3.0 mi) provides FMO habitat for populations below the BOR dams in the Upper Yakima (Service 2002a, p.6; WDFW 1998, p. 229; WDFW 2009 (Distribution Maps; E. Anderson, pers. comm.. 2009b; J. Thomas, pers comm. 2009; W. Meyer, pers. comm.. 2009).	Swauk Creek contains essential FMO habitat for Upper Yakima fluvial pops that are located and entrained below the BOR Dams. (See text for Yakima River Basin CHU above)	1207370 471233
Yakima River–None	Cooper River	WA	Cooper River from its confluence with the Cle Elum River upstream 12.5 km (7.7 mi) to its headwaters above Cle Elum Lake is occupied and provides SR habitat for the Cle Elum populations (Service 2002a, p. 13; Service 2002a, p. 71300; WDFW 1998, p. 265).	Cooper River contains essential spawning and rearing habitat for the Cle Elum local population for recovery as specified in the Draft Recovery Plan which also provides connectivity for the Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1210983 473905
Yakima River–None	Waptus River	WA	Waptus River from its confluence with the Cle Elum River upstream 17.6 km (10.9 mi) to its headwaters is occupied and provides SR habitat for the Waptus River population (Service 2002a, p. 13; Service 2002a, p. 71300; WDFW 1998, p. 265; Service 2008d (5yr review)).	Waptus River contains essential spawning and rearing habitat for the Waptus local populations for recovery as specified in the Draft Recovery Plan and the more recent 2004 status update. It provides connectivity for the Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1210863 474194
Yakima River–None	Yakima River	WA	Yakima River from the confluence with the Columbia River to Easton Diversion Dam is currently occupied FMO habitat (Service 2002b (proposed rule) p71298; WDFW 1998 (Sassi doc) p. 229; WDFW 2009 (Yakima Genetic Study); Anderson and Mizell 2010 (Draft Telemetry Report)).	Yakima R contains FMO habitat that is essential for recovery and maintaining connectivity for the metapopulation including all local populations within the CHU. (See text for Yakima River Basin CHU above)	1192269 462537
Yakima River–None	Cle Elum River	WA	Cle Elum River from its confluence with the Cle Elum Reservoir upstream 33.4 km (20.7 mi) to its headwaters is occupied and provides SR habitat for the Cle Elum and Waptus local populations (Service 2002a, p. 13; Service 2002a, p. 71299; WDFW 1998, p. 265; J. Thomas, pers. comm., 2009).	Cle Elum River contains essential spawning and rearing habitat for the Cle Elum/Waptus local population for recovery and as specified in the Bull Trout Draft Recovery Plan and connects the Cle Elum/Waptus River adfluvial populations and the Yakima River. (See text for Yakima River Basin CHU above)	1209901 471771

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River - None	Bumping Lake	WA	Bumping Lake is largely surrounded by National Forest. It supports year round use by the second largest population in the Yakima CHU (Deep Creek) (WDFW 1998, 253; Service 2002a, pg 11).	Essential FMO for Deep Creek local population and potentially an upper Bumping River population, second largest pop in CHU (See text for Yakima River Basin CHU above)	1213276 468505
Yakima River - None	Cle Elum Lake	WA	Cle Elum Lake is largely surrounded by National Forest. Year round use for Cle Elum local population (WDFW 1998, pg 265; Service 2002a, pg 13).	Essential FMO for Cle Elum R/Cooper and Waptus R local populations (See text for Yakima River Basin CHU above)	1211027 472900
Yakima River - None	Clear Lake	WA	Clear Lake is largely surrounded by private land and National Forest. It supports S. Fork Tieton, N. Fork Tieton and Indian Creek local populations (WDFW, 1998, pg 265; Service 2008d (status update); Anderson and Mizell 2010 (Draft Radio Telemetry Report)).	Essential FMO for N. Fork Tieton, S. Fork Tieton, Indian Creek local populations in Yakima CHU (See text for Yakima River Basin CHU above)	1212806 466291
Yakima River - None	Cooper Lake	WA	Cooper Lake is surrounded by National Forest. It supports year round use for the Cle Elum/Cooper local population WDFW, 1998 pg 265; Service 2002a, pg 13; Service, 2008d (status update)).	Lake is surrounded by National Forest. Essential FMO for Cooper R/Cle Elum local populations (See text for Yakima River Basin CHU above)	1211760 474260
Yakima River - None	Easton Lake	WA	Easton Lake is surrounded by private, state, and National Forest lands. It supports the Upper Yakima Local population and potentially any other populations that may use the upper Yakima (Teanaway, Kachess, Box Canyon, Cle Elum, or Gold Creek)	Essential FMO for Upper Yakima River, Kachess, Keechelus River local population (See text for Yakima River Basin CHU above)	1211952 472477
Yakima River - None	Hyas Lake	WA	Hyas Lake is located in Wilderness. It provides for year round use for Cle Elum local population (WDFW, 1998; Service 2002a).	Essential FMO for Cle Elum River local population (See text for Yakima River Basin CHU above)	1211206 475666
Yakima River - None	Kachess Lake	WA	Kachess Lake is surrounded by private lands and National Forest. It supports year round use for Box Canyon and Kachess River local populations (WDFW 1998, pg 271; Service 2002a, pg 12).	Essential FMO for Box Canyon Cr and Kachess River local populations (See text for Yakima River Basin CHU above)	1212282 473164
Yakima River - None	Keechelus Lake	WA	Keechelus Lake is surrounded by private land and National Forest. It supports year round use of the Gold Creek local population (WDFW 1998, pg 277; Service 2002a, pg 12).	Essential FMO for Gold Creek local population (See text for Yakima River Basin CHU above)	1213681 473485
Yakima River - None	Rimrock Lake	WA	Rimrock Lake is surrounded by private land and National Forest. It supports year round use by S. Fork Tieton, N. Fork Tieton, Indian Creek local populations (WDFW 1998, pg 247; Service 2002a, pg 11; WDFW 2009; 2010 Draft Radio Telemetry Reports).	Essential FMO for N. Fork Tieton, S. Fork Tieton, Indian Creek local populations in Yakima CHU (See text for Yakima River Basin CHU above)	1211801 466392

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Yakima River - None	Waptus Lake	WA	Waptus Lake is located in Wilderness. It supports year round use for the Waptus local population (WDFW, 1998, pg 265; Service 2002a, pg 13).	Essential FMO for Waptus R/Cle Elum local populations (See text for Yakima River Basin CHU above)	1211779 475033

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 12. Mid-Columbia Recovery Unit—John Day River Critical Habitat Unit

Chapter 12. John Day River Critical Habitat Unit

The John Day River CHU is essential for bull trout conservation because it is a large CHU, centrally located in the southern portion of the Mid-Columbia RU; has no major dams to prevent connectivity through existing FMO habitats within and among this and other CHUs via the Columbia River; and appears to contain both resident and fluvial life history strategies (see Appendix 1 for more detailed information).

The John Day River Basin CHU in the John Day River Basin in eastern Oregon includes portions of the mainstem John Day River, North Fork John Day River, Middle Fork John Day River and their tributary streams within Wheeler, Grant, and Umatilla Counties in Oregon. Four critical habitat subunits (CHSUs) are defined for the John Day River unit: Lower Mainstem John Day River, Upper Mainstem John Day River, North Fork John Day River, and Middle Fork John Day River. Bull trout in the John Day Basin exhibit both resident and fluvial life histories. The latter three generally correspond to core areas. A total of twelve local populations are found in this CHU. Research is needed to evaluate the status of the populations in this CHU. All critical habitat designations are essential to the long-term conservation of the species. The Confederated Tribes of the Warm Springs owns lands in this CHU.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* – The four CHSUs have no major dams preventing connectivity between populations, although mainstem habitats during the summer and fall can be inhospitable because of temperature and flow conditions. Access to the Columbia River would be possible during the winter and spring. Bull trout in the John Day Basin exhibit both resident and fluvial life histories. Tracking of radio-tagged fish has documented the fluvial life history (Hemmingsen, Gunckel, and Sankovich et al. 2001, pp. 9-11). Bull trout have been captured in the mainstem John Day River near the town of Spray radio tagged and then tracked to locations in the North Fork John Day River (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 9). In the upper John Day River fluvial fish have been observed as far downstream as the John Day visitor center at Sheep Rock (Service in litt. 2008f, p. 4) and in the lower Middle Fork John Day River near Ritter (ODFW, *in litt.,* 2003). The ability to migrate is important to the persistence of local bull trout subpopulations (Rieman and McIntyre 1993, p. 7; Gilpin 1997; Rieman and Clayton 1997, p. 11; Rieman et al. 1997, p. 54).

2. *Conserve opportunity for genetic diversity*- Genetic samples have been taken from streams in the three core areas that support local populations and analyzed. Bull trout from the John Day basin group with other populations in the "Inland" lineage (Spruell and Allendorf 1997, p. 1). Although there was little genetic variation within populations there was substantial variation between populations (Bellerud et al. 1997, p. 1; Spruel and Allendorf 1997, p. 13), hence the need to conserve all populations of bull trout to preserve genetic diversity of the species.

3. *Ensure bull trout are distributed across representative habitats* – Bull trout were more widely distributed across the John Day basin historically compared to their current distribution (Buchanan et al. 1997, pp. 69 – 72). Nevertheless they have persisted and are widely distributed within the John Day Basin. SR occurs in headwater areas in all three core areas where the habitat is still suitable and provides the primary constituent elements for bull trout.

4. *Ensure sufficient connectivity among populations* – Unlike most river basins in Oregon, there are no major dams in the John Day Basin. Seasonal barriers occur during periods of low flow

and thermal barriers occur during the summer. However, all three core areas are connected to one another through FMO. There is a potential for bull trout to migrate to the Columbia. In 2002 a bull trout was captured in the juvenile bypass facility at John Day Dam. Although its origin is unknown at this time, it could have been from the John Day River as this is the closest bull trout population upstream of the dam. The presence of a fluvial life history in all four core areas necessitates the need to protect the migratory corridors among them and to the Columbia River.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* - Systematic surveys have been conducted since 2002, but the period of record is not sufficient to establish trends in abundance. Based on the available data, there is no clear trend in redd abundance (Service in litt. 2008f, p. 3).

6. *Consider threats (e.g., climate change)*-The John Day bull trout populations would be at increased risk of extinction with a warming of the climate because the hydrology is driven primarily by snowmelt, although some streams originate from spring fed sources. Protection of high elevation habitats will become even more important as the climate warms. Threats remain from seasonal dewatering, entrainment in irrigation ditches, removal of riparian vegetation, passage at culverts, legacy effects from forest road building, suction dredge mining in tributaries, introduced species, and illegal harvest. There are numerous restoration activities ongoing in the John Day Basin. Many are directed toward recovery of anadromous species, but these would provide benefits for bull trout because the species habitats overlap. For example, Increases in Chinook salmon have been observed due to habitat restoration in the mainstem John Day River (Service in litt. 2008f, p. 5), Restoration activities have been ongoing in three of the core areas by state, federal and local entities. Projects include the Big Boulder Creek channel relocation (MFJD), mine reclamation, riparian restoration, passage projects, and water right leases. The Nature Conservancy and the Confederated Tribes of the Warms Springs have purchased large holdings in the Middle Fork John Day core area and the CTWS has purchased land on the Upper John Day. The properties are being managed to benefit native species and restore the habitats to support them. Restoration efforts are also being pursued by Grant County Soil and Water Conservation District, and regulatory changes to benefit habitat restoration are being implemented by Grant County.

7. *Ensure sufficient redundancy in conserving population units* –The upper John Day provides high quality habitat for resident and fluvial bull trout. The entire occupied area is essential because it provides redundancy to adjacent core areas. The presence of multiple local populations distributed throughout a watershed provides a mechanism for spreading risk (Service 2002a, p. 24).

12.1. Lower Mainstem John Day River Critical Habitat Subunit

The Lower Mainstem John Day River CHSU is essential for bull trout conservation because it serves as FMO habitat and provides a vital connection between the headwaters of the John Day River basin to FMO habitat in the Columbia River. The lower mainstem John Day, from the mouth upstream to its confluence with the North Fork John Day River, is presumed occupied FMO habitat (see Appendix 1 for more detailed information).

This reach provides FMO habitat seasonally, and serves as a vital connection FMO habitat in the Columbia River. Bull trout migrations from adjacent basins, specifically the Umatilla and Deschutes rivers, to the Columbia River have been documented. Additional studies are needed to determine bull trout FMO use in the lower mainstem John Day River. Surveys are usually conducted during the summer, and bull trout would not be expected to be in the lower mainstem at this time of the year. This unit is not a core area and thus, does not support spawning population.

The following water bodies are included in this CHSU (see Table 40):

John Day River from the confluence with the Columbia River upstream 315.7 km (163.2 mi) to its confluence with the North Fork John Day River is presumed occupied FMO habitat. Bull trout have been observed as far downstream as the town of Spray during juvenile spring Chinook sampling. Two bull trout were radio-tagged and subsequently tracked into the North Fork John Day (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 9.) Although no bull trout have been documented further downstream, their presence is probable, at least seasonally.

Table 40. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the John Day River–Lower Mainstem John Day River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Lower Mainstem John Day River	John Day River	OR	John Day River from the confluence with the Columbia River upstream 315.7 km (163.2 mi) to its confluence with the North Fork John Day River is presumed occupied FMO habitat. Bull trout have been observed as far downstream as the town of Spray during juvenile spring Chinook sampling. Two bull trout were radio-tagged and subsequently tracked into the North Fork John Day (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 9.) Although no bull trout have been documented further downstream, their presence is probable, at least seasonally.	See CHU text	1206499457318.1

12.2. North Fork John Day River Critical Habitat Subunit

The North Fork John Day River CHSU is essential for bull trout conservation because it provides critical spawning and rearing habitat, is connected to the mainstem John Day River FMO habitat, and has no major physical barriers (see Appendix 1 for more detailed information).

The North Fork John Day River and its tributary, the Middle Fork John Day River, flow into the mainstem John Day River with no major physical barriers between them, except for barriers as a consequence of low flow and high stream temperatures during summer that may limit the seasonal distribution of individuals. Seven local bull trout populations have been identified in the North Fork John Day River subunit: (1) the upper John Day River local population complex, including Crawfish, Baldy, Cunningham, Trail, Onion, and Crane Creeks, as well as the North Fork John Day River upstream of Granite Creek; (2) upper Granite Creek, including Bull Run, Deep, and Boundary Creeks and the upper mainstem Granite Creek; (3) Boulder Creek; (4) Clear/Lightning Creek, including Salmon Creek; (5) Clear Creek below the Pete Mann ditch, including Lightning Creek below the ditch; (6) Desolation Creek, including South Fork Desolation Creek below the falls and North Fork Desolation Creek; and (7) South Fork Desolation Creek above the falls.

The following water bodies are included in this CHSU (see Table 41):

North Fork John Day River from its confluence with the John Day River upstream 138.7 km (86.2 mi) to Granite Creek is occupied FMO habitat (Service 2002a, p. 72). From Granite Creek upstream 40.0 km (24.9 mi) to its source is known occupied spawning and rearing habitat (Buchanan et al. 1997, p. 72 – 73; Service 2002a, p. 72). Bull trout were observed during ODFW aquatic inventories in 1991 and 1993 (ODFW, *in litt.,* 1997).

West Fork Meadow Brook Creek from its confluence with the North Fork John Day River upstream 4.7 km (2.9 mi) to East Fork Meadow Brook Creek contains occupied FMO habitat.

Desolation Creek from its confluence with North Fork John Day River upstream 8.9 km (5.5 mi) is occupied FMO habitat. From this point upstream 25.1 km (15.6 mi) to the confluence of the North Fork and South Fork is occupied spawning and rearing habitat (ODFW, *in litt*., 1997, Buchanan et al. 1997, p. 73).

> *South Fork Desolation Creek* from its confluence with Desolation Creek upstream 14.1 km (8.8 mi) to its source contains occupied spawning and rearing habitat (ODFW, *in litt.*, 1997, Buchanan et al. 1997, p. 73).

Big Creek from the confluence with the North Fork John Day River upstream 4.1 km (2.6 mi) to the confluence with Winom Creek provides FMO habitat. Bull trout were observed during ODFW aquatic inventories in 1991 and 1995 (ODFW, *in litt.,* 1997). Surveys in 2003 and 2004 found brook trout and f2 brook trout/bull trout hybrids in Big Creek (USFS, *in litt.* 2009c).

> *Winom Creek* from the confluence with Big Creek upstream 12.1 km (7.5 mi) to its source contains occupied spawning and rearing habitat. One bull trout was enumerated during an ODFW aquatic inventory in 1991 (ODFW, *in litt.,* 1997). Surveys in 2003 and 2004 found brook trout and f2 brook trout/bull trout hybrids in Big Creek (USFS, *in litt.* 2009c). Winom Creek has been identified as potential habitat for range expansion, but was not considered essential for recovery (Service 2002a, p. 72).

Granite Creek from the confluence with North Fork John Day River upstream 26.2 km (16.3 mi) to its source is known historic spawning and rearing habitat (prior to 1990 in Buchanan et al. 1997, p. 73). It currently provides FMO habitat for local bull trout populations in tributaries to Granite Creek. A bull trout radio tagged in the mainstem John Day River near Spray in April of 2000 was located in July 2000 at km 6.01 in Granite Creek (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 9).

Clear Creek from the confluence with the Granite Creek upstream 16.4 km (10.2 mi) to the juncture of West Fork Clear Creek contains spawning and rearing habitat. Bull trout were enumerated in Clear Creek during surveys in 1991 and 1992 (ODFW, *in litt.*, 1997).

West Fork Clear Creek from the confluence with Clear Creek upstream 3.9 km (2.4 mi) to its source provides SR habitat (ODFW, *in litt.*, 1997; Buchanan et al. 1997; p. 73; ODFW in litt. 2009a,b).

Bull Run Creek from the confluence with Granite Creek upstream 14.9 km (9.3 mi) to its source provides FMO habitat. There has been one sighting of a bull trout in this stream by a BLM fish biologist in 1997.

Boundary Creek from the confluence with Bull Run Creek upstream 4.1 km (2.5 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, *in litt.*, 1997) and the Wallowa-Whitman National Forest surveyed in 1990.

Deep Creek from the confluence with Bull Run Creek upstream 5.7 km (3.6 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, *in litt.*, 1997) and the Wallowa-Whitman National Forest surveyed in 1993.

Lightning Creek from the confluence with Clear Creek upstream 6.2 km (3.9 mi) to its source contains spawning and rearing habitat (ODFW, *in litt.*, 1997, Buchanan et al. 1997, p. 73).

Dry Creek from the confluence with Lightning Creek upstream 3.9 km (2.4 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, *in litt.*, 1997).

Salmon Creek from the confluence with Lightning Creek upstream 3.3 km (2.1 mi) contains spawning and rearing habitat (ODFW, *in litt.*, 1997, Buchanan et al. 1997, p. 73).

Boulder Creek from the confluence with Granite Creek upstream 8.4 km (5.2 mi) to its source provides spawning and rearing habitat (Buchanan et al. 1997, p. 73). The lower end of Boulder Creek has been altered due to mining activities and has the potential with recovery to serve as seasonal rearing habitat with overlapping FMO habitat. Spawning habitat is not present in the lower end of the reach (ODFW, *in litt.* 2009a).

Crane Creek from the confluence with North Fork John Day River upstream 6.6 km (4.1 mi) is FMO habitat. Upstream 6.4 km (3.6 mi) from the FMO habitat to the source of Crane Creek is occupied spawning and rearing habitat (ODFW, *in litt.* 2009b) Bull trout in Crane Creek were documented in 1990 during ODFW surveys (ODFW, *in litt.*, 1997).

Trail Creek from the confluence with the North Fork John Day upstream 3.0 km (1.9 mi) to the juncture with North Trail and South Trail creeks contains FMO habitat with bull trout presence documented both above and below this reach. South Trail Creek from the confluence with Trail Creek upstream 10.7 km (6.6 mi) to its source provides spawning and rearing habitat (StreamNet 2009).

> *South Fork Trail Creek* from its confluence with Trail Creek upstream 10.7 km (6.6 mi) to its source is SR habitat (ODFW, *in litt*., 1997, Buchanan et al. 1997, p. 73).

Onion Creek from the confluence with the North Fork John Day River upstream 7.3 km (4.5 mi) to its source is spawning and rearing habitat (Buchanan et al. 1997, p. 73).

Baldy Creek from the confluence with the North Fork John Day River upstream 8.0 km (5.0 mi), to its spring source, contains spawning and rearing habitat (ODFW, *in litt.*, 1997, Buchanan et al. 1997, p. 73).

Crawfish Creek from the confluence with North Fork John Day River upstream 8.5 km (5.3 mi) to its source provides spawning and rearing habitat (Buchanan et al. 1997, p. 73).

Cunningham Creek from the confluence with North Fork John Day upstream 2.9 km (1.8 mi) to its source contains spawning and rearing habitat (Buchanan et al. 1997, p. 73).

Table 41. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the John Day River–North Fork John Day River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–North Fork John Day River	Baldy Creek	OR	Baldy Creek from the confluence with the North Fork John Day River upstream 8.0 km (5.0 mi), to its spring source, contains spawning and rearing habitat (ODFW, *in litt*., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1183176 449098
John Day River–North Fork John Day River	Big Creek	OR	Big Creek from the confluence with the North Fork John Day River upstream 4.1 km (2.6 mi) to the confluence with Winom Creek provides FMO habitat. Bull trout were observed during ODFW aquatic inventories in 1991 and 1995 (ODFW, in litt., 1997). Surveys in 2003 and 2004 found brook trout and f2 brook trout/bull trout hybrids in Big Creek (USFS, *in litt.* 2009b).	See CHU text	1186830 449604
John Day River–North Fork John Day River	Boulder Creek	OR	Boulder Creek from the confluence with Granite Creek upstream 8.4 km (5.2 mi) to its source provides spawning and rearing habitat (Buchanan et al. 1997, p. 73). The lower end of Boulder Creek has been altered due to mining activities and has the potential with recovery to serve as seasonal rearing habitat with overlapping FMO habitat. Spawning habitat is not present in the lower end of the reach (ODFW, *in litt.* 2009a).	See CHU text	1184155 448194
John Day River–North Fork John Day River	Boundary Creek	OR	Boundary Creek from the confluence with Bull Run Creek upstream 4.1 km (2.5 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, *in litt*., 1997) and the Wallowa-Whitman National Forest surveyed in 1990.	See CHU text	1183747 447870
John Day River–North Fork John Day River	Bull Run Creek	OR	Bull Run Creek from the confluence with Granite Creek upstream 14.9 km (9.3 mi) to its source provides FMO habitat. There has been one sighting of a bull trout in this stream by a BLM fish biologist in 1997.	See CHU text	1184252 448079
John Day River–North Fork John Day River	Clear Creek	OR	Clear Creek from the confluence with the Granite Creek upstream 16.4 km (10.2 mi) to the juncture of West Fork Clear Creek contains spawning and rearing habitat. Bull trout were enumerated in Clear Creek during surveys in 1991 and 1992 (ODFW, *in litt*., 1997).	See CHU text	1184500 448213

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–North Fork John Day River	Crane Creek	OR	Crane Creek from the confluence with North Fork John Day River upstream 6.6 km (4.1 mi) is FMO habitat. Upstream 6.4 km (3.6 mi) from the FMO habitat to the source of Crane Creek is occupied spawning and rearing habitat (ODFW, in litt. 2009b). Bull trout in Crane Creek were documented in 1990 during ODFW surveys (ODFW, *in litt.*, 1997).	See CHU text	1184777 448936
John Day River–North Fork John Day River	Crawfish Creek	OR	Crawfish Creek from the confluence with North Fork John Day River upstream 8.5 km (5.3 mi) to its source provides spawning and rearing habitat (Buchanan et al. 1997, p. 73).	See CHU text	1182983 449150
John Day River–North Fork John Day River	Cunningham Creek	OR	Cunningham Creek from the confluence with North Fork John Day upstream 2.9 km (1.8 mi) to its source contains spawning and rearing habitat (Buchanan et al. 1997, p. 73).	See CHU text	1182667 449108
John Day River–North Fork John Day River	Deep Creek	OR	Deep Creek from the confluence with Bull Run Creek upstream 5.7 km (3.6 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, *in litt.*, 1997) and the Wallowa-Whitman National Forest surveyed in 1993.	See CHU text	1183481 447798
John Day River–North Fork John Day River	Desolation Creek	OR	Desolation Creek from its confluence with North Fork John Day River upstream 8.9 km (5.5 mi) is occupied FMO habitat. From this point upstream 25.1 km (15.6 mi) to the confluence of the North Fork and South Fork is occupied spawning and rearing habitat (ODFW, in litt., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1189363 449976
John Day River–North Fork John Day River	Dry Creek	OR	Dry Creek from the confluence with Lightning Creek upstream 3.9 km (2.4 mi) to its source contains spawning and rearing habitat. ODFW surveyed in 1996 (ODFW, in litt., 1997).	See CHU text	1184991 447506

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–North Fork John Day River	Granite Creek	OR	Granite Creek from the confluence with North Fork John Day River upstream 26.2 km (16.3 mi) to its source is known historic spawning and rearing habitat (prior to 1990 in Buchanan et al. 1997, p. 73). It currently provides FMO habitat for local bull trout populations in tributaries to Granite Creek. A bull trout radio tagged in the mainstem John Day River near Spray in April of 2000 was located in July 2000 at km 6.01 in Granite Creek (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 9).	See CHU text	1185615 448659
John Day River–North Fork John Day River	Lightning Creek	OR	Lightning Creek from the confluence with Clear Creek upstream 6.2 km (3.9 mi) to its source contains spawning and rearing habitat (ODFW, in litt., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1184968 447647
John Day River–North Fork John Day River	North Fork John Day River	OR	North Fork John Day River from its confluence with the John Day River upstream 138.7 km (86.2 mi) to Granite Creek is occupied FMO habitat (Service 2002a, p. 72). From Granite Creek upstream 40.0 km (24.9 mi) to its source is known occupied spawning and rearing habitat (Buchanan et al. 1997, p. 72 – 73; Service 2002a, p. 72). Bull trout were observed during ODFW aquatic inventories in 1991 and 1993 (ODFW, in litt., 1997).	See CHU text	1196393 447553
John Day River–North Fork John Day River	Onion Creek	OR	Onion Creek from the confluence with the North Fork John Day River upstream 7.3 km (4.5 mi) to its source is spawning and rearing habitat (Buchanan et al. 1997, p. 73).	See CHU text	1184006 449127
John Day River–North Fork John Day River	Salmon Creek	OR	Salmon Creek from the confluence with Lightning Creek upstream 3.3 km (2.1 mi) contains spawning and rearing habitat (ODFW, in litt., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1185028 447252
John Day River–North Fork John Day River	South Fork Desolation Creek	OR	South Fork Desolation Creek from its confluence with Desolation Creek upstream 14.1 km (8.8 mi) to its source contains occupied spawning and rearing habitat (ODFW, in litt., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1186888 448196
John Day River–North Fork John Day River	South Trail Creek	OR	South Fork Trail Creek from its confluence with Trail Creek upstream 10.7 km (6.6 mi) to its source is SR habitat (ODFW, in litt., 1997, Buchanan et al. 1997, p. 73).	See CHU text	1183896 449368

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–North Fork John Day River	Trail Creek	OR	Trail Creek from the confluence with the North Fork John Day upstream 3.0 km (1.9 mi) to the juncture with North Trail and South Trail creeks contains FMO habitat with bull trout presence documented both above and below this reach. South Trail Creek from the confluence with Trail Creek upstream 10.7 km (6.6 mi) to its source provides spawning and rearing habitat (StreamNet 2009).	See CHU text	1184063 449155
John Day River–North Fork John Day River	West Fork Clear Creek	OR	West Fork Clear Creek from the confluence with Clear Creek upstream 3.9 km (2.4 mi) to its source provides SR habitat (ODFW, in litt., 1997; Buchanan et al. 1997; p. 73; ODFW in litt. 2009a,b).	See CHU text	1185450 447490
John Day River–North Fork John Day River	West Fork Meadow Brook Creek	OR	West Fork Meadow Brook Creek from its confluence with the North Fork John Day River upstream 4.7 km (2.9 mi) to East Fork Meadow Brook Creek contains occupied FMO habitat.	See CHU text	1189455 449975
John Day River–North Fork John Day River	Winom Creek	OR	Winom Creek from the confluence with Big Creek upstream 12.1 km (7.5 mi) to its source contains occupied spawning and rearing habitat. One bull trout was enumerated during an ODFW aquatic inventory in 1991 (ODFW, in litt., 1997). Surveys in 2003 and 2004 found brook trout and f2 brook trout/bull trout hybrids in Big Creek (USFS, in litt, 2009b). Winom Creek has been identified as potential habitat for range expansion, but was not considered essential for recovery (Service 2002a, p. 72).	See CHU text	1186718 449764

12.3. Middle Fork John Day River Critical Habitat Subunit

The Middle Fork John Day River CHSU is essential for bull trout conservation because it provides critical spawning and rearing habitat, is connected to the mainstem John Day River FMO habitat, and has no major physical barriers (see Appendix 1 for more detailed information).

Three local populations exist within the Middle Fork John Day River subunit drainage: Clear Creek, Granite Boulder Creek, and Big Creek. Two creeks, Butte and Vinegar, were identified as potential bull trout habitat and may contain local populations based on limited data. Additional surveys are necessary to confirm the presence of bull trout populations.

The following water bodies are included in this CHSU (see Table 42):

Middle Fork John Day River from the confluence with the North Fork John Day River upstream 105.8 km (65.7 mi) to its source is FMO habitat.

Clear Creek from the confluence with the Middle Fork John Day River upstream 20.4 km (12.7 mi) to its source is occupied spawning and rearing habitat (Buchanan et al. 1997, pp. 72-73; Moore et al. 2006, p. 24 – 25).

Granite Boulder Creek from the confluence with the Middle Fork John Day River upstream 13.0 km (8.1 mi) to a barrier falls is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73; Claire and Gray 1993, no pagination). One bull trout redd was enumerated during ODFW surveys in 2005 (Moore et al. 2006, p. 24).

Big Creek from the confluence with the Middle Fork John Day River upstream 18.6 km (11.6 mi) to its source is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73; Claire and Gray 1993, no pagination). A single bull trout was documented during ODFW surveys in 1995 (ODFW, *in litt.*, 1997), and one redd was enumerated during ODFW surveys in 2005 (Moore et al. 2006, p. 24 - 25). During surveys in Big Creek in 1999, the population was estimated at 1950 fish mostly juveniles and subadults (Hemmingsen 1999, no pagination). Interchange between the other spawning habitats in the Middle Fork John Day is unknown, but suspected to be limited by habitat alterations and thermal barriers during the summer (Claire and Gray 1993, no pagination).

> *Deadwood Creek* from the confluence with Big Creek upstream approximately 7.2 km (4.5 mi) is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73). Population surveys conducted by the ODFW affirmed the presence of bull trout (Hemmingsen 1999, no pagination). However in 2005, no bull trout redds were observed during ODFW surveys (Moore et al. 2006, p. 24 - 25).

Butte Creek from the confluence with the Middle Fork John Day River upstream 7.8 km (4.9 mi) to the headwaters provides spawning and rearing habitat for bull trout. Juvenile bull trout were identified in Butte Creek during a culvert removal in 2007; additional surveys are needed to confirm the presence of a spawning population (Service in litt. 2008e).

Vinegar Creek from the confluence with the Middle Fork John Day River upstream 15.2 km (9.4 mi) to its source provides spawning and rearing habitat for bull trout. Isolated sightings of bull trout have been confirmed in Vinegar Creek, and the Bull Trout Draft Recovery Plan identifies Vinegar Creek as potential habitat for bull trout (Seals, in litt. 2000, no pagination), and the draft recovery plan identifies Vinegar Creek as potential habitat for bull trout (Service 2002a, p. 18).

Table 42. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the John Day River–Middle Fork John Day River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Middle Fork John Day River	Big Creek	OR	Big Creek from the confluence with the Middle Fork John Day River upstream 18.6 km (11.6 mi) to its source is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73; Claire and Gray 1993, no pagination). A single bull trout was documented during ODFW surveys in 1995 (ODFW, in litt., 1997), and one redd was enumerated during ODFW surveys in 2005 (Moore et al. 2006, p. 24 - 25). During surveys in Big Creek in 1999, the population was estimated at 1950 fish mostly juveniles and subadults (Hemmingsen 1999, no pagination). Interchange between the other spawning habitats in the Middle Fork John Day is unknown, but suspected to be limited by habitat alterations and thermal barriers during the summer (Claire and Gray 1993, no pagination).	See CHU text	1188742 447658
John Day River–Middle Fork John Day River	Butte Creek	OR	Butte Creek from the confluence with the Middle Fork John Day River upstream 7.8 km (4.9 mi) to the headwaters provides spawning and rearing habitat for bull trout. Juvenile bull trout were identified in Butte Creek during a culvert removal in 2007; additional surveys are needed to confirm the presence of a spawning population (Service in litt. 2008e).	See CHU text	1186523 446422
John Day River–Middle Fork John Day River	Clear Creek	OR	Clear Creek from the confluence with the Middle Fork John Day River upstream 20.4 km (12.7 mi) to its source is occupied spawning and rearing habitat (Buchanan et al. 1997, pp. 72-73; Moore et al. 2006, p. 24 – 25).	See CHU text	1185080 445935
John Day River–Middle Fork John Day River	Deadwood Creek	OR	Deadwood Creek from the confluence with Big Creek upstream approximately 7.2 km (4.5 mi) is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73). Population surveys conducted by the ODFW affirmed the presence of bull trout (Hemmingsen 1999, no pagination). However in 2005, no bull trout redds were observed during ODFW surveys (Moore et al. 2006, p. 24 - 25).	See CHU text	1187927 447678

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Middle Fork John Day River	Granite Boulder Creek	OR	Granite Boulder Creek from the confluence with the Middle Fork John Day River upstream 13.0 km (8.1 mi) to a barrier falls is occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73; Claire and Gray 1993, no pagination). One bull trout redd was enumerated during ODFW surveys in 2005 (Moore et al. 2006, p. 24).	See CHU text	1186651 446474
John Day River–Middle Fork John Day River	Middle Fork John Day River	OR	Middle Fork John Day River from the confluence with the North Fork John Day River upstream 105.8 km (65.7 mi) to its source is FMO habitat.	See CHU text	1193015 449167.1
John Day River–Middle Fork John Day River	Vinegar Creek	OR	Vinegar Creek from the confluence with the Middle Fork John Day River upstream 15.2 km (9.4 mi) to its source provides spawning and rearing habitat for bull trout. Isolated sightings of bull trout have been confirmed in Vinegar Creek, and the Bull Trout Draft Recovery Plan identifies Vinegar Creek as potential habitat for bull trout (Seals, in litt. 2000, no pagination), and the draft recovery plan identifies Vinegar Creek as potential habitat for bull trout (Service 2002a, p. 18).	See CHU text	1185357 446012

12.4. Upper Mainstem John Day River Critical Habitat Subunit

The Upper Mainstem John Day River CHSU is essential for bull trout conservation because it provides critical spawning and rearing habitat, is connected to the mainstem John Day River FMO habitat, and has no major physical barriers (see Appendix 1 for more detailed information).

There are two local populations identified in the upper mainstem John Day River, the upper John Day River local population complex that includes Deardorff Creek, Reynolds Creek, Rail Creek, Roberts Creek, and Call Creek and the Indian Creek local population. The upper John Day River local population occurs in the headwaters streams of the John Day River. Indian Creek enters the John Day west of Prairie City.

The following water bodies are included in this CHSU (see Table 43):

John Day River from the confluence with the North Fork John Day River upstream 133.9.km (83.2 mi) to the confluence with Reynolds Creek is occupied FMO habitat. From Reynolds Creek upstream 20.7 km (12.9 mi) to its source is occupied spawning and rearing habitat. Presence of bull trout has been confirmed in the mainstem John Day downstream to Sheep Rock (near the JD Fossil bed visitor center) (Service in litt. 2008f, p. 4). Bull trout were observed in the upper mainstem John Day River during ODFW aquatic inventories in 1990 (ODFW, *in litt.,* 1997) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7).

Indian Creek from its confluence with the John Day River upstream 19.0 km (11.8 mi) to the headwaters provides SR habitat for bull trout. Bull trout spawning occurs above a seasonal flow barrier. Restoring functional connectivity in Indian Creek is a priority for recovery because this population is essential to the long-term conservation of the species (Service 2002a, p. 53) although distribution is seasonally limited by low flows (Service in litt. 2008f, p. 5). Surveys conducted in 1992 detected bull trout in Indian Creek (Claire and Gray 1993, Appendix Table A, no pagination) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). A large fire in the Indian Creek watershed in 1996 may have altered habitat, thereby impacting the local population (Service 2002a, pp.30 and 110). Additional surveys for presence have not been conducted. Irrigation diversions from the mouth upstream to the Forest Service boundary alter the habitat during the irrigation season, so it is useful as FMO habitat for the non-irrigation part of the year (approximately October through May) (ODFW, *in litt*., 2000a). Known bull trout SR habitat occurs upstream of the Forest Service/Wilderness boundary (Buchanan et al. 1997, p. 73).

Reynolds Creek from its confluence with the John Day River upstream 15.5 km (9.6 mi) to its source is known occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, *in litt.,* 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Reynolds Creek were captured and radio tagged in 1999 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Gunckel, and Sankovich et al. 2001, p. 6–11).

> *North Fork Reynolds Creek* from its confluence with Reynolds Creek upstream 11.9 km (7.4 mi) is occupied SR habitat (Buchanan et al. 1997, p. 73). Bull trout were observed during ODFW aquatic inventories in 1990 and 1997 (ODFW, *in litt.,* 1997).

Deardorff Creek from its confluence with the John Day River upstream 15.5 km (9.6 mi) to its source is known occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1990 and 1997 (ODFW, *in litt.,* 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Deardorff Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Bellerud, Buchanan, et al. 2001, pp. 9-12; 2001b, p. 13; 2001c, p. 14; and 2001d, pp. 10 - 11).

Rail Creek from its confluence with the John Day upstream 11.4 km (7.1 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 - 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, *in litt.,* 1997).

Roberts Creek from its confluence with the John Day River upstream 8.9 km (5.5 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1996 and 1997 (ODFW, *in litt.,* 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Roberts Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Bellerud, Buchanan, et al. 2001, pp. 9-12; Hemmingsen, Bellerud, Gunkel, et al. 2001, p. 13; Hemmingsen, Gunckel, and Howell, 2001, pp. 6–13; and Hemmingsen, Gunckel, Sankovich, et al. 2001, pp. 10–11).

Call Creek from its confluence with the John Day River upstream 6.1 km (3.8 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, *in litt.,* 1997) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Call Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Bellerud, Buchanan, et al. 2001, pp. 9-10; Hemmingsen, Bellerud, Gunkel, et al. 2001, p. 13; Hemmingsen, Gunckel, and Howell, 2001, pp. 6 – 13; and Hemmingsen, Gunckel, Sankovich, et al. 2001, pp. 10-11).

Table 43. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the John Day River–Upper Mainstem John Day River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Upper Mainstem John Day River	Call Creek	OR	Call Creek from its confluence with the John Day River upstream 6.1 km (3.8 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, in litt., 1997) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Call Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Bellerud, Buchanan, et al. 2001, pp. 9-10; Hemmingsen, Bellerud, Gunkel, et al. 2001, p. 13; Hemmingsen, Gunckel, and Howell, 2001, pp. 6 – 13; and Hemmingsen, Gunckel, Sankovich, et al. 2001, pp. 10-11)..	See CHU text	1185571 443201
John Day River–Upper Mainstem John Day River	Deardorff Creek	OR	Deardorff Creek from its confluence with the John Day River upstream 15.5 km (9.6 mi) to its source is known occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1990 and 1997 (ODFW, in litt., 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Deardorff Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Bellerud, Buchanan, et al. 2001, pp. 9-12; Hemmingsen, Bellerud, Gunkel, et al. 2001, p. 13; Hemmingsen, Gunckel, and Howell, 2001, pp. 6 – 13; and Hemmingsen, Gunckel, Sankovich, et al. 2001, pp. 10-11).	See CHU text	1185763 443948

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Upper Mainstem John Day River	Indian Creek	OR	Indian Creek from its confluence with the John Day River upstream 19.0 km (11.8 mi) to the headwaters provides SR habitat for bull trout. Bull trout spawning occurs above a seasonal flow barrier. Restoring functional connectivity in Indian Creek is a priority for recovery because this population is essential to the long-term conservation of the species (Service 2002a, p. 53) although distribution is seasonally limited by low flows (Service in litt. 2008f, p. 5). Surveys conducted in 1992 detected bull trout in Indian Creek (Claire and Gray 1993, Appendix Table A, no pagination) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). A large fire in the Indian Creek watershed in 1996 may have altered habitat, thereby impacting the local population (Service 2002a, pp.30 and 110). Additional surveys for presence have not been conducted. Irrigation diversions from the mouth upstream to the Forest Service boundary alter the habitat during the irrigation season, so it is useful as FMO habitat for the non-irrigation part of the year (approximately October through May) (ODFW, in litt., 2000a). Known bull trout SR habitat occurs upstream of the Forest Service/Wilderness boundary (Buchanan et al. 1997, p. 73).	See CHU text	1188002 444428
John Day River–Upper Mainstem John Day River	John Day River	OR	John Day River from the confluence with the North Fork John Day River upstream 133.9.km (83.2 mi) to the confluence with Reynolds Creek is occupied FMO habitat. From Reynolds Creek upstream 20.7 km (12.9 mi) to its source is occupied spawning and rearing habitat. Presence of bull trout has been confirmed in the mainstem John Day downstream to Sheep Rock (near the JD Fossil bed visitor center) (Service in litt. 2008f, p. 4). Bull trout were observed in the upper mainstem John Day River during ODFW aquatic inventories in 1990 (ODFW, in litt., 1997) and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7).	See CHU text	1206499 457318
John Day River–Upper Mainstem John Day River	North Reynolds Creek	OR	North Fork Reynolds Creek from its confluence with Reynolds Creek upstream 11.9 km (7.4 mi) is occupied SR habitat (Buchanan et al. 1997, p. 73). Bull trout were observed during ODFW aquatic inventories in 1990 and 1997 (ODFW, in litt., 1997).	See CHU text	1185168 444229

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
John Day River–Upper Mainstem John Day River	Rail Creek	OR	Rail Creek from its confluence with the John Day upstream 11.4 km (7.1 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 - 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, in litt., 1997).	See CHU text	1185745443489
John Day River–Upper Mainstem John Day River	Reynolds Creek	OR	Reynolds Creek from its confluence with the John Day River upstream 15.5 km (9.6 mi) to its source is known occupied spawning and rearing habitat (Buchanan et al. 1997, p. 73). Bull trout were observed during ODFW aquatic inventories in 1990 (ODFW, in litt., 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Reynolds Creek were captured and radio tagged in 1999 for tracking studies conducted from 1997 through 2000 (Hemmingsen, Gunckel, Sankovich, et al. 2001, p. 6 - 11).	See CHU text	1185958444143
John Day River–Upper Mainstem John Day River	Roberts Creek	OR	Roberts Creek from its confluence with the John Day River upstream 8.9 km (5.5 mi) to its source is occupied SR habitat (Buchanan et al. 1997, pp. 72 – 73). Bull trout were observed during ODFW aquatic inventories in 1996 and 1997 (ODFW, in litt., 1997), and tissue samples were taken in 1995 for genetic analysis (Hemmingsen et al. 1996, pp. 2 and 7). Bull trout in Roberts Creek were captured and radio tagged in 1997 for tracking studies conducted from 1997 through 2000 (Hemmingsen Bellerud, Buchanan, et al. 2001, Hemmingsen, Bellerud, Gunkel, et al. 2001, p. 13; Hemmingsen, Gunckel, and Howell, 2001, pp. 6 – 13; and Hemmingsen, Gunckel, Sankovich, et al. 2001, pp. 10-11).	See CHU text	1185747443478

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 13. Mid-Columbia Recovery Unit—Umatilla River Critical Habitat Unit

Chapter 13. Umatilla River Critical Habitat Unit

The Umatilla River CHU is located in northeastern Oregon in Umatilla and Union Counties. There are two known bull trout local populations in this unit: one in the North Fork Umatilla River and one in North Fork Meacham Creek. Bull trout in this basin are primarily fluvial migrants that overwinter in middle and lower sections of the mainstem Umatilla River. The Draft Recovery Plan (Service 2002a) indicates the need to maintain these local populations to provide for the recovered distribution of bull trout. The Umatilla River population provides connectivity between core areas in the middle Columbia River. The absence of brook trout in the Umatilla River also increases the recovery potential of bull trout in this Basin. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) owns lands in this basin.

Rationale for determining critical habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* – Both fluvial and resident bull trout life-history forms occur in the Umatilla River Basin. Fish passage actions over the next decade are expected to improve conditions for maintaining and enhancing the fluvial population in lower and middle sections of the river.

2. *Conserve opportunity for genetic diversity* - Bull trout from the Umatilla River Basin are part of the "Inland" lineage (Spruell and Allendorf 1997). Although there was little genetic variation within populations there was substantial variation between populations (Bellerud et al. 1997, p. 1; Spruel and Allendorf 1997), hence the need to conserve all populations of bull trout to preserve genetic diversity of the species.

3. *Ensure bull trout are distributed across representative habitats* – The Umatilla River contains stream habitats representative of the Blue Mountains. Bull trout were once more widely distributed across the Umatilla River Basin historically compared to their current distribution (Buchanan et al. 1997).

4. *Ensure sufficient connectivity among populations* – The Umatilla River core area is important for population connectivity through the middle Columbia River region. Along the Columbia River, the Umatilla River is situated between the John Day River and the Walla Walla River. Without the Umatilla River population, there would be almost 100 miles of river between occupied river basins. The loss of this population would greatly reduce the potential for connectivity between core areas in the middle Columbia River.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* – Suitable spawning habitat is limited in the Umatilla River, however, there is potential for restoration as the upper tributaries continue to recover from past heavy logging and grazing. In addition, significant actions are being taken to restore the lower river to improve foraging, migrating and overwintering habitat.

6. *Consider threats (e.g., climate change)* – The Umatilla River Basin could be vulnerable to the affects of climate change given its relatively low elevation and the limited amount of suitable cold water habitat. On the positive side, the absence of brook trout in the Umatilla River increases the recovery potential of bull trout within this basin.

7. *Ensure sufficient redundancy in conserving population units* – The Umatilla River core area is in an important geographic location for maintaining bull trout population connectivity in the

middle Columbia River region. Within the basin, all suitable habitat is essential to population persistence given the relatively small size of the basin and the limited amount of suitable spawning habitat.

The following water bodies are included in this CHU (see Table 44):

Lower Umatilla River from its confluence with the Columbia River upstream 89 km (55 mi) to the western boundary of the Confederated Tribes of the Umatilla Indian Reservation is FMO habitat and an important migratory connection to FMO habitat in the Columbia River. Bull trout are difficult to census in the lower river because they are few in number and occur in this section primarily during winter and spring months when high flows make detection difficult. However, bull trout are occasionally observed in the lower river. A bull trout was captured at the upstream migrant fish collection facility at Three Mile Falls Dam in June 2009, and two were captured in spring 2007 (Paul Sankovich, pers. comm. 2009). Bull trout have also been captured at that facility in spring 1995, 1996, 1999 and 2000, and one was captured at the juvenile collection facility at Westland in 1994 (ODFW in litt. 2000b). Bull trout were also caught by anglers near the town of Echo in 1998 and at approximately River Mile 42 in 1997 during the winter steelhead fishery. During November 1999, two bull trout were salvaged from lower McKay Creek, after McKay Reservoir water releases for fish migration were ended for the season.

Upper Umatilla River from the western boundary of the Confederated Tribes of the Umatilla Indian Reservation upstream 52.8 km (32.8 mi) to the South Fork/North Fork Umatilla River confluence. Most of the adult and sub-adult fluvial bull trout in the basin overwinter in this section of the river. The upper mainstem section of the Umatilla River is an important area where most of the adults forage and overwinter and is used seasonally for subadult rearing of fluvial bull trout. Bull trout use of the mainstem Umatilla River is concentrated upstream of Thornhollow Creek, with some use extending downstream to McKay Creek (Sankovich et al. 2003). Data from screw traps and radio-tagged fish show bull trout migrants using the Umatilla River downstream of Thornhollow Creek beginning in late October/early November. Bull trout have been found between the towns of Pendleton and Thornhollow, from late October until June, when fish begin to migrate upstream, probably in response to warming water temperatures (Sankovich et al. 2003). The Umatilla River from Thornhollow Creek upstream to the North Fork/South Fork Umatilla River confluence is used seasonally by rearing subadult and overwintering adult bull trout. Radio-telemetry data indicate that bull trout occupy this reach from late October until July (Sankovich et al. 2003).

Ryan Creek from the confluence of the Umatilla River upstream 3.2 km (2 mi) is used for rearing and migration (Germond et al. 1996, Contor et al. 1995).

Meacham Creek from its confluence with the Umatilla River upstream 29 km (18 mi) to the mouth of East Meacham Creek is FMO habitat. Meacham Creek supports migratory movements of fluvial bull trout between spawning grounds in its North Fork and the Umatilla River. It is an essential migratory corridor and has the potential to be important foraging and overwintering habitat. In its present degraded state, Meacham Creek below the confluence with North Fork Meacham Creek is only capable of supporting migratory movements of fluvial bull trout. Despite its poor condition, Meacham Creek is essential to bull trout because the maintenance of a migratory corridor to the Umatilla River is critical to the viability of the local population in

North Fork Meacham Creek. If restored, Meacham Creek could serve as adult overwintering habitat in the future.

North Fork Meacham Creek from its confluence with Meacham Creek upstream 4.5 km (2.8 mi) to the mouth of Bear Creek is essential FMO habitat. The lower portion of North Fork Meacham Creek provides FMO habitat. Above the mouth of Bear Creek upstream 11.5 km (7.1 mi) provides spawning and rearing of both fluvial and resident bull trout. This creek supports a local population that is very small and at risk of extirpation, but its recovery is considered essential to bull trout recovery in the Umatilla River Basin. In 2001, a few adult bull trout were observed several miles above the mouth during summer steelhead escapement surveys in April and May and one was observed during spring chinook pre-spawning surveys in July. Spawning bull trout have been found upstream of the confluence with Bear Creek and also in Pot Creek. Resident and fluvial bull trout have been observed in this area. When redd counts were initiated in 1994, two redds were observed in the reach between Bear Creek and Pot Creek (ODFW in litt. 2000a). In 2002, two bull trout redds were detected (ODFW, in litt. 2000b). Bull trout spawning has not been documented in this area since 2002, and the population appears to have dropped below detectible levels. However, recovery of a local population in North Fork Meacham Creek is essential to bull trout recovery in the Umatilla River Basin and there are ongoing efforts to restore habitat in both Meacham and North Fork Meacham creeks.

> **Pot Creek** from the confluence with North Fork Meacham Creek upstream 4.8 km (3.0 mi) provides spawning and rearing of both fluvial and resident bull trout. The Pot Creek local population is very small and at risk of extirpation, but its recovery is considered essential to bull trout recovery in the Umatilla River Basin. Spawning bull trout have been found upstream of the confluence in Pot Creek. Resident and fluvial bull trout have been observed in this area. When redd counts were initiated in 1994, two redds were observed in the reach between Bear Creek and Pot Creek and one redd was observed in Pot Creek. One redd was observed in Pot Creek in 1995 (ODFW in litt. 2000a).

North Fork Umatilla River from its confluence with the South Fork Umatilla River upstream 16.6 km (10.3 mi) to its headwaters along with Coyote and Woodward creeks supports the highest concentrations of spawning bull trout in the Umatilla River Basin. Bull trout in the North Fork Umatilla River are currently the only functional local population in the Umatilla River Basin (Anglin et al. 2008). Redd counts conducted annually since 1994 by ODFW, the Confederated Tribes of the Umatilla Indian Reservation, and the U.S. Forest Service had found at least 20 redds each year through 2006, with over 100 redds detected in the North Fork Umatilla River in 1999, 2000, and 2001 (Germond et al. 1996; Buchanan et al. 1997; ODFW, in litt. 2007c). However, the count dropped to 12 redds in 2007. Redd sizes in the North Fork Umatilla River suggest that this local population consists mostly of fluvial fish (Paul Sankovich, pers. comm. 2009). Population estimates of large bull trout (> 370mm) range from a high of 22 fish in 2007 to a low of 2 in 2006 (Budy et al. 2008). However, small sample sizes from the Umatilla River result in very high variance in the mark-recapture population estimates from the Budy et al. (2008) study.

Coyote Creek from its confluence with the North Fork Umatilla River upstream 1.6 km (1.0 mi) is SR habitat and helps support the highest concentrations of spawning bull trout in the Umatilla River Basin.

Woodward Creek from its confluence with the North Fork Umatilla River upstream 1.6 km (1.0 mi) is SR habitat and helps support the highest concentrations of spawning bull trout in the Umatilla River Basin.

Table 44. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Umatilla River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Umatilla River–None	Coyote Creek	OR	Coyote Creek from its confluence with the North Fork Umatilla River upstream 1.6 km (1.0 mi) is SR habitat and helps support the highest concentrations of spawning bull trout in the Umatilla River Basin.	See CHU text	1181391 457319
Umatilla River–None	Meacham Creek	OR	Meacham Creek from its confluence with the Umatilla River upstream 29 km (18 mi) to the mouth of East Meacham Creek is FMO habitat. Meacham Creek supports migratory movements of fluvial bull trout between spawning grounds in its North Fork and the Umatilla River. It is an essential migratory corridor and has the potential to be important foraging and overwintering habitat. In its present degraded state, Meacham Creek below the confluence with North Fork Meacham Creek is only capable of supporting migratory movements of fluvial bull trout. Despite its poor condition, Meacham Creek is essential to bull trout because the maintenance of a migratory corridor to the Umatilla River is critical to the viability of the local population in North Fork Meacham Creek. If restored, Meacham Creek could serve as adult overwintering habitat in the future.	See CHU text	1183604 457023.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Umatilla River–None	North Fork Meacham Creek	OR	North Fork Meacham Creek upstream 4.5 km (2.8 mi) to the mouth of Bear Creek is essential FMO habitat. The lower portion of North Fork Meacham Creek provides FMO habitat. Above the mouth of Bear Creek upstream 11.5 km (7.1 mi) provides spawning and rearing of both fluvial and resident bull trout. This creek supports a local population that is very small and at risk of extirpation, but its recovery is considered essential to bull trout recovery in the Umatilla River Basin. In 2001, a few adult bull trout were observed several miles above the mouth during summer steelhead escapement surveys in April and May and one was observed during spring chinook pre-spawning surveys in July. Spawning bull trout have been found upstream of the confluence with Bear Creek and also in Pot Creek. Resident and fluvial bull trout have been observed in this area. When redd counts were initiated in 1994, two redds were observed in the reach between Bear Creek and Pot Creek (ODFW in litt. 2000a). In 2002, two bull trout redds were detected (ODFW, in litt. 2007c). Bull trout spawning has not been documented in this area since 2002, and the population appears to have dropped below detectible levels. However, recovery of a local population in North Fork Meacham Creek is essential to bull trout recovery in the Umatilla River Basin and there are ongoing efforts to restore habitat in both Meacham and North Fork Meacham creeks.	See CHU text	1182906 455268

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Umatilla River–None	North Fork Umatilla River	OR	North Fork Umatilla River from its confluence with the South Fork Umatilla River upstream 16.6 km (10.3 mi) to its headwaters along with Coyote and Woodward creeks supports the highest concentrations of spawning bull trout in the Umatilla River Basin. Bull trout in the North Fork Umatilla River are currently the only functional local population in the Umatilla River Basin (Anglin et al. 2008). Redd counts conducted annually since 1994 by ODFW, the Confederated Tribes of the Umatilla Indian Reservation, and the U.S. Forest Service had found at least 20 redds each year through 2006, with over 100 redds detected in the North Fork Umatilla River in 1999, 2000, and 2001 (Germond et al. 1996; Buchanan et al. 1997; ODFW, in litt. 2000b). However, the count dropped to 12 redds in 2007. Redd sizes in the North Fork Umatilla River suggest that this local population consists mostly of fluvial fish (Paul Sankovich, pers. comm. 2009). Population estimates of large bull trout (> 370mm) range from a high of 22 fish in 2007 to a low of 2 in 2006 (Budy et al. 2008). However, small sample sizes from the Umatilla River result in very high variance in the mark-recapture population estimates from the Budy et al. (2008) study.	See CHU text	1181885 457258
Umatilla River–None	Pot Creek	OR	Pot Creek from the confluence with North Fork Meacham Creek upstream 4.8 km (3.0 mi) provides spawning and rearing of both fluvial and resident bull trout. The Pot Creek local population is very small and at risk of extirpation, but its recovery is considered essential to bull trout recovery in the Umatilla River Basin. Spawning bull trout have been found upstream of the confluence in Pot Creek. Resident and fluvial bull trout have been observed in this area. When redd counts were initiated in 1994, two redds were observed in the reach between Bear Creek and Pot Creek and one redd was observed in Pot Creek. One redd was observed in Pot Creek in 1995 (ODFW in litt. 2000a).	See CHU text	1182015 455536
Umatilla River–None	Ryan Creek	OR	Ryan Creek from the confluence of the Umatilla River upstream 3.2 km (2 mi) is used for rearing and migration (Germond et al. 1996, Contor et al. 1995).	See CHU text	1183153 457226

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Umatilla River–None	Umatilla River-lower	OR	Lower Umatilla River from its confluence with the Columbia River upstream 89 km (55 mi) to the western boundary of the Confederated Tribes of the Umatilla Indian Reservation is FMO habitat and an important migratory connection to FMO habitat in the Columbia River. Bull trout are difficult to census in the lower river because they are few in number and occur in this section primarily during winter and spring months when high flows make detection difficult. However, bull trout are occasionally observed in the lower river. A bull trout was captured at the upstream migrant fish collection facility at Three Mile Falls Dam in June 2009, and two were captured in spring 2007 (Paul Sankovich, pers. comm. 2009). Bull trout have also been captured at that facility in spring 1995, 1996, 1999 and 2000, and one was captured at the juvenile collection facility at Westland in 1994 (ODFW in litt. 2000b). Bull trout were also caught by anglers near the town of Echo in 1998 and at approximately River Mile 42 in 1997 during the winter steelhead fishery. During November 1999, two bull trout were salvaged from lower McKay Creek, after McKay Reservoir water releases for fish migration were ended for the season.	See CHU text	1193384 459144

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Umatilla River–None	Umatilla River-upper	OR	Upper Umatilla River from the western boundary of the Confederated Tribes of the Umatilla Indian Reservation upstream 52.8 km (32.8 mi) to the South Fork/North Fork Umatilla River confluence. Most of the adult and sub-adult fluvial bull trout in the basin overwinter in this section of the river. The upper mainstem section of the Umatilla River is an important area where most of the adults forage and overwinter and is used seasonally for subadult rearing of fluvial bull trout. Bull trout use of the mainstem Umatilla River is concentrated upstream of Thornhollow Creek, with some use extending downstream to McKay Creek (Sankovich et al. 2003). Data from screw traps and radio-tagged fish show bull trout migrants using the Umatilla River downstream of Thornhollow Creek beginning in late October/early November. Bull trout have been found between the towns of Pendleton and Thornhollow, from late October until June, when fish begin to migrate upstream, probably in response to warming water temperatures (Sankovich et al. 2003). The Umatilla River from Thornhollow Creek upstream to the North Fork/South Fork Umatilla River confluence is used seasonally by rearing subadult and overwintering adult bull trout. Radio-telemetry data indicate that bull trout occupy this reach from late October until July (Sankovich et al. 2003).	See CHU text	1193384 459144
Umatilla River–None	Woodward Creek	OR	Woodward Creek from its confluence with the North Fork Umatilla River upstream 1.6 km (1.0 mi) is SR habitat and helps support the highest concentrations of spawning bull trout in the Umatilla River Basin.	See CHU text	1180799 457361

Chapter 14. Mid-Columbia Recovery Unit —Walla Walla River Critical Habitat Unit

Chapter 14. Walla Walla River Critical Habitat Unit

The Walla Walla River CHU is essential to the conservation of bull trout because it contains a discrete population of bull trout in the southeastern part of the Mid-Columbia RU with connectivity to FMO habitat in the Columbia River and the potential to interact with bull trout from other CHSUs. The fluvial population in the Walla Walla River is particularly significant because of its size and documented movement of bull trout into the Columbia River (see Appendix 1 for more detailed information).

The Walla Walla River basin CHU straddles the Oregon/Washington state line in the eastern part of both states and includes two Critical Habitat Sun-Units (CHSUs); the Walla Walla and Touchet. The Walla Walla River flows out of the Blue Mountains in northeastern Oregon and southeastern Washington and into the Columbia River above McNary Dam. The Touchet River is the largest tributary to the Walla Walla River. There are five known bull trout local populations in this unit; two in the Walla Walla River basin and three in the Touchet River basin. The Bull Trout Draft Recovery Plan indicates the need to maintain these local populations to provide for the recovered distribution of bull trout. The Walla Walla River core area is a stronghold population with fluvial and resident bull trout populations across diverse terrain. This CHU has potential to recover and is essential to the recovery of bull trout in the Middle Columbia / Snake Recovery Unit. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) owns lands in this CHU.

<u>Rationale for determining Critical Habitat based on the Seven Guiding Principles</u>

1. *Conserve opportunity for diverse life-history expression* – Both fluvial and resident bull trout life-history forms occur in the Walla Walla and Touchet river basins. The fluvial population in the Walla Walla River is particularly significant because of its size and the documented movement of bull trout into the Columbia River. Recent and ongoing restoration actions to improve habitat in the lower river are expected to improve conditions for maintaining and enhancing the fluvial populations in these basins.

2. *Conserve opportunity for genetic diversity* – Bull trout from the Walla Walla River Basin are part of the “Inland” lineage (Spruell and Allendorf 1997).

3. *Ensure bull trout are distributed across representative habitats* – The Walla Walla River Basin contains stream habitats representative of the Blue Mountains. Because of its large size and varied terrain, the basin encompasses a wide variety of habitat conditions.

4. *Ensure sufficient connectivity among populations* – Along the Columbia River, the Walla Walla River is in an important location above the Umatilla River and immediately downstream of the Snake River and Yakima River. The loss of this population would greatly reduce the potential for connectivity between populations in the Snake River and the Columbia River. Bull trout in the Walla Walla River basin have been observed moving into the Columbia River.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* – Substantial amounts of suitable habitat are present in the Walla Walla River Basin and significant efforts are underway to restore the lower river to improve foraging, migrating and overwintering habitat. Conditions in this basin, particularly in the upper Walla Walla River, are good for population recovery.

6. Consider threats (e.g., climate change) – The large size and diversity of Walla Walla River Basin should increase its resiliency to the affects of climate change. The almost complete absence of brook trout in the Walla Walla River increases the recovery potential of bull trout in this basin.

7. *Ensure sufficient redundancy in conserving population units* – The Walla Walla River Basin is a major stronghold for bull trout in the middle Columbia River region. Its relatively large population is essential to the recovery of bull trout in this region.

14.1. Walla Walla River Critical Habitat Subunit

The Walla Walla River CHSU is essential to the conservation of bull trout because it contains stream habitats representative of the Blue Mountains and, because of its large size and varied terrain, the basin encompasses a wide variety of habitat conditions. Losing this population would greatly reduce the potential for connectivity between populations in the Snake and Columbia Rivers. Conditions in this basin, particularly in the upper Walla Walla River, are good for population recovery. The large size and diversity of Walla Walla River Basin should increase its resiliency to the affects of climate change. The almost complete absence of brook trout in the Walla Walla River increases the recovery potential of bull trout in this basin. The Walla Walla River Basin is a major stronghold for bull trout in the Mid-Columbia River region. Its relatively large population is essential to the recovery of bull trout in this region (see Appendix 1 for more detailed information).

This CHU supports two local bull trout populations in the Walla Walla River basin. Landownership within the CHSU is approximately 28 percent Federal, 69 percent private, and 3 percent State. The stream segments that make up the Walla Walla CHSU are described below.

The following water bodies are included in this CHSU (Table 45)

Walla Walla River from its confluence with the Columbia River upstream 81.2 km (50.5 mi) to the South Fork/North Fork confluence is overwintering habitat, and an important migratory connection to essential FMO habitat in the Columbia River. Information is limited on bull trout use of the lower river downstream of the Burlingame Diversion Dam, however, tagged fish have been observed moving downstream past the Oasis Road Bridge to the Columbia River (Anglin et al. 2008) and the reach is an important migratory connection to the Columbia River and the Touchet River. The greatest concentration of overwintering bull trout are in the mainstem Walla Walla River between Burlingame Diversion Dam and Cemetery Bridge. A radio telemetry study found many fluvial bull trout overwintering in the upper end of this reach, between the Oregon/ Washington state line and Cemetery Bridge (Mahoney et al. 2006). Large irrigation diversions just above Cemetery Bridge (i.e., the Eastside and Little Walla Walla River diversions) greatly reduce stream flows in this reach during the irrigation season (April to October), which may influence downstream fish movements. It is essential to maintain a migratory corridor down to the confluence with Mill Creek to allow for genetic interchange between the Mill Creek and Upper Walla Walla local populations. The Walla Walla River from Cemetery Bridge upstream to the North Fork/South Fork confluence provides year-round subadult rearing habitat and adult overwintering habitat. This reach is heavily used by fluvial bull trout that spawn in the South Fork Walla Walla River (Mahoney et al. 2006).

Couse Creek from the confluence of the Walla Walla River upstream 9.2 km (5.7 mi) is overwintering habitat and an important migratory connection to essential FMO habitat in the Columbia River.

North Fork Walla Walla River from its confluence with the South Fork Walla Walla River upstream 19 km (11.8 mi) is used as FMO habitat. Bull trout subadults and juveniles have been observed in the lower North Fork, and a 2001-2004 radio telemetry study detected multiple adults in lower and middle sections of the North Fork from December through May (Mahoney et al. 2006, pg 102).

South Fork Walla Walla River and its tributaries from its confluence with the North Fork upstream 40.4 km (mi 25.1) includes 5.8 km (3.6 mi) of FMO habitat and 41.2 km (25.6 mi) of spawning and rearing habitat. The South Fork Walla Walla River and its tributaries (listed below) constitute a major bull trout stronghold (Al-Chokhachy and Budy 2008, Anglin et al. 2008, Mahoney et al. 2006). Well over 100 bull trout redds have been observed annually in spawning surveys conducted since 1994, and over 300 redds have been detected annually since 1999 (ODFW in litt. 2002).

Skiphorton Creek from its confluence with the South Fork Walla Walla River upstream 2.6 km (1.6 mi) provides spawning and rearing habitat (Anglin et al. 2008, ODFW in litt. 2002).

Reser Creek from its confluence with the South Fork Walla Walla River upstream 1.8 km (1.1 mi) provides spawning and rearing habitat (Anglin et al. 2008, ODFW in litt. 2002).

*Husky Spring Creek f*rom its confluence with the South Fork Walla Walla River upstream 2.3 km (1.4 mi) provides spawning and rearing habitat (ODFW in litt. 2002).

Mill Creek from its confluence with the Walla Walla River upstream 41.1 km (25.6 mi) is FMO habitat for adult bull trout, as well as connectivity to the Walla Walla and upper Mill Creek contains 12.8 km (7.9 mi) of spawning and rearing habitat that supports an important bull trout local population (Mendel et al. 2007). Studies indicate that many fluvial bull trout overwinter in lower Mill Creek between the Bennington Lake Dam and the City of Walla Walla Intake Dam, particularly in the section of above Blue Creek (Mendel et al. 2007). Most of the radio-tagged fish were located in the vicinity of the intake dam. Upper Mill Creek (including the tributaries listed) supports a significant bull trout local population. Over 120 redds have been counted annually in Upper Mill Creek and its tributaries from 1998 to 2005, with a high of 220 redds in 2001; redd numbers dropped to below 90 in 2006 and 2007 (Mendel et al. 2007). The total number of redds per kilometer was 5.5 (8.9 per mile) in 1998 and 10.5 (16.9 per mile) in 1999 (Coyle et al. 2000).

Blue Creek from its confluence with Mill Creek upstream 3.9 km (2.4 mi) provides FMO habitat (Mendel et al. 2007).

Henry Canyon from its confluence with Mill Creek upstream 8.5 km (5.3 mi) provides FMO habitat (Mendel et al. 2007).

Low Creek from its confluence with Mill Creek upstream 3.2 km (2.0 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Paradise Creek from its confluence with Mill Creek upstream 3.1 km (1.9 mi) provides spawning and rearing habitat (Mendel et al. 2007).

North Fork Mill Creek from its confluence with Mill Creek upstream 0.8 km (0.5 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Deadman Creek from its confluence with Mill Creek upstream 2.1 km (1.3 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Burnt Fork Creek from its confluence with Mill Creek upstream 0.6 km (0.4 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Green Fork Creek from its confluence with Mill Creek upstream 1.2 km (0.7 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Bull Creek from its confluence with Mill Creek upstream 0.7 km (0.4 mi) provides spawning and rearing habitat (Mendel et al. 2007).

Yellowhawk Creek from its confluence with the Walla Walla River upstream 13.7 km (8.5 mi) to its confluence with Mill Creek provides foraging and overwintering habitat for adult bull trout as well as connectivity to the Walla Walla River. (Mendel et al. 2007).

Table 45. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Walla Walla River Basin–Walla Walla River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Walla Walla River	Blue Creek	WA	Blue Creek from its confluence with Mill Creek upstream 3.9 km (2.4 mi) provides FMO habitat (Mendel et al. 2007).	See CHU text	1181536 460611
Walla Walla River Basin–Walla Walla River	Bull Creek	WA	Bull Creek from its confluence with Mill Creek upstream 0.7 km (0.4 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1179465 460292
Walla Walla River Basin–Walla Walla River	Burnt Fork Creek	WA	Burnt Fork Creek from its confluence with Mill Creek upstream 0.6 km (0.4 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1179523 460319
Walla Walla River Basin–Walla Walla River	Couse Creek	OR	Couse Creek from the confluence of the Walla Walla River upstream 9.2 km (5.7 mi) is overwintering habitat and an important migratory connection to essential FMO habitat in the Columbia River.	See CHU text	1183707 459103
Walla Walla River Basin–Walla Walla River	Deadman Creek	WA	Deadman Creek from its confluence with Mill Creek upstream 2.1 km (1.3 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1179550 460323
Walla Walla River Basin–Walla Walla River	Green Fork Creek	WA	Green Fork Creek from its confluence with Mill Creek upstream 1.2 km (0.7 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1179484 460292
Walla Walla River Basin–Walla Walla River	Henry Canyon	OR	Henry Canyon from its confluence with Mill Creek upstream 8.5 km (5.3 mi) provides FMO habitat (Mendel et al. 2007).	See CHU text	1180905 459884
Walla Walla River Basin–Walla Walla River	Husky Spring Creek	OR	Husky Spring Creek from its confluence with the South Fork Walla Walla River upstream 2.3 km (1.4 mi) provides spawning and rearing habitat (ODFW in litt. 2002).	See CHU text	1179783 458836
Walla Walla River Basin–Walla Walla River	Low Creek	OR	Low Creek from its confluence with Mill Creek upstream 3.2 km (2.0 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1180361 459926

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Walla Walla River	Mill Creek	OR	Mill Creek from its confluence with the Walla Walla River upstream 41.1 km (25.6 mi) is FMO habitat for adult bull trout, as well as connectivity to the Walla Walla and upper Mill Creek contains 12.8 km (7.9 mi) of spawning and rearing habitat that supports an important bull trout local population (Mendel et al. 2007). Studies indicate that many fluvial bull trout overwinter in lower Mill Creek between the Bennington Lake Dam and the City of Walla Walla Intake Dam, particularly in the section of above Blue Creek (Mendel et al. 2007). Most of the radio-tagged fish were located in the vicinity of the intake dam. Upper Mill Creek (including the tributaries listed) supports a significant bull trout local population. Over 120 redds have been counted annually in Upper Mill Creek and its tributaries from 1998 to 2005, with a high of 220 redds in 2001; redd numbers dropped to below 90 in 2006 and 2007 (Mendel et al. 2007). The total number of redds per kilometer was 5.5 (8.9 per mile) in 1998 and 10.5 (16.9 per mile) in 1999 (Coyle et al. 2000).	See CHU text	1184778 460386
Walla Walla River Basin–Walla Walla River	North Fork Mill Creek	WA	North Fork Mill Creek from its confluence with Mill Creek upstream 0.8 km (0.5 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1179955 460215
Walla Walla River Basin–Walla Walla River	North Fork Walla Walla River	OR	North Fork Walla Walla River from its confluence with the South Fork Walla Walla River upstream 19 km (11.8 mi) is used as FMO habitat. Bull trout subadults and juveniles have been observed in the lower North Fork, and a 2001-2004 radio telemetry study detected multiple adults in lower and middle sections of the North Fork from December through May (Mahoney et al. 2006, pg 102).	See CHU text	1183076 458986
Walla Walla River Basin–Walla Walla River	Paradise Creek	OR	Paradise Creek from its confluence with Mill Creek upstream 3.1 km (1.9 mi) provides spawning and rearing habitat (Mendel et al. 2007).	See CHU text	1180179 460044
Walla Walla River Basin–Walla Walla River	Reser Creek	OR	Reser Creek from its confluence with the South Fork Walla Walla River upstream 1.8 km (1.1 mi) provides spawning and rearing habitat (Anglin et al. 2008, ODFW in litt. 2002).	See CHU text	1179856 458763

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Walla Walla River	Skiphorton Creek	OR	Skiphorton Creek from its confluence with the South Fork Walla Walla River upstream 2.6 km (1.6 mi) provides spawning and rearing habitat (Anglin et al. 2008, ODFW in litt. 2002).	See CHU text	1180253 458517
Walla Walla River Basin–Walla Walla River	South Fork Walla Walla River	OR	South Fork Walla Walla River and its tributaries from its confluence with the North Fork upstream 40.4 km (mi 25.1) includes 5.8 km (3.6 mi) of FMO habitat and 41.2 km (25.6 mi) of spawning and rearing habitat. The South Fork Walla Walla River and its tributaries (listed below) constitute a major bull trout stronghold (Al-Chokhachy and Budy 2008, Anglin et al. 2008, Mahoney et al. 2006). Well over 100 bull trout redds have been observed annually in spawning surveys conducted since 1994, and over 300 redds have been detected annually since 1999 (ODFW in litt. 2002).	See CHU text	1183076 458985

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Walla Walla River	Walla Walla River	OR / WA	Walla Walla River from its confluence with the Columbia River upstream 81.2 km (50.5 mi) to the South Fork/North Fork confluence is overwintering habitat, and an important migratory connection to essential FMO habitat in the Columbia River. Information is limited on bull trout use of the lower river downstream of the Burlingame Diversion Dam, however, tagged fish have been observed moving downstream past the Oasis Road Bridge to the Columbia River (Anglin et al. 2008) and the reach is an important migratory connection to the Columbia River and the Touchet River. The greatest concentration of overwintering bull trout are in the mainstem Walla Walla River between Burlingame Diversion Dam and Cemetery Bridge. A radio telemetry study found many fluvial bull trout overwintering in the upper end of this reach, between the Oregon/ Washington state line and Cemetery Bridge (Mahoney et al. 2006). Large irrigation diversions just above Cemetery Bridge (i.e., the Eastside and Little Walla Walla River diversions) greatly reduce stream flows in this reach during the irrigation season (April to October), which may influence downstream fish movements. It is essential to maintain a migratory corridor down to the confluence with Mill Creek to allow for genetic interchange between the Mill Creek and Upper Walla Walla local populations. The Walla Walla River from Cemetery Bridge upstream to the North Fork/South Fork confluence provides year-round subadult rearing habitat and adult overwintering habitat. This reach is heavily used by fluvial bull trout that spawn in the South Fork Walla Walla River (Mahoney et al. 2006).	See CHU text	1189393 460624
Walla Walla River Basin–Walla Walla River	Yellowhawk Creek	WA	Yellowhawk Creek from its confluence with the Walla Walla River upstream 13.7 km (8.5 mi) to its confluence with Mill Creek provides foraging and overwintering habitat for adult bull trout as well as connectivity to the Walla Walla River. (Mendel et al. 2007).	See CHU text	1183998 460169

14.2. Touchet River Critical Habitat Subunit

The Touchet River CHSU is essential to the conservation of bull trout because it contains stream habitats representative of the Blue Mountains and, because of its large size and varied terrain, the basin encompasses a wide variety of habitat conditions. Losing this population would greatly reduce the potential for connectivity between populations in the Snake and Columbia Rivers (see Appendix 1 for more detailed information).

The Touchet River is a tributary of the Walla Walla River in southeastern Washington within Columbia and Walla Walla counties. This CHSU supports three bull trout local populations in the Touchet River Basin.

The following water bodies are included in this CHSU (Table 46).

Touchet River from its confluence with the Walla Walla River upstream 78.9 km (49.0 mi) to the confluence with Coppei Creek is unoccupied potential FMO habitat and provides connectivity to FMO habitat in the Walla Walla and Columbia Rivers. The Touchet River from its confluence with Coppei Creek upstream 21.2 km (13.2 mi) to the North Fork/South Fork confluence currently provides important foraging and overwintering habitat for fluvial bull trout that spawn upstream and serves as a migratory corridor to the lower Walla Walla River and Columbia River. Adult and sub-adult bull trout have been captured annually at the steelhead adult trap in Dayton. Trap counts were 20 or more bull trout per year through 2008, with 110 captured in the new fish trap in 2009. Fluvial bull trout are presumed to overwinter downstream of Dayton, but their abundance, distribution and use patterns in this reach have not been determined. Glen Mendel reported that a pit tag from a Touchet River bull trout was identified in the Columbia River in 2009. Data is limited on bull trout use of the lower Touchet River. In 2008, a fish ladder was installed at Hofer Dam, which is expected to greatly improve conditions for upstream fish movement from the lower Walla Walla River up into the Touchet River.

North Fork Touchet River from its confluence with the South Fork Touchet River upstream 32.1 km (19.9 mi) to its headwaters is critical habitat. The lower 24.0 km (14.9 mi) of the North Fork is utilized by bull trout for foraging and overwintering, and it provides connectivity to the South Fork and the mainstem Touchet River. The upper North Fork Touchet River from Spangler Creek upstream 8.1 km (5.0 mi) to its headwaters provides spawning and rearing habitat. Bull trout spawn in the North Fork Touchet River from Bluewood Creek downstream to Spangler Creek**.** From 1984 through 2001, over 40 redds per year were found in this area (Mendel et al. 2007, pg 78). However, redd numbers have been declining since 2001, with only 15 observed in 2005 and 9 in 2006 (Mendel et al. 2007, pg 78). Rearing of adults, subadults, and age 1+ juveniles occurs in the North Fork from Spangler Creek down to the Wolf Fork confluence. WDFW found bull trout in 59 of 104 sites surveyed from 1998 to 2006, with multiple age classes detected at many of the sites (Mendel et al. 2007).

Lewis Creek from its confluence with the North Fork Touchet River upstream 8.0 km (4.9 mi) is utilized as rearing habitat, but a few redds have been documented in the past. WDFW found bull trout in 16 of 47 sites electrofished from 1998 to 2006 and multiple age classes were observed (Mendel et al. 2007).

Spangler Creek from its confluence with the North Fork Touchet River upstream 6.6 km (4.1 mi) provides spawning and rearing habitat (Mendel et al. 2007, pg 78). Some bull trout spawning has been documented in Spangler Creek and bull trout were detected at 11 of 17 sites electrofished by WDFW from 1998 to 2006 (Mendel et al. 2007).

Corral Creek from its confluence with the North Fork Touchet River upstream 0.5 km (0.31 mi) provides spawning and rearing habitat (Mendel et al. 2007, pg 78). Young of year bull trout were found in lower Corral Creek during WDFW electrofishing surveys in 2005.

Wolf Fork Touchet River includes 12.4 km (7.7 mi) of FMO habitat and 13.5 km (8.4 mi) of spawning and rearing habitat. The Wolf Fork Touchet River supports the largest local population in the Touchet River Basin. The lower Wolf Fork Touchet River, downstream of Whitney Creek, is utilized by bull trout for foraging and overwintering and provides connectivity to the North Fork and mainstem Touchet River. The current known spawning distribution in the Wolf Fork Touchet River is from Whitney Creek 2.4 km (1.5 mi) upstream of the Forest Service boundary (about 8.8 km / 5.5 mi). From 1994 to 2002, an average of 63 redds per year were found in this area, with a high of 93 redds in 1999 (Mendel et al. 2003). In 2005, 57 redds were found (Mendel, Trump, and Gembala 2006, pg 52), 37 redds were found in 2006, and 38 redds were found in 2007 (Mendel et al. 2007). WDFW detected bull trout at 56 of 82 electrofishing sites sampled from 1998 to 2006, with multiple age classes observed in upper reach areas (Mendel et al. 2007).

Green Fly Canyon from its confluence with Wolf Fork upstream 0.33 km (0.2 mi) provides spawning and rearing habitat (Mendel et al. 2007). Lower Green Fly Creek has multiple age classes of bull trout based on one-pass electrofishing by WDFW (Mendel et al. 2007).

South Fork Touchet River from the confluence with the Walla Walla River upstream 25.8 km (16.0 mi) is FMO habitat and 4.4 km (2.7 mi) of spawning and rearing habitat in the upper reaches. The South Fork Touchet River supports a small local population with spawning occurring in Burnt Fork. WDFW detected bull trout at 3 of 67 sites electrofished on the South Fork from 1998 to 2006 (Mendel et al. 2007). The South Fork Touchet River and Griffin Fork are utilized by fluvial bull trout for foraging and overwintering. A bull trout local population was identified in the Burnt Fork of the South Fork Touchet River in 2000, as evidenced by the presence of three age classes and four redds (Mendel et al. 2007). The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) purchased a large ranch on the South Fork Touchet River (now called the Rainwater Wildlife Area) in 1998, and have taken steps to improve in-stream habitat and acquire additional lands. This area serves as a wildlife mitigation area and is managed for fish and wildlife resources.

Griffin Fork from its confluence with the South Fork Touchet River upstream 0.7 km (0.4 mi) provides FMO habitat. Bull trout have been documented in Griffin Fork by CTUIR personnel, although no redds have been found in this tributary (Mendel et al. 2007, pg 55).

Burnt Fork from its confluence with the South Fork Touchet River upstream 4.4 km (2.7 mi) provides spawning and rearing habitat. Sixteen redds were found in the Burnt Fork in 2001, but only two redds were detected in 2002 (Mendel et al. 2003). Two redds were observed in Burnt Fork in 2005 (Mendel, Trump, and Gembala 2006, pg 56), and in 2008 six live bull trout were observed in the South Fork Touchet River just below Burnt Fork.

Table 46. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Walla Walla River Basin–Touchet River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Touchet River	Burnt Fork	WA	Burnt Fork from its confluence with the South Fork Touchet River upstream 4.4 km (2.7 mi) provides spawning and rearing habitat. Sixteen redds were found in the Burnt Fork in 2001, but only two redds were detected in 2002 (Mendel et al. 2003). Two redds were observed in Burnt Fork in 2005 (Mendel, Trump, and Gembala 2006, pg 56), and in 2008 six live bull trout were observed in the South Fork Touchet River just below Burnt Fork.	See CHU text	1179853 461054
Walla Walla River Basin–Touchet River	Corral Creek	WA	Corral Creek from its confluence with the North Fork Touchet River upstream 0.5 km (0.31 mi) provides spawning and rearing habitat (Mendel et al. 2007, pg 78). Young of year bull trout were found in lower Corral Creek during WDFW electrofishing surveys in 2005.	See CHU text	1179588 463015
Walla Walla River Basin–Touchet River	Green Fly Canyon	WA	Green Fly Canyon from its confluence with Wolf Fork upstream 0.33 km (0.2 mi) provides spawning and rearing habitat (Mendel et al. 2007). Lower Green Fly Creek has multiple age classes of bull trout based on one-pass electrofishing by WDFW (Mendel et al. 2007).	See CHU text	1178750 461426
Walla Walla River Basin–Touchet River	Griffin Fork	WA	Griffin Fork from its confluence with the South Fork Touchet River upstream 0.7 km (0.4 mi) provides FMO habitat. Bull trout have been documented in Griffin Fork by CTUIR personnel, although no redds have been found in this tributary (Mendel et al. 2007, pg 55).	See CHU text	1179735 461208
Walla Walla River Basin–Touchet River	Lewis Creek	WA	Lewis Creek from its confluence with the North Fork Touchet River upstream 8.0 km (4.9 mi) is utilized as rearing habitat, but a few redds have been documented in the past. WDFW found bull trout in 16 of 47 sites electrofished from 1998 to 2006 and multiple age classes were observed (Mendel et al. 2007).	See CHU text	1178236 461906

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Touchet River	North Fork Touchet River	WA	North Fork Touchet River from its confluence with the South Fork Touchet River upstream 32.1 km (19.9 mi) to its headwaters is critical habitat. The lower 24.0 km (14.9 mi) of the North Fork is utilized by bull trout for foraging and overwintering, and it provides connectivity to the South Fork and the mainstem Touchet River. The upper North Fork Touchet River from Spangler Creek upstream 8.1 km (5.0 mi) to its headwaters provides spawning and rearing habitat. Bull trout spawn in the North Fork Touchet River from Bluewood Creek downstream to Spangler Creek. From 1984 through 2001, over 40 redds per year were found in this area (Mendel et al. 2007, pg 78). However, redd numbers have been declining since 2001, with only 15 observed in 2005 and 9 in 2006 (Mendel et al. 2007, pg 78). Rearing of adults, subadults, and age 1+ juveniles occurs in the North Fork from Spangler Creek down to the Wolf Fork confluence. WDFW found bull trout in 59 of 104 sites surveyed from 1998 to 2006, with multiple age classes detected at many of the sites (Mendel et al. 2007).	See CHU text	1179588 463015
Walla Walla River Basin–Touchet River	South Fork Touchet River	WA	South Fork Touchet River from the confluence with the Walla Walla River upstream 25.8 km (16.0 mi) is FMO habitat and 4.4 km (2.7 mi) of spawning and rearing habitat in the upper reaches. The South Fork Touchet River supports a small local population with spawning occurring in Burnt Fork. WDFW detected bull trout at 3 of 67 sites electrofished on the South Fork from 1998 to 2006 (Mendel et al. 2007). The South Fork Touchet River and Griffin Fork are utilized by fluvial bull trout for foraging and overwintering. A bull trout local population was identified in the Burnt Fork of the South Fork Touchet River in 2000, as evidenced by the presence of three age classes and four redds. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) purchased a large ranch on the South Fork Touchet River (now called the Rainwater Wildlife Area) in 1998, and have taken steps to improve in-stream habitat and acquire additional lands. This area serves as a wildlife mitigation area and is managed for fish and wildlife resources.	See CHU text	1179588 463025

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Touchet River	Spangler Creek	WA	Spangler Creek from its confluence with the North Fork Touchet River upstream 6.6 km (4.1 mi) provides spawning and rearing habitat (Mendel et al. 2007, pg 78). Some bull trout spawning has been documented in Spangler Creek and bull trout were detected at 11 of 17 sites electrofished by WDFW from 1998 to 2006 (Mendel et al. 2007).	See CHU text	1178063 461487
Walla Walla River Basin–Touchet River	Touchet River	WA	Touchet River from its confluence with the Walla Walla River upstream 78.9 km (49.0 mi) to the confluence with Coppei Creek is unoccupied potential FMO habitat and provides connectivity to FMO habitat in the Walla Walla and Columbia Rivers. The Touchet River from its confluence with Coppei Creek upstream 21.2 km (13.2 mi) to the North Fork/South Fork confluence currently provides important foraging and overwintering habitat for fluvial bull trout that spawn upstream and serves as a migratory corridor to the lower Walla Walla River and Columbia River. Adult and sub-adult bull trout have been captured annually at the steelhead adult trap in Dayton. Trap counts were 20 or more bull trout per year through 2008, with 110 captured in the new fish trap in 2009. Fluvial bull trout are presumed to overwinter downstream of Dayton, but their abundance, distribution and use patterns in this reach have not been determined. Glen Mendel reported that a pit tag from a Touchet River bull trout was identified in the Columbia River in 2009. Data is limited on bull trout use of the lower Touchet River. In 2008, a fish ladder was installed at Hofer Dam, which is expected to greatly improve conditions for upstream fish movement from the lower Walla Walla River up into the Touchet River.	See CHU text	1186823 460337

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Walla Walla River Basin–Touchet River	Wolf Fork Touchet River	WA	Wolf Fork Touchet River includes 12.4 km (7.7 mi) of FMO habitat and 13.5 km (8.4 mi) of spawning and rearing habitat. The Wolf Fork Touchet River supports the largest local population in the Touchet River Basin. The lower Wolf Fork Touchet River, downstream of Whitney Creek, is utilized by bull trout for foraging and overwintering and provides connectivity to the North Fork and mainstem Touchet River. The current known spawning distribution in the Wolf Fork Touchet River is from Whitney Creek 2.4 km (1.5 mi) upstream of the Forest Service boundary (about 8.8 km / 5.5 mi). From 1994 to 2002, an average of 63 redds per year were found in this area, with a high of 93 redds in 1999 (Mendel et al. 2003). In 2005, 57 redds were found (Mendel, Trump, Gembala, et al. 2006, pg 52), 37 redds were found in 2006, and 38 redds were found in 2007 (Mendel et al. 2007). WDFW detected bull trout at 56 of 82 electrofishing sites sampled from 1998 to 2006, with multiple age classes observed in upper reach areas (Mendel et al. 2007).	See CHU text	1178953 462742

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 15. Mid-Columbia Recovery Unit—Lower Snake River Critical Habitat Unit

Chapter 15. Lower Snake River Critical Habitat Unit

The Lower Snake River CHU is essential to the conservation of bull trout because both fluvial and resident bull trout life history forms occur in the Asotin and Tucannon Rivers, and these basins are the only suitable bull trout refugia with adequate spawning and rearing and FMO habitat in the lower Snake River basin. The Tucannon and Asotin Basins are fairly isolated from other bull trout populations. Bull trout persistence in these basins is important for maintaining connectivity between populations in the upper Snake River basin and the Columbia River. While some habitat within the core area is highly suitable for bull trout, other habitat is less suitable and may prove marginal given habitat degradation and impending climate change. The Tucannon River and Asotin Creek are separated from one another by 132 km (82 mi) of the Snake River and two dams, so connectivity between the populations in these basins is somewhat limited. However, habitat connectivity is better between Asotin Creek and the Grande Ronde River, and there is only one Snake River dam between the Tucannon and Columbia Rivers. Losing either of these populations would greatly reduce the potential for connectivity between populations in the middle/upper Snake River and the Columbia River. Also, there are no major dams on either of these streams, increasing the potential to recover fluvial populations that connect to the Snake River. Bull trout have been extirpated from a large portion of their previous habitat in the lower Snake River basin. The Tucannon and Asotin populations are important to maintaining bull trout in the lower Snake River and bolstering population connectivity between the Snake and Columbia Rivers. Within these basins, all suitable habitat is essential to population persistence given the limited amount of habitat, particularly in the Asotin Creek Basin (see Appendix 1 for more detailed information).

The Lower Snake River Basin CHU is located in southeast Washington and contains two Critical Habitat Sub Units (CHSUs): (1) Tucannon River basin CHSU located in Columbia and Garfield Counties and (2) Asotin Creek basin CHSU within Garfield and Asotin Counties. This CHU is part of the Middle Columbia River Recovery Unit and contains at least 6 local populations. The Tucannon and Asotin populations are important to maintaining bull trout in the lower Snake River and bolstering population connectivity between the Snake River and the Columbia River. Within these basins, all suitable habitats are essential to population persistence given the limited amount of habitat, particularly in the Asotin Creek Basin.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* – Both fluvial and resident bull trout life-history forms occur in the Asotin and Tucannon river basins. These basins are the only suitable bull trout refugia in the lower Snake River Basin. Fish passage actions over the next decade are expected to improve conditions for maintaining and enhancing the fluvial populations in these basins.

2. *Conserve opportunity for genetic diversity* – Recent genetic analyses indicate that there are at least five local populations in the Tucannon River Basin (DeHaan, Ardren, and Mendel 2007). The Tucannon and Asotin basins are fairly isolated from other bull trout populations.

3. *Ensure bull trout are distributed across representative habitats* – Asotin Creek and the Tucannon River provide the only suitable spawning habitat for bull trout in the lower Snake River Basin. The persistence of bull trout in these basins is important for maintaining connectivity between populations in the Upper Snake River Basin and the Columbia River.

While some habitat within the core area is highly suitable for bull trout other habitats are less suitable and may prove marginal given habitat degradation and impending climate change.

4. *Ensure sufficient connectivity among populations* – The Tucannon River and Asotin Creek are separated from one another by 82 miles of the Snake River and two dams, so connectivity between the populations in these basins is somewhat limited. However, habitat connectivity is better between Asotin Creek and the Grande Ronde River, and there is only one Snake River dam between the Tucannon River and the Columbia River. The loss of either of these populations would greatly reduce the potential for connectivity between populations in the middle/upper Snake River and the Columbia River.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* – Substantial amounts of suitable habitat are present in the upper Tucannon River and its tributaries and opportunities exist to restore the lower river to improve foraging, migrating and overwintering habitat. Habitat is more limited in Asotin Creek, however, there is potential for recovery as the upper tributaries continue to recover from past heavy logging and grazing.

6. *Consider threats (e.g., climate change)* – Asotin Creek could be vulnerable to the affects of climate change given the limited amount of suitable habitat and its relatively low elevation. The Tucannon River should be more resilient to climate change given its larger and higher elevation watershed. Also, there are no major dams on either of these streams, increasing the potential to recover fluvial populations that connect to the Snake River.

7. *Ensure sufficient redundancy in conserving population units* – Bull trout have been extirpated from a large portion of their previous habitat in the lower Snake River Basin. The Tucannon and Asotin populations are important to maintaining bull trout in the lower Snake River and bolstering population connectivity between the Snake River and the Columbia River. Within these basins, all suitable habitats are essential to population persistence given the limited amount of habitat, particularly in the Asotin Creek Basin.

15.1. Tucannon River Critical Habitat Subunit

The Tucannon River CHSU is essential to the conservation of bull trout because both fluvial and resident bull trout life-history forms occur in the CHSU, and along with Asotin Creek, this CHSU is the only suitable bull trout refugium with adequate spawning and rearing and FMO habitat in the lower Snake River basin. The Tucannon Basin is fairly isolated from other bull trout populations. Bull trout persistence in this CHSU is important for maintaining connectivity between populations in the upper Snake River basin and the Columbia River (see Appendix 1 for more detailed information).

The Tucannon River is a tributary to the Snake River located in Columbia and Garfield Counties, Washington. Recent genetic analyses indicate that there are at least 5 local populations in the Tucannon River Basin. Recent genetic analyses indicate that there are at least 5 local populations in the Tucannon River Basin (DeHaan, Ardren, and Mendel 2007). There is a sizeable amount of occupied bull trout habitat in the Tucannon River Basin, and surveys through the early 1990s and early 2000s indicated a large population. However, surveys suggest the population has been in a pronounced decline over the last several years. Redd numbers in the upper Tucannon River have dropped from over 100 in 2002 and 2003, to less than 20 in 2007 (Mendel et al. 2008). Furthermore, the number of adult migratory bull trout captured moving upstream (at the Tucannon Hatchery trap) to spawning streams were down significantly with only 52 fish captured in 2007, as compared to 261 and 283 in 2003 and 2004, respectively (Mendel in litt. 2008). Many of the bull trout observed at the trap were also in poor health with new or recent injuries (cuts and scrapes) around their head and gills.

In 2007, the total redds observed for the upper Tucannon River and Bear Creek was the lowest documented since redd surveys began in 1990 (Mendel et al. 2008). In 2007, 13 redds were documented in the upper Tucannon River, the long-term average for this area is 57 redds. In 2007, only 4 redds were documented in Bear Creek. Within Bear Creek, redd surveys have not been completed consistently over the years. However, 5 years of redd data between the years of 1999 and 2005, documented an average of 41 redds for the same reach as surveyed in 2007. Redd survey data for the Panjab and Meadow Creek basin also indicate a declining trend with only 6 redds observed in 2007. Like Bear Creek, redd surveys have not been done consistently over the years in the Panjab and Meadow Creek basin, but in general, surveys documented from 11 to 49 redds in similarly surveyed reaches in most years between 1999 and 2005 (Mendel et al. 2008).

The following water bodies are included in this CHSU (see Table 47).

Tucannon River mainstem includes the lower 71 km (44 mi), which is primarily FMO bull trout habitat. The upper 22.9 km (14.2 mi) from Cow Camp Bridge to the uppermost headwaters of the Tucannon River above Bear Creek serves primarily as spawning, rearing, and foraging habitat. This area includes the Tucannon River from its confluence with the Snake River upstream to a waterfall below Buckley Ridge located approximately 4.8 km (3 mi) above the mouth of Bear Creek. Bull trout occur either seasonally or year around in mainstem habitats along of the Tucannon River. Bull trout spawn in tributaries to the Tucannon river, but most spawning takes place in a 13.2 km (8.2 mi) reach of the mainstem between Panjab Creek and Bear Creek (USFS in litt. 2001a). From 1994 to 2007, redd counts in the mainstem Tucannon River above Panjab Creek have ranged from 13 to 99 (Mendel et al. 2008). The lower 8.6 km (5.5 mi) of this reach between Panjab Creek and Bear Creek is in the Wenaha-Tucannon Wilderness area. The upper 4.3 kilometers (2.7 miles) of this river reach lies outside of the Wilderness area. Resident, fluvial, and adfluvial bull trout life history forms are believed to be present in the Tucannon River (Martin et al. 1992; Underwood et al. 1995; WDFW 1997). The lower Tucannon River is an important migratory corridor to spawning areas upstream in the watershed. Each spring, between 20 and 40 adult bull trout up to 650 mm (25.6 in) in length enter the Tucannon River anadromous fish trap and are released upstream of the facility (G. Mendel, pers. comm., 2002). Movement of bull trout upstream into the trap coincides with the movements of spring chinook from the Snake River. The largest bull trout caught in the trap in the spring of 2002 was 559 mm (22 in) in length; these bull trout are believed to be migrating into the Tucannon River from the Snake River to prepare for spawning in upper reaches of the Tucannon River and its tributaries in the September and October (G. Mendel, pers. comm. 2002; Underwood et al. 1995).

Cummings Creek from its confluence with the Tucannon River upstream 15.4 km (9.6 mi) provides FMO habitat. Lower sections of the creek provide FMO habitat, while the uppermost 5 km (3.1 mi) supports spawning and rearing habitat. Cummings Creek is the most downstream of all Tucannon River tributaries containing bull trout (WDFW 1997). WDFW biologists documented bull trout in Cummings Creek in 1991, approximately 9.7 km (6 mi) upstream from the confluence with the Tucannon River (WDFW 1997). The USFS (in litt. 1992c) observed 142 juvenile bull trout during snorkel surveys in Cummings Creek in June and July, 1992. The USFS observed bull trout in Cummings Creek from river kilometer 0 up to river kilometer 10.9 (river mile 0 up to 6.8) during these surveys. From 2004 to 2006, WDFW conducted electrofishing surveys at 31 sites on Cummings Creek and found bull trout at 10 sites.

Hixon Creek from its confluence with the Tucannon River upstream approximately 1.3 km (0.8 mi) provides FMO habitat. The Snake River Washington Bull Trout Recovery Unit Team (Service 2002a) identified Hixon Creek as a potential contributor to bull trout population recovery goals for the Tucannon River. Hixon Creek is a small tributary to the Tucannon River and is entirely within the Umatilla National Forest except for the lower 0.4 km (0.25 mi) which is on State Land owned by WDFW. Sub-adult bull trout were sampled in Hixon Creek in the late 1980's by WDFW biologists. Bull trout spawning has not been observed.

Little Tucannon River from its confluence with the Tucannon River upstream approximately 4 km (2.5 mi) provides FMO habitat. The USFS (in litt. 1992d) observed one bull trout in the upper Little Tucannon River during fish surveys (snorkeling) in 1992. In addition to the bull trout, more than 160 rainbow trout/steelhead were also observed in two reaches of the Little Tucannon River covering 12.3 stream kilometers (3.75 stream miles) in 1992 (USFS in litt. 1992d). A biologist at the USFS Pomeroy Ranger District caught bull trout with hook and line in the Little Tucannon River in the 1970's (D. Groat, pers. comm., 2002).

Panjab Creek from its confluence with the Tucannon River upstream 12 km (7.5 mi) to Oregon Butte Spring provides spawning and rearing habitat (USFS in litt. 2002a). A high of 19 bull trout redds were observed in Panjab Creek in 2004 (Mendel et al. 2008) and a low of 0 redds in 1998 (USFS in litt. 2002a). Bull trout were documented in 3 of 4 sites electrofished by WDFW in 2006 (Mendel et al. 2008). The WDFW considers Panjab Creek an index stream for bull trout redd surveys.

> *Meadow Creek* from its confluence with Panjab Creek upstream 10.5 km (6.5 mi) to Godman Spring provides spawning and rearing habitat. The highest redd count occurred in 1999, when 25 redds were observed in lower 7.4 km (4.6 mi) of Meadow Creek (USFS in litt. 2002a). The USFS (in litt. 1992e) observed 38 bull trout larger than 150 millimeters (6 inches) and 10 juvenile bull trout during snorkeling surveys in July and August 1992. Bull trout were documented in 5 of 6 electrofishing sites sampled by WDFW in 2006 (Mendel et al. 2008).
>
>> Little Turkey Creek from its confluence with Meadow Creek upstream 4.9 km (3.1 mi) to its headwaters provides spawning and rearing habitat. The WDFW conducted bull trout redd counts for the first time in Little Turkey Creek in 1999. Eight bull trout redds were identified that year (Mendel et al. 2008); the survey covered first 3.4 miles of Little Turkey Creek up to the point where the stream forks into two smaller streams of equal size (USFS in litt. 2002a). WDFW conducted electrofishing surveys at two sites in lower Little Turkey Creek in 2006 and documented bull trout at both sites (Mendel et al. 2008).
>
> *Turkey Creek* from its confluence with Panjab Creek upstream 6.2 km (3.9 mi) to Hatfield Spring provides spawning and rearing habitat. Bull trout spawn, and likely rear, in Turkey Creek. The WDFW conducted a single pass bull trout spawning survey in Turkey Creek for the first time on October 6, 1999; eight bull trout redds were observed (Mendel et al. 2008). During snorkel surveys, the USFS observed 29 bull trout in Turkey Creek, 14 juveniles less than 152 millimeters (6 inches) in length and 15 sub-adults/adults

greater than 152 millimeters, in 1992 (USFS in litt. 1992g). The USFS observed these fish in the first survey reach from the mouth of Turkey Creek upstream 3 river kilometers (1.9 river miles) during snorkeling surveys (USFS 1992g).

Cold Creek from its confluence with the Tucannon River upstream 1.9 km (1.2 mi) provides spawning and rearing habitat. Four bull trout were observed by USFS snorkelers in the first 2 km (1.3 mi) of Cold Creek in 1992 (USFS in litt. 1992b). A water fall 3 meters (10 feet) in height was noted by the USFS which appeared to be a migration barrier (USFS in litt. 1992b). The WDFW conducted a single pass redd survey in Cold Creek for the first time in 1999. The survey extended from the confluence of Cold Creek with the Tucannon River upstream for 1.3 km (0.8 mi); two bull trout redds were observed (USFS in litt. 2002a).

Sheep Creek from its confluence with the Tucannon River upstream 0.5 km (0.8 mi) to where a 7.5 m (25 ft) waterfall blocks upstream fish passage provides spawning and rearing habitat. Bull trout and rainbow trout/steelhead were observed in Sheep Creek in 1992 during snorkeling surveys by the USFS (USFS in litt. 1992f). The WDFW conducted bull trout redd counts in Sheep Creek for the first time in 1999; surveyors observed two bull trout redds between the mouth and a permanent waterfall barrier 0.8 kilometers (0.5miles) upstream.

Bear Creek from its confluence with the Tucannon River upstream 7.4 km (4.6 mi) provides spawning and rearing habitat. The lower 4.8 km (3.0 mi) of Bear Creek provides spawning and rearing habitat for fluvial bull trout, while the upper section lies upstream of a 3 m (10 ft) waterfall and thus supports only resident fish. Bear Creek is the uppermost Tucannon River tributary containing bull trout. The number of redds documented from various survey efforts from 1994-2007 varied from 4 to 51 per year (Mendel et al. 2008). Also, 9 sites were sampled with one-pass electrofishing in 2006 and bull trout were present in all but the uppermost site (Mendel et al. 2008). The WDFW considers Bear Creek an index stream for bull trout redd counts. The USFS reports that historically, unusually large fluvial or adfluvial bull trout were found in Bear Creek which drew recreational fisherman (USFS in litt 1992a). Bull trout were the most common salmonid observed by the USFS during 1992 snorkeling surveys in Bear Creek (USFS in litt. 1992a).

Table 47. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Snake River Basins–Tucannon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Tucannon River	Bear Creek	WA	Bear Creek from its confluence with the Tucannon River upstream 7.4 km (4.6 mi) provides spawning and rearing habitat. The lower 4.8 km (3.0 mi) of Bear Creek provides spawning and rearing habitat for fluvial bull trout, while the upper section lies upstream of a 3 m (10 ft) waterfall and thus supports only resident fish. Bear Creek is the uppermost Tucannon River tributary containing bull trout. The number of redds documented from various survey efforts from 1994-2007 varied from 4 to 51 per year (Mendel et al. 2008). Also, 9 sites were sampled with one-pass electrofishing in 2006 and bull trout were present in all but the uppermost site (Mendel et al. 2008). The WDFW considers Bear Creek an index stream for bull trout redd counts. The USFS reports that historically, unusually large fluvial or adfluvial bull trout were found in Bear Creek which drew recreational fisherman (USFS in litt 1992a). Bull trout were the most common salmonid observed by the USFS during 1992 snorkeling surveys in Bear Creek (USFS in litt. 1992a).	See CHU text	1175593 461680
Lower Snake River Basins–Tucannon River	Cold Creek	WA	Cold Creek from its confluence with the Tucannon River upstream 1.9 km (1.2 mi) provides spawning and rearing habitat. Four bull trout were observed by USFS snorkelers in the first 2 km (1.3 mi) of Cold Creek in 1992 (USFS in litt. 1992b). A water fall 3 meters (10 feet) in height was noted by the USFS which appeared to be a migration barrier (USFS in litt. 1992b). The WDFW conducted a single pass redd survey in Cold Creek for the first time in 1999. The survey extended from the confluence of Cold Creek with the Tucannon River upstream for 1.3 km (0.8 mi); two bull trout redds were observed (USFS in litt. 2002a).	See CHU text	1176302 461912

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Tucannon River	Cummings Creek	WA	Cummings Creek from its confluence with the Tucannon River upstream 15.4 km (9.6 mi) provides FMO habitat. Lower sections of the creek provide FMO habitat, while the uppermost 5 km (3.1 mi) supports spawning and rearing habitat. Cummings Creek is the most downstream of all Tucannon River tributaries containing bull trout (WDFW 1997). WDFW biologists documented bull trout in Cummings Creek in 1991, approximately 9.7 km (6 mi) upstream from the confluence with the Tucannon River (WDFW 1997). The USFS (in litt. 1992c) observed 142 juvenile bull trout during snorkel surveys in Cummings Creek in June and July, 1992. The USFS observed bull trout in Cummings Creek from river kilometer 0 up to river kilometer 10.9 (river mile 0 up to 6.8) during these surveys. From 2004 to 2006, WDFW conducted electrofishing surveys at 31 sites on Cummings Creek and found bull trout at 10 sites.	See CHU text	1176742 463327
Lower Snake River Basins–Tucannon River	Hixon Creek	WA	Hixon Creek from its confluence with the Tucannon River upstream approximately 1.3 km (0.8 mi) provides FMO habitat. The Snake River Washington Bull Trout Recovery Unit Team (Service 2002a) identified Hixon Creek as a potential contributor to bull trout population recovery goals for the Tucannon River. Hixon Creek is a small tributary to the Tucannon River and is entirely within the Umatilla National Forest except for the lower 0.4 km (0.25 mi) which is on State Land owned by WDFW. Sub-adult bull trout were sampled in Hixon Creek in the late 1980's by WDFW biologists. Bull trout spawning has not been observed.	See CHU text	1176828 462460
Lower Snake River Basins–Tucannon River	Little Tucannon River	WA	Little Tucannon River from its confluence with the Tucannon River upstream approximately 4 km (2.5 mi) provides FMO habitat. The USFS (in litt. 1992d) observed one bull trout in the upper Little Tucannon River during fish surveys (snorkeling) in 1992. In addition to the bull trout, more than 160 rainbow trout/steelhead were also observed in two reaches of the Little Tucannon River covering 12.3 stream kilometers (3.75 stream miles) in 1992 (USFS in litt. 1992d). A biologist at the USFS Pomeroy Ranger District caught bull trout with hook and line in the Little Tucannon River in the 1970's (D. Groat, pers. comm. 2002).	See CHU text	1177214 462284

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Tucannon River	Little Turkey Creek	WA	Little Turkey Creek from its confluence with Meadow Creek upstream 4.9 km (3.1 mi) to its headwaters provides spawning and rearing habitat. The WDFW conducted bull trout redd counts for the first time in Little Turkey Creek in 1999. Eight bull trout redds were identified that year (Mendel et al. 2008); the survey covered first 3.4 miles of Little Turkey Creek up to the point where the stream forks into two smaller streams of equal size (USFS in litt. 2002a). WDFW conducted electrofishing surveys at two sites in lower Little Turkey Creek in 2006 and documented bull trout at both sites (Mendel et al. 2008).	See CHU text	1177363 461551
Lower Snake River Basins–Tucannon River	Meadow Creek	WA	Meadow Creek from its confluence with Panjab Creek upstream 10.5 km (6.5 mi) to Godman Spring provides spawning and rearing habitat. The highest redd count occurred in 1999, when 25 redds were observed in lower 7.4 km (4.6 mi) of Meadow Creek (USFS in litt. 2002a). The USFS (in litt. 1992e) observed 38 bull trout larger than 150 millimeters (6 inches) and 10 juvenile bull trout during snorkeling surveys in July and August 1992. Bull trout were documented in 5 of 6 electrofishing sites sampled by WDFW in 2006 (Mendel et al. 2008).	See CHU text	1177181 461765
Lower Snake River Basins–Tucannon River	Panjab Creek	WA	Panjab Creek from its confluence with the Tucannon River upstream 12 km (7.5 mi) to Oregon Butte Spring provides spawning and rearing habitat (USFS in litt. 2002a). A high of 19 bull trout redds were observed in Panjab Creek in 2004 (Mendel et al. 2008) and a low of 0 redds in 1998 (USFS in litt. 2002a). Bull trout were documented in 3 of 4 sites electrofished by WDFW in 2006 (Mendel et al. 2008). The WDFW considers Panjab Creek an index stream for bull trout redd surveys.	See CHU text	1177051 462047
Lower Snake River Basins–Tucannon River	Sheep Creek	WA	Sheep Creek from its confluence with the Tucannon River upstream 0.5 km (0.8 mi) to where a 7.5 m (25 ft) waterfall blocks upstream fish passage provides spawning and rearing habitat. Bull trout and rainbow trout/steelhead were observed in Sheep Creek in 1992 during snorkeling surveys by the USFS (USFS in litt. 1992f). The WDFW conducted bull trout redd counts in Sheep Creek for the first time in 1999; surveyors observed two bull trout redds between the mouth and a permanent waterfall barrier 0.8 kilometers (0.5miles) upstream.	See CHU text	1176238 461882

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Tucannon River	Tucannon River	WA	Tucannon River mainstem includes the lower 71 km (44 mi), which is primarily FMO bull trout habitat. The upper 22.9 km (14.2 mi) from Cow Camp Bridge to the uppermost headwaters of the Tucannon River above Bear Creek serves primarily as spawning, rearing, and foraging habitat. This area includes the Tucannon River from its confluence with the Snake River upstream to a waterfall below Buckley Ridge located approximately 4.8 km (3 mi) above the mouth of Bear Creek. Bull trout occur either seasonally or year around in mainstem habitats along of the Tucannon River. Bull trout spawn in tributaries to the Tucannon river, but most spawning takes place in a 13.2 km (8.2 mi) reach of the mainstem between Panjab Creek and Bear Creek (USFS in litt. 2002a). From 1994-2007, redd counts in the mainstem Tucannon River above Panjab Creek have ranged from 13 to 99 (Mendel et al. 2008). The lower 8.6 km (5.5 mi) of this reach between Panjab Creek and Bear Creek is in the Wenaha-Tucannon Wilderness area. The upper 4.3 kilometers (2.7 miles) of this river reach lies outside of the Wilderness area. Resident, fluvial, and adfluvial bull trout life history forms are believed to be present in the Tucannon River (Martin et al. 1992; Underwood et al. 1995; WDFW 1997). The lower Tucannon River is an important migratory corridor to spawning areas upstream in the watershed. Each spring, between 20 and 40 adult bull trout up to 650 mm (25.6 in) in length enter the Tucannon River anadromous fish trap and are released upstream of the facility (G. Mendel, pers. comm. 2002). Movement of bull trout upstream into the trap coincides with the movements of spring chinook from the Snake River. The largest bull trout caught in the trap in the spring of 2002 was 559 mm (22 in) in length; these bull trout are believed to be migrating into the Tucannon River from the Snake River to prepare for spawning in upper reaches of the Tucannon River and its tributaries in the September and October (G Mendel, pers. comm. 2002; Underwood et al. 1995).	See CHU text	1181740 465575

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Tucannon River	Turkey Creek	WA	Turkey Creek from its confluence with Panjab Creek upstream 6.2 km (3.9 mi) to Hatfield Spring provides spawning and rearing habitat. Bull trout spawn, and likely rear, in Turkey Creek. The WDFW conducted a single pass bull trout spawning survey in Turkey Creek for the first time on October 6, 1999; eight bull trout redds were observed (Mendel et al. 2008). During snorkel surveys, the USFS observed 29 bull trout in Turkey Creek, 14 juveniles less than 152 millimeters (6 inches) in length and 15 sub-adults/adults greater than 152 millimeters, in 1992 (USFS in litt. 1992g). The USFS observed these fish in the first survey reach from the mouth of Turkey Creek upstream 3 river kilometers (1.9 river miles) during snorkeling surveys (USFS in litt. 1992g).	See CHU text	1177020 461612

15.2. Asotin Creek Critical Habitat Subunit

The Asotin Creek CHSU is essential to the conservation of bull trout because both fluvial and resident bull trout life history forms occur in the CHSU, and along with Tucannon River, this CHSU is the only suitable bull trout refugium with adequate spawning and rearing and FMO habitat in the lower Snake River basin. Asotin Creek is fairly isolated from other bull trout populations. Bull trout persistence in this CHSU is important for maintaining connectivity between populations in the upper Snake River basin and the Columbia River (see Appendix 1 for more detailed information).

Asotin Creek is a tributary to the Snake River located in Asotin and Garfield Counties in Washington. Asotin Creek drains a portion of the northern slopes of the Blue Mountains of southeastern Washington State and enters the Snake River upstream of Clarkston, Washington. The Asotin Creek CHSU is known to support one bull trout local population, but there is potential for other undetected local populations to exist in the basin. Approximately 124.1 km (77.1 mi) of stream is critical habitat for bull trout in this CHSU.

Bull trout populations in the Asotin Creek watershed are at critically low levels (G. Mendel, pers. comm. 2002; USFS 1998a; WDFW 1997; Martin et al. 1992). Bull trout in Asotin Creek are currently documented in headwater locations only, and may be primarily resident fish. Historically, bull trout distribution in Asotin Creek was thought to be much more extensive and contain both resident and migratory bull trout (USFS 1998a; WDFW 1997). The streams or stream reaches in Asotin Creek designated as critical habitat are those identified by the Recovery Unit Team as containing bull trout populations currently, or those that may be currently unoccupied, but contain necessary constituent elements to support spawning and rearing and will be essential to meet population goals to recover bull trout in Asotin Creek. Habitat conditions, and the reduced distribution and isolation of bull trout in headwater areas of Asotin Creek severely limits the ability of remaining populations to expand naturally.

Adult bull trout abundance is unknown in Asotin Creek, however, information from spawning surveys and fish sampling indicates that the adult spawning population is small and possibly at a critical level (USFS in litt 2002a; Martin et al. 1992). To reverse the serious decline of bull trout in Asotin Creek, occupied habitat must be restored and expanded downstream. Unoccupied habitat must be restored to a useable status so that it can produce bull trout via natural re-establishment or from a supplementation program.

The following water bodies are included in this CHSU (see Table 48).

Asotin Creek mainstem from the confluence with the Snake River upstream 24.0 km (14.9 mi) to the confluence with the North Fork and the South Fork of Asotin Creek provides FMO habitat and is an important migratory connection to the Snake River FMO habitat. The mainstem of Asotin Creek provides foraging and overwintering habitat and is an important migratory connection to the Snake River. Observed redd sizes in this core area suggest that most bull trout in the basin are resident. However, trap data near the mouth of Asotin Creek indicate that both juvenile and adult migrant bull trout have been captured annually in recent years in both upstream and downstream traps (Mayer et al. 2006, 2007, 2008). It is unknown if the adult fish originated in Asotin Creek or if they utilize Asotin Creek seasonally for cold water refuge and for forage. In the 1960s, large bull trout exceeding 508 mm (20 inches) were caught in Asotin Creek (D. Groat pers. comm. 2002). Asotin Creek currently supports a remnant population of spring Chinook salmon and a population of wild Snake River Steelhead that migrates into Asotin Creek and spawns (Martin et al. 1992).

George Creek from the confluence with Asotin Creek upstream 34.6 km (21.5 mi) to its headwaters at Seven Sisters Spring provides foraging habitat and potential spawning and rearing habitat. George Creek is the largest tributary to Asotin Creek. It was identified in the Snake River, Washington, Bull Trout Recovery Plan as essential because it contains habitat which may currently support bull trout, or could support bull trout populations to aid in attainment of recovery plan goals. One bull trout was found in George Creek in surveys done by the Forest Service in 1993 (USFS 1993b). Stream habitat conditions in George Creek above the confluence of Coombs Creek at River Mile 16.2 are good (G. Mendel pers. comm. 2002). Stream canopy cover is good and riparian vegetation is healthy up to the National Forest boundary. However, one-pass electrofishing by WDFW at many sites in upper George Creek upstream of Coombs Creek in the early 2000s did not confirm bull trout presence (WDFW, *in litt.* 2010).

Charley Creek, a large tributary of Asotin Creek, provides FMO habitat from its confluence with Asotin Creek upstream 11 km (6.8 mi) to an inlet of a large, unnamed spring near the National Forest boundary. Bull trout have been documented using this lower section of Charley Creek. The drainage was identified in the Draft Snake River Basin Bull Trout Recovery Plan as essential because it contains habitat which may currently support bull trout, or could in the future. During habitat and fish surveys in June/July 1993, the USFS observed four bull trout in a total of five pools in a middle reach of Charley Creek (USFS in litt. 1993a, 1996a). They observed two additional bull trout in a total of four pools in the upper 6.44 kilometers (4 miles) of Charley Creek. All six bull trout observed were approximately 203 millimeters (8 inches) or less (D. Groat, pers. comm. 2002). Salmonid refuge cover (for age 1+ and older fish) was rated as “good” by the USFS in all reaches totaling 25.76 kilometers (16 miles) of Charley Creek in 1993 (USFS in litt. 1993a, 1996b). Bull trout redd surveys were conducted in Charley Creek in 1998, 1999, and 2000, but no spawning activity was observed. Spawning surveys were not performed in Charley Creek prior to 1998. WDFW electrofishing surveys and steelhead trapping over several years in the 1980s and early 1990s did not confirm bull trout presence, except in 1986 (G. Mendel, pers. comm. 2002).

North Fork Asotin Creek and its uppermost tributary Cougar Creek are the only areas in the Asotin Creek Basin where bull trout spawning has been confirmed. The lower 15 km (9.3 mi) of North Fork Asotin Creek, below the confluence of the South Fork of the North Fork Asotin Creek, provides FMO habitat. The upper 13.4 km (8.3 mi) of North Fork Asotin Creek up to Dodge Springs is spawning and rearing habitat. In 1999, 59 bull trout redds were counted in the North Fork Asotin Creek (USFS *in litt.* 2002a). In 2006, 9 bull trout redds were observed along 3.2 miles of the North Fork Asotin Creek (Mendel et al. 2008, pg 28-29). WDFW believes most bull trout spawning in the North Fork Asotin Creek are resident fish (G. Mendel pers. comm. 2002; WDFW 1997).

> Cougar Creek from the confluence with North Fork Asotin Creek upstream 2.9 km (1.8 mi) supports spawning and rearing habitat. In 1999, 9 redds were counted in Cougar Creek (USFS *in litt.* 2002a). In 2006, 3 redds were found along 0.5 miles of Cougar Creek (Mendel et al. 2008, pg 28-29). WDFW believes most bull trout spawning in Cougar Creek are resident fish (G. Mendel pers. comm. 2002; WDFW 1997). WDFW electrofishing surveys in 2006 documented bull trout at several sites, including one site in lower Cougar Creek (Mendel et al. 2008).

South Fork Asotin Creek from its confluence with North Fork Asotin Creek upstream to its headwaters provides 11.8 km (7.3 mi) of FMO habitat and 11.4 km (7.0 mi) of potential spawning and rearing habitat. Bull trout have been found in South Fork Asotin Creek, but no spawning has been documented; however, the drainage has not been extensively surveyed. Two bull trout were found in lower South Fork Asotin Creek in 2008 during an electrofishing survey (Mendel, in litt. 2008). These were the first bull trout documented in this stream in a long time, although there have been reports from anglers about catching bull trout in the South Fork in recent years. This stream is critical habitat because it potentially supports a local population and to recover bull trout in the Asotin Creek Basin, it will be necessary to expand the population beyond the limited area in the North Fork Asotin Creek where spawning is currently known to occur.

Table 48. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Lower Snake River Basins–Asotin Creek CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Asotin Creek	Asotin Creek	WA	Asotin Creek mainstem from the confluence with the Snake River upstream 24.0 km (14.9 mi) to the confluence with the North Fork and the South Fork of Asotin Creek provides FMO habitat and is an important migratory connection to the Snake River FMO habitat. The mainstem of Asotin Creek provides foraging and overwintering habitat and is an important migratory connection to the Snake River. Observed redd sizes in this core area suggest that most bull trout in the basin are resident. However, trap data near the mouth of Asotin Creek indicate that both juvenile and adult migrant bull trout have been captured annually in recent years in both upstream and downstream traps (Mayer et al. 2006, 2007, 2008). It is unknown if the adult fish originated in Asotin Creek or if they utilize Asotin Creek seasonally for cold water refuge and for forage. In the 1960s, large bull trout exceeding 508 mm (20 inches) were caught in Asotin Creek (D. Groat pers. comm. 2002). Asotin Creek currently supports a remnant population of spring chinook salmon and a population of wild Snake River Steelhead that migrates into Asotin Creek and spawns (Martin et al. 1992).	See CHU text	1170531 463443

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Asotin Creek	Charley Creek	WA	Charley Creek, a large tributary of Asotin Creek, provides FMO habitat from its confluence with Asotin Creek upstream 11 km (6.8 mi) to an inlet of a large, unnamed spring near the National Forest boundary. Bull trout have been documented using this lower section of Charley Creek. The drainage was identified in the Draft Snake River Basin Bull Trout Recovery Plan as essential because it contains habitat which may currently support bull trout, or could in the future. During habitat and fish surveys in June/July 1993, the USFS observed four bull trout in a total of five pools in a middle reach of Charley Creek (USFS in litt. 1993a, 1996a). They observed two additional bull trout in a total of four pools in the upper 6.44 kilometers (4 miles) of Charley Creek. All six bull trout observed were approximately 203 millimeters (8 inches) or less (D. Groat, pers. comm. 2002). Salmonid refuge cover (for age 1+ and older fish) was rated as "good" by the USFS in all reaches totaling 25.76 kilometers (16 miles) of Charley Creek in 1993 (USFS in litt. 1993a, 1996a). Bull trout redd surveys were conducted in Charley Creek in 1998, 1999, and 2000, but no spawning activity was observed. Spawning surveys were not performed in Charley Creek prior to 1998. WDFW electrofishing surveys and steelhead trapping over several years in the 1980s and early 1990s did not confirm bull trout presence, except in 1986 (G. Mendel, pers. comm. 2002).	See CHU text	1172777 462887
Lower Snake River Basins–Asotin Creek	Cougar Creek	WA	Cougar Creek from the confluence with North Fork Asotin Creek upstream 2.9 km (1.8 mi) supports spawning and rearing habitat. In 1999, 9 redds were counted in Cougar Creek (USFS in litt. 2002a). In 2006, 3 redds were found along 0.5 miles of Cougar Creek (Mendel et al. 2008, pg 28-29). WDFW believes most bull trout spawning in Cougar Creek are resident fish (G. Mendel pers. comm. 2002; WDFW 1997). WDFW electrofishing surveys in 2006 documented bull trout at several sites, including one site in lower Cougar Creek (Mendel et al. 2008).	See CHU text	1175083 462046

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Asotin Creek	George Creek	WA	George Creek from the confluence with Asotin Creek upstream 34.6 km (21.5 mi) to its headwaters at Seven Sisters Spring provides foraging habitat and potential spawning and rearing habitat. George Creek is the largest tributary to Asotin Creek. It was identified in the Snake River, Washington, Bull Trout Recovery Plan as essential because it contains habitat which may currently support bull trout, or could support bull trout populations to aid in attainment of recovery plan goals. One bull trout was found in George Creek in surveys done by the Forest Service in 1993 (USFS 1993b). Stream habitat conditions in George Creek above the confluence of Coombs Creek at River Mile 16.2 are good (Mendel et al. 2001; G. Mendel pers. comm. 2002). Stream canopy cover is good and riparian vegetation is healthy up to the National Forest boundary. However, one-pass electrofishing by WDFW at many sites in upper George Creek upstream of Coombs Creek in the early 2000s did not confirm bull trout presence (WDFW, in litt. 2010).	See CHU text	1171053 463261.1
Lower Snake River Basins–Asotin Creek	North Fork Asotin Creek	WA	North Fork Asotin Creek and its uppermost tributary Cougar Creek are the only areas in the Asotin Creek Basin where bull trout spawning has been confirmed. The lower 15 km (9.3 mi) of North Fork Asotin Creek, below the confluence of the South Fork of the North Fork Asotin Creek, provides FMO habitat. The upper 13.4 km (8.3 mi) of North Fork Asotin Creek up to Dodge Springs is spawning and rearing habitat. In 1999, 59 bull trout redds were counted in the North Fork Asotin Creek (USFS in litt. 2002a). In 2006, 9 bull trout redds were observed along 3.2 miles of the North Fork Asotin Creek (Mendel et al. 2008, pg 28-29). WDFW believes most bull trout spawning in the North Fork Asotin Creek are resident fish (G. Mendel pers. comm. 2002; WDFW 1997).	See CHU text	1172913 462724.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Lower Snake River Basins–Asotin Creek	South Fork Asotin Creek	WA	South Fork Asotin Creek from its confluence with North Fork Asotin Creek upstream to its headwaters provides 11.8 km (7.3 mi) of FMO habitat and 11.4 km (7.0 mi) of potential spawning and rearing habitat. Bull trout have been found in South Fork Asotin Creek, but no spawning has been documented; however, the drainage has not been extensively surveyed. Two bull trout were found in lower South Fork Asotin Creek in 2008 during an electrofishing survey (Mendel, in litt. 2008). These were the first bull trout documented in this stream in a long time, although there have been reports from anglers about catching bull trout in the South Fork in recent years. This stream is critical habitat because it potentially supports a local population and to recover bull trout in the Asotin Creek Basin, it will be necessary to expand the population beyond the limited area in the North Fork Asotin Creek where spawning is currently known to occur.	See CHU text	1172913 462734

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 16. Mid-Columbia Recovery Unit—Grande Ronde River Critical Habitat Unit

Chapter 16. Grande Ronde River Critical Habitat Unit

The Grande Ronde River CHU is essential to the conservation of bull trout because is supports strong bull trout populations and provides high-quality habitat to potentially expand bull trout distribution and is considered to be essential for bull trout recovery in the Mid-Columbia RU. The eleven populations in this CHU are spread over a large geographical area with multiple age classes, containing both resident and fluvial fish. This bull trout stronghold also has a prey base; connectivity with the Snake River; general distribution of bull trout throughout the habitat; and varying habitat conditions. But in several of the populations, including the Wenaha River, Lostine River, Lookingglass Creek, and Little Minam River populations, excellent habitat conditions exist; many streams and rivers are designated as Wild and Scenic Rivers and/or located within or near Wilderness areas.

Two wilderness areas are designated within the Grande Ronde River basin. The Eagle Cap Wilderness is located in the Wallowa-Whitman National Forest, encompasses 146,272 (ha) (361,446 ac), and includes most of the Minam, upper Wallowa and Lostine river drainages as well as Bear Creek and Hurricane Creek and a small portion of Catherine Creek. Federal Wild and Scenic River status is designated for the Lostine and Minam Rivers and Oregon State Scenic Waterway status is designated to the Minam and Wallowa Rivers. The Grande Ronde River with its headwaters in the Wallowa-Whitman National Forest is designated as a Federal Wild and Scenic River and a State Scenic Waterway, from the confluence with the Wallowa River to the Washington border. The Wenaha-Tucannon Wilderness is located in the Umatilla National Forest, encompasses 71,817 ha (177,465 ac), and includes most of the Wenaha River drainage. The Wenaha River is designated as a Federal Wild and Scenic River. The Little Minam core area is located entirely within the Eagle Cap Wilderness (see Appendix 1 for more detailed information).

The Grande Ronde River Critical Habitat Unit is located in northeast Oregon and southeast Washington and includes the mainstem Grande Ronde River from its headwaters to the confluence with the Snake River. This CHU contains two core areas: the Grande Ronde River and the Little Minam. The Grande Ronde core area includes large portions of Union and Wallowa Counties and a small portion of Umatilla County in Oregon as well as about a third of Asotin County and small portions of Columbia, and Garfield counties in Washington. The Little Minam core area is located entirely within the Eagle Cap Wilderness on the western edge of the Wallowa subbasin, in both Union and Wallowa Counties, Oregon. This CHU is within the Middle Columbia River Recovery Unit.

Two wilderness areas are designated within the Grande Ronde Critical Habitat Unit. The Eagle Cap Wilderness is located in the Wallowa-Whitman National Forest, encompasses 361,446 acres, and includes most of the Minam, upper Wallowa and Lostine river drainages as well as Bear Creek and Hurricane Creek and a small portion of Catherine Creek. Federal Wild and Scenic River status is designated for the Lostine and Minam rivers and Oregon State Scenic Waterway status is designated to the Minam and Wallowa rivers. The Grande Ronde River with its headwaters in the Wallowa-Whitman National Forest is designated as a Federal Wild and Scenic River and a State Scenic Waterway from the confluence with the Wallowa River to the Washington border. The Wenaha-Tucannon Wilderness is located in the Umatilla National Forest, encompasses 177,465 acres and includes most of the Wenaha River drainage. The Wenaha River is designated as a Federal Wild and Scenic River.

The Grande Ronde Critical Habitat CHU contains at least ten local populations in the Grande Ronde River Basin CHU, these include: 1) Upper Grande Ronde; 2) Catherine; 3) Indian; and 4) Minam/Deer; 5) Lostine/Bear; 6) Upper Hurricane; 7) N.F. Wenaha; 8) S.F. Wenaha; 9) Butte and WF Butte; and 10) Lookingglass. The Little Minam core area includes the Little Minam River, a tributary to the Minam River. This core area encompasses tributaries containing one local population located above a barrier falls at approximately km 9 (mi 5.6) as well as the Little Minam River below the barrier to the confluence with the Minam River.

The designated critical habitat described below is our best assessment of stream or river reaches essential for conservation of bull trout for the Grande Ronde River Basin Critical Habitat Unit, and is based on the best scientific and commercial information available. These stream reaches are believed to be essential for the conservation of the species because they currently support bull trout populations (occupied habitat) and/or provide high quality habitat to potentially expand bull trout distribution and are considered to be essential for recovery of bull trout in the Mid-Columbia Recovery Unit.

The Grande Ronde River Basin CHU is essential to the recovery unit because it is a bull trout stronghold within the Middle Columbia Recovery Unit and within the states of Oregon and Washington. The Grande Ronde basin core area contains ten healthy local populations. The Little Minam Core area contains one healthy resident population. In total, these eleven populations are spread over a large geographical area with multiple age classes, containing both resident and fluvial fish. This bull trout stronghold also has: an anadromous prey base; connectivity with the Snake River; bull trout are generally distributed throughout the habitat; and habitat conditions vary; but in several of the populations including the Wenaha, Lostine, Lookingglass, and Little Minam populations there are excellent habitat conditions (many designated as wild and scenic rivers and/or located within or near wilderness).

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* – The Grande Ronde River CHU contains at least ten local populations with fluvial and resident life history forms and multiple age classes in the Grande Ronde River Basin core area and one resident population in the Little Minam River core area. The Little Minam River supports a healthy resident population located in the wilderness above a barrier falls. Connectivity with the Snake River and Grande Ronde River and among populations is possible for the Grande Ronde River Basin core area. The Little Minam River has one-way connectivity, from the resident population downstream to the Minam River. The barrier waterfall on the Little Minam (RM 5.6) prevents upstream migration of bull trout.

2. *Conserve opportunity for genetic diversity* – Large geographical area containing eleven local populations with both fluvial and resident life histories; therefore, genetic diversity is likely. No recent genetic data is available for this CHU.

3. *Ensure bull trout are distributed across representative habitats* – Ten populations in the Grande Ronde River CHU (Upper Grande Ronde River, Catherine, Indian, Minam/Deer, Lostine/Bear, Upper Hurricane, N.F. Wenaha, S.F. Wenaha, Butte and WF Butte, and Lookingglass). The isolated core area of the Little Minam includes one population, the Little Minam River. This CHU contains a variety of habitat conditions which are spread over a large geographical area with connectivity to other core areas.

4. *Ensure sufficient connectivity among populations* – Bull trout move freely (seasonally) within the Snake River and Grande Ronde River. There are natural and manmade barriers that prevent connectivity in the CHU. The Little Minam Core area and Grande Ronde River Core areas have one way connectivity between core areas due to a barrier falls on the Little Minam River. Existing passage problems (diversions, low flows, high stream temperatures, irrigation dams, and culvert fish passage barriers) occur in this CHU and limit connectivity at least seasonally within or between populations.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* –The Eagle Cap and the Wenaha-Tucannon wilderness areas are within this CHU, as well as Federal wild and Scenic Rivers, and private lands. The populations are relatively stable and habitat conditions are generally excellent (especially for the Wenaha, Lostine, Lookingglass, and Little Minam populations). These river systems provide a variety of habitat types.

6. *Consider threats (e.g., climate change)* – Climate change is a threat in this CHU. The nature of the threat includes increase in fire frequency and magnitude, increase in peak flows, increase in air and stream temperatures, and exotic invasion/expansion.

7. *Ensure sufficient redundancy in conserving population units* – The entire occupied and some unoccupied areas are essential for conservation because the CHU is a bull trout stronghold within the Mid-Columbia Recovery Unit and within the states of Oregon and Washington. The Grande Ronde Basin Core Area contains ten healthy (overall) fluvial and resident populations. The Little Minam Core Area contains one healthy resident population. These eleven total populations are spread over a large geographical area with multiple age classes, containing both fluvial and resident fish.

Grande Ronde River Core Area

The Grande Ronde Critical core area contains at least ten local populations: in the Grande Ronde River Basin CHU and within the greater Middle Columbia Recovery Unit. Eight local populations were designated in the Grande Ronde River Draft Recovery Unit Plan (Service 2002a, pp.11-36). The 2008 Core Area Status Assessment team recommends at least ten local populations as follows: 1) Upper Grande Ronde; 2) Catherine; 3) Indian; and 4) Minam/Deer; 5) Lostine/Bear; 6) Upper Hurricane; 7) N.F. Wenaha; 8) S.F. Wenaha; 9) Butte and West Fork Butte; and 10) Lookingglass (Service 2008a, pp.4-5).

The following water bodies are included in this CHU (see Table 49).

Grande Ronde River extending from its confluence with the Snake River upstream 267.2 km (166 mi) to Meadow Brook Creek, including the state ditch provides key FMO habitat for sub-adult and adult fluvial bull trout and is an important migratory corridor. It is the primary artery that supports and links ten local populations in the Grande Ronde River and Wallowa River basins. The Upper Grande Ronde River from the junction with Meadow Brook Creek upstream 18.5 km (11.5 mi) is utilized as spawning and rearing habitat. (Buchanan et al. 1997, p. 105-107; P. Boehne, pers. comm. 2009).

Menatchee Creek from the confluence with the Grande Ronde River upstream 15.3 km (9.5 mi) to the headwaters provides FMO habitat for bull trout. Historical data indicate bull trout presence in this stream. Currently, bull trout have not been confirmed. Menatchee Creek was sampled with one pass electrofishing by WDFW and USFS personnel and no bull trout were found in 14 sites surveyed in 2007. (Buchanan et al. 1997, pp. 107; Service 2000, pp.35-36; Mendel in litt. 2008, Mendel et al. 2008, pp.22-35, WDFW, 2010).

Wenaha River from its confluence with the Grande Ronde River upstream 35 km (21.7 mi) to the junction of the North Fork and South Fork Wenaha River is critical habitat. Collectively, the Wenaha River and its tributaries support three bull trout populations, which is about one-third of the populations within in the Grande Ronde basin. The Wenaha River system is the basin's stronghold. The lower 16 km (10 mi) of the Wenaha River near the confluence with Beaver Creek provide FMO habitat for fluvial bull trout and a migratory connection to the Grande Ronde River. Spawning and rearing has been documented in the upper Wenaha and in South Fork Wenaha, Milk Creek, North Fork Wenaha, Beaver Creek, Butte Creek, and West Fork Butte Creek. All other tributaries named are documented FMO habitat for bull trout (Buchanan et al. 1997, pp.107, 111; Mendel, in litt. 2008, G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).

Crooked Creek from its confluence with the Wenaha River upstream 7.2 km (4.5 mi) to the confluence with First Creek provides FMO habitat. Crooked Creek from its confluence with the First Creek upstream 5.2 km (3.2 mi) to the confluence with Third Creek provides spawning and rearing habitat. WDFW documented a bull trout in lower Crooked Creek, downstream of First Creek in 1986. USFS also captured one bull trout (approx. 200 mm) below First Creek in 1995 or 1996 (WDFW, 2010). The reach on Crooked Creek from the confluence with First Creek to the confluence with Third Creek at is currently unoccupied. This reach provides essential foraging, migratory, and overwintering habitat for bull trout. Portions of Crooked Creek were sampled in 2008 with one pass electrofishing, but no bull trout were documented (Buchanan et al. 1997, pp. 107, 111; Mendel, in litt. 2008, G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).

First Creek from its confluence with the Crooked Creek upstream 2.2 km (1.4 mi) is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997, p. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, Service, pers. comm. 2009).

Third Creek from its confluence with the Crooked Creek upstream 5.3 km (3.3 mi) to the confluence with Trout Creek is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997: p. 107, 111; G. Mendel, pers. comm. 2009).

Trout Creek from the confluence with Third Creek upstream to approximately 3.2 km (2.0 mi) upstream is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997: p. 107, 111; G. Mendel, pers. comm. 2009).

Butte Creek from its confluence with the Wenaha River upstream 11.5 km (7.2 mi) to the confluence with East Fork and West Fork Butte Creek provides spawning and rearing habitat. Butte Creek and the West Fork of Butte Creek also have recent bull trout redd counts (of 31-32 redds, respectively) in 2005 and 2006, although the survey areas were not exactly the same during the two years. Eight total bull trout redds were documented in Butte Creek in 2005. (Buchanan et al. 1997; pp. 107, 111; Mendel, in litt. 2008, G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009, Mendel, Trump, Gembala, et al. 2006, p. 47, WDFW, 2010).)

<u>East Fork Butte Creek</u> from its confluence with Butte Creek upstream 1.6 km (1.0 mi) provides spawning and rearing habitat. Bull trout have been documented in the lower section (Mendel et al. 2008). WDFW conducted one-pass electrofishing in 2006, and documented bull trout in 3 of the 3 surveyed sites in the lower mile of East Fork Butte Creek (WDFW, 2010).

<u>West Fork Butte Creek</u> from the confluence with Butte Creek upstream 4.2 km (2.6 mi) to the confluence with Rainbow Creek provides spawning and rearing habitat. Recent surveys in 2005 and 2006, were conducted from Rainbow Creek to East Fork Butte Creek, where redd distribution differed substantially between the upper and lower sections in both years. Total redds documented in 2005 were 23; the upper section had 16 redds in 2005 but only 2 redds in 2006. The lower section had 7 redds in 2005, and 30 redds in 2006. WDFW conducted one pass electrofishing in 2006, and documented bull trout in all six sites surveyed between East Fork and Preacher Creek. (Buchanan et al. 1997, pp. 107, 111; Mendel, in litt. 2008, G. Mendel, pers. comm..2009; P. Sankovich, pers. comm. 2009; Mendel et al. 2008, 74-75 and 84-87, WDFW, 2010).

Beaver Creek from its confluence with the Wenaha River upstream 2.5 km (1.6 mi) provides spawning and rearing habitat (G. Mendel, pers. comm. 2009).

North Fork Wenaha River from its junction with the Wenaha River upstream 18.8 km (11.7 mi) provides spawning and rearing habitat. Recent information is available regarding the relative abundance of bull trout in northern tributaries of the Wenaha River within Washington State. The North Fork Wenaha River within Washington has bull trout redd counts of 82, 86 (both partial counts) in 2006 and 2007 respectively, and 153 redds in 2005. WDFW conducted one pass electrofishing at 10 sites in 2005 from the state line upstream about 5 miles to a small falls and bull trout were documented for each site surveyed, and in general, multiple age classes of bull trout were reported for each site. In 2006 WDFW electro-fished six sites upstream of the falls and documented bull trout in each site up to the forks of the North Fork Wenaha. Bull trout and redds were observed upstream of the forks in 2006 by WDFW.(Buchanan et al. 1997, pp. 107, 111; Mendel, in litt. 2008 , 2009; P. Sankovich, Service, pers. comm. 2009; Mendel et al. 2008, pp. 68-73 and 76-84, WDFW, 2010).

South Fork Wenaha River from its junction with the Wenaha River upstream 13.1 km (8.1 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).

<u>Milk Creek</u> from its mouth at the South Fork Wenaha River upstream 5.2 km (3.2 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).

Lookingglass Creek from its confluence with the Grande Ronde River upstream 24.1 km (15.0 mi) to a barrier falls provides FMO habitat for a total distance of 19.8 km (12.3 mi) and spawning and rearing habitat for a total distance of 4.6 km (2.8 mi) to the headwaters. The Lookingglass Creek system supports a local population and bull trout spawn and rear throughout the identified stream reaches. Lower portions of Lookingglass Creek also provide probable foraging habitat for fluvial fish and a migratory connection to the Grande Ronde River. Fifty eight total redds on Lookingglass were reported in 2008, in four miles of stream, with the majority of redds documented in the upper two reaches. There appears to be a slight downward trend in redd counts in recent years. (Buchanan et al. 1997, pp. 105, 110, 111; Bellerud, et al, 1997, pp. 37-48; D. Crabtree, pers. comm. 2008, 2009).

> *Little Lookingglass Creek*, a tributary to Lookingglass Creek, provides FMO habitat for 5.4 km (3.4 mi) to the National Forest boundary and spawning and rearing (and FMO) habitat for 4.2 km (2.6 mi) from the National Forest boundary to the confluence with Buzzard Creek (Buchanan et al. 1997, pp.105, 111; D. Crabtree, pers. comm. 2009).

> *Summer Creek* from the confluence of Lookingglass Creek upstream 0.6 km (0.4 mi) provides spawning and rearing habitat for bull trout (D. Crabtree, pers. comm. 2009).

Indian Creek from the confluence with the Grande Ronde River 32.6 km (20.3 mi) upstream and includes three tributary streams (Camp, East Fork and North Fork Indian creeks). Indian Creek supports a bull trout local population with spawning and rearing occurring in the upper 15.2 km (9.5 mi) portion of Indian Creek and the identified reaches of Camp Creek, East Fork, and North Fork Indian Creek. The lower section (below the USFS boundary) of Indian Creek provides FMO habitat for fluvial bull trout and a connection to the Grande Ronde River for a distance of 17.7 km (11 mi) (P. Boehne, pers. comm. 2009; T. Bailey, pers. comm. 2008).

> *Camp Creek* from the confluence with Indian Creek upstream contains spawning and rearing habitat for a distance of 1.1 km (0.7 mi) (Buchanan et al. 1997, pp.105, 110; P. Boehne, pers. comm. 2009).

> *East Fork Indian Creek* from the confluence with Indian Creek upstream contains spawning and rearing habitat for a distance of 3.1 km (1.9 mi) (P. Boehne, pers. comm. 2009; Buchanan et al. 1997).

> *North Fork Indian Creek* from the confluence with Indian Creek upstream 1.4 km (0.9 mi) provides FMO habitat (above and below a waterfall) and spawning and rearing habitat continues upstream for an additional 5.1 km (3.1 mi) above the FMO reach (P. Boehne, pers. comm. 2009).

Catherine Creek from the confluence with the Grande Ronde River upstream to the junction of North Fork and South Fork Catherine Creek provides 78.9 km (49 mi) FMO habitat. Spawning and rearing habitat continues upstream from the FMO reach for 7.4 km (4.6 mi) to the confluence with North Fork and South Fork Catherine Creek. Bull trout have been observed throughout the mainstem and migratory fluvial fish are present (Service 2002a, pp. 16-19; Buchanan et al. 1997, pp.104-116; P. Boehne, pers. comm. 2009).

> *North Fork Catherine Creek* from its mouth at Catherine Creek upstream a distance of 14 km (8.7 mi) provides spawning and rearing habitat. ODFW surveyed 1.3 miles of bull trout spawning habitat on North Fork Catherine Creek from 1998 to 2006. Bull trout redds were highest in 1998 with 19 redds and dropped to a low of 2 redds in 2006. (Service 2002a, pp.17-19; ODFW 2006; Buchanan et al. 1997, p. 105; T. Bailey, pers. comm.2008; P. Boehne, pers. comm. 2009).

>> Middle Fork Catherine Creek from its junction with North Fork Catherine Creek upstream 4.3 km (2.7 mi) to the confluence with Squaw Creek provides spawning and rearing habitat (Service 2002a, pp.17-19; Buchanan et al. 1997, p. 105; P. Boehne, pers. comm. 2009).

South Fork Catherine Creek from its junction with Catherine Creek upstream 10.7 km (6.7 mi) provides spawning and rearing habitat (Service 2002a, pp.17-19; P. Boehne, pers. comm. 2009, B. Lovatt, pers. comm. 2009; Buchanan et al. 1997, p. 105).

Pole Creek from its mouth at South Fork Catherine Creek upstream 3.9 km (2.4 mi) to its headwaters provides spawning and rearing habitat (P. Boehne, pers. comm. 2009; Buchanan et al. 1997, p. 105).

Sand Pass Creek from its mouth at South Fork Catherine Creek upstream 2.9 km (1.8 mi) to its headwaters provides spawning and rearing habitat (P. Boehne, pers. comm. 2009; Buchanan et al. 1997, p.105).

Collins Creek from its junction with South Fork Catherine Creek upstream 3 km (1.9 mi) to its headwaters provides spawning and rearing habitat (Buchanan et al. 1997, p.105).

Five Points Creek from its confluence with the Grande Ronde River upstream 3.1 km (1.9 mi) provides unoccupied potential FMO habitat and potential spawning and rearing habitat continues upstream 18.9 km (11.7 mi) above the FMO reach. Habitat and water temperatures are suitable for bull trout. This reach provides essential foraging, migratory, and overwintering habitat in the lower portion, and spawning and rearing habitat in the upper portion. An isolated bull trout sighting was made in Lower Five Points Creek on USFS lands. Five Points Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as a potential area to expand bull trout distribution necessary to achieve conservation and recovery. (Buchanan, et al.1997, p. 110; Service 2002a, p. 43; P. Boehne, pers. comm. 2009).

Middle Fork Five Point Creek from its confluence with Five Point Creek upstream 2.7 km (1.7 mi) is unoccupied FMO habitat. This reach has the potential to provide essential spawning and rearing habitat; it flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout distribution essential for conservation and recovery (P. Boehne, pers. comm. 2009).

Tie Creek from its confluence with Middle Fork Five Points Creek upstream 0.9 km (0.5 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout distribution necessary for conservation and recovery (P. Boehne, pers. comm. 2009).

Fiddlers Hell Creek from its confluence with Middle Fork Five Points Creek upstream 1.4 km (0.9 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout habitat necessary for conservation and recovery (P. Boehne, pers. comm. 2009).

Mount Emily Creek from its confluence with Middle Fork Five Points Creek upstream 2.1 km (1.3 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach connects to Five Points Creek (Recovery Task 5.2.3) and provides high quality habitat with potential to support expanded bull trout distribution necessary for conservation and recovery (P. Boehne, pers. comm. 2009).

Fly Creek from its confluence with the Grande Ronde River upstream 13.5 km (8.4 mi) to Lookout Creek provides FMO habitat for bull trout that spawn and rear in Lookout Creek. This reach provides foraging, migratory, and overwintering habitat for bull trout which spawn and rear in Lookout Creek, a tributary to Fly Creek (Buchanan et al. 1997, pp.104,105; J. Zakel, pers. comm. 2006; P. Boehne, pers. comm. 2009).

Little Fly Creek from its confluence with Fly Creek upstream 1.6 km (1 mi) is spawning and rearing habitat and connects to Fly and Lookout creeks.

Lookout Creek from its confluence with Fly Creek upstream 6.9 km (4.3 mi) to approximately 0.6 km (1 mi) above USFS Road 5160 is spawning and rearing habitat. Bull trout have been observed in Lookout Creek. Future verification of the upper distribution boundary of SR habitat is recommended by the USFS. (P. Boehne, pers. comm. 2009; J. Zakel, pers. comm. 2006).

Sheep Creek from its confluence with the Grande Ronde River provides FMO habitat upstream for 11.3 km (7 mi) and fluvial bull trout utilize 3.9 km (2.4 mi) of spawning and rearing habitat above the FMO reach. Currently unoccupied, this reach has the potential to provide essential foraging, migratory and overwintering habitat in the lower portion and suitable spawning and rearing habitat in the upper portion (P. Boehne, pers. comm. 2009). Sheep Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution essential to achieve conservation and recovery (Service 2002a, p.43).

East Fork Sheep Creek from its confluence with Sheep Creek upstream 4.8 km (3 mi) provides potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout (P. Boehne, pers. comm. 2009). East Fork Sheep Creek is identified in the recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution necessary to achieve conservation and recovery in the draft recovery plan (Service 2002a, p.43).

Chicken Creek from its confluence with Sheep Creek upstream 8.5 km (5.3 mi) provides FMO habitat and spawning and rearing habitat continues for 0.4 km (0.3 mi) above the FMO reach. (Buchanan et al. 1997, p.104, 105, 110; P. Boehne, pers. comm. 2009).

Indiana Creek from its mouth at Chicken Creek upstream 3.5 km (2.1 mi) provides spawning and rearing habitat. There is a large culvert near the mouth that is a passage barrier, bull trout are located upstream (Buchanan et al. 1997, pp. 105, 110; P. Sankovich, Service, pers. comm. 2009; P. Boehne, pers. comm. 2009).

Limber Jim Creek from its confluence with the Grande Ronde River upstream 13.1 km (8.1 mi) contains FMO habitat from the confluence upstream for 7.4 km (4.6 mi) and spawning and rearing habitat upstream 5.7 km (3.5 mi) of the FMO reach to the headwaters. The lower portion of Limber Jim Creek provides FMO habitat up to a potentially impassable falls, and occupied spawning and rearing habitat occurs above the falls (Buchanan et al. 1997, pp.105, 110; P. Sankovich, pers. comm. 2009; P. Boehne, pers. comm. 2009).

> _Marion Creek_ at the confluence with Limber Jim Creek to the headwaters upstream 3.4 km (2.1 mi) to its junction with Limber Jim Creek provides spawning and rearing habitat for bull trout (P. Boehne, pers. comm. 2009).

Clear Creek from its confluence with the Grande Ronde River upstream 6.8 km (4.2 mi) provides FMO habitat and spawning and rearing habitat extends for 4.8 km (3 mi) above the FMO reach (Buchanan et al. 1997, P. 105, 110; P. Sankovich, Service, pers. comm. 2009; P. Boehne, pers. comm. 2009).

> _Unnamed tributary_ from the confluence with Clear Creek upstream provides 2.2 km (1.4 mi) FMO habitat and spawning and rearing habitat upstream of the FMO reach for 2.5 km (1.6 mi) (P. Boehne, pers. comm. 2009).

Wallowa Lake from the ordinary high water mark provides a surface area of 605 ha (1,496 ac) FMO habitat.

Wallowa River from the confluence with the Grande Ronde River upstream for 80.4 km (50 mi) to the dam at Wallowa Lake provides FMO habitat for sub-adult and adult fluvial bull trout and is an essential migratory corridor for movement from upper watershed spawning streams to the Grande Ronde River. Fluvial fish that spawn in the Lostine, Deer, Minam, Bear, and upper Hurricane Rivers use the Wallowa River to move to and from FMO habitat in the Grande Ronde and Snake Rivers (Service 2002a, p. 24; Buchanan et al. 1997, p.106). Current bull trout use in the Wallowa River from Hurricane Creek confluence upstream to Wallowa Lake is largely unknown. The dam currently lacks upstream passage for fish at Wallowa Lake and unscreened diversions below the dam currently provide limited habitat conditions and connectivity for bull trout in this section of the Wallowa River. In the future, if passage is provided for fish at Wallowa Lake (the Nez Perce Tribe and BPA have a proposal to reintroduce sockeye), then this section of the Wallowa River will likely be utilized by bull trout as FMO habitat.

Wallowa River from the head of Wallowa Lake continues upstream 1.5 km (0.9 mi) as spawning and rearing habitat. Historically, bull trout were present in the Wallowa River above Wallowa Lake, however, this population is believed to have been extirpated by the 1950's (Buchanan et al. 1997, p. 110). Although a reintroduction program using bull trout and Dolly Varden (*Salvelinus malma*) from Alaska was initiated in 1968, this program was not successful and was terminated in 1978. No bull trout or Dolly Varden was captured in the Wallowa Lake fishery between 1980 and 1996. In 1997, 600 bull trout from Big Sheep Creek, a tributary to the Imnaha River, were introduced into Wallowa River above Wallowa Lake. These fish were salvaged because a hydroelectric diversion in the Big Sheep drainage (Imnaha River Subbasin) was being decommissioned (Service 2002a, pp.35). Recent creel counts and 2002 snorkel counts indicate that bull trout are present (G. Sausen, pers. comm., 2009).

> _East Fork Wallowa River_ from the confluence with the Wallowa River at the head of the lake upstream from Wallowa Lake 1.1 km (0.7 mi) to a waterfall provides occupied spawning and rearing habitat.

> _West Fork Wallowa River_ from the confluence with the Wallowa River at the head of the lake upstream from Wallowa Lake 0.9 km (0.6 mi) to a waterfall provides occupied spawning and rearing habitat.

Minam River from the confluence with the Wallowa River upstream 72.9 km (35.3 mi) and extending up the North Minam River supports a bull trout local population with spawning and rearing habitat occurring in the tributary streams (Elk and East Fork Elk creeks)and the upper 55 km (34.2 mi) of the Minam River. Lower sections of the Minam River are utilized as FMO habitat for a distance of 18.7 km (11.6 mi). Bull trout have been observed throughout the mainstem and migratory fluvial fish and resident fish are present. The status of bull trout in the Minam River is "low risk of extinction." Minam River has had surveys conducted by ODFW in past years, with limited documentation of bull trout numbers observed (Service 2002a, pp.20-22; Buchanan et al. 1997, pp.106, 111, 116; Service 2008e, p.12).

North Minam River from the confluence with the Minam River for 2.1 km (1.3 mi) provides spawning and rearing habitat (Buchanan et al. 1997, Service 2002a, pp.20-22; A. Miller, pers. comm. 2009).

Elk Creek from the confluence with the Minam River upstream 2.6 km (1.6 mi) provides spawning and rearing habitat (Buchanan et al. 1997; Service 2002a, pp.20-22; A. Miller, pers. comm. 2009).

East Fork Elk Creek from the confluence with Elk Creek upstream 0.5 km (0.3 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 106, 111; Service 2002a, pp.20-22; A. Miller, pers. comm. 2009).

Little Minam River Core Area

The Little Minam River core area includes the Little Minam River, a tributary to the Minam River. All of the designated streams in this core area are located within the Eagle Cap Wilderness. This core area encompasses tributaries containing one local resident population located above a barrier falls as well as the Little Minam River below the barrier to the confluence with the Minam River.

Little Minam River from its confluence with the Minam River upstream 24.1 km (15 mi) contains an isolated, resident bull trout local population above the barrier falls in portions of the Little Minam River, Boulder Creek, and Dobbin Creek. This reach provides foraging, migratory, and overwintering habitat in the lower portion as well as spawning and rearing habitat in the upper portion. The 8.1 km (5 mi) stretch of the Little Minam River below the barrier falls is critical habitat because of the presence of bull trout in this reach, high water quality, and the potential importance that emigrants from the Little Minam local population / core area may provide to other downstream populations. All of the Little Minam River and its tributaries are within the Eagle Cap Wilderness Area. Tributaries include Boulder and Dobbin creeks. Currently a resident population exists above a barrier falls at rkm 8 (rm 4.9). This resident population does not experience immigration of bull trout from other areas in the Grande Ronde River. The foraging, migratory, and overwintering designation of this stream is included due to the presence of bull trout in this reach, high water quality, and the potential importance emigrants from the Little Minam Core Area may provide to other essential populations (Buchanan et al. 1997, pp. 106, 112, 113; Service 2002a, pp. 32-35; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).

Boulder Creek from the confluence with the Little Minam River upstream 0.7 km (0.4 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp.106, 113; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).

<u>*Dobbin Creek*</u> from the confluence with the Little Minam River upstream 5.2 km (3.2 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 106, 113; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).

Deer Creek from the confluence with the Wallowa River upstream to the headwaters contains 14.9 km (9.2 mi) FMO habitat and 11.1 km (6.9 mi) spawning and rearing habitat. Bull trout have been observed throughout the mainstem and both fluvial and resident fish are present. Deer Creek bull trout are considered to be part of the Minam River local population. The status of bull trout in Deer Creek has been listed as special concern (Buchanan et al. 1997, pp. 106, 110, 116; Service 2002a, pp.20-23). Limited spawning surveys have been conducted on Deer Creek. Four bull trout redds were documented in 1.4 miles of survey on Deer Creek in 2000. In 2008, a USFS culvert replacement project on Deer Creek upstream of the confluence with Sage Creek has likely provided fish passage all year to all age classes of bull trout and other fish species above this culvert (G. Sausen, pers. comm. 2009). This bull trout fish passage restoration project was listed as task 1.2.3, 1.2.5, and 1.4.2 in the draft recovery plan (Service 2002a, p.164; A. Miller, pers. comm. 2009).

<u>*Sage Creek*</u> from the confluence of Deer Creek 2.8 km (1.7 mi) upstream is identified as an area to potentially expand bull trout spawning and rearing distribution necessary to achieve conservation and recovery. A culvert at the mouth is currently a fish passage barrier. The U.S. Forest Service is fixing this culvert to restore bull trout connectivity in Sage Creek in 2010 (A. Miller, pers. comm. 2009; Service 2002a, p.43; Service 2002a, p.20).

Bear Creek from its confluence with the Wallowa River upstream 12.1 km (7.5 mi) provides FMO habitat. The lower portions of Bear Creek and Little Bear Creek are utilized by fluvial bull trout and considered to be part of the Lostine River local population; thus, connectivity may be important to population viability. Bear Creek spawning and rearing habitat begins at National Forest boundaries and continues upstream 21.9 km (13.6 mi). A total of fourteen bull trout redds were documented in a 2.3 mile survey reach of Bear Creek in 2008. In the draft recovery plan, Bear Creek is identified as a stream to potentially expand bull trout spawning and rearing habitat downstream (Recovery Task 5.2.3). Bull trout have been observed throughout the mainstem and fluvial fish are present (Buchanan et al. 1997; Service 2002a, pp.109, 116-117, Sausen 2009, pp.47; A. Miller, pers. comm. 2009).

<u>*Little Bear Creek*</u> FMO habitat extends 3.9 km (2.4 mi) from the confluence of Bear Creek and spawning and rearing habitat continues for 6.9 km (4.3 mi) above the FMO reach. Little Bear Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution necessary to achieve conservation and recovery (Buchanan et al. 1997, p.106; Service 2002a, pp.109, 116-117; A. Miller, pers. comm. 2009).

<u>*Goat Creek*</u> from its confluence with the Bear Creek upstream 1.7 km (1.1 mi) provides spawning and rearing habitat for both resident and fluvial bull trout. Total number of bull trout redds observed in this stream from the mouth to approximately 0.9 miles upstream to an impassable falls has ranged from 3-9 redds in survey years 1999-2008. In 2008, four total redds were documented in Goat Creek. Except in 2008, this stream has had more redds documented than a larger reach of stream surveyed annually on Bear Creek. Goat Creek is a cold perennial stream that is critical to the Bear Creek bull trout

population. (Buchanan et al. 1997, p.106; Sausen 2009, p.41, G. Sausen, pers. comm. 2009).

Lostine River from its confluence with the Wallowa River upstream for 40.4 km (25.1 mi) to the mouth of the East Lostine River provides habitat for fluvial and resident fish. Bull trout spawning and rearing habitat is 15.1 km (9.4 mi) upstream of the Lostine River Bridge to the headwaters upstream of Shady campground. The Lostine River downstream of Lostine River Ranch is utilized as FMO habitat. Migration studies on fluvial bull trout tagged in the Lostine River reported migration within the river and movement into the Wallowa River and Grande Ronde River to near the town of Elgin, Oregon. Bull trout redd surveys in the fall of 2008 found 53 total redds for 10.1 miles of index survey between RM 9.4 and RM 24.5 of the Lostine River. Fluvial size redds were the dominant redd size recorded during the spawning surveys. Mean redd area (m^2) ranged from 0.9-1.3 in 2004-2008 for the Lostine River. Migration studies on fluvial size bull trout tagged in the Lostine reported migration within the Lostine to spawning habitat and overwintering habitat, and movement into the Wallowa River and Grande Ronde to near the town of Elgin (several miles of movement). Hybridization with brook trout appears to be occurring. Genetic samples have been taken but have not been reported to date and in 2008 bull trout and potential brook trout hybrids were observed on the spawning grounds. The Nez Perce Tribe has expressed concerns with the number of potential bull trout hybrids they have caught at their weir located on the Lostine River near the confluence with the Wallowa River. (P. Howell, pers. comm. 2005; Sausen 2009, pp.8, 13, 20; Buchanan et al. 1997, p.106; Service 2002a, pp.23-25; G. Sausen, pers. comm. 2009).

Silver Creek from its confluence with the Lostine River upstream 0.5 km (0.3 mi) to Hunter Falls provides spawning and rearing habitat (Buchanan et al. 1997, p.106; A. Miller, pers. comm. 2009).

Lake Creek from its confluence with the Lostine River 1.2 km (0.7 mi) provides spawning and rearing habitat (Buchanan et al. 1997, p.106; G. Sausen, pers. comm. 2009).

Hurricane Creek from its confluence with the Wallowa River upstream 14 km (8.7 mi) to Slick Rock Creek supports a local population; bull trout spawn and rear in the upper 8.0 km (5.0 mi) and utilize the lower portion as FMO habitat. Fluvial fish are present in Hurricane Creek in the lower section. However, miles 3.0-7.0 are not included as critical habitat due to irrigation withdrawals upstream where the stream channel is dewatered. Resident bull trout occur above the Consolidated–Moonshine Ditch diversion dam. The upper distribution of resident spawning and rearing bull trout is from the ditch to below Slick Rock Falls. Howell reported that genetic sampling in 2003 in Hurricane Creek documented numerous brook trout and apparent hybrids and sampled only 25 fish after 4 days of sampling. Genetic analysis underway will indicate how many of these fish are hybrids. The Hurricane Creek population appears to be small and potentially substantially hybridized. In addition, electrofishing data on Hurricane Creek for bull trout collected by ODFW in 2002, suggests a population of approximately 200 bull trout, 300 brook trout, and 150 hybrids above the natural barrier cascade (Buchanan et al. 1997, pp. 106, 113; Service 2002a, pp.27-28, Service 2008a, p.8).

Table 49. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Grande Ronde River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Bear Creek	OR	Bear Creek from its confluence with the Wallowa River upstream 12.1 km (7.5 mi) provides FMO habitat. The lower portions of Bear Creek and Little Bear Creek are utilized by fluvial bull trout and considered to be part of the Lostine River local population; thus, connectivity may be important to population viability. Bear Creek spawning and rearing habitat begins at National Forest boundaries and continues upstream 21.9 km (13.6 mi). A total of fourteen bull trout redds were documented in a 2.3 mile survey reach of Bear Creek in 2008. In the draft recovery plan, Bear Creek is identified as a stream to potentially expand bull trout spawning and rearing habitat downstream (Recovery Task 5.2.3). Bull trout have been observed throughout the mainstem and fluvial fish are present (Buchanan et al. 1997; Service 2002a, pp.109, 116-117, Sausen 2009, pp.47; A. Miller, pers. comm. 2009).	See CHU text	1175411 455843
Grande Ronde River–None	Beaver Creek	OR	Beaver Creek from its confluence with the Wenaha River upstream 2.5 km (1.6 mi) provides spawning and rearing habitat (G. Mendel, pers. comm. 2009).	See CHU text	1177863 459547
Grande Ronde River–None	Boulder Creek	OR	Boulder Creek from the confluence with the Little Minam River upstream 0.7 km (0.4 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp.106, 113; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).	See CHU text	1176327 453117
Grande Ronde River–None	Butte Creek	OR	Butte Creek from its confluence with the Wenaha River upstream 11.5 km (7.2 mi) to the confluence with East Fork and West Fork Butte Creek provides spawning and rearing habitat. Butte Creek and the West Fork of Butte Creek also have recent bull trout redd counts (of 31-32 redds, respectively) in 2005 and 2006, although the survey areas were not exactly the same during the two years. Eight total bull trout redds were documented in Butte Creek in 2005. (Buchanan et al. 1997; pp. 107, 111; Mendel, in litt. 2008; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009, Mendel, Trump, Gembala, et al. 2006, p. 47, WDFW, 2010).)	See CHU text	1176788 459820

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Camp Creek	OR	Camp Creek from the confluence with Indian Creek upstream contains spawning and rearing habitat for a distance of 1.1 km (0.7 mi) (Buchanan et al. 1997, pp.105, 110; P. Boehne, pers. comm. 2009).	See CHU text	1177578453867
Grande Ronde River–None	Catherine Creek	OR	Catherine Creek from the confluence with the Grande Ronde River upstream to the junction of North Fork and South Fork Catherine Creek provides 78.9 km (49 mi) FMO habitat. Spawning and rearing habitat continues upstream from the FMO reach for 7.4 km (4.6 mi) to the confluence with North Fork and South Fork Catherine Creek. Bull trout have been observed throughout the mainstem and migratory fluvial fish are present (Service 2002a, pp. 16-19; Buchanan et al. 1997, pp.104-116; P. Boehne, pers. comm. 2009).	See CHU text	1178722453139
Grande Ronde River–None	Chicken Creek	OR	Chicken Creek from its confluence with Sheep Creek upstream 8.5 km (5.3 mi) provides FMO habitat and spawning and rearing habitat continues for 0.4 km (0.3 mi) above the FMO reach. (Buchanan et al. 1997, p.104, 105, 110 ; P. Boehne, pers. comm. 2009).	See CHU text	1183955450948
Grande Ronde River–None	Clear Creek	OR	Clear Creek from its confluence with the Grande Ronde River upstream 6.8 km (4.2 mi) provides FMO habitat and spawning and rearing habitat extends for 4.8 km (3 mi) above the FMO reach (Buchanan et al. 1997, P. 105, 110; P. Sankovich, pers. comm. 2009; P. Boehne, pers. comm. 2009).	See CHU text	1183105450628.1
Grande Ronde River–None	Collins Creek	OR	Collins Creek from its junction with South Fork Catherine Creek upstream 3 km (1.9 mi) to its headwaters provides spawning and rearing habitat (Buchanan et al. 1997, p.105).	See CHU text	1175430451055

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Crooked Creek	OR and WA	Crooked Creek from its confluence with the Wenaha River upstream 7.2 km (4.5 mi) to the confluence with First Creek provides FMO habitat. Crooked Creek from its confluence with the First Creek upstream 5.2 km (3.2 mi) to the confluence with Third Creek provides spawning and rearing habitat. WDFW documented a bull trout in lower Crooked Creek, downstream of First Creek in 1986. USFS also captured one bull trout (approx. 200 mm) below First Creek in 1995 or 1996 (WDFW, 2010). The reach on Crooked Creek from the confluence with First Creek to the confluence with Third Creek at is currently unoccupied. This reach provides essential foraging, migratory, and overwintering habitat for bull trout. Portions of Crooked Creek were sampled in 2008 with one pass electrofishing, but no bull trout were documented (Buchanan et al. 1997, pp. 107, 111; Mendel in litt, 2008; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).	See CHU text	1175523 459767
Grande Ronde River–None	Deer Creek	OR	Deer Creek from the confluence with the Wallowa River upstream to the headwaters contains 14.9 km (9.2 mi) FMO habitat and 11.1 km (6.9 mi) spawning and rearing habitat. Bull trout have been observed throughout the mainstem and both fluvial and resident fish are present. Deer Creek bull trout are considered to be part of the Minam River local population. The status of bull trout in Deer Creek has been listed as special concern (Buchanan et al. 1997, pp. 106, 110, 116; Service 2002a, pp.20-23). Limited spawning surveys have been conducted on Deer Creek. Four bull trout redds were documented in 1.4 miles of survey on Deer Creek in 2000. In 2008, a USFS culvert replacement project on Deer Creek upstream of the confluence with Sage Creek has likely provided fish passage all year to all age classes of bull trout and other fish species above this culvert (G. Sausen, pers. comm. 2009). This bull trout fish passage restoration project was listed as task 1.2.3, 1.2.5, and 1.4.2 in the draft recovery plan (Service 2002a, p.164; A. Miller, pers. comm. 2009).	See CHU text	1176996 456197

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Dobbin Creek	OR	Dobbin Creek from the confluence with the Little Minam River upstream 5.2 km (3.2 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 106, 113; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).	See CHU text	1176543 452590
Grande Ronde River–None	East Fork Butte Creek	WA	East Fork Butte Creek from its confluence with Butte Creek upstream 1.6 km (1.0 mi) provides spawning and rearing habitat. Bull trout have been documented in the lower section (Mendel et al. 2008). WDFW conducted one-pass electrofishing in 2006, and documented bull trout in 3 of the 3 surveyed sites in the lower mile of East Fork Butte Creek (WDFW, 2010).	See CHU text	1177217 460637
Grande Ronde River–None	East Fork Elk Creek	OR	East Fork Elk Creek from the confluence with Elk Creek upstream 0.5 km (0.3 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 106, 111; Service 2002a, pp.20-22; A. Miller,, pers. comm. 2009).	See CHU text	1174701 451657
Grande Ronde River–None	East Fork Indian Creek	OR	East Fork Indian Creek from the confluence with Indian Creek upstream contains spawning and rearing habitat for a distance of 3.1 km (1.9 mi) (P. Boehne, pers. comm. 2009; Buchanan et al. 1997).	See CHU text	1177493 453684
Grande Ronde River–None	East Fork Wallowa River	OR	East Fork Wallowa River from the confluence with the Wallowa River at the head of the lake upstream from Wallowa Lake 1.1 km (0.7 mi) to a waterfall provides occupied spawning and rearing habitat.	See CHU text	1172120 452737
Grande Ronde River–None	East Fork Sheep Creek	OR	East Fork Sheep Creek from its confluence with Sheep Creek upstream 4.8 km (3 mi) provides potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout (P. Boehne, pers. comm. 2009). East Fork Sheep Creek is identified in the recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution necessary to achieve conservation and recovery in the draft recovery plan (Service 2002a, p.43).	See CHU text	1184751 450257
Grande Ronde River–None	Elk Creek	OR	Elk Creek from the confluence with the Minam River upstream 2.6 km (1.6 mi) provides spawning and rearing habitat (Buchanan et al. 1997; Service 2002a, pp.20-22; A. Miller, USFS, pers. comm. 2009).	See CHU text	1174603 451779

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Fiddlers Hell Creek	OR	Fiddlers Hell Creek from its confluence with Middle Fork Five Points Creek upstream 1.4 km (0.9 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout habitat necessary for conservation and recovery (P. Boehne, pers. comm. 2009).	See CHU text	1181597 454275
Grande Ronde River–None	First Creek	WA	First Creek from its confluence with the Crooked Creek upstream 2.2 km (1.4 mi) is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997, p. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).	See CHU text	1175710 460351
Grande Ronde River–None	Five Points Creek	OR	Five Points Creek from its confluence with the Grande Ronde River upstream 3.1 km (1.9 mi) provides unoccupied potential FMO habitat and potential spawning and rearing habitat continues upstream 18.9 km (11.7 mi) above the FMO reach. Habitat and water temperatures are suitable for bull trout. This reach provides essential foraging, migratory, and overwintering habitat in the lower portion, and spawning and rearing habitat in the upper portion. An isolated bull trout sighting was made in Lower Five Points Creek on USFS lands. Five Points Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as a potential area to expand bull trout distribution necessary to achieve conservation and recovery. (Buchanan, et al.1997, p. 110; Service 2002a, p. 43; Paul Boehne, USFS, pers. comm. 2009).	See CHU text	1182220 453464.1
Grande Ronde River–None	Fly Creek	OR	Fly Creek from its confluence with the Grande Ronde River upstream 13.5 km (8.4 mi) to Lookout Creek provides FMO habitat for bull trout that spawn and rear in Lookout Creek. This reach provides foraging, migratory, and overwintering habitat for bull trout which spawn and rear in Lookout Creek, a tributary to Fly Creek (Buchanan et al. 1997, pp.104, 105; J. Zakel, pers. comm. 2006; P. Boehne, pers. comm. 2009).	See CHU text	1183950 452096

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Goat Creek	OR	Goat Creek from its confluence with the Bear Creek upstream 1.7 km (1.1 mi) provides spawning and rearing habitat for both resident and fluvial bull trout. Total number of bull trout redds observed in this stream from the mouth to approximately 0.9 miles upstream to an impassable falls has ranged from 3-9 redds in survey years 1999-2008. In 2008, four total redds were documented in Goat Creek. Except in 2008, this stream has had more redds documented than a larger reach of stream surveyed annually on Bear Creek. Goat Creek is a cold perennial stream that is critical to the Bear Creek bull trout population. (Buchanan et al. 1997, p.106; Sausen 2009, p.41, G. Sausen, pers. comm. 2009).	See CHU text	1175379 454181
Grande Ronde River–None	Grande Ronde River	OR	Grande Ronde River extending from its confluence with the Snake River upstream 267.2 km (166 mi) to Meadow Brook Creek, including the state ditch provides key FMO habitat for sub-adult and adult fluvial bull trout and is an important migratory corridor. It is the primary artery that supports and links ten local populations in the Grande Ronde River and Wallowa River basins. The Upper Grande Ronde River from the junction with Meadow Brook Creek upstream 18.5 km (11.5 mi) is utilized as spawning and rearing habitat. (Buchanan et al. 1997, p. 105-107; P. Boehne, pers. comm. 2009).	See CHU text	1169845 460718

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Hurricane Creek	OR	Hurricane Creek from its confluence with the Wallowa River upstream 14 km (8.7 mi) to Slick Rock Creek supports a local population; bull trout spawn and rear in the upper 8.0 km (5.0 mi) and utilize the lower portion as FMO habitat. Fluvial fish are present in Hurricane Creek in the lower section. However, miles 3.0 7.0 are not included as critical habitat due to irrigation withdrawals upstream where the stream channel is dewatered. Resident bull trout occur above the Consolidated–Moonshine Ditch diversion dam. The upper distribution of resident spawning and rearing bull trout is from the ditch to below Slick Rock Falls. Howell reported that genetic sampling in 2003 in Hurricane Creek documented numerous brook trout and apparent hybrids and sampled only 25 fish after 4 days of sampling. Genetic analysis underway will indicate how many of these fish are hybrids. The Hurricane Creek population appears to be small and potentially substantially hybridized. In addition, electrofishing data on Hurricane Creek for bull trout collected by ODFW in 2002, suggests a population of approximately 200 bull trout, 300 brook trout, and 150 hybrids above the natural barrier cascade (Buchanan et al. 1997, pp. 106, 113; Service 2002a, pp.27-28, Service 2008a, p.8).	See CHU text	1173021 454196
Grande Ronde River–None	Indian Creek	OR	Indian Creek from the confluence with the Grande Ronde River 32.6 km (20.3 mi) upstream and includes three tributary streams (Camp, East Fork and North Fork Indian creeks). Indian Creek supports a bull trout local population with spawning and rearing occurring in the upper 15.2 km (9.5 mi) portion of Indian Creek and the identified reaches of Camp Creek, East Fork, and North Fork Indian Creek. The lower section (below the USFS boundary) of Indian Creek provides FMO habitat for fluvial bull trout and a connection to the Grande Ronde River for a distance of 17.7 km (11 mi) (P. Boehne, pers. comm. 2009; T. Bailey, pers. comm. 2008).	See CHU text	1179201 455342

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Indiana Creek	OR	Indiana Creek from its mouth at Chicken Creek upstream 3.5 km (2.1 mi) provides spawning and rearing habitat. There is a large culvert near the mouth that is a passage barrier, bull trout are located upstream (Buchanan et al. 1997, pp. 105, 110; P. Sankovich, pers. comm. 2009; P. Boehne, pers. comm. 2009).	See CHU text	1183863 450237
Grande Ronde River–None	Lake Creek	OR	Lake Creek from its confluence with the Lostine River 1.2 km (0.7 mi) provides spawning and rearing habitat (Buchanan et al. 1997, p.106; G. Sausen, pers. comm.. 2009).	See CHU text	1174103 453321
Grande Ronde River–None	Limber Jim Creek	OR	Limber Jim Creek from its confluence with the Grande Ronde River upstream 13.1 km (8.1 mi) contains FMO habitat from the confluence upstream for 7.4 km (4.6 mi) and spawning and rearing habitat upstream 5.7 km (3.5 mi) of the FMO reach to the headwaters. The lower portion of Limber Jim Creek provides FMO habitat up to a potentially impassable falls, and occupied spawning and rearing habitat occurs above the falls (Buchanan et al. 1997, pp.105, 110; P. Sankovich,, pers. comm. 2009; P. Boehne, pers. comm. 2009).	See CHU text	1183437 450889
Grande Ronde River–None	Little Bear Creek	OR	Little Bear Creek FMO habitat extends 3.9 km (2.4 mi) from the confluence of Bear Creek and spawning and rearing habitat continues for 6.9 km (4.3 mi) above the FMO reach. Little Bear Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution necessary to achieve conservation and recovery (Buchanan et al. 1997, p.106; Service 2002a, pp.109, 116-117; A. Miller, pers. comm. 2009).	See CHU text	1175553 454853
Grande Ronde River–None	Little Fly Creek	OR	Little Fly Creek from its confluence with Fly Creek upstream 1.6 km (1 mi) is spawning and rearing habitat and connects to Fly and Lookout creeks.	See CHU text	1184665 451210
Grande Ronde River–None	Little Lookingglass Creek	OR	Little Lookingglass Creek, a tributary to Lookingglass Creek, provides FMO habitat for 5.4 km (3.4 mi) to the National Forest boundary and spawning and rearing (and FMO) habitat for 4.2 km (2.6 mi) from the National Forest boundary to the confluence with Buzzard Creek (Buchanan et al. 1997, pp.105, 111; D. Crabtree, pers. comm. 2009).	See CHU text	1178748 457499

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Lookingglass Creek	OR	Lookingglass Creek from its confluence with the Grande Ronde River upstream 24.1 km (15.0 mi) to a barrier falls provides FMO habitat for a total distance of 19.8 km (12.3 mi) and spawning and rearing habitat for a total distance of 4.6 km (2.8 mi) to the headwaters. The Lookingglass Creek system supports a local population and bull trout spawn and rear throughout the identified stream reaches. Lower portions of Lookingglass Creek also provide probable foraging habitat for fluvial fish and a migratory connection to the Grande Ronde River. Fifty eight total redds on Lookingglass were reported in 2008, in four miles of stream, with the majority of redds documented in the upper two reaches. There appears to be a slight downward trend in redd counts in recent years. (Buchanan et al. 1997, pp. 105, 110, 111; Bellerud, et al, 1997, pp. 37-48; D. Crabtree, pers. comm. 2008, 2009).	See CHU text	1178423 457068
Grande Ronde River–None	Lookout Creek	OR	Lookout Creek from its confluence with Fly Creek upstream 6.9 km (4.3 mi) to approximately 0.6 km (1 mi) above USFS Road 5160 is spawning and rearing habitat. Bull trout have been observed in Lookout Creek. Future verification of the upper distribution boundary of SR habitat is recommended by the USFS. (P. Boehne, pers. comm. 2009; J. Zakel, pers. comm. 2006).	See CHU text	1184763 451094

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Lostine River	OR	Lostine River from its confluence with the Wallowa River upstream for 40.4 km (25.1 mi) to the mouth of the East Lostine River provides habitat for fluvial and resident fish. Bull trout spawning and rearing habitat is 15.1 km (9.4 mi) upstream of the Lostine River Bridge to the headwaters upstream of Shady campground. The Lostine River downstream of Lostine River Ranch is utilized as FMO habitat. Migration studies on fluvial bull trout tagged in the Lostine River reported migration within the river and movement into the Wallowa River and Grande Ronde River to near the town of Elgin, Oregon. Bull trout redd surveys in the fall of 2008 found 53 total redds for 10.1 miles of index survey between RM 9.4 and RM 24.5 of the Lostine River. Fluvial size redds were the dominant redd size recorded during the spawning surveys. Mean redd area (m2) ranged from 0.9-1.3 in 2002a-2008 for the Lostine River. Migration studies on fluvial size bull trout tagged in the Lostine reported migration within the Lostine to spawning habitat and overwintering habitat, and movement into the Wallowa River and Grande Ronde to near the town of Elgin (several miles of movement). Hybridization with brook trout appears to be occurring. Genetic samples have been taken but have not been reported to date and in 2008 bull trout and potential brook trout hybrids were observed on the spawning grounds. The Nez Perce Tribe has expressed concerns with the number of potential bull trout hybrids they have caught at their weir located on the Lostine River near the confluence with the Wallowa River. (P. Howell, pers. comm. 2005; Sausen 2009, pp.8, 13, 20; Buchanan et al. 1997, p.106; Service 2002a, pp.23-25; G. Sausen, pers. comm. 2009).	See CHU text	1174900 455521
Grande Ronde River–None	Marion Creek	OR	Marion Creek at the confluence with Limber Jim Creek to the headwaters upstream 3.4 km (2.1 mi) to its junction with Limber Jim Creek provides spawning and rearing habitat for bull trout (P. Boehne, pers. comm. 2009).	See CHU text	1182669 451055

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Menatchee Creek	WA	Menatchee Creek from the confluence with the Grande Ronde River upstream 15.3 km (9.5 mi) to the headwaters provides FMO habitat for bull trout. Historical data indicate bull trout presence in this stream. Currently, bull trout have not been confirmed. Menatchee Creek was sampled with one pass electrofishing by WDFW and USFS personnel and no bull trout were found in 14 sites surveyed in 2007. (Buchanan et al. 1997, pp. 107; Service 2002a, pp.35-36; Mendel, in litt., 2008, Mendel et al. 2008, pp.22-35, 2010).	See CHU text	1173643 460072
Grande Ronde River–None	Middle Fork Catherine Creek	OR	Middle Fork Catherine Creek from its junction with North Fork Catherine Creek upstream 4.3 km (2.7 mi) to the confluence with Squaw Creek provides spawning and rearing habitat (Service 2002a, pp.17-19; Buchanan et al. 1997, p. 105; P. Boehne, pers. comm. 2009).	See CHU text	1176174 451521
Grande Ronde River–None	Middle Fork Five Points Creek	OR	Middle Fork Five Point Creek from its confluence with Five Point Creek upstream 2.7 km (1.7 mi) is unoccupied FMO habitat. This reach has the potential to provide essential spawning and rearing habitat; it flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout distribution essential for conservation and recovery (P. Boehne, pers. comm. 2009).	See CHU text	1181439 454813
Grande Ronde River–None	Milk Creek	OR	Milk Creek from its mouth at the South Fork Wenaha River upstream 5.2 km (3.2 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).	See CHU text	1178825 459132

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Minam River	OR	Minam River from the confluence with the Wallowa River upstream 72.9 km (35.3 mi) and extending up the North Minam River supports a bull trout local population with spawning and rearing habitat occurring in the tributary streams (Elk and East Fork Elk creeks)and the upper 55 km (34.2 mi) of the Minam River. Lower sections of the Minam River are utilized as FMO habitat for a distance of 18.7 km (11.6 mi). Bull trout have been observed throughout the mainstem and migratory fluvial fish and resident fish are present. The status of bull trout in the Minam River is "low risk of extinction." Minam River has had surveys conducted by ODFW in past years, with limited documentation of bull trout numbers observed (Service 2002a, pp.20-22; Buchanan et al. 1997, pp.106, 111, 116; Service 2008a, p.12).	See CHU text	1177211 456214
Grande Ronde River–None	Mount Emily Creek	OR	Mount Emily Creek from its confluence with Middle Fork Five Points Creek upstream 2.1 km (1.3 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach connects to Five Points Creek (Recovery Task 5.2.3) and provides high quality habitat with potential to support expanded bull trout distribution necessary for conservation and recovery (P. Boehne, pers. comm. 2009).	See CHU text	1181474 454732
Grande Ronde River–None	North Fork Catherine Creek	OR	North Fork Catherine Creek from its mouth at Catherine Creek upstream a distance of 14 km (8.7 mi) provides spawning and rearing habitat. ODFW surveyed 1.3 miles of bull trout spawning habitat on North Fork Catherine Creek from 1998 to 2006. Bull trout redds were highest in 1998 with 19 redds and dropped to a low of 2 redds in 2006. (Service 2002a, pp.17-19; Service 2008a, pp. Buchanan et al. 1997, p. 105; T. Bailey, pers. comm.2008; P. Boehne, , pers. comm. 2009).	See CHU text	1176472 451197
Grande Ronde River–None	North Fork Indian Creek	OR	North Fork Indian Creek from the confluence with Indian Creek upstream 1.4 km (0.9 mi) provides FMO habitat (above and below a waterfall) and spawning and rearing habitat continues upstream for an additional 5.1 km (3.1 mi) above the FMO reach (P. Boehne, pers. comm. 2009).	See CHU text	1178201 454333

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	North Fork Wenaha River	OR and WA	North Fork Wenaha River from its junction with the Wenaha River upstream 18.8 km (11.7 mi) provides spawning and rearing habitat. Recent information is available regarding the relative abundance of bull trout in northern tributaries of the Wenaha River within Washington State. The North Fork Wenaha River within Washington has bull trout redd counts of 82, 86 (both partial counts) in 2006 and 2007 respectively, and 153 redds in 2005. WDFW conducted one pass electrofishing at 10 sites in 2005 from the state line upstream about 5 miles to a small falls and bull trout were documented for each site surveyed, and in general, multiple age classes of bull trout were reported for each site. In 2006 WDFW electro-fished six sites upstream of the falls and documented bull trout in each site up to the forks of the North Fork Wenaha. Bull trout and redds were observed upstream of the forks in 2006 by WDFW.(Buchanan et al. 1997, pp. 107, 111; Mendel in litt., 2008; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009; Mendel et al. 2008, pp. 68-73 and 76-84, WDFW, 2010).	See CHU text	1177950 459508
Grande Ronde River–None	North Minam River	OR	North Minam River from the confluence with the Minam River for 2.1 km (1.3 mi) provides spawning and rearing habitat (Buchanan et al. 1997, Service 2002a, pp.20-22; A. Miller, pers. comm. 2009).	See CHU text	1175368 452725
Grande Ronde River–None	Pole Creek	OR	Pole Creek from its mouth at South Fork Catherine Creek upstream 3.9 km (2.4 mi) to its headwaters provides spawning and rearing habitat (P. Boehne, pers. comm. 2009; Buchanan et al. 1997, p. 105).	See CHU text	1175604 451070
Grande Ronde River–None	Sage Creek	OR	Sage Creek from the confluence of Deer Creek 2.8 km (1.7 mi) upstream is identified as an area to potentially expand bull trout spawning and rearing distribution necessary to achieve conservation and recovery. A culvert at the mouth is currently a fish passage barrier. The U.S. Forest Service is fixing this culvert to restore bull trout connectivity in Sage Creek in 2010 (A. Miller, pers. comm. 2009; Service 2002a, p.43; Service 2002a, p.20).	See CHU text	1176074 455005

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Sand Pass Creek	OR	Sand Pass Creek from its mouth at South Fork Catherine Creek upstream 2.9 km (1.8 mi) to its headwaters provides spawning and rearing habitat (P. Boehne, pers. comm. 2009; Buchanan et al. 1997, p.105).	See CHU text	1175518 451080
Grande Ronde River–None	Sheep Creek	OR	Sheep Creek from its confluence with the Grande Ronde River provides FMO habitat upstream for 11.3 km (7 mi) and fluvial bull trout utilize 3.9 km (2.4 mi) of spawning and rearing habitat above the FMO reach. Currently unoccupied, this reach has the potential to provide essential foraging, migratory and overwintering habitat in the lower portion and suitable spawning and rearing habitat in the upper portion (P. Boehne, pers. comm. 2009). Sheep Creek is identified in the draft recovery plan (Recovery Task 5.2.3) as an area to potentially expand bull trout distribution essential to achieve conservation and recovery (Service 2002a, p.43).	See CHU text	1183818 451047
Grande Ronde River–None	Silver Creek	OR	Silver Creek from its confluence with the Lostine River upstream 0.5 km (0.3 mi) to Hunter Falls provides spawning and rearing habitat (Buchanan et al. 1997, p.106; A. Miller, pers. comm. 2009).	See CHU text	1174277 453958
Grande Ronde River–None	South Fork Catherine Creek	OR	South Fork Catherine Creek from its junction with Catherine Creek upstream 10.7 km (6.7 mi) provides spawning and rearing habitat (Service 2002a, pp.17-19; P. Boehne, pers. comm. 2009, B. Lovatt, pers. comm. 2009; Buchanan et al. 1997, p. 105).	See CHU text	1176472 451196
Grande Ronde River–None	South Fork Wenaha River	OR	South Fork Wenaha River from its junction with the Wenaha River upstream 13.1 km (8.1 mi) provides spawning and rearing habitat (Buchanan et al. 1997, pp. 107, 111; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).	See CHU text	1177950 459507
Grande Ronde River–None	Summer Creek	OR	Summer Creek from the confluence of Lookingglass Creek upstream 0.6 km (0.4 mi) provides spawning and rearing habitat for bull trout (D. Crabtree, pers. comm. 2009).	See CHU text	1179828 457664

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Third Creek	WA	Third Creek from its confluence with the Crooked Creek upstream 5.3 km (3.3 mi) to the confluence with Trout Creek is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997: p. 107, 111; G. Mendel, pers. comm. 2009).	See CHU text	1176238 460458
Grande Ronde River–None	Tie Creek	OR	Tie Creek from its confluence with Middle Fork Five Points Creek upstream 0.9 km (0.5 mi) is potential spawning and rearing habitat. Currently unoccupied, this reach has the potential to provide essential spawning and rearing habitat for bull trout. This short reach flows into Five Points Creek and provides equally high quality habitat with potential to support expanded bull trout distribution necessary for conservation and recovery (P. Boehne, pers. comm. 2009).	See CHU text	1181587 454227
Grande Ronde River–None	Trout Creek	WA	Trout Creek from the confluence with Third Creek upstream to approximately 3.2 km (2.0 mi) upstream is currently unoccupied, but has the potential to provide essential foraging, migratory, and overwintering habitat for bull trout (Buchanan et al. 1997: p. 107, 111; G. Mendel, pers. comm. 2009).	See CHU text	1176271 460887

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Wallowa River	OR	Wallowa River from the confluence with the Grande Ronde River upstream for 80.4 km (50 mi) to the dam at Wallowa Lake provides FMO habitat for sub-adult and adult fluvial bull trout and is an essential migratory corridor for movement from upper watershed spawning streams to the Grande Ronde River. Fluvial fish that spawn in the Lostine, Deer, Minam, Bear, and upper Hurricane Rivers use the Wallowa River to move to and from FMO habitat in the Grande Ronde and Snake Rivers (Service 2002a, p. 24; Buchanan et al. 1997, p.106). Current bull trout use in the Wallowa River from Hurricane Creek confluence upstream to Wallowa Lake is largely unknown. The dam currently lacks upstream passage for fish at Wallowa Lake and unscreened diversions below the dam currently provide limited habitat conditions and connectivity for bull trout in this section of the Wallowa River. In the future, if passage is provided for fish at Wallowa Lake (the Nez Perce Tribe and BPA have a proposal to reintroduce sockeye), then this section of the Wallowa River will likely be utilized by bull trout as FMO habitat.	See CHU text	1177853 457255
Grande Ronde River–None	Wallowa River	OR	Wallowa River from the head of Wallowa Lake continues upstream 1.5 km (0.9 mi) as spawning and rearing habitat. Historically, bull trout were present in the Wallowa River above Wallowa Lake, however, this population is believed to have been extirpated by the 1950's (Buchanan et al. 1997, p. 110). Although a reintroduction program using bull trout and Dolly Varden (Salvelinus malma) from Alaska was initiated in 1968, this program was not successful and was terminated in 1978. No bull trout or Dolly Varden was captured in the Wallowa Lake fishery between 1980 and 1996. In 1997, 600 bull trout from Big Sheep Creek, a tributary to the Imnaha River, were introduced into Wallowa River above Wallowa Lake. These fish were salvaged because a hydroelectric diversion in the Big Sheep drainage (Imnaha River Subbasin) was being decommissioned (Service 2002a, pp.35). Recent creel counts and 2002 snorkel counts indicate that bull trout are present (G. Sausen, pers. comm., 2009).	See CHU text	1177853 457255

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Wallowa Lake	OR	Wallowa Lake from the ordinary high water mark provides a surface area of 605 ha (1,496 ac) FMO habitat.	See CHU text	1172095 453100
Grande Ronde River–None	Wenaha River	OR	Wenaha River from its confluence with the Grande Ronde River upstream 35 km (21.7 mi) to the junction of the North Fork and South Fork Wenaha River is critical habitat. Collectively, the Wenaha River and its tributaries support three bull trout populations, which is about one-third of the populations within in the Grande Ronde basin. The Wenaha River system is the basin's stronghold. The lower 16 km (10 mi) of the Wenaha River near the confluence with Beaver Creek provide FMO habitat for fluvial bull trout and a migratory connection to the Grande Ronde River. Spawning and rearing has been documented in the upper Wenaha and in South Fork Wenaha, Milk Creek, North Fork Wenaha, Beaver Creek, Butte Creek, and West Fork Butte Creek. All other tributaries named are documented FMO habitat for bull trout (Buchanan et al. 1997, pp.107, 111; Mendel in litt., 2008; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009).	See CHU text	1174512 459454
Grande Ronde River–None	West Fork Butte Creek	WA	West Fork Butte Creek from the confluence with Butte Creek upstream 4.2 km (2.6 mi) to the confluence with Rainbow Creek provides spawning and rearing habitat. Recent surveys in 2005 and 2006, were conducted from Rainbow Creek to East Fork Butte Creek, where redd distribution differed substantially between the upper and lower sections in both years. Total redds documented in 2005 were 23; the upper section had 16 redds in 2005 but only 2 redds in 2006. The lower section had 7 redds in 2005, and 30 redds in 2006. WDFW conducted one pass electrofishing in 2006, and documented bull trout in all six sites surveyed between East Fork and Preacher Creek. (Buchanan et al. 1997, pp. 107, 111;Mendel in litt., 2008; G. Mendel, pers. comm. 2009; P. Sankovich, pers. comm. 2009; Mendel et al. 2008, 74-75 and 84-87, WDFW, 2010).	See CHU text	1177221 460632
Grande Ronde River–None	West Fork Wallowa River	OR	West Fork Wallowa River from the confluence with the Wallowa River at the head of the lake upstream from Wallowa Lake 0.9 km (0.6 mi) to a waterfall provides occupied spawning and rearing habitat.	See CHU text	1172120 452736

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Grande Ronde River–None	Unnamed Tributary to Clear Creek	OR	Unnamed tributary from the confluence with Clear Creek upstream provides 2.2 km (1.4 mi) FMO habitat and spawning and rearing habitat upstream of the FMO reach for 2.5 km (1.6 mi) (P. Boehne, pers. comm. 2009).	See CHU text	1183298 450133
Grande Ronde River–None	Little Minam River	OR	Little Minam River from its confluence with the Minam River upstream 24.1 km (15 mi) contains an isolated, resident bull trout local population above the barrier falls in portions of the Little Minam River, Boulder Creek, and Dobbin Creek. This reach provides foraging, migratory, and overwintering habitat in the lower portion as well as spawning and rearing habitat in the upper portion. The 8.1 km (5 mi) stretch of the Little Minam River below the barrier falls is critical habitat because of the presence of bull trout in this reach, high water quality, and the potential importance that emigrants from the Little Minam local population / core area may provide to other downstream populations. All of the Little Minam River and its tributaries are within the Eagle Cap Wilderness Area. Tributaries include Boulder and Dobbin creeks. Currently a resident population exists above a barrier falls at RKM 8 (RM 4.9). This resident population does not experience immigration of bull trout from other areas in the Grande Ronde River. The foraging, migratory, and overwintering designation of this stream is included due to the presence of bull trout in this reach, high water quality, and the potential importance emigrants from the Little Minam Core Area may provide to other essential populations (Buchanan et al. 1997, pp. 106, 112, 113; Service 2002a, pp. 32-35; P. Sankovich, pers. comm., 2008 and T. Bailey, pers. comm. 2008).	See CHU text	1176719 454005

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 17. Mid-Columbia Recovery Unit—Imnaha River Critical Habitat Unit

Chapter 17. Imnaha River Critical Habitat Unit

The Imnaha River CHU is essential to the conservation of bull trout because it supports strong bull trout populations that are considered to be essential for bull trout recovery in the Mid-Columbia RU. It contains four generally healthy populations spread over a large geographical area with multiple age classes, containing both resident and fluvial fish. This bull trout stronghold also has a prey base; connectivity with the Snake River; wide distribution throughout the habitat; and overall, excellent habitat conditions. Primary spawning activity on the Imnaha River have been documented to occur in the headwaters, which lie within wilderness, and contain higher elevation, coldwater habitat that should help ameliorate future climate change effects on bull trout in the Columbia River basin (see Appendix 1 for more detailed information).

The Imnaha River CHU is located in northeastern Oregon in Wallowa County and a very small portion of Baker and Union Counties. Although much of the mainstem Imnaha River watershed is federally owned, the river corridor is mostly privately owned below approximately river km 83 (mi 51.5).

The entire occupied area of the Imnaha River Basin CHU and the Imnaha River Core Area are essential to the recovery unit because the Imnaha River CHU/Core Area is a bull trout stronghold within the Columbia basin and within the state of Oregon. The Imnaha River Core area contains four populations that are generally healthy; especially the Imnaha River population which was rated at low risk of extinction by Buchanan et al. (1997, p. 126.) These four populations are spread over a large geographical area with multiple age classes, containing both resident and fluvial fish. This bull trout stronghold also has an anadromous prey base; connectivity with the Snake River; wide distribution throughout the habitat; and overall, excellent habitat conditions. Primary spawning activity on the Imnaha River has been documented to occur in the headwaters, which lie within wilderness, and contain higher elevation, coldwater habitat that should help ameliorate future climate change effects on bull trout in the Columbia River Basin.

The four local populations in the Imnaha River core area are located in the; 1) mainstem Imnaha; 2) Big Sheep Creek and tributary streams (Big Sheep Creek is considered to be one local population above and below the Wallowa Valley Irrigation Canal); 3) Little Sheep Creek and tributary streams; and 4) McCully Creek (Service 2002a, p. 15). Cook and Hudson (2008, p.1) describe five populations which includes the above populations and in addition they divide Big Sheep above the diversion and below into two populations.

Both resident and fluvial bull trout exist above and below Imnaha Falls. Cliff Creek is a significant tributary to South Fork Imnaha (located above the falls) that contains primarily resident bull trout (due to a waterfall near the mouth). The mainstem Imnaha, S.F. Imnaha, and N.F. Imnaha contain both resident and fluvial bull trout. Soldier Creek, Bear Creek, and Blue Creek (also tributary streams to the SF Imnaha) contain primarily resident bull trout. The Imnaha falls likely affects the distribution of fluvial fish above the falls, dependent on annual flows (Sausen 2009, pp. 14 and 18). Resident and/or fluvial bull trout occupy the mainstem Imnaha River from the mouth to the headwaters for at least part of the year (Buchanan et al. 1997, p. 120). Maintenance of these populations is identified as essential to conservation and recovery in the draft bull trout Recovery Plan. Starting approximately 0.5 miles upstream of Indian Crossing, the mainstem Imnaha River and its tributaries are within the Eagle Cap Wilderness.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression* – the Imnaha River CHU contains four local populations with fluvial and resident life history forms and multiple age classes spread over a large geographical area (the Imnaha River Basin and Big Sheep Subbasin). Connectivity with the Snake River, an anadromous prey base, and future fish passage improvements in the Big Sheep Subbasin will maintain and improve the fluvial life history forms and multiple age classes in this CHU.

2. *Conserve opportunity for genetic diversity* – Large geographical area containing four local populations with both fluvial and resident life histories, therefore, genetic diversity likely. Genetic samples have recently been taken by the Service in this CHU but the results are not known.

3. *Ensure bull trout are distributed across representative habitats* – Four healthy populations; Imnaha, Big Sheep, Little Sheep, and McCully Creek with excellent habitat conditions (overall) and a variety of habitat conditions are spread over a large geographical area with connectivity to the Snake River.

4. *Ensure sufficient connectivity among populations* – Bull trout move freely within the Snake River and Imnaha River migratory corridor. Upper Big Sheep, Little Sheep, and McCully populations have limitations on connectivity between populations due to water diversions.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* – Primary spawning activity on the Imnaha occurs in the headwaters; which lie within wilderness containing high elevation cold water habitat. Both spawning and rearing and FMO habitat and excellent and varied habitat conditions (overall) occur in this CHU.

6. *Consider threats (e.g., climate change)* – Spawning habitat occurs within high elevation cold water habitat that should help ameliorate future climate change effects on bull trout in the Columbia River Basin.

7. *Ensure sufficient redundancy in conserving population units* – The entire occupied area of the Imnaha River Basin CHU and the Imnaha River Core Area are essential to the recovery unit because the CHU/Core Area is a bull trout stronghold within the Columbia Basin and within the state of Oregon. The CHU contains four healthy populations; excellent habitat conditions (overall); fluvial and resident populations with multiple age classes; and a variety of habitat conditions spread over a large geographic area.

The following water bodies are included in this CHU (see Table 50)

Imnaha River from its confluence with the Snake River upstream approximately 66.6 km (41.4 mi) is utilized by fluvial bull trout in fall, winter, and spring as essential FMO habitat (G. Sausen, pers. comm., 2009). Bull trout occur year-round upstream of the confluence with Grouse Creek and utilize the upper 49.4 km (30.7 mi) as spawning and rearing habitat. The Imnaha River from the fish weir below Gumboot confluence to Indian Crossing was not surveyed for redds in 2005 through 2008, (this area was surveyed in 1999 to 2004 and is considered bull trout spawning habitat) (Sausen 2009, p.7). In 2003, a low density of redds (5 total redds) were reported in the Fish weir to Indian Crossing section (Sausen 2009, p.42). In addition to the index surveys, bull trout spawning has been observed in the Crazyman to weir reach of the Imnaha during chinook surveys (G. Sausen, pers. comm., 2009). The Buchanan et al. (1997 p. 119) Imnaha fish distribution map displays spawning/rearing distribution upstream of

Summit Creek and isolated bull trout sightings within Grouse and Summit Creek. Eighty-one bull trout redds were reported in 2008 for 5.3 miles of survey, within the Indian Crossing upstream to the confluence of the N.F. and S.F.s of the Imnaha River (Sausen 2009, p.42).

North Fork Imnaha River from the confluence with South Fork Imnaha River upstream approximately 9.7 km (6.0 mi) is used for spawning and rearing by both resident and fluvial bull trout. The size of the fish and redds documented (whether resident or fluvial) has varied through the survey years. This is likely related to the access above the Imnaha falls. Mean redd area (m^2) for the N.F. Imnaha River (including M.F. Imnaha) in 2005 was fluvial size (>1 m^2) and mean redd area in 2008 was resident size (0.3 m^2). Redd surveys in the fall of 2008, in this section, found 22 redds in the N.F. Imnaha River and a high of 68 redds in 2004 (Sausen 2009, p.42). The North Fork Imnaha River is within the Eagle Cap Wilderness.

Middle Fork Imnaha River from the confluence of the North Fork Imnaha River upstream approximately 1.4 km (0.8 mi) to a barrier falls provides spawning and rearing habitat for resident and fluvial bull trout.

Redd surveys in the fall of 2008, in this section, found eight redds in the Middle Fork Imnaha River and a high of 24 redds in 2005 (Sausen 2009, p.42). The Middle Fork Imnaha River is within the Eagle Cap Wilderness.

South Fork Imnaha River from the confluence of the North Fork Imnaha River upstream approximately 9.3 km (5.8 mi) is used for spawning and rearing habitat by fluvial and resident bull trout. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Redd surveys in the fall of 2008, found 21 redds in this river, and in 2005 a high of 99 redds was documented (Sausen 2009, p.42). Both fluvial and resident bull trout have been documented during spawning surveys in this stream as well as large fluvial redds (mean redd size in 2008 was 2.0 m^2). The South Fork Imnaha River is within the Eagle Cap Wilderness.

> _Soldier Creek_ from the confluence with the South Fork Imnaha River upstream approximately 0.3 km (0.2 mi) provides spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Redd surveys in the fall of 2001 found 13 redds in this stretch of the Soldier Creek (Sausen et al. 2001, p.9). Soldier Creek is within the Eagle Cap Wilderness.

Bear Creek from the confluence with the South Fork Imnaha River upstream approximately 0.4 km (0.3 mi) is spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Bear Creek is within the Eagle Cap Wilderness.

> _Blue Creek_ from the confluence with the South Fork Imnaha River upstream approximately 0.5 km (0.3 mi) is spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Blue Creek is within the Eagle Cap Wilderness.

> _Cliff Creek_ from the confluence with the South Fork Imnaha River upstream approximately 6.7 km (4.2 mi) to the headwaters is spawning and rearing habitat. Redd surveys in the fall of 2008, found 52 redds from the mouth upstream 4.1 km (2.5 mi) in

Cliff Creek (Sausen 2009, p.42). Cliff Creek contains resident bull trout due to a waterfall near the mouth. Cliff Creek is within the Eagle Cap Wilderness.

Big Sheep Creek Subbasin

The Wallowa Valley Irrigation Canal (WVIC) intercepts flow and inhibits connectivity in Big Sheep, Salt, and several other small streams or springs. Flows below the WVIC are reduced or eliminated, making the streams unusable by bull trout for a variable distance downstream during certain times of the year. Bull trout in Big Sheep Creek located above and below the WVIC, are considered to be one local population in the draft Recovery Plan (Service 2002a, p. 15). Cook and Hudson (2008, p.1) describe five populations which includes the above populations and in addition they divide Big Sheep above the diversion and below into two populations. Bull trout in Big Sheep Creek are considered to be of special concern (Ratliff and Howell 1992, p.14).

Big Sheep Creek from the confluence of the Imnaha River upstream 49.8 km (30.8 mi) to the confluence of the North and Middle Forks of Big Sheep Creek is FMO habitat and upstream 12.1 km (7.5 mi) to the headwaters near Bonny Lakes is spawning and rearing habitat. Both resident and fluvial bull trout occur in Big Sheep Creek. Bull trout above the Wallowa Valley Irrigation Canal (WVIC) are considered resident because of the barriers to upstream movement caused by the WVIC diversion. Maintenance of this population is identified as essential to recovery in the draft bull trout Recovery Plan (Service 2002a, p. 15). Bull trout occur year round from Owl Creek at approximately km 46.1 (mile 28.7) and upstream. In fall, winter, and spring, fluvial bull trout are present below this approximate location as FMO habitat down to confluence with the Imnaha River (Buchanan et al. 1997, p.119). Redd surveys in the fall of 2008 found 3 redds from km 56.4-59.6 (mi 35-37) of Big Sheep Creek and a high of 17 redds were reported in 2002 (Sausen 2009, p.42). Both resident and fluvial bull trout occur in Big Sheep Creek. Bull trout above the WVIC at km 61 (mi 37.8) are considered to be resident because of the barriers to upstream movement caused by the WVIC diversion. Nearly the entire stream corridor, from the confluence with the Imnaha River upstream to Owl Creek, is privately owned. From Owl Creek upstream the corridor is federally owned, with the upper 5 km (3.1 mi) within the Eagle Cap Wilderness.

Middle Fork Big Sheep Creek from the confluence with Big Sheep Creek upstream 3.5 km (2.2 mi) to the headwaters near Bonny Lakes is utilized as spawning and rearing habitat by fluvial bull trout.

Lick Creek from the confluence of Big Creek upstream approximately 15.1 km (9.4 mi) to the headwaters is spawning and rearing habitat. Both resident and fluvial bull trout occur in Lick Creek. All of Lick Creek is on National Forest System land with approximately the upper 3.7 km (2.3 mi) within the Eagle Cap Wilderness. Redd surveys in the fall of 2008 found 19 redds from km 2.9-12.1 (mi 1.8-7.5) of Lick Creek (Sausen 2009, p.42). Both resident and fluvial bull trout occur in Lick Creek. Maintenance of this population is identified as essential to the conservation and recovery in the draft bull trout Recovery Plan. All of Lick Creek is on Forest Service land, with approximately the upper 3.7 km (2.3 mi) within the Eagle Cap Wilderness.

Unnamed tributary (possibly called Quartz Creek) from the confluence with Lick Creek upstream 1.5 km (0.9 mi) is spawning and rearing habitat. U.S. Fish and Wildlife Service researchers reported bull trout presence in this tributary based on a survey of six reaches (250 m each) from the confluence with Lick Creek upstream. Forty-six bull trout > 120 mm and over 60 fry high were collected with indications that bull trout are likely using this tributary for spawning in addition to mainstem Lick Creek. In 2008, an exploratory bull trout spawning survey conducted in this location (one mile survey reach) documented 6 redds (Sausen 2009, p.46).

Salt Creek from the confluence with Big Sheep Creek upstream approximately 1.9 km (1.2 mi) to the point where the stream goes sub-surface (below the WVIC) and then continues approximately 0.5 km (0.3 mi) above the intersection with the WVIC to provide 3.82 km (2.4 mi) of spawning and rearing habitat for resident and fluvial bull trout. The stream reach above the WVIC is not connected to the lower reach of Salt Creek and currently bull trout are considered resident fish associated with the Little Sheep local population above the WVIC. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Redd surveys in the fall of 2001 found 7 redds from km 0-1.3 (mi 0-0.8) of Salt Creek (Sausen et al. 2001). Both resident and fluvial bull trout occur in Salt Creek.

Little Sheep Creek Subbasin

Maintenance of this population is identified as essential to the conservation and recovery in the draft bull trout Recovery Plan. The WVIC intercepts flow and inhibits connectivity between Little Sheep and Cabin, Redmont, Canal, Ferguson, and McCully creeks (which is considered to be a separate local population in the draft Recovery Plan). Flows below the WVIC are reduced or eliminated making the streams unsuitable for bull trout for a variable distance downstream during certain times of the year. Nearly the entire Little Sheep stream corridor from the confluence with the Big Sheep Creek upstream to just below Ferguson Creek is privately owned. Above this point Little Sheep Creek is within Forest Service boundaries.

Little Sheep Creek from the confluence with Big Sheep Creek upstream 41.9 km (26.1 mi) provides FMO habitat to where Little Sheep Creek is intercepted by the WVIC (Buchanan et al. 1997, p.119). The area upstream approximately 0.9 km (0.6 mi) from the WVIC provides spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p. 119). Bull trout in Little Sheep Creek are considered to be at high risk (Buchanan et al. 1997, p.126). Little Sheep Creek is considered as one local population (above and below the canal) in the draft Recovery Plan.

Redmont Creek upstream from the confluence with Little Sheep Creek to above the WVIC is used as FMO habitat for 1.3 km (0.8 mi) and spawning and rearing habitat for 0.42 km (0.26 mi). Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Redmont Creek is within Forest Service boundaries. Bull trout above the WVIC may occasionally move downstream, but fish below the WVIC are not able to move upstream.

Cabin Creek from the confluence of Little Sheep Creek upstream 0.3 km (0.2 mi) is used for spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Cabin Creek is within Forest Service boundaries and is a tributary to Little Sheep Creek above the WVIC.

McCully Creek upstream from the WVIC approximately 10.8 km (6.7 mi) to the headwaters is used as spawning and rearing habitat by resident bull trout. Bull trout in McCully Creek are considered to be at moderate risk (Buchanan et al. 1997, p.126). Maintenance of this population is identified as essential to recovery in the draft bull trout Recovery Plan. The WVIC does not divert McCully Creek. Instead, the WVIC is carried over McCully Creek and some water from the canal is diverted into the creek. It is not likely that much, if any, immigration into McCully Creek is occurring through this diversion given the physical structure being used. In addition, McCully Creek no longer drains into the Imnaha River basin. The stream bed was shifted in the past so that the creek now drains directly into the Wallowa Valley (Grande Ronde River basin) and provides a water source for irrigation. Therefore, the only potential source of bull trout immigration into McCully Creek would be from the Grande Ronde River basin, through a series of irrigation canals that most likely act as temperature barriers for bull trout. Thus, it is reasonable to speculate that the bull trout population in McCully Creek is isolated (Cook and Hudson 2008, pp.2-3). Bull trout in McCully Creek above the WVIC are considered to be resident fish because there has been no connectivity to Little Sheep Creek below the WVIC for many years, but probably had a fluvial component originally. From the Canal upstream approximately 1.6 km (1 mi) the stream corridor is privately owned. Above this point McCully Creek is federally owned, with approximately the upper 4.8 km (3 mi) within the Eagle Cap Wilderness.

Table 50. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Imnaha River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Bear Creek	OR	Bear Creek from the confluence with the South Fork Imnaha River upstream approximately 0.4 km (0.3 mi) is spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Bear Creek is within the Eagle Cap Wilderness.	See CHU text	1171718451037

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Big Sheep Creek	OR	Big Sheep Creek from the confluence of the Imnaha River upstream 49.8 km (30.8 mi) to the confluence of the North and Middle Forks of Big Sheep Creek is FMO habitat and upstream 12.1 km (7.5 mi) to the headwaters near Bonny Lakes is spawning and rearing habitat. Both resident and fluvial bull trout occur in Big Sheep Creek. Bull trout above the Wallowa Valley Irrigation Canal (WVIC) are considered resident because of the barriers to upstream movement caused by the WVIC diversion. Maintenance of this population is identified as essential to recovery in the draft bull trout Recovery Plan (Service 2002a, p. 15). Bull trout occur year round from Owl Creek at approximately km 46.1 (mile 28.7) and upstream. In fall, winter, and spring, fluvial bull trout are present below this approximate location as FMO habitat down to confluence with the Imnaha River (Buchanan et al. 1997, p.119). Redd surveys in the fall of 2008 found 3 redds from km 56.4-59.6 (mi 35-37) of Big Sheep Creek and a high of 17 redds were reported in 2002 (Sausen 2009, p.42). Both resident and fluvial bull trout occur in Big Sheep Creek. Bull trout above the WVIC at km 61 (mi 37.8) are considered to be resident because of the barriers to upstream movement caused by the WVIC diversion. Nearly the entire stream corridor, from the confluence with the Imnaha River upstream to Owl Creek, is privately owned. From Owl Creek upstream the corridor is federally owned, with the upper 5 km (3.1 mi) within the Eagle Cap Wilderness.	See CHU text	1168347 455572

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Blue Creek	OR	Blue Creek from the confluence with the South Fork Imnaha River upstream approximately 0.5 km (0.3 mi) is spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Blue Creek is within the Eagle Cap Wilderness.	See CHU text	1171948451007
Imnaha River–None	Cabin Creek	OR	Cabin Creek from the confluence of Little Sheep Creek upstream 0.3 km (0.2 mi) is used for spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Cabin Creek is within Forest Service boundaries and is a tributary to Little Sheep Creek above the WVIC.	See CHU text	1170889452316
Imnaha River–None	Cliff Creek	OR	Cliff Creek from the confluence with the South Fork Imnaha River upstream approximately 6.7 km (4.2 mi) to the headwaters is spawning and rearing habitat. Redd surveys in the fall of 2008, found 52 redds from the mouth upstream 4.1 km (2.5 mi) in Cliff Creek (Sausen 2009, p.42). Cliff Creek contains resident bull trout due to a waterfall near the mouth. Cliff Creek is within the Eagle Cap Wilderness.	See CHU text	1172151451020

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Imnaha River	OR	Imnaha River from its confluence with the Snake River upstream approximately 66.6 km (41.4 mi) is utilized by fluvial bull trout in fall, winter, and spring as essential FMO habitat (G. Sausen, pers. comm., 2009). Bull trout occur year-round upstream of the confluence with Grouse Creek and utilize the upper 49.4 km (30.7 mi) as spawning and rearing habitat. The Imnaha River from the fish weir below Gumboot confluence to Indian Crossing was not surveyed for redds in 2005 through 2008, (this area was surveyed in 1999 to 2004 and is considered bull trout spawning habitat) (Sausen 2009, p.7). In 2003, a low density of redds (5 total redds) were reported in the Fish weir to Indian Crossing section (Sausen 2009, p.42). In addition to the index surveys, bull trout spawning has been observed in the Crazyman to weir reach of the Imnaha during chinook surveys (G. Sausen, pers. comm., 2009). The Buchanan et al. (1997 p. 119) Imnaha fish distribution map displays spawning/rearing distribution upstream of Summit Creek and isolated bull trout sightings within Grouse and Summit Creek. Eighty-one bull trout redds were reported in 2008 for 5.3 miles of survey, within the Indian Crossing upstream to the confluence of the N.F. and S.F.s of the Imnaha River (Sausen 2009, p.42).	See CHU text	1167649 458167

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Lick Creek	OR	Lick Creek from the confluence of Big Creek upstream approximately 15.1 km (9.4 mi) to the headwaters is spawning and rearing habitat. Both resident and fluvial bull trout occur in Lick Creek. All of Lick Creek is on National Forest System land with approximately the upper 3.7 km (2.3 mi) within the Eagle Cap Wilderness. Redd surveys in the fall of 2008 found 19 redds from km 2.9-12.1 (mi 1.8-7.5) of Lick Creek (Sausen 2009, p.42). Both resident and fluvial bull trout occur in Lick Creek. Maintenance of this population is identified as essential to the conservation and recovery in the draft bull trout Recovery Plan. All of Lick Creek is on Forest Service land, with approximately the upper 3.7 km (2.3 mi) within the Eagle Cap Wilderness.	See CHU text	1170252 451983
Imnaha River–None	Little Sheep Creek	OR	Little Sheep Creek from the confluence with Big Sheep Creek upstream 41.9 km (26.1 mi) provides FMO habitat to where Little Sheep Creek is intercepted by the WVIC (Buchanan et al. 1997, p.119). The area upstream approximately 0.9 km (0.6 mi) from the WVIC provides spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p. 119). Bull trout in Little Sheep Creek are considered to be at high risk (Buchanan et al. 1997, p.126). Little Sheep Creek is considered as one local population (above and below the canal) in the draft Recovery Plan.	See CHU text	1168602 455202

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	McCully Creek	OR	McCully Creek upstream from the WVIC approximately 10.8 km (6.7 mi) to the headwaters is used as spawning and rearing habitat by resident bull trout. Bull trout in McCully Creek are considered to be at moderate risk (Buchanan et al. 1997, p.126). Maintenance of this population is identified as essential to recovery in the draft bull trout Recovery Plan. The WVIC does not divert McCully Creek. Instead, the WVIC is carried over McCully Creek and some water from the canal is diverted into the creek. It is not likely that much, if any, immigration into McCully Creek is occurring through this diversion given the physical structure being used. In addition, McCully Creek no longer drains into the Imnaha River basin. The stream bed was shifted in the past so that the creek now drains directly into the Wallowa Valley (Grande Ronde River basin) and provides a water source for irrigation. Therefore, the only potential source of bull trout immigration into McCully Creek would be from the Grande Ronde River basin, through a series of irrigation canals that most likely act as temperature barriers for bull trout. Thus, it is reasonable to speculate that the bull trout population in McCully Creek is isolated (Cook and Hudson 2008, pp.2-3). Bull trout in McCully Creek above the WVIC are considered to be resident fish because there has been no connectivity to Little Sheep Creek below the WVIC for many years, but probably had a fluvial component originally. From the Canal upstream approximately 1.6 km (1 mi) the stream corridor is privately owned. Above this point McCully Creek is federally owned, with approximately the upper 4.8 km (3 mi) within the Eagle Cap Wilderness.	See CHU text	1170832 453113

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Middle Fork Big Sheep Creek	OR	Middle Fork Big Sheep Creek from the confluence with Big Sheep Creek upstream 3.5 km (2.2 mi) to the headwaters near Bonny Lakes is utilized as spawning and rearing habitat by fluvial bull trout.	See CHU text	1171198451781
Imnaha River–None	Middle Fork Imnaha River	OR	Middle Fork Imnaha River from the confluence of the North Fork Imnaha River upstream approximately 1.4 km (0.8 mi) to a barrier falls provides spawning and rearing habitat for resident and fluvial bull trout. Redd surveys in the fall of 2008, in this section, found eight redds in the Middle Fork Imnaha River and a high of 24 redds in 2005 (Sausen 2009, p.42). The Middle Fork Imnaha River is within the Eagle Cap Wilderness.	See CHU text	1171800451421
Imnaha River–None	North Fork Imnaha River	OR	North Fork Imnaha River from the confluence with South Fork Imnaha River upstream approximately 9.7 km (6.0 mi) is used for spawning and rearing by both resident and fluvial bull trout. The size of the fish and redds documented (whether resident or fluvial) has varied through the survey years. This is likely related to the access above the Imnaha falls. Mean redd area (m2) for the N.F. Imnaha River (including M.F. Imnaha) in 2005 was fluvial size (>1 m2) and mean redd area in 2008 was resident size (0.3 m2). Redd surveys in the fall of 2008, in this section, found 22 redds in the N.F. Imnaha River and a high of 68 redds in 2004 (Sausen 2009, p.42). The North Fork Imnaha River is within the Eagle Cap Wilderness.	See CHU text	1171263451132

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	Redmont Creek	OR	Redmont Creek upstream from the confluence with Little Sheep Creek to above the WVIC is used as FMO habitat for 1.3 km (0.8 mi) and spawning and rearing habitat for 0.42 km (0.26 mi). Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Redmont Creek is within Forest Service boundaries. Bull trout above the WVIC may occasionally move downstream, but fish below the WVIC are not able to move upstream.	See CHU text	1170891 452557
Imnaha River–None	Salt Creek	OR	Salt Creek from the confluence with Big Sheep Creek upstream approximately 1.9 km (1.2 mi) to the point where the stream goes sub-surface (below the WVIC) and then continues approximately 0.5 km (0.3 mi) above the intersection with the WVIC to provide 3.82 km (2.4 mi) of spawning and rearing habitat for resident and fluvial bull trout. The stream reach above the WVIC is not connected to the lower reach of Salt Creek and currently bull trout are considered resident fish associated with the Little Sheep local population above the WVIC. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, p.119). Redd surveys in the fall of 2001 found 7 redds from km 0-1.3 (mi 0-0.8) of Salt Creek (Sausen et al. 2001). Both resident and fluvial bull trout occur in Salt Creek.	See CHU text	1170442 451883
Imnaha River–None	Soldier Creek	OR	Soldier Creek from the confluence with the South Fork Imnaha River upstream approximately 0.3 km (0.2 mi) provides spawning and rearing habitat. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Redd surveys in the fall of 2001 found 13 redds in this stretch of the Soldier Creek (Sausen et al. 2001, p.9). Soldier Creek is within the Eagle Cap Wilderness.	See CHU text	1171523 451087

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Imnaha River–None	South Fork Imnaha River	OR	South Fork Imnaha River from the confluence of the North Fork Imnaha River upstream approximately 9.3 km (5.8 mi) is used for spawning and rearing habitat by fluvial and resident bull trout. Based on current information, this is as far upstream as spawning, rearing, and foraging are known to occur (Buchanan et al. 1997, pp. 118-119). Redd surveys in the fall of 2008, found 21 redds in this river, and in 2005 a high of 99 redds was documented (Sausen 2009, p.42). Both fluvial and resident bull trout have been documented during spawning surveys in this stream as well as large fluvial redds (mean redd size in 2008 was 2.0 m2). The South Fork Imnaha River is within the Eagle Cap Wilderness.	See CHU text	1171263 451131
Imnaha River–None	UNNAMED - off Lick Creek	OR	Unnamed tributary (possibly called Quartz Creek) from the confluence with Lick Creek upstream 1.5 km (0.9 mi) is spawning and rearing habitat. U.S. Fish and Wildlife Service researchers reported bull trout presence in this tributary based on a survey of six reaches (250 m each) from the confluence with Lick Creek upstream. Forty-six bull trout > 120 mm and over 60 fry high were collected with indications that bull trout are likely using this tributary for spawning in addition to mainstem Lick Creek (M. Hudson, Service, pers. comm. 2008). In 2008, an exploratory bull trout spawning survey conducted in this location (one mile survey reach) documented 6 redds (Sausen 2009, p.46).	See CHU text	1170568 451326

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 18. Mid-Columbia Recovery Unit—Sheep and Granite Creeks Critical Habitat Unit

Chapter 18. Sheep and Granite Creeks Critical Habitat Unit

The Sheep and Granite Creeks CHU is essential for maintaining bull trout distribution within this unique geographic region of the Mid-Columbia RU. This CHU occurs immediately below Hells Canyon Dam. Two drainages occur within this CHU: Sheep and Granite Creeks, both within Idaho. This CHU is essential due to its location in the southeastern extent of the Middle Columbia RU and the presence of both fluvial and resident life history forms. Migratory life history expression is needed for the long-term conservation of the species, but some resident populations may also contain unique genes that promote resistance to specific threats (see Appendix 1 for more detailed information).

This CHU is located within Adams and Idaho Counties in Idaho, approximately 21.0 km (13.0 mi) east of Riggins, Idaho. In the Sheep and Granite Creeks CHU, 47.9 km (29.7 mi) of streams are designated as critical habitat.

The following water bodies are included in this CHU (see Table 51):

(A) Sheep Creek from its confluence with the Snake River upstream 9.6 km (6.0 mi) to its confluence with East Fork Sheep Creek provides spawning and rearing habitat; Sheep Creek from its confluence with East Fork Sheep Creek upstream 8.8 km (5.4 mi) to its headwaters contains FMO habitat; and Clarks Fork from its confluence with Sheep Creek upstream 9.1 km (5.6 mi) to its headwaters contains FMO habitat.

(B) Granite Creek from its confluence with the Snake River upstream 10.9 km (6.8 mi) provides spawning and rearing habitat, and then from this point on Granite Creek upstream 9.5 km (5.9 mi) to its headwaters contains FMO habitat.

Table 51. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Sheep and Granite Creeks CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Sheep/Granite	Granite Creek	ID	(StreamNet 2009, pg. 1; Chandler et al. 2001 pg. 19)	Rationale provided in Sheep/Granite CHU justification text	1166550 453487
Sheep/Granite	Clarks Fork	ID	(StreamNet 2009, pg. 3)	Rationale provided in Sheep/Granite CHU justification text	1165325 45577
Sheep/Granite	Sheep Creek	ID	(StreamNet 2009, pg. 3; Chandler and Richter 2001, pg. 5; Chandler et al. 2001, pg. 28-29)	Rationale provided in Sheep/Granite CHU justification text	1165553 454677

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 19 Mid-Columbia Recovery Unit—Hells Canyon Complex Critical Habitat Unit

Chapter 19. Hells Canyon Complex Critical Habitat Unit

The Hells Canyon Complex CHU is essential for maintaining bull trout distribution within this unique geographic region of the Mid-Columbia RU. This CHU occurs above Hells Canyon Dam and below Brownlee Reservoir. There are three drainages that occur within this CHU: Pine Creek in Oregon and Indian Creek and Wildhorse River in Idaho. This CHU contains both fluvial and resident populations of bull trout that have access to the Snake River, which assists in promoting the migratory life history expression within the Upper Snake RU. Migratory life history expression is needed for the long-term conservation of the species. This CHU also represents the southeastern most extent of the Middle Columbia RU (see Appendix 1 for more detailed information).

The Hells Canyon Complex is located in Adams County, Idaho, and Baker County, Oregon. This CHU contains 377.6.3 km (234.6 mi) of streams designated as critical habitat.

The following water bodies are included in this CHU (see Table 52):

(A) Indian Creek from its confluence with the east bank of the Snake River within the Oxbow Bypass upstream 26.3 km (16.3 mi) to its confluence with Camp Creek contains FMO habitat; Indian Creek from its confluence with Camp Creek upstream 3.3 km (2.1 mi) to its headwaters provides spawning and rearing habitat; and Camp Creek from its confluence with Indian Creek upstream 3.7 km (2.3 mi) to its headwaters provides spawning and rearing habitat.

(B) Pine Creek from its confluence with the west bank of Hells Canyon Reservoir upstream 50.4 km (31.3 mi) to East Fork Pine Creek contains FMO habitat; Pine Creek from its confluence with East Fork Pine Creek upstream 2.3 km (1.4 mi) to its confluence with Middle Fork Pine Creek and West Fork Pine Creek provides spawning and rearing habitat; North Fork Pine Creek from its confluence with Pine Creek upstream 22.3 km (13.8 mi) contains FMO habitat; Little Elk Creek from its confluence with North Pine Creek upstream 9.9 km (6.2 mi) to its headwaters contains FMO habitat; and Fall Creek from its confluence with North Pine Creek upstream 7.1 km (4.4 mi) to its headwaters contains FMO habitat.

(C) Elk Creek from its confluence with North Pine Creek upstream 3.1 km (1.9 mi) to its confluence with Lake Fork (also termed Lake Fork of Elk Creek or Lake Creek) contains FMO habitat. Elk Creek from its confluence with Lake Fork upstream 12.2 km (7.6 mi) to its headwaters; Lake Fork from its confluence with Elk Creek upstream 16.7 km (10.4 mi) to its headwaters; Aspen Creek from its confluence with Elk Creek upstream 2.5 km (1.6 mi) to its headwaters; Cabin Creek from its confluence with Elk Creek upstream 2.0 km (1.2 mi) to its headwaters; and Big Elk Creek from its confluence with Elk Creek upstream 3.3 km (2.1 mi) to its headwaters all provide spawning and rearing habitat.

(D) Duck Creek from its confluence with North Pine Creek upstream 9.7 km (6.0 mi) to its headwaters provides spawning and rearing habitat. Fish Creek from its confluence with Pine Creek upstream 20.5 km (12.8 mi) to its headwaters contains FMO habitat.

(E) East Pine Creek from its confluence with Pine Creek upstream 19.7 km (12.2 mi) to its confluence with Okanogan Creek contains FMO habitat; East Pine Creek from its confluence with Okanogan Creek upstream 10.3 km (6.4 mi) to its headwaters provides spawning and rearing habitat; Okanogan Creek from its confluence with East Pine Creek upstream 4.0 km (2.5 mi) to its headwaters contains FMO habitat. Trinity Creek from its confluence with East

Pine Creek upstream 4.8 km (3.0 mi) to its headwaters; an unnamed creek from its confluence with East Pine Creek (located between Trinity Creek and the east fork of East Pine Creek) upstream 2.5 km (1.6 mi) to its headwaters and the east fork of East Pine Creek from its confluence with East Pine Creek upstream 2.5 km (1.6 mi) to its headwaters all provide spawning and rearing habitat.

(F) Clear Creek from its confluence with Pine Creek upstream 14.6 km (9.1 mi) contains FMO habitat. Clear Creek from 14.6 km (9.1 mi) upstream of the mouth of Clear Creek for 11.4 km (7.1 mi) to East Fork Clear Creek; Meadow Creek from its confluence with Clear Creek upstream 5.3 km (3.3 mi) to its headwaters; and Trail Creek from its confluence with Clear Creek upstream 6.8 km (4.2 mi) to its headwaters all provide spawning and rearing habitat.

(G) East Fork Pine Creek from its confluence with Pine Creek upstream 7.2 km (4.5 mi) to its headwaters; Middle Fork Pine Creek from its confluence with Pine Creek upstream 3.7 km (2.3 mi) to its headwaters; and West Fork Pine Creek from its confluence with Pine Creek upstream 3.8 km (2.4 mi) to its headwaters all provide spawning and rearing habitat.

(H) Wildhorse River from its confluence with the east bank of Oxbow Reservoir upstream 22.4 km (13.9 mi) to its confluence with Bear Creek and Crooked River contains FMO habitat.

(I) Bear Creek from its confluence with Crooked River upstream 20.4 km (12.7 mi) to its confluence with Little Bear Creek contains FMO habitat. Bear Creek from its confluence with Little Bear Creek upstream 9.6 km (6.0 mi) to its headwaters. The following tributaries contain FMO habitat: Mickey Creek from its confluence with Bear Creek upstream 2.5 km (1.6 mi) to its headwaters; Wesley Creek from its confluence with Bear Creek upstream 3.6 km (2.2 mi) to its headwaters; an unnamed tributary to Bear Creek (entering Bear Creek approximately 1.6 km (1.0 mi) upstream from Wesley Creek) from its confluence with Bear Creek upstream 1.8 km (1.1 mi) to its headwaters; and an unnamed tributary to Bear Creek (entering Bear Creek approximately 2.4 km (1.5 mi) upstream from Wesley Creek) from its confluence with Bear Creek upstream 1.7 km (1.0 mi) to its headwaters.

(J) Crooked River from its confluence with Bear Creek upstream 9.6 km (6.0 mi) to its confluence with Dick Ross Creek contains FMO habitat. Crooked River from its confluence with Dick Ross Creek upstream 14.1 km (8.7 mi) to its headwaters provides spawning and rearing habitat.

Table 52. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Hells Canyon Complex–Indian Creek–Pine Creek-Wildhorse River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hells Canyon Complex–Indian-Pine-Wildhorse	UNNAMED-trib to Bear Creek	ID	(StreamNet 2009, pg. 37)	Rationale provided in Hells Canyon Complex CHU justification text	1165450 451242
Hells Canyon Complex–Indian-Pine-Wildhorse	UNNAMED-trib to Bear Creek	ID	(StreamNet 2009, pg. 38)	Rationale provided in Hells Canyon Complex CHU justification text	1165543 451244
Hells Canyon Complex–Indian-Pine-Wildhorse	Wesley Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Hells Canyon Complex CHU justification text	1165621 451123
Hells Canyon Complex–Indian-Pine-Wildhorse	Mickey Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Hells Canyon Complex CHU justification text	1165647 451091
Hells Canyon Complex–Indian-Pine-Wildhorse	Camp Creek	ID	(Nelson 1998, pg. 20)	Rationale provided in Hells Canyon Complex CHU justification text	1166226 451316
Hells Canyon Complex–Indian-Pine-Wildhorse	Crooked River	ID	(Nelson 1998, pg. 17)	Rationale provided in Hells Canyon Complex CHU justification text	1167248 449591.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Crooked River	ID	(Nelson 1998, pg. 17; Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1167248 449591.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Bear Creek	ID	(Nelson 1998, pg. 34; Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1167248 449592.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Bear Creek	ID	(Nelson 1998, pg. 34; Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1167248 449592.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Indian Creek	ID	(Nelson 1998, pg. 25; Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1168289 449843.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Indian Creek	ID	(Nelson 1998, pg. 20; Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1168289 449843.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hells Canyon Complex–Indian-Pine-Wildhorse	Pine Creek	OR	(PBWC 2000, pg. 36)	Rationale provided in Hells Canyon Complex CHU justification text	1168539 449735.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Pine Creek	OR	(PBWC 2000, pg. 36)	Rationale provided in Hells Canyon Complex CHU justification text	1168539 449735.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Wildhorse River	ID	(Grunder 1999, pg. 3-7)	Rationale provided in Hells Canyon Complex CHU justification text	1168973 448511
Hells Canyon Complex–Indian-Pine-Wildhorse	Duck Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169057 450685
Hells Canyon Complex–Indian-Pine-Wildhorse	Elk Creek	OR	(BLM 1998a, pg. 19)	Rationale provided in Hells Canyon Complex CHU justification text	1169095 450086.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Elk Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169095 450086.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Lake Fork	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169416 450198
Hells Canyon Complex–Indian-Pine-Wildhorse	North Pine Creek	OR	(Chandler, *in litt.* 2000)	Rationale provided in Hells Canyon Complex CHU justification text	1169488 449099.1
Hells Canyon Complex–Indian-Pine-Wildhorse	North Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169488 449099.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Fall Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169492 449700
Hells Canyon Complex–Indian-Pine-Wildhorse	Fish Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169532 449081
Hells Canyon Complex–Indian-Pine-Wildhorse	Little Elk Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1169618 449545

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hells Canyon Complex–Indian-Pine-Wildhorse	Aspen Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170117 450568
Hells Canyon Complex–Indian-Pine-Wildhorse	East Pine Creek	OR	(PBWC 2000, pg. 36)	Rationale provided in Hells Canyon Complex CHU justification text	1170207 448719.1
Hells Canyon Complex–Indian-Pine-Wildhorse	East Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170207 448719.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Cabin Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170208 450612
Hells Canyon Complex–Indian-Pine-Wildhorse	Big Elk Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170244 450629
Hells Canyon Complex–Indian-Pine-Wildhorse	Clear Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170299 448659.1
Hells Canyon Complex–Indian-Pine-Wildhorse	Clear Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1170299 448659.2
Hells Canyon Complex–Indian-Pine-Wildhorse	Okanogan Creek	OR	(Buchanan et al. 1997, pg. 129; PBWC 2000, p. H-2)	Rationale provided in Hells Canyon Complex CHU justification text	1170647 449871
Hells Canyon Complex–Indian-Pine-Wildhorse	Trinity Creek	OR	(Buchanan et al. 1997, pg. 129; PBWC 2000, p. H-2)	Rationale provided in Hells Canyon Complex CHU justification text	1170720 449880
Hells Canyon Complex–Indian-Pine-Wildhorse	UNNAMED - off East Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1171019 449931
Hells Canyon Complex–Indian-Pine-Wildhorse	East Fork Of East Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1171074 450207
Hells Canyon Complex–Indian-Pine-Wildhorse	Meadow Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1171430 449898

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Hells Canyon Complex–Indian-Pine-Wildhorse	Trail Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1171432 449911
Hells Canyon Complex–Indian-Pine-Wildhorse	East Fork Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1172008 450217
Hells Canyon Complex–Indian-Pine-Wildhorse	West Fork Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1172158 450387
Hells Canyon Complex–Indian-Pine-Wildhorse	Middle Fork Pine Creek	OR	(Buchanan et al. 1997, pg. 129)	Rationale provided in Hells Canyon Complex CHU justification text	1172158 450388

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 20. Mid-Columbia Recovery Unit—Powder River Critical Habitat Unit

Chapter 20. Powder River Critical Habitat Unit

The Powder River CHU is located within Baker, Union, and Wallowa Counties in northeastern Oregon. This unit is thought to contain up to nine resident bull trout local populations, which are small and highly fragmented. Bull trout in the Powder River basin are part of the Hells Canyon complex and represent the southern range of the Middle Columbia / Snake River Recovery Unit. Little is known about the status of bull trout in this CHU.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. *Conserve opportunity for diverse life-history expression – Bull trout in the Powder River Basin are* believed to be resident (Service 2002a, p. 12). There may have been a fluvial life history historically, but there is no documentation. Access to the Snake River was blocked for bull trout in the upper Powder Basin in 1932, with the construction of Thief Valley Dam on the mainstem Powder River. Bull trout in Eagle Creek may have had access to the Snake River. A twelve inch bull trout was caught during net sampling in Brownlee Reservoir in 1959 (Buchanan et al. 1997, p. 133).

2. *Conserve opportunity for genetic diversity* – Bull trout samples were taken from fish in the North Fork Powder River and Silver Creek in 1995 and preserved for analysis (Bellerud et al. 1997, p. 8). The genetic analysis revealed Powder River bull trout were genetically similar to bull trout from the Grande Ronde River system (Spruell and Allendorf 1997, p. 13). They also found that while bull trout have low levels of variation within populations they are highly differentiated between populations suggesting that all populations should be conserved to maintain the genetic diversity of the species (Spruell and Allendorf 1997, p. 13).

3. *Ensure bull trout are distributed across representative habitats* **–** Bull trout in the Powder River basin are part of the Hells Canyon complex and represent the southern range of the Middle Columbia / Snake River Recovery Unit. The draft revised recovery plan (Service 2004a, p. 21) identified nine local populations in the Powder River Basin, although another local population (in Rock Creek) was added during the 2008 core area assessments. All are located in headwater streams draining the Elkhorn Mountain Range and persist in areas where the habitat is still suitable.

4. *Ensure sufficient connectivity among populations* – Bull trout populations in the Powder River Basin are small and highly fragmented. Migratory corridors are blocked by dams, unscreened diversions, and poor water quality. Tasks to identify, assess, and reduce barriers to bull trout passage were deemed essential for recovery to occur (Service 2004a, pp 79-80). There is no connectivity to other core areas in the recovery unit.

5. *Ensure sufficient habitat to support population viability (e.g., abundance, trend indices)* - The role of the Powder River basin habitat to the Middle Columbia / Snake River Recovery Unit is unknown. Redd surveys were conducted from 1996 through 1999, in three Powder Basin streams, but the length of record is not sufficient to determine trend. The populations have not been assessed since 1999. Results of snorkel and electrofishing surveys in Silver Creek in 1999, resulted in a population estimate of 885 bull trout 150 millimeters (5.1 inches) fork length or greater (Hemmingsen, Gunckel, and Howell 2001, p. 38).

6. *Consider threats (e.g., climate change)* - The Powder River bull trout populations would be at increased risk of extinction with a warming of the climate because the hydrology is driven

primarily by snowmelt (Nowak 2004, p. 2). Protection of high elevation habitats will become even more important as the climate warms. Summer maximum water temperature increases in spawning and rearing habitat of 1° to 3° C would have profound impacts on the bull trout population. Maximum weekly average temperatures of 13-15 °C were reported for streams supporting bull trout in the Powder River basin (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 19). Maximum daily temperatures would have been higher than the weekly averages. If maximum daily temperatures increased 1-3 °C, they would likely be in the high teens and low twenties. Bull trout typically do not occur in streams where maximum daily temperature exceeds 18° C (Rieman and Chandler 1999, p. 11). Brook trout are present in many of the streams in the basin where bull trout occur. A 1-3 °C increase in maximum daily temperature could provide brook trout a greater competitive advantage over bull trout than they might already have (McMahon et al. 1999, p. 1321). It might also allow brook trout to expand the upper limit of their distribution into areas where bull trout currently occur in allopatry, furthering the threat posed by hybridization. Isolation and habitat fragmentation along with brook trout and legacy effects from mining and agricultural development are continuing threats to the populations. However, local efforts are ongoing to address water quality issues in the Powder River Basin (Service 2004a, pp. 63-64). Recent Oregon Watershed Enhancement Board (OWEB) funded projects include riparian restoration on 10 miles of the Powder River below Baker City and piping of a ditch system to supply livestock water by the Baker Valley SWCD, and the Sumpter Municipal Diversion by the Powder Basin Watershed Council (T. Bailey, ODFW, *in litt*. 2009). This project involved the installation of a new fish passage friendly diversion intake for the City of Sumpter water intake on McCully Fork (T. Bailey, ODFW, *in litt*. 2009). McCully Fork appears to have suitable habitat but for bull trout but is not currently occupied (Service 2004a, p. 107). The draft recovery plan includes recovery tasks to address passage barriers, sedimentation, and inadequate flows and temperatures where necessary for recovery (Service 2004a, pp. 92-94).

7. *Ensure sufficient redundancy in conserving population units* – Habitat in the occupied reaches of the Powder River Basin provide high quality habitat for resident bull trout. All of the occupied area is essential because it provides redundancy across the Powder River basin and to the critical habitat unit. The presence of multiple local populations distributed throughout a watershed provides a mechanism for spreading risk (Service 2002a, p. 24).

The following water bodies are included in this CHU (see Table 53).

Powder River from the confluence with Brownlee Reservoir on the Snake River upstream 15.3 km (9.5 mi) to the confluence of the Eagle Creek is potential FMO habitat; from the confluence with Wolf Creek upstream 0.8 km (0.5 mi) to the confluence with the North Powder River is potential FMO habitat; and from Mason Dam upstream 15.9 km (9.9 mi) to the confluence with Cracker Creek is potential FMO habitat. There are historical (1960s) observations of bull trout in the Powder River downstream of Baker City, Oregon, and upstream of Mason Dam (Buchanan et al. 1997, p. 135). Bull trout can utilize Phillips Reservoir above Mason Dam for FMO habitat in the fall, winter, and spring, but there are no documented records of bull trout presence. Thief Valley Dam and Mason Dam represent upstream fish passage barriers in the mainstem Powder River. If restored, the segments of the Powder River would provide FMO habitat and connectivity for existing local populations of bull trout in the upper Powder and North Powder rivers and a potential local population in Eagle Creek, which is essential for recovery (Service 2004a, p. 28).

Eagle Creek from the confluence with the Powder River upstream to the perennial headwaters is designated as critical habitat. The lower river below the East Fork Eagle Creek confluence provides 34.0 km (21.1 mi) of FMO habitat. There is 26.9 km (16.7 mi) of spawning and rearing habitat upstream of the confluence with East Fork Eagle Creek. Eagle Creek has numerous historical (1940s–1980s) records and recent (1990s) angler reports of bull trout. However, 1991 and 1994 surveys failed to locate any bull trout in Eagle Creek (Buchanan et al. 1997, p. 134). Both habitat conditions and water quality are considered to be excellent in the headwaters of Eagle Creek, especially within the Eagle Cap Wilderness, and could support bull trout spawning (Buchanan et al. 1997, p. 136). Reestablishing a local population of bull trout in the Eagle Creek watershed is necessary for recovery of bull trout in the Powder River Basin (Service 2004a, p.105).

East Fork Eagle Creek from the confluence with Eagle Creek upstream 24.2 km (15.0 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).

West Fork Eagle Creek from the confluence with Eagle Creek upstream 15.1 km (9.4 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).

Wolf Creek from the confluence with the Powder River upstream 11.2 km (6.9 mi) provides FMO habitat and upstream approximately 20.4 km (12.7 mi) to the end of perennial water is spawning and rearing habitat. Bull trout occur in the headwaters of Wolf Creek above the confluence with Elkhorn Creek (Service 2004a, p. 28).

North Powder River from the confluence with the Powder River upstream provides approximately 33.2 km (20.7 mi) of FMO habitat and 5.8 km (3.7 mi) of spawning and rearing habitat from the FMO habitat upstream to the end of perennial water. Adult and juvenile bull trout and hybrids are found in the North Powder River (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 20; Bellerud et al. 1997, p. 8; Buchanan et al. 1997, p. 134).

Anthony Creek from the confluence with the Powder River upstream provides 7.9 km (4.9 mi) of FMO habitat and 7.9 km (11.1 mi) of spawning and rearing habitat to the end of perennial water. Bull trout in Anthony Creek and its tributaries, North Anthony Creek and Indian Creek, form a single local population.

Upstream fish movement in Anthony Creek is limited by a waterfall located approximately 10 kilometers (6.2 miles) upstream from the confluence with Indian Creek (Buchanan et al. 1997, p. 136). There are also two major diversion structures on Anthony Creek downstream of known bull trout distribution, which result in reduced flows and elevated temperatures (USFS 1995c, p. 24); Buchanan et al. 1997, p. 137).

North Fork Anthony Creek from the confluence with Anthony Creek upstream to the end of perennial water provides 8.5 km (5.3 mi) of occupied spawning and rearing habitat

(Buchanan et al. 1997, p. 136; Bellerud et al. 1997, p. 14). Brook trout and brook/bull trout hybrids have been documented in North Fork Anthony Creek (Bellerud et al. 1997, p. 8).

Indian Creek from the confluence with Anthony Creek upstream 8.4 km (5.2 mi) to the end of perennial water provides occupied spawning and rearing habitat. Indian Creek has a potential upstream barrier (0.6 m (2 ft) waterfall) downstream of known bull trout distribution. Indian Creek has a potential upstream barrier (0.6-meter, 2-foot waterfall) downstream of known bull trout distribution (RUT 2001, p. 17).

Phillips Reservoir is a 897.0 ha (2216.5 ac) reservoir that provides FMO habitat and connectivity to the upper Powder River populations and Deer Creek / Lake Creek population.

Deer Creek from the confluence with the north bank of Phillips Reservoir on the Powder River upstream 9.2 km (5.7 mi) to the confluence with Lake Creek is potential FMO habitat. Stream survey data for Deer Creek indicate primary constituent elements for habitat complexity and migratory corridors are present, though extent of use by bull trout is uncertain (USFS, 1999c). Deer Creek provides a migration corridor for bull trout from Lake Creek to access Phillips Reservoir and the Powder River (P/PBTW 1999, p. 2).

Lake Creek from the confluence with Deer Creek upstream to the extent of perennial water provides 8.3 km (5.2 mi) of spawning and rearing habitat for a local population of bull trout. Bull trout have been documented in Lake Creek. The entire perennial length of Lake Creek is essential for recovery (Bellerud et al. 1997, p. 9; Buchanan et al. 1997, pp. 134 & 135; USFS and BLM 1999a, p. 3; Service 2004a, pp. 78 - 79). The draft recovery plan specifies providing connectivity among local populations within the Powder River Basin (Service 2004a, pp. 79-80.)

Cracker Creek from the confluence with the McCully Fork (the upstream extent of the Powder River) upstream 13.5 km (8.4 mi) to its perennial headwaters is FMO habitat. Cracker Creek provides connectivity between two headwater tributaries (Silver and Little Cracker Creeks) within the upper Powder River local population, which is essential for recovery. It is presumed, but actually unknown, if bull trout are present or using Cracker Creek. However, upper Cracker Creek could provide 4.7 km (2.9 mi) of spawning and rearing habitat and allow for expansion of the upper Powder River local population (USFS and BLM 1999a). Expansion of distribution within existing local populations is called for in the Bull Trout Draft Recovery Plan. Connectivity with other local populations within the Powder River Basin via lower Cracker Creek is also necessary for recovery (Service 2004a, pp. 79-80).

Little Cracker Creek from the confluence with Cracker Creek upstream 3.1 km (1.9 mi) to its headwaters is known to support bull trout rearing (Bellerud et al. 1997, p. 8, 17), but it is uncertain that spawning is occurring. Brook trout occur in Little Cracker Creek and hybrids were documented in Little Cracker Creek in 1996. Little Cracker Creek and Silver Creek are considered one local population, the upper Powder local population (Service 2004a, p. 22). The Bull Trout Draft Recovery Plan specifies providing connectivity among local populations within the Powder River Basin (Service 2004a, pp. 79-80.).

Silver Creek from the confluence with Cracker Creek upstream 0.4 km (0.2 mi) is FMO habitat and the remaining 9.4 km (5.8 mi) provides spawning and rearing habitat. This is an important occupied bull trout spawning and rearing stream (Bellerud et al. 1997, p. 31; Buchanan et al. 1997, p. 135; USFS 1995a, p. 4; RUT 2001, p. 5). Silver Creek has sites with high substrate embeddedness and is water quality limited for temperature for bull trout spawning from the mouth to the headwaters and requires some restoration (USFS 1995a, p. 20; ODEQ *in litt* 2009*;* Service 2004a, pp. 89-97).

Fruit Creek from the confluence with Silver Creek upstream 7.3 km (4.5 mi) to the perennial headwaters is historical bull trout habitat and is still considered likely to contain bull trout (Buchanan et al. 1997, p. 135; USFS 1995a, p. 15). Fruit Creek has several potential fish passage barriers (RUT 2001, p. 6) and evidence of substrate embeddedness (USFS 1995a, p. 23; USFS 1999f). However, water temperatures in Fruit Creek are suitable for spawning and rearing (RUT 2001, p. 5). Implementation of recovery tasks to address habitat issues would allow for natural expansion of distribution, reproductive rates, and numbers of individuals within the upper Powder River local population.

Table 53. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Powder River Basin CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Anthony Creek	OR	Anthony Creek from the confluence with the Powder River upstream provides 7.9 km (4.9 mi) of FMO habitat and 7.9 km (11.1 mi) of spawning and rearing habitat to the end of perennial water. Bull trout in Anthony Creek and its tributaries, North Anthony Creek and Indian Creek, form a single local population. Upstream fish movement in Anthony Creek is limited by a waterfall located approximately 10 kilometers (6.2 miles) upstream from the confluence with Indian Creek (Buchanan et al. 1997, p. 136). There are also two major diversion structures on Anthony Creek downstream of known bull trout distribution, which result in reduced flows and elevated temperatures (USFS 1995c, p. 24); Buchanan et al. 1997, p. 137).	See CHU text	1180600 450132
Powder River Basin–None	Cracker Creek	OR	Cracker Creek from the confluence with the McCully Fork (the upstream extent of the Powder River) upstream 13.5 km (8.4 mi) to its perennial headwaters is FMO habitat. Cracker Creek provides connectivity between two headwater tributaries (Silver and Little Cracker Creeks) within the upper Powder River local population, which is essential for recovery. It is presumed, but actually unknown, if bull trout are present or using Cracker Creek. However, upper Cracker Creek could provide 4.7 km (2.9 mi) of spawning and rearing habitat and allow for expansion of the upper Powder River local population (USFS 1999c). Expansion of distribution within existing local populations is called for in the Bull Trout Draft Recovery Plan. Connectivity with other local populations within the Powder River Basin via lower Cracker Creek is also necessary for recovery (Service 2002a, pp. 79-80).	See CHU text	1182058 447415

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Deer Creek	OR	Deer Creek from the confluence with the north bank of Phillips Reservoir on the Powder River upstream 9.2 km (5.7 mi) to the confluence with Lake Creek is potential FMO habitat. Stream survey data for Deer Creek indicate primary constituent elements for habitat complexity and migratory corridors are present, though extent of use by bull trout is uncertain (USFS, 1999c). Deer Creek provides a migration corridor for bull trout from Lake Creek to access Phillips Reservoir and the Powder River (P/PBTW 1999, p. 2).	See CHU text	1180605 446836
Powder River Basin–None	Eagle Creek	OR	Eagle Creek from the confluence with the Powder River upstream to the perennial headwaters is designated as critical habitat. The lower river below the East Fork Eagle Creek confluence provides 34.0 km (21.1 mi) of FMO habitat. There is 26.9 km (16.7 mi) of spawning and rearing habitat upstream of the confluence with East Fork Eagle Creek. Eagle Creek has numerous historical (1940s–1980s) records and recent (1990s) angler reports of bull trout (USFS 1995b). However, 1991 and 1994 surveys failed to locate any bull trout in Eagle Creek (Buchanan et al. 1997, p. 134). Both habitat conditions and water quality are considered to be excellent in the headwaters of Eagle Creek, especially within the Eagle Cap Wilderness, and could support bull trout spawning (Buchanan et al. 1997, p. 136). Reestablishing a local population of bull trout in the Eagle Creek watershed is necessary for recovery of bull trout in the Powder River Basin (Service 2002a, p.105).	See CHU text	1171699 447463
Powder River Basin–None	East Fork Eagle Creek	OR	East Fork Eagle Creek from the confluence with Eagle Creek upstream 24.2 km (15.0 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).	See CHU text	1173711 449826

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Fruit Creek	OR	Fruit Creek from the confluence with Silver Creek upstream 7.3 km (4.5 mi) to the perennial headwaters is historical bull trout habitat and is still considered likely to contain bull trout (Buchanan et al. 1997, p. 135; USFS 1995a, p. 15). Fruit Creek has several potential fish passage barriers (RUT 2001, p. 6) and evidence of substrate embeddedness (USFS 1995a, p. 23; USFS 1999c). However, water temperatures in Fruit Creek are suitable for spawning and rearing (RUT 2001, p. 5). Implementation of recovery tasks to address habitat issues would allow for natural expansion of distribution, reproductive rates, and numbers of individuals within the upper Powder River local population.	See CHU text	1182122 448088
Powder River Basin–None	Indian Creek	OR	Indian Creek from the confluence with Anthony Creek upstream 8.4 km (5.2 mi) to the end of perennial water provides occupied spawning and rearing habitat. Indian Creek has a potential upstream barrier (0.6 m (2 ft) waterfall) downstream of known bull trout distribution. Indian Creek has a potential upstream barrier (0.6-meter, 2-foot waterfall) downstream of known bull trout distribution (RUT 2001, p. 17).	See CHU text	1181554 450189
Powder River Basin–None	Lake Creek	OR	Lake Creek from the confluence with Deer Creek upstream to the extent of perennial water provides 8.3 km (5.2 mi) of spawning and rearing habitat for a local population of bull trout. Bull trout have been documented in Lake Creek. The entire perennial length of Lake Creek is essential for recovery (Bellerud et al. 1997, p. 9; Buchanan et al. 1997, pp. 134 & 135; USFS 1999f, p. 3; Service 2002a, pp. 78 - 79). The draft recovery plan specifies providing connectivity among local populations within the Powder River Basin (Service 2002a, pp. 79-80.)	See CHU text	1181079 447494

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Little Cracker Creek	OR	Little Cracker Creek from the confluence with Cracker Creek upstream 3.1 km (1.9 mi) to its headwaters is known to support bull trout rearing (Bellerud et al. 1997, p. 8, 17), but it is uncertain that spawning is occurring. Brook trout occur in Little Cracker Creek and hybrids were documented in Little Cracker Creek in 1996. Little Cracker Creek and Silver Creek are considered one local population, the upper Powder local population (Service 2002a, p. 22). The Bull Trout Draft Recovery Plan specifies providing connectivity among local populations within the Powder River Basin (Service 2002a, pp. 79-80.).	See CHU text	1181968 448257
Powder River Basin–None	North Fork Anthony Creek	OR	North Fork Anthony Creek from the confluence with Anthony Creek upstream to the end of perennial water provides 8.5 km (5.3 mi) of occupied spawning and rearing habitat (Buchanan et al. 1997, p. 136; Bellerud et al. 1997, p. 14). Brook trout and brook/bull trout hybrids have been documented in North Fork Anthony Creek (Bellerud et al. 1997, p. 8).	See CHU text	1182315 450424
Powder River Basin–None	North Powder River	OR	North Powder River from the confluence with the Powder River upstream provides approximately 33.2 km (20.7 mi) of FMO habitat and 5.8 km (3.7 mi) of spawning and rearing habitat from the FMO habitat upstream to the end of perennial water. Adult and juvenile bull trout and hybrids are found in the North Powder River (Hemmingsen, Bellerud, Buchanan, et al. 2001, p. 20; Bellerud et al. 1997, p. 8; Buchanan et al. 1997, p. 134).	See CHU text	1178956 450385
Powder River Basin–None	Phillips Reservoir	OR	Phillips Reservoir is a 897.0 ha (2216.5 ac) reservoir that provides FMO habitat and connectivity to the upper Powder River populations and Deer Creek / Lake Creek population.	See CHU text	1180518 446812

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Powder River	OR	Powder River from the confluence with Brownlee Reservoir on the Snake River upstream 15.3 km (9.5 mi) to the confluence of the Eagle Creek is potential FMO habitat; from the confluence with Wolf Creek upstream 0.8 km (0.5 mi) to the confluence with the North Powder River is potential FMO habitat; and from Mason Dam upstream 15.9 km (9.9 mi) to the confluence with Cracker Creek is potential FMO habitat. There are historical (1960s) observations of bull trout in the Powder River downstream of Baker City, Oregon, and upstream of Mason Dam (Buchanan et al. 1997, p. 135). Bull trout can utilize Phillips Reservoir above Mason Dam for FMO habitat in the fall, winter, and spring, but there are no documented records of bull trout presence. Thief Valley Dam and Mason Dam represent upstream fish passage barriers in the mainstem Powder River. If restored, the segments of the Powder River would provide FMO habitat and connectivity for existing local populations of bull trout in the upper Powder and North Powder rivers and a potential local population in Eagle Creek, which is essential for recovery (Service 2002a, p. 28).	See CHU text	1170508 447455
Powder River Basin–None	Silver Creek	OR	Silver Creek from the confluence with Cracker Creek upstream 0.4 km (0.2 mi) is FMO habitat and the remaining 9.4 km (5.8 mi) provides spawning and rearing habitat. This is an important occupied bull trout spawning and rearing stream (Bellerud et al. 1997, p. 31; Buchanan et al. 1997, p. 135; USFS 1995a, p. 4; RUT 2001, p. 5). Silver Creek has sites with high substrate embeddedness and is water quality limited for temperature for bull trout spawning from the mouth to the headwaters and requires some restoration (USFS 1995a, p. 20; ODEQ 2009 in litt; Service 2002a, pp. 89-97).	See CHU text	1182078 448087
Powder River Basin–None	West Fork Eagle Creek	OR	West Fork Eagle Creek from the confluence with Eagle Creek upstream 15.1 km (9.4 mi) to its source is potential spawning and rearing habitat. The stream has historical (1965–1967) records of bull trout, but current occupancy is unknown (Buchanan et al. 1997, p. 135). Habitat conditions and water quality in the headwaters are considered to be excellent and could support bull trout spawning and rearing (Buchanan et al. 1997, p. 136).	See CHU text	1174544 450192

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Powder River Basin–None	Wolf Creek	OR	Wolf Creek from the confluence with the Powder River upstream 11.2 km (6.9 mi) provides FMO habitat and upstream approximately 20.4 km (12.7 mi) to the end of perennial water is spawning and rearing habitat. Bull trout occur in the headwaters of Wolf Creek above the confluence with Elkhorn Creek (Service 2002a, p. 28).	See CHU text	1178944 450439

Chapter 21. Mid-Columbia Recovery Unit—Clearwater River Critical Habitat Unit

Chapter 21. Clearwater River Critical Habitat Unit

The Clearwater River CHU is essential for maintaining bull trout distribution within this unique geographic region of the Mid-Columbia RU. This CHU extends from the Snake River confluence at Lewiston, Idaho, on the west to headwaters in the Bitterroot Mountains along the Idaho and Montana border. The Clearwater River CHU represents the easternmost extent of the Mid Columbia RU. This CHU is among the largest CHU in the Mid Columbia RU and contains several large and stable core area populations of bull trout. Fluvial and resident bull trout are the predominant life history forms known to occur within this CHU with several adfluvial populations occurring in headwater lakes. This CHU includes five critical habitat subunits: Middle–Lower Fork Clearwater River; South Fork Clearwater River; Selway River; Lochsa River (and Fish Lake); and the North Fork Clearwater River (and Fish Lake). See Appendix 1 for more detailed information.

The Clearwater River CHU is located east of Lewiston, Idaho, and extends from the Snake River confluence at Lewiston on the west to headwaters in the Bitterroot Mountains along the Idaho–Montana border on the east in Nez Perce, Latah, Lewis, Clearwater, Idaho, and Shoshone Counties. This unit includes five CHSUs: Lower/Middle Fork Clearwater River; North Fork Clearwater River (and Fish Lake); South Fork Clearwater River; Lochsa River (and Fish Lake); and the Selway River. In the Clearwater River CHU, 2,702.1 km (1,679.0 mi) of streams and 6,721.9 ha (16,610.2 ac) of lake and reservoir surface area are designated as critical habitat.

21.1. Middle–Lower Fork Clearwater River Critical Habitat Subunit

The Middle–Lower Fork Clearwater River CHSU is essential to bull trout conservation because the Clearwater River and Middle Fork Clearwater River primarily serve as migratory corridors, connecting bull trout local populations within the Clearwater River CHU as well as maintaining connectivity to other Mid-Columbia River bull trout populations. These mainstem river reaches also provide important foraging and overwintering areas for subadult and adult bull trout that originate in upstream CHSUs (see Appendix 1 for more detailed information).

Located within Idaho's Nez Perce, Latah, Lewis, Clearwater, and Idaho Counties, the Lower/Middle Fork Clearwater River CHSU includes the mainstem Clearwater River and Middle Fork Clearwater River and all tributary watersheds. The North Fork Clearwater River above Dworshak Dam, South Fork Clearwater River, Lochsa River, and Selway River drainages are separate CHSUs. A total of 159.5 km (99.1 mi) of rivers are designated for designation as critical habitat. The following water bodies are included in this CHSU (see Table 54):

(A) The Clearwater River from its confluence with the Snake River upstream 119.6 km (74.3 mi) to its confluence with the South Fork Clearwater River and the Middle Fork Clearwater River from its confluence with the South Fork upstream 36.8 km (22.9 mi) to the confluence of the Lochsa and Selway Rivers provide FMO habitat. The North Fork Clearwater River from its confluence with the Clearwater River upstream 3.1 km (2.0 mi) to the base of Dworshak Dam provides FMO habitat.

Table 54. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–Middle-Lower Clearwater River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Middle-Lower Clearwater River	Clearwater River	ID	Documented use by subadults and adults (CBBTTAT 1998a). A few subadult fish have been captured in the mainstem Clearwater River near the mouth (Basham 2000; E. Schriever, pers. comm. 2002).	Rationale provided in Middle-Lower Clearwater River CHSU justification text	1170397 464258
Clearwater River–Middle-Lower Clearwater River	Middle Fork Clearwater River	ID	Documented use by subadults and adults (CBBTTAT 1998a).	Rationale provided in Middle-Lower Clearwater River CHSU justification text	1159798 461459

21.2. South Fork Clearwater River Critical Habitat Subunit

The South Fork Clearwater River CHSU is essential to bull trout conservation because both migratory and resident life histories are known to occur within the CHSU. Although the overall core area population level is considered to be moderate, bull trout are distributed among most of the major watersheds within the CHSU. Located downstream of the Lochsa River CHSU and Selway River CHSU and upstream of the North Fork Clearwater CHSU, the South Fork Clearwater River CHSU provides additional habitat for foraging and thermal refuge for bull trout that disperse from these other CHSUs. Furthermore, for bull trout originating in the North Fork Clearwater CHSU that are entrained past Dworshak Dam, the South Fork Clearwater River CHSU is the first major drainage below the dam supporting known local populations and suitable habitat that the entrained fish can utilize to fulfill their life cycle as they are unable to return to their natal streams (see Appendix 1 for more detailed information).

Located within Idaho and Nez Perce Counties, the South Fork Clearwater River CHSU includes the entire stream network of the South Fork Clearwater River. A total of 508.0 km (315.6 mi) of streams and rivers are designated for designation as critical habitat. The following water bodies are included in this CHSU (see Table 55):

(A) The South Fork Clearwater River from its confluence with the Clearwater River upstream 100.3 km (62.3 mi) to the confluence of the Red River and the American River provides FMO habitat.

(B) Mill Creek from its confluence with the South Fork Clearwater River upstream 13.6 km (8.4 mi) to Merton Creek provides FMO habitat. Merton Creek from its confluence upstream 1.6 km (1.0 mi) provides spawning and rearing habitat.

(C) Johns Creek from its confluence with the South Fork Clearwater River upstream approximately 4.9 km (3.0 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 26.2 km (16.3 mi). Gospel Creek from its confluence with Johns Creek upstream 3.1 km (2.0 mi); Moores Lake Creek from its confluence with Gospel Creek upstream 3.4 km (2.1 mi); Open Creek from its confluence with Johns Creek upstream 1.5 km (0.9 mi); Moores Creek from its confluence with Johns Creek upstream 8.2 km (5.1 mi) to a barrier; Twin Lakes Creek from its confluence with Johns Creek upstream 2.0 km (1.2 mi) to Hagen Creek; Hagen Creek from its confluence with Twin Lakes Creek upstream 2.3 km (1.5 mi); and Taylor Creek from its confluence with Johns Creek upstream 2.7 km (1.7 mi) provide spawning and rearing habitat.

(D) Tenmile Creek from its confluence with the South Fork Clearwater River upstream 7.2 km (4.5 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 15.4 km (9.6 mi). Sixmile Creek from its confluence with Tenmile Creek upstream 1.4 km (0.9 mi) to a barrier falls provides spawning and rearing habitat. Williams Creek from its confluence with Tenmile Creek upstream 8.4 km (5.2 mi) to its headwaters provides presumed spawning and rearing habitat. Wiseboy Creek from its confluence with Tenmile Creek upstream 0.9 km (0.6 mi) provides spawning and rearing habitat.

(E) Newsome Creek from its confluence with the South Fork Clearwater River upstream 12.5 km (7.7 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 7.1 km (4.4 mi) with presumed spawning and rearing habitat occurring upstream an additional 5.6 km (3.5 mi) to its headwaters. West Fork Newsome Creek from its confluence with

Newsome Creek upstream 7.9 km (4.9 mi) to a migration barrier and Bear Creek from its confluence with Newsome Creek upstream 2.7 km (1.6 mi) may provide spawning and rearing habitat but at a minimum provide FMO habitat. Beaver Creek from its confluence with Newsome Creek upstream 8.0 km (5.0 mi) to its headwaters provides presumed spawning and rearing habitat. Pilot Creek from its confluence with Newsome Creek upstream 9.6 km (5.9 mi) to its headwaters; Sawmill Creek from its confluence with Pilot Creek upstream 1.1 km (0.7 mi); an unnamed Pilot Creek tributary from its confluence upstream 1.3 km (0.8 mi); a second unnamed Pilot Creek tributary from its confluence upstream 1.4 km (0.9 mi); and Baldy Creek from its confluence with Newsome Creek upstream 9.9 km (6.1 mi) provide spawning and rearing habitat. Mule Creek from its confluence with Newsome Creek upstream 0.9 km (0.6 mi) provides FMO habitat.

(F) Crooked River from its confluence with the South Fork Clearwater River upstream 3.5 km (2.2 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 15.3 km (9.6 mi). Relief Creek from its confluence with the Crooked River upstream 2.2 km (1.3 mi); Silver Creek from its confluence with the Crooked River upstream 3.6 km (2.2 mi); West Fork Crooked River from its confluence with the East Fork Crooked River upstream 5.4 km (3.4 mi) to a barrier falls; an unnamed tributary to the West Fork Crooked River from its confluence upstream approximately 1.0 km (0.6 mi); and East Fork Crooked River from its confluence with the West Fork upstream 5.7 km (3.5 mi) provide spawning and rearing habitat.

(G) Red River from its confluence with the Crooked River and American River upstream 18.7 km (11.6 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 27.2 km (16.9 mi). Spawning and rearing habitat also occurs in the following tributaries: Red Horse Creek from its confluence with the Red River upstream 9.1 km (5.6 mi); Siegel Creek from its confluence with the Red River upstream 2.7 km (1.7 mi); Dawson Creek from its confluence with the Red River upstream 3.7 km (2.3 mi); Little Moose Creek from its confluence with the Red River upstream 3.0 km (1.8 mi); Moose Butte Creek from its confluence with the Red River upstream 7.4 km (4.6 mi); South Fork Red River from its confluence with the Red River upstream 18.8 km (11.7 mi); Trapper Creek from its confluence with the South Fork Red River upstream 10.5 km (6.6 mi); West Fork Red River from its confluence with the South Fork Red River upstream 4.9 km (3.0 mi); and Middle Fork Red River from its confluence with the West Fork Red River upstream 6.1 km (3.8 mi). Ditch Creek from its confluence with the Red River upstream 6.3 km (3.9 mi) and Soda Creek from its confluence with the Red River upstream 1.8 km (1.1 mi) may provide spawning and rearing habitat but at a minimum provide FMO habitat. Baston Creek from its confluence with the Red River upstream 3.6 km (2.2 mi) provides spawning and rearing habitat. Otterson Creek from its confluence with the Red River upstream 5.6 km (3.5 mi) provides presumed spawning and rearing habitat. Bridge Creek from its confluence with the Red River upstream 6.4 km (4.0 mi) provides spawning and rearing habitat.

(H) American River from its confluence with the Red River and the South Fork Clearwater River upstream 27.4 km (17.0 mi) provides FMO habitat. Elk Creek from its confluence with the American River upstream 3.8 km (2.3 mi) to Big Elk Creek provides FMO habitat. Little Elk Creek from its confluence with Elk Creek upstream 4.0 km (2.5 mi) provides spawning and rearing habitat. Kirks Fork of the American River from its confluence upstream 2.1 km (1.3 mi); East Fork American River from its confluence upstream 10.4 km (6.5 mi); and Flint Creek from its confluence with the East Fork American River upstream 3.0 km (1.9 mi) provide spawning and rearing habitat. West Fork American River from its confluence upstream 8.0 km (5.0 mi) to its headwaters and Lick Creek from its confluence with the American River upstream 6.0 km (3.7 mi) provide presumed spawning and rearing habitat.

Table 55. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–South Fork Clearwater River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	American River	ID	CBBTTAT (1998d) documented recent bull trout use of this stream for subadult/adult rearing.	Rationale provided in South Fork Clearwater River CHSU justification text	1154741 458082
Clearwater River–South Fork Clearwater River	Baldy Creek	ID	The presence of small juvenile bull trout (IDFG 2001) reflects that this stream continues to be used by bull trout as spawning/early habitat (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1156294 459080.1
Clearwater River–South Fork Clearwater River	Baldy Creek	ID	The presence of small juvenile bull trout (IDFG 2001) reflects that this stream continues to be used by bull trout as spawning/early habitat (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1156294 459080.2
Clearwater River–South Fork Clearwater River	Baston Creek	ID	A 100 mm bull trout was seen in the second kilometer of this stream in 1997 (IDFG 2001).	Rationale provided in South Fork Clearwater River CHSU justification text	1152346 457600
Clearwater River–South Fork Clearwater River	Bear Creek	ID	Results of USFS surveys indicate that this section of stream continues to be used by bull trout as subadult/adult rearing habitat (D. Mays, pers comm. 2002a,b).	Rationale provided in South Fork Clearwater River CHSU justification text	1156167 458631
Clearwater River–South Fork Clearwater River	Beaver Creek	ID	CBBTTAT (1998d) suspected current (post-1985) use of this stream as a bull trout spawning/early rearing area.	Rationale provided in South Fork Clearwater River CHSU justification text	1156302 458958
Clearwater River–South Fork Clearwater River	Bridge Creek	ID	Forest Service observations of small juvenile (<150 mm) fish in the lower end of the stream (D. Mays, pers comm. 2002a,b).	Rationale provided in South Fork Clearwater River CHSU justification text	1152096 457793
Clearwater River–South Fork Clearwater River	Crooked River	ID	The lower portion of Crooked River was identified by CBBTTAT (1998d) as having current (post-1985) bull trout use as subadult/adult rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1155291 458241.1
Clearwater River–South Fork Clearwater River	Crooked River	ID	The lower portion of Crooked River was identified by CBBTTAT (1998d) as having current (post-1985) bull trout use as subadult/adult rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1155291 458241.2
Clearwater River–South Fork Clearwater River	Crooked River	ID	This middle segment of Crooked River appears to have mixed use. Small juvenile bull trout (<6 in.) have been sampled here (IDFG 2001) and CBBTTAT (1998d) classified the stream as currently used by bull trout as spawning/early rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1155291 458241.3

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	Crooked River	ID	Small (<6 in.) bull trout have been sampled here (IDFG 2001) and CBBTTAT (1998d) classified the stream as currently used by bull trout as spawning/early rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1155291 458241.4
Clearwater River–South Fork Clearwater River	Dawson Creek	ID	Low abundance of small (<150 mm) bull trout was seen in the lower end of this stream in 1997 (IDFG 2001).	Rationale provided in South Fork Clearwater River CHSU justification text	1153905 457301
Clearwater River–South Fork Clearwater River	Ditch Creek	ID	USFS (1999e) identified this stream segment as having known bull trout presence.	Rationale provided in South Fork Clearwater River CHSU justification text	1152969 457466
Clearwater River–South Fork Clearwater River	East Fork American River	ID	Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1154237 458641.1
Clearwater River–South Fork Clearwater River	East Fork American River	ID	Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1154237 458641.2
Clearwater River–South Fork Clearwater River	East Fork American River	ID	Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1154237 458641.3
Clearwater River–South Fork Clearwater River	East Fork Crooked River	ID	Fluvial adult bull trout have been radio-tracked into this spawning area (J. Brostrom, IDFG, pers comm.2007), and multiple age classes of fish, including 50-150 mm juveniles, have been observed here by snorkelers (IDFG/GPM, in litt. 2002).	Rationale provided in South Fork Clearwater River CHSU justification text	1155477 456953.1
Clearwater River–South Fork Clearwater River	East Fork Crooked River	ID	Fluvial adult bull trout have been radio-tracked into this spawning area (J. Brostrom, pers comm. 2002), and multiple age classes of fish, including 50-150 mm juveniles, have been observed here by snorkelers (IDFG/GPM, in litt. 2002).	Rationale provided in South Fork Clearwater River CHSU justification text	1155477 456953.2
Clearwater River–South Fork Clearwater River	Elk Creek	ID	Bull trout presence in lower Little Elk Cr. (upstream) suggests that subadult/adult fish use this segment as a migratory corridor to access Little Elk Cr. (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1154584 458181
Clearwater River–South Fork Clearwater River	Flint Creek	ID	USFS (1999e) identified this stream segment as having known bull trout presence.	Rationale provided in South Fork Clearwater River CHSU justification text	1154266 458914

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	Gospel Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1158898 457033
Clearwater River–South Fork Clearwater River	Hagen Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1158170 456492
Clearwater River–South Fork Clearwater River	Johns Creek	ID	Current (post-1985) use of lower Johns Cr. by bull trout for subadult/adult rearing has been documented (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1158892 458238.1
Clearwater River–South Fork Clearwater River	Johns Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997). Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1158892 458238.2
Clearwater River–South Fork Clearwater River	Johns Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997). Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1158892 458238.3
Clearwater River–South Fork Clearwater River	Kirks Fork American River	ID	Current (post-1985) use of this stream as a bull trout subadult/adult rearing area was documented by CBBTTAT (1998d). USFS (1999b) identified this stream segment as having known bull trout presence.	Rationale provided in South Fork Clearwater River CHSU justification text	1154102 458224
Clearwater River–South Fork Clearwater River	Lick Creek	ID	Current (post-1985) spawning/early rearing use of this stream is suspected as bull trout have been documented downstream in the American River (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1154682 459226
Clearwater River–South Fork Clearwater River	Little Elk Creek	ID	USFS (1999e) identified this stream segment as having known bull trout presence, and as weak SR (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1154339 458407
Clearwater River–South Fork Clearwater River	Little Moose Creek	ID	Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1153670 457159
Clearwater River–South Fork Clearwater River	Melton Creek	ID	Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1159950 457249
Clearwater River–South Fork Clearwater River	Middle Fork. Red River	ID	CBBTTAT (1998d) reported recent (post-1985) use of this stream as a bull trout spawning/early rearing area. IDFG (2001) found a small juvenile (<150 mm) bull trout here in 1995.	Rationale provided in South Fork Clearwater River CHSU justification text	1154123 456586

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	Mill Creek	ID	Bull trout presence in this stream is sporadic (CBBTTAT 1998d), and use is apparently confined to subadult/adult rearing (W. Paradis, pers comm. 2002).	Rationale provided in South Fork Clearwater River CHSU justification text	1159313 458298
Clearwater River–South Fork Clearwater River	Moores Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was found by Spangler (1997) and documented by CBBTTAT (1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1158374 456764
Clearwater River–South Fork Clearwater River	Moores Lake Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1158904 456771
Clearwater River–South Fork Clearwater River	Moose Butte Creek	ID	CBBTTAT (1998d) documented recent (post-1985) use of this stream as a bull trout spawning/early rearing area.	Rationale provided in South Fork Clearwater River CHSU justification text	1153524 457098
Clearwater River–South Fork Clearwater River	Mule Creek	ID	Recent surveys have shown that the lower end of Mule Cr. is used by bull trout as subadult/adult rearing habitat. IDFG sampled a 150-175 mm and a 200-225 mm bull trout here in 1995 (IDFG 2001).	Rationale provided in South Fork Clearwater River CHSU justification text	1156340 459252
Clearwater River–South Fork Clearwater River	Newsome Creek	ID	CBBTTAT (1998d) indicates that the lower portion of Newsome Cr. has current (post-1985) bull trout use as subadult/adult rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1156148 458284.1
Clearwater River–South Fork Clearwater River	Newsome Creek	ID	The presence of small juvenile bull trout (IDFG 2001) reflects that this segment of Newsome Creek continues to be used by bull trout as spawning/early habitat (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1156148 458284.2
Clearwater River–South Fork Clearwater River	Newsome Creek	ID	Presumed occupied as Newsome Creek downstream has known SR (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1156148 458284.3
Clearwater River–South Fork Clearwater River	Open Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1158374 456765
Clearwater River–South Fork Clearwater River	Otterson Creek	ID	Otterson Creek was classified as a suspected used SR area by CBBTTAT (1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1152188 457761
Clearwater River–South Fork Clearwater River	Pilot Creek	ID	The presence of small juvenile bull trout (IDFG 2001) reflects that this stream continues to be used by bull trout as spawning/early habitat (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1156294 459072
Clearwater River–South Fork Clearwater River	Red Horse Creek	ID	USFS (1999e) identified this stream segment as having known bull trout presence.	Rationale provided in South Fork Clearwater River CHSU justification text	1154005 457939

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	Red River	ID	CBBTTAT (1998d) documented recent (post-1985) use of the lower section of Red River as subadult/adult rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1154741 458083.1
Clearwater River–South Fork Clearwater River	Red River	ID	Small bull trout have been found in mainstem Red River (IDFG 2001), and CBBTTAT (1998d) classified the stream's recent use by bull trout as spawning/early rearing.	Rationale provided in South Fork Clearwater River CHSU justification text	1154741 458083.2
Clearwater River–South Fork Clearwater River	Red River	ID	Above SF Red River, small bull trout have been found in mainstem Red River (IDFG 2001), and CBBTTAT (1998d) classified the stream's recent use by bull trout as spawning/early rearing.	Rationale provided in South Fork Clearwater River CHSU justification text	1154741 458083.3
Clearwater River–South Fork Clearwater River	Relief Creek	ID	Small (<6 in.) bull trout have been sampled from the lower end of Relief Creek (IDFG 2001), and CBBTTAT (1998d) classified the stream as currently (post-1985) used spawning/early rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1155189 457483
Clearwater River–South Fork Clearwater River	Sawmill Creek	ID	Identified as strong SR by the Forest Service (USFS 2009e).	Rationale provided in South Fork Clearwater River CHSU justification text	1156344 459083
Clearwater River–South Fork Clearwater River	Siegel Creek	ID	A bull trout >150 mm long was found in this section of channel during surveys conducted in 1997 (IDFG 2001). Identified as weak SR by the Forest Service (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1153870 457733
Clearwater River–South Fork Clearwater River	Silver Creek	ID	USFS (1999e) noted that a subadult bull trout was recently found using this stream as foraging/thermal refuge habitat, and Identified as weak SR (USFS 2009b).	Rationale provided in South Fork Clearwater River CHSU justification text	1155395 457156
Clearwater River–South Fork Clearwater River	Sixmile Creek	ID	Recent use of this stream section by bull trout as subadult/adult rearing habitat has been observed by the USFS (W. Paradis, pers. comm. 2002).	Rationale provided in South Fork Clearwater River CHSU justification text	1156592 457643
Clearwater River–South Fork Clearwater River	Soda Creek	ID	This segment of stream is known used subadult/adult rearing habitat for bull trout (D. Mays, pers comm. 2002 a,b).	Rationale provided in South Fork Clearwater River CHSU justification text	1152564 457563
Clearwater River–South Fork Clearwater River	South Fork Clearwater River	ID	Subadult/adult rearing and overwintering habitat in the mainstem South Fork has been documented as used by bull trout through radio-tracking studies and creel surveys (IDFG 2001).	Rationale provided in South Fork Clearwater River CHSU justification text	1159798 461458
Clearwater River–South Fork Clearwater River	South Fork Red River	ID	CBBTTAT (1998d) reported current (post-1985) use of this stream as a bull trout spawning/early rearing area. IDFG (2001) confirmed that small juvenile (<150 mm) bull trout were present in 1997.	Rationale provided in South Fork Clearwater River CHSU justification text	1153441 457108

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	Taylor Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1157817 456587
Clearwater River–South Fork Clearwater River	Tenmile Creek	ID	The lower portion of Tenmile Cr. was identified by CBBTTAT (1998d) as having current (post-1985) bull trout use as subadult/adult rearing habitat.	Rationale provided in South Fork Clearwater River CHSU justification text	1156833 458061.1
Clearwater River–South Fork Clearwater River	Tenmile Creek	ID	The upper portion of Tenmile Cr. was identified by CBBTTAT (1998d) as having current (post-1985) bull trout use as spawning/early rearing habitat. Field studies by Spangler (1997) documented this use.	Rationale provided in South Fork Clearwater River CHSU justification text	1156833 458061.2
Clearwater River–South Fork Clearwater River	Trapper Creek	ID	(1999e) identified bull trout presence in the upper reach of this stream.	Rationale provided in South Fork Clearwater River CHSU justification text	1153441 456738.1
Clearwater River–South Fork Clearwater River	Trapper Creek	ID	USFS (1999e) identified this stream segment as having known bull trout presence.	Rationale provided in South Fork Clearwater River CHSU justification text	1153441 456738.2
Clearwater River–South Fork Clearwater River	Twin Lakes Creek	ID	Current (post-1985) use of this stream by bull trout for spawning/early rearing documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1158267 456644
Clearwater River–South Fork Clearwater River	UNNAMED - off West Fork Crooked River	ID	USFS surveys have found small (<6 in.) bull trout in this stream (D. Mays, pers comm. 2002a,b).	Rationale provided in South Fork Clearwater River CHSU justification text	1155625 456904
Clearwater River–South Fork Clearwater River	UNNAMED 1 - off Pilot Creek	ID	Mapping in USFS (1999e) identified this section of stream as recently known to be occupied by bull trout. D. Mays (pers. comm. 2002 a, b) confirmed that this occupancy reflected spawning/early rearing activity.	Rationale provided in South Fork Clearwater River CHSU justification text	1156758 459302
Clearwater River–South Fork Clearwater River	UNNAMED 2 - off Pilot Creek	ID	Mapping in USFS (1999e) identified this section of stream as recently known to be occupied by bull trout. D. Mays (pers. comm. 2002a,b) confirmed that this occupancy reflected spawning/early rearing activity.	Rationale provided in South Fork Clearwater River CHSU justification text	1157174 459384.1
Clearwater River–South Fork Clearwater River	UNNAMED 2 - off Pilot Creek	ID	Mapping in USFS (1999e) identified this section of stream as recently known to be occupied by bull trout. D. Mays (pers. comm. 2002a,b) confirmed that this occupancy reflected spawning/early rearing activity.	Rationale provided in South Fork Clearwater River CHSU justification text	1157174 459384.2
Clearwater River–South Fork Clearwater River	West Fork American River	ID	Current (post-1985) spawning/early rearing use of this stream is suspected as bull trout have been documented downstream in the American River (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1154650 459131

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–South Fork Clearwater River	West Fork Crooked River	ID	Current (post-1985) spawning/early rearing use of this stream is suspected as bull trout have been documented downstream in the American River (CBBTTAT 1998d).	Rationale provided in South Fork Clearwater River CHSU justification text	1155477 456955
Clearwater River–South Fork Clearwater River	West Fork Newsome Creek	ID	CBBTTAT (1998d) documented current (post-1985) use of this stream as a subadult/adult rearing area for bull trout.	Rationale provided in South Fork Clearwater River CHSU justification text	1156174 458648
Clearwater River–South Fork Clearwater River	West Fork Red River	ID	CBBTTAT (1998d) reported recent (post-1985) use of this stream as a bull trout spawning/early rearing area. IDFG (2001) found multiple small bull trout here in 1995, including age 1 and age 2 fish.	Rationale provided in South Fork Clearwater River CHSU justification text	1154014 456527
Clearwater River–South Fork Clearwater River	Williams Creek	ID	Bull trout SR use of this high-quality stream is strongly suspected (D. Mays, pers comm. 2002a,b). Bull trout have been documented downstream in Tenmile Creek (CBBTTAT 1998d; Spangler 1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1156555 457314
Clearwater River–South Fork Clearwater River	Wiseboy Creek	ID	Recent bull trout use of the lower portion of Wiseboy Cr. as spawning/rearing habitat was documented by Spangler (1997).	Rationale provided in South Fork Clearwater River CHSU justification text	1157119 456415

21.3. Selway River Critical Habitat Subunit

The Selway River CHSU is essential to bull trout conservation because the Selway River core area has many individuals and local populations that are distributed throughout much of the CHSU. The Selway River CHSU is almost entirely within Wilderness areas and has much habitat with few threats. Bull trout within the Selway River CHSU are one of the more secure and stable bull trout core area populations within the Clearwater River CHU and provide a very important stronghold against potential extinction (see Appendix 1 for more detailed information).

Located within Idaho County, the Selway River CHSU includes the entire stream network of the Selway River. A total of 735.6 km (457.1 mi) of streams are designated for designation as critical habitat. The following water bodies are included in this CHSU (see Table 56):

(A) The Selway River from its confluence with the Lochsa River upstream 130.0 km (80.7 mi) to Deep Creek provides FMO habitat; spawning and rearing habitat occurs upstream an additional 29.0 km (18.0 mi).

(B) O'Hara Creek from its confluence with the Selway River upstream 12.4 km (7.7 mi) to the confluence of the East and West Forks of O'Hara Creek provides FMO habitat. East Fork O'Hara Creek from its confluence with O'Hara Creek upstream 8.1 km (5.0 mi) to its headwaters and West Fork O'Hara Creek from its confluence with O'Hara Creek upstream 9.3 km (5.8 mi) to its headwaters provide presumed spawning and rearing habitat.

(C) Gedney Creek from its confluence with the Selway River upstream 5.4 km (3.4 mi) to West Fork Gedney Creek provides FMO habitat; spawning and rearing habitat occurs upstream an additional 7.1 km (4.4 mi). The West Fork Gedney Creek from its confluence with Gedney Creek upstream 2.0 km (1.2 mi) to a barrier falls provides spawning and rearing habitat.

(D) Meadow Creek from its confluence with the Selway River upstream 44.1 km (27.4 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 23.7 km (14.8 mi). Schwar Creek from its confluence with Meadow Creek upstream 3.5 km (2.2 mi) to a barrier falls and East Fork Meadow Creek from its confluence with Meadow Creek upstream 11.1 km (6.9 mi) provide spawning and rearing habitat.

(E) Marten Creek from its confluence with the Selway River upstream 3.4 km (2.1 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 14.9 km (9.3 mi).

(F) Moose Creek from its confluence with the Selway River upstream 6.0 km (3.7 mi) to the confluence of North Fork Moose Creek and East Fork Moose Creek provides FMO habitat. The following tributaries provide spawning and rearing habitat: North Fork Moose Creek from its confluence with Moose Creek upstream 19.4 km (12.1 mi); Rhoda Creek from its confluence with North Fork Moose Creek upstream 5.1 km (3.2 mi) to Wounded Doe Creek; Wounded Doe Creek from its confluence with Rhoda Creek upstream 11.4 km (7.1 mi); East Fork Moose Creek from its confluence with Moose Creek upstream 26.7 km (16.6 mi) to a potential barrier falls; and Cedar Creek from its confluence at East Fork Moose Creek upstream 10.1 km (6.3 mi).

(G) Bear Creek from its confluence with the Selway River upstream 16.8 km (10.4 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 16.5 km (10.2 mi). Cub Creek from its confluence with Bear Creek upstream 9.0 km (5.6 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 6.0 km (3.7 mi) to a barrier falls.

Paradise Creek from its confluence with Cub Creek upstream 6.8 km (4.2 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 13.3 km (8.3 mi). Brushy Fork Creek from its confluence with Cub Creek upstream 3.2 km (2.0 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 8.0 km (5.0 mi) upstream.

(H) Running Creek from its confluence with the Selway River upstream 2.4 km (1.5 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 13.0 km (8.0 mi) with an additional 16.0 km (10.0 mi) upstream of presumed spawning and rearing habitat. Eagle Creek from its confluence with Running Creek upstream 17.3 km (10.7 mi) provides spawning and rearing habitat. Lynx Creek from its confluence with Running Creek upstream 4.1 km (2.6 mi); South Fork Running Creek from its confluence with Running Creek upstream 3.3 km (2.0 mi); and Tom Creek from its confluence with Running Creek upstream 6.1 km (3.8 mi) provide presumed spawning and rearing habitat.

(I) White Cap Creek from its confluence with the Selway River upstream 12.4 km (7.7 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 25.5 km (15.9 mi). Canyon Creek from its confluence with White Cap Creek upstream 17.8 km (11.1 mi) provides spawning and rearing habitat.

(J) Indian Creek from its confluence with the Selway River upstream 18.2 km (11.4 mi) provides spawning and rearing habitat. Jack Creek from its confluence with Indian Creek upstream 1.4 km (0.9 mi); Saddle Gulch Creek from its confluence with Indian Creek upstream 1.1 km (0.7 mi); Schofield Creek from its confluence with Indian Creek upstream 8.4 km (5.2 mi); and Burnt Strip Creek from its confluence with Schofield Creek upstream 1.3 km (0.8 mi) also provide spawning and rearing habitat.

(K) Little Clearwater River from its confluence with the Selway River upstream 19.9 km (12.3 mi) provides spawning and rearing habitat. Flat Creek from its confluence with the Little Clearwater River upstream 8.7 km (5.4 mi); Salamander Creek from its confluence with the Little Clearwater River upstream 7.7 km (4.8 mi); and Burnt Knob Creek from its confluence with the Little Clearwater River upstream 4.7 km (2.9 mi) also provide spawning and rearing habitat.

(L) Magruder Creek from its confluence with the Selway River upstream 3.8 km (2.4 mi) provides spawning and rearing habitat.

(M) Deep Creek from its confluence with the Selway River upstream 20.0 km (12.4 mi) provides spawning and rearing habitat. The following tributaries to Deep Creek also provide spawning and rearing habitat: Gabe Creek from its confluence with Deep Creek upstream 1.6 km (1.0 mi); Cayuse Creek from its confluence with Deep Creek upstream 4.6 km (2.8 mi); Vance Creek from its confluence with Deep Creek upstream 2.6 km (1.6 mi); Pete Creek from its confluence with Deep Creek upstream 2.0 km (1.2 mi); Slow Gulch Creek from its confluence with Deep Creek upstream 2.2 km (1.3 mi); and Lazy Creek from its confluence with Slow Gulch Creek upstream 1.5 km (0.9 mi).

(N) Hells Half Acre Creek from its confluence with the Selway River upstream 1.2 km (0.7 mi) provides spawning and rearing habitat.

(O) Kim Creek from its confluence with the Selway River upstream 1.3 km (0.8 mi) provides spawning and rearing habitat.

(P) Gold Pan Creek from its confluence with the Selway River upstream 1.4 km (0.8 mi) provides spawning and rearing habitat.

(Q) Three Lakes Creek from its confluence with the Selway River upstream 1.5 km (0.9 mi) provides spawning and rearing habitat.

(R) Wilkerson Creek from its confluence with the Selway River upstream 10.3 km (6.4 mi) provides spawning and rearing habitat. Storm Creek from its confluence with Wilkerson Creek upstream 6.9 km (4.3 mi); French Creek from its confluence with Wilkerson Creek upstream 1.8 km (1.1 mi); and Mist Creek from its confluence with Wilkerson Creek upstream 1.5 km (0.9 mi) also provide spawning and rearing habitat.

(S) Sweet Creek from its confluence with the Selway River upstream 9.1 km (5.7 mi) provides spawning and rearing habitat.

(T) Stripe Creek from its confluence with the Selway River upstream 2.9 km (1.8 mi) provides spawning and rearing habitat.

(U) Surprise Creek from its confluence with the Selway River upstream 3.9 km (2.4 mi) and South Fork Surprise Creek from its confluence with Surprise Creek upstream 3.8 km (2.3 mi) provide spawning and rearing habitat. Table 56. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–Selway River CHU/CHSU

Table 56. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–Selway River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	Bear Creek	ID	This section of stream is identified as having known bull trout presence by USFS (2001b). IDFG snorkel surveys have documented small (<150 mm) juvenile bull trout (IDFG/GPM in litt. 2002).	Rationale provided in Selway River CHSU justification text	1148442 460188.1
Clearwater River–Selway River	Bear Creek	ID	Bull trout spawning/early rearing is occurring in the Bear Cr. watershed (CBBTTAT 1998a).	Rationale provided in Selway River CHSU justification text	1148442 460188.2
Clearwater River–Selway River	Brushy Fork Creek	ID	USFS (2001b) identified this segment of stream as known occupied FMO habitat for bull trout.	Rationale provided in Selway River CHSU justification text	1146985 460025.1
Clearwater River–Selway River	Brushy Fork Creek	ID	Bull trout spawning/early rearing is occurring in the Bear Cr. watershed (CBBTTAT 1998a).	Rationale provided in Selway River CHSU justification text	1146985 460025.2
Clearwater River–Selway River	Burnt Knob Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148977 457153
Clearwater River–Selway River	Burnt Strip Creek	ID	Subadult and adult bull trout are known to be present in the mainstem Selway River (CBBTTAT 1998a), and use it for FMO (Service 2002a).	Rationale provided in Selway River CHSU justification text	1146256 458172
Clearwater River–Selway River	Canyon Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146132 458878
Clearwater River–Selway River	Cayuse Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146139 457055
Clearwater River–Selway River	Cedar Creek	ID	USFS (2001) identified this segment of stream within the East Fork Moose Creek system as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1147081 462492
Clearwater River–Selway River	Cub Creek	ID	USFS (2001) identified this segment of stream as known occupied FMO habitat for bull trout.	Rationale provided in Selway River CHSU justification text	1147562 460344.1
Clearwater River–Selway River	Cub Creek	ID	Bull trout spawning/early rearing is occurring in the Bear Cr. watershed (CBBTTAT 1998a), and bull trout are known to occur in the lower reaches of Cub Creek (USFS 2001b).	Rationale provided in Selway River CHSU justification text	1147562 460344.2
Clearwater River–Selway River	Deep Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147185 457073
Clearwater River–Selway River	East Fork Meadow Creek	ID	Bull trout spawning is known to occur here (USFS 1999d; CBBTTAT 1998a).	Rationale provided in Selway River CHSU justification text	1151035 458804.1
Clearwater River–Selway River	East Fork Meadow Creek	ID	Bull trout spawning is known to occur here (USFS 1999d; CBBTTAT 1998a).	Rationale provided in Selway River CHSU justification text	1151035 458804.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	E.Fk. O'Hara Creek	ID	Presumed occupied based on bull trout observation downstream in O'Hare Creek in 2000. (IDFG/GPM in litt. 2002).	Rationale provided in Selway River CHSU justification text	1155232 459986
Clearwater River–Selway River	Eagle Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148532 459084.1
Clearwater River–Selway River	Eagle Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148532 459084.2
Clearwater River–Selway River	East Fork Moose Creek	ID	Bull trout spawning/early rearing occurs in the East Fork Moose Creek system (CBBTTAT 1998a), but exact locations are unclear. USFS (2001) identified this segment of stream within the East Fork Moose Creek system as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1148970 461647.1
Clearwater River–Selway River	East Fork Moose Creek	ID	Bull trout spawning/early rearing occurs in the East Fork Moose Creek system (CBBTTAT 1998a), but exact locations are unclear. USFS (2001) identified this segment of stream within the East Fork Moose Creek system as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1148970 461647.2
Clearwater River–Selway River	East Fork Moose Creek	ID	Bull trout spawning/early rearing occurs in the East Fork Moose Creek system (CBBTTAT 1998a), but exact locations are unclear. USFS (2001) identified this segment of stream within the East Fork Moose Creek system as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1148970 461647.3
Clearwater River–Selway River	Flat Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148570 457218
Clearwater River–Selway River	French Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145911 455973
Clearwater River–Selway River	Gabe Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146699 456968
Clearwater River–Selway River	Gedney Creek	ID	CBBTTAT (1998b) documented current (post-1985) occupancy of Gedney Cr., a habitat stronghold (USFS 2001b), as bull trout FMO habitat. IDFG has found strong use of this segment by fluvial bull trout (A. Byrne, pers. comm. 2002).	Rationale provided in Selway River CHSU justification text	1153132 460564

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	Gedney Creek	ID	IDFG has observed large bull trout moving up Gedney Creek above the West Fork and beyond Canteen Creek. It is suspected from the level of use that these fish are spawning somewhere upstream (A. Byrne, pers comm. 2002).	Rationale provided in Selway River CHSU justification text	1153132 460564
Clearwater River–Selway River	Gold Pan Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147214 456666
Clearwater River–Selway River	Hells Half Acre Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147174 456921
Clearwater River–Selway River	Indian Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147639 457916.1
Clearwater River–Selway River	Indian Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147639 457916.2
Clearwater River–Selway River	Jack Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146924 457779
Clearwater River–Selway River	Kim Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147188 456788
Clearwater River–Selway River	Lazy Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145444 456786
Clearwater River–Selway River	Little Clearwater River	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147746 457536
Clearwater River–Selway River	Lynx Creek	ID	Presumed to be occupied by bull trout based on current use directly downstream in Running Creek (USFS 2009a; M. Jakober, pers. comm. 2009).	Rationale provided in Selway River CHSU justification text	1149367 458488
Clearwater River–Selway River	Magruder Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147600 457446.1
Clearwater River–Selway River	Magruder Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147600 457446.2
Clearwater River–Selway River	Marten Creek	ID	Incidental sightings of adult fluvial bull trout have been documented in Marten Cr. (Service 2002a).	Rationale provided in Selway River CHSU justification text	1150522 460987.1
Clearwater River–Selway River	Marten Creek	ID	CBBTTAT (1998b) identified Marten Cr. as being suspected of current (post-1985) use by bull trout as a SR area.	Rationale provided in Selway River CHSU justification text	1150522 460987.2
Clearwater River–Selway River	Meadow Creek	ID	Bull trout have been documented throughout the mainstem of Meadow Cr. (Service 2002a).	Rationale provided in Selway River CHSU justification text	1152954 460456.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	Meadow Creek	ID	Bull trout have been documented throughout the mainstem of Meadow Cr. (Service 2002a).	Rationale provided in Selway River CHSU justification text	1152954 460456.2
Clearwater River–Selway River	Meadow Creek	ID	Meadow Cr. supports a significant and strong population of bull trout in its upper reaches (Service 2002a).	Rationale provided in Selway River CHSU justification text	1152954 460456.3
Clearwater River–Selway River	Mist Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146280 455670
Clearwater River–Selway River	Moose Creek	ID	USFS (2001b) identified this segment of stream as known used bull trout habitat. IDFG has found small (<150 mm) juvenile bull trout in this channel segment (IDFG/GPM in litt. 2002).	Rationale provided in Selway River CHSU justification text	1149345 461224
Clearwater River–Selway River	North Fork Moose Creek	ID	North Fork Moose Creek is a known recently used bull trout spawning/early rearing stream (CBBTTAT 1998a). This segment of the stream was identified by (2001b) as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1148970 461648.1
Clearwater River–Selway River	North Fork Moose Creek	ID	North Fork Moose Creek is a known recently used bull trout spawning/early rearing stream (CBBTTAT 1998a). This segment of the stream was identified by (2001b) as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1148970 461648.2
Clearwater River–Selway River	O'Hara Creek	ID	Snorkelers found a 255-280 mm bull trout in this segment of O'Hara Cr in 2000. (IDFG/GPM in litt 2002).	Rationale provided in Selway River CHSU justification text	1155171 460860
Clearwater River–Selway River	Paradise Creek	ID	USFS (2001b) identified this segment of stream as known occupied FMO habitat for bull trout.	Rationale provided in Selway River CHSU justification text	1147283 460220.1
Clearwater River–Selway River	Paradise Creek	ID	Bull trout spawning/early rearing is occurring in the Bear Cr. watershed (CBBTTAT 1998a), and bull trout are known to occur in the lower reaches of Paradise Creek (USFS 2001b).	Rationale provided in Selway River CHSU justification text	1147283 460220.2
Clearwater River–Selway River	Pete Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145788 457028
Clearwater River–Selway River	Rhoda Creek	ID	Used by bull trout for spawning/early rearing (CBBTTAT 1998a). This segment of the stream was identified by USFS (2001b) as known to be occupied by bull trout.	Rationale provided in Selway River CHSU justification text	1149597 462339
Clearwater River–Selway River	Running Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148316 459188.1
Clearwater River–Selway River	Running Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148316 459188.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	Running Creek	ID	Presumed to be occupied based on current use directly downstream in lower Running Creek by bull trout (USFS 2009a; M Jakober, pers. comm. 2009).	Rationale provided in Selway River CHSU justification text	1148316 459188.3
Clearwater River–Selway River	South Fork Running Creek	ID	Presumed to be occupied based on current use directly downstream in Running Creek by bull trout (USFS 2009a; M Jakober, pers. comm. 2009).	Rationale provided in Selway River CHSU justification text	1149439 458449
Clearwater River–Selway River	South Fork Surprise Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146793 455268
Clearwater River–Selway River	Saddle Gulch	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146526 457700
Clearwater River–Selway River	Salamander Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1148646 457108
Clearwater River–Selway River	Schofield Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146452 457774
Clearwater River–Selway River	Schwar Creek	ID	Bull trout have been reported in this stream (IDFG in litt. 2002), and current (post-1985) use of this stream by bull trout was mapped by CBBTTAT (1998b).	Rationale provided in Selway River CHSU justification text	1151160 458817
Clearwater River–Selway River	Selway River	ID	Subadult and adult bull trout are known present in the mainstem Selway River (CBBTTAT 1998a) and use it for FMO (Service 2002a).	Rationale provided in Selway River CHSU justification text	1155987 461401.1
Clearwater River–Selway River	Selway River	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1155987 461401.2
Clearwater River–Selway River	Selway River	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1155987 461401.3
Clearwater River–Selway River	Selway River	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1155987 461401.4
Clearwater River–Selway River	Selway River	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1155987 461401.5
Clearwater River–Selway River	Slow Gulch Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145600 456938
Clearwater River–Selway River	Storm Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1146399 455778
Clearwater River–Selway River	Stripe Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147026 455226
Clearwater River–Selway River	Surprise Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147012 455206

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Selway River	Swet Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147193 455805
Clearwater River–Selway River	Three Lakes Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147077 456228
Clearwater River–Selway River	Tom Creek	ID	Presumed to be occupied by bull trout based on current use directly downstream in Running Creek (USFS 2009a; M. Jakober, pers. comm. 2009).	Rationale provided in Selway River CHSU justification text	1149865 458620
Clearwater River–Selway River	Vance Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145788 457029.1
Clearwater River–Selway River	Vance Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1145788 457029.2
Clearwater River–Selway River	West Fork Gedney Creek	ID	Bull trout are relatively abundant in mainstem Gedney Cr. and have access to the lower 2 km of the West Fork (A. Byrne, pers comm. 2002).	Rationale provided in Selway River CHSU justification text	1152928 460939
Clearwater River–Selway River	West Fork O'Hara Creek	ID	Presumed occupied based on bull trout observation downstream in O'Hare Creek in 2000. (IDFG/GPM in litt. 2002).	Rationale provided in Selway River CHSU justification text	1155232 459985
Clearwater River–Selway River	White Cap Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147438 458602.1
Clearwater River–Selway River	White Cap Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147438 458602.2
Clearwater River–Selway River	Wilkerson Creek	ID	Occupied based on USFS stream surveys (USFS 2009a).	Rationale provided in Selway River CHSU justification text	1147057 456120
Clearwater River–Selway River	Wounded Doe Creek	ID	Use by bull trout for spawning/early rearing (CBBTTAT 1998a). Identified by USFS (2001) as having the largest known concentration of spawning and early rearing of fluvial bull trout in the entire Selway.	Rationale provided in Selway River CHSU justification text	1150082 462386

21.4. Lochsa River Critical Habitat Subunit (and Fish Lake)

The Lochsa River CHSU is essential to bull trout conservation because it has moderately few individuals and relatively many local populations or population complexes distributed throughout much of the upper portion of the CHSU. In addition to fluvial life history forms, which are important in the long-term recovery of the species, the Lochsa River CHSU also contains one of only two headwater lake adfluvial bull trout populations (Fish Lake) in the entire Clearwater River CHU. The relatively large amount of occupied habitat and few threats are considered important factors in preventing potential extinction (see Appendix 1 for more detailed information).

Located within Idaho and Clearwater Counties, the Lochsa River CHSU includes the entire stream network of the Lochsa River system. A total of 487.9 km (303.1 mi) of streams and a 21.8 ha (54.0 ac) of lake surface area are designated for designation as bull trout critical habitat. The following water bodies are included in this CHSU (see Table 57):

(A) The Lochsa River from its confluence with the Selway River upstream 110.6 km (68.7 mi) to its origin at the confluence of Crooked Fork and Colt Killed Creek provides FMO habitat.

(B) Fish Creek from its confluence with the Lochsa River upstream 7.5 km (4.6 mi) to its confluence with Hungery Creek provides FMO habitat; spawning and rearing habitat occurs for an additional 25.1 km (15.6 mi) upstream. Hungery Creek from its confluence with Fish Creek upstream 21.8 km (13.6 mi) provides spawning and rearing habitat.

(C) Indian Grave Creek from its confluence with the Lochsa River upstream 7.6 km (4.8 mi) to its headwaters provides FMO habitat, and may provide spawning and rearing habitat in the upper reaches.

(D) Weir Creek from its confluence with the Lochsa River upstream 9.5 km (5.9 mi) to its headwaters provides FMO habitat, and may provide spawning and rearing habitat in the upper reaches.

(E) Fish Lake Creek from its confluence with the Lochsa River upstream 16.2 km (10.0 mi) to California Creek provides FMO habitat. Lake Creek from California Creek upstream 5.8 km (3.6 mi) to Fish Lake provides spawning and rearing habitat. Fish Lake (22.3 ha (55.0 ac)) provides FMO habitat. Fish Lake Creek from Fish Lake upstream 2.3 km (1.5 mi) provides spawning and rearing habitat.

(F) Post Office Creek from its confluence with the Lochsa River upstream 8.9 km (5.5 mi) provides FMO habitat, and may provide spawning and rearing habitat in the upper reaches.

(G) Warm Springs Creek from its confluence with the Lochsa River upstream 5.9 km (3.7 mi) to a barrier falls and Cooperation Creek from its confluence with Warm Springs Creek upstream 5.5 km (3.4 mi) provide spawning and rearing habitat.

(H) Fishing (Squaw) Creek from its confluence with the Lochsa River upstream 10.1 km (6.3 mi) provides spawning and rearing habitat. Doe Creek from its confluence with Fishing Creek upstream 8.9 km (5.5 mi); West Fork Fishing Creek from its confluence with Fishing Creek upstream 4.2 km (2.6 mi); Spring Creek from its confluence with West Fork Fishing Creek upstream 1.6 km (1.0 mi); and East Fork Fishing Creek from its confluence with Fishing Creek upstream 1.5 km (0.9 mi) also provide spawning and rearing habitat.

(I) Legendary Bear (Papoose) Creek from its confluence with the Lochsa River upstream 3.0 km (1.9 mi) to West Fork Legendary Bear Creek provides spawning and rearing habitat. Parachute Creek from its confluence with Legendary Bear Creek upstream 0.4 km (0.3 mi) to a potential barrier; West Fork Legendary Bear Creek from its confluence upstream 7.3 km (4.5 mi); and East Fork Legendary Bear Creek from its confluence upstream 4.2 km (2.6 mi) also provide spawning and rearing habitat.

(J) Walton Creek from its confluence with the Lochsa River upstream 4.4 km (2.7 mi) provides spawning and rearing habitat.

(K) Colt Killed Creek from its confluence with the Lochsa River upstream 5.3 km (3.3 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 28.5 km (17.8 mi). The following tributaries to Colt Killed Creek also provide spawning and rearing habitat: Beaver Creek from its confluence at Colt Killed Creek upstream 12.2 km (7.6 mi); Storm Creek from its confluence with Colt Killed Creek upstream 17.0 km (10.6 mi); Maud Creek from its confluence with Storm Creek upstream 10.1 km (6.3 mi); Colt Creek from its confluence with Colt Killed Creek upstream 8.4 km (5.2 mi); and Big Flat Creek from its confluence with Colt Killed Creek upstream 13.5 km (8.4 mi).

(L) Crooked Fork from its confluence with the Lochsa River upstream 21.7 km (13.5 mi) to Boulder Creek provides FMO habitat; spawning and rearing habitat occurs upstream an additional 12.4 km (7.7 mi). The following tributaries to Crooked Creek also provide spawning and rearing habitat: Haskell Creek from its confluence with Crooked Fork upstream 4.5 km (2.8 mi); Rock Creek from its confluence with Crooked Fork upstream 1.8 km (1.1 mi); Shotgun Creek from its confluence with Crooked Fork upstream 7.6 km (4.7 mi); Boulder Creek from its confluence with Crooked Fork upstream 10.5 km (6.5 mi); Fox Creek from its confluence with Boulder Creek upstream 5.6 km (3.5 mi); Williams Lake Creek from its confluence with Boulder Creek upstream 4.2 km (2.6 mi); Hopeful Creek from its confluence with Crooked Fork Creek upstream 7.4 km (4.6 mi); and an unnamed Hopeful Creek tributary from its confluence upstream 4.7 km (2.9 mi).

(M) Brushy Fork Creek from its confluence with the Crooked Fork upstream 7.6 km (4.7 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 8.5 km (5.3 mi). Twin Creek from its confluence with Brushy Fork Creek upstream 4.7 km (3.0 mi) to a barrier falls and Spruce Creek from its confluence with Brushy Fork Creek upstream 5.6 km (3.5 mi) to South Fork Spruce Creek provide spawning and rearing habitat. Shoot Creek from its confluence with Spruce Creek upstream 3.4 km (2.1 mi) and North Fork Spruce Creek from its confluence with Spruce Creek upstream 4.0 km (2.5 mi) provide presumed spawning and rearing habitat. South Fork Spruce Creek from its confluence with Spruce Creek upstream 6.4 km (4.0 mi) provides spawning and rearing habitat. Table 57. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–Lochsa River CHU/CHSU

Table 57. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–Lochsa River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Lochsa River	Beaver Creek	ID	Occupied based on telemetry data (Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146260 465061
Clearwater River–Lochsa River	Big Flat Creek	ID	IDFG snorkelers found a small juvenile (<102-127 mm) bull trout in this stream (IDFG/GPM in litt. 2002), indicating use as a spawning/rearing area.	Rationale provided in Lochsa River CHSU justification text	1144934 464024
Clearwater River–Lochsa River	Boulder Creek	ID	CBBTTAT (1998b) classified Boulder Creek as a currently used bull trout spawning/rearing stream. CBI (1997) found small (age 2 or less) bull trout in the stream.	Rationale provided in Lochsa River CHSU justification text	1146703 466152
Clearwater River–Lochsa River	Brushy Fork	ID	CBBTTAT (1998b) classified Brushy Fork as a recently used bull trout spawning/rearing stream. Surveys by CBI (1996b, 1997) suggest habitat below Twin Creek is better suited to subadult/adult rearing.	Rationale provided in Lochsa River CHSU justification text	1146115 465783.1
Clearwater River–Lochsa River	Brushy Fork	ID	Occupied based on telemetry data (Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146115 465783.2
Clearwater River–Lochsa River	Brushy Fork	ID	Occupied based on telemetry data (Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146115 465783.3
Clearwater River–Lochsa River	Colt Creek	ID	Occupied based on telemetry data (Schiff et al. 2005).	Rationale provided in Lochsa River CHSU justification text	1145395 464331
Clearwater River–Lochsa River	Colt Killed Creek	ID	CBBTTAT (1998b) classified Colt Killed Creek as currently (post-1985) used for subadult/adult rearing by bull trout.	Rationale provided in Lochsa River CHSU justification text	1146808 465084.1
Clearwater River–Lochsa River	Colt Killed Creek	ID	Occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146808 465084.2
Clearwater River–Lochsa River	Colt Killed Creek	ID	Occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146808 465084.3
Clearwater River–Lochsa River	Colt Killed Creek	ID	Occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146808 465084.4
Clearwater River–Lochsa River	Cooperation Creek	ID	Spot-sampling by the Nez Perce Tribe during 1999 found 111-232 mm bull trout in the lower portion of Cooperation Creek (Weigel, in litt. 2002).	Rationale provided in Lochsa River CHSU justification text	1148693 464521

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Lochsa River	Crooked Fork	ID	Currently used as a migratory corridor for bull trout using upstream areas (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1146808 465082.1
Clearwater River–Lochsa River	Crooked Fork	ID	Currently used by bull trout for SR (CBBTTAT 1998a; Schiff et al. 2005; Hanson and Schriever 2006) . CBI (1996b, 1997) found small (age 2 or less) bull trout in the section of Crooked Fork above Boulder Creek.	Rationale provided in Lochsa River CHSU justification text	1146808 465082.2
Clearwater River–Lochsa River	Doe Creek	ID	Occupied by adults during spawning season based on telemetry data (Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1148619 464987
Clearwater River–Lochsa River	East Fork Fishing Creek	ID	Surveys have documented bull trout redds over multiple years (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1148541 465564
Clearwater River–Lochsa River	East Fork Legendary Bear Creek	ID	Surveys have documented bull trout redds over multiple years (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1147651 465351
Clearwater River–Lochsa River	Fish Creek	ID	Current (post-1985) use of this stream as a bull trout subadult/adult rearing area was documented by CBBTTAT (1998b).	Rationale provided in Lochsa River CHSU justification text	1153450 463333.1
Clearwater River–Lochsa River	Fish Creek	ID	Adult and juvenile bull trout caught or observed annually (Partridge 2006, 2008: Grunder 2009).	Rationale provided in Lochsa River CHSU justification text	1153450 463333.2
Clearwater River–Lochsa River	Fish Lake Creek	ID	Bull trout have been documented in lower Lake Creek (Platts et al. 1993).	Rationale provided in Lochsa River CHSU justification text	1150057 464148.1
Clearwater River–Lochsa River	Fish Lake Creek	ID	Lake Creek between California Creek and Fish Lake, Fish Lake itself, and Lake Creek above Fish Lake, currently provide habitat sustaining all life stages of an adfluvial bull trout population (Murphy and Cochnauer 1998).	Rationale provided in Lochsa River CHSU justification text	1150057 464148.2
Clearwater River–Lochsa River	Fish Lake Creek	ID	Presumed to be present as bull trout have been documented both above and below this reach (Murphy and Cochnauer 1998; Platts et al. 1993).	Rationale provided in Lochsa River CHSU justification text	1150057 464148.3
Clearwater River–Lochsa River	Fishing Creek	ID	Surveys have documented bull trout redds over multiple years (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1148567 464923
Clearwater River–Lochsa River	Fox Creek	ID	CBI (1997) found small (age 2 or less) bull trout in Fox Creek.	Rationale provided in Lochsa River CHSU justification text	1146949 466297
Clearwater River–Lochsa River	Haskell Creek	ID	Bull trout redds have been documented in this stream (P. Murphy, pers. comm. 2002a).	Rationale provided in Lochsa River CHSU justification text	1146033 465965
Clearwater River–Lochsa River	Hopeful Creek	ID	CBI (1997) found small (age 2 or less) bull trout in Hopeful Creek.	Rationale provided in Lochsa River CHSU justification text	1146805 466713

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Lochsa River	Hungery Creek	ID	Current (post-1985) use of this stream as a bull trout subadult/adult rearing area was documented by CBBTTAT (1998b). Platts et al. (1993) identified the segment below Obia Creek as known to be used by bull trout.	Rationale provided in Lochsa River CHSU justification text	1153975 463557.1
Clearwater River–Lochsa River	Hungery Creek	ID	Current (post-1985) use of this stream as a bull trout subadult/adult rearing area was documented by CBBTTAT (1998b). Platts et al. (1993) identified the segment below Obia Creek as known to be used by bull trout.	Rationale provided in Lochsa River CHSU justification text	1153975 463557.2
Clearwater River–Lochsa River	Indian Grave Creek	ID	Platts et al. (1993) identified Indian Grave Creek as a known bull trout stream.	Rationale provided in Lochsa River CHSU justification text	1150765 464524.1
Clearwater River–Lochsa River	Indian Grave Creek	ID	Platts et al. (1993) identified Indian Grave Creek as a known bull trout stream.	Rationale provided in Lochsa River CHSU justification text	1150765 464524.2
Clearwater River–Lochsa River	Legendary Bear Creek	ID	Surveys have documented bull trout redds over multiple years (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1147606 465114
Clearwater River–Lochsa River	Lochsa River	ID	CBBTTAT (1998b) classified the mainstem Lochsa River as currently supporting subadult and adult bull trout rearing.	Rationale provided in Lochsa River CHSU justification text	1155987 461400
Clearwater River–Lochsa River	Maud Creek	ID	A survey of Maud Creek by CBI (1996a) found adult bull trout preparing to spawn in the stream. Also occupied by adults during spawning season based on telemetry data (Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1145145 464967
Clearwater River–Lochsa River	North Fork Spruce Creek	ID	Presumed occupied based on bull trout presence in SF Spruce Creek (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1143924 466060
Clearwater River–Lochsa River	Parachute Creek	ID	Used by bull trout for subadult/adult rearing (USFS 1999e; CBBTTAT 1998a).	Rationale provided in Lochsa River CHSU justification text	1147612 465285
Clearwater River–Lochsa River	Postoffice Creek	ID	CBBTTAT (1998b) documented current (post-1985) subadult/adult rearing by bull trout in lower Postoffice Creek.	Rationale provided in Lochsa River CHSU justification text	1149849 464656
Clearwater River–Lochsa River	Rock Creek	ID	Watson and Hillman (1997) found bull trout in Rock Creek.	Rationale provided in Lochsa River CHSU justification text	1146085 465975
Clearwater River–Lochsa River	South Fork Spruce Creek	ID	Bull trout have been documented during surveys (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1143924 466061
Clearwater River–Lochsa River	Shoot Creek	ID	Presumed occupied based on bull trout presence in SF Spruce Creek (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1144141 466061

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Lochsa River	Shotgun Creek	ID	Bull trout and redds have been documented (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1146639 466008
Clearwater River–Lochsa River	Spring Creek	ID	CBI (1992) sampled a small juvenile bull trout in this segment of stream, and saw 3 other bull trout while walking the streambank.	Rationale provided in Lochsa River CHSU justification text	1148848 465457
Clearwater River–Lochsa River	Spruce Creek	ID	Bull trout have been documented during surveys (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1144540 466164
Clearwater River–Lochsa River	Storm Creek	ID	Occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1145483 464630.1
Clearwater River–Lochsa River	Storm Creek	ID	Occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1145483 464630.2
Clearwater River–Lochsa River	Twin Creek	ID	Bull trout have been documented during surveys (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1145269 465821.1
Clearwater River–Lochsa River	Twin Creek	ID	Bull trout have been documented during surveys (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1145269 465821.2
Clearwater River–Lochsa River	UNNAMED - off Hopeful Creek	ID	CBI (1997) found small (age 2 or less) bull trout in this unnamed tributary to Hopeful Creek.	Rationale provided in Lochsa River CHSU justification text	1146692 466990
Clearwater River–Lochsa River	West Fork Fishing Creek	ID	Bull trout redds are documented annually (USFS 1999e; USFS 2007). Furthermore, occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1148670 465372
Clearwater River–Lochsa River	Walton Creek	ID	A weir at the mouth of Walton Creek routinely captures bull trout (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1146808 465083
Clearwater River–Lochsa River	Warm Springs Creek	ID	Bull trout have been documented in the creek below a barrier falls at RM 3.6 (USFS 1999e) and during telemetry studies (Schiff et al. 2005).	Rationale provided in Lochsa River CHSU justification text	1148873 464733.1
Clearwater River–Lochsa River	Warm Springs Creek	ID	Bull trout have been documented in the creek below a barrier falls at RM 3.6 (USFS 1999e), and during telemetry studies (Schiff et al. 2005).	Rationale provided in Lochsa River CHSU justification text	1148873 464733.2
Clearwater River–Lochsa River	Weir Creek	ID	Current (post-1985) use of this stream as a bull trout subadult/adult rearing area was documented by CBBTTAT (1998b).	Rationale provided in Lochsa River CHSU justification text	1150350 464575.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–Lochsa River	Weir Creek	ID	Presumed to be occupied based on current (post-1985) use of the lower reaches of this stream by subadult/adult bull trout (CBBTTAT 1998a).	Rationale provided in Lochsa River CHSU justification text	1150350 464575.2
Clearwater River–Lochsa River	West Fork Legendary Bear Creek	ID	Surveys have documented bull trout redds over multiple years (USFS 1999e).	Rationale provided in Lochsa River CHSU justification text	1147651 465352
Clearwater River–Lochsa River	Williams Lake Creek	ID	CBI (1997) found multiple age classes of bull trout. Furthermore, occupied by adults during spawning season based on telemetry data (Schiff et al. 2005; Hanson and Schriever 2006).	Rationale provided in Lochsa River CHSU justification text	1147171 466438

21.5. North Fork Clearwater River (and Fish Lake) Critical Habitat Subunit

The North Fork Clearwater River CHSU is essential to bull trout conservation because the North Fork Clearwater River core area has a relatively large number of local populations that support large numbers of bull trout. The CHSU is also relatively secure with few threats. This CHSU also includes the Fish Lake core area, which contains one of only two headwater lake adfluvial bull trout populations in the entire Clearwater River CHU. Bull trout within the North Fork Clearwater River CHSU are one of the more secure and stable bull trout core area populations within the Clearwater CHU, which provides a very important stronghold against potential extinction (see Appendix 1 for more detailed information).

Located within Clearwater, Idaho, and Shoshone Counties, the CHSU includes the entire North Fork Clearwater River basin above Dworshak Dam. A total of 811.1 km (504.0 mi) of streams and rivers, the 6,653.4 ha (16,441.0 ac) Dworshak Reservoir surface area, and 46.1 ha (114.0 ac) of Fish Lake surface area are designated as critical habitat. The following water bodies are included in this CHSU (see Table 58):

(A) Dworshak Reservoir (6,653.4 ha (16,441.0 ac)) provides FMO habitat.

(B) North Fork Clearwater River from the head of the reservoir upstream 106.8 km (66.4 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 18.8 km (11.7 mi) to its headwaters.

(C) Breakfast Creek from its confluence with Little North Fork Clearwater River upstream 1.3 km (0.8 mi) to the mouth of Floodwood Creek provides FMO habitat; spawning and rearing habitat occurs upstream an additional 3.9 km (2.4 mi). Floodwood Creek from its confluence with Breakfast Creek upstream 13.8 km (8.6 mi) to a barrier falls and West Fork Floodwood Creek from its confluence with Floodwood Creek upstream 3.5 km (2.2 mi) to a barrier falls provide spawning and rearing habitat. Stoney Creek from its confluence with Breakfast Creek upstream 7.6 km (4.7 mi) and Glover Creek from its confluence with Stoney Creek upstream 12.1 km (7.5 mi) provide spawning and rearing habitat.

(D) The Little North Fork Clearwater River from Dworshak Reservoir upstream 35.2 km (21.9 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 29.0 km (18.0 mi) to near its headwaters. The following tributaries to the Little North Fork Clearwater River also provide spawning and rearing habitat: Foehl Creek from its confluence with the Little North Fork Clearwater River upstream 6.4 km (4.0 mi); Canyon Creek from its confluence with the Little North Fork Clearwater River upstream 15.5 km (9.7 mi); Buck Creek from its confluence with Canyon Creek upstream 3.5 km (2.2 mi); Montana Creek from its confluence with the Little North Fork Clearwater River upstream 5.5 km (3.4 mi); Butte Creek from its confluence with the Little North Fork Clearwater River upstream 3.0 km (1.8 mi); Rutledge Creek from its confluence with the Little North Fork Clearwater River upstream 5.2 km (3.2 mi); Jungle Creek from its confluence with the Little North Fork Clearwater River upstream 4.2 km (2.6 mi); Adair Creek from its confluence with Jungle Creek upstream 4.7 km (3.0 mi); Rocky Run Creek from its confluence with the Little North Fork Clearwater River upstream 4.9 km (3.0 mi); Lund Creek from its confluence with the Little North Fork Clearwater River upstream 3.3 km (2.0 mi); Little Lost Lake Creek from its confluence with the Little North Fork

Clearwater River upstream 3.9 km (2.5 mi); and Lost Lake Creek from its confluence upstream 3.2 km (2.0 mi).

(E) Isabella Creek from its confluence with the North Fork Clearwater River upstream 11.6 km (7.2 mi) provides spawning and rearing habitat.

(F) Beaver Creek from its confluence with the North Fork Clearwater River upstream 12.5 km (2.8 mi) provides spawning and rearing habitat.

(G) Skull Creek from its confluence with the North Fork Clearwater River upstream 17.5 km (10.8 mi); Collins Creek from its confluence with Skull Creek upstream 16.2 km (10.0 mi); Roaring Creek from its confluence with Skull Creek upstream 4.3 km (2.7 mi) to Frost Creek; and Frost Creek from its confluence with Roaring Creek upstream 2.7 km (1.7 mi) provide spawning and rearing habitat.

(H) Quartz Creek from its confluence with the North Fork Clearwater River upstream 19.7 km (12.3 mi) provides spawning and rearing habitat.

(I) Orogrande Creek from its confluence with the North Fork Clearwater River upstream 1.6 km (1.0 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 18.8 km (11.7 mi).

(J) Weitas Creek from its confluence with the North Fork Clearwater River upstream 10.8 km (6.7 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 32.1 km (19.9 mi) to its headwaters. Johnny Creek from its confluence with Weitas Creek upstream 7.2 km (4.5 mi) provides spawning and rearing habitat. Little Weitas Creek from its confluence with Weitas Creek upstream 3.8 km (2.4 mi) provides FMO habitat. Johnagan Creek from its confluence with Weitas Creek upstream 4.4 km (2.7 mi) and Windy Creek from its confluence with Weitas Creek upstream 13.2 km (8.2 mi) provide spawning and rearing habitat. Liz Creek from its confluence with Weitas Creek upstream 1.8 km (1.1 mi) provides FMO habitat; presumed spawning and rearing habitat occurs upstream an additional 4.3 km (2.7 mi) to its headwaters. Corral Creek from its confluence with Weitas Creek upstream 7.1 km (4.4 mi) and Fro Creek from its confluence with Weitas Creek upstream 1.9 km (1.2 mi) provide presumed spawning and rearing habitat.

(K) Fourth of July Creek from its confluence with the North Fork Clearwater River upstream 12.7 km (7.9 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 9.0 km (5.6 mi) to its headwaters. Shot Creek from its confluence with Fourth of July Creek upstream 8.0 km (5.0 mi) and Bill Creek from its confluence with Fourth of July Creek upstream 7.5 km (4.7 mi) to its headwaters provide presumed spawning and rearing habitat.

(L) Kelly Creek from its confluence with the North Fork Clearwater River upstream 39.0 km (24.3 mi) to North Fork Kelly Creek provides FMO habitat; spawning and rearing habitat occurs upstream an additional 2.2 km (1.4 mi).

(M) Moose Creek from its confluence with Kelly Creek upstream 15.3 km (9.6 mi) provides spawning and rearing habitat. The following tributaries to Moose Creek also provide spawning and rearing habitat: Ruby Creek from its confluence upstream 2.7 km (1.7 mi); Little Moose Creek from its confluence upstream 16.1 km (10.0 mi); Swamp Creek from its confluence with Osier Creek upstream 8.7 km (5.4 mi); Sugar Creek from its confluence with Swamp Creek upstream 6.4 km (4.0 mi); Pollock Creek from its confluence with Swamp Creek upstream

2.7 km (1.7 mi); and Osier Creek from its confluence with Swamp Creek upstream 13.1 km (8.1 mi) provide spawning and rearing habitat.

(N) Bear Creek from its confluence with Kelly Creek upstream 6.1 km (3.8 mi) provides spawning and rearing habitat.

(O) South Fork Kelly Creek from its confluence with Kelly Creek upstream 4.3 km (2.7 mi) and Middle Fork Kelly Creek from its confluence with Kelly Creek upstream 5.0 km (3.1 mi) provide spawning and rearing habitat. Kid Lake Creek from its confluence with Middle Fork Kelly Creek upstream 2.9 km (1.8 mi); and North Fork Kelly Creek from its confluence with Kelly Creek upstream 8.8 km (5.4 mi) also provide spawning and rearing habitat.

(P) Cayuse Creek from its confluence with Kelly Creek upstream 47.7 km (29.6 mi) provides FMO habitat; spawning and rearing habitat occurs upstream an additional 5.0 km (3.1 mi). Weasel Creek from its confluence with Cayuse Creek upstream 2.9 km (1.8 mi); Mink Creek from its confluence with Cayuse Creek upstream 3.4 km (2.1 mi); and Silver Creek from its confluence with Cayuse Creek upstream 5.5 km (3.4 mi) provide spawning and rearing habitat.

(Q) Lake Creek from its confluence with the North Fork Clearwater River upstream 19.6 km (12.2 mi) to Fish Lake provides spawning and rearing habitat. Fish Lake (46.1 ha (115.0 ac)) provides FMO habitat. Four unnamed and unmapped inlets that enter Fish Lake on the eastern end of the lake and a fifth unnamed inlet on the north side from their confluence with Fish Lake upstream to their sources provide spawning and rearing habitat. Goose Creek from its confluence with Lake Creek upstream 8.2 km (5.1 mi) provides spawning and rearing habitat.

(R) Long Creek from its confluence with the North Fork Clearwater River upstream 11.3 km (7.0 mi) provides spawning and rearing habitat. Short Creek from its confluence with Long Creek upstream 3.7 km (2.3 mi); Rawhide Creek from its confluence with Long Creek upstream 5.5 km (3.4 mi); Slate Creek from its confluence with Long Creek upstream 0.7 km (0.5 mi); and an unnamed Long Creek tributary from its confluence upstream 1.3 km (0.8 mi) also provide spawning and rearing habitat.

(S) Meadow Creek from its confluence with the North Fork Clearwater River upstream 12.9 km (8.0 mi) provides spawning and rearing habitat. In addition, the following tributaries to the North Fork Clearwater River also provide spawning and rearing habitat: Vanderbilt Gulch from its confluence with the North Fork Clearwater River upstream 6.9 km (4.3 mi); Chamberlain Creek from its confluence with Vanderbilt Gulch upstream 2.7 km (1.7 mi); Placer Creek from its confluence with Vanderbilt Gulch upstream 2.6 km (1.6 mi); Bostonian Creek from its confluence with the North Fork Clearwater River upstream 5.9 km (3.6 mi); Niagara Gulch from its confluence with Bostonian Creek upstream 1.9 km (1.2 mi); Boundary Creek from its confluence with the North Fork Clearwater River upstream 3.0 km (1.9 mi); and Graves Creek from its from its confluence with the North Fork Clearwater River upstream 3.2 km (2.0 mi).

Table 58. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clearwater River–North Fork Clearwater River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Adair Creek	ID	Current (post-1985) use of this stream for spawning/early rearing of bull trout has been documented by CBBTTAT (1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1158049 470831
Clearwater River–North Fork Clearwater River	Bear Creek	ID	Spot-sampling by the Nez Perce Tribe during early August 1999 found multiple age classes of bull trout (fish 82-217 mm long) in Bear Creek (Weigel, in litt. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1149624 467111
Clearwater River–North Fork Clearwater River	Beaver Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156197 468418
Clearwater River–North Fork Clearwater River	Bill Creek	ID	Use is suspected but stream has not been sampled (P. Murphy, pers. comm. 2009).	Rationale provided in North Fork Clearwater River CHSU justification text	1152700 466313
Clearwater River–North Fork Clearwater River	Bostonian Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151127 469617
Clearwater River–North Fork Clearwater River	Boundary Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151074 469720
Clearwater River–North Fork Clearwater River	Breakfast Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159387 468832.1
Clearwater River–North Fork Clearwater River	Breakfast Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159387 468832.2
Clearwater River–North Fork Clearwater River	Breakfast Creek	ID	Presumed occupied based on documented bull trout in the lower reaches of this stream (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159387 468832.3
Clearwater River–North Fork Clearwater River	Buck Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1155544 470214
Clearwater River–North Fork Clearwater River	Butte Creek (North Fork Clearwater)	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1157186 470452

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Canyon Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156503 470004
Clearwater River–North Fork Clearwater River	Cayuse Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150201 467122.1
Clearwater River–North Fork Clearwater River	Cayuse Creek	ID	The Recovery Plan (Service 2002a) indicates historic use of this area for bull trout SR is known.	Rationale provided in North Fork Clearwater River CHSU justification text	1150201 467122.2
Clearwater River–North Fork Clearwater River	Chamberlain Creek	ID	Current (post-1985) spawning/early rearing by bull trout has been documented in this section of stream (CBBTTAT 1998c). Small juvenile bull trout (age 2 or less) were documented in 1993 (CBI 1994).	Rationale provided in North Fork Clearwater River CHSU justification text	1151419 469286
Clearwater River–North Fork Clearwater River	Collins Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154329 468619
Clearwater River–North Fork Clearwater River	Corral Creek	ID	Corral Creek is a remote stream suspected of current SR use by bull trout, but this has not yet been checked with focused surveys (P. Murphy, pers. comm. 2009).	Rationale provided in North Fork Clearwater River CHSU justification text	1152400 464825
Clearwater River–North Fork Clearwater River	Floodwood Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159530 468879.1
Clearwater River–North Fork Clearwater River	Floodwood Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159530 468879.2
Clearwater River–North Fork Clearwater River	Foehl Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156748 469702
Clearwater River–North Fork Clearwater River	Fourth of July Creek	ID	Platts et al. (1993) identified lower Fourth of July Creek as a known bull trout stream.	Rationale provided in North Fork Clearwater River CHSU justification text	1153757 466652.1
Clearwater River–North Fork Clearwater River	Fourth of July Creek	ID	Current (post-1985) use of this stream segment for spawning/early rearing of bull trout has been documented by CBBTTAT (1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1153757 466652.2
Clearwater River–North Fork Clearwater River	Fro Creek	ID	Fro Creek is a remote stream suspected of current SR use by bull trout, but this has not yet been checked with focused surveys (P. Murphy, pers. comm. 2002b).	Rationale provided in North Fork Clearwater River CHSU justification text	1152209 464787

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Frost Creek	ID	USFS surveys have documented the presence of small juvenile bull trout (age 2 or less) in this section of stream (E. Key, pers. comm. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1153480 469181
Clearwater River–North Fork Clearwater River	Glover Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1160120 469156.1
Clearwater River–North Fork Clearwater River	Glover Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1160120 469156.2
Clearwater River–North Fork Clearwater River	Goose Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150121 468518
Clearwater River–North Fork Clearwater River	Graves Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151001 469857
Clearwater River–North Fork Clearwater River	Isabella Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156297 468487.1
Clearwater River–North Fork Clearwater River	Isabella Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156297 468487.2
Clearwater River–North Fork Clearwater River	Isabella Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1156297 468487.3
Clearwater River–North Fork Clearwater River	Johnagan Creek	ID	The presence of subadult bull trout in this segment of channel was documented during a recent USFS survey (E. Key pers. comm. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1153657 465101
Clearwater River–North Fork Clearwater River	Johnny Creek	ID	Large (spawner sized) bull trout were seen in lower Johnny Creek during low intensity surveys by the Nez Perce Tribe in mid-August 1998 (Weigel, in litt. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1154343 466131.1
Clearwater River–North Fork Clearwater River	Johnny Creek	ID	A small (age 2 or less) juvenile bull trout was documented in this segment of Johnny Creek during recent USFS surveys (E. Key, pers. comm. 2002), pointing to use of the area for spawning/early rearing.	Rationale provided in North Fork Clearwater River CHSU justification text	1154343 466131.2
Clearwater River–North Fork Clearwater River	Jungle Creek	ID	Current (post-1985) use of this stream for spawning/early rearing of bull trout has been documented by CBBTTAT (1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1158035 470765

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Kelly Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1152567 467157.1
Clearwater River–North Fork Clearwater River	Kelly Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1152567 467157.2
Clearwater River–North Fork Clearwater River	Kid Lake Creek	ID	Small juvenile bull trout have been found recently in this stream, indicating its use as a spawning/early rearing area (P. Murphy, pers. comm. 2002c).	Rationale provided in North Fork Clearwater River CHSU justification text	1148054 467474.1
Clearwater River–North Fork Clearwater River	Lake Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150785 468690
Clearwater River–North Fork Clearwater River	Little Lost Lake Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1158923 470887
Clearwater River–North Fork Clearwater River	Little Moose Creek	ID	Occupied based on snorkeling data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150768 467333.1
Clearwater River–North Fork Clearwater River	Little Moose Creek	ID	Occupied based on snorkeling (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150768 467333.2
Clearwater River–North Fork Clearwater River	Little North Fork Clearwater River	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1158767 468868.1
Clearwater River–North Fork Clearwater River	Little North Fork Clearwater River	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1158767 468868.2
Clearwater River–North Fork Clearwater River	Little Weitas Creek	ID	Platts et al. (1993) identified lower Little Weitas Creek as a known bull trout stream.	Rationale provided in North Fork Clearwater River CHSU justification text	1153913 465059
Clearwater River–North Fork Clearwater River	Liz Creek	ID	Spot-sampling by the Nez Perce Tribe found a 182 mm subadult bull trout near the upper end of this reach in late August 1998 (Weigel, in litt. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1152890 464816.1
Clearwater River–North Fork Clearwater River	Liz Creek	ID	Recent sampling of upper Liz Creek has been very limited and insufficient to document the presence of bull trout, or to give confidence that the species is not present. Bull trout have been documented downstream (Weigel, in litt. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1152890 464816.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Long Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150746 468725
Clearwater River–North Fork Clearwater River	Lost Lake Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1158998 470955
Clearwater River–North Fork Clearwater River	Lund Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1158835 470676
Clearwater River–North Fork Clearwater River	Meadow Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151156 469053.1
Clearwater River–North Fork Clearwater River	Meadow Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151156 469053.2
Clearwater River–North Fork Clearwater River	Middle Fork Kelly Creek	ID	Forest Service surveyors have seen adult bull trout in this segment of stream (P. Murphy, pers. comm. 2002d).	Rationale provided in North Fork Clearwater River CHSU justification text	1148599 467304
Clearwater River–North Fork Clearwater River	Mink Creek	ID	Juvenile bull trout have been documented (P. Murphy, pers. comm. 2009).	Rationale provided in North Fork Clearwater River CHSU justification text	1148940 466013
Clearwater River–North Fork Clearwater River	Montana Cr	ID	Recent (post-1985) use of this stream for spawning/early rearing of bull trout has been documented by CBBTTAT (1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1157000 470450
Clearwater River–North Fork Clearwater River	Moose Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150859 467207.1
Clearwater River–North Fork Clearwater River	Moose Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150859 467207.2
Clearwater River–North Fork Clearwater River	Moose Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150859 467207.3
Clearwater River–North Fork Clearwater River	Moose Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150859 467207.4

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Niagra Gulch	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151362 469673
Clearwater River–North Fork Clearwater River	North Fork Clearwater River	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1163310 465027.1
Clearwater River–North Fork Clearwater River	North Fork Clearwater River	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1163310 465027.2
Clearwater River–North Fork Clearwater River	North Fork Clearwater River	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1163310 465027.3
Clearwater River–North Fork Clearwater River	North Fork Clearwater River	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1163310 465027.4
Clearwater River–North Fork Clearwater River	North Fork Kelly Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1148599 467305.1
Clearwater River–North Fork Clearwater River	North Fork Kelly Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1148599 467305.2
Clearwater River–North Fork Clearwater River	Orogrande Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1155062 466314.1
Clearwater River–North Fork Clearwater River	Orogrande Creek	ID	Occupied based on snorkeling and telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1155062 466314.2
Clearwater River–North Fork Clearwater River	Osier Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150729 467436.2
Clearwater River–North Fork Clearwater River	Osier Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150729 467436.3
Clearwater River–North Fork Clearwater River	Osier Creek	ID	Presumed occupied based on documented redds in the lower reaches of this stream (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150729 467436

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Placer Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151674 469385
Clearwater River–North Fork Clearwater River	Pollock Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150220 467805
Clearwater River–North Fork Clearwater River	Quartz Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154555 468064.1
Clearwater River–North Fork Clearwater River	Quartz Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154555 468064.2
Clearwater River–North Fork Clearwater River	Rawhide Creek	ID	Mapped as having current (post-1985) use as a spawning/early rearing stream by CBBTTAT (1998c). Small bull trout (107-125 mm) sampled here by the Nez Perce Tribe in 1998 (Weigel, in litt. 2002).	Rationale provided in North Fork Clearwater River CHSU justification text	1150466 468980
Clearwater River–North Fork Clearwater River	Roaring Creek	ID	Current use is suspected based on known bull trout use both immediately upstream in Frost Creek and immediately downstream in Skull Creek (E. Key, pers. comm. 2002; Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1153549 468859
Clearwater River–North Fork Clearwater River	Rocky Run	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1158177 470689
Clearwater River–North Fork Clearwater River	Ruby Creek	ID	CBI (1999) found small (age 2 or less) bull trout in this stream.	Rationale provided in North Fork Clearwater River CHSU justification text	1150777 467329
Clearwater River–North Fork Clearwater River	Rutledge Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in North Fork Clearwater River CHSU justification text	1157543 470727
Clearwater River–North Fork Clearwater River	Short Creek	ID	Current (post-1985) spawning/early rearing has been documented in this stream (CBBTTAT 1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1150569 468858
Clearwater River–North Fork Clearwater River	Shot Creek	ID	Use is suspected but stream has not been sampled (P. Murphy, pers. comm. 2009).	Rationale provided in North Fork Clearwater River CHSU justification text	1152800 466386
Clearwater River–North Fork Clearwater River	Silver Creek	ID	Bull trout have been documented in this stream (P. Murphy, pers. comm. 2009).	Rationale provided in North Fork Clearwater River CHSU justification text	1148299 466074.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Skull Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154851 468271.1
Clearwater River–North Fork Clearwater River	Skull Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154851 468271.2
Clearwater River–North Fork Clearwater River	Slate Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150176 469271
Clearwater River–North Fork Clearwater River	South Fork Kelly Creek	ID	CBBTTAT (1998c) identified this stream as having current (post-1985) spawning/early rearing use by bull trout.	Rationale provided in North Fork Clearwater River CHSU justification text	1148622 467117
Clearwater River–North Fork Clearwater River	Stoney Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159693 468844
Clearwater River–North Fork Clearwater River	Sugar Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150345 467706
Clearwater River–North Fork Clearwater River	Swamp Creek	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1150667 467446.1
Clearwater River–North Fork Clearwater River	UNNAMED - off Long Creek	ID	Mapped as providing (post-1985) spawning/early rearing habitat by CBBTTAT (1998c).	Rationale provided in North Fork Clearwater River CHSU justification text	1150238 469386
Clearwater River–North Fork Clearwater River	Vanderbilt Gulch	ID	Occupied based on annual spawning surveys (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1151192 469156
Clearwater River–North Fork Clearwater River	Weasel Creek	ID	Use of this stream by bull trout is suspected but it has been little sampled (P. Murphy, pers. comm. 2002c).	Rationale provided in North Fork Clearwater River CHSU justification text	1149042 466013
Clearwater River–North Fork Clearwater River	Weitas Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154329 466361.1
Clearwater River–North Fork Clearwater River	Weitas Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154329 466361.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clearwater River–North Fork Clearwater River	Weitas Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154329 466361.3
Clearwater River–North Fork Clearwater River	Weitas Creek	ID	Occupied based on telemetry data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1154329 466361.4
Clearwater River–North Fork Clearwater River	West Fork Floodwood Creek	ID	Occupied based on snorkeling data (Hanson et al. 2006).	Rationale provided in North Fork Clearwater River CHSU justification text	1159271 469569
Clearwater River–North Fork Clearwater River	Windy Creek	ID	CBI (2000) found bull trout in Windy Cr. but no small juvenile fish in this lower-most segment.	Rationale provided in North Fork Clearwater River CHSU justification text	1153271 464941
Clearwater River–North Fork Clearwater River	Windy Creek	ID	CBBTTAT (1998c) identified Windy Cr. as currently (post- 1985) used by bull trout as a spawning/early rearing stream.	Rationale provided in North Fork Clearwater River CHSU justification text	1153271 464941.2

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 22 Mid-Columbia Recovery Unit—Mainstem Upper Columbia River Critical Habitat Unit

Chapter 22. Mainstem Upper Columbia River Critical Habitat Unit

The Mainstem Upper Columbia River CHU is essential for maintaining bull trout distribution within this unique geographic region of the Mid-Columbia RU and conserving the fluvial migratory life history types exhibited by many of the populations from adjacent core areas. It is essential for conservation by maintaining broad distribution within the Mid-Columbia RU across Washington, Idaho, and Oregon. Its location between Chief Joseph Dam in the most northern geographical area and John Day Dam in the most southern area provides key connectivity for the Mid-Columbia River RU. It is essential for maintaining distribution and genetic contributions to the Lower Columbia and Snake River Mainstems and 13 CHUs. Bull trout are known to reside year-round as sub-adults and adults, but spawning adults may utilize the mainstem Columbia River for up to at least 9 months as well. Several studies in the upper Columbia and lower Snake Rivers indicate migration between the Mainstem Upper Columbia River CHU and core areas, generally during periods of cooler water temperatures. FMO habitat provided by the mainstem Columbia River is essential for conservation because it supports the expression of the fluvial migratory life history forms for multiple core areas. In addition, there are several accounts of amphidromous life history forms present between Yakima and John Day Rivers that may still have the potential to express anadromy (see Appendix 1 for more detailed information). The water bodies included in this CHU are listed in Table 59.

Table 59. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Mainstem Upper Columbia River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Mainstem Upper Columbia River–None	Columbia River	WA	The Middle Columbia River mainstem is currently occupied FMO for several Core Areas. FMO habitat is within free flowing and reservoir reaches. It is the main FMO for the Entiat River Core Area (BioAnalysts 2004 p. 17-22, 35-42, 49-51, 57-70; Stevenson et al. 2006 p. 13-21; Stevenson et al. 2007 p. 14-24; Nelson and Nelle 2007 p. 11; Nelson et al. 2007 p. 29; Nelson and Nelle 2008 p. 75, 80; Stevenson et al. 2008 p. 13-21; Kelly Ringel and DeLaVergne 2010 draft p. 13, 17-19, 71; Service 2002a; Service 2008k, 2009c (Priest R/Rocky R Relicensing Project BOs).	The Columbia River is essential and in some cases provides the primary FMO. It provides connectivity between many Core Areas/CHUs/CHSUs. For example most of the Entiat River Core Area local populations depend on the Columbia for FMO (See text for Mainstem Mid-Columbia River CHU above)	1240483 462464

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 23. Mid-Columbia Recovery Unit—Mainstem Snake River Critical Habitat Unit

Chapter 23. Mainstem Snake River Critical Habitat Unit

The Mainstem Snake River CHU is maintaining bull trout distribution within this unique geographic region of the Mid-Columbia RU. The Snake River, from the mouth at the Columbia River to the upper end of Brownlee Reservoir, is occupied in several reaches and is essential to the long-term conservation of the species because it helps conserve the opportunity for migratory life history expression, facilitates genetic exchange, and ensures connectivity between populations and core areas. The mainstem Snake River plays an important role in the recovery of bull trout populations by providing essential FMO habitat necessary for populations found in the Tucannon River, Asotin Creek, Grande Ronde River, Imnaha River, Clearwater River, Salmon River, Sheep Creek, Granite Creek, Powder River, Pine Creek, Indian Creek, and Wildhorse Creek core areas. Brownlee Reservoir contains potential FMO habitat for fluvial bull trout in the Powder River and Eagle Creek.

The entire reach, from the mouth to the upper end of Brownlee Reservoir, is considered essential and included in designated critical habitat because: (1) it is presently or could potentially be used as FMO habitat by bull trout from tributaries; (2) quality habitat containing several primary constituent elements exists during the FMO period for bull trout; and (3) including this area in critical habitat reflects two recovery objectives: maintaining stable or increasing trends in abundance (indirectly by providing for the needs of migratory forms) and restoring and maintaining suitable habitat conditions for all bull trout life history stages (see Appendix 1 for more detailed information).

The Snake River Mainstem CHU is located from the confluence with the Columbia River upstream to Brownlee Dam. The Snake River is the largest tributary to the Columbia River and forms the border between Washington and Idaho from Clarkston/Lewiston upstream to the Oregon border and the boundary between Idaho and Oregon. The Snake River is within Franklin, Walla Walla, Columbia, Whitman, and Asotin Counties in Washington; Wallowa, Whitman, Baker, and Malheur Counties in Oregon; and Nez Perce, Idaho, Adams, and Washington Counties in Idaho. The Snake River mainstem presently or could potentially be used as FMO habitat and connectivity for at least ten bull trout core areas and between two recovery units (Middle Columbia River and Upper Snake River). Critical habitat includes the free flowing reaches of the Snake River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively.

In the lower section of the Snake River are a series of dams and locks built by the U.S. Army Corps of Engineers. The Lower Granite, Little Goose, Lower Monumental, and Ice Harbor Dams serve as hydroelectric power sources and provide barge traffic navigation to Lewiston, Idaho. The major features in the Hells Canyon Hydroelectric Complex reach of the Snake River are Hells Canyon, Oxbow, and Brownlee Dams and their reservoirs.

Downstream from Hells Canyon Dam to the Oregon–Washington border, the Snake River is designated a Wild and Scenic River. It is also within the Hells Canyon National Recreation Area (NRA) and the Hells Canyon Wilderness, which are administered by the U.S. Forest Service.

The Snake River from the mouth to Brownlee Dam is occupied in most of the reaches and is essential to the long-term conservation of the species by conserving the opportunity for life history expression, facilitating genetic exchange, and ensuring connectivity among populations and core areas. The mainstem Snake River plays an important role in the recovery of bull trout populations by maintaining multiple life history strategies and providing essential FMO habitat necessary for populations found in the Tucannon River, Asotin Creek, Grande Ronde River, Imnaha River, Clearwater River, Salmon River, Sheep Creek, Granite Creek, Pine Creek, Indian Creek, and Wildhorse Creek core areas.

Historically, bull trout utilized the Snake River more extensively for foraging, overwintering, and as a migratory corridor. The Snake River plays an important role in providing a corridor for exchange of bull trout between populations in its tributaries. It will become increasingly important as recovery plans are implemented in tributaries and their local populations increase.

The Snake River and its reservoirs provide an abundant food source for migratory bull trout during the fall, winter, and spring. Thirty-four different species of resident fishes have been collected from the Lower Snake River reservoirs during fisheries studies conducted from 1979 through 1993 (Service 2002a). Forage fish such as juvenile salmon and steelhead, whitefish, sculpins (family Cottidae), suckers (family Catostomidae), and minnows (family Cyprinidae) are present throughout the Lower Snake River.

The following water bodies are included in this CHU (see Table 60).

Snake River mainstem from the confluence with the Columbia River upstream 451.7 km (280.6 mi) to Brownlee Dam provides essential FMO habitat and connectivity for at least ten bull trout core areas and the Middle Columbia River and Upper Snake River Recovery Units. Critical habitat includes the free-flowing reaches of the Snake River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively. Observations of bull trout at anadromous fish passage and monitoring facilities in the Snake River indicate their presence in the Snake River. Bull trout have been observed at all of the lower Snake River dams, smolt monitoring traps, juvenile fish facilities, and fish ladders; although they are anecdotal to salmon monitoring and are generally not targeted for observation and collection. Radio-telemetry studies in the Snake, Imnaha, and Grande Ronde rivers have shown that bull trout migrate between the foraging, overwintering, and migration habitat in the Snake River and spawning and rearing habitat in its tributaries (Hemmingsen, Bellerud, Gunckel, et al. 2001).

Table 60. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Mainstem Snake River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Mainstem Snake River–None	Snake River	OR	Snake River mainstem from the confluence with the Columbia River upstream 451.7 km (280.6 mi) to Brownlee Dam provides essential FMO habitat and connectivity for at least ten bull trout core areas and the Middle Columbia River and Upper Snake River Recovery Units. Critical habitat includes the free-flowing reaches of the Snake River and the reservoirs to the ordinary high water elevations and normal operating pool elevations, respectively. Observations of bull trout at anadromous fish passage and monitoring facilities in the Snake River indicate their presence in the Snake River. Bull trout have been observed at all of the lower Snake River dams, smolt monitoring traps, juvenile fish facilities, and fish ladders; although they are anecdotal to salmon monitoring and are generally not targeted for observation and collection. Radio-telemetry studies in the Snake, Imnaha, and Grande Ronde rivers have shown that bull trout migrate between the foraging, overwintering, and migration habitat in the Snake River and spawning and rearing habitat in its tributaries (Hemmingsen, Bellerud, Gunckel, et al. 2001).	See CHU text	1190296461886

Chapter 24. Upper Snake Recovery Unit—Malheur River Basin Critical Habitat Unit

Chapter 24. Malheur River Basin Critical Habitat Unit

The Malheur River Basin CHU is essential to the conservation of bull trout because the two local bull trout populations are genetically distinct, exhibit important resident and fluvial life histories, and represents the westernmost occurrence of bull trout in the Upper Snake River RU. This CHU does or can contain multiple populations, providing a mechanism for spreading risk from stochastic events and ensuring population redundancy. The Malheur River core area is disconnected from other core areas in the Upper Snake River RU (see Appendix 1 for more detailed information).

The Malheur River CHU is in eastern Oregon within Grant, Baker, Harney, and Malheur Counties. It is the most western core area in the Upper Snake Recovery Unit and is isolated from the other core areas in this unit. There are two local bull trout populations identified; upper Malheur and North Fork Malheur Rivers. These populations consist of both fluvial and resident bull trout. The 2002 Bull Trout Draft Recovery Plan also identified several streams, including Bosonberg Creek, McCoy Creek, and Corral Basin Creek, for expansion of bull trout range within the upper Malheur River local population and they are considered essential for recovery. Summit Creek is considered potential suitable bull trout habitat and is included in the designation. The Burns Paiute Tribe owns lands within this unit.

Rationale for determining Critical Habitat based on the Seven Guiding Principles

1. Conserve opportunity for diverse life-history expression –The upper Malheur River Basin contains two local bull trout populations, the North Fork Malheur population and the upper Malheur population. The presence of dams on the upper Malheur River (Warm Springs Dam) and on the North Fork Malheur (Agency Dam, neither of which have upstream fish passage), effectively separates the two populations. Both populations exhibit resident and fluvial life histories, although fluvial fish are more prevalent in the North Fork Malheur population. Bull trout from the North Fork Malheur population are known to overwinter in Beulah Reservoir (Schwabe et al. 2001, p. 8). The ability to migrate is important to the persistence of local bull trout subpopulations (Rieman and McIntyre 1993, p. 25; M. Gilpin 1997; Rieman and Clayton 1997, p. 11; Rieman et al. 1997, p. 54).

2. Conserve opportunity for genetic diversity- Genetic analysis of Malheur bull trout indicate that there is variation between the upper Malheur and North Fork Malheur bull trout populations and variation among populations within these two stream systems (DeHaan, Diggs, and Ardren 2007, p. 5). These populations have remained diverse in spite of 60 to 70 years of isolation above barrier dams and, in the case of the upper Malheur population, hybridization with brook trout (DeHaan, Diggs, and Ardren 2007, p. 10). Bull trout populations in the Malheur Basin exhibit genetic diversity consistent with other bull trout populations at the southern extent of their range in the Upper Snake Recovery Unit (DeHaan, Diggs, and Ardren 2007, p. 5). Maintaining multiple local populations within the Malheur Basin provides a mechanism for spreading risk from stochastic events (Service 2002a, p. 50).

3. Ensure bull trout are distributed across representative habitats –Spawning and juvenile rearing occurs in the headwaters of the upper Malheur and North Fork Malheur rivers, and subadult rearing occurs in the mainstems of both rivers. Use of habitat in Warm Springs Reservoir by upper Malheur River bull trout has not been documented, although it is possible for them to forage downstream to the reservoir during winter (Service 2002a, p. 9). Fluvial bull trout in the North Fork Malheur River utilize the mainstem and Beulah Reservoir as overwintering habitat. However, during low water years Beulah Reservoir does not provide a sufficient pool to support overwintering bull trout and this may affect their ability to reproduce as reflected in redd counts (Rose and Mesa 2009, pp 17 and 51).

4. Ensure sufficient connectivity among populations –The draft recovery plan identifies restoration of passage at the dams to allow connectivity as an objective in the Malheur River Basin. However, brook trout remain a threat in the upper Malheur River, and this threat needs to be addressed before volitional passage can be restored (Service 2002a, p. 35).

5. Ensure sufficient habitat to support population viability (e.g., abundance, trend indices) - Bull trout redd surveys have been taking place annually since 1992 in the North Fork Malheur and since 1998 in the upper Malheur River. Although survey timing and locations have been adjusted over time in order to respond to new information and staffing challenges, a measure of trend can be obtained from redds per mile data. In the North Fork Malheur redds per mile (r/m) trended upward from 0.2 r/m in 1992 to 6.6 r/m in 2000, dipped downward to 3.1 r/m in 2005 and reached the highest during the period of record in 2007 (7.1 r/m). In 2008 redds per mile were down to 5.9(Perkins 2009, p. 20). Coincidentally the minimum reservoir pool in Beulah Reservoir was 0 acre-feet during the period from 2003 through 2005, which may have had an influence of redd counts in the North Fork Malheur (Rose and Mesa 2009, p. 17, 51). Redd counts in the upper Malheur are confounded by the presence of brook trout and the similarity in redd sizes of both species. Redds counted before September 15 are presumed to be those of bull trout based on the onset of spawning observed in the North Fork Malheur (Perkins 2009, p. 17). Although fewer in number compared to the North Fork Malheur, the trend in the upper Malheur is similar with peaks in redds per mile noted in 2001 and 2007(Perkins 2009, p. 21). The Bureau of Reclamation has initiated studies that should provide guidance for reservoir operations and establishment of a conservation pool for Beulah Reservoir (Peterson and Kofoot 2002, p. 8). Ensuring sufficient habitat to support fluvial populations is important to the conservation of the species.

6. Consider threats (e.g., climate change) - Most of the streamflow in the Malheur Basin is from winter snow pack, although several of the tributaries where bull trout spawn are spring fed. Based on recent simulations, a warming climate could have a profound effect on Malheur bull trout populations by reducing the suitability of habitat through changes in the thermal regime (increased stream temperature) (Rieman et al. 2007, pp. 1557 – 1562) and, in the upper Malheur in particular, changes that favor further expansion of brook trout into bull trout spawning tributaries (Rahel and Olden 2008, p. 523).

7. Ensure sufficient redundancy in conserving population units – The draft recovery plan identified two local populations, upper Malheur and North Fork Malheur River. DeHaan, Diggs, and Ardren (2007) analyzed samples from bull trout in three streams in the upper Malheur and five streams in the North Fork Malheur. They observed a high level of genetic variation among all populations, and that the greatest level of variation observed was between populations in the upper Malheur and North Fork Malheur rivers (DeHaan, Diggs, and Ardren 2007, p. 6). Having multiple local populations distributed throughout a watershed provides a mechanism for spreading risk (Service 2002a, p. 24).

The following water bodies are included in this CHU (see Table 61)

North Fork Malheur River from Agency Valley Dam upstream 22.5 km (14.0 mi) to the confluence with Bear Creek (including Beulah Reservoir) is FMO habitat. From the confluence with Bear Creek 37.7 km (23.4) upstream to its source is occupied spawning and rearing habitat. Bull trout are known to be present throughout the length of the North Fork Malheur River including Beulah Reservoir. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al. 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). The North Fork Malheur River is bull trout population is an adfluvial population, with migration to, and overwintering in, Beulah Reservoir an essential part of the bull trout's life history upon which persistence of the population is dependent. The North Fork Malheur has been redd surveyed annually since 1992 (Perkins 2009, p. 5)

Beulah Reservoir provides (716 ha (1,769 ac) of FMO habitat. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). Beulah Reservoir is an essential part of the bull trout's life history upon which persistence of the population is dependent.

Crane Creek from the confluence with the North Fork Malheur River upstream 1.8 km (1.1 mi) to the confluence with Little Crane Creek contains suitable migratory and rearing habitat. A bull trout life history study conducted in 1999, documented the use of Crane Creek from its mouth up to Little Crane Creek by migrating bull trout (Schwabe et al 2000, p. 10). Although no spawning has been observed, bull trout have been observed in Crane Creek during spawning surveys, and during sampling conducted by Burns Paiute Tribe in 1998 (Burns Paiute Tribe 1998).

> *Little Crane Creek* from the confluence with Crane Creek upstream 9.6 km (6.0 mi) to its spring-fed sources is occupied spawning and rearing habitat**.** Little Crane Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009. P. 17).

Elk Creek from the confluence with the North Fork Malheur River upstream 1.6 km (1.0 mi) to the confluence with North Fork Creek and South Fork Elk Creek is occupied spawning and rearing habitat. Elk Creek has been redd surveyed annually since 1992. Redd counts in 2008 in Elk Creek increased from 2007 counts (Perkins 2009, p.17).

> *South Fork Elk Creek* from the confluence with Elk Creek upstream 1.2 km (0.8 mi) is occupied spawning and rearing habitat. South Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).

> *North Fork Elk Creek* from the confluence with Elk Creek upstream 4.0 km (2.5 mi) is occupied spawning and rearing habitat. North Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).

Sheep Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Sheep Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).

Swamp Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Swamp Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).

Flat Creek from the confluence with North Fork Malheur River upstream 1.2 km (0.7 mi) to the first tributary confluence provides FMO habitat. Bull trout were detected in Flat Creek during sampling in 1989, but use of the habitat is suspected to be limited to rearing and foraging in the lowest reach of the stream (up to the first tributary) (Buckman et al. 1992, p.49).

Horseshoe Creek from the confluence with the North Fork Malheur River upstream 2.7 km (1.7 mi) to its source is occupied spawning and rearing habitat. Horseshoe creek has been redd surveyed annually since 1998 (Perkins 2009, p. 6). Redd counts in 2008 were higher than in 2007 (Perkins 2009, p. 17).

Malheur River from Drewsey Valley at the Headgate north of Highway 20, upstream 72.1 km (44.8 mi) to the confluence with Big Creek in the Logan Valley provides FMO habitat for bull trout that migrate downstream from spawning and rearing habitat upstream of the confluence of Big Creek. Much of the Upper Malheur River mainstem is in need of restoration to be able to support fluvial bull trout. The draft recovery plan identifies restoration of habitat to support all life histories of bull trout as a recovery goal for the Malheur (Service 2002a, p.31).

Big Creek from the confluence with the Malheur River upstream 13.8 km (8.6 mi) to its source is occupied spawning and rearing habitat. Redds have been counted in Big Creek from 1998 to 2001 and from 2004 to 2008 (Perkins 2009, p. 12).

> *Meadow Fork Big Creek* from the confluence with Big Creek upstream 5.2 km (3.3 mi) to its source is occupied spawning and rearing habitat. Bull trout were detected in Meadow Fork Big Creek in surveys done in 1989 by Buckman et al.(1992, p. 53). Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Meadow Fork Big Creek (Perkins 2009, p. 13).
>
> *Snowshoe Creek* from the confluence with Big Creek upstream 3.4 km (2.1 mi) to its source are occupied and provide spawning and rearing habitat for the upper Malheur River local population. Surveys in 1993 revealed bull trout in Snowshoe Creek (Buchanan et al. 1997, p. 140). Redd surveys have been conducted in Snowshoe Creek since 1998 (Perkins 2009, p. 11).
>
> *Corral Basin Creek* from the confluence with Big Creek upstream 5.8 km (3.6 mi) to its source is historic spawning and rearing habitat necessary to provide for population expansion. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Corral Basin Creek is identified as areas for range expansion in the draft recovery plan (Service 2002a, p. 55).

Lake Creek from the confluence with the Malheur River upstream 16.8 km (10.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Lake Creek (Perkins 2009, p. 14).

> *Crooked Creek* from the confluence with Lake Creek upstream 13.5 km (8.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. A bull trout was caught in 1995 by Forest Service fisheries biologist in Crooked Creek (Buchanan et al. 1997, p. 140), and rearing bull trout were sampled in 1998 by Burns Paiute Tribe biologists (Burns Paiute Tribe 1998). Habitat in Crooked Creek is currently below optimal conditions for bull trout, but the stream has been

identified as essential for restoration for habitat expansion in the draft recovery plan (Service 2002a, p. 35).

McCoy Creek from the confluence with Lake Creek upstream 10.2 km (6.3 mi) to its source contains potential spawning and rearing habitat. McCoy Creek is identified as an area for range expansion in the Bull Trout Draft Recovery Plan and is essential for the long-term conservation of the species.

Summit Creek from the confluence with the Malheur River upstream 22.8 km (14.2 mi) to its source contains potential spawning and rearing habitat. Summit Creek has been surveyed from 1999 through 2006. Redds, some of which may be brook trout, have been counted annually since 1999, but bull trout have not been observed since 2000. Restoration of the habitat in Summit Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, restoration could provide suitable spawning and rearing habitat for bull trout (R. Perkins, pers. comm. 2009). Summit Creek has been surveyed from 1999 through 2006. Redds have been counted, but bull trout have not been observed since 2000 (Schwabe et al 2001, p. 11, pg. 41; Perkins 2009, p. 11).

Bosonberg Creek from the confluence with the Malheur River upstream 13.2 km (8.2 mi) to its source contains potential spawning and rearing and FMO habitat. Restoration of the habitat in Bosonberg Creek to provide for population expansion is essential to the long-term conservation of the species.

Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, pers. comm. 2009). Bosonberg Creek is identified as an area for range expansion in the draft recovery plan (Service 2002a, p. 55).

Table 61. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Malheur River Basin CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Big Creek	OR	Big Creek from the confluence with the Malheur River upstream 13.8 km (8.6 mi) to its source is occupied spawning and rearing habitat. Redds have been counted in Big Creek from 1998 to 2001 and from 2004 to 2008 (Perkins 2009, p. 12).	See CHU text	1186252441447
Malheur River Basin–None	Bosonberg Creek	OR	Bosonberg Creek from the confluence with the Malheur River upstream 13.2 km (8.2 mi) to its source contains potential spawning and rearing and FMO habitat. Restoration of the habitat in Bosonberg Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Bosonberg Creek is identified as an area for range expansion in the draft recovery plan (Service 2002a, p. 55).	See CHU text	1186192441346
Malheur River Basin–None	Corral Basin Creek	OR	Corral Basin Creek from the confluence with Big Creek upstream 5.8 km (3.6 mi) to its source is historic spawning and rearing habitat necessary to provide for population expansion. Although currently unoccupied, habitat restoration could provide spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Corral Basin Creek is identified as areas for range expansion in the draft recovery plan (Service 2002a, p. 55).	See CHU text	1186183442142
Malheur River Basin–None	Crane Creek	OR	Crane Creek from the confluence with the North Fork Malheur River upstream 1.8 km (1.1 mi) to the confluence with Little Crane Creek contains suitable migratory and rearing habitat. A bull trout life history study conducted in 1999, documented the use of Crane Creek from its mouth up to Little Crane Creek by migrating bull trout (Schwabe et al 2000, p. 10). Although no spawning has been observed, bull trout have been observed in Crane Creek during spawning surveys, and during sampling conducted by Burns Paiute Tribe in 1998 (Burns Paiute Tribe 1998).	See CHU text	1183709441616

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Crooked Creek	OR	Crooked Creek from the confluence with Lake Creek upstream 13.5 km (8.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. A bull trout was caught in 1995 by Forest Service fisheries biologist in Crooked Creek (Buchanan et al. 1997, p. 140), and rearing bull trout were sampled in 1998 by Burns Paiute Tribe biologists (Burns Paiute Tribe 1998). Habitat in Crooked Creek is currently below optimal conditions for bull trout, but the stream has been identified as essential for restoration for habitat expansion in the draft recovery plan (Service 2002a, p. 35).	See CHU text	1186352 441513
Malheur River Basin–None	Elk Creek	OR	Elk Creek from the confluence with the North Fork Malheur River upstream 1.6 km (1.0 mi) to the confluence with North Fork Creek and South Fork Elk Creek is occupied spawning and rearing habitat. Elk Creek has been redd surveyed annually since 1992. Redd counts in 2008 in Elk Creek increased from 2007 counts (Perkins 2009, p.17).	See CHU text	1183920 442497
Malheur River Basin–None	Flat Creek	OR	Flat Creek from the confluence with North Fork Malheur River upstream 1.2 km (0.7 mi) to the first tributary confluence provides FMO habitat. Bull trout were detected in Flat Creek during sampling in 1989, but use of the habitat is suspected to be limited to rearing and foraging in the lowest reach of the stream (up to the first tributary) (Buckman et al.1992, p.49).	See CHU text	1184032 443044
Malheur River Basin–None	Horseshoe Creek	OR	Horseshoe Creek from the confluence with the North Fork Malheur River upstream 2.7 km (1.7 mi) to its source is occupied spawning and rearing habitat. Horseshoe creek has been redd surveyed annually since 1998 (Perkins 2009, p. 6). Redd counts in 2008 were higher than in 2007 (Perkins 2009, p. 17).	See CHU text	1184157 443231
Malheur River Basin–None	Lake Creek	OR	Lake Creek from the confluence with the Malheur River upstream 16.8 km (10.4 mi) to its source provides spawning and rearing habitat for the upper Malheur River local population. Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Lake Creek (Perkins 2009, p. 14).	See CHU text	1186252 441446

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Little Crane Creek	OR	Little Crane Creek from the confluence with Crane Creek upstream 9.6 km (6.0 mi) to its spring-fed sources is occupied spawning and rearing habitat. Little Crane Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009. P. 17).	See CHU text	1183868 441515.1
Malheur River Basin–None	Malheur River	OR	Malheur River from Drewsey Valley at the Headgate north of Highway 20, upstream 72.1 km (44.8 mi) to the confluence with Big Creek in the Logan Valley provides FMO habitat for bull trout that migrate downstream from spawning and rearing habitat upstream of the confluence of Big Creek. Much of the Upper Malheur River mainstem is in need of restoration to be able to support fluvial bull trout. The draft recovery plan identifies restoration of habitat to support all life histories of bull trout as a recovery goal for the Malheur (Service 2002a, p.31).	See CHU text	1169731 440585
Malheur River Basin–None	McCoy Creek	OR	McCoy Creek from the confluence with Lake Creek upstream 10.2 km (6.3 mi) to its source contains potential spawning and rearing habitat. McCoy Creek is identified as an area for range expansion in the Bull Trout Draft Recovery Plan and is essential for the long-term conservation of the species.	See CHU text	1186540 441692
Malheur River Basin–None	Meadow Fork Big Creek	OR	Meadow Fork Big Creek from the confluence with Big Creek upstream 5.2 km (3.3 mi) to its source is occupied spawning and rearing habitat. Bull trout were detected in Meadow Fork Big Creek in surveys done in 1989 by Buckman et al.(1992, p. 53). Spawning surveys conducted since 1998 have continued to indicate bull trout spawning in Meadow Fork Big Creek (Perkins 2009, p. 13).	See CHU text	1186219 442274
Malheur River Basin–None	North Fork Elk Creek	OR	North Fork Elk Creek from the confluence with Elk Creek upstream 4.0 km (2.5 mi) is occupied spawning and rearing habitat. North Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).	See CHU text	1184093 442451

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	North Fork Malheur River	OR	North Fork Malheur River from Agency Valley Dam upstream 22.5 km (14.0 mi) to the confluence with Bear Creek (including Beulah Reservoir) is FMO habitat. From the confluence with Bear Creek 37.7 km (23.4) upstream to its source is occupied spawning and rearing habitat. Bull trout are known to be present throughout the length of the North Fork Malheur River including Beulah Reservoir. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). The North Fork Malheur River is bull trout population is an adfluvial population, with migration to, and overwintering in, Beulah Reservoir an essential part of the bull trout's life history upon which persistence of the population is dependent. The North Fork Malheur has been redd surveyed annually since 1992 (Perkins 2009, p. 5)	See CHU text	1180605 437569.1
Malheur River Basin–None	Sheep Creek	OR	Sheep Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Sheep Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).	See CHU text	1183970 442810
Malheur River Basin–None	Snowshoe Creek	OR	Snowshoe Creek from the confluence with Big Creek upstream 3.4 km (2.1 mi) to its source are occupied and provide spawning and rearing habitat for the upper Malheur River local population. Surveys in 1993 revealed bull trout in Snowshoe Creek (Buchanan et al. 1997, p. 140). Redd surveys have been conducted in Snowshoe Creek since 1998 (Perkins 2009, p. 11).	See CHU text	1186119 442421
Malheur River Basin–None	South Fork Elk Creek	OR	South Fork Elk Creek from the confluence with Elk Creek upstream 1.2 km (0.8 mi) is occupied spawning and rearing habitat. South Fork Elk Creek is included in the redd surveys for Elk Creek and has been surveyed annually since 1992 (Perkins 2009, p. 9).	See CHU text	1184093 442450

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Malheur River Basin–None	Summit Creek	OR	Summit Creek from the confluence with the Malheur River upstream 22.8 km (14.2 mi) to its source contains potential spawning and rearing habitat. Summit Creek has been surveyed from 1999 through 2006. Redds, some of which may be brook trout, have been counted annually since 1999, but bull trout have not been observed since 2000. Restoration of the habitat in Summit Creek to provide for population expansion is essential to the long-term conservation of the species. Although currently unoccupied, restoration could provide suitable spawning and rearing habitat for bull trout (R. Perkins, Oregon Department of Fish and Wildlife, pers. comm. 2009). Summit Creek has been surveyed from 1999 through 2006. Redds have been counted, but bull trout have not been observed since 2000 (Schwabe et al 2001, p. 11, pg. 41; Perkins 2009, p. 11).	See CHU text	1185880 440989
Malheur River Basin–None	Swamp Creek	OR	Swamp Creek from the confluence with North Fork Malheur River upstream 6.7 km (4.2 mi) to its source is occupied spawning and rearing habitat. Swamp Creek has been redd surveyed annually since 1992, and continues to be one of several prime spawning areas in the basin (Perkins, 2009, P. 17).	See CHU text	1184011 442907
Malheur River Basin - None	Beulah Reservoir	OR	Beulah Reservoir provides (716 ha (1,769 ac) of FMO habitat. Life history patterns of the population have been well documented (Gonzales 1998, pp. 9-12, Schwabe et al 2000, pp. 1-77, 2001, pp. 4-65, 2003, pp. 1-68 and 2004, pp. 1-221). Beulah Reservoir is an essential part of the bull trout's life history upon which persistence of the population is dependent.	See CHU text	1181543 439309

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 25. Upper Snake Recovery Unit—Jarbidge River Critical Habitat Unit

Chapter 25. Jarbidge River Critical Habitat Unit

The Jarbidge River CHU is essential to bull trout conservation. Jarbidge River bull trout are a high conservation priority for maintaining the maximum genetic diversity and evolutionary potential of the species across its range. The ecological setting of this CHU is unique. It is the southernmost extent of the species' range. The loss of bull trout in this CHU would result in a substantial modification of the species' range. Bull trout in the Jarbidge area are isolated from the rest of the species' range due to a combination of physical barriers that have been in place for over a century and habitat that has been unsuitable for much of this same period of isolation. Although recognized as being within the Snake River complex, recent genetic analyses conducted by the Service's Abernathy Fish Technology Center indicate that genetic characteristics of bull trout in the Jarbidge area do differ from other populations. Local genetic adaptations of this southernmost bull trout population may be a very desirable trait in the face of global climate change (see Appendix 1 for more detailed information).

The Jarbidge River CHU encompasses the Jarbidge and Bruneau River basins, which drain into the Snake River within C.J. Strike Reservoir upstream of Grand View, Idaho. The Jarbidge River CHU is located approximately 112.6 km (70 mi) north of Elko within Elko County in northeastern Nevada and Owyhee County in southwestern Idaho.

The Jarbidge River CHU includes 245.1 km (152.3 mi) of streams designated as critical habitat. The Jarbidge River CHU contains six local populations of resident and migratory bull trout and the stream segments in the Jarbidge River CHU provide either FMO or spawning and rearing habitat. These habitats maintain the population and the migratory life-history form essential to the species' long-term conservation and provide habitat necessary for the recovered distribution of bull trout (Service 2002a, pp. 7–9). The stream segments that make up the Jarbidge CHU are described below. The following water bodies are included in this CHU (see Table 62):

(A) Bruneau River from the Buckaroo Ditch irrigation diversion structure near Hot Spring, Idaho, upstream 68 km (42.2 mi) to its confluence with the Jarbidge River provides FMO habitat for migratory bull trout, but the extent and frequency of occupancy is unknown.

(B) Jarbidge River from its confluence with the Bruneau River upstream 47.3 km (29.4 mi) to the joint confluence of the East Fork and West Fork Jarbidge Rivers provides FMO habitat for migratory bull trout, but the extent and frequency of occupancy is unknown.

(C) West Fork Jarbidge River (also termed Jarbidge River) from its confluence with the East Fork Jarbidge River upstream 31.2 km (19.4 mi) to a permanent natural barrier. The lower West Fork Jarbidge River provides FMO habitat between its confluence with the East Fork and its confluence with Snowslide Gulch (28 km (17.4 mi)). Spawning and rearing habitat for the West Fork Jarbidge River local population and migratory bull trout is located from Snowslide Gulch 3.2 km (2.0 mi) upstream to the headwaters. An unnamed western headwater tributary from its confluence with the West Fork Jarbidge River upstream 1.4 km (0.9 mi) to a permanent natural barrier provides additional spawning and rearing habitat for the West Fork Jarbidge River local population. Fox Creek from its confluence with the West Fork Jarbidge River upstream 1.4 km (0.8 mi) to a permanent natural barrier likely provides foraging and overwintering habitat for the West Fork Jarbidge River and Pine Creek local populations and migratory bull trout from the West Fork Jarbidge River, but the extent and frequency of occupancy is unknown.
Sawmill Creek from its confluence with the West Fork Jarbidge River upstream 0.5 km (0.3 mi)

to a permanent natural barrier provides spawning and rearing habitat for the West Fork Jarbidge River local population.

(D) Deer Creek from its confluence with the West Fork Jarbidge River upstream 10.4 km (6.5 mi) to a permanent natural barrier provides foraging and overwintering habitat and a cool refuge from elevated temperatures in the lower West Fork Jarbidge River for migratory bull trout, but the extent and frequency of occupancy is unknown. Deer Creek may also provide spawning and rearing habitat under recovered conditions.

(E) Jack Creek from its confluence with the West Fork Jarbidge River upstream 4.7 km (2.9 mi) to a permanent natural barrier. Lower Jack Creek provides FMO habitat necessary to maintain connectivity among local populations in the Jarbidge River population. Jack Creek provides spawning and rearing habitat upstream of its confluence with Jenny Creek. Jenny Creek from its confluence with Jack Creek upstream 0.2 km (0.1 mi) to the upper extent of fish distribution likely provides additional foraging and overwintering habitat for the Jack Creek local populations and migratory bull trout from the West Fork Jarbidge River, but the extent and frequency of is unknown.

(F) Pine Creek (also termed West Fork Pine Creek) from its confluence with the West Fork Jarbidge River upstream 7.3 km (4.5 mi) to a permanent natural barrier provides spawning and rearing habitat. An unnamed western tributary from its confluence with Pine Creek upstream 1.5 km (1.0 mi) to a permanent natural barrier and an unnamed eastern headwater tributary from its confluence with Pine Creek upstream 2.4 km (1.5 mi) to a permanent natural barrier provide spawning and rearing habitat for the Pine Creek local population and migratory bull trout from the West Fork Jarbidge River.

(G) East Fork Jarbidge River from its confluence with the West Fork Jarbidge River upstream 34.7 km (21.6 mi) to a permanent natural barrier provides spawning and rearing habitat. The lower East Fork Jarbidge River from its confluence with the West Fork Jarbidge River upstream to its confluence with Fall Creek provides FMO habitat and connectivity for local populations. Spawning and rearing habitat is located upstream of Fall Creek in its headwaters. An unnamed eastern headwater tributary from its confluence with the East Fork Jarbidge River upstream 3.5 km (2.2 mi) to a permanent natural barrier provides spawning and rearing habitat. Fall Creek from its confluence with the East Fork Jarbidge River upstream 3.4 km (2.1 mi) to a permanent natural barrier; an unnamed lower western tributary from its confluence with Fall Creek upstream 0.3 km (0.2 mi) to a permanent natural barrier; and an unnamed upper western tributary from its confluence with Fall Creek upstream 0.5 km (0.3 mi) to a permanent natural barrier provide spawning and rearing habitat for the East Fork Jarbidge River local population. Cougar Creek from its confluence with the East Fork Jarbidge River upstream 3.1 km (1.9 mi) to a permanent natural barrier provides spawning and rearing habitat for the East Fork Jarbidge River local population.

(H) Dave Creek from its confluence with the East Fork Jarbidge River upstream 13.9 km (8.6 mi) to a permanent natural barrier provides FMO habitat in the lower reach and spawning and rearing habitat for the Dave Creek local population in the upper reach.

(I) The following reaches provide spawning and rearing habitat for the Slide Creek local population upstream to permanent natural barriers: Slide Creek from its confluence with the East Fork Jarbidge River upstream 7.3 km (4.6 mi); Gods Pocket Creek from its confluence with Slide Creek upstream 1.2 km (0.7 mi); an unnamed lower southern tributary from its confluence with Slide Creek upstream 0.6 km (0.4 mi); and an unnamed upper southern tributary from its confluence with Slide Creek upstream 0.4 km (0.3 mi).

Table 62. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Jarbidge River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Jarbidge River–None	Bruneau River	ID	Presumed occupied based on open access and current presence of bull trout in the Jarbidge River (USGS 2008).	Bruneau River (lower) is presumed occupied and is essential as it provides FMO habitat for the East Fork Jarbidge River, West Fork Jarbidge River, and other local populations.	1159358 429400
Jarbidge River–None	Cougar Creek	NV	Part of current distribution. Adult bull trout collected in 2007 (USGS 2008).	Cougar Creek is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153196 418401
Jarbidge River–None	Dave Creek	NV	Part of current distribution. Adult bull trout documented (USGS 2008).	Dave Creek (lower) is occupied and is essential as it provides FMO habitat for the Dave Creek local population.	1153518 419950.1
Jarbidge River–None	Dave Creek	NV	Part of current distribution. Adult (including spawners), juveniles, and fry bull trout collected or observed in 2006 and 2007 (USGS 2008).	Dave Creek (upper) is occupied and is essential as it provides spawning and rearing habitat for the Dave Creek local population.	1153518 419950.2
Jarbidge River–None	Deer Creek	NV	Part of the current distribution. Adult bull trout documented in 2000 (NDOW 2001) and in a prior year (J. Klott, BLM, in litt. 1994).	Deer Creek is occupied and is essential as it provides FMO habitat for the West Fork Jarbidge River and other local populations (e.g., Jack Creek, Pine Creek).	1154203 419330.1
Jarbidge River–None	Deer Creek	NV	Presumed occupied based on open access to and documented adult bull trout downstream in 2000 (NDOW 2001) and earlier (J. Klott, BLM, in litt. 1994).	Deer Creek (upper) is presumed occupied and is essential as it provides FMO habitat for the West Fork Jarbidge River and other local populations (e.g., Jack Creek, Pine Creek).	1154203 419330.2
Jarbidge River–None	East Fork Jarbidge River	ID	Part of current distribution. Tagged bull trout detected in 2007 (USGS 2008).	East Fork Jarbidge River (lower) is occupied and is essential as it provides FMO habitat for the East Fork Jarbidge River local population and other local populations.	1153901 420494.1
Jarbidge River–None	East Fork Jarbidge River	NV	Part of the current distribution. Adult bull trout collected in 2006 and 2007 (USGS 2008).	East Fork Jarbidge River (lower) is occupied and is essential as it provides FMO habitat for the East Fork Jarbidge River local population and other local populations.	1153901 420494.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Jarbidge River–None	East Fork Jarbidge River	NV	Part of the current distribution. Adult bull trout collected in 2006 and 2007 (USGS 2008).	East Fork Jarbidge River (upper) is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153901 420494.3
Jarbidge River–None	Fall Creek	NV	Part of current distribution. Adult and juvenile bull trout collected in 2006 and 2007 (USGS 2008).	Fall Creek is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153141 418564
Jarbidge River–None	Fox Creek	NV	Presumed occupied based on open access and current bull trout presence in W. Fork Jarbidge River (USGS 2008).	Fox Creek is presumed occupied and is essential as it provides FMO habitat for the West Fork Jarbidge River and Pine Creek local populations.	1154200 418265
Jarbidge River–None	Gods Pocket Creek	NV	Presumed occupied. Bull trout presence documented in Slide Creek near this tributary's mouth (Johnson 1993, 1996, 1999; NDOW 1993; Johnson and Weller 1994).	Gods Pocket Creek is presumed occupied and is essential as it provides spawning and rearing habitat for the Slide Creek local population.	1152924418 474
Jarbidge River–None	Jack Creek	NV	Part of the current distribution. Tagged bull trout documented (USGS 2008).	Jack Creek (lower) is occupied and is essential as it provides FMO habitat for the Jack Creek local population.	1154244 419118.1
Jarbidge River–None	Jack Creek	NV	Part of the current distribution. Adult and age-0 bull trout collected in 2006 and 2007 (USGS 2008).	Jack Creek (upper) is occupied and is essential as it provides spawning and rearing habitat for the Jack Creek local population.	1154244 419118.2
Jarbidge River–None	Jarbidge River	ID	Part of current distribution. Tagged bull trout detected in 2007 (USGS 2008).	Jarbidge River (mainstem) is occupied and is essential as it provides FMO habitat for the East Fork Jarbidge River, West Fork Jarbidge River, and other local populations.	1156515 423294
Jarbidge River–None	Jenny Creek	NV	Presumed occupied based on open access and current bull trout presence nearby in Jack Creek (USGS 2008).	Jenny Creek is presumed occupied and is essential as it provides FMO habitat for the Jack Creek local population.	1154095 419014
Jarbidge River–None	Pine Creek	NV	Part of the current distribution. Adult and age-0 bull trout collected in 2006 and 2007 (USGS 2008).	Pine Creek is occupied and is essential as it provides spawning and rearing habitat for the Pine Creek local population.	1154243 418336
Jarbidge River–None	Sawmill Creek	NV	Part of the current distribution. Johnson (1999) documented bull trout in 1998.	Sawmill Creek is occupied and is essential as it provides spawning and rearing habitat for the West Fork Jarbidge River local population.	1153993 417941

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Jarbidge River–None	Slide Creek	NV	Part of current distribution. Adult bull trout, including spawners, collected or observed in 2006 and 2007 (USGS 2008).	Slide Creek is occupied and is essential as it provides spawning and rearing habitat for the Slide Creek local population.	1153116 418667
Jarbidge River–None	UNNAMED E Trib off Pine Creek	NV	Part of the current distribution. Juvenile bull trout documented in 1998 (Johnson 1999, Johnson and Haskins 2000).	Unnamed E Tributary to Pine Creek is occupied and is essential as it provides spawning and rearing habitat for the Pine Creek local population.	1154550 417858
Jarbidge River–None	UNNAMED Headwater Trib off East Fork Jarbidge R	NV	Part of current distribution. Juvenile and adult bull trout collected in 2007 (USGS 2008).	Unnamed Headwater Tributary to East Fork Jarbidge River is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153295 417820
Jarbidge River–None	UNNAMED Lower Trib off Fall Cr	NV	Part of current distribution. Juvenile and adult bull trout collected in 1998 (Johnson 1999).	Unnamed Lower Tributary to Fall Creek is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153275 418489
Jarbidge River–None	UNNAMED Lower Trib off Slide Cr	NV	Part of current distribution. Juvenile bull trout observed in 1999 (Werdon 2000).	Unnamed Lower Tributary to Slide Creek is occupied and is essential as it provides spawning and rearing habitat for the Slide Creek local population.	1152772 418393
Jarbidge River–None	UNNAMED Upper Trib off Fall Cr	NV	Part of current distribution. Juvenile and adult bull trout collected in 1998 (Johnson 1999).	Unnamed Upper Tributary to Fall Creek is occupied and is essential as it provides spawning and rearing habitat for the East Fork Jarbidge River local population.	1153349 418428
Jarbidge River–None	UNNAMED Upper Trib off Slide Cr	NV	Part of current distribution. Juvenile bull trout observed in 1993 (Johnson 1993, 1996, 1999; NDOW 1993; Johnson and Weller 1994).	Unnamed Upper Tributary to Slide Creek is occupied and is essential as it provides spawning and rearing habitat for the Slide Creek local population.	1152645 418380
Jarbidge River–None	UNNAMED W Trib off Pine Creek	NV	Part of the current distribution. Juvenile bull trout documented in 1998 (Johnson 1999, Johnson and Haskins 2000).	Unnamed W Tributary to Pine Creek is occupied and is essential as it provides spawning and rearing habitat for the Pine Creek local population.	1154472 418032
Jarbidge River–None	UNNAMED W Trib off West Fork Jarbidge R	NV	Part of the current distribution. Bull trout documented in 2006-2007 surveys (USGS 2008).	Unnamed W Tributary to West Fork Jarbidge River is occupied and is essential as it provides spawning and rearing habitat for the West Fork Jarbidge River local population.	1153970 417924

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Jarbidge River–None	West Fork Jarbidge River	ID	Part of current distribution. Tagged bull trout detected in 2007 (USGS 2008).	West Fork Jarbidge River (lower) is occupied and is essential as it provides FMO habitat for the West Fork Jarbidge River local population and several other local populations.	1153900 420495.1
Jarbidge River–None	West Fork Jarbidge River	NV	Part of the current distribution. Adult bull trout collected in 2006 and 2007 (USGS 2008).	West Fork Jarbidge River (lower) is occupied and is essential as it provides FMO habitat for the West Fork Jarbidge River local population and several other local populations.	1153900 420495.2
Jarbidge River–None	West Fork Jarbidge River	NV	Part of the current distribution. Adult and age-0 bull trout collected in 2006 and 2007 (USGS 2008).	West Fork Jarbidge River (upper) is occupied and is essential as it provides spawning and rearing habitat for the West Fork Jarbidge River local population.	1153900 420495.3

Chapter 26. Upper Snake Recovery Unit—Southwest Idaho River Basins Critical Habitat Unit

Chapter 26. Southwest Idaho River Basins Critical Habitat Unit

The Southwest Idaho River Basins CHU is essential maintaining bull trout distribution within this unique geographic region of the Upper Snake RU. This CHU occurs in southwestern Idaho and consists of three River Basins: the Boise River, Payette River, and Weiser River. This CHU contains adfluvial, fluvial, and resident populations of bull trout. Large adfluvial and fluvial populations of bull trout occur within the Boise and Payette River systems, but small isolated populations may contain genes that protect the species from specific threats. Migratory life history expression is needed for the long-term conservation of the species, but some resident populations may also contain unique genes that protect the populations from specific threats. The populations that exhibit adfluvail life history expressions may be the largest in the Upper Snake River RU. The migratory life history expression is needed for the long-term conservation of the species (see Appendix 1 for more detailed information).

The Southwest Idaho River Basins CHU is located in southwest Idaho in the following counties: Adams, Boise, Camas, Canyon, Elmore, Gem, Valley, and Washington. This unit includes eight CHSUs: Anderson Ranch, Arrowrock Reservoir, South Fork Payette River, Deadwood River, Middle Fork Payette River, North Fork Payette River, Squaw Creek, and Weiser River. The Southwest Idaho River Basins CHU includes approximately 2,149.6 km (1,336.0 mi) of streams and 4,310.5 ha (10,651.5 ac) of lake and reservoir surface area designated as critical habitat.

26.1. Weiser River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the potential possibility that the resident populations have unique genetic diversity and distribution and may contribute to the long-term persistence of the species (see Appendix 1 for more detailed information).

Located within Washington and Adams Counties in Idaho approximately 48 km (30 mi) north of Weiser, Idaho, designated critical habitat includes approximately 113.3 km (70.4 mi) of streams.

The following water bodies are included in this CHSU (see Table 63):

(A) Little Weiser River from the Forest Service boundary upstream 8.5 km (5.3 mi) to its confluence with Anderson Creek contains FMO habitat; Little Weiser River from its confluence with Anderson Creek upstream 16.2 km (10.1 mi) to its headwaters provides spawning and rearing habitat; Anderson Creek from its confluence with the Little Weiser River upstream 11.4 km (7.1 mi) to its headwaters provides spawning and rearing habitat; and Sheep Creek from its confluence with Anderson Creek upstream 7.4 km (4.6 mi) to its headwaters provides spawning and rearing habitat.

(B) Hornet Creek from its confluence with the Disappointment Creek downstream 4.8 km (2.9 mi) to the Idaho State lands boundary contains FMO habitat. Hornet Creek from approximately 2.1 km (1.3 mi) upstream from its confluence with Disappointment Creek upstream 5.7 km (3.5 mi) to its headwaters provides spawning and rearing habitat.

(C) Olive Creek from the Idaho State lands boundary upstream 4.0 km (2.5 mi) contains FMO habitat, and upstream from that point for 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat. An unnamed creek from its confluence with Olive Creek upstream 1.1 km (0.7 mi) contains FMO habitat. An unnamed creek that enters Olive Creek 3.3 km (2.0 mi) upstream of the confluence of Olive Creek and Hornet Creek provides spawning and rearing habitat, and is designated as critical habitat from its mouth upstream to its headwaters (1.5 km (0.9 mi)); and an unnamed creek that enters Olive Creek 5.3 km (3.3 mi) upstream of the confluence of Olive Creek and Hornet Creek provides spawning and rearing habitat, and is designated as critical habitat from its mouth to its headwaters 1.8 km (1.1 mi).

(D) Grouse Creek from its confluence with Hornet Creek upstream 1.2 km (0.7 mi) contains FMO habitat and Grouse Creek from 1.2 km (0.7 mi) upstream from its mouth upstream 4.0 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(E) Disappointment Creek from its confluence with Hornet Creek upstream 1.5 km (1.0 mi) contains FMO habitat, and from that point upstream 2.7 km (1.7 mi) to its headwaters provides spawning and rearing habitat.

(F) Placer Creek from its confluence with Hornet Creek upstream 5.2 km (3.2 mi) to its headwaters and North Creek from its confluence with Placer Creek upstream 3.4 km (2.1 mi) to its headwaters provide spawning and rearing habitat.

(G) East Fork Weiser River from its confluence with the Weiser River upstream 24.5 km (15.2 mi) to its headwaters and Dewey Creek from its confluence with the East Fork Weiser River upstream 4.2 km (2.6 mi) to its headwaters provide spawning and rearing habitat.

Table 63. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Weiser River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Weiser River	Sheep Creek	ID	(Adams 1994, pg. 16, 24-25, 33-34; DuPont and Kennedy, 2000 pg. 6-20)	Rationale provided in Southwest Idaho CHU justification text	1162215 445421
Southwest Idaho River Basins–Weiser River	Anderson Creek	ID	(Adams 1994, pg. 16, 24-25, 33-34; DuPont and Kennedy 2000, pg. 6-37)	Rationale provided in Southwest Idaho CHU justification text	1162424 445268
Southwest Idaho River Basins–Weiser River	Dewey Creek	ID	(Adams 1994, pg. 17, 24-25, 33-34; DuPont and Kennedy 2000, pg. 6-25; McGee et al. 2001, pg. 26-27)	Rationale provided in Southwest Idaho CHU justification text	1162770 448072
Southwest Idaho River Basins–Weiser River	East Fork Weiser River	ID	(Adams 1994, pg. 26 ; DuPont and Kennedy 2000, pg. 6-15; McGee et al. 2001, pg. 26-27)	Rationale provided in Southwest Idaho CHU justification text	1163794 448466
Southwest Idaho River Basins–Weiser River	Hornet Creek	ID	(DuPont in litt. 2000, pg. 2-3)	Rationale provided in Southwest Idaho CHU justification text	1164481 447277.4
Southwest Idaho River Basins–Weiser River	Olive Creek	ID	(DuPont in litt. 1998, pg. 1-2)	Rationale provided in Southwest Idaho CHU justification text	1166270 448360.2
Southwest Idaho River Basins–Weiser River	UNNAMED 1 - off Olive Creek	ID	(DuPont in litt. 2000, pg. 9)	Rationale provided in Southwest Idaho CHU justification text	1166433 448122
Southwest Idaho River Basins–Weiser River	UNNAMED 1 - off Olive Creek	ID	(DuPont in litt. 2000, pg. 9)	Rationale provided in Southwest Idaho CHU justification text	1166433 448122
Southwest Idaho River Basins–Weiser River	Disappointment Creek	ID	(DuPont in litt. 2000, pg. 2, 9)	Rationale provided in Southwest Idaho CHU justification text	1166566 448251.1
Southwest Idaho River Basins–Weiser River	Disappointment Creek	ID	(DuPont in litt. 2000, pg. 2, 9)	Rationale provided in Southwest Idaho CHU justification text	1166566 448251.2
Southwest Idaho River Basins–Weiser River	Grouse Creek	ID	(DuPont in litt. 2000, pg. 9)	Rationale provided in Southwest Idaho CHU justification text	1166570 448263.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Weiser River	Grouse Creek	ID	(DuPont in litt. 2000, pg. 9)	Rationale provided in Southwest Idaho CHU justification text	1166570 448263.2
Southwest Idaho River Basins–Weiser River	UNNAMED - off Olive Creek	ID	(DuPont in litt. 2000, pg. 9)	Rationale provided in Southwest Idaho CHU justification text	1166602 448011
Southwest Idaho River Basins–Weiser River	Placer Creek	ID	(DuPont in litt. 2000, pg. 2, 9)	Rationale provided in Southwest Idaho CHU justification text	1166790 448081.2
Southwest Idaho River Basins–Weiser River	North Creek	ID	(DuPont in litt. 2000, pg. 2, 9)	Rationale provided in Southwest Idaho CHU justification text	1166922 448142.2
Southwest Idaho River Basins–Weiser River	Little Weiser River	ID	(Adams 1994, pg. 16; DuPont and Kennedy 2000, pg. 6-39)	Rationale provided in Southwest Idaho CHU justification text	1166931 445530.2

26.2. Squaw Creek Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the potential possibility that the resident populations have unique genetic diversity and distribution and may contribute to the long-term persistence of the species (see Appendix 1 for more detailed information).

Located within Gem, Boise, and Valley Counties in Idaho approximately 74 km (46 mi) north of Boise, Idaho, designated critical habitat includes approximately 72.3 km (44.9 mi) of streams.

The following water bodies are included in this CHSU (see Table 64):

(A) Squaw Creek from its confluence with Cold Spring Creek upstream 19.1 km (11.8 mi) to its headwaters provides spawning and rearing habitat.

(B) Second Fork Squaw Creek from its confluence with Sage Hen Creek upstream 4.4 km (2.8 mi) to its headwaters provides spawning and rearing habitat.

(C) Renwick Creek from its confluence with Second Fork Squaw Creek upstream 6.2 km (3.8 mi) to its headwaters provides spawning and rearing habitat.

(D) Antelope Creek from its confluence with Second Fork Squaw Creek upstream 4.0 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(E) The following tributaries provide spawning and rearing habitat: Third Fork Squaw Creek from Unnamed 1 upstream 6.6 km (4.1 mi) to its headwaters; Unnamed 1 from its confluence with Third Fork Squaw Creek upstream 7.2 km (4.5 mi) to its headwaters; an unnamed creek to Unnamed 1 off of Third Fork Squaw Creek (Unnamed 3) from its confluence with Unnamed 1 upstream 4.0 km (2.5 mi) to its headwaters; an unnamed creek to Unnamed 1 off of Third Fork Squaw Creek (Unnamed 2) from its confluence with Unnamed 1 upstream 1.8 km (1.1 mi) to its headwaters; Unnamed Creek tributary (Unnamed 3) to Third Fork Squaw Creek from its confluence with Third Fork Squaw Creek upstream 3.2 km (2.0 mi) to its headwaters; and an unnamed creek (Unnamed 4) to Squaw Creek from its confluence with Squaw Creek upstream 2.6 km (1.6 mi) to its headwaters.

(F) Pole Creek from its confluence with Squaw Creek upstream 4.1 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(G) An unnamed creek (Unnamed 5) to Squaw Creek from its confluence with Squaw Creek upstream 3.5 km (2.2 mi) to its headwaters provides spawning and rearing habitat.

(H) An unnamed creek (Unnamed 6) to Unnamed 5 from its confluence with Unnamed 5 upstream 2.8 km (1.7 mi) to its headwaters provides spawning and rearing habitat.

(I) Poison Creek from its confluence with Squaw Creek upstream 2.7 km (1.7 mi) to its headwaters provides spawning and rearing habitat.

Table 64. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Squaw Creek CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Squaw Creek	Poison Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161852 444786
Southwest Idaho River Basins–Squaw Creek	UNNAMED 2 - off of Unnamed 1 off of Third Fork Squaw Creek	ID	(Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161901 444149
Southwest Idaho River Basins–Squaw Creek	UNNAMED 5 - off Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161910 444757
Southwest Idaho River Basins–Squaw Creek	UNNAMED 6 - off Unnamed 5 off of Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161910 444758
Southwest Idaho River Basins–Squaw Creek	Renwick Creek	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1161945 443673.1
Southwest Idaho River Basins–Squaw Creek	Renwick Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161945 443673.2
Southwest Idaho River Basins–Squaw Creek	Renwick Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161945 443673.3
Southwest Idaho River Basins–Squaw Creek	Antelope Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1161974 443751
Southwest Idaho River Basins–Squaw Creek	UNNAMED 3 - off of Unnamed 1 off of Third Fork Squaw Creek	ID	(Burton 1999, pg. 11)	Rationale provided in Southwest Idaho CHU justification text	1162008 444158
Southwest Idaho River Basins–Squaw Creek	UNNAMED 3 - off Third Fork Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1162043 444335

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Squaw Creek	UNNAMED 1 - off Third Fork Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1162102 444240
Southwest Idaho River Basins–Squaw Creek	Pole Creek	ID	(Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1162184 444715
Southwest Idaho River Basins–Squaw Creek	UNNAMED 4 - off Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1162187 444701
Southwest Idaho River Basins–Squaw Creek	Third Fork Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1162996 443733.2
Southwest Idaho River Basins–Squaw Creek	Second Fork Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-25)	Rationale provided in Southwest Idaho CHU justification text	1163101 443086.2
Southwest Idaho River Basins–Squaw Creek	Squaw Creek	ID	(Burton 1999, pg. 11; Steed 1999, pg. 4-14)	Rationale provided in Southwest Idaho CHU justification text	1163689 439467.3

26.3. North Fork Payette River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the potential possibility that the resident populations have unique genetic diversity and distribution and may contribute to the long-term persistence of the species (see Appendix 1 for more detailed information).

The North Fork Payette River CHSU is located within Valley County, Idaho, and near Cascade, Idaho. Designated critical habitat includes approximately 31.1 km (19.3 mi) of streams.

The following water bodies are included in this CHSU (see Table 65):

(A) South Fork Gold Fork River from its confluence with the Gold Fork River upstream 7.4 km (4.6 mi) to its headwaters provides spawning and rearing habitat.

(B) North Fork Gold Fork River from its confluence with the Gold Fork River upstream 15.9 km (9.9 mi) to its headwaters provides spawning and rearing habitat. The following tributaries to the North Fork Gold Fork River also provide spawning and rearing habitat: an unnamed creek (Unnamed Tributary 4) (entering the North Fork Gold Fork River approximately 4.7 km (2.9 mi) from the mouth of the North Fork Gold Fork River) from its confluence with the North Fork Gold Fork River upstream 3.2 km (2.0 mi) to its headwaters; and an unnamed creek (Unnamed Tributary 3) (entering the North Fork Gold Fork River approximately 5.0 km (3.1 mi) from the mouth of the North Fork Gold Fork River) from its confluence with the North Fork Gold Fork River upstream 4.6 km (2.9 mi) to its headwaters.

Table 65. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–North Fork Payette River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–North Fork Payette River	UNNAMED Trib 3 - off North Fork Gold Fork River	ID	(Roy in litt. 2002, pg. 2)	Rationale provided in Southwest Idaho CHU justification text	1158165 447076
Southwest Idaho River Basins–North Fork Payette River	UNNAMED Trib 4 - off North Fork Gold Fork River	ID	(Roy in litt. 2002, pg. 2)	Rationale provided in Southwest Idaho CHU justification text	1158191 447064
Southwest Idaho River Basins–North Fork Payette River	South Fork Gold Fork River	ID	(Newberry 2000, pg. 2; Steed 1999, pg. 4-13)	Rationale provided in Southwest Idaho CHU justification text	1158957 446737
Southwest Idaho River Basins–North Fork Payette River	North Fork Gold Fork River	ID	(Newberry 2000, pg. 2; Steed 1999, pg. 4-13)	Rationale provided in Southwest Idaho CHU justification text	1158957 446738

26.4. Middle Fork Payette River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the potential possibility that the resident populations have unique genetic diversity and distribution and may contribute to the long-term persistence of the species. This CHSU contains populations that exhibit fluvial life history expressions that are important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Boise and Valley Counties in Idaho approximately 72 km (45 mi) north of Boise, Idaho, designated critical habitat includes approximately 197.6 km (122.7 mi) of streams.

The following water bodies are included in this CHSU (see Table 66):

(A) Middle Fork Payette River from its confluence with the South Fork Payette River upstream 56.4 km (35.0 mi) to its confluence with Bull Creek contains FMO habitat and Middle Fork Payette River from its confluence with Bull Creek upstream 17.6 km (10.9 mi) to its headwaters provides spawning and rearing habitat.

(B) Lightning Creek from its confluence with the Middle Fork Payette River upstream 13.3 km (8.3 mi) to its confluence with Onion Creek contains FMO habitat. Lightning Creek from its confluence with Onion Creek upstream 8.7 km (5.4 mi) to its headwaters and Onion Creek from its confluence with Lightning Creek upstream 7.9 km (4.9 mi) to its headwaters provides spawning and rearing habitat.

(C) Silver Creek from its confluence with the Middle Fork Payette River 19.0 km (11.8 mi) upstream to its headwaters and Peace Creek from its confluence with Silver Creek upstream 6.8 km (4.2 mi) to its headwaters provide spawning and rearing habitat. Valley Creek from its confluence with Peace Creek upstream 8.5 km (5.3 mi) to its headwaters contains FMO habitat.

(D) Ucon Creek from its confluence with Silver Creek upstream 5.0 km (3.1 mi) to its headwaters contains FMO habitat and Long Fork Silver Creek from its confluence with Silver Creek upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(E) Bull Creek from its confluence with the Middle Fork Payette River upstream 20.5 km (12.8 mi) to its headwaters; Sixteen-to-one Creek from its confluence with Bull Creek upstream 10.6 km (7.0 mi) to its headwaters; and Oxtail Creek from its confluence with Bull Creek upstream 4.4 km (2.8 mi) to its headwaters provide spawning and rearing habitat.

(F) Unnamed Creek number 1 from its confluence with the Middle Fork Payette River (approximately 13.0 km (8.1 mi) upstream from its confluence with the Middle Fork Payette River and Bull Creek) upstream 7.2 km (4.5 mi) to its headwaters and Unnamed Creek number 3 from its confluence with the Middle Fork Payette River (approximately 14.8 km (9.2 mi) upstream from the confluence of with Middle Fork Payette River and Bull Creek) upstream 3.2 km (2.0 mi) to its headwaters provide spawning and rearing habitat.

Table 66. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Middle Fork Payette River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Middle Fork Payette River	Oxtail Creek	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156666 444587
Southwest Idaho River Basins–Middle Fork Payette River	Long Fork Silver Creek	ID	(USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157602 443818
Southwest Idaho River Basins–Middle Fork Payette River	Ucon Creek	ID	(USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157657 443711
Southwest Idaho River Basins–Middle Fork Payette River	UNNAMED 3 - off Middle Fork Payette River	ID	(Jimenez and Zaroban 1998, pg. 5-13; USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157701 445393
Southwest Idaho River Basins–Middle Fork Payette River	UNNAMED 1 - off Middle Fork Payette River	ID	(Jimenez and Zaroban 1998, pg. 5-13; USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157738 445241
Southwest Idaho River Basins–Middle Fork Payette River	Valley Creek	ID	(USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157764 443329
Southwest Idaho River Basins–Middle Fork Payette River	Peace Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13, USFS 2000a, pg. 2)	Rationale provided in Southwest Idaho CHU justification text	1157912 443413
Southwest Idaho River Basins–Middle Fork Payette River	Sixteen-to-one Creek	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1158014 444259

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Middle Fork Payette River	Sixteen-to-one Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1158014 444259
Southwest Idaho River Basins–Middle Fork Payette River	Bull Creek	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1158125 444220.1
Southwest Idaho River Basins–Middle Fork Payette River	Bull Creek	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1158125 444220.2
Southwest Idaho River Basins–Middle Fork Payette River	Onion Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13, USFS 2000a, pg. 2)	Rationale provided in Southwest Idaho CHU justification text	1158241 442141
Southwest Idaho River Basins–Middle Fork Payette River	Silver Creek	ID	(USFS 2000a, pg. 2; Jimenez and Zaroban 1998, pg. 5-18)	Rationale provided in Southwest Idaho CHU justification text	1158644 443042
Southwest Idaho River Basins–Middle Fork Payette River	Lightning Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13, USFS 2000a, pg. 2).	Rationale provided in Southwest Idaho CHU justification text	1159361 441932.1
Southwest Idaho River Basins–Middle Fork Payette River	Lightning Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13; USFS 2000a, pg. 2)	Rationale provided in Southwest Idaho CHU justification text	1159361 441932.2
Southwest Idaho River Basins–Middle Fork Payette River	Middle Fork Payette River	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1159999 441036.1
Southwest Idaho River Basins–Middle Fork Payette River	Middle Fork Payette River	ID	(Roy in litt. 2002; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1159999 441036.2

26.5. Upper South Fork Payette River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of populations exhibiting fluvial life history expression and the high number of individuals. This CHSU is essential due to the potential possibility that the resident populations have unique genetic diversity and distribution and may contribute to the long-term persistence of the species (see Appendix 1 for more detailed information).

Located within Boise and Valley Counties in Idaho, approximately 104.6 km (65 mi) north of Mountain Home, Idaho, designated critical habitat includes approximately 447.4 km (278.0 mi) of streams.

The following water bodies are included in this CHSU (see Table 67):

(A) South Fork Payette River from its confluence with the Middle Fork Payette River upstream 104.7 km (65.1 mi) to 2.1 km (1.3 mi) downstream from the confluence of Lake Creek and South Fork Payette River contains FMO habitat. South Fork Payette River from 2.1 km (1.3 mi) downstream from the confluence of Lake Creek and South Fork Payette River upstream 14.4 km (9.0 mi) to its confluence with Benedict Creek provides spawning and rearing habitat.

(B) Deadwood River from its confluence with the South Fork Payette River upstream 37.0 km (23.0 mi) to Deadwood Dam contains FMO habitat.

(C) Scott Creek from its confluence with Deadwood River upstream 1.3 km (0.8 mi) to its confluence with South Fork Scott Creek contains FMO. Scott Creek from its confluence with South Fork Scott Creek upstream 10.9 km (6.8 mi) to its headwaters; South Fork Scott Creek from its confluence with Scott Creek upstream 5.7 km (3.5 mi) to its headwaters; Packsaddle Creek from its confluence with Scott Creek upstream 4.0 km (2.5 mi) to its headwaters; Smith Creek from its confluence with Scott Creek upstream 4.6 km (2.9 mi) to its headwaters; and an unnamed creek (entering Scott Creek 1.6 km (1.0 mi) upstream from its confluence with Smith Creek) from its confluence with Scott Creek upstream 2.2 km (1.4 mi) to its headwaters provide spawning and rearing habitat.

(D) No Man Creek from its confluence with the Deadwood River upstream 4.7 km (2.9 mi) to its confluence with an unnamed creek provides spawning and rearing habitat.

(E) Whitehawk Creek from its confluence with the Deadwood River upstream 12.4 km (7.7 mi) to its headwaters and North Fork Whitehawk Creek from its confluence with Whitehawk Creek upstream 5.3 km (3.3 mi) to its headwaters provide spawning and rearing habitat.

(F) Warm Springs Creek from its confluence with the Deadwood River upstream 11.4 km (7.1 mi) to its headwaters provides spawning and rearing habitat. East Fork Warm Springs Creek from its confluence with Warm Springs Creek upstream 8.8 km (5.5 mi) to its headwaters provides spawning and rearing habitat. An unnamed creek (entering East Fork Warm Springs Creek approximately 5.0 km (3.1 mi) upstream from the confluence of East Fork Warm Springs Creek and Warm Springs Creek) upstream 2.0 km (1.2 mi) to its headwaters contains FMO habitat. Middle Fork Warm Springs Creek from its confluence with Warm Springs Creek upstream 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat and an unnamed creek (entering Middle Fork Warm Springs Creek approximately 1.8 km (1.1 mi) upstream of the confluence of Middle Fork Warm Springs Creek and Warm

Springs Creek) upstream 4.1 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(G) Wilson Creek from its confluence with the Deadwood River upstream 16.9 km (10.5 mi) to its headwaters provides spawning and rearing habitat.

(H) Clear Creek from its confluence with the South Fork Payette River upstream 26.7 km (16.6 mi) contains FMO habitat. Clear Creek from 26.7 km (16.6 mi) upstream from its confluence with the South Fork Payette River for 8.6 km (5.4 mi) to its headwaters; Garney Creek from its confluence with Clear Creek upstream 0.4 km (0.2 mi); Long Creek from its confluence with Clear Creek upstream 5.1 km (3.2 mi); an unnamed creek (entering Long Creek approximately 3.7 km (2.3 mi) from the confluence of Long Creek and Clear Creek) from its confluence with Long Creek upstream 1.7 km (1.0 mi) to its headwaters; and South Fork Clear Creek from its confluence with Clear Creek upstream 7.5 km (4.7 mi) to its headwaters provide spawning and rearing habitat.

(I) Eightmile Creek from its confluence with the South Fork Payette River upstream 11.3 km (7.0 mi) to approximately 1.5 km (1.0 mi) downstream from the confluence of Castro Creek and Eightmile Creek contains FMO habitat. Eightmile Creek from approximately 1.5 km (1.0 mi) downstream from the confluence of Castro Creek and Eightmile Creek upstream 6.0 km (3.7 mi) to approximately 4.5 km (2.7 mi) upstream from the confluence of Castro Creek and Eightmile Creek provides spawning and rearing habitat. Eightmile Creek from approximately 4.5 km (2.7 mi) upstream from the confluence of Castro Creek and Eightmile Creek upstream 2.7 km (1.7 mi) to its headwaters contains FMO habitat.

(J) East Fork Eightmile Creek from its confluence with Eightmile Creek upstream approximately 4.2 km (2.6 mi) to its confluence with an unnamed creek contains FMO habitat. East Fork Eightmile Creek from approximately 4.2 km (2.6 mi) upstream from its mouth upstream 5.0 km (3.1 mi) to its headwaters and

(K) An unnamed creek (approximately 7.5 km (4.7 mi) upstream from the confluence of Eightmile Creek and the South Fork Payette River) from its confluence with Eightmile Creek upstream 3.4 km (2.1 mi) to its headwaters provides spawning and rearing habitat.

(L) Tenmile Creek from its confluence with the South Fork Payette River upstream 7.2 km (4.5 mi) to its confluence with an unnamed creek contains FMO habitat and Tenmile Creek from its confluence with an unnamed creek 7.2 km (4.5 mi) from its mouth upstream 11.1 km (6.9 mi) to its headwaters provides spawning and rearing habitat. In addition, the following tributaries to Tenmile Creek also provide spawning and rearing habitat: Horseshoe Creek from its confluence with Tenmile Creek upstream 1.1 km (0.7 mi);

(M) Chapman Creek from its confluence with the South Fork Payette River upstream 6.1 km (3.8 mi) to its headwaters provides spawning and rearing habitat.

(N) Warm Spring Creek from its confluence with the South Fork Payette River upstream 19.1 km (11.9 mi) to its confluence with Gates Creek and Gates Creek from its confluence with Warm Spring Creek upstream 6.8 km (4.2 mi) to its headwaters provide spawning and rearing habitat.

(O) Canyon Creek from its confluence with the South Fork Payette River upstream 17.0 km (10.6 mi) to its headwaters; South Fork Canyon Creek from its confluence with Canyon Creek upstream 5.1 km (3.2 mi) to its headwaters; North Fork Canyon Creek from its confluence with

Canyon Creek upstream 2.0 km (1.2 mi) to its confluence with an unnamed creek; and an unnamed creek (entering North Fork Canyon Creek 2.0 km (1.2 mi) upstream from the confluence of North Fork Canyon Creek and Canyon Creek) from its confluence with North Fork Canyon Creek upstream 4.6 km (2.9 mi) to its headwaters provide spawning and rearing habitat.

(P) Wapiti Creek from its confluence with the South Fork Payette River upstream 8.4 km (5.2 mi) to its headwaters provides spawning and rearing habitat.

(Q) Trail Creek from its confluence with the South Fork Payette River upstream 6.9 km (4.3 mi) to its headwaters provides spawning and rearing habitat.

(R) Baron Creek from its confluence with the South Fork Payette River upstream 12.3 km (7.6 mi) provides spawning and rearing habitat and North Fork Baron Creek from its confluence with Baron Creek upstream 2.7 km (1.7 mi) provides spawning and rearing habitat.

Table 67. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Upper South Fork Payette River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	North Fork Baron Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1151013 441314
Southwest Idaho River Basins–Upper South Fork Payette River	Baron Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Southwest Idaho CHU justification text	1151479 441370
Southwest Idaho River Basins–Upper South Fork Payette River	Trail Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1151529 441464.1
Southwest Idaho River Basins–Upper South Fork Payette River	Trail Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1151529 441464.2
Southwest Idaho River Basins–Upper South Fork Payette River	Wapiti Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1151899 441617.1
Southwest Idaho River Basins–Upper South Fork Payette River	Wapiti Creek	ID	(StreamNet 2009, pg. 20)	Rationale provided in Southwest Idaho CHU justification text	1151899 441617.2
Southwest Idaho River Basins–Upper South Fork Payette River	UNNAMED - off North Fork Canyon Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1151984 442605

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Canyon Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152135 442365.1
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Canyon Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Southwest Idaho CHU justification text	1152135 442365.2
Southwest Idaho River Basins–Upper South Fork Payette River	North Fork Canyon Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152137 442497
Southwest Idaho River Basins–Upper South Fork Payette River	Canyon Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152431 441720
Southwest Idaho River Basins–Upper South Fork Payette River	Warm Spring Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1153032 441443.1
Southwest Idaho River Basins–Upper South Fork Payette River	Warm Spring Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13) 8)	Rationale provided in Southwest Idaho CHU justification text	1153032 441443.2
Southwest Idaho River Basins–Upper South Fork Payette River	Gates Creek	ID	(USFS in litt. 2002b; StreamNet 2009 pg. 17)	Rationale provided in Southwest Idaho CHU justification text	1153052 442923
Southwest Idaho River Basins–Upper South Fork Payette River	Chapman Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1153136 441366

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	Horseshoe Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1153154 440620
Southwest Idaho River Basins–Upper South Fork Payette River	Tenmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1153847 441196.1
Southwest Idaho River Basins–Upper South Fork Payette River	Tenmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1153847 441196.2
Southwest Idaho River Basins–Upper South Fork Payette River	UNNAMED 2 - off Eightmile Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1153972 441744
Southwest Idaho River Basins–Upper South Fork Payette River	East Fork Eightmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13; USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1154063 441335.1
Southwest Idaho River Basins–Upper South Fork Payette River	East Fork Eightmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1154063 441335.2
Southwest Idaho River Basins–Upper South Fork Payette River	Eightmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1154121 441176.1
Southwest Idaho River Basins–Upper South Fork Payette River	Eightmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1154121 441176.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	Eightmile Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1154121 441176.2
Southwest Idaho River Basins–Upper South Fork Payette River	Eightmile Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1154121 441176.2
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Clear Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1154394 442324
Southwest Idaho River Basins–Upper South Fork Payette River	UNNAMED - off Long Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1155462 441478
Southwest Idaho River Basins–Upper South Fork Payette River	UNNAMED - off East Fork Warm Springs Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1155770 443118
Southwest Idaho River Basins–Upper South Fork Payette River	Long Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1155785 441293
Southwest Idaho River Basins–Upper South Fork Payette River	UNNAMED - off Middle Fork Warm Springs Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1155798 443319
Southwest Idaho River Basins–Upper South Fork Payette River	North Fork Whitehawk Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13; StreamNet 2009 pg. 13)	Rationale provided in Southwest Idaho CHU justification text	1155843 442769

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	Middle Fork Warm Springs Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Southwest Idaho CHU justification text	1155977 443259
Southwest Idaho River Basins–Upper South Fork Payette River	Garney Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Southwest Idaho CHU justification text	1156076 440913
Southwest Idaho River Basins–Upper South Fork Payette River	Clear Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156102 440816
Southwest Idaho River Basins–Upper South Fork Payette River	Clear Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156102 440816.1
Southwest Idaho River Basins–Upper South Fork Payette River	Clear Creek	ID	(StreamNet 2009, pg. 12; Kellet 2008; Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1156102 440816.2
Southwest Idaho River Basins–Upper South Fork Payette River	Clear Creek	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1156102 440816.3
Southwest Idaho River Basins–Upper South Fork Payette River	East Fork Warm Springs Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Southwest Idaho CHU justification text	1156214 442942
Southwest Idaho River Basins–Upper South Fork Payette River	No Man Creek	ID	(Jimenez and Zaroban 1998 pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156292 442466

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	Warm Springs Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13, USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1156304 442786.1
Southwest Idaho River Basins–Upper South Fork Payette River	Warm Springs Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13, USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1156304 442786.2
Southwest Idaho River Basins–Upper South Fork Payette River	Whitehawk Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13; StreamNet 2009 pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1156350 442751.1
Southwest Idaho River Basins–Upper South Fork Payette River	Whitehawk Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1156350 442751.2
Southwest Idaho River Basins–Upper South Fork Payette River	Wilson Creek	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156405 442917
Southwest Idaho River Basins–Upper South Fork Payette River	Scott Creek	ID	(Jimenez and Zaroban 1998 pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156475 442231.1
Southwest Idaho River Basins–Upper South Fork Payette River	Scott Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156475 442231.2
Southwest Idaho River Basins–Upper South Fork Payette River	Deadwood River	ID	(Jimenez and Zaroban 1998 pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1156572 440792

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Scott Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Southwest Idaho CHU justification text	1156605 442224
Southwest Idaho River Basins–Upper South Fork Payette River	Packsaddle Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Southwest Idaho CHU justification text	1156968 442236
Southwest Idaho River Basins–Upper South Fork Payette River	Smith Creek	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1157092 442136
Southwest Idaho River Basins–Upper South Fork Payette River	Unnamed	ID	(StreamNet 2009, pg. 45)	Rationale provided in Southwest Idaho CHU justification text	1157167 442009
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Payette River	ID	(Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1159999 441035.1
Southwest Idaho River Basins–Upper South Fork Payette River	South Fork Payette River	ID	(USFS in litt. 2002b; Jimenez and Zaroban 1998, pg. 5-13)	Rationale provided in Southwest Idaho CHU justification text	1159999 441035.2

26.6. Deadwood River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it provides a rare adfluvial life history expression in the Upper Snake RU. It contains a moderate number of adults. Migratory life history expression is important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Valley County, Idaho, approximately 91.7 km (57 mi) northeast of Boise, Idaho, designated critical habitat includes approximately 123.9 km (77.0 mi) of streams and 1,197.0 ha (2,957.8 ac) of reservoir surface area.

The following water bodies are included in this CHSU (see Table 68):

(A) Deadwood Reservoir from Deadwood Dam to the inlet (1,197.0 ha (2,957.8 ac)) contains FMO habitat.

(B) Deadwood River from Deadwood Dam upstream 32.1 km (20.0 mi) to its headwaters contains FMO habitat.

(C) Trail Creek from its confluence with the Deadwood River upstream 10.3 km (6.4 mi) to its headwaters and Daisy Creek from its confluence with Trail Creek upstream 4.9 km (3.0 mi) to its headwaters provide spawning and rearing habitat.

(D) South Fork Beaver Creek from its confluence with the Deadwood River upstream 4.5 km (2.8 mi) to its headwaters provides spawning and rearing habitat. An unnamed creek from its confluence with South Fork Beaver Creek (at approximately 0.2 km (0.1 mi) upstream of the confluence of South Fork Beaver Creek with Deadwood Reservoir) upstream 3.2 km (2.0 mi) to its headwaters; Beaver Creek from its confluence with the Deadwood Reservoir upstream 0.6 km (0.4 mi) to a fish barrier; and an unnamed creek (entering Beaver Creek approximately 0.2 km (0.1 mi) upstream from the confluence of Beaver Creek with Deadwood Reservoir) from its confluence with Beaver Creek upstream 3.2 km (2.0 mi) to its headwaters contains FMO habitat. The remaining 0.4 km (0.2 mi) provides spawning and rearing habitat. .

(E) Habit Creek from its confluence with Deadwood Reservoir upstream 4.2 km (2.6 mi) to its headwaters provides spawning and rearing habitat and Basin Creek from its confluence with Deadwood Reservoir upstream 8.3 km (5.1 mi) to its headwaters contains FMO habitat.

(F) Wild Buck Creek from its confluence with the Deadwood River upstream 6.3 km (3.9 mi) to its headwaters provides spawning and rearing habitat.

(G) Deer Creek from its confluence with the Deadwood River upstream 16.4 km (10.2 mi) to its headwaters provides spawning and rearing habitat. In addition, the following tributaries to Deer Creek also provide spawning and rearing habitat: An unnamed creek from its confluence with Deer Creek (3.3 km (2.0 mi) upstream of the confluence of Deer Creek with the Deadwood River) upstream 2.1 km (1.3 mi) to its headwaters; an unnamed creek (entering Deer Creek 5.5 km (3.4 mi) upstream of the confluence of Deer Creek and the Deadwood River) from its confluence with Deer Creek upstream 2.0 km (1.3 mi) to its headwaters; North Fork Deer Creek from its confluence with Deer Creek upstream 5.5 km (3.4 mi) to its headwaters; and an unnamed creek (entering Deer Creek 1.0 km (0.6 mi) upstream of the confluence of Deer Creek and North Fork Deer Creek) from its confluence with Deer Creek upstream 1.8 km (1.1 mi) to its headwaters.

(H) Goat Creek from its confluence with the Deadwood River upstream 6.3 km (3.9 mi) to its headwaters provides spawning and rearing habitat.

(I) Bitter Creek from its confluence with the Deadwood River upstream 5.9 km (3.7 mi) to its headwaters contains FMO habitat.

(J) Stratton Creek from its confluence with the Deadwood River upstream 5.3 km (3.3 mi) to its headwaters provides spawning and rearing habitat.

(K) East Fork Deadwood River from its confluence with the Deadwood River upstream 0.4 km (0.2 mi) to a waterfall barrier contains FMO habitat.

Table 68. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Deadwood River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Deadwood River	UNNAMED 3 - off Deer Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1155415 444066
Southwest Idaho River Basins–Deadwood River	North Fork Deer Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1155529 444081
Southwest Idaho River Basins–Deadwood River	UNNAMED 2 - off Deer Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1155586 444016
Southwest Idaho River Basins–Deadwood River	East Fork Deadwood River	ID	(Burton 1999, pg. 4)	Rationale provided in Southwest Idaho CHU justification text	1155744 444919
Southwest Idaho River Basins–Deadwood River	Stratton Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Southwest Idaho CHU justification text	1155863 444702
Southwest Idaho River Basins–Deadwood River	UNNAMED 1 - off Deer Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1155864 444068
Southwest Idaho River Basins–Deadwood River	Deer Creek	ID	(StreamNet 2009, pg. 12, Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156153 443960
Southwest Idaho River Basins–Deadwood River	Bitter Creek	ID	(StreamNet 2009, pg. 12, Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156167 444059
Southwest Idaho River Basins–Deadwood River	Goat Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Southwest Idaho CHU justification text	1156189 443975
Southwest Idaho River Basins–Deadwood River	Trail Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156523 442923
Southwest Idaho River Basins–Deadwood River	Deadwood River	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156567 443423

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Deadwood River	Wild Buck Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156571 443425
Southwest Idaho River Basins–Deadwood River	Basin Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	115658 4443411
Southwest Idaho River Basins–Deadwood River	Habit Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Southwest Idaho CHU justification text	1156722 443302
Southwest Idaho River Basins–Deadwood River	Beaver Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10, BOR 2010, pg. 8)	Rationale provided in Southwest Idaho CHU justification text	1156839 443166
Southwest Idaho River Basins–Deadwood River	South Fork Beaver Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156855 442943
Southwest Idaho River Basins–Deadwood River	UNNAMED - off Beaver Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10, BOR 2010, pg. 8)	Rationale provided in Southwest Idaho CHU justification text	1156860 443178
Southwest Idaho River Basins–Deadwood River	UNNAMED - off Beaver Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1156860 443178
Southwest Idaho River Basins–Deadwood River	UNNAMED - off South Fork Beaver Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156865 442942
Southwest Idaho River Basins–Deadwood River	Daisy Creek	ID	(Jimenez and Zaroban 1998, pg. 5-10)	Rationale provided in Southwest Idaho CHU justification text	1156938 442601
Southwest Idaho River Basins–Deadwood River	Deadwood Reservoir	ID		Rationale provided in Southwest Idaho CHU justification text	1156631 443093

26.7. Arrowrock Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the populations exhibiting rare adfluvial life history expressions, moderate number of local populations, large numbers of individuals, moderate amount of habitat, and few threats. Migratory life history expression is important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Boise and Elmore Counties in Idaho approximately 32 km (20 mi) east of Boise, Idaho, designated critical habitat includes approximately 720.0 km (447.4 mi) of streams and 1,252.0 ha (3,093.7 ac) of reservoir surface area.

The following water bodies are included in this CHSU (see Table 69):

(A) Arrowrock Reservoir (1,252.0 ha (3,093.7 ac)) contains FMO habitat and South Fork Boise River from the inlet to Arrowrock Reservoir upstream 36.5 km (22.7 mi) contains FMO habitat.

(B) Rattlesnake Creek from its confluence with the South Fork Boise River upstream 26.0 km (16.2 mi) to its headwaters provides spawning and rearing habitat. Little Rattlesnake Creek from its confluence with Rattlesnake Creek upstream 9.8 km (6.1 mi) to its headwaters contains FMO habitat and Russell Gulch from its confluence with Rattlesnake Creek upstream 4.0 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(C) Boise River from the inlet to Arrowrock Reservoir upstream 16.9 km (10.5 mi) to confluence of the North Fork Boise River and Middle Fork Boise River contains FMO habitat.

(D) Sheep Creek from its confluence with the Boise River upstream 11.8 km (7.3 mi) contains FMO habitat. Sheep Creek (approximately 11.8 km (7.3 mi) from its confluence with the Boise River) upstream 2.0 km (1.2 mi) to its confluence with an unnamed creek provides spawning and rearing habitat. Sheep Creek from its confluence with an unnamed creek upstream 6.5 km (4.0 mi) contains FMO habitat. Devils Creek from its confluence with Sheep Creek upstream 5.9 km (3.6 mi) to its headwaters provides spawning and rearing habitat. An unnamed tributary to Sheep Creek from its confluence with Sheep Creek upstream 1.3 km (0.8 mi) provides spawning and rearing habitat; and East Fork Sheep Creek from its confluence with Sheep Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat.

(E) Middle Fork Boise River from its confluence with the Boise River upstream 73.4 km (45.6 mi) to Rock Creek contains FMO habitat. The Middle Fork Boise River from its confluence with Rock Creek upstream 8.4 km (5.3 mi) to Spangle Lake contains spawning and rearing habitat.

(F) Roaring River from its confluence with Middle Fork Boise River upstream 17.4 km (10.8 mi) to its headwaters; East Fork Roaring River from its confluence with Roaring River upstream 2.5 km (1.6 mi) to its headwaters; and Middle Fork Roaring River from its confluence with East Fork Roaring River upstream 8.6 km (5.4 mi) to its headwaters provide spawning and rearing habitat and Scotch Creek from its confluence with East Fork Roaring River upstream 0.7 km (0.4 mi).

(G) Buck Creek from its confluence with the Middle Fork Boise River upstream 11.5 km (7.2 mi) to its headwaters provides spawning and rearing habitat and an unnamed creek (approximately 7.5 km (4.7 mi) upstream from the mouth of Buck Creek) from its confluence with Buck Creek upstream 3.4 km (2.1 mi) to its headwaters contains FMO habitat.

(H) Black Warrior Creek from its confluence with the Middle Fork Boise River upstream 18.7 km (11.6 mi) to its headwaters and West Warrior Creek from its confluence with Black Warrior Creek upstream 8.6 km (5.3 mi) to its headwaters provides spawning and rearing habitat. An unnamed creek (approximately 2.7 km (1.7 mi) upstream from the mouth of West Warrior Creek) from its confluence with West Warrior Creek upstream 2.5 km (1.6 mi) to its headwaters contains FMO habitat and an unnamed creek (approximately 8.5 km (5.3 mi) upstream from the mouth of Black Warrior Creek) from its confluence with Black Warrior Creek upstream 3.0 km (1.9 mi) to its headwaters provides spawning and rearing habitat.

(I) Bald Mountain Creek from its confluence with the Middle Fork Boise River upstream 10.0 km (6.2 mi) to its headwaters provides spawning and rearing habitat and an unnamed creek (approximately 5.4 km (3.4 mi) upstream from the mouth of Bald Mountain Creek) from its confluence with Bald Mountain Creek upstream 2.5 km (1.6 mi) to its headwaters contains FMO habitat.

(J) Queens River from its confluence with the Middle Fork Boise River upstream 23.4 km (14.5 mi) to its headwaters provides spawning and rearing habitat. In addition, Little Queens River from its confluence with Queens River upstream 14.8 km (9.2 mi) to its headwaters and Right Creek from its confluence with Little Queens River upstream 1.8 km (1.1 mi) provide spawning and rearing habitat. An unnamed creek (approximately 1.7 km (1.0 mi) upstream from the mouth of Right Creek) from its confluence with Right Creek upstream 1.2 km (0.8 mi) contains FMO habitat. Scott Creek from its confluence with Little Queens River upstream 2.5 km (1.5 mi) to its headwaters; Tripod Creek from its confluence with Little Queens River upstream 3.1 km (1.9 mi) to its headwaters; and Scenic Creek from its confluence with Little Queens River upstream 4.1 km (2.6 mi) to its headwaters provide spawning and rearing habitat.

(K) Yuba River from its confluence with the Middle Fork Boise River upstream 14.0 km (8.7 mi) to its headwaters; Decker Creek from its confluence with the Yuba River upstream 12.1 km (7.5 mi) to its headwaters; Grouse Creek from its confluence with Decker Creek upstream 8.5 km (5.3 mi) upstream to its headwaters; and Trail Creek from its confluence with the Yuba River upstream 7.5 km (4.7 mi) to its headwaters provide spawning and rearing habitat. East Fork Yuba River from its confluence with the Yuba River upstream 2.9 km (1.8 mi) and Corbus Creek from its confluence with the Yuba River upstream 2.4 km (1.5 mi) contain FMO habitat.

(L) Sawmill Creek from its confluence with Grouse Creek upstream 6.5 km (4.1 mi) to its headwaters provides spawning and rearing habitat.

(M) Mattingly Creek from its confluence with the Middle Fork Boise River upstream 1.6 km (1.0 mi) to its headwaters contains FMO habitat. Rock Creek from its confluence with the Middle Fork Boise River upstream 6.5 km (4.0 mi) to its headwaters and Flytrip Creek from its confluence with the Middle Fork Boise River upstream 4.4 km (2.8 mi) to its headwaters provide spawning and rearing habitat.

(N) North Fork Boise River from its confluence with the Middle Fork Boise River upstream 68.1 km (42.3 mi) to its confluence with Ballentyne Creek contains FMO habitat. North Fork

Boise River from its confluence with Ballentyne Creek upstream 11.6 km (7.2 mi) to its headwaters; French Creek from its confluence with the North Fork Boise River upstream 1.0 km (0.6 mi); and Meadow Creek from its confluence with the North Fork Boise River upstream 0.5 km (0.3 mi) provide spawning and rearing habitat.

(O) Rabbit Creek from its confluence with the North Fork Boise River upstream 1.3 km (0.8 mi) to its confluence with First Creek contains FMO habitat and Rabbit Creek from its confluence with First Creek upstream 9.0 km (5.6 mi) to its confluence with North Fork Rabbit Creek provides spawning and rearing habitat.

(P) Hungarian Creek from its confluence with the North Fork Boise River upstream 0.5 km (0.3 mi) contains FMO habitat, and from there upstream 1.9 km (1.2 mi) provides spawning and rearing habitat. Hungarian Creek from 2.4 km (1.5 mi) upstream from its confluence with the North Fork Boise River upstream 4.7 km (2.9 mi) contains FMO habitat.

(Q) Crooked River from its confluence with the North Fork Boise River upstream 46.7 km (29.0 mi) to its headwaters; Pikes Fork from its confluence with the Crooked River upstream 14.1 km (8.8 mi) to its headwaters; and Banner Creek from its confluence with Pikes Fork upstream 1.9 km (1.2 mi) to its confluence with Sawmill Creek provide spawning and rearing habitat. Banner Creek from its confluence with Sawmill Creek upstream 5.9 km (3.7 mi) to its headwaters and Willow Creek from its confluence with Crooked River upstream 5.2 km (3.2 mi) to its headwaters contain FMO habitat.

(R) Bear River from its confluence with the North Fork Boise River upstream 22.0 km (13.7 mi) to its headwaters, Bear Creek from its confluence with the Bear River upstream 13.2 km (8.2 mi) to its headwaters, and Louise Creek from its confluence with Bear River upstream 3.4 km (2.1 mi) to its headwaters provide spawning and rearing habitat. Rockey Creek from its confluence with Bear River upstream 5.8 km (3.6 mi) to its headwaters and an unnamed tributary to Rockey Creek (entering Rockey Creek from the north approximately 2.5 km (1.6 mi) upstream from the mouth of Rockey Creek) from its confluence with Rockey Creek upstream 2.7 km (1.7 mi) to its headwaters contain FMO habitat. Cub Creek from its confluence with the Bear River upstream 4.8 km (3.0 mi) to its headwaters and South Fork Cub Creek from its confluence with Cub Creek upstream 3.5 km (2.2 mi) to its headwaters provides spawning and rearing habitat.

(S) Trail Creek from its confluence with the North Fork Boise River upstream 6.8 km (4.2 mi) to its headwaters provides spawning and rearing habitat; Lodgepole Creek from its confluence with the North Fork Boise River upstream 5.6 km (3.5 mi) to its headwaters contains FMO habitat; and Johnson Creek from its confluence with the North Fork Boise River upstream 20.0 km (12.4 mi) to its headwaters provides spawning and rearing habitat.

(T) Big Silver Creek from its confluence with the North Fork Boise River upstream 7.0 km (4.3 mi) to its headwaters and Little Silver Creek from its confluence with Big Silver Creek upstream 4.1 km (2.6 mi) to its headwaters provide spawning and rearing habitat.

(U) Cow Creek from its confluence with the North Fork Boise River upstream 7.4 km (4.6 mi) to its headwaters and an unnamed tributary to Cow Creek (entering Cow Creek from the north approximately 4.5 km (2.8 mi) upstream from the mouth of Cow Creek) from its confluence with Cow Creek upstream 1.1 km (0.7 mi) contain spawning and rearing.

(V) Ballentyne Creek from its confluence with the North Fork Boise River upstream 9.9 km (6.2 mi) to its headwaters; West Fork Creek from its confluence with the North Fork Boise River upstream 3.3 km (2.1 mi) to its headwaters; McLeod Creek from its confluence with the North Fork Boise River upstream 5.9 km (3.6 mi) to its headwaters; and McPhearson Creek from its confluence with the North Fork Boise River upstream 5.4 km (3.4 mi) to its headwaters provide spawning and rearing habitat.

Table 69. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Arrowrock Reservoir CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	Flytrip Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Southwest Idaho CHU justification text	1150181 439276
Southwest Idaho River Basins–Arrowrock Reservoir	Rock Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Southwest Idaho CHU justification text	1150438 438938
Southwest Idaho River Basins–Arrowrock Reservoir	Mattingly Creek	ID	(USFS in litt. 2002b, Dillon Pers. Comm. 2010)	Rationale provided in Southwest Idaho CHU justification text	1150479 438457
Southwest Idaho River Basins–Arrowrock Reservoir	Sawmill Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1151210 437607
Southwest Idaho River Basins–Arrowrock Reservoir	Grouse Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Southwest Idaho CHU justification text	1151217 437670.1
Southwest Idaho River Basins–Arrowrock Reservoir	Grouse Creek	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1151217 437670.2
Southwest Idaho River Basins–Arrowrock Reservoir	Decker Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1151442 437687
Southwest Idaho River Basins–Arrowrock Reservoir	Trail Creek-Yuba	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1151455 437632

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	East Fork Yuba River	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1151537 437475
Southwest Idaho River Basins–Arrowrock Reservoir	Yuba River	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1151587 438027
Southwest Idaho River Basins–Arrowrock Reservoir	Corbus Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1151644 437371
Southwest Idaho River Basins–Arrowrock Reservoir	Scenic Creek	ID	(Steed et al. 1998, pg. 18)	Rationale provided in Southwest Idaho CHU justification text	1151776 439214
Southwest Idaho River Basins–Arrowrock Reservoir	Scott Creek	ID	(Steed et al. 1998, Appendix B pg. 1)	Rationale provided in Southwest Idaho CHU justification text	1151796 438834
Southwest Idaho River Basins–Arrowrock Reservoir	Little Queens River	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1151842 438430
Southwest Idaho River Basins–Arrowrock Reservoir	Right Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Southwest Idaho CHU justification text	1151860 438555
Southwest Idaho River Basins–Arrowrock Reservoir	Tripod Creek	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1151877 438946
Southwest Idaho River Basins–Arrowrock Reservoir	Unnamed	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1151935 438670

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	McPhearson Creek	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1151982 440663
Southwest Idaho River Basins–Arrowrock Reservoir	McLeod Creek	ID	(Flatter 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1152074 440573
Southwest Idaho River Basins–Arrowrock Reservoir	Queens River	ID	(Flatter 1998, page 30; Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1152075 438208
Southwest Idaho River Basins–Arrowrock Reservoir	West Fork Creek	ID	(Service, in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1152087 440555
Southwest Idaho River Basins–Arrowrock Reservoir	Ballentyne Creek	ID	(Flatter 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1152317 440113
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED - off Black Warrior Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152451 438778
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1152521 437808
Southwest Idaho River Basins–Arrowrock Reservoir	Cow Creek	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1152543 439907
Southwest Idaho River Basins–Arrowrock Reservoir	Big Silver Creek	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1152550 439896

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	West Warrior Creek	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1152560 438399
Southwest Idaho River Basins–Arrowrock Reservoir	Bald Mountain Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152661 438178
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1152705 438607
Southwest Idaho River Basins–Arrowrock Reservoir	Johnson Creek	ID	(Flatter, 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1152845 439401
Southwest Idaho River Basins–Arrowrock Reservoir	Little Silver Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152876 439970
Southwest Idaho River Basins–Arrowrock Reservoir	Black Warrior Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152897 438180
Southwest Idaho River Basins–Arrowrock Reservoir	Lodgepole Creek	ID	(Flatter 1998, page 30)	Rationale provided in Southwest Idaho CHU justification text	1153142 439296
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1153609 437509
Southwest Idaho River Basins–Arrowrock Reservoir	South Fork Cub Creek	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1153885 439769

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	Buck Creek	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1153958 438031
Southwest Idaho River Basins–Arrowrock Reservoir	Cub Creek	ID	(Salow 2001, pages 9, 36)	Rationale provided in Southwest Idaho CHU justification text	1154009 439803
Southwest Idaho River Basins–Arrowrock Reservoir	Trail Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Southwest Idaho CHU justification text	1154073 439117
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1154178 439873
Southwest Idaho River Basins–Arrowrock Reservoir	Rockey Creek	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1154230 439691
Southwest Idaho River Basins–Arrowrock Reservoir	UNNAMED	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1154238 436706
Southwest Idaho River Basins–Arrowrock Reservoir	Louise Creek	ID	(Steed et al. 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1154241 439684
Southwest Idaho River Basins–Arrowrock Reservoir	Scotch Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1154375 436871
Southwest Idaho River Basins–Arrowrock Reservoir	Roaring River	ID	(Flatter 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1154387 437904

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	Middle Fork Roaring River	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1154511 436881
Southwest Idaho River Basins–Arrowrock Reservoir	Bear Creek	ID	(Salow 2001, pages 9, 36)	Rationale provided in Southwest Idaho CHU justification text	1154557 439376
Southwest Idaho River Basins–Arrowrock Reservoir	East Fork Roaring River	ID	(USFS. 2002b, Flatter 1998, Dillon Pers. Comm. 2010)	Rationale provided in Southwest Idaho CHU justification text	1154641 436945
Southwest Idaho River Basins–Arrowrock Reservoir	Bear River	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1154884 438920
Southwest Idaho River Basins–Arrowrock Reservoir	Willow Creek	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1155297 439594
Southwest Idaho River Basins–Arrowrock Reservoir	Hungarian Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1155327 438184.1
Southwest Idaho River Basins–Arrowrock Reservoir	Hungarian Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Southwest Idaho CHU justification text	1155327 438184.2
Southwest Idaho River Basins–Arrowrock Reservoir	Hungarian Creek	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1155327 438184.3
Southwest Idaho River Basins–Arrowrock Reservoir	Crooked River	ID	(Salow 2001, pages 9, 36)	Rationale provided in Southwest Idaho CHU justification text	1155358 438528

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	East Fork Sheep Creek	ID	(Flatter 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1155466 436842
Southwest Idaho River Basins–Arrowrock Reservoir	Banner Creek	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1155472 439827.1
Southwest Idaho River Basins–Arrowrock Reservoir	Banner Creek	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1155472 439827.2
Southwest Idaho River Basins–Arrowrock Reservoir	Pikes Fork	ID	(Steed et al. 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1155614 439715
Southwest Idaho River Basins–Arrowrock Reservoir	Devils Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1155912 436849
Southwest Idaho River Basins–Arrowrock Reservoir	Russel Gulch	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1155954 435910
Southwest Idaho River Basins–Arrowrock Reservoir	Rabbit Creek	ID	(Flatter 1998, page 39)	Rationale provided in Southwest Idaho CHU justification text	1156025 437900.1
Southwest Idaho River Basins–Arrowrock Reservoir	Rabbit Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Southwest Idaho CHU justification text	1156025 437900.2
Southwest Idaho River Basins–Arrowrock Reservoir	Meadow Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Southwest Idaho CHU justification text	1156159 437638

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	French Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Southwest Idaho CHU justification text	1156260 437407
Southwest Idaho River Basins–Arrowrock Reservoir	North Fork Boise River	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1156347 437134.1
Southwest Idaho River Basins–Arrowrock Reservoir	North Fork Boise River	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1156347 437134.2
Southwest Idaho River Basins–Arrowrock Reservoir	Middle Fork Boise River	ID	(Salow 2001, page 5; Flatter 1998, page 1)	Rationale provided in Southwest Idaho CHU justification text	1156347 437135.1
Southwest Idaho River Basins–Arrowrock Reservoir	Middle Fork Boise River	ID	(Steed et al. 1998, page 18)	Rationale provided in Southwest Idaho CHU justification text	1156347 437135.2
Southwest Idaho River Basins–Arrowrock Reservoir	Sheep Creek	ID	(Flatter 1998, Appendix B page 1)	Rationale provided in Southwest Idaho CHU justification text	1156607 436967.1
Southwest Idaho River Basins–Arrowrock Reservoir	Sheep Creek	ID	(Flatter 1998)	Rationale provided in Southwest Idaho CHU justification text	1156607 436967.2
Southwest Idaho River Basins–Arrowrock Reservoir	Sheep Creek	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	1156607 436967.3
Southwest Idaho River Basins–Arrowrock Reservoir	Little Rattlesnake Creek	ID	(StreamNet 1998)	Rationale provided in Southwest Idaho CHU justification text	1156996 435892

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Arrowrock Reservoir	South Fork Boise River	ID	Steed et al. 1998, pages 11, 18	Rationale provided in Southwest Idaho CHU justification text	1157355 435501
Southwest Idaho River Basins–Arrowrock Reservoir	Rattlesnake Creek	ID	(USFS in litt. 2002b)	Rationale provided in Southwest Idaho CHU justification text	1157396 435605
Southwest Idaho River Basins–Arrowrock Reservoir	Boise River	ID	Steed et al. 1998, pages 11, 18	Rationale provided in Southwest Idaho CHU justification text	1170217 438155
Southwest Idaho River Basins–Arrowrock Reservoir	Unnamed	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	NA
Southwest Idaho River Basins–Arrowrock Reservoir	Unnamed	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	NA
Southwest Idaho River Basins–Arrowrock Reservoir	Unnamed	ID	(Service in litt. 2008h)	Rationale provided in Southwest Idaho CHU justification text	NA
Southwest Idaho River Basins–Arrowrock Reservoir	Unnamed	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	NA
Southwest Idaho River Basins–Arrowrock Reservoir	Arrowrock Reservoir	ID		Rationale provided in Southwest Idaho CHU justification text	1158399 435988

26.8. Anderson Ranch Critical Habitat Subunit

This CHSU is essential to bull trout conservation because of the presence of populations exhibiting rare adfluvial life history expressions, moderate number of local populations, moderate number of individuals, moderate amount of habitat, and few threats. Migratory life history expression is important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Camas and Elmore Counties approximately 72 km (45 mi) east of Boise, Idaho, designated critical habitat includes Anderson Ranch Reservoir (1,862.0 ha; (4,601.0 ac)) and approximately 443.4 km (275.5 mi) of streams.

The following water bodies are included in this CHSU (see Table 70):

(A) South Fork Boise River from the Anderson Ranch CHSU boundary upstream 8.7 km (5.4 mi) to Anderson Ranch Dam contains FMO habitat.

(B) Anderson Ranch Reservoir from Anderson Ranch Dam to the inlet (1,862.0 ha (4,601.1 ac)) contains FMO habitat.

(C) South Fork Boise River from the inlet to Anderson Ranch Reservoir upstream 77.6 km (48.2 mi) to the confluence of Johnson Creek and Ross Fork contains FMO habitat. Dog Creek from its confluence with South Fork Boise River upstream 9.1 km (5.7 mi) to its headwaters provides spawning and rearing habitat. Wagontown Creek from its confluence with South Fork Boise River upstream 6.5 km (4.0 mi) to its headwaters provides spawning and rearing habitat.

(D) Trinity Creek from its confluence with South Fork Boise River upstream 8.0 km (4.9 mi) to its confluence with Rainbow Creek; Parks Creek from its confluence with Trinity Creek upstream 6.1 km (3.8 mi); West Parks Creek from its confluence with Parks Creek upstream 2.6 km (1.6 mi) to its headwaters; and Rainbow Creek from its confluence with Trinity Creek upstream 1.7 km (1.1 mi) to its headwaters contain FMO habitat.

(E) Feather River from its confluence with South Fork Boise River upstream 10.2 km (6.4 mi) to its confluence with Elk Creek provides spawning and rearing habitat and Feather River from its confluence with Elk Creek upstream 2.7 km (1.7 mi) to the confluence of Bear Creek and Steel Creek contains FMO habitat.

(F) Elk Creek from its confluence with the Feather River upstream 11.4 km (7.1 mi) to its headwaters provides spawning and rearing habitat. Alta Creek from its confluence with Elk Creek upstream 0.4 km (0.2 mi) contains FMO habitat. East Fork Elk Creek from its confluence with Elk Creek upstream 4.7 km (2.9 mi) to its headwaters provides spawning and rearing habitat. Boiler Grade Creek from its confluence with Elk Creek upstream 1.2 km (0.8 mi) contains FMO habitat.

(G) Willow Creek from its confluence with the South Fork Boise River upstream 19.3 km (12.0 mi) to its headwaters and Big Water Gulch from its confluence with the South Fork Boise River upstream 3.2 km (2 mi) until a waterfall is FMO habitat and the remaining 7.3 km (4.6 mi) to its headwaters provide spawning and rearing habitat.

(H) Skeleton Creek from its confluence with South Fork Boise River upstream 15.0 km (9.3 mi) to its headwaters; Burnt Log Creek from its confluence with Skeleton Creek upstream 4.0 km (2.5 mi) to its headwaters; West Fork Skeleton Creek from its confluence with Skeleton Creek upstream 5.2 km (3.2 mi) to its headwaters; and East Fork Skeleton Creek from its confluence with West Fork Skeleton Creek upstream 4.8 km (3.0 mi) to its headwaters provide spawning and rearing habitat.

(I) Deadwood Creek from its confluence with South Fork Boise River upstream 6.9 km (4.3 mi) to its headwaters contains FMO habitat and Boardman Creek from its confluence with South Fork Boise River upstream 14.4 km (8.9 mi) to its headwaters provides spawning and rearing habitat.

(J) Smoky Dome Canyon from its confluence with Boardman Creek upstream 5.3 km (3.3 mi) to its headwaters provides spawning and rearing habitat.

(K) Big Smoky Creek from its confluence with South Fork Boise River upstream 35.4 km (22.0 mi) to its headwaters provides spawning and rearing habitat. Little Smoky Creek from its confluence with Big Smoky Creek upstream 34.8 km (21.6 mi) to its headwaters contains FMO habitat. Carrie Creek from its confluence with Little Smoky Creek upstream 11.4 km (7.1 mi) to its headwaters provides FMO habitat. Big Peak Creek from its confluence with Big Smoky Creek upstream 7.4 km (4.6 mi) to the confluence of West Fork Big Peak Creek and East Fork Big Peak Creek, West Fork Big Peak Creek from its confluence with Big Smoky Creek upstream 2.3 km (1.4 mi), and East Fork Big Peak Creek from its confluence with Big Smoky Creek upstream 2.5 km (1.5 mi) contains FMO habitat. Bluff Creek from its confluence with Big Smoky Creek upstream 7.0 km (4.4 mi) to its headwaters provides spawning and rearing habitat. Salt Creek from its confluence with Big Smokey Creek upstream for 8.4 km (5.2 mi) to its headwaters provides spawning and rearing habitat.

(L) North Fork Big Smoky Creek from its confluence with Big Smoky Creek upstream 4.4 km (2.7 mi) to its confluence with Snowslide Creek contains FMO habitat. North Fork Big Smoky Creek from its confluence with Snowslide Creek upstream 3.5 km (2.2 mi) to its headwaters and Snowslide Creek from its confluence with North Fork Big Smoky Creek upstream 4.2 km (2.6 mi) to its headwaters provide spawning and rearing habitat.

(M) West Fork Big Smoky Creek from its confluence with Big Smoky Creek upstream 10.7 km (6.7 mi) to its headwaters provides spawning and rearing habitat and Loggy Creek from its confluence with West Fork Big Smoky Creek upstream 4.4 km (2.8 mi) to its headwaters provides spawning and rearing habitat.

(N) Royal Gorge from its confluence with Big Smoky Creek upstream 0.1 km (0.1 mi) and Blind Canyon from its confluence with Big Smoky Creek upstream 0.4 km (0.3 mi) contain FMO habitat.

(O) Bear Creek from its confluence with South Fork Boise River upstream 10.1 km (6.3 mi) to its headwaters provides spawning and rearing habitat.

(P) Goat Creek from its confluence with Bear Creek upstream 2.8 km (1.8 mi) to its headwaters provides spawning and rearing habitat.

(Q) Emma Creek from its confluence with South Fork Boise River upstream 9.4 km (5.9 mi) to its headwaters and an unnamed tributary to Emma Creek (approximately 4.5 km (2.8 mi) upstream from the mouth Emma Creek) from its confluence with Emma Creek upstream 1.8 km (1.1 mi) to its headwaters provide spawning and rearing habitat.

(R) Ross Fork from its confluence with South Fork Boise River upstream 6.0 km (3.7 mi) to the confluence of South Fork Ross Fork and North Fork Ross Fork; Little Bear Creek from its confluence with Ross Fork upstream 5.4 km (3.3 mi) to its headwaters; Bass Creek from its confluence with Ross Fork upstream 6.5 km (4.0 mi) to its headwaters; South Fork Ross Fork from its confluence with Ross Fork upstream 8.4 km (5.2 mi) to its headwaters; and North Fork Ross Fork from its confluence with Ross Fork upstream 7.6 km (4.7 mi) to its headwaters provide spawning and rearing habitat.

(S) Johnson Creek from its confluence with South Fork Boise River upstream 11.9 km (7.4 mi) to its headwaters provides spawning and rearing habitat.

(T) Vienna Creek from its confluence with Johnson Creek upstream 0.3 km (0.2 mi) to its headwaters provides spawning and rearing habitat.

Table 70. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Southwest Idaho River Basins–Anderson Ranch Reservoir CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	Blind Canyon	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147235 437679.1
Southwest Idaho River Basins–Anderson Ranch Reservoir	Blind Canyon	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147235 437679.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	Royal Gorge	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147239 437507.1
Southwest Idaho River Basins–Anderson Ranch Reservoir	Royal Gorge	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147239 437507.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Big Smoky Creek	ID	(Corley 1997, p. 10; Partridge et al. 2000, p. 7)	Rationale provided in Southwest Idaho CHU justification text	1147263 437439
Southwest Idaho River Basins–Anderson Ranch Reservoir	Big Peak Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147293 436280
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Big Peak Creek	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147293 436280.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Big Peak Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147293 436280.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Big Peak Creek	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147293 436280.4
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Big Peak Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147293 436280.3
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Big Peak Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147293 436281.1
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Big Peak Creek	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147293 436281.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Big Peak Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1147293 436281.3
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Big Peak Creek	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1147293 436281.4
Southwest Idaho River Basins–Anderson Ranch Reservoir	Bluff Creek	ID	(Corley 1997, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1147544 437001
Southwest Idaho River Basins–Anderson Ranch Reservoir	Carrie Creek	ID	(Kenney; in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1147586 435523
Southwest Idaho River Basins–Anderson Ranch Reservoir	North Fork Big Smoky Creek	ID	(Kenney, in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1147776 436863.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	North Fork Big Smoky Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Southwest Idaho CHU justification text	1147776 436863.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	Loggy Creek	ID	(Kenney; in litt. 2002; Partridge et al. 2000)	Rationale provided in Southwest Idaho CHU justification text	1147871 437627
Southwest Idaho River Basins–Anderson Ranch Reservoir	Snowslide Creek	ID	(Partridge et al. 2000, pg. 24, Table 4; StreamNet 2009, pg. 26)	Rationale provided in Southwest Idaho CHU justification text	1147883 437230
Southwest Idaho River Basins–Anderson Ranch Reservoir	Little Smoky Creek	ID	(Kenney, in litt. 2002, StreamNet 2009, p. 25)	Rationale provided in Southwest Idaho CHU justification text	1148707 436079
Southwest Idaho River Basins–Anderson Ranch Reservoir	UNNAMED 1-off Emma Creek	ID	(Corley 1997, pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1148714 437592
Southwest Idaho River Basins–Anderson Ranch Reservoir	Bear Creek	ID	(Corley 1997, p. 10; Partridge et al. 2000, p. 8)	Rationale provided in Southwest Idaho CHU justification text	1149006 437274
Southwest Idaho River Basins–Anderson Ranch Reservoir	Emma Creek	ID	(Corley 1997, p. 10; Partridge et al. 2000, p. 9 Kenney; in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1149056 437354
Southwest Idaho River Basins–Anderson Ranch Reservoir	Vienna Creek	ID	(Corley 1997, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1149090 438017
Southwest Idaho River Basins–Anderson Ranch Reservoir	Big Smoky Creek	ID	(Partridge et al. 2000, p. 6, Table 1, StreamNet 2009, p. 23)	Rationale provided in Southwest Idaho CHU justification text	1149152 436038

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	Johnson Creek	ID	(Corley 1997, p. 10; Partridge et al. 2000, p. 6; Kenney, in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1149284437737
Southwest Idaho River Basins–Anderson Ranch Reservoir	Ross Fork	ID	(Corley 1997, p. 10; Kenney, in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1149284437738
Southwest Idaho River Basins–Anderson Ranch Reservoir	Little Bear Creek	ID	(Corley 1997, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1149347437791
Southwest Idaho River Basins–Anderson Ranch Reservoir	Boardman Creek	ID	(Corley 1997, p. 8; Partridge et al. 2000, p. 5, Table 1; Kenney, in litt. 2002; Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	1149387436123
Southwest Idaho River Basins–Anderson Ranch Reservoir	Smokey Dome Canyon	ID	(Corley 1997, p. 9, Table 2;. Kenney, in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1149549435471
Southwest Idaho River Basins–Anderson Ranch Reservoir	Burnt Log Creek	ID	(Partridge et al. 2000, p. 7, Table 1)	Rationale provided in Southwest Idaho CHU justification text	1149690436433
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Fork Skeleton Creek	ID	(Corley 1997, p. 9, Table 2; StreamNet 2009, p. 22)	Rationale provided in Southwest Idaho CHU justification text	1149728436510
Southwest Idaho River Basins–Anderson Ranch Reservoir	Bass Creek	ID	(Corley 1997, p. 10; Partridge et al. 2000, p. 18)	Rationale provided in Southwest Idaho CHU justification text	1149745437908
Southwest Idaho River Basins–Anderson Ranch Reservoir	Goat Creek	ID	(Corley 1997, pg. 10)	Rationale provided in Southwest Idaho CHU justification text	1149788437153

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	North Fork Ross Fork	ID	(Corley 1997, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1149878 437962
Southwest Idaho River Basins–Anderson Ranch Reservoir	South Fork Ross Fork	ID	(Corley 1997, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1149878 437963
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Skeleton Creek	ID	(Kenney; in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1149979 436582
Southwest Idaho River Basins–Anderson Ranch Reservoir	Deadwood Creek	ID	(Corley 1997, pg. 8; USFS 2002b; StreamNet 2009, pg. 24)	Rationale provided in Southwest Idaho CHU justification text	1150068 435855
Southwest Idaho River Basins–Anderson Ranch Reservoir	Skeleton Creek	ID	(Corley 1997, p. 8; Partridge et al. 2000, p. 7, Table 1, StreamNet 2009, p. 24)	Rationale provided in Southwest Idaho CHU justification text	1150213 435893
Southwest Idaho River Basins–Anderson Ranch Reservoir	Big Water Gulch	ID	(Corley 1997, p. 8; USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1151057 436073
Southwest Idaho River Basins–Anderson Ranch Reservoir	Willow Creek	ID	(Corley 1997, p. 8; Partridge et al. 2000, p. 7, Table 1, StreamNet 2009, p. 22)	Rationale provided in Southwest Idaho CHU justification text	1151434 436046
Southwest Idaho River Basins–Anderson Ranch Reservoir	Alta Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1152470 437009
Southwest Idaho River Basins–Anderson Ranch Reservoir	East Fork Elk Creek	ID	(C. Reighn, in litt. 2002)	Rationale provided in Southwest Idaho CHU justification text	1152534 437087

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	Boiler Grade Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1152617 437212
Southwest Idaho River Basins–Anderson Ranch Reservoir	Feather River	ID	(C. Reighn, in litt. 2002, StreamNet 2009, pp. 18, 19)	Rationale provided in Southwest Idaho CHU justification text	1152620 436069.1
Southwest Idaho River Basins–Anderson Ranch Reservoir	Feather River	ID	(StreamNet 2009, pg. 18)	Rationale provided in Southwest Idaho CHU justification text	1152620 436069.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	Elk Creek	ID	(Corley 1997, pg. 8; USFS 2002b, StreamNet 2009, pg. 18)	Rationale provided in Southwest Idaho CHU justification text	1152652 436779
Southwest Idaho River Basins–Anderson Ranch Reservoir	Trinity Creek	ID	(Service in litt. 2009a)	Rationale provided in Southwest Idaho CHU justification text	1152695 436001
Southwest Idaho River Basins–Anderson Ranch Reservoir	Wagontown Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Southwest Idaho CHU justification text	1152762 435648
Southwest Idaho River Basins–Anderson Ranch Reservoir	Dog Creek	ID	(Corley 1997, p. 8; USFS 2002b)	Rationale provided in Southwest Idaho CHU justification text	1152991 435297
Southwest Idaho River Basins–Anderson Ranch Reservoir	Parks Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1153363 436294
Southwest Idaho River Basins–Anderson Ranch Reservoir	Rainbow Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1153401 436300

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Southwest Idaho River Basins–Anderson Ranch Reservoir	West Parks Creek	ID	(Kellet 2008)	Rationale provided in Southwest Idaho CHU justification text	1153404 436230
Southwest Idaho River Basins–Anderson Ranch Reservoir	South Fork Boise River	ID	(Partridge et al. 2000, pp. 4-14; StreamNet 2009, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1155361 433347.1
Southwest Idaho River Basins–Anderson Ranch Reservoir	South Fork Boise River	ID	(C. Reighn, in litt. 2002, StreamNet 2009, p. 10)	Rationale provided in Southwest Idaho CHU justification text	1155361 433347.2
Southwest Idaho River Basins–Anderson Ranch Reservoir	Unnamed-Little Bear Creek	ID	(Chatel 2008)	Rationale provided in Southwest Idaho CHU justification text	NA
Southwest Idaho River Basins–Anderson Ranch Reservoir	Anderson Ranch Reservoir	ID	(Partridge et al. 2000, pp. 1-12)	Rationale provided in Southwest Idaho CHU justification text	1153483 434147
Southwest Idaho River Basins–Anderson Ranch Reservoir	Salt Creek	ID	SNF 2010, pg. 2; Corley 1997, pg. 28; Partridge et al. 2000, pg. 27; Steed et al. 1998, pg. 89)	Rationale provided in Southwest Idaho CHU justification text	1148713 436074

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 27. Upper Snake Recovery Unit—Salmon River Basin Critical Habitat Unit

Chapter 27. Salmon River Basin Critical Habitat Unit

The Salmon River Basin CHU is essential for maintaining bull trout distribution within this unique geographic region of the Upper Snake RU. This CHU extends from the Idaho–Montana border to the Oregon–Idaho border before entering the Snake River and represents the most northern and eastern extents of the Upper Snake RU. This CHU is the largest CHU of the Upper Snake RU and contains the largest populations of bull trout in this RU. It supports populations that express adfluvial, fluvial, and resident life history expression. Migratory life history expression is needed for the long-term conservation of the species; while some resident populations may also contain unique genes that promote persistence from specific threats. Large portions of this CHU occur within the Frank Church—River of No Return Wilderness, which implies that many CHSUs in the Salmon River basin have few threats compared to other areas in the Upper Snake RU. See Appendices 1 and 2 for more detailed information.

The Salmon River basin extends across central Idaho from the Snake River to the Montana–Idaho border. The Salmon River Basin CHU extends across portions of Adams, Blaine, Custer, Idaho, Lemhi, Nez Perce, and Valley Counties in Idaho. This CHU contains 10 CHSUs: Little-Lower Salmon River, Opal Lake, Lake Creek, South Fork Salmon River, Middle Salmon–Panther River, Middle Fork Salmon River, Middle Salmon Chamberlain River, Upper Salmon River, Lemhi River, and Pahsimeroi River. The Salmon River Basin CHU includes 7,376.4 km (4,583.5 mi) of stream and 1,683.7 ha (4,160.6 ac) of lake and reservoir surface area designated as critical habitat.

27.1. Little-Lower Salmon River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it is in the northwesternmost extent of the CHU and contains many individuals, a large amount of habitat, and few threats. This CHSU has fluvial life history forms that are important to the long-term recovery of the species. This CHSU provides access to the Snake River, which promotes the migratory life history form that is needed for the conservation of the species (see Appendix 1 for more detailed information).

Located within Nez Perce, Lewis, Idaho, Adams, and Valley counties in west-central Idaho immediately southeast of the town of Riggins, Idaho, designated critical habitat includes 472.7 km (293.7 mi) of streams.

The following water bodies are included in this CHSU (see Table 71):

(A) Salmon River from its confluence with the Snake River upstream 167.6 km (104.1 mi) contains FMO habitat.

(B) Slate Creek from its confluence with the Salmon River upstream 23.8 km (14.8 mi) to 0.7 km (0.4 mi) above its confluence with Little Slate Creek provides spawning and rearing habitat.

(C) Little Slate Creek from its confluence with Slate Creek upstream 23.8 km (14.8 mi) to its headwaters provide spawning and rearing habitat. In addition, the following tributaries to Little Slate Creek also provide spawning and rearing habitat: Deadhorse Creek from its confluence with Little Slate Creek upstream 9.2 km (5.7 mi) to its headwaters; Rubie Creek from its confluence with Little Slate Creek upstream 6.4 km (4.0 mi) to its headwaters; Van Buren Creek from its confluence with Little Slate Creek upstream 8.5 km (5.3 mi) to its headwaters; Turnbull Creek from its confluence with Little Slate Creek upstream 4.9 km (3.0 mi) to its headwaters; Royal Creek from its confluence with Turnbull Creek upstream 3.1 km (1.9 mi) to its headwaters; Victor Creek from its confluence with Little Slate Creek upstream 3.9 km (2.4 mi) to its headwaters; and Burn Creek from its confluence with Little Slate Creek upstream 1.7 km (1.0 mi) to its headwaters.

(D) John Day Creek from its confluence with the Salmon River upstream 13.9 km (8.6 mi) to its headwaters; East Fork John Day Creek from its confluence with John Day Creek upstream 6.5 km (4.0 mi) to its headwaters; and South Fork John Day from its confluence with John Day Creek upstream 2.3 km (1.4 mi) to a barrier provide spawning and rearing habitat.

(E) Little Salmon River from its confluence with the Salmon River upstream 31.1 km (19.3 mi) contains FMO habitat.

(F) Rapid River from its confluence with the Little Salmon River upstream 36.4 km (22.6 mi) to its headwaters provides spawning and rearing habitat. West Fork Rapid River from its confluence with Rapid River upstream 16.6 km (10.3 mi) to its headwaters contains FMO habitat. Lake Fork Rapid River from its confluence with Rapid River upstream 6.9 km (4.3 mi) to its headwaters and Granite Fork Lake Fork Rapid River from its confluence with Lake Fork Rapid River upstream 5.0 km (3.1 mi) to its headwaters provide spawning and rearing habitat.

(G) Boulder Creek from its confluence with the Little Salmon River upstream 30.0 km (18.6 mi) to its headwaters and Yellow Jacket Creek from its confluence with Boulder Creek upstream 2.9 km (1.8 mi) to its headwaters provide spawning and rearing habitat.

(H) Hazard Creek from its confluence with the Little Salmon River upstream 4.8 km (3.0 mi) and Hard Creek from its confluence with Hazard Creek upstream 8.1 km (5.0 mi) to its confluence with Brown Creek provide spawning and rearing habitat.

(I) Lake Creek from its confluence with the Salmon River upstream 13.9 km (8.7 mi) to its headwaters provides spawning and rearing habitat.

(J) Partridge Creek from its confluence with the Salmon River upstream 18.6 km (11.6 mi) to its headwaters provides spawning and rearing habitat.

(K) Elkhorn Creek from its confluence with the Salmon River upstream 17.7 km (11.0 mi) to its headwaters provides spawning and rearing habitat.

(L) French Creek from its confluence with the Salmon River upstream 6.7 km (4.2 mi) to its headwaters provides spawning and rearing habitat

Table 71. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Little-Lower Salmon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Little-Lower Salmon River	French Creek	ID	(BLM 2000a,b, pp. 33-35, 327, 327, 338, 340, and 341; PNF 2010, pg. 44)	Rationale provided in Salmon River Basin CHU justification text	1160300 454251
Salmon River Basin–Little-Lower Salmon River	Deadhorse Creek	ID	(K. Munson, pers. comm. 2002)	Rationale provided in Salmon River Basin CHU justification text	1160656 456130
Salmon River Basin–Little-Lower Salmon River	Little Slate Creek	ID	(StreamNet 2009, pg. 8; K. Munson, pers. comm. 2002)	Rationale provided in Salmon River Basin CHU justification text	1160664 456199.1
Salmon River Basin–Little-Lower Salmon River	Little Slate Creek	ID	(StreamNet 2009, pg. 8; K. Munson, pers. comm. 2002)	Rationale provided in Salmon River Basin CHU justification text	1160664 456199.2
Salmon River Basin–Little-Lower Salmon River	Rubie Creek	ID	(StreamNet 2009, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1160776 455458
Salmon River Basin–Little-Lower Salmon River	Van Buren Creek	ID	(USFS 1999a, pg. 2-6, 2-7; StreamNet 2009, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1160822 455325
Salmon River Basin–Little-Lower Salmon River	Tumbull Creek	ID	(StreamNet 2009, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1160916 455228
Salmon River Basin–Little-Lower Salmon River	Elkhorn Creek	ID	(BLM 2000b, IV-J-1)	Rationale provided in Salmon River Basin CHU justification text	1160941 454042

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Little-Lower Salmon River	Royal Creek	ID	(StreamNet 2009, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1160974 455254
Salmon River Basin–Little-Lower Salmon River	Victor Creek	ID	(StreamNet 2009, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1160997 455104
Salmon River Basin–Little-Lower Salmon River	Burn Creek	ID	(StreamNet 2009, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1161040 455001
Salmon River Basin–Little-Lower Salmon River	Partridge Creek	ID	(BLM 2000b, pg. II-21, IV-B-8, IV-I-3)	Rationale provided in Salmon River Basin CHU justification text	1161262 454080
Salmon River Basin–Little-Lower Salmon River	Lake Creek	ID	(BLM 2000b, pg. II-20)	Rationale provided in Salmon River Basin CHU justification text	1162120 454000
Salmon River Basin–Little-Lower Salmon River	South Fork John Day Creek	ID	(StreamNet 2009, pg. 5; BLM 2010 pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1162282 455708
Salmon River Basin–Little-Lower Salmon River	East Fork John Day Creek	ID	(BLM 2000b, pg. II-19; USFS 1999a, pg. 2-8)	Rationale provided in Salmon River Basin CHU justification text	1162293 455728
Salmon River Basin–Little-Lower Salmon River	Hard Creek	ID	(BLM 2000a, pg. II-16, II-17)	Rationale provided in Salmon River Basin CHU justification text	1162831 451830.1
Salmon River Basin–Little-Lower Salmon River	Slate Creek	ID	(StreamNet 2009, pg. 40 and 63; BLM 2000b pg. II-19; USFS 1999a, pg. 2-6, 2-7)	Rationale provided in Salmon River Basin CHU justification text	1162843 456397.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Little-Lower Salmon River	Slate Creek	ID	(StreamNet 2009, pg. 5; BLM 2000b pg. II-19; USFS 1999a, pg. 2-6, 2-7)	Rationale provided in Salmon River Basin CHU justification text	1162843 456397.2
Salmon River Basin–Little-Lower Salmon River	John Day Creek	ID	(StreamNet 2009, pg. 5; BLM 2000b, pg. I-6, II-19, IV-A-6; USFS 1999a, pg. 2-6)	Rationale provided in Salmon River Basin CHU justification text	1162962 455855
Salmon River Basin–Little-Lower Salmon River	Hazard Creek	ID	(USFS 2001a, pg. 12, 49; PNF 2010)	Rationale provided in Salmon River Basin CHU justification text	1162999 451838
Salmon River Basin–Little-Lower Salmon River	Boulder Creek	ID	(USFS 2001a, pg. 12, 42)	Rationale provided in Salmon River Basin CHU justification text	1163100 452042
Salmon River Basin–Little-Lower Salmon River	Little Salmon River	ID	(BLM 2000b pg. VI-7, I-1; Elle et al. 1994, pg. 60; Schill et al. 1994, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1163132 454168.1
Salmon River Basin–Little-Lower Salmon River	Rapid River	ID	(BLM 2000b, pg. II-19, II-20; USFS 2001a, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1163546 453745
Salmon River Basin–Little-Lower Salmon River	Yellow Jacket Creek	ID	(USFS 2001a, pg. 42)	Rationale provided in Salmon River Basin CHU justification text	1164119 451369
Salmon River Basin–Little-Lower Salmon River	West Fork Rapid River	ID	(Schill et al. 1994, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1164188 453070
Salmon River Basin–Little-Lower Salmon River	Lake Fork Rapid River	ID	(Schill et al. 1994, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1164821 451874

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Little-Lower Salmon River	Granite Fork Lake Fork Rapid River	ID	(Schill et al. 1994, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1165168 451866
Salmon River Basin–Little-Lower Salmon River	Salmon River	ID	(USFS 1999a, pg. 2-6, 2-7; BLM 2000b pg. VI-7, I-1; Elle et al. 1994, pg. 60; Schill et al. 1994, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1167926 458560

27.2. South Fork Salmon River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it contains many individuals, a moderate amount of habitat, and few threats. This CHSU contains populations that contain fluvial life history expressions which are important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Idaho and Valley Counties in central Idaho, 32.0 km (19.9 mi) northeast of Cascade, Idaho, designated critical habitat includes 1,220.5 km (758.4 mi) of streams and 259.0 ha (640.0 ac) of lake surface area.

The following water bodies are included in this CHSU (see Table 72):

(A) South Fork Salmon River from its confluence with the Salmon River upstream 128.4 km (79.8 mi) to its confluence with Tyndall Creek contains FMO habitat and from its confluence with Tyndall Creek upstream 14.2 km (8.8 mi) to its headwaters provides spawning and rearing habitat. The following tributaries to the South Fork Salmon River also contain FMO habitat: Mill Creek from its confluence with the South Fork Salmon River upstream 7.3 km (4.5 mi) to its headwaters; Station Creek from its confluence with the South Fork Salmon River upstream 4.0 km (2.5 mi) to its headwaters; Carlson Creek from its confluence with the South Fork Salmon River upstream 3.9 km (2.4 mi) to its headwaters; Raines Creek from its confluence with the South Fork Salmon River upstream 10.6 km (6.6 mi) to its headwaters; Rooster Creek from its confluence with the South Fork Salmon River upstream 5.6 km (3.5 mi) to its headwaters; Chicken Creek from its confluence with the South Fork Salmon River upstream 7.3 km (4.5 mi) to its headwaters; Rattlesnake Creek from its confluence with the South Fork Salmon River upstream 4.0 km (2.5 mi) to its headwaters; Smith Creek from its confluence with the South Fork Salmon River upstream 7.0 km (4.4 mi) to its headwaters; Big Buck Creek from its confluence with Smith Creek upstream 4.2 km (2.6 mi) to its headwaters; Little Buck Creek from its confluence with Big Buck Creek upstream 3.2 km (2.0 mi) to its headwaters; Big Flat Creek from its confluence with the South Fork Salmon River upstream 3.8 km (2.4 mi) to its headwaters; and Grouse Creek from its confluence with the South Fork Salmon River upstream 7.5 km (4.7 mi) to its headwaters. Pony Creek from its confluence with the South Fork Salmon River upstream 14.7 km (9.1 mi) to its headwaters provides spawning and rearing habitat. Bear Creek from its confluence with the South Fork Salmon River upstream 2.1 km (1.3 mi) contains FMO habitat, and Fritser Creek from its confluence with the South Fork Salmon River upstream 5.2 km (3.2 mi) to its headwaters provides spawning and rearing habitat.

(B) Elk Creek from its confluence with the South Fork Salmon River upstream 14.3 km (8.7 mi) to its headwaters provides spawning and rearing habitat. West Fork Elk Creek from its confluence with Elk Creek upstream 10.7 km (6.6 mi) to its headwaters provides spawning and rearing habitat. South Fork Elk Creek from its confluence with West Fork Elk Creek upstream 7.6 km (4.7 mi) to its headwaters contains FMO habitat and an unnamed creek (tributary to West Fork Elk Creek) from its confluence with West Fork Elk Creek upstream 4.4 km (2.7 mi) to its headwaters provides spawning and rearing habitat.

(C) Sheep Creek from its confluence with the South Fork Salmon River upstream 12.2 km (7.6 mi) to its headwaters; Willey Creek from its confluence with Sheep Creek upstream 3.0 km (1.9 mi) to its headwaters; South Fork Sheep Creek from its confluence with Sheep Creek upstream 6.7 km (4.1 mi) to its headwaters; and North Fork Sheep Creek from its confluence with Sheep Creek upstream 3.9 km (2.4 mi) to its headwaters contain FMO habitat.

(D) The Secesh River from its confluence with South Fork Salmon River upstream 45.3 km (28.2 mi) to its confluence with Lake Creek provides spawning and rearing habitat. The following tributaries to the Secesh River provide FMO habitat: Oompaul Creek from its confluence with the Secesh River upstream 3.5 km (2.2 mi) to its headwaters; Zena Creek from its confluence with the Secesh River upstream 2.9 km (1.8 mi) to the confluence of West Fork Zena Creek and East Fork Zena Creek; Deep Creek from its confluence with the Secesh River upstream 2.8 km (1.8 mi) to its headwaters; Lick Creek from its confluence with the Secesh River upstream 14.0 km (8.7 mi) to a natural fish barrier; North Fork Lick Creek from its confluence with the Secesh River upstream 10.0 km (6.2 mi) to its headwaters; Pardise Creek from its confluence with the Secesh River upstream 4.0 km (2.5 mi) to its headwaters; Blue Lake Creek from its confluence with the Secesh River upstream 7.1 km (4.4 mi) to its headwaters; Enos Creek from its confluence with the Secesh River upstream 7.7 km (4.8 mi) to its headwaters; Jungle Creek from its confluence with Enos Creek upstream 5.6 km (3.5 mi) to its headwaters; West Fork Enos Creek from its confluence with Enos Creek upstream 3.1 km (1.9 mi) to its headwaters; Whangdoodle Creek from its confluence with the Secesh River upstream 6.9 km (4.3 mi) to its headwaters; and Grimmet Creek from its confluence with the Secesh River upstream 3.7 km (2.3 mi) to its headwaters. Loon Creek from its confluence with the Secesh River upstream 2.4 km (1.5 mi) to the outlet of Loon Lake provides spawning and rearing habitat. Loon Lake (41.0 ha (101.3 ac)) contains FMO habitat Victor Creek from its confluence with the Secesh River upstream 11.1 km (6.9 mi) to its headwaters, and Willowbasket Creek from its confluence with Victor Creek upstream 6.5 km (4.1 mi) to its headwaters provide spawning and rearing habitat and Fernan Creek from its confluence with the Secesh River upstream 3.6 km (2.2 mi) to its headwaters. Grouse Creek from its confluence with the Secesh River upstream 7.2 km (4.5 mi) to its headwaters; Flat Creek from its confluence with Grouse Creek upstream 6.7 km (4.1 mi) to its headwaters; Sand Creek from its confluence with Grouse Creek upstream 4.1 km (2.6 mi) to its headwaters; Ruby Creek from its confluence with the Secesh River upstream 9.3 km (5.8 mi); Summit Creek from its confluence with the Secesh River upstream 15.5 km (9.7 mi) to its headwaters; and Josephine Creek from its confluence with Summit Creek upstream 4.0 km (2.5 mi) to its headwaters provide spawning and rearing habitat.

(E) Lake Creek from its confluence with the Secesh River upstream 19.1 km (11.9 mi) to the outlet of Lake Creek Lake provides spawning and rearing habitat; Lake Creek Lake (7.0 ha (17.3 ac)) contains FMO habitat; Lake Creek from the inlet to Lake Creek Lake upstream 2.2 km (1.4 mi) to its headwaters provides spawning and rearing habitat; Nethker Creek from its confluence with Lake Creek upstream 6.1 km (3.8 mi) to its headwaters provides spawning and rearing habitat; Burgdorf Creek from its confluence with Lake Creek upstream 4.8 km (3.0 mi) to its headwaters contains FMO habitat; Jeanette Creek from its confluence with Lake Creek upstream 2.7 km (1.7 mi) to its headwaters contains FMO habitat; Threemile Creek from its confluence with Lake Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; an unnamed tributary to Threemile Creek from its confluence with Threemile Creek upstream 2.4 km (1.5 mi) to its headwaters contains spawning and rearing habitat; and South Fork Threemile Creek from its confluence with Threemile Creek upstream 4.8 km (3.0 mi) to its headwaters and Willow Creek from its confluence with Lake Creek upstream 9.0 km (5.6 mi) to its headwaters contain spawning and rearing habitat.

(F) East Fork South Fork Salmon River from its confluence with South Fork Salmon River upstream 52.2 km (32.5 mi) to its headwaters provides spawning and rearing habitat;

Quartz Creek from its confluence with East Fork South Fork Salmon River upstream 12.5 km (7.8 mi) to its headwaters provides spawning and rearing habitat; Vein Creek from its confluence with Quartz Creek upstream 6.0 km (3.7 mi) to its headwaters contains spawning and rearing habitat; Profile Creek from its confluence with East Fork South Fork Salmon River upstream 13.2 km (8.2 mi) to its headwaters provides spawning and rearing habitat; Camp Creek from its confluence with Profile Creek upstream 2.9 km (1.8 mi) to its headwaters contains FMO habitat; Missouri Creek from its confluence with Profile Creek upstream 4.8 km (3.0 mi) to its headwaters provides spawning and rearing habitat; Ryan Creek from its confluence with Profile Creek upstream 2.1 km (1.3 mi) to its headwaters contains FMO habitat; Tamarack Creek from its confluence with East Fork South Fork Salmon River upstream 11.8 km (7.4 mi) to its headwaters provides spawning and rearing habitat; Bum Creek from its confluence with Tamarack Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; Salt Creek from its confluence with East Fork South Fork Salmon River upstream 3.8 km (2.4 mi) to its headwaters contains FMO habitat; Pepper Creek from its confluence with East Fork South Fork Salmon River upstream 4.5 km (2.8 mi) to its headwaters contains FMO habitat; Sugar Creek from its confluence with East Fork South Fork Salmon River upstream 11.5 km (7.1 mi) to its headwaters provides spawning and rearing habitat; an unnamed tributary to Sugar Creek from its confluence with Sugar Creek upstream 11.5 km (7.1 mi) to its headwaters provides spawning and rearing habitat; Cinnabar Creek from its confluence with Sugar Creek upstream 5.5 km (3.4 mi) to its headwaters provides spawning and rearing habitat; Cane Creek from its confluence with Sugar Creek upstream 4.2 km (2.6 mi) to its headwaters provides spawning and rearing habitat; Meadow Creek from its confluence with East Fork South Fork Salmon River upstream 2.4 km (1.5 mi) to the outlet of Meadow Creek Lake provides spawning and rearing habitat; Meadow Creek Lake (10.7 ha; 26.5 ac) contains FMO habitat; and Meadow Creek from the inlet to Meadow Creek Lake upstream 4.7 km (2.9 mi) to its headwaters provides spawning and rearing habitat.

(G) Johnson Creek from its confluence with East Fork South Fork Salmon River upstream 46.4 km (28.7 mi) to Rock Creek contains FMO habitat; Riordan Creek from its confluence with Johnson Creek upstream 4.3 km (2.7 mi) to the potential barriers contains FMO habitat; Riordan Creek from the potential barriers upstream 3.2 km (2.0 mi) to Riordan Lake outlet provides spawning and rearing habitat; Riordan Lake (29.6 ha, (73.1 ac)) contains FMO habitat; Riordan Creek from Riordan Lake inlet upstream 6.5 km (4.1 mi) to its headwaters provides spawning and rearing habitat; North Fork Riordan Creek from its confluence with Riordan Creek upstream 5.5 km (3.4 mi) to its headwaters contains FMO habitat; Porcupine Creek from its confluence with Johnson Creek upstream 3.9 km (2.4 mi) to its headwaters contains FMO habitat; Falls Creek from its confluence with Johnson Creek upstream 2.4 km (1.5 mi) to its headwaters contains FMO habitat; Hanson Creek from its confluence with Johnson Creek upstream 3.1 km (1.9 mi) to its headwaters contains FMO habitat; Moose Creek from its confluence with Johnson Creek upstream 3.2 km (2.0 mi) to its headwaters contains FMO habitat; Bear Creek from its confluence with Johnson Creek upstream 3.2 km (2.0 mi) to the confluence of North Fork Bear Creek and South Fork Bear Creek contains FMO habitat; North Fork Bear Creek from its confluence with Bear Creek upstream 4.5 km (2.8 mi) to its headwaters contains FMO habitat; South Fork Bear Creek from its confluence with Bear Creek upstream 2.7 km (1.7 mi) to its headwaters contains FMO habitat; Trapper Creek from its confluence with Johnson Creek upstream 14.4 km (9.0 mi) to its headwaters provides spawning and rearing habitat; an unnamed creek (entering 6.5 km (4.0 mi) upstream from the mouth of Trapper Creek) from its confluence with Trapper Creek upstream 4.0 km (2.5 mi) to its headwaters provides spawning and rearing habitat; an unnamed creek (entering 6.8 km (4.2 mi) upstream from the mouth of Trapper Creek) from its confluence with Trapper Creek upstream 1.2 km (0.8 mi) contains FMO habitat; an unnamed creek (entering 8.3 km (5.2 mi) upstream from the mouth of Trapper Creek) from its confluence with Trapper Creek upstream 2.1 km (1.3 mi) contains FMO habitat; Wardenhoff Creek from its confluence with Johnson Creek upstream 4.6 km (2.8 mi) to its headwaters contains FMO habitat. Burntlog Creek from its confluence with Johnson Creek upstream 22.7 km (14.1 mi) to its headwaters provides spawning and rearing habitat; Buck Creek from its confluence with Burntlog Creek upstream 7.3 km (4.5 mi) to its headwaters provides spawning and rearing habitat; an unnamed creek (entering 5.2 km (3.2 mi) upstream from the mouth of Buck Creek) from its confluence with Buck Creek upstream 1.1 km (0.7 mi) contains FMO habitat; an unnamed creek (tributary to an unnamed tributary to Buck Creek, entering 0.8 km (0.5 mi) upstream from the mouth of the unnamed tributary to Buck Creek) from its confluence with the unnamed tributary to Buck Creek upstream 0.4 km (0.3 mi) contains FMO habitat; East Fork Burntlog Creek from its confluence with Burntlog Creek upstream 7.3 km (4.5 mi) to its headwaters provides spawning and rearing habitat; an unnamed creek (entering 1.8 km (1.1 mi) upstream from the mouth of East Fork Burntlog Creek) from its confluence with East Fork Burntlog Creek upstream 2.1 km (1.3 mi) contains FMO habitat; Peanut Creek from its confluence with Burntlog Creek upstream 7.6 km (4.8 mi) to its headwaters contains FMO habitat; an unnamed creek (entering 16.0 km (9.9 mi) upstream from the mouth of Burntlog Creek) from its confluence with Burntlog Creek upstream 1.4 km (0.9 mi) contains FMO habitat; Dutch Creek from its confluence with Johnson Creek upstream 0.3 km (0.2 mi) contains FMO habitat; Park Creek from its confluence with Johnson Creek upstream 4.0 km (2.5 mi) to its headwaters contains FMO habitat; Sheep Creek from its confluence with Johnson Creek upstream 4.6 km (2.9 mi) to its headwaters contains FMO habitat; Landmark Creek from its confluence with Johnson Creek upstream 5.6 km (3.5 mi) to its headwaters contains FMO habitat; Rock Creek from its confluence with Johnson Creek upstream 8.1 km (5.0 mi) to its headwaters contains FMO habitat; Sand Creek from its confluence with Johnson Creek upstream 12.0 km (7.4 mi) to its headwaters contains FMO habitat; North Fork Sand Creek from its confluence with Sand Creek upstream 4.8 km (3.0 mi) to its headwaters contains FMO habitat

(H) Fitsum Creek from its confluence with South Fork Salmon River upstream 3.9 km (2.4 mi) to a barrier provides spawning and rearing habitat; North Fork Fitsum Creek from its confluence with Fitsum Creek upstream 13.0 km (8.1 mi) to its headwaters provides spawning and rearing habitat; Tie Creek from its confluence with North Fork Fitsum Creek upstream 2.6 km (1.6 mi) to its headwaters contains FMO habitat; and South Fork Fitsum Creek from its confluence with Fitsum Creek upstream 3.7 km (2.3 mi) to its headwaters provides spawning and rearing habitat.

(I) Krassel Creek from its confluence with South Fork Salmon River upstream 3.0 km (1.9 mi) to its headwaters contains FMO habitat.

(J) Indian Creek from its confluence with South Fork Salmon River upstream 5.0 km (3.1 mi) to its headwaters contains FMO habitat.

(K) Little Indian Creek from its confluence with South Fork Salmon River upstream 3.1 km (1.9 mi) to its headwaters contains FMO habitat.

(L) Buckhorn Creek from its confluence with South Fork Salmon River upstream 16.6 km (10.3 mi) to its headwaters provides spawning and rearing habitat; West Fork Buckhorn Creek from its confluence with Buckhorn Creek upstream 11.5 km (7.1 mi) to its headwaters contains FMO habitat; North Fork Buckhorn Creek from its confluence with West Fork Buckhorn Creek upstream 13.3 km (8.3 mi) to its headwaters contains FMO habitat; Nick Creek from its confluence with West Fork Buckhorn Creek upstream 5.8 km (3.6 mi) to its headwaters contains FMO habitat; and South Fork Buckhorn Creek from its confluence with Buckhorn Creek upstream 6.1 km (3.8 mi) to its headwaters provide spawning and rearing habitat.

(M) Camp Creek from its confluence with South Fork Salmon River upstream 10.8 km (6.7 mi) to its headwaters provides spawning and rearing habitat and North Fork Camp Creek from its confluence with Camp Creek upstream 7.9 km (4.9 mi) to its headwaters contains FMO habitat.

(N) Cougar Creek from its confluence with South Fork Salmon River upstream 13.8 km (8.5 mi) to its headwaters provides spawning and rearing habitat.

(O) Nasty Creek from its confluence with South Fork Salmon River upstream 6.6 km (4.1 mi) to its headwaters contains FMO habitat.

(P) Fourmile Creek from its confluence with South Fork Salmon River upstream 12.1 km (7.5 mi) to its headwaters and South Fork Fourmile Creek from its confluence with Fourmile Creek upstream 5.8 km (3.6 mi) to its headwaters provide spawning and rearing habitat.

(Q) Holdover Creek from its confluence with South Fork Salmon River upstream 2.4 km (1.5 mi) to its headwaters contains FMO habitat.

(R) Blackmare Creek from its confluence with South Fork Salmon River upstream 9.1 km (5.6 mi) to its headwaters and South Fork Blackmare Creek from its confluence with Blackmare Creek upstream 7.4 km (4.6 mi) to its headwaters provide spawning and rearing habitat.

(S) Cliff Creek from its confluence with South Fork Salmon River upstream 4.9 km (3.0 mi) to its headwaters contains FMO habitat.

(T) Dollar Creek from its confluence with South Fork Salmon River upstream 12.7 km (7.9 mi) to its headwaters provides spawning and rearing habitat and North Fork Dollar Creek from its confluence with Dollar Creek upstream 0.4 km (0.3 mi) contains FMO habitat.

(U) Six Bit Creek from its confluence with South Fork Salmon River upstream 10.0 km (6.2 mi) to its headwaters provides spawning and rearing habitat and North Fork Six Bit Creek from its confluence with Six Bit Creek upstream 5.2 km (3.2 mi) to its headwaters contains FMO habitat.

(V) Warm Lake Creek from its confluence with South Fork Salmon River upstream 4.5 km (2.7 mi) to Warm Lake contains FMO habitat; Warm Lake (171.0 ha (422.5 ac)) contains FMO habitat; Cabin Creek from its confluence with Warm Lake Creek upstream 7.9 km (4.9 mi) to its headwaters provides spawning and rearing habitat; Reeves Creek from its confluence with Cabin Creek upstream 5.1 km (3.2 mi) to its headwaters provides spawning and rearing habitat; and Knee Creek from its confluence with Cabin Creek upstream 4.3 km (2.7 mi) to its headwaters contains FMO habitat.

(W) Curtis Creek from its confluence with South Fork Salmon River upstream 12.2 km (7.6 mi) to its headwaters; Trail Creek from its confluence with Curtis Creek upstream 7.2 km (4.5 mi) to its headwaters; an unnamed reek (tributary to Trail Creek) from its confluence with Trail Creek upstream 6.3 km (3.9 mi) to its headwaters; an unnamed creek (tributary number 1 to Curtis Creek) from its confluence with Curtis Creek upstream 6.1 km (3.8 mi) to its headwaters; and an unnamed creek (tributary number 2 to Curtis Creek) from its confluence with Curtis Creek upstream 4.6 km (2.8 mi) provide spawning and rearing habitat.

(X) Bear Creek from its confluence with South Fork Salmon River upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(Y) Camp Creek from its confluence with South Fork Salmon River upstream 4.0 km (2.5 mi) to its headwaters contains FMO habitat.

(Z) Lodgepole Creek from its confluence with South Fork Salmon River upstream 7.2 km (4.5 mi) to its headwaters provides spawning and rearing habitat.

(AA) Tyndall Creek from its confluence with South Fork Salmon River upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat.

(BB) Rice Creek from its confluence with South Fork Salmon River upstream 10.2 km (6.3 mi) to its headwaters; an unnamed creek (tributary to Rice Creek) from its confluence with Rice Creek upstream 1.5 km (0.9 mi) to its headwaters; and Unnamed Creek (approximately 2.0 km (1.3 mi) upstream from the confluence of Rice Creek and the South Fork Salmon River) from its confluence with the South Fork Salmon River upstream 2.0 km (1.3 mi) to its headwaters provide spawning and rearing habitat.

(CC) Mormon Creek from its confluence with South Fork Salmon River upstream 4.8 km (3.0 mi) to its headwaters provides spawning and rearing habitat and an unnamed creek (approximately 2.3 km (1.4 mi) upstream from the mouth of Mormon Creek) from its confluence with Mormon Creek upstream 1.3 km (0.8 mi) contains FMO habitat.

(DD) Back Creek from its confluence with South Fork Salmon River upstream 2.9 km (1.8 mi) to its headwaters contains FMO habitat.

(EE) Pete Creek from its confluence with Lake Creek continuing upstream 6.1 km (3.8 mi) contains spawning and rearing habitat. An unnamed tributary to Pete Creek from its confluence with Pete Creek upstream 6.1 km (3.8 mi) to a headwater lake contains spawning and rearing habitat.

Table 72. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–South Fork Salmon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Cane Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1152913 449534
Salmon River Basin–South Fork Salmon River	Cinnabar Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1152926 449524
Salmon River Basin–South Fork Salmon River	Bum Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1153190 449947
Salmon River Basin–South Fork Salmon River	Meadow Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1153267 449022.1
Salmon River Basin–South Fork Salmon River	Meadow Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1153267 449022.2
Salmon River Basin–South Fork Salmon River	Sugar Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 16; Watry and Scarnecchia 2008, pg. 233)	Rationale provided in Salmon River Basin CHU justification text	1153362 449358
Salmon River Basin–South Fork Salmon River	Pepper Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153500 449490
Salmon River Basin–South Fork Salmon River	Salt Creek	ID	(Service in litt. 2002, pg. 22; StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153517 449495
Salmon River Basin–South Fork Salmon River	Tamarack Creek	ID	(Service in litt. 2002, pg. 22; StreamNet 2009, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1153895 449591
Salmon River Basin–South Fork Salmon River	Missouri Creek	ID	(Service in litt. 2002, pg. 22; StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1153943 450068
Salmon River Basin–South Fork Salmon River	Ryan Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1153943 450191

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Camp Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154135 449847
Salmon River Basin–South Fork Salmon River	Profile Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1154280 449575
Salmon River Basin–South Fork Salmon River	North Fork Riordan Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1154457 448675
Salmon River Basin–South Fork Salmon River	UNNAMED Trib 3- Off Trapper Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1154636 447933
Salmon River Basin–South Fork Salmon River	Vein Creek	ID	(StreamNet 2009, pg. 15; Watry and Scarnecchia 2008, pg. 233)	Rationale provided in Salmon River Basin CHU justification text	1154706 450079
Salmon River Basin–South Fork Salmon River	Chicken Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154727 452875
Salmon River Basin–South Fork Salmon River	Quartz Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1154773 449704
Salmon River Basin–South Fork Salmon River	South Fork Bear Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154826 448267
Salmon River Basin–South Fork Salmon River	Riordan Creek	ID	Don Newberry (Service in litt. 2002c, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1154846 449072.1
Salmon River Basin–South Fork Salmon River	Riordan Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1154846 449072.2
Salmon River Basin–South Fork Salmon River	Riordan Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1154846 449072.3
Salmon River Basin–South Fork Salmon River	Riordan Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22	Rationale provided in Salmon River Basin CHU justification text	1154846 449072.4

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Peanut Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	1154853 446885.1
Salmon River Basin–South Fork Salmon River	Peanut Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154853 446885.2
Salmon River Basin–South Fork Salmon River	Rooster Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1154893 453094
Salmon River Basin–South Fork Salmon River	North Fork Sand Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1154961 446422
Salmon River Basin–South Fork Salmon River	Porcupine Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1154984 448901
Salmon River Basin–South Fork Salmon River	Raines Creek	ID	(StreamNet 2009. pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155000 453325
Salmon River Basin–South Fork Salmon River	East Fork Burntlog Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1155006 447370
Salmon River Basin–South Fork Salmon River	Johnson Creek	ID	(Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1155008 449625.1
Salmon River Basin–South Fork Salmon River	Johnson Creek	ID	(Service in litt. 2002b, pg. 21; IDOSC 2010)	Rationale provided in Salmon River Basin CHU justification text	1155008 449625.2
Salmon River Basin–South Fork Salmon River	Falls Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155068 448807
Salmon River Basin–South Fork Salmon River	Hanson Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155073 448695
Salmon River Basin–South Fork Salmon River	South Fork Elk Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155085 451358

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Moose Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155086 448527
Salmon River Basin–South Fork Salmon River	West Fork Elk Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155113 451472
Salmon River Basin–South Fork Salmon River	South Fork Salmon River	ID	(StreamNet 2009, pg. 15; SBNFTG 1998, pg. 7-6; Service in litt. 2002, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1155122 453783.1
Salmon River Basin–South Fork Salmon River	South Fork Salmon River	ID	(StreamNet 2009, pg. 15; SBNFTG 1998, pg. 7-6; Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1155122 453783.2
Salmon River Basin–South Fork Salmon River	South Fork Salmon River	ID	(Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1155122 453783.3
Salmon River Basin–South Fork Salmon River	South Fork Salmon River	ID	(Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1155122 453783.4
Salmon River Basin–South Fork Salmon River	Unnamed Tributary to West Fork Elk Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155133 450951
Salmon River Basin–South Fork Salmon River	Trapper Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1155134 448315
Salmon River Basin–South Fork Salmon River	Bear Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1155137 448335
Salmon River Basin–South Fork Salmon River	North Fork Bear Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1155137 448335
Salmon River Basin–South Fork Salmon River	Carlson Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155163 453452
Salmon River Basin–South Fork Salmon River	Rattlesnake Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155173 452492

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Wardenhoff Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155175 448218
Salmon River Basin–South Fork Salmon River	Buck Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1155177 447919
Salmon River Basin–South Fork Salmon River	Burntlog Creek	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1155178 448030
Salmon River Basin–South Fork Salmon River	Dutch Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155188 447992
Salmon River Basin–South Fork Salmon River	Mill Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1155194 453556
Salmon River Basin–South Fork Salmon River	Station Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155202 453525
Salmon River Basin–South Fork Salmon River	Sand Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1155251 446323
Salmon River Basin–South Fork Salmon River	Smith Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155277 452410
Salmon River Basin–South Fork Salmon River	Parks Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155346 449553
Salmon River Basin–South Fork Salmon River	Big Buck Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155395 452516
Salmon River Basin–South Fork Salmon River	Landmark Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155419 446573
Salmon River Basin–South Fork Salmon River	Rock Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155424 446386

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Grouse Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155442 452262
Salmon River Basin–South Fork Salmon River	Big Flat Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155444 452268
Salmon River Basin–South Fork Salmon River	Little Buck Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155496 452519
Salmon River Basin–South Fork Salmon River	Park Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1155500 447337
Salmon River Basin–South Fork Salmon River	Sheep Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155597 447084
Salmon River Basin–South Fork Salmon River	Pony Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155625 451869
Salmon River Basin–South Fork Salmon River	North Fork Sheep Creek	ID	(StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1155828 450387
Salmon River Basin–South Fork Salmon River	Elk Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1155846 451564
Salmon River Basin–South Fork Salmon River	Bear Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156182 451060
Salmon River Basin–South Fork Salmon River	South Fork Sheep Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156219 450357
Salmon River Basin–South Fork Salmon River	Fritser Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156262 450910
Salmon River Basin–South Fork Salmon River	Willey Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156275 450428

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Sheep Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1156375 450493
Salmon River Basin–South Fork Salmon River	UNNAMED - Off Rice Creek	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156554 445514
Salmon River Basin–South Fork Salmon River	Knee Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156613 446760
Salmon River Basin–South Fork Salmon River	Reeves Creek	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156658 446675
Salmon River Basin–South Fork Salmon River	South Fork Fourmile Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156786 448603
Salmon River Basin–South Fork Salmon River	Camp Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156791 446071
Salmon River Basin–South Fork Salmon River	UNNAMED - Off South Fork Salmon River	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156821 445564
Salmon River Basin–South Fork Salmon River	Tyndall Creek	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156844 445802
Salmon River Basin–South Fork Salmon River	Rice Creek	ID	(Service in litt. 2002b, pg. 23; StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156846 445751
Salmon River Basin–South Fork Salmon River	Cabin Creek	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156846 446666.1
Salmon River Basin–South Fork Salmon River	Cabin Creek	ID	(Kellet 2008, USFS 2002b)	Rationale provided in Salmon River Basin CHU justification text	1156846 446666.2
Salmon River Basin–South Fork Salmon River	Lodgepole Creek	ID	(Service in litt. 2002b, pg. 23; StreamNet 2009, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1156860 445926

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Bear Creek	ID	(Service in litt. 2002b, pg. 23; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156896 446230
Salmon River Basin–South Fork Salmon River	North Fork Camp Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156905 448885
Salmon River Basin–South Fork Salmon River	Dollar Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156947 447224
Salmon River Basin–South Fork Salmon River	Mormon Creek	ID	(Service in litt. 2002b, pg. 23; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156949 445238
Salmon River Basin–South Fork Salmon River	Fourmile Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156952 448574
Salmon River Basin–South Fork Salmon River	Nasty Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156962 448773
Salmon River Basin–South Fork Salmon River	Cliff Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1156966 447896
Salmon River Basin–South Fork Salmon River	Holdover Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1156973 448450
Salmon River Basin–South Fork Salmon River	Warm Lake Creek	ID	(Service in litt. 2002b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1156984 446664
Salmon River Basin–South Fork Salmon River	Curtis Creek	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157028 446522
Salmon River Basin–South Fork Salmon River	Blackmare Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157031 448225
Salmon River Basin–South Fork Salmon River	Six-Bit Creek	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157060 446863

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Back Creek	ID	(StreamNet 2009, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1157062 445108
Salmon River Basin–South Fork Salmon River	North Fork Dollar Creek	ID	(StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157064 447149
Salmon River Basin–South Fork Salmon River	Secesh River	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157065 450248.1
Salmon River Basin–South Fork Salmon River	Secesh River	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157065 450248.2
Salmon River Basin–South Fork Salmon River	East Fork South Fork Salmon River	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157131 450148.1
Salmon River Basin–South Fork Salmon River	East Fork South Fork Salmon River	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1157131 450148.2
Salmon River Basin–South Fork Salmon River	Cougar Creek	ID	Dave Burns (Service in litt. 2002c, pg. 22); StreamNet 2009, pg. 10	Rationale provided in Salmon River Basin CHU justification text	1157165 448889
Salmon River Basin–South Fork Salmon River	Camp Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157166 448979
Salmon River Basin–South Fork Salmon River	Trail Creek	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157171 446353
Salmon River Basin–South Fork Salmon River	Fitsum Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157216 449994.1
Salmon River Basin–South Fork Salmon River	Fitsum Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157216 449994.2
Salmon River Basin–South Fork Salmon River	Fitsum Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157216 449994.3

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Little Indian Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157263 449674
Salmon River Basin–South Fork Salmon River	Krassel Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157263 449786
Salmon River Basin–South Fork Salmon River	Indian Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157308 449700
Salmon River Basin–South Fork Salmon River	Oompaul Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157352 450338
Salmon River Basin–South Fork Salmon River	Buckhorn Creek	ID	(Service in litt. 2002b, pg. 22; StreamNet 2009, pg. 10; SBNFTG 1998, Table A, pg. 7-15)	Rationale provided in Salmon River Basin CHU justification text	1157358 449219
Salmon River Basin–South Fork Salmon River	West Fork Buckhorn Creek	ID	(StreamNet 2009, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1157417 449169
Salmon River Basin–South Fork Salmon River	Unnamed Tributary 1of Curtis Creek	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157446 446096
Salmon River Basin–South Fork Salmon River	UNNAMED - Off Trail Creek	ID	Don Newberry (Service in litt. 2002, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157451 446257
Salmon River Basin–South Fork Salmon River	South Fork Blackmare Creek	ID	(Service in litt. 2002b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1157469 448091
Salmon River Basin–South Fork Salmon River	Zena Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157473 450412
Salmon River Basin–South Fork Salmon River	Unnamed Tributary 2 of Curtis Creek	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1157524 445946
Salmon River Basin–South Fork Salmon River	Deep Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157528 450510

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	North Fork Fitsum Creek	ID	Dave Burns (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1157595 449993
Salmon River Basin–South Fork Salmon River	Lick Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 9; PNF 2010, pg. 38)	Rationale provided in Salmon River Basin CHU justification text	1157608 450625
Salmon River Basin–South Fork Salmon River	North Fork Six-bit Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157622 446703
Salmon River Basin–South Fork Salmon River	South Fork Fitsum Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157623 449997
Salmon River Basin–South Fork Salmon River	Paradise Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157645 451212
Salmon River Basin–South Fork Salmon River	Tie Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157688 450168
Salmon River Basin–South Fork Salmon River	North Fork Buckhorn Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1157739 449284
Salmon River Basin–South Fork Salmon River	Blue Lake Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157800 451321
Salmon River Basin–South Fork Salmon River	North Fork Lick Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157835 450718
Salmon River Basin–South Fork Salmon River	Enos Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157939 451482
Salmon River Basin–South Fork Salmon River	Nick Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157945 449273
Salmon River Basin–South Fork Salmon River	Whangdoodle Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157958 451497

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Jungle Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157976 451468
Salmon River Basin–South Fork Salmon River	Grimmet Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1157990 451557
Salmon River Basin–South Fork Salmon River	West Fork Enos Creek	ID	(StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1158032 451483
Salmon River Basin–South Fork Salmon River	Loon Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1158085 451699.1
Salmon River Basin–South Fork Salmon River	Loon Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 9; PNF 2005, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1158085 451699.2
Salmon River Basin–South Fork Salmon River	Fernan Creek	ID	(StreamNet 2009, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1158118 452385
Salmon River Basin–South Fork Salmon River	Sand Creek	ID	(Service in litt. 2002b,pg.21;StreamNet2009,pg.10)	Rationale provided in Salmon River Basin CHU justification text	1158206 453073
Salmon River Basin–South Fork Salmon River	Victor Creek	ID	(Service in litt. 2002b,pg.21)	Rationale provided in Salmon River Basin CHU justification text	1158215 451825
Salmon River Basin–South Fork Salmon River	South Fork Buckhorn Creek	ID	Dave Burns (Service in litt. 2002c, pg.22); StreamNet2009,pg.1	Rationale provided in Salmon River Basin CHU justification text	1158226 448904
Salmon River Basin–South Fork Salmon River	Grouse Creek	ID	(Service in litt. 2002b, pg. 21; StreamNet 2009, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1158307 452653
Salmon River Basin–South Fork Salmon River	Willow Basket Creek	ID	(Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158311 451859
Salmon River Basin–South Fork Salmon River	Flat Creek	ID	(Service in litt. 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158362 452714

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Ruby Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158781 452580
Salmon River Basin–South Fork Salmon River	Lake Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158962 452564.1
Salmon River Basin–South Fork Salmon River	Lake Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158962 452564.2
Salmon River Basin–South Fork Salmon River	Summit Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1158962 452565
Salmon River Basin–South Fork Salmon River	Nethker Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1159053 452649
Salmon River Basin–South Fork Salmon River	Burgdorf Creek	ID	(StreamNet 2009, pg. 7, PNF 2010, pg. 38)	Rationale provided in Salmon River Basin CHU justification text	1159102 452685
Salmon River Basin–South Fork Salmon River	Jeanette Creek	ID	(StreamNet 2009, pg. 8; PNF 2010, pg. 38)	Rationale provided in Salmon River Basin CHU justification text	1159180 452760
Salmon River Basin–South Fork Salmon River	South Fork Threemile Creek	ID	(StreamNet 2009, pg. 6; Watry and Scarnecchia 2008, pg. 233)	Rationale provided in Salmon River Basin CHU justification text	1159282 453072
Salmon River Basin–South Fork Salmon River	Threemile Creek	ID	(StreamNet 2009, pg. 8; Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1159287 452992
Salmon River Basin–South Fork Salmon River	Josephine Creek	ID	(Service in litt 2002b, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1159293 452244
Salmon River Basin–South Fork Salmon River	Willow Creek	ID	(NMFS 2000, Table 1, pg. 5)	Rationale provided in Salmon River Basin CHU justification text	1159490 453307
Salmon River Basin–South Fork Salmon River	Unnamed Trib 1-Off Trapper Creek	ID	(Kellet 2008, USFS 2002b)	Rationale provided in Salmon River Basin CHU justification text	NA

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Unnamed Trib 2-Off Trapper Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Unnamed-Off Buck Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Unnamed-Off Burntlog Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Unnamed-Off Mormon Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Unnamed-Off Unnamed to Buck Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Unnamed-Off Unnamed to Burntlog Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–South Fork Salmon River	Lake Creek Lake	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1158967 453726
Salmon River Basin–South Fork Salmon River	Loon Lake	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1158403 451633
Salmon River Basin–South Fork Salmon River	Riordan Lake	ID	Don Newberry (Service in litt. 2002c, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1154391 448503
Salmon River Basin–South Fork Salmon River	Unnamed Lake on Meadow Creek	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1153513 448904
Salmon River Basin–South Fork Salmon River	Warm Lake	ID	Don Newberry (Service in litt. 2002c, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1156701 446451
Salmon River Basin–South Fork Salmon River	Unnamed Tributary to Sugar Creek	ID	Watry and Scarnecchia 2008, pg. 233	Rationale provided in Salmon River Basin CHU justification text	1153362 449358

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–South Fork Salmon River	Unnamed Tributary to Threemile Creek	ID	Watry and Scarnecchia 2008, pg. 233	Rationale provided in Salmon River Basin CHU justification text	1159120 453230
Salmon River Basin–South Fork Salmon River	Pete Creek	ID	Watry and Scarnecchia 2008, pg. 233	Rationale provided in Salmon River Basin CHU justification text	1159262 452983
Salmon River Basin–South Fork Salmon River	Unnamed Tributary to Pete Creek	ID	Watry and Scarnecchia 2008, pg. 233	Rationale provided in Salmon River Basin CHU justification text	1159555 452810

27.3. Middle Salmon River–Chamberlain River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it contains many individuals, a large amount of habitat, and few threats. This CHSU has fluvial life history forms that are important in the long-term recovery of the species. This CHSU provides a migratory corridor between multiple CHSUs, which assists in the promotion of the migratory life history expression within the Salmon River basin (see Appendix 1 for more detailed information).

Located within Idaho and Valley Counties in east-central Idaho 80 km (50 mi) east of the town of Riggins, Idaho, designated critical habitat includes 793.7 km (493.2 mi) of streams.

The following water bodies are included in this CHSU (see Table 73):

(A) The Salmon River from approximately 2.1 km (1.3 mi) upstream from its confluence with French Creek upstream 110.0 km (68.3 mi) to its confluence with Chamberlain Creek contains FMO habitat.

(B) Fall Creek from its confluence with the Salmon River upstream 14.7 km (9.1 mi) to its headwaters and East Fork Fall Creek from its confluence with Fall Creek upstream 7.2 km (4.5 mi) to its headwaters provide spawning and rearing habitat.

(C) Wind River from its confluence with the Salmon River upstream 22.5 km (14.0 mi) to its headwaters provides spawning and rearing habitat.

(D) Sheep Creek from its confluence with the Salmon River upstream 23.8 km (14.8 mi) to its headwaters provides spawning and rearing habitat.

(E) California Creek from its confluence with the Salmon River upstream 19.5 km (12.1 mi) to its headwaters contains FMO habitat.

(F) Crooked Creek from its confluence with the Salmon River upstream 34.2 km (21.2 mi) to its headwaters and Lake Creek from its confluence with Crooked Creek upstream 21.0 km (13.0 mi) to its headwaters provide spawning and rearing habitat.

(G) Warren Creek from its confluence with the Salmon River upstream 28.9 km (18.0 mi) to its headwaters provides spawning and rearing habitat and Schissler Creek from its confluence with Warren Creek upstream 6.8 km (4.2 mi) to its headwaters; Guard Creek from its confluence with Warren Creek upstream 3.8 km (2.4 mi) to its headwaters; Slaughter Creek from its confluence with Warren Creek upstream 7.8 km (4.8 mi) to its headwaters; Mayflower Creek from its confluence with Warren Creek upstream 5.6 km (3.5 mi) to its headwaters; North Fork Mayflower Creek from its confluence with Mayflower Creek upstream 1.5 km (0.9 mi) to its headwaters; and Webfoot Creek from its confluence with Warren Creek upstream 3.5 km (2.2 mi) to its headwaters contain FMO habitat.

(H) Fivemile Creek from its confluence with the Salmon River upstream 2.8 km (1.7 mi) contains FMO habitat.

(I) Rhett Creek from its confluence with the Salmon River upstream 1.2 km (0.8 mi) to a barrier falls contains FMO habitat.

(J) Little Mallard Creek from its confluence with the Salmon River upstream 0.1 km (0.1 mi) to a barrier falls contains FMO habitat.

(K) Big Mallard Creek from its confluence with the Salmon River at upstream 1.3 km (0.8 mi) to Mallard Creek Falls contains FMO habitat.

(L) Richardson Creek from its confluence with the Salmon River upstream 1.8 km (7.3 mi) to its headwaters and Hartan Creek from its confluence with Richardson Creek upstream 6.6 km (4.1 mi) to its headwaters contain FMO habitat.

(M) Silge Creek from its confluence with the Salmon River upstream 3.8 km (2.3 mi) to its headwaters contains FMO habitat.

(N) Bargamin Creek from its confluence with the Salmon River at upstream 39.1 km (24.3 mi) to its headwaters; Cache Creek from its confluence with Bargamin Creek upstream 9.9 km (6.1 mi) to its headwaters; Poet Creek from its confluence with Bargamin Creek upstream 5.2 km (3.3 mi) to its headwaters; Hot Springs Creek from its confluence with Bargamin Creek upstream 6.3 km (3.9 mi) to its headwaters; and Green Creek from its confluence with Bargamin Creek upstream 5.0 km (3.1 mi) to its headwaters provide spawning and rearing habitat.

(O) Hida Creek from its confluence with the Salmon River upstream 6.5 km (4.0 mi) to its headwaters contains FMO habitat.

(P) Raven Creek from its confluence with the Salmon River upstream 5.2 km (3.2 mi) to its headwaters contains FMO habitat.

(Q) Magpie Creek from its confluence with the Salmon River upstream 6.4 km (4.0 mi) to its headwaters contains FMO habitat.

(R) Dillinger Creek from its confluence with the Salmon River upstream 11.8 km (7.3 mi) to its headwaters contains FMO habitat.

(S) South Fork Dillinger Creek from its confluence with Dillinger Creek upstream 5.5 km (3.4 mi) to its headwaters contains FMO habitat.

(T) Bruin Creek from its confluence with the Salmon River upstream 4.5 km (2.8 mi) to its headwaters contains FMO habitat.

(U) Hot Springs Creek from its confluence with the Salmon River upstream 10.0 km (6.2 mi) to its headwaters and Cold Creek from its confluence with Hot Springs Creek upstream 2.9 km (1.8 mi) to its headwaters contain FMO habitat.

(V) Sabe Creek from its confluence with the Salmon River upstream 24.4 km (15.2 mi) to its headwaters; Twist Creek from its confluence with Sabe Creek upstream 3.9 km (2.4 mi) to its headwaters; Goodman Creek from its confluence with Sabe Creek upstream 4.6 km (2.9 mi) to its headwaters; Camp Creek from its confluence with Sabe Creek upstream 4.2 km (2.6 mi) to its headwaters; and Basin Creek from its confluence with Sabe Creek upstream 3.2 km (2.0 mi) to its headwaters provide spawning and rearing habitat.

(W) Arctic Creek from its confluence with the Salmon River upstream 3.5 km (2.2 mi) to its headwaters contains FMO habitat.

(X) Big Harrington Creek from its confluence with the Salmon River upstream 13.5 km (8.4 mi) to its headwaters contains FMO habitat.

(Y) Big Bear Creek from its confluence with the Salmon River upstream 12.3 km (7.6 mi) to its headwaters contains FMO habitat.

(Z) Chamberlain Creek from its confluence with the Salmon River upstream 21.4 km (13.3 mi) to Lodgepole Creek contains FMO habitat; Chamberlain Creek from its confluence with Lodgepole Creek upstream 15.0 km (9.3 mi) to Red Top Creek provides spawning and rearing habitat; Chamberlain Creek from its confluence with Red Top Creek upstream 7.2 km (4.4 mi) to its headwaters (confluence of Rim Creek and South Fork Chamberlain Creek) contains FMO habitat.

(AA) McCalla Creek from its confluence with Chamberlain Creek upstream 25.5 km (15.9 mi) to its headwaters; Root Creek from its confluence with McCalla Creek upstream 3.4 km (2.1 mi) to its headwaters; Whimstick Creek from its confluence with McCalla Creek upstream 17.4 km (10.8 mi) to its headwaters; Our Creek from its confluence with Whimstick Creek upstream 2.3 km (1.4 mi) to its headwaters; My Creek from its confluence with Whimstick Creek upstream 2.9 km (1.8 mi) to its headwaters; Wapiti Creek from its confluence with Whimstick Creek upstream 5.9 km (3.6 mi) to its headwaters; East Fork Whimstick Creek from its confluence with Whimstick Creek upstream 6.8 km (4.2 mi) to its headwaters; West Fork Whimstick Creek from its confluence with Whimstick Creek upstream 0.6 km (0.4 mi) to its confluence with Club Creek; Club Creek from its confluence with West Fork Whimstick Creek upstream 5.2 km (3.2 mi) to its headwaters; South Fork Whimstick Creek from its confluence with Whimstick Creek upstream 5.6 km (3.5 mi) to its headwaters; and Moose Jaw Creek from its confluence with McCalla Creek upstream 7.5 km (4.6 mi) to its headwaters contain FMO habitat.

(BB) Queen Creek from its confluence with Chamberlain Creek upstream 9.2 km (5.7 mi) to its headwaters contains FMO habitat.

(CC) Deer Creek from its confluence with Chamberlain Creek upstream 10.1 km (6.2 mi) contains FMO habitat.

(DD) Lodgepole Creek from its confluence with Chamberlain Creek upstream 14.9 km (9.2 mi) to its headwaters; Little Lodgepole Creek from its confluence with Lodgepole Creek upstream 7.0 km (4.3 mi) to it headwaters; and Pole Creek from its confluence with Lodgepole Creek upstream 4.9 km (3.0 mi) to its headwaters contain FMO habitat.

(EE) Pup Creek from its confluence with Chamberlain Creek upstream 4.3 km (2.7 mi) to its headwaters contains FMO habitat.

(FF) Dog Creek from its confluence with Chamberlain Creek upstream 9.0 km (5.6 mi) to its headwaters contains FMO habitat.

(GG) West Fork Chamberlain Creek from its confluence with Chamberlain Creek upstream 14.6 km (9.1 mi) to its headwaters and Game Creek from its mouth on West Fork Chamberlain Creek upstream 8.3 km (5.2 mi) to its headwaters contain FMO habitat.

(HH) Ranch Creek from its confluence with Chamberlain Creek upstream 6.5 km (4.0 mi) to its headwaters contains FMO habitat.

(II) Hotzel Creek from its confluence with Chamberlain Creek upstream 3.2 km (2.0 mi) to its headwaters contains FMO habitat.

(JJ) Flossie Creek from its confluence with Chamberlain Creek upstream 8.1 km (5.0 mi) to its headwaters contains FMO habitat.

(KK) No Name Creek from its confluence with Chamberlain Creek upstream 5.3 km (3.3 mi) to its headwaters contains FMO habitat.

(LL) Moose Creek from its confluence with Chamberlain Creek upstream 9.9 km (6.2 mi) to its headwaters contains FMO habitat.

(MM) Red Top Creek from its confluence with Chamberlain Creek upstream 4.0 km (2.5 mi) to its headwaters contains FMO habitat.

(NN) Fish Creek from its confluence with Chamberlain Creek upstream 6.3 km (3.9 mi) to its headwaters contains FMO habitat.

(OO) South Fork Chamberlain Creek from its confluence with Rim Creek upstream 7.2 km (4.5 mi) to its headwaters and Rim Creek from its confluence with South Fork Chamberlain Creek upstream 8.4 km (5.2 mi) to its headwaters contain FMO habitat.

Table 73. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Middle Salmon River–Chamberlain CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Chamberlain Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1149310 454542.1
Salmon River Basin–Middle Salmon River–Chamberlain	Chamberlain Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1149310 454542.2
Salmon River Basin–Middle Salmon River–Chamberlain	Chamberlain Creek	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1149310 454542.3
Salmon River Basin–Middle Salmon River–Chamberlain	Basin Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149593 456566
Salmon River Basin–Middle Salmon River–Chamberlain	Twist Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149599 456334
Salmon River Basin–Middle Salmon River–Chamberlain	Camp Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1149605 456432
Salmon River Basin–Middle Salmon River–Chamberlain	Big Bear Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149618 454724
Salmon River Basin–Middle Salmon River–Chamberlain	Big Harrington Creek	ID	(Jakober pers. com. 2002, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1149628 454730

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Goodman Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149645 456364
Salmon River Basin–Middle Salmon River–Chamberlain	McCalla Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149812 454140
Salmon River Basin–Middle Salmon River–Chamberlain	Root Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149934 453824
Salmon River Basin–Middle Salmon River–Chamberlain	Arctic Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149970 454975
Salmon River Basin–Middle Salmon River–Chamberlain	Our Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149993 453638
Salmon River Basin–Middle Salmon River–Chamberlain	Whimstick Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149994 453784
Salmon River Basin–Middle Salmon River–Chamberlain	My Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1150032 453570
Salmon River Basin–Middle Salmon River–Chamberlain	Wapiti Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150212 453350
Salmon River Basin–Middle Salmon River–Chamberlain	Green Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150223 457394

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Sabe Creek	ID	(CBBTTAT 1998b, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1150237 455074
Salmon River Basin–Middle Salmon River–Chamberlain	East Fork Whimstick Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1150286 453005
Salmon River Basin–Middle Salmon River–Chamberlain	South Fork Whimstick Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150298 452841
Salmon River Basin–Middle Salmon River–Chamberlain	West Fork Whimstick Creek	ID	Service in litt. 2009	Rationale provided in Salmon River Basin CHU justification text	1150298 452938
Salmon River Basin–Middle Salmon River–Chamberlain	Hot Springs Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1150312 457292
Salmon River Basin–Middle Salmon River–Chamberlain	Poet Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1150329 457225
Salmon River Basin–Middle Salmon River–Chamberlain	Club Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150361 452915
Salmon River Basin–Middle Salmon River–Chamberlain	Hot Springs Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1150406 455109
Salmon River Basin–Middle Salmon River–Chamberlain	Queen Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150486 453998

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Cold Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150702 454881
Salmon River Basin–Middle Salmon River–Chamberlain	Bruin Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1150747 455171
Salmon River Basin–Middle Salmon River–Chamberlain	Deer Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1150915 453819
Salmon River Basin–Middle Salmon River–Chamberlain	Dillinger Creek	ID	(StreamNet 2009, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1151075 455299
Salmon River Basin–Middle Salmon River–Chamberlain	Moose Jaw Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1151169 453119
Salmon River Basin–Middle Salmon River–Chamberlain	Cache Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1151170 456364
Salmon River Basin–Middle Salmon River–Chamberlain	Lodgepole Creek	ID	(StreamNet 2009, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1151250 453722
Salmon River Basin–Middle Salmon River–Chamberlain	Pup Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151465 453784
Salmon River Basin–Middle Salmon River–Chamberlain	Dog Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151502 453801

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Magpie Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151517 455484
Salmon River Basin–Middle Salmon River–Chamberlain	Little Lodgepole Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151543 453507
Salmon River Basin–Middle Salmon River–Chamberlain	South Fork Dillinger Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151551 454951
Salmon River Basin–Middle Salmon River–Chamberlain	Pole Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1151586 453355
Salmon River Basin–Middle Salmon River–Chamberlain	Raven Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1151596 455502
Salmon River Basin–Middle Salmon River–Chamberlain	West Fork Chamberlain Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1151663 453826
Salmon River Basin–Middle Salmon River–Chamberlain	Hida Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1151663 455564
Salmon River Basin–Middle Salmon River–Chamberlain	Ranch Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151855 453741
Salmon River Basin–Middle Salmon River–Chamberlain	Hotzel Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151869 453732

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Bargamin Creek	ID	(CBBTTAT 1998b, pg. 1, 22)	Rationale provided in Salmon River Basin CHU justification text	1151912 455673
Salmon River Basin–Middle Salmon River–Chamberlain	Game Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1151920 453982
Salmon River Basin–Middle Salmon River–Chamberlain	Flossie Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1152059 453717
Salmon River Basin–Middle Salmon River–Chamberlain	No Name Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1152242 453612
Salmon River Basin–Middle Salmon River–Chamberlain	Silge Creek	ID	(StreamNet 2009, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1152469 455449
Salmon River Basin–Middle Salmon River–Chamberlain	Moose Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152488 453560
Salmon River Basin–Middle Salmon River–Chamberlain	Hartan Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152572 455186
Salmon River Basin–Middle Salmon River–Chamberlain	Richardson Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152597 455387
Salmon River Basin–Middle Salmon River–Chamberlain	Red Top Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152652 453616

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Big Mallard Creek	ID	(D. Mays, pers. comm. 2002b.)	Rationale provided in Salmon River Basin CHU justification text	1152692 455369
Salmon River Basin–Middle Salmon River–Chamberlain	Little Mallard Creek	ID	(D. Mays, pers. comm. 2002b.)	Rationale provided in Salmon River Basin CHU justification text	1153029 455290
Salmon River Basin–Middle Salmon River–Chamberlain	Fish Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1153030 453520
Salmon River Basin–Middle Salmon River–Chamberlain	Rim Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1153290 453359
Salmon River Basin–Middle Salmon River–Chamberlain	South Fork Chamberlain Creek	ID	(CBBTTAT 1998b, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1153290 453360
Salmon River Basin–Middle Salmon River–Chamberlain	Rhett Creek	ID	(Mays 2002b pers. com., pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1153930 454718
Salmon River Basin–Middle Salmon River–Chamberlain	Fivemile Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154682 454122
Salmon River Basin–Middle Salmon River–Chamberlain	Lake Creek	ID	(IDEQ 2001, pg. 17 of appendix 4a)	Rationale provided in Salmon River Basin CHU justification text	1155736 455143
Salmon River Basin–Middle Salmon River–Chamberlain	Warren Creek	ID	(CBBTTAT 1998b, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1155919 453971

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	Slaughter Creek	ID	(CBBTTAT 1998b, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1156360 452722
Salmon River Basin–Middle Salmon River–Chamberlain	Mayflower Creek	ID	(CBBTTAT 1998b, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1156529 452476
Salmon River Basin–Middle Salmon River–Chamberlain	Crooked Creek	ID	(IDEQ 2001, pg. 7 of Appendix 4a)	Rationale provided in Salmon River Basin CHU justification text	1156659 454343
Salmon River Basin–Middle Salmon River–Chamberlain	Webfoot Creek	ID	(IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1156750 452374
Salmon River Basin–Middle Salmon River–Chamberlain	Guard Creek	ID	(IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1156949 452931
Salmon River Basin–Middle Salmon River–Chamberlain	Schissler Creek	ID	(CBBTTAT 1998b, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1157072 453277
Salmon River Basin–Middle Salmon River–Chamberlain	California Creek	ID	(CBBTTAT 1998b, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1157590 454484
Salmon River Basin–Middle Salmon River–Chamberlain	Sheep Creek	ID	(CBBTTAT 1998b, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1158099 454680
Salmon River Basin–Middle Salmon River–Chamberlain	Wind River	ID	(StreamNet 2009, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1159412 454552

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Chamberlain	East Fork Fall Creek	ID	(CBBTTAT 1998b, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1159756 454153
Salmon River Basin–Middle Salmon River–Chamberlain	Fall Creek	ID	(CBBTTAT 1998b, pg. 19)	Rationale provided in Salmon River Basin CHU justification text	1159831 454326
Salmon River Basin–Middle Salmon River–Chamberlain	Salmon River	ID	(USFS 1999a, pg. 2-6; BLM 2000b pg. VI-7, I-1; Elle et al. 1994, pg. 60; Schill et al. 1994, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1167926 458560
Salmon River Basin–Middle Salmon River–Chamberlain	Unnamed-North Fork Mayflower Creek	ID	(CBBTTAT 1998b, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	NA

27.4. Middle Fork Salmon River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it contains the largest number of local populations, a high number of individuals, a large amount of habitat, and few threats. This CHSU also has fluvial life history forms that are important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Idaho, Valley, Custer, and Lemhi Counties in east-central Idaho 40 km (25 mi) northwest of the town of Challis, Idaho, designated critical habitat includes 2,045.7 km (1,271.1 mi) of streams and 90.9 ha (224.6 ac) of lake surface area.

The following water bodies are included in this CHSU (see Table 74):

(A) Middle Fork Salmon River from its confluence with the Salmon River upstream 168.1 km (104.4 mi) to the confluence of Bear Valley Creek and Marsh Creek contains FMO habitat.

(B) Roaring Creek from its confluence with the Middle Fork Salmon River upstream 3.5 (2.2 mi) contains FMO habitat.

(C) Stoddard Creek from its confluence with the Middle Fork Salmon River upstream 2.0 km (1.2 mi) contains FMO habitat.

(D) Ship Island Creek from its confluence with the Middle Fork Salmon River upstream 7.9 km (4.9 mi) to outlet of Ship Island Lake number 1; Ship Island Lake number 1 (35.6 ha (87.9 ac)); Ship Island Creek from the inlet to Ship Island Lake number 1 upstream 1.7 km (1.1 mi) to outlet of Airplane Lake; Airplane Lake (6.3 ha (15.6 ac)); Ship Island Creek from the inlet to Airplane Lake upstream 0.3 km (0.2 mi) to the outlet of Shoban Lake; Shoban Lake (1.9 ha (4.7 ac)); and Ship Island Creek from the inlet to Shoban Lake upstream 0.1 km (0.1 mi) to its headwaters contain FMO habitat.

(E) Papoose Creek from its confluence with the Middle Fork Salmon River upstream 15.4 km (9.5 mi) to its headwaters contains FMO habitat.

(F) Big Creek from its confluence with the Middle Fork Salmon River upstream 21.6 km (13.4 mi) to its confluence with Cave Creek contains FMO habitat; Big Creek from its confluence with Cave Creek upstream 40.3 km (25.0 mi) to Big Creek Marsh provides spawning and rearing habitat; Big Creek Marsh (46.1 ha (113.9 ac)) contains FMO habitat; Big Creek from Big Creek Marsh upstream 11.8 km (7.4 mi) to its headwaters provides spawning and rearing habitat; Rush Creek from its confluence with Big Creek upstream 27.4 km (17.0 mi) to its headwaters provides spawning and rearing habitat; South Fork Rush Creek from its confluence with Rush Creek upstream 7.8 km (4.9 mi) to its headwaters contains FMO habitat; Cabin Creek from its confluence with Big Creek upstream 14.4 km (8.9 mi) to its headwaters provides spawning and rearing habitat; Cave Creek from its confluence with Big Creek upstream 19.4 km (12.0 mi) to its headwaters provides spawning and rearing habitat; Monumental Creek from its confluence with Big Creek upstream 41.1 km (25.5 mi) to its headwaters provides spawning and rearing habitat; Snowslide Creek from its confluence with Monumental Creek upstream 12.8 km (7.9 mi) to its headwaters provides spawning and rearing habitat; West Fork Monumental Creek from its confluence with Monumental Creek upstream 12.7 km (7.9 mi) to its headwaters provides spawning and rearing habitat; Crooked Creek from its confluence with Big Creek upstream 11.1 km (6.9 mi) to its confluence with West Fork Crooked Creek provides spawning and rearing habitat; Big Ramey Creek from its confluence with Big Creek upstream 18.7 km

(11.7 mi) to its headwaters provides spawning and rearing habitat; East Fork Big Ramey Creek from its confluence with Big Ramey Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; Beaver Creek from its confluence with Big Creek upstream 11.6 km (7.2 mi) to Boulder Creek provides spawning and rearing habitat; Beaver Creek from its confluence with Boulder Creek upstream 2.3 km (1.5 mi) contains FMO habitat; Hand Creek from its confluence with Beaver Creek upstream 11.2 km (6.9 mi) to its headwaters provides spawning and rearing habitat; Boulder Creek from its confluence with Beaver Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; Smith Creek from its confluence with Big Creek upstream 10.0 km (6.2 mi) to the confluence of Middle Fork Smith Creek and South Fork Smith Creek provides spawning and rearing habitat; North Fork Smith Creek from its confluence with Smith Creek upstream 1.2 km (0.8 mi) to an unnamed tributary entering from the north contains FMO habitat; Middle Fork Smith Creek from its confluence with Smith Creek upstream 3.8 km (2.3 mi) to its headwaters provides spawning and rearing habitat; South Fork Smith Creek from its confluence with Smith Creek upstream 4.9 km (3.0 mi) to its headwaters provides spawning and rearing habitat; Logan Creek from its confluence with Big Creek upstream 13.4 km (8.3 mi) to its headwaters provides spawning and rearing habitat; and Belvidere Creek from its confluence with Big Creek upstream 4.7 km (2.9 mi) to its headwaters contains FMO habitat.

(G) Wilson Creek from its confluence with the Middle Fork Salmon River upstream 24.2 km (15.1 mi) to its headwaters provides spawning and rearing habitat and Alpine Creek from its confluence with Wilson Creek upstream 6.4 km (4.0 mi) to the outlet of Alpine Creek Lake number 5; Alpine Creek Lake number 5 (1.0 ha (2.6 ac)); and Alpine Creek from the inlet to Alpine Creek Lake number 5 upstream 0.3 km (0.2 mi) to its headwaters contain FMO habitat.

(H) Soldier Creek from its confluence with the Middle Fork Salmon River upstream 14.3 km (8.9 mi) to its headwaters provides spawning and rearing habitat.

(I) Bernard Creek from its confluence with the Middle Fork Salmon River upstream 2.2 km (1.4 mi) contains FMO habitat.

(J) Brush Creek from its confluence with the Middle Fork Salmon River upstream 10.7 km (6.6 mi) to North Fork Brush Creek provides spawning and rearing habitat.

(K) Sheep Creek from its confluence with the Middle Fork Salmon River upstream 16.3 km (10.1 mi) to its headwaters provides spawning and rearing habitat.

(L) Camas Creek from its confluence with the Middle Fork Salmon River upstream 22.2 km (13.8 mi) to its confluence with West Fork Camas Creek contains FMO habitat; Camas Creek from its confluence with West Fork Camas Creek upstream 30.3 km (18.8 mi) to its headwaters provides spawning and rearing habitat; Woodtick Creek from its confluence with Camas Creek upstream 9.6 km (5.9 mi) to its headwaters provides spawning and rearing habitat; Castle Creek from its confluence with Camas Creek upstream 15.0 km (9.3 mi) to its headwaters provides spawning and rearing habitat; Sheep Creek from its confluence with Camas Creek upstream 3.2 km (2.0 mi) contains FMO habitat; Furnace Creek from its confluence with Camas Creek upstream 12.9 km (8.0 mi) to its headwaters provides spawning and rearing habitat; White Goat Creek from its confluence with Camas Creek upstream 7.1 km (4.4 mi) to its headwaters provides spawning and rearing habitat; South Fork Camas Creek from its confluence with Camas Creek upstream 13.2 km (8.2 mi) to its headwaters provides spawning and rearing habitat; Fly Creek from its confluence with Camas Creek upstream 6.2 km (3.9 mi) to its headwaters provides spawning and rearing habitat; Spider Creek from its confluence with Camas Creek upstream 3.3 km (2.1 mi) contains FMO habitat; and J Fell Creek from its confluence with Camas Creek upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(M) Yellowjacket Creek from its confluence with Camas Creek upstream 36.5 km (22.6 mi) to its headwaters provides spawning and rearing habitat; Camp Creek from its confluence with Yellowjacket Creek upstream 1.8 km (1.1 mi) contains FMO habitat; Lake Creek from its confluence with Yellowjacket Creek upstream 6.4 km (4.0 mi) to its headwaters provides spawning and rearing habitat; Hoodoo Creek from its confluence with Yellowjacket Creek upstream 13.6 km (8.5 mi) to its headwaters provides spawning and rearing habitat; Blackeagle Creek from its confluence with Hoodoo Creek upstream 2.9 km (1.8 mi) contains FMO habitat; Little Jacket Creek from its confluence with Yellowjacket Creek upstream 8.4 km (5.2 mi) to its headwaters provides spawning and rearing habitat; Trail Creek from its confluence with Yellowjacket Creek upstream 4.1 km (2.5 mi) contains FMO habitat; Meadow Creek from its confluence with Yellowjacket Creek upstream 2.0 km (1.3 mi) contains FMO habitat; Beagle Creek from its confluence with Yellowjacket Creek upstream 1.5 km (1.0 mi) to an unnamed tributary entering from the east contains FMO habitat; and Shovel Creek from its confluence with Yellowjacket Creek upstream 5.2 km (3.2 mi) to its headwaters provides spawning and rearing habitat.

(N) West Fork Camas Creek from its confluence with Camas Creek upstream 14.6 km (9.1 mi) to its headwaters provides spawning and rearing habitat; Martindale Creek from its confluence with West Fork Camas Creek upstream 3.0 km (1.9 mi) contains FMO habitat; and Pole Creek from its confluence with West Fork Camas Creek upstream 7.8 km (4.9 mi) to its headwaters and Liberty Creek from its confluence with Pole Creek upstream 4.3 km (2.7 mi) to its headwaters provide spawning and rearing habitat.

(O) Silver Creek from its confluence with Camas Creek upstream 29.0 km (18.0 mi) to its headwaters and Rams Creek from its confluence with Silver Creek upstream 1.2 km (0.8 mi) contain FMO habitat and Arrastra Creek from its confluence with Silver Creek upstream 7.8 km (4.8 mi) to its headwaters; Birdseye Creek from its confluence with Silver Creek upstream 6.9 km (4.3 mi) to its headwaters; and Blue Fork Silver Creek from its confluence with Silver Creek upstream 3.5 km (2.2 mi) to its headwaters contain spawning and rearing habitat.

(P) Norton Creek from its confluence with the Middle Fork Salmon River upstream 12.8 km (7.9 mi) to its headwaters provides spawning and rearing habitat.

(Q) Loon Creek from its confluence with the Middle Fork Salmon River upstream 39.1 km (24.3 mi) to its confluence with Mayfield Creek contains FMO habitat; Loon Creek from its confluence with Mayfield Creek upstream 15.4 km (9.6 mi) to its headwaters provides spawning and rearing habitat; Cache Creek from its confluence with Loon Creek upstream 11.5 km (7.1 mi) to its headwaters provides spawning and rearing habitat; Bear Creek from its confluence with Loon Creek upstream 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat; Cold Spring Creek from its confluence with Loon Creek upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; Jack Creek from its confluence with Loon Creek upstream 7.5 km (4.7 mi) to its headwaters contains FMO habitat; Indian Creek from its confluence with Loon Creek upstream 8.7 km (5.4 mi) to its headwaters provides spawning and rearing habitat; Cabin Creek from its confluence with Loon Creek upstream

10.5 km (6.5 mi) to its headwaters provides spawning and rearing habitat; Rock Creek from its confluence with Loon Creek upstream 13.0 km (8.1 mi) to its headwaters provides spawning and rearing habitat; Shell Creek from its confluence with Loon Creek upstream 5.5 km (3.4 mi) to its headwaters contains FMO habitat; Rat Creek from its confluence with Loon Creek upstream 4.9 km (3.0 mi) to its headwaters contains FMO habitat; Canyon Creek from its confluence with Loon Creek upstream 8.5 km (5.3 mi) to its headwaters contains FMO habitat; Deer Creek from its confluence with Loon Creek upstream 5.9 km (3.7 mi) to its headwaters contains FMO habitat; Trail Creek from its confluence with Loon Creek upstream 10.1 km (6.3 mi) to its headwaters provides spawning and rearing habitat; and Pioneer Creek from its confluence with Loon Creek upstream 11.0 km (6.8 mi) to its headwaters provides spawning and rearing habitat.

(R) Warm Spring Creek from its confluence with Loon Creek upstream 30.1 km (18.7 mi) to its headwaters provides spawning and rearing habitat; Fir Creek from its confluence with Warm Spring Creek upstream 5.2 km (3.2 mi) to its headwaters contains FMO habitat; Cat Creek from its confluence with Warm Spring Creek upstream 4.6 km (2.9 mi) contains FMO habitat; Mahoney Creek (also known as McHoney Creek on some maps) from its confluence with Warm Spring Creek upstream 6.2 km (3.8 mi) to its headwaters contains FMO habitat; Parker Creek from its confluence with Warm Spring Creek upstream 7.3 km (4.5 mi) to its headwaters contains FMO habitat; Wickiup Creek from its confluence with Warm Spring Creek upstream 5.5 km (3.4 mi) to its headwaters provides spawning and rearing habitat; Trapper Creek from its confluence with Warm Spring Creek upstream 12.1 km (7.5 mi) to its headwaters contains FMO habitat; McKee Creek from its confluence with Trapper Creek upstream 6.2 km (3.8 mi) to its headwaters contains FMO habitat; Rush Creek from its confluence with Trapper Creek upstream 5.9 km (3.7 mi) to its headwaters contains FMO habitat; and South Fork Warm Spring Creek from its confluence with Warm Spring Creek upstream 1.4 km (0.9 mi) to an unnamed tributary entering from the south provides spawning and rearing habitat.

(S) Cottonwood Creek from its confluence with Loon Creek upstream 8.9 km (5.5 mi) to its headwaters provides spawning and rearing habitat and South Fork Cottonwood Creek from its confluence with Cottonwood Creek upstream 7.4 km (4.6 mi) to its headwaters contains FMO habitat.

(T) Mayfield Creek from its confluence with Loon Creek upstream 5.1 km (3.2 mi) to the confluence of East Fork Mayfield Creek and West Fork Mayfield Creek provides spawning and rearing habitat; Nelson Creek from its confluence with Mayfield Creek upstream 4.9 km (3.0 mi) to its headwaters provides spawning and rearing habitat; West Fork Mayfield Creek from its confluence with East Fork Mayfield Creek upstream 11.2 km (6.9 mi) to its headwaters provides spawning and rearing habitat; Mystery Creek from its confluence with West Fork Mayfield Creek upstream 3.7 km (2.3 mi) to its headwaters contains FMO habitat; and East Fork Mayfield Creek from its confluence with West Fork Mayfield Creek upstream 20.2 km (12.5 mi) to its headwaters provides spawning and rearing habitat.

(U) Little Loon Creek from its confluence with the Middle Fork Salmon River upstream 18.5 km (11.5 mi) to its headwaters and West Fork Little Loon Creek from its confluence with Little Loon Creek upstream 6.2 km (3.9 mi) to its headwaters provide spawning and rearing habitat.

(V) Little Creek from its confluence with the Middle Fork Salmon River upstream 3.9 km (2.4 mi) to its headwaters contains FMO habitat.

(W) Thomas Creek from its confluence with the Middle Fork Salmon River upstream 1.8 km (1.1 mi) to the confluence of West Fork Thomas Creek and East Fork Thomas Creek; West Fork Thomas Creek from its confluence with Thomas Creek upstream 3.8 km (2.3 mi) to its headwaters; East Fork Thomas Creek from its confluence with Thomas Creek upstream 4.8 km (3.0 mi) to its headwaters; and West Fork Thomas Creek from its confluence with Thomas Creek upstream 3.8 km (2.3 mi) to its headwaters provide spawning and rearing habitat.

(X) Marble Creek from its confluence with the Middle Fork Salmon River upstream 21.5 km (13.3 mi) to Dynamite Creek contains FMO habitat and Marble Creek from its confluence with Dynamite Creek upstream 14.9 km (9.3 mi) to its headwaters; Trail Creek from its confluence with Marble Creek upstream 15.5 km (9.6 mi) to its headwaters; Dynamite Creek from its confluence with Marble Creek upstream 13.2 km (8.2 mi) to its headwaters; Buck Creek from its confluence with Marble Creek upstream 6.9 km (4.3 mi) to its headwaters; Little Cottonwood Creek from its confluence with Marble Creek upstream 6.5 km (4.0 mi) to its headwaters; and Big Cottonwood Creek from its confluence with Marble Creek upstream 12.2 km (7.6 mi) to its headwaters provide spawning and rearing habitat.

(Y) Indian Creek from its confluence with the Middle Fork Salmon River upstream 6.0 km (3.7 mi) to its confluence with Middle Fork Indian Creek contains FMO habitat and Indian Creek from its confluence with Middle Fork Indian Creek upstream 26.7 km (16.6 mi) to its headwaters; Middle Fork Indian Creek from its confluence with Indian Creek upstream 8.7 km (5.4 mi) to its headwaters; Cultus Creek from its confluence with Indian Creek upstream 4.9 km (3.1 mi) to its headwaters; Papoose Creek from its confluence with Indian Creek upstream 5.9 km (3.6 mi) to its headwaters; Little Indian Creek from its confluence with Indian Creek upstream 7.7 km (4.8 mi) to its headwaters; and Big Chief Creek from its confluence with Indian Creek upstream 8.2 km (5.1 mi) to its headwaters provide spawning and rearing habitat.

(Z) Pistol Creek from its confluence with the Middle Fork Salmon River upstream 5.0 km (3.1 mi) to Little Pistol Creek contains FMO habitat and Pistol Creek from its confluence with Little Pistol Creek upstream 24.4 km (15.1 mi) to its headwaters; Little Pistol Creek from its confluence with Pistol Creek upstream 22.1 km (13.7 mi) to its headwaters; Springfield Creek from its confluence with Little Pistol Creek upstream 6.0 km (3.7 mi) to its headwaters; West Fork Springfield Creek from its confluence with Springfield Creek upstream 5.5 km (3.4 mi) to its headwaters; Browning Creek from its confluence with Little Pistol Creek upstream 5.5 km (3.4 mi) to its headwaters; Forty-Five Creek from its confluence with Pistol Creek upstream 9.6 km (5.9 mi) to its headwaters; Luger Creek from its confluence with Pistol Creek upstream 8.8 km (5.5 mi) to its headwaters; and Thirty-Eight Creek from its confluence with Pistol Creek upstream 5.4 km (3.3 mi) to its headwaters provide spawning and rearing habitat.

(AA) Lake Creek from its confluence with the Middle Fork Salmon River upstream 4.3 km (2.7 mi) to its headwaters contains FMO habitat.

(BB) Rapid River from its confluence with the Middle Fork Salmon River upstream 20.2 km (12.6 mi) to its confluence with Float Creek contains FMO habitat and Rapid River from its confluence with Float Creek upstream 7.3 km (4.5 mi) to its confluence with Duffield Creek; Sheep Creek from its confluence with Rapid River upstream 3.3 km (2.0 mi) to its confluence with North Fork Sheep Creek and South Fork Sheep Creek; North Fork Sheep Creek from its confluence with South Fork Sheep Creek upstream 5.1 km (3.2 mi) to its headwaters; South Fork Sheep Creek from its confluence with North Fork Sheep Creek upstream 7.2 km (4.5 mi) to its headwaters; Sulfur Creek from its confluence with Rapid River upstream 7.9 km (4.9 mi) to its headwaters; Float Creek from its confluence with Rapid River upstream 11.4 km (7.1 mi) to its headwaters; Vanity Creek from its confluence with Rapid River upstream 9.6 km (6.0 mi) to its headwaters; Seafoam Creek from its confluence with Vanity Creek upstream 5.6 km (3.5 mi) to an unnamed tributary entering from the south; and Baldwin Creek from its confluence with Seafoam Creek upstream 5.9 km (3.7 mi) provide spawning and rearing habitat.

(CC) Duffield Creek from its confluence with Pinyon Creek upstream 10.9 km (6.8 mi) to its headwaters provides spawning and rearing habitat.

(DD) Greyhound Creek from its confluence with the Middle Fork Salmon River upstream 8.3 km (5.2 mi) to its headwaters provides spawning and rearing habitat.

(EE) Lake Creek from its confluence with the Middle Fork Salmon River upstream 5.1 km (3.2 mi) to its headwaters contains FMO habitat.

(FF) Soldier Creek from its confluence with the Middle Fork Salmon River upstream 12.6 km (7.8 mi) to its headwaters provides spawning and rearing habitat.

(GG) Elkhorn Creek from its confluence with the Middle Fork Salmon River upstream 11.9 km (7.4 mi) to its headwaters provides spawning and rearing habitat; North Fork Elkhorn Creek from its confluence with Elkhorn Creek upstream 7.9 km (4.9 mi) to its headwaters provides spawning and rearing habitat; Lucky Creek from its confluence with North Fork Elkhorn Creek upstream 6.0 km (3.7 mi) to its headwaters contains FMO habitat; and Middle Fork Elkhorn Creek from its confluence with Elkhorn Creek upstream 6.8 km (4.2 mi) to its headwaters provides spawning and rearing habitat.

(HH) Sulphur Creek from its confluence with the Middle Fork Salmon River upstream 29.3 km (18.2 mi) to its headwaters provides spawning and rearing habitat and Honeymoon Creek from its confluence with Sulphur Creek upstream 0.8 km (0.5 mi); Half Moon Creek from its confluence with Honeymoon Creek upstream 0.3 km (0.2 mi); and North Fork Sulphur Creek from its confluence with Sulphur Creek upstream 6.3 km (3.9 mi) to its headwaters contain FMO habitat.

(II) Dagger Creek from its confluence with the Middle Fork Salmon River upstream 12.4 km (7.7 mi) to its headwaters provides spawning and rearing habitat.

(JJ) Marsh Creek from its confluence with the Middle Fork Salmon River upstream 15.5 km (9.7 mi) to its confluence with Knapp Creek contains FMO habitat; Marsh Creek from its confluence with Knapp Creek upstream 6.4 km (3.9 mi) to its headwaters provides spawning and rearing habitat; Lola Creek from its confluence with Marsh Creek upstream 6.3 km (3.9 mi) to its headwaters provides spawning and rearing habitat; Beaver Creek from its confluence with Marsh Creek upstream 8.5 km (5.3 mi) to its confluence with Bear Creek contains FMO habitat; Beaver Creek from its confluence with Bear Creek upstream 18.8 km (11.7 mi) to its headwaters provides spawning and rearing habitat; Winnemucca Creek from its confluence with Beaver Creek upstream 11.3 km (7.0 mi) to its headwaters provides spawning and rearing habitat; Bear Creek from its confluence with Beaver Creek upstream 6.5 km (4.1 mi) to its headwaters provides spawning and rearing habitat; Cape Horn Creek from its confluence with Marsh Creek upstream 15.1 km (9.4 mi) to its headwaters provides spawning and rearing habitat; Banner Creek from its confluence with Cape Horn Creek upstream 11.5 km (7.1 mi) to its headwaters provides spawning and rearing habitat; Knapp Creek from its confluence with

Marsh Creek upstream 24.8 km (15.4 mi) to its headwaters provides spawning and rearing habitat; and an unnamed creek (entering Knapp Creek approximately 11 km (7 mi) upstream from its confluence with Marsh Creek) from its confluence with Knapp Creek upstream 3.0 km (1.9 mi) to its headwaters contains FMO habitat.

(KK) Bear Valley Creek from its confluence with Marsh Creek upstream 18.1 km (11.2 mi) to its confluence with Elk Creek contains FMO habitat and Bear Valley Creek from its confluence with Elk Creek upstream 31.4 km (19.5 mi) to its headwaters; Fir Creek from its confluence with Bear Valley Creek upstream 11.0 km (6.8 mi) to its headwaters; Cold Creek from its confluence with Bear Valley Creek upstream 6.8 km (4.2 mi) to its headwaters; Wyoming Creek from its confluence with Bear Valley Creek upstream 10.0 km (6.2 mi) to its headwaters; Poker Creek from its confluence with Bear Valley Creek upstream 4.0 km (2.5 mi) to its headwaters; Chip Creek from its confluence with Bear Valley Creek upstream 2.6 km (1.6 mi) to its headwaters; Pole Creek from its confluence with Bear Valley Creek upstream 3.1 km (1.9 mi) to its headwaters; Sack Creek from its confluence with Bear Valley Creek upstream 8.9 km (5.5 mi) to its headwaters; Cache Creek from its confluence with Bear Valley Creek upstream 12.2 km (7.6 mi) to its headwaters; East Fork Cache Creek from its confluence with Cache Creek upstream 3.2 km (2.0 mi) to its headwaters; Sheep Trail Creek from its confluence with Bear Valley Creek upstream 3.6 km (2.2 mi) to its headwaters; Cub Creek from its confluence with Bear Valley Creek upstream 4.2 km (2.6 mi) to its headwaters; and Casner Creek from its confluence with Bear Valley Creek upstream 4.4 km (2.8 mi) to its headwaters provide spawning and rearing habitat.

(LL) Elk Creek from its confluence with Bear Valley Creek upstream 25.5 km (15.9 mi) to the confluence of East Fork Elk Creek and North Fork Elk Creek contains FMO habitat; Cook Creek from its confluence with Elk Creek upstream 9.8 km (6.1 mi) to its headwaters provides spawning and rearing habitat; Bearskin Creek from its confluence with Elk Creek upstream 13.6 km (8.4 mi) to its headwaters provides spawning and rearing habitat; Little Beaver Creek from its confluence with Bearskin Creek upstream 6.3 km (3.9 mi) to its headwaters provides spawning and rearing habitat; an unnamed creek (entering Bearskin Creek from the west approximately 6.0 km (3.7 mi) upstream from its confluence with Little Beaver Creek) from its confluence with Bearskin Creek upstream 2.7 km (1.7 mi) to its headwaters contains FMO habitat; Porter Creek from its confluence with Elk Creek upstream 9.9 km (6.2 mi) to its headwaters provides spawning and rearing habitat; Little East Fork Elk Creek from its confluence with Elk Creek upstream 5.1 km (3.2 mi) to its headwaters contains FMO habitat; West Fork Elk Creek from its confluence with Elk Creek upstream 6.4 km (4.0 mi) to its headwaters provides spawning and rearing habitat; North Fork Elk Creek from its confluence with East Fork Elk Creek upstream 5.1 km (3.2 mi) to its headwaters provides spawning and rearing habitat; East Fork Elk Creek from its confluence with North Fork Elk Creek upstream 10.2 km (6.4 mi) to its headwaters provides spawning and rearing habitat.

Table 74. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Middle Fork Salmon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Blue Fork Silver Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1143544 448830
Salmon River Basin–Middle Fork Salmon River	Birdseye Creek	ID	(Bruce Roberts in Service in litt. 2002, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1143841 449270
Salmon River Basin–Middle Fork Salmon River	Arrastra Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144247 448684
Salmon River Basin–Middle Fork Salmon River	Rams Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1144523 448610
Salmon River Basin–Middle Fork Salmon River	J Fell Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144576 446840
Salmon River Basin–Middle Fork Salmon River	Castle Creek	ID	(StreamNet 2009, pg. 27; Service in litt 2002b, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144706 448011
Salmon River Basin–Middle Fork Salmon River	Shovel Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144779 450002
Salmon River Basin–Middle Fork Salmon River	Beagle Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1144796 449962

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Sheep Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1144820 447703
Salmon River Basin–Middle Fork Salmon River	Spider Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1144834 446966
Salmon River Basin–Middle Fork Salmon River	Furnace Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1144857 447665
Salmon River Basin–Middle Fork Salmon River	Meadow Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1144866 449905
Salmon River Basin–Middle Fork Salmon River	White Goat Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144883 447412
Salmon River Basin–Middle Fork Salmon River	Fly Creek	ID	(StreamNet 2009, pg. 20; Service in litt 2002b, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144960 447052
Salmon River Basin–Middle Fork Salmon River	South Fork Camas Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1144979 447206
Salmon River Basin–Middle Fork Salmon River	Silver Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145007 448300
Salmon River Basin–Middle Fork Salmon River	West Fork Camas Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145035 448310

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Trail Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1145310 449761
Salmon River Basin–Middle Fork Salmon River	Martindale Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145438 448135
Salmon River Basin–Middle Fork Salmon River	South Fork Warm Spring Creek	ID	Tom Montoya (Service in litt. 2002c,pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1145514 445784
Salmon River Basin–Middle Fork Salmon River	Little Jacket Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1145655 449529
Salmon River Basin–Middle Fork Salmon River	Blackeagle Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145670 449919
Salmon River Basin–Middle Fork Salmon River	Hoodoo Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1145812 449527
Salmon River Basin–Middle Fork Salmon River	Lake Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1145908 449475
Salmon River Basin–Middle Fork Salmon River	Middle Fork Salmon River	ID	Leon Jadlowski (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1145914 452972
Salmon River Basin–Middle Fork Salmon River	Pole Creek-Camas	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	11459374 47942

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Camp Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1145942 449446
Salmon River Basin–Middle Fork Salmon River	Parker Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145959 446225
Salmon River Basin–Middle Fork Salmon River	Wickiup Creek-Loon	ID	Tom Montoya (Service in litt. 2002c,pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1145966 446065
Salmon River Basin–Middle Fork Salmon River	Trapper Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146022 445966
Salmon River Basin–Middle Fork Salmon River	McKee Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146086 445909
Salmon River Basin–Middle Fork Salmon River	McHoney Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146094 446383
Salmon River Basin–Middle Fork Salmon River	Rush Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146130 445780.2
Salmon River Basin–Middle Fork Salmon River	Liberty Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146167 447835
Salmon River Basin–Middle Fork Salmon River	Woodtick Creek	ID	(Bruce Roberts in Service in litt. 2002, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1146250 448840

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Cat Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1146275 446522
Salmon River Basin–Middle Fork Salmon River	Yellowjacket Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1146437 448923
Salmon River Basin–Middle Fork Salmon River	Roaring Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1146450 452593
Salmon River Basin–Middle Fork Salmon River	Alpine Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1146546 450318
Salmon River Basin–Middle Fork Salmon River	Alpine Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1146546 450318
Salmon River Basin–Middle Fork Salmon River	Stoddard Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1146668 452353
Salmon River Basin–Middle Fork Salmon River	Fir Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1146977 446554
Salmon River Basin–Middle Fork Salmon River	Ship Island Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1147196 451755.1
Salmon River Basin–Middle Fork Salmon River	Ship Island Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1147196 451755.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Ship Island Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1147196 451755.3
Salmon River Basin–Middle Fork Salmon River	Ship Island Creek	ID	(StreamNet 2009, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1147196 451755.4
Salmon River Basin–Middle Fork Salmon River	Papoose Creek	ID	(StreamNet 2009, pg. 29)	Rationale provided in Salmon River Basin CHU justification text	1147198 451741
Salmon River Basin–Middle Fork Salmon River	Camas Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1147222 448918.1
Salmon River Basin–Middle Fork Salmon River	Camas Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1147222 448918.2
Salmon River Basin–Middle Fork Salmon River	Wilson Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1147235 450334
Salmon River Basin–Middle Fork Salmon River	Soldier Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1147257 450286
Salmon River Basin–Middle Fork Salmon River	Sheep Creek-Lmf	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1147264 449426
Salmon River Basin–Middle Fork Salmon River	Big Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1147322 450945.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Big Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1147322 450945.2
Salmon River Basin–Middle Fork Salmon River	Big Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1147322 450945.3
Salmon River Basin–Middle Fork Salmon River	Brush Creek	ID	(StreamNet 2009, pg. 29)	Rationale provided in Salmon River Basin CHU justification text	1147330 449554
Salmon River Basin–Middle Fork Salmon River	Bernard Creek	ID	(StreamNet 2009, pg. 29)	Rationale provided in Salmon River Basin CHU justification text	1147342 449752
Salmon River Basin–Middle Fork Salmon River	Warm Spring Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147361 446527
Salmon River Basin–Middle Fork Salmon River	Rock Creek-Loon	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147399 446744
Salmon River Basin–Middle Fork Salmon River	Cabin Creek-Loon	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147529 446911
Salmon River Basin–Middle Fork Salmon River	Indian Creek-Loon	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147544 446922
Salmon River Basin–Middle Fork Salmon River	South Fork Cottonwood Creek	ID	(StreamNet 2009, pg. 30)	Rationale provided in Salmon River Basin CHU justification text	1147594 446210

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Cottonwood Creek	ID	(StreamNet 2009, pg. 30; Tom Montoya in Service in litt. 2002, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1147605 446230
Salmon River Basin–Middle Fork Salmon River	Jack Creek	ID	(StreamNet 2009, pg. 30)	Rationale provided in Salmon River Basin CHU justification text	1147605 446957
Salmon River Basin–Middle Fork Salmon River	Mystery Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1147741 445190
Salmon River Basin–Middle Fork Salmon River	Shell Creek	ID	(StreamNet 2009, pg. 26)	Rationale provided in Salmon River Basin CHU justification text	1147884 446131
Salmon River Basin–Middle Fork Salmon River	Norton Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147936 448267
Salmon River Basin–Middle Fork Salmon River	East Fork Mayfield Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1147974 445391
Salmon River Basin–Middle Fork Salmon River	West Fork Mayfield Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1147974 445392
Salmon River Basin–Middle Fork Salmon River	Cold Spring Creek-Loon	ID	Tom Montoya (Service in litt. 2002c,pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1147986 447179
Salmon River Basin–Middle Fork Salmon River	Nelson Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1148030 445401

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Cache Creek-Loon	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1148054 448010
Salmon River Basin–Middle Fork Salmon River	Loon Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1148112 448083.1
Salmon River Basin–Middle Fork Salmon River	Loon Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1148112 448083.2
Salmon River Basin–Middle Fork Salmon River	Bear Creek-Loon	ID	Tom Montoya (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1148179 447417
Salmon River Basin–Middle Fork Salmon River	Rat Creek	ID	(StreamNet 2009, pg. 26)	Rationale provided in Salmon River Basin CHU justification text	1148249 445883
Salmon River Basin–Middle Fork Salmon River	Canyon Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1148459 445684
Salmon River Basin–Middle Fork Salmon River	Mayfield Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1148492 445522
Salmon River Basin–Middle Fork Salmon River	Deer Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1148538 445482
Salmon River Basin–Middle Fork Salmon River	Trail Creek-Loon	ID	Tom Montoya (Service in litt. 2002c,pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1148578 445433

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Rush Creek	ID	Tom Montoya (Service in litt. 2002c,pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1148605 451048.1
Salmon River Basin–Middle Fork Salmon River	Pioneer Creek - Loon	ID	Tom Montoya (Service in litt. 2002c,pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1148640 445216
Salmon River Basin–Middle Fork Salmon River	West Fork Little Loon Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1149345 447096
Salmon River Basin–Middle Fork Salmon River	Cabin Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 12)	Rationale provided in Salmon River Basin CHU justification text	1149354 451265
Salmon River Basin–Middle Fork Salmon River	Little Loon Creek	ID	(StreamNet 2009, pg. 23; Service in litt 2002b, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1149397 447312
Salmon River Basin–Middle Fork Salmon River	Cave-Big Creek	ID	Dave Burns (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1149547 451322
Salmon River Basin–Middle Fork Salmon River	South Fork Rush Creek	ID	(StreamNet 2009, pg. 22, Service in litt 2002b, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1149782 450138
Salmon River Basin–Middle Fork Salmon River	Little Creek	ID	(StreamNet 2009, pg. 22, Service in litt 2002b, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1149975 447238
Salmon River Basin–Middle Fork Salmon River	Duffield Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	115007 4445509

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Trail Creek-Marble	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150094 448408
Salmon River Basin–Middle Fork Salmon River	Thomas Creek	ID	(StreamNet 2009, pg. 24; Service in litt 2002b, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150110 447147
Salmon River Basin–Middle Fork Salmon River	Marble Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150164 447433.1
Salmon River Basin–Middle Fork Salmon River	Marble Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150164 447433.2
Salmon River Basin–Middle Fork Salmon River	North Fork Sheep Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150175 446490
Salmon River Basin–Middle Fork Salmon River	South Fork Sheep Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150175 446491
Salmon River Basin–Middle Fork Salmon River	East Fork Thomas Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150268 447049
Salmon River Basin–Middle Fork Salmon River	West Fork Thomas Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150268 447050
Salmon River Basin–Middle Fork Salmon River	Unnamed-to Knapp Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1150356 444207

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Dynamite Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150567 448763
Salmon River Basin–Middle Fork Salmon River	Sheep Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1150575 446466
Salmon River Basin–Middle Fork Salmon River	Winnemucca Creek	ID	Tom Montoya (Service in litt. 2002c,pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1150578 444364
Salmon River Basin–Middle Fork Salmon River	Vanity Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150612 445531
Salmon River Basin–Middle Fork Salmon River	Seafoam Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150644 445419
Salmon River Basin–Middle Fork Salmon River	Buck Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150645 448962
Salmon River Basin–Middle Fork Salmon River	Baldwin Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150673 445414
Salmon River Basin–Middle Fork Salmon River	Float Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150710 445710
Salmon River Basin–Middle Fork Salmon River	Sulphur Creek-Rapid	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1150730 445862

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Little Cottonwood Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150732 449068
Salmon River Basin–Middle Fork Salmon River	Big Cottonwood Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150818 449116
Salmon River Basin–Middle Fork Salmon River	Indian Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150903 447696.1
Salmon River Basin–Middle Fork Salmon River	Indian Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1150903 447696.2
Salmon River Basin–Middle Fork Salmon River	Bear Creek-Marsh	ID	Tom Montoya (Service in litt. 2002c,pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151001 444387
Salmon River Basin–Middle Fork Salmon River	Crooked Creek	ID	(StreamNet 2009, pg. 20)	Rationale provided in Salmon River Basin CHU justification text	1151281 451632
Salmon River Basin–Middle Fork Salmon River	Monumental Creek	ID	Dave Burns (Service in litt. 2002c, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1151290 451604
Salmon River Basin–Middle Fork Salmon River	Knapp Creek	ID	Tom Montoya (Service in litt. 2002c,pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151311 443652
Salmon River Basin–Middle Fork Salmon River	Middle Fork Indian Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1151325 447965

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	West Fork Monumental Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1151393 450050
Salmon River Basin–Middle Fork Salmon River	Lake Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1151416 447196
Salmon River Basin–Middle Fork Salmon River	Pistol Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1151487 447239.1
Salmon River Basin–Middle Fork Salmon River	Pistol Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1151487 447239.2
Salmon River Basin–Middle Fork Salmon River	Rapid River	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1151523 446804.1
Salmon River Basin–Middle Fork Salmon River	Rapid River	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1151523 446804.2
Salmon River Basin–Middle Fork Salmon River	Snowslide Creek	ID	(StreamNet 2009, pg. 21, Service in litt 2002b, pg. 10)	Rationale provided in Salmon River Basin CHU justification text	1151558 450984
Salmon River Basin–Middle Fork Salmon River	Big Ramey Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1151595 451770
Salmon River Basin–Middle Fork Salmon River	Greyhound Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1151670 446484

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Cape Horn Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151682 443950
Salmon River Basin–Middle Fork Salmon River	Beaver Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151697 444060.1
Salmon River Basin–Middle Fork Salmon River	Beaver Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151697 444060.2
Salmon River Basin–Middle Fork Salmon River	Lola Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1151737 444082
Salmon River Basin–Middle Fork Salmon River	Cultus Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1151752 448129
Salmon River Basin–Middle Fork Salmon River	Lake Creek	ID	(StreamNet 2009, pg. 21)	Rationale provided in Salmon River Basin CHU justification text	1151801 446429
Salmon River Basin–Middle Fork Salmon River	East Fork Big Ramey Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1151873 452139
Salmon River Basin–Middle Fork Salmon River	Little Pistol Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152032 447211
Salmon River Basin–Middle Fork Salmon River	Banner Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1152079 443560

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Soldier Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1152122 446259
Salmon River Basin–Middle Fork Salmon River	Bear Valley Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1152301 444492.1
Salmon River Basin–Middle Fork Salmon River	Bear Valley Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1152301 444492.2
Salmon River Basin–Middle Fork Salmon River	Marsh Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1152301 444493.1
Salmon River Basin–Middle Fork Salmon River	Marsh Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1152301 444493.2
Salmon River Basin–Middle Fork Salmon River	Forty-Five Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	115232 4447179
Salmon River Basin–Middle Fork Salmon River	Beaver Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152425 451626
Salmon River Basin–Middle Fork Salmon River	Beaver Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1152425 451626
Salmon River Basin–Middle Fork Salmon River	Papoose Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152447 448372

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Little Indian Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152558 448415
Salmon River Basin–Middle Fork Salmon River	Elkhorn Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152565 446153
Salmon River Basin–Middle Fork Salmon River	North Fork Elkhorn Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152761 446250
Salmon River Basin–Middle Fork Salmon River	Lucky Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152766 446252
Salmon River Basin–Middle Fork Salmon River	Dagger Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1152812 445233
Salmon River Basin–Middle Fork Salmon River	Middle Fork Elkhorn Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152899 446201
Salmon River Basin–Middle Fork Salmon River	Fir Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1152902 444282
Salmon River Basin–Middle Fork Salmon River	Smith Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1152968 451525
Salmon River Basin–Middle Fork Salmon River	Big Chief Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152973 448376

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Sulphur Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1152974 445546
Salmon River Basin–Middle Fork Salmon River	Hand Creek	ID	(StreamNet 2009, pg. 18, Service in litt 2002b, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1152999 452276
Salmon River Basin–Middle Fork Salmon River	Cold Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153106 444252
Salmon River Basin–Middle Fork Salmon River	Springfield Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1153117 447642
Salmon River Basin–Middle Fork Salmon River	Boulder Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1153140 452419
Salmon River Basin–Middle Fork Salmon River	Logan Creek	ID	(Service in litt 2002b, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1153192 451183
Salmon River Basin–Middle Fork Salmon River	West Fork Springfield Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1153198 447857
Salmon River Basin–Middle Fork Salmon River	Wyoming Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1153205 444255
Salmon River Basin–Middle Fork Salmon River	Poker Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153342 444290

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Chip Creek	ID	(USFS 2002b)	Rationale provided in Salmon River Basin CHU justification text	1153398 444288
Salmon River Basin–Middle Fork Salmon River	North Fork Smith Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153451 451882
Salmon River Basin–Middle Fork Salmon River	Luger Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1153571 446864
Salmon River Basin–Middle Fork Salmon River	Browning Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1153628 447590
Salmon River Basin–Middle Fork Salmon River	Belvidere Creek	ID	(StreamNet 2009, pg. 17, Service in litt 2002b, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1153636 450695
Salmon River Basin–Middle Fork Salmon River	Elk Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153717 444105
Salmon River Basin–Middle Fork Salmon River	Cook Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153766 444086
Salmon River Basin–Middle Fork Salmon River	Pole Creek	ID	(StreamNet 2009, pg. 17)	Rationale provided in Salmon River Basin CHU justification text	1153788 443858
Salmon River Basin–Middle Fork Salmon River	South Fork Smith Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1153803 451704

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Middle Fork Smith Creek	ID	Dave Burns (Service in litt. 2002c, pg. 11)	Rationale provided in Salmon River Basin CHU justification text	1153804 451703
Salmon River Basin–Middle Fork Salmon River	Thirty-Eight Creek	ID	Leon Jadlowski (Service in litt. 2002c, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1153948 446727
Salmon River Basin–Middle Fork Salmon River	Sack Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1154075 443590
Salmon River Basin–Middle Fork Salmon River	Half Moon Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	1154112 445567
Salmon River Basin–Middle Fork Salmon River	Honeymoon Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	1154127 445533
Salmon River Basin–Middle Fork Salmon River	Cache Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154190 443464
Salmon River Basin–Middle Fork Salmon River	East Fork Cache Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	1154228 443146
Salmon River Basin–Middle Fork Salmon River	North Fork Sulphur Creek	ID	(IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1154387 445541
Salmon River Basin–Middle Fork Salmon River	Little East Fork Elk Creek	ID	(IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1154450 444645

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Sheep Trail Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1154473 443369
Salmon River Basin–Middle Fork Salmon River	Porter Creek	ID	(StreamNet 2009, pg. 16)	Rationale provided in Salmon River Basin CHU justification text	1154503 444574
Salmon River Basin–Middle Fork Salmon River	East Fork Elk Creek	ID	(StreamNet 2009, pg. 18)	Rationale provided in Salmon River Basin CHU justification text	1154524 444852
Salmon River Basin–Middle Fork Salmon River	North Fork Elk Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154524 444853
Salmon River Basin–Middle Fork Salmon River	West Fork Elk Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154572 444790
Salmon River Basin–Middle Fork Salmon River	Bearskin Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154663 444147
Salmon River Basin–Middle Fork Salmon River	Cub Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154726 443244
Salmon River Basin–Middle Fork Salmon River	Casner Creek	ID	(StreamNet 2009, pg. 15)	Rationale provided in Salmon River Basin CHU justification text	1154840 442950
Salmon River Basin–Middle Fork Salmon River	Little Beaver Creek	ID	(StreamNet 2009, pg. 14)	Rationale provided in Salmon River Basin CHU justification text	1154913 444095

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Fork Salmon River	Unnamed to Bearskin Creek	ID	(Kellet 2008)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Middle Fork Salmon River	Airplane Lake	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1145987 451562
Salmon River Basin–Middle Fork Salmon River	Alpine Creek Lake #5	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1146168 450775
Salmon River Basin–Middle Fork Salmon River	Big Creek Marsh	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1153329 450912
Salmon River Basin–Middle Fork Salmon River	Ship Island Lake #1	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1146254 451661
Salmon River Basin–Middle Fork Salmon River	Shoban Lake	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1146024 451529

27.5. Middle Salmon–Panther River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it contains many individuals, a large amount of habitat, and moderate threat level. This CHSU has fluvial life history forms that are important in the long-term recovery of the species. This CHSU provides a migratory corridor between multiple CHSUs, which promotes the expression of the migratory life history expression within the Salmon River basin (see Appendix 1 for more detailed information).

Located within Lemhi County in east-central Idaho, immediately west of the town of Salmon, Idaho, designated critical habitat includes 990.7 km (615.6 mi) of streams.

The following water bodies are included in this CHSU (see Table 75):

(A) The Salmon River from its confluence with Chamberlain Creek upstream 206.8 km (128.5 mi) to approximately its confluence with the Pahsimeroi River contains FMO habitat.

(B) Devils Toe Creek from its confluence with the Salmon River upstream 4.4 km (2.8 mi) to its headwaters contains FMO habitat.

(C) Disappointment Creek from its confluence with the Salmon River upstream 16.6 km (10.3 mi) to its headwaters; Hungry Creek from its confluence with Disappointment Creek upstream 6.2 km (3.8 mi) to its headwaters; Starvation Creek from its confluence with Disappointment Creek upstream 6.0 km (3.7 mi) to its headwaters; and Dismal Creek from its confluence with Starvation Creek upstream 5.6 km (3.5 mi) to its headwaters contain FMO habitat.

(D) Horse Creek from its confluence with the Salmon River upstream 40.9 km (25.4 mi) to its headwaters provides spawning and rearing habitat; Little Horse Creek from its confluence with Horse Creek upstream 14.5 km (9.0 mi) to its headwaters contains FMO habitat; and Cayuse Creek from its confluence with Horse Creek upstream 4.7 km (2.9 mi) and Woods Fork Horse Creek (also known as Woods Creek) from its confluence with Horse Creek upstream 3.9 km (2.4 mi) to its headwaters provide spawning and rearing habitat.

(E) Corn Creek from its confluence with the Salmon River upstream 11.3 km (7.0 mi) to its headwaters and Colson Creek from its confluence with the Salmon River upstream 9.7 km (6.0 mi) to its headwaters contain FMO habitat.

(F) Owl Creek from its confluence with the Salmon River upstream 23.1 km (14.3 mi) to its headwaters provides spawning and rearing habitat and East Fork Owl Creek from its confluence with Owl Creek upstream 0.8 km (0.5 mi) contains FMO habitat.

(G) Panther Creek from its confluence with the Salmon River upstream 47.1 km (29.3 mi) to its confluence with Moyer Creek contains FMO habitat and Panther Creek from its confluence with Moyer Creek upstream 25.9 km (16.1 mi) to its headwaters; Clear Creek from its confluence with Panther Creek upstream 27.7 km (17.2 mi) to its headwaters; Beaver Creek from its confluence with Panther Creek upstream 15.5 km (9.7 mi) to its headwaters; and Trail Creek from its confluence with Panther Creek upstream 8.8 km (5.5 mi) to its headwaters provide spawning and rearing habitat.

(H) Napias Creek from its confluence with Panther Creek upstream 3.0 km (1.9 mi) contains FMO habitat and Napias Creek from 3.0 km (1.9 mi) upstream from its mouth upstream 20.5 km (12.7 mi) to its headwaters; Moccasin Creek from its confluence with Napias Creek upstream

10.9 km (6.8 mi) to its headwaters; Phelan Creek from the confluence of Napias Creek upstream 11.5 km (7.1 mi) to its headwaters; Pony Creek from the confluence of Napias Creek upstream 7.4 km (4.6 mi) to its headwaters; Arnett Creek from the confluence of Napias Creek upstream 12.5 km (7.8 mi) to its headwaters; Rapps Creek from the confluence of Arnett Creek upstream 8.3 km (5.1 mi) to its headwaters; Jefferson Creek from the confluence of Arnett Creek upstream 3.4 km (2.1 mi) to its headwaters; and Camp Creek from the confluence of Arnett Creek upstream 8.0 km (5.0 mi) to its headwaters provide spawning and rearing habitat and Sharkey Creek from the confluence of Napias Creek upstream 5.9 km (3.7 mi) to its headwaters contains FMO habitat.

(I) Deep Creek from its confluence with Panther Creek upstream 19.5 km (12.1 mi) to its headwaters; Little Deep Creek from its confluence with Deep Creek upstream 13.6 km (8.4 mi) to its headwaters; and an unnamed creek (tributary to Deep Creek) from its confluence with Deep Creek upstream 3.2 km (2.0 mi) to its headwaters provide spawning and rearing habitat.

(J) Woodtick Creek from its confluence with Panther Creek upstream 14.1 km (8.8 mi) to its headwaters provides spawning and rearing habitat.

(K) Moyer Creek from its confluence with Panther Creek upstream 19.7 km (12.3 mi) to its headwaters; Salt Creek from its confluence with Moyer Creek upstream 6.5 km (4.0 mi) to its headwaters; and South Fork Moyer Creek from its confluence with Moyer Creek upstream 12.2 km (7.6 mi) to its headwaters provide spawning and rearing habitat.

(L) Musgrove Creek from its confluence with Panther Creek upstream 17.6 km (10.9 mi) to its headwaters provides spawning and rearing habitat.

(M) Porphyry Creek from its confluence with Panther Creek upstream 11.5 km (7.2 mi) to its headwaters provides spawning and rearing habitat.

(N) Fourth of July Creek from its confluence with Panther Creek upstream 6.7 km (4.1 mi) to its headwaters provides spawning and rearing habitat.

(O) Opal Creek from its confluence with Panther Creek upstream 3.4 km (2.1 mi) to the outlet of Opal Lake provides spawning and rearing habitat.

(P) Weasel Creek from its confluence with Panther Creek upstream 2.8 km (1.8 mi) to its headwaters provides spawning and rearing habitat.

(Q) Mink Creek from its confluence with Panther Creek upstream 4.1 km (2.5 mi) to its headwaters provides spawning and rearing habitat.

(R) Otter Creek from its confluence with Panther Creek upstream 5.7 km (3.5 mi) to its headwaters provides spawning and rearing habitat.

(S) Pine Creek from its confluence with the Salmon River upstream 16.1 km (10.0 mi) to its headwaters provides spawning and rearing habitat.

(T) Squaw Creek from its confluence with the Salmon River upstream 15.0 km (9.3 mi) to its headwaters provides spawning and rearing habitat.

(U) Indian Creek from its confluence with the Salmon River upstream 18.8 km (11.7 mi) to its headwaters; West Fork Indian Creek from the confluence of Indian Creek upstream 5.6 km (3.5 mi) to its headwaters; Corral Creek from the confluence of Indian Creek upstream 7.6 km

(4.7 mi) to its headwaters; and McConn Creek from the confluence of Indian Creek upstream 9.2 km (5.7 mi) to its headwaters provide spawning and rearing habitat.

(V) Moose Creek from the confluence of the Salmon River upstream 23.5 km (14.6 mi) to its headwaters contains FMO habitat.

(W) North Fork Salmon River from its confluence with the Salmon River upstream 8.5 km (5.3 mi) to the confluence of Hughes Creek contains FMO habitat; North Fork Salmon River from its confluence with Hughes Creek upstream 30.8 km (19.1 mi) to its headwaters provides spawning and rearing habitat; and Hull Creek from the confluence of North Fork Salmon River upstream 8.9 km (5.5 mi) to its headwaters contains FMO habitat and Hughes Creek from the confluence of North Fork Salmon River upstream 18.2 km (11.3 mi) to its headwaters; Sheep Creek from the confluence of North Fork Salmon River upstream 10.9 km (6.8 mi) to the confluence of North Fork Sheep Creek and South Fork Sheep Creek; South Fork Sheep Creek from its confluence with Sheep Creek upstream 5.2 km (3.2 mi) to its headwaters; North Fork Sheep Creek from its confluence with Sheep Creek upstream 9.2 km (5.7 mi) to its headwaters; Dahlonega Creek from the confluence of North Fork Salmon River upstream 12.6 km (7.9 mi) to its headwaters; Twin Creek from the confluence of North Fork Salmon River upstream 11.9 km (7.4 mi) to its headwaters; Vine Creek from the confluence of North Fork Salmon River upstream 4.4 km (2.8 mi) to its headwaters; Pierce Creek from the confluence of North Fork Salmon River upstream 6.7 km (4.2 mi) to its headwaters; West Fork North Fork Salmon River from the confluence of North Fork Salmon River upstream 3.1 km (1.9 mi); and Moose Creek from the confluence of the North Fork Salmon River upstream 5.0 km (3.1 mi) to its headwaters provide spawning and rearing habitat.

(X) Fourth of July Creek from its confluence with the Salmon River upstream 2.7 km (1.7 mi) to the confluence of Little Fourth of July Creek contains FMO habitat and Fourth of July Creek from its confluence with Little Fourth of July Creek upstream 15.2 km (9.5 mi) to its headwaters provides spawning and rearing habitat.

(Y) Ditch Creek from its confluence with Hughes Creek upstream 11.9 km (7.4 mi) to its headwaters is FMO habitat.

(Z) Garden Creek from its confluence with Panther Creek upstream 13.7 km (8.5 mi)) to its headwaters is spawning and rearing habitat.

(AA) Pruvan Creek from its confluence with North Fork Sheep Creek upstream 4.6 km (2.8 mi) to its headwaters is spawning and rearing habitat.

Table 75. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Middle Salmon River–Panther CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	South Fork Sheep Creek	ID	(IDFG in litt. 2002 from R7 stream DB, pg. 323; USFS 1999a, pg. 52)	Rationale provided in Salmon River Basin CHU justification text	1138359 454819
Salmon River Basin–Middle Salmon River–Panther	North Fork Sheep Creek	ID	(USFS 1999a pg. 52; IDFG in litt. 2002 from R7 stream DB; USFS in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1138359 454820
Salmon River Basin–Middle Salmon River–Panther	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1138992 451774
Salmon River Basin–Middle Salmon River–Panther	Dahlonega Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139285 455411
Salmon River Basin–Middle Salmon River–Panther	Fourth of July Creek	ID	(IDFG in litt. 2002 Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139433 453641.1
Salmon River Basin–Middle Salmon River–Panther	Fourth of July Creek	ID	(IDFG in litt. 2002; Service in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139433 453641.2
Salmon River Basin–Middle Salmon River–Panther	Sheep Creek	ID	(USFS 1999a, pg. 52; IDFG in litt. 2002	Rationale provided in Salmon River Basin CHU justification text	1139535 455036
Salmon River Basin–Middle Salmon River–Panther	Pierce Creek	ID	(IDFG in litt. 2002; Service in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139630 456209

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Twin Creek	ID	(IDFG in litt. 2002 from R7 streamDB; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139642 456083
Salmon River Basin–Middle Salmon River–Panther	Vine Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139661 456110
Salmon River Basin–Middle Salmon River–Panther	Lake Creek	ID	(StreamNet 2009, pg. 32)	Rationale provided in Salmon River Basin CHU justification text	1139670 450121
Salmon River Basin–Middle Salmon River–Panther	West Fork North Fork Salmon River	ID	(IDFG in litt. 2002 from R7 streamDB; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139697 456541
Salmon River Basin–Middle Salmon River–Panther	Moose Creek	ID	(IDFG in litt 2002 from R7 stream DB; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139697 456542
Salmon River Basin–Middle Salmon River–Panther	Hughes Creek	ID	(IDFG in litt.2002 from R7 streamDB; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1139884 454758
Salmon River Basin–Middle Salmon River–Panther	Hull Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1139927 454676
Salmon River Basin–Middle Salmon River–Panther	North Fork Salmon River	ID	(Service in litt 2002b; USFS 1998b; IDFG/GPM in litt. 2002; IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1139935 454047.1
Salmon River Basin–Middle Salmon River–Panther	North Fork Salmon River	ID	(IDFG/GPM in litt. 2002; IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1139935 454047.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Dump Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1140632 453828
Salmon River Basin–Middle Salmon River–Panther	Moose Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1140865 453746.1
Salmon River Basin–Middle Salmon River–Panther	Moose Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1140865 453746.2
Salmon River Basin–Middle Salmon River–Panther	Sharkey Creek	ID	(StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1141076 452222
Salmon River Basin–Middle Salmon River–Panther	Camp Creek	ID	(StreamNet 2009, pg. 32)	Rationale provided in Salmon River Basin CHU justification text	1141145 452221
Salmon River Basin–Middle Salmon River–Panther	Jefferson Creek	ID	(StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1141190 452205
Salmon River Basin–Middle Salmon River–Panther	Unnamed Tributary of Deep Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141209 450644
Salmon River Basin–Middle Salmon River–Panther	Arnett Creek	ID	(USRITAT 1998, pg. 126; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141330 452052
Salmon River Basin–Middle Salmon River–Panther	Pony Creek	ID	(StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1141371 451937

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	West Fork Indian Creek	ID	(IDFG in litt. 2002; Service in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141380 454755
Salmon River Basin–Middle Salmon River–Panther	Corral Creek	ID	(Service in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141462 454983
Salmon River Basin–Middle Salmon River–Panther	McConn Creek	ID	(IDFG in litt 2002; Service in litt. 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141530 455042
Salmon River Basin–Middle Salmon River–Panther	Phelan Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141599 451673
Salmon River Basin–Middle Salmon River–Panther	Rapps Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141629 452126
Salmon River Basin–Middle Salmon River–Panther	Indian Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141678 453998
Salmon River Basin–Middle Salmon River–Panther	Squaw Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141681 453988
Salmon River Basin–Middle Salmon River–Panther	Moccasin Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1141713 451528
Salmon River Basin–Middle Salmon River–Panther	Little Deep Creek	ID	(Service in litt 2002b; IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1141787 451085

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Deep Creek	ID	(Service in litt 2002b; IDFG in litt. 2002.)	Rationale provided in Salmon River Basin CHU justification text	1142147 451258
Salmon River Basin–Middle Salmon River–Panther	Napias Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1142167 451371.1
Salmon River Basin–Middle Salmon River–Panther	Napias Creek	ID	(Service in litt 2002b; Roberts in litt. 2000; Roberts in litt. 2001)	Rationale provided in Salmon River Basin CHU justification text	1142167 451371.2
Salmon River Basin–Middle Salmon River–Panther	Woodtick Creek	ID	(Service in litt 2002b; IDFG/GPM 2002; IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1142825 450463
Salmon River Basin–Middle Salmon River–Panther	Otter Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1142900 448605
Salmon River Basin–Middle Salmon River–Panther	South Fork Moyer Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1142929 449580
Salmon River Basin–Middle Salmon River–Panther	Salt Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1142956 449840
Salmon River Basin–Middle Salmon River–Panther	Mink Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1142972 448652
Salmon River Basin–Middle Salmon River–Panther	Pine Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1142995 453638

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Weasel Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143053 448870
Salmon River Basin–Middle Salmon River–Panther	Moyer Creek	ID	(StreamNet 2009, pg. 30)	Rationale provided in Salmon River Basin CHU justification text	1143113 450242
Salmon River Basin–Middle Salmon River–Panther	Musgrove Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143126 450219
Salmon River Basin–Middle Salmon River–Panther	Opal Creek	ID	(StreamNet 2009, pg. 30, 31)	Rationale provided in Salmon River Basin CHU justification text	1143141 448963
Salmon River Basin–Middle Salmon River–Panther	Trail Creek	ID	(IDFG in litt. 2002)	Rationale provided in Salmon River Basin CHU justification text	1143187 452501
Salmon River Basin–Middle Salmon River–Panther	Porphyry Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143330 450036
Salmon River Basin–Middle Salmon River–Panther	Beaver Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143339 452741
Salmon River Basin–Middle Salmon River–Panther	Fourth of July Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143465 449857.1
Salmon River Basin–Middle Salmon River–Panther	Fourth Of July Creek	ID	(StreamNet 2009, pg. 32)	Rationale provided in Salmon River Basin CHU justification text	1143465 449857.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Clear Creek	ID	(IDFG in litt. 2002; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1143507 452953
Salmon River Basin–Middle Salmon River–Panther	Panther Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1144047 453157.1
Salmon River Basin–Middle Salmon River–Panther	Panther Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1144047 453157.2
Salmon River Basin–Middle Salmon River–Panther	Owl Creek	ID	(Service in litt 2002b; IDFG in litt. 2002 from FIS_REF; IDOSC 2010)	Rationale provided in Salmon River Basin CHU justification text	1144478 453177
Salmon River Basin–Middle Salmon River–Panther	Woods Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1144589 455055
Salmon River Basin–Middle Salmon River–Panther	East Fork Owl Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1144622 453397
Salmon River Basin–Middle Salmon River–Panther	Colson Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1145308 453000
Salmon River Basin–Middle Salmon River–Panther	Cayuse Creek	ID	(Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1145677 454741
Salmon River Basin–Middle Salmon River–Panther	Little Horse Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1145840 454398

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Corn Creek	ID	(StreamNet 1998)	Rationale provided in Salmon River Basin CHU justification text	1146849 453680
Salmon River Basin–Middle Salmon River–Panther	Horse Creek	ID	(IDFG in litt. 2002 fromR7streamDB; Service in litt 2002b)	Rationale provided in Salmon River Basin CHU justification text	1147320 453953
Salmon River Basin–Middle Salmon River–Panther	Disappointment Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1148788 454220
Salmon River Basin–Middle Salmon River–Panther	Devils Toe Creek	ID	(StreamNet 2009, pg. 26)	Rationale provided in Salmon River Basin CHU justification text	1148925 454358
Salmon River Basin–Middle Salmon River–Panther	Hungry Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149148 453918
Salmon River Basin–Middle Salmon River–Panther	Starvation Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149322 453583
Salmon River Basin–Middle Salmon River–Panther	Dismal Creek	ID	(StreamNet 2009, pg. 22)	Rationale provided in Salmon River Basin CHU justification text	1149493 453506
Salmon River Basin–Middle Salmon River–Panther	Salmon River	ID	(USFS 1999a, pg. 2-6, 2-7; BLM 2000b pg. VI-7, I-1; Elle et al. 1994, pg. 60; Schill et al. 1994, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1167926 458560
Salmon River Basin–Middle Salmon River–Panther	Unnamed-Needed bypass channel	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Middle Salmon River–Panther	Lake Creek	ID	(T. Curet pers. comm. 2002)	Rationale provided in Salmon River Basin CHU justification text	1139670 450121
Salmon River Basin–Middle Salmon River–Panther	Pruvan Creek	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1.1382E+12
Salmon River Basin–Middle Salmon River–Panther	Garden Creek	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1.14403E+12
Salmon River Basin–Middle Salmon River–Panther	Ditch Creek	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1152969 457466

27.6. Lake Creek Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it provides a rare adfluvial life history form in the Upper Snake RU. This CHSU occurs within Lake Creek, which is isolated from other CHSUs and CHUs. This CHSU contains a moderate number of individuals that are exposed to a moderate threat level (see Appendix 1 for more detailed information).

Located within Lemhi County, Idaho, approximately 19 km (12 mi) south of Salmon, Idaho, designated critical habitat includes 13.0 km (8.0 mi) of stream and 72.0 ha (177.9 ac) of lake surface area.

The following water bodies are included in this CHSU (see Table 76):

(A) Williams Lake (72.0 ha, (177.9 ac)) contains FMO habitat and Lake Creek from the inlet to Williams Lake upstream 8.7 km (5.4 mi) to its headwaters provides spawning and rearing habitat.

(B) North Fork Lake Creek from its confluence with Lake Creek upstream 4.3 km (2.7 mi) to its headwaters provides spawning and rearing habitat.

Table 76. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Lake Creek CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Lake Creek	Unnamed-North Fork Lake Creek	ID	(T. Curet IDFG pers. comm. 2002)	Rationale provided in Salmon River Basin CHU justification text	1140162 450091
Salmon River Basin–Lake Creek	Williams Lake	ID	(T. Curet pers. comm., 2002)	Rationale provided in Salmon River Basin CHU justification text	1139762 450161

27.7. Opal Lake Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it provides a rare adfluvial life history expression in the Upper Snake RU. This CHSU occurs within Opal Lake, which is isolated from other bull trout populations, and contains a moderate number of individuals that are exposed to a moderate threat level (see Appendix 1 for more detailed information).

Located within Lemhi County, Idaho, approximately 19 km (12 mi) south of Salmon, Idaho, designated critical habitat includes 13.0 km (8.0 mi) of stream and 72.0 ha (177.9 ac) of lake surface area.

The following water bodies are included in this CHSU (see Table 77):

(A) Opal Lake (6.0 ha, (14.8 ac)) contains FMO habitat and Opal Creek from the inlet of Opal Lake upstream 3.5 km (2.2 mi) to its headwaters provides spawning and rearing habitat.

Table 77. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Opal Lake CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Opal Lake	Opal Creek	ID	(StreamNet 2009, pg. 30, 31)	Rationale provided in Salmon River Basin CHU justification text	1143141 448963
Salmon River Basin–Opal Lake	Opal Lake	ID	(Roberts in litt. 2000)	Rationale provided in Salmon River Basin CHU justification text	1142814 448991

27.8. Lemhi River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it has many individuals, a large amount of habitat, and few threats. This CHSU also occurs in the easternmost extent of the RU. This CHSU has fluvial life history forms that are important to the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Lemhi County immediately southeast of Salmon, Idaho, designated critical habitat includes 413.8 km (234.3 mi) of streams.

The following water bodies are included in this CHSU (see Table 78):

(A) Lemhi River from its confluence with the Salmon River up upstream 91.9 km (57.1 mi) to the confluence of Texas Creek and Eighteenmile Creek contains FMO habitat.

(B) Bohannon Creek from its confluence with the Lemhi River upstream 16.3 km (10.1 mi) to its headwaters provides spawning and rearing habitat.

(C) Kenney Creek from the historical confluence with the Lemhi River upstream 16.0 km (9.9 mi) to its headwaters provides spawning and rearing habitat.

(D) Wimpey Creek from its confluence with the Lemhi River upstream 13.9 km (8.7 mi) to its headwaters provides FMO habitat.

(E) Hayden Creek from its confluence with the Lemhi River upstream 31.7 km (19.7 mi) to its headwaters; Bear Valley Creek from its confluence with Hayden Creek upstream 14.4 km (8.9 mi) to Bear Valley Lake number 1; Kadletz Creek from its confluence with Bear Valley Creek upstream 8.0 km (4.9 mi) to its headwaters; Wright Creek from its confluence with Bear Valley Creek upstream 8.4 km (5.2 mi) to its headwaters; Short Creek from its confluence with Bear Valley Creek upstream 2.9 km (1.8 mi) to its headwaters; Deer Creek from its confluence with Bear Valley Creek upstream 3.4 km (2.1 mi) to its headwaters; East Fork Hayden Creek from its confluence with Hayden Creek upstream 13.8 km (8.6 mi) to its headwaters; Cooper Creek from its confluence with Hayden Creek upstream 6.7 km (4.1 mi) to its headwaters; West Fork Hayden Creek from the confluence of Hayden Creek upstream 6.1 km (3.8 mi) to its headwaters; and Bray Creek from its historical confluence with Hayden Creek upstream 5.2 km (3.2 mi) to its headwaters provide spawning and rearing habitat.

(F) Mill Creek from the point where it is diverted upstream irrigation (does not appear to connect to the Lemhi River) upstream 17.9 km (11.1 mi) to an outlet of a lake provides spawning and rearing habitat.

(G) Big Eightmile Creek from its confluence with the Lemhi River upstream 25.1 km (15.6 mi) to its headwaters and Dairy Creek from its confluence with Big Eightmile Creek upstream 4.1 km (2.5 mi) to its headwaters provide spawning and rearing habitat.

(H) Lee Creek from its confluence with Big Springs Creek upstream 15.6 km (9.7 mi) to its headwaters provides FMO habitat. Big Springs Creek from its confluence with Big Eighteenmile Creek upstream 2.1 km (1.3 mi) to its confluence with Lee Creek provides FMO habitat.

(I) Little Eightmile Creek from its confluence with the Lemhi River upstream 14.1 km (8.7 mi) to its headwaters provides spawning and rearing habitat.

(J) Big Timber Creek from its confluence with the Lemhi River upstream 34.0 km (21.1 mi) to its headwaters; Little Timber Creek from its confluence with Big Timber Creek upstream 6.7 km (4.2 mi) to the confluence of the North Fork Little Timber Creek and Middle Fork Little Timber Creek; North Fork Little Timber Creek from its confluence with Little Timber Creek upstream 6.2 km (3.9 mi) provides FMO habitat; and Rocky Creek from its confluence with Big Timber Creek upstream 6.4 km (3.9 mi) to its headwaters provides spawning and rearing habitat.

Table 78. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Lemhi River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Lemhi River	Big Timber Creek	ID	(S. Feldhausen 2002, pers. com.; USRITAT 1998, pg. 91; BLM and USFS 1998, pg. 43; StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1133687 446894
Salmon River Basin–Lemhi River	Little Timber Creek	ID	(S. Feldhausen 2002, pers. com.; USRITAT 1998, pg. 91; BLM and USFS 1998, pg. 43; StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1133835 446417
Salmon River Basin–Lemhi River	Big Eightmile Creek	ID	(S. Feldhausen 2002, pers. com.; BLM and USFS 1998, pg. 36, StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1134595 447394
Salmon River Basin–Lemhi River	Little Eightmile Creek	ID	(StreamNet 2009, pg. 34, S. Feldhausen 2002, pers. com.; USRITAT 1998, pg. 97; StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1134595 447395
Salmon River Basin–Lemhi River	Big Springs Creek	ID	(S. Feldhausen 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1135009 447581
Salmon River Basin–Lemhi River	Mill Creek	ID	(BLM and USFS 1998, pg. 149; USRITAT 1998, pg. 98; StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1135181 447665
Salmon River Basin–Lemhi River	Dairy Creek	ID	(BLM and USFS 1998, pg. 34; S. Feldhausen 2002, pers. com.; StreamNet 2009, pg. 33)	Rationale provided in Salmon River Basin CHU justification text	1135517 446366
Salmon River Basin–Lemhi River	Hayden Creek	ID	(S. Feldhausen 2002, pers. com.; StreamNet 2009, pg. 35; BLM and USFS 1998, pg. 97; USRITAT 1998, pg. 95)	Rationale provided in Salmon River Basin CHU justification text	1136256 448699
Salmon River Basin–Lemhi River	Kenney Creek	ID	(BLM 1998b, pg. 394; USRITAT 1998, pg. 96; BLM and USFS 1998, pg. 119 and 122; S. Feldhausen 2002, pers.; StreamNet 2009, pg. 35)	Rationale provided in Salmon River Basin CHU justification text	1136595 450326
Salmon River Basin–Lemhi River	Bear Valley Creek	ID	(USRITAT 1998, pg. 95: StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1137073 447721

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Lemhi River	East Fork Hayden Creek	ID	(StreamNet 2009, pg. 34; BLM and USFS 1998, pg. 97)	Rationale provided in Salmon River Basin CHU justification text	1137115 447602
Salmon River Basin–Lemhi River	Cooper Creek	ID	(StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1137254 447260
Salmon River Basin–Lemhi River	Kadletz Creek	ID	(StreamNet 2009, pg. 34; BLM and USFS 1998, pg. 97; S. Feldenhausen, 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1137416 447745
Salmon River Basin–Lemhi River	Bohannon Creek	ID	(StreamNet 2009, pg. 34; S. Feldhausen 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1137463 451118
Salmon River Basin–Lemhi River	Wright Creek	ID	(StreamNet 2009, pg. 34; BLM and USFS 1998, pg. 97; S. Feldenhausen, 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1137538 447835
Salmon River Basin–Lemhi River	West Fork Hayden Cr	ID	(StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1137562 447051.1
Salmon River Basin–Lemhi River	West Fork Hayden Creek	ID	(StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1137562 447051.2
Salmon River Basin–Lemhi River	Short Creek	ID	(StreamNet 2009, pg. 34; S. Feldhausen 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1137673 447877
Salmon River Basin–Lemhi River	Bray Creek	ID	(StreamNet 2009, pg. 34)	Rationale provided in Salmon River Basin CHU justification text	1137682 447061
Salmon River Basin–Lemhi River	Deer Creek	ID	(StreamNet 2009, pg. 36; S. Feldhausen 2002, pers. com.)	Rationale provided in Salmon River Basin CHU justification text	1137775 447928

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Lemhi River	Lemhi River	ID	(Servheen 2001, pg. 68; StreamNet 2009, pg. 32; T. Curet and D. Garren, pers. comm. 2010)	Rationale provided in Salmon River Basin CHU justification text	1138891 451879
Salmon River Basin–Lemhi River	Unnamed - digitized	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Lemhi River	Wimpey	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1137203 450979
Salmon River Basin–Lemhi River	North Fork Little Timber Creek	ID	BLM and USFS 1998, pg. 43	Rationale provided in Salmon River Basin CHU justification text	1134448 446055
Salmon River Basin–Lemhi River	Rocky Creek	ID	T. Curet and D. Garren, pers. Comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1134327 445210
Salmon River Basin–Lemhi River	Lee Creek	ID	T. Curet and D. Garren, pers. Comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1134808 447400

27.9. Pahsimeroi River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it has many individuals, a moderate amount of habitat, and a moderate threat level. This CHSU occurs in the easternmost extent of the CHU that is still hydrologically connected to other CHSUs. The resident populations in this CHSU may also contain unique genes that promote persistence from specific threats (see Appendix 1 for more detailed information).

Located within Custer and Lemhi Counties 27 km (17 mi) east of the town of Challis, in east-central Idaho, designated critical habitat includes 328.3 km (204.0 mi) of streams.

The following water bodies are included in this CHSU (see Table 79):

(A) Pahsimeroi River from its confluence with the Salmon River upstream 85.6 km (53.2 mi) to its confluence with West Fork Pahsimeroi River

(B) Morgan Creek from its confluence with an unnamed segment connecting Morgan Creek to the Pahsimeroi River upstream 8.7 km (5.4 mi) to its confluence with North Fork Morgan Creek; North Fork Morgan Creek from its confluence with Morgan Creek upstream 9.8 km (6.1 mi) to its headwaters; and East Fork Morgan Creek from its confluence with Morgan Creek upstream 6.8 km (4.2 mi) to its headwaters provide spawning and rearing habitat

(C) Tater Creek from its confluence with an unnamed segment (canal) upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(D) Patterson Creek from its confluence with the Pahsimeroi River upstream 43.1 km (26.8 mi) to its headwaters provides spawning and rearing habitat; and Inyo Creek from its confluence with Patterson Creek upstream 5.2 km (3.2 mi) to its headwaters provides spawning and rearing habitat.

(E) Falls Creek from its confluence with an unnamed segment (canal) upstream 22.5 km (14.0 mi) to its headwaters provides spawning and rearing habitat.

(F) Morse Creek from its confluence with an unnamed segment (canal) upstream 18.7 km (11.6 mi) to its headwaters provides spawning and rearing habitat.

(G) Big Creek from its confluence with the Pahsimeroi River upstream 19.9 km (12.4 mi) to the confluence of North Fork Big Creek and South Fork Big Creek; South Fork Big Creek from its confluence with North Fork Big Creek upstream 14.2 km (8.8 mi) to its headwaters; and North Fork Big Creek from its confluence with South Fork Big Creek upstream 13.4 km (8.3 mi) to its headwaters provide spawning and rearing habitat. Mill Creek from its confluence with Big Creek upstream 7.7 km (4.8 mi) to its headwaters provides FMO habitat.

(H) Burnt Creek from its confluence with the Pahsimeroi River 17.2 km (10.7 mi) to the confluence of East Fork Burnt Creek provides spawning and rearing habitat.

(I) Mahogany Creek from its confluence with the Pahsimeroi River upstream 9.1 km (5.7 mi) to its headwaters provides spawning and rearing habitat.

(J) West Fork Pahsimeroi River from its confluence with the Pahsimeroi River and East Fork Pahsimeroi River upstream 9.1 km (5.6 mi) to its headwaters provides spawning and rearing habitat.

(K) East Fork Pahsimeroi River from its confluence with the Pahsimeroi River and West Fork Pahsimeroi River upstream 10.8 km (6.7 mi) to its headwaters provides spawning and rearing habitat.

Table 79. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Pahsimeroi River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Pahsimeroi River	North Fork Big Creek	ID	(StreamNet 2009, pg. 35; BLM and USFS 2001a,b, pg. 117)	Rationale provided in Salmon River Basin CHU justification text	1136000 444417
Salmon River Basin–Pahsimeroi River	South Fork Big Creek	ID	(StreamNet 2009, pg. 35; BLM and USFS 2001a,b, pg. 117)	Rationale provided in Salmon River Basin CHU justification text	1136000 444418
Salmon River Basin–Pahsimeroi River	Burnt Creek	ID	(StreamNet 2009, pg. 35; BLM and USFS 2001a,b, pg. 119, 127)	Rationale provided in Salmon River Basin CHU justification text	1136524 442841
Salmon River Basin–Pahsimeroi River	Inyo Creek	ID	(StreamNet 2009, pg. 35; Servheen 2001, pg. 46)	Rationale provided in Salmon River Basin CHU justification text	1136830 445350
Salmon River Basin–Pahsimeroi River	Mahogany Creek	ID	(StreamNet 2009, pg. 35; Servheen 2001, pg. 46; BLM and USFS 2001a,b, pg. 119)	Rationale provided in Salmon River Basin CHU justification text	1137009 442080
Salmon River Basin–Pahsimeroi River	East Fork Pahsimeroi River	ID	(StreamNet 2009, pg. 34; BLM and USFS 2001a,b, pg. 120)	Rationale provided in Salmon River Basin CHU justification text	1137034 441567
Salmon River Basin–Pahsimeroi River	West Fork Pahsimeroi River	ID	(StreamNet 2009, pg. 34; BLM and USFS 2001a,b, pg. 120)	Rationale provided in Salmon River Basin CHU justification text	1137034 441568
Salmon River Basin–Pahsimeroi River	Big Creek	ID	(StreamNet 2009, pg. 1; BLM and USFS 2001a,b, pg. 13; Servheen 2001, pg. 46; BLM and USFS 2001a,b, pg 117)	Rationale provided in Salmon River Basin CHU justification text	1138183 444954
Salmon River Basin–Pahsimeroi River	Falls Creek	ID	(StreamNet 2009, pg. 33; BLM and USFS 2001a,b, pg. 13; BLM and USFS 2001a,b, pg. 116)	Rationale provided in Salmon River Basin CHU justification text	1138782 445655
Salmon River Basin–Pahsimeroi River	Morse Creek	ID	(StreamNet 2009, pg. 32; BLM and USFS 2001a,b, pg. 13)	Rationale provided in Salmon River Basin CHU justification text	1138850 445688
Salmon River Basin–Pahsimeroi River	East Fork Morgan Creek	ID	(StreamNet 2009, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1138993 446748

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Pahsimeroi River	North Fork Morgan Creek	ID	(StreamNet 2009, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1138993 446749
Salmon River Basin–Pahsimeroi River	Tater Creek	ID	(BLM and USFS 2001a,b, pg. 13; StreamNet 2009, pg. 1)	Rationale provided in Salmon River Basin CHU justification text	1139021 446325
Salmon River Basin–Pahsimeroi River	Morgan Creek	ID	(Servheen 2001, pg. 46; StreamNet 2009, pg. 32)	Rationale provided in Salmon River Basin CHU justification text	1139634 446184
Salmon River Basin–Pahsimeroi River	Patterson Creek	ID	(BLM and USFS 2001a,b, pg. 130; StreamNet 2009, pg. 32; Servheen 2001, pg. 46)	Rationale provided in Salmon River Basin CHU justification text	1139656 446137
Salmon River Basin–Pahsimeroi River	Pahsimeroi River	ID	(BLM and USFS 2001a,b, pg. 8, 12, 13, 15)	Rationale provided in Salmon River Basin CHU justification text	1140485 446923
Salmon River Basin–Pahsimeroi River	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed - digitized	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Unnamed - digitized	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Pahsimeroi River	Unnamed - digitized	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	NA
Salmon River Basin–Pahsimeroi River	Mill Creek (Tributary to Big Creek)	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1136844 444671

27.10. Upper Salmon River Critical Habitat Subunit

This CHSU is essential to bull trout conservation because it provides a rare adfluvial life history expression in the Upper Snake RU. It contains many individuals, a large amount of habitat, and few threats. This CHSU contains populations that contain fluvial life history expressions that are important in the long-term recovery of the species (see Appendix 1 for more detailed information).

Located within Custer County in east-central Idaho, including the towns of Challis, Idaho, and Stanley, Idaho, designated critical habitat includes 1,135.5 km (705.6 mi) of streams and 1,256.3 ha (3,104.2 ac) of lake surface area.

The following water bodies are included in this CHSU (see Table 80):

(A) The Salmon River from approximately its confluence with the Pahsimeroi River upstream 164.9 km (102.4 mi) to Alturas Lake Creek contains FMO habitat and the Salmon River from Alturas Lake Creek upstream 31.0 km (19.3 mi) to its headwaters provides spawning and rearing habitat.

(B) Morgan Creek from its confluence with the Salmon River upstream 10.8 km (6.7 mi) to West Fork Morgan Creek contains FMO habitat and Morgan Creek from its confluence with West Fork Morgan Creek upstream 20.9 km (13.0 mi) to its headwaters; West Fork Morgan Creek from its confluence with Morgan Creek upstream 14.1 km (8.8 mi) to its headwaters; Lick Creek from its confluence with Morgan Creek upstream 9.4 km (5.8 mi) to its headwaters; Van Horn Creek from its confluence with Morgan Creek upstream 9.6 km (6.0 mi) to its headwaters; Corral Creek from its confluence with Morgan Creek upstream 12.7 km (7.9 mi) to its headwaters; and an unnamed creek (entering Corral Creek from the east) from its confluence with Corral Creek upstream 5.4 km (3.4 mi) provide spawning and rearing habitat.

(C) Challis Creek from its confluence with the Salmon River upstream 14.3 km (8.9 mi) to its confluence with Pats Creek contains FMO habitat; Challis Creek from its confluence with Pats Creek upstream 6.8 km (4.2 mi) to its confluence with Lodgepole Creek provides spawning and rearing habitat; Mill Creek from its confluence with Challis Creek upstream 8.2 km (5.1 mi) contains FMO habitat and Mill Creek from 8.2 km (5.1 mi) upstream 15.7 km (9.7 mi) to its headwaters contains spawning and rearing; Bear Creek from its confluence with Challis Creek upstream 8.9 km (5.5 mi) to its headwaters; and Lodgepole Creek from its confluence with Challis Creek upstream 6.3 km (3.9 mi) to its headwaters provide spawning and rearing habitat.

(D) East Fork Salmon River from its confluence with the Salmon River upstream 34.0 km (21.1 mi) to its confluence with Little Boulder Creek contains FMO habitat; East Fork Salmon River from its confluence with Little Boulder Creek upstream 24.5 km (15.2 mi) to the confluence of West Fork East Fork Salmon River and South Fork East Fork Salmon River provides spawning and rearing habitat; Herd Creek from its confluence with East Fork Salmon River upstream 14.3 km (8.9 mi) to the confluence of East Fork Herd Creek and West Fork Herd Creek provides spawning and rearing habitat; East Pass Creek from its confluence with Herd Creek upstream 4.2 km (2.6 mi) to its confluence with an unnamed tributary entering East Pass Creek from the south provides spawning and rearing habitat; East Fork Herd Creek from its confluence with Herd Creek upstream 10.0 km (6.2 mi) to its headwaters provides spawning and rearing habitat; West Fork Herd Creek from its confluence with Herd Creek upstream 9.4 km (5.8 mi) to its headwaters provides spawning and rearing habitat;

Meridian Creek from its confluence with West Fork Herd Creek upstream 2.8 km (1.7 mi) to its confluence with an unnamed tributary entering from the south provides spawning and rearing habitat; Big Boulder Creek from its confluence with East Fork Salmon River upstream 11.8 km (7.4 mi) to its headwaters provides spawning and rearing habitat; Little Boulder Creek from its confluence with East Fork Salmon River upstream 10.1 km (6.3 mi) to an unnamed tributary provides spawning and rearing habitat; Germania Creek from its confluence with East Fork Salmon River upstream 23.4 km (14.5 mi) to its headwaters provides spawning and rearing habitat; Bowery Creek from its confluence with East Fork Salmon River upstream 8.0 km (4.9 mi) to its headwaters provides spawning and rearing habitat; Long Tom Creek from its confluence with Bowery Creek upstream 6.5 km (4.0 mi) to its headwaters provides spawning and rearing habitat; North Fork Bowery Creek from its confluence with Bowery Creek upstream 3.9 km (2.4 mi) to its headwaters contains FMO habitat; West Pass Creek from its confluence with East Fork Salmon River upstream 13.5 km (8.4 mi) to its headwaters contains FMO habitat; and Ibex Creek from its confluence with East Fork Salmon River upstream 6.1 km (3.8 mi) to its headwaters provides spawning and rearing habitat.

(E) West Fork East Fork Salmon River from its confluence with East Fork Salmon River upstream 8.6 km (5.4 mi) to its headwaters provides spawning and rearing habitat.

(F) South Fork East Fork Salmon River from its confluence with East Fork Salmon River upstream 10.1 km (6.3 mi) to its headwaters provides spawning and rearing habitat.

(G) Kinnikinic Creek from its confluence with the Salmon River upstream approximately 0.1 km (0.1 mi) to a highway culvert that is a barrier to upstream migration contains FMO habitat.

(H) Squaw Creek from its confluence with the Salmon River upstream 17.2 km (10.7 mi) to its confluence with Martin Creek contains FMO habitat and Squaw Creek from its confluence with Martin Creek upstream 8.5 km (5.3 mi) to its headwaters; Martin Creek from its confluence with Squaw Creek upstream 8.3 km (5.2 mi) to its headwaters; and Willow Creek from its confluence with Squaw Creek upstream 5.2 km (3.2 mi) to its headwaters provide spawning and rearing habitat.

(I) Thompson Creek from its confluence with the Salmon River upstream 19.6 km (12.2 mi) to its headwaters contains FMO habitat.

(J) Slate Creek from its confluence with the Salmon River upstream 13.3 km (8.3 mi) and Silver Rule Creek from its confluence with Slate Creek upstream 8.4 km (5.2 mi) to its headwaters provide spawning and rearing habitat and Livingston Creek from its confluence with Slate Creek upstream 5.9 km (3.7 mi) to its headwaters contains FMO habitat.

(K) Warm Springs Creek from its confluence with the Salmon River upstream 34.4 km (21.4 mi) to its headwaters; Martin Creek from its confluence with Warm Springs Creek upstream 9.1 km (5.7 mi) to its headwaters; and Pigtail Creek from its confluence with Warm Springs Creek upstream 1.2 km (0.8 mi) to its confluence with an unnamed tributary provide spawning and rearing habitat.

(L) Yankee Fork from its confluence with the Salmon River upstream 14.4 km (9.0 mi) to its confluence with Jordan Creek contains FMO habitat; Yankee Fork from its confluence with Jordan Creek upstream 32.3 km (20.1 mi) to its headwaters provides spawning and rearing habitat; West Fork Yankee Fork from its confluence with Yankee Fork upstream 21.1 km (13.1 mi) to its headwaters provides spawning and rearing habitat; Deadwood Creek from its confluence with West Fork Yankee Fork upstream 6.5 km (4.0 mi) to its headwaters provides spawning and rearing habitat; Lightning Creek from its confluence with West Fork Yankee Fork upstream 12.6 km (7.9 mi) to its headwaters provides spawning and rearing habitat; Cabin Creek from its confluence with West Fork Yankee Fork upstream 8.3 km (5.2 mi) to its headwaters provides spawning and rearing habitat; Jordan Creek from its confluence with Yankee Fork upstream 6.4 km (4.0 mi) to an unnamed tributary contains FMO habitat; Jordan Creek from its confluence with an unnamed tributary upstream 6.2 km (3.9 mi) to its headwaters provides spawning and rearing habitat; Fivemile Creek from its confluence with Yankee Fork upstream 7.6 km (4.7 mi) to its headwaters provides spawning and rearing habitat; Sixmile Creek from its confluence with Yankee Fork upstream 7.0 km (4.3 mi) to its headwaters provides spawning and rearing habitat; Eightmile Creek from its confluence with Yankee Fork upstream 10.7 km (6.7 mi) to its headwaters provides spawning and rearing habitat; Ninemile Creek from its confluence with Yankee Fork upstream 4.5 km (2.8 mi) to its headwaters provides spawning and rearing habitat; Tenmile Creek from its confluence with Yankee Fork upstream 6.7 km (4.1 mi) to its headwaters provides spawning and rearing habitat; Elevenmile Creek from its confluence with Yankee Fork upstream 4.6 km (2.9 mi) to its headwaters provides spawning and rearing habitat; Twelvemile Creek from its confluence with Yankee Fork upstream 5.8 km (3.6 mi) to its headwaters provides spawning and rearing habitat; McKay Creek from its confluence with Yankee Fork upstream 7.5 km (4.7 mi) to its headwaters provides spawning and rearing habitat; and an unnamed creek (entering McKay Creek from the south) from its confluence with McKay Creek upstream 4.4 km (2.7 mi) to its headwaters provides spawning and rearing habitat.

(M) Basin Creek from its confluence with the Salmon River upstream 19.8 km (12.3 mi) to its headwaters; East Basin Creek from its confluence with the Basin Creek upstream 10.1 km (6.3 mi) to its headwaters; Short Creek from its confluence with the Basin Creek upstream 3.0 km (1.9 mi) to its headwaters; and Sunday Creek from its confluence with the Basin Creek upstream 5.7 km (3.5 mi) to its headwaters provide spawning and rearing habitat.

(N) Valley Creek from its confluence with the Salmon River upstream 9.8 km (6.1 mi) to Stanley Lake Creek contains FMO habitat; Valley Creek from its confluence with Stanley Lake Creek upstream 30.0 km (18.6 mi) to a headwater lake provides spawning and rearing habitat; Goat Creek from its confluence with the Valley Creek upstream 8.4 km (5.2 mi) provides spawning and rearing habitat; Iron Creek from its confluence with the Valley Creek upstream 10.0 km (6.2 mi) provides spawning and rearing habitat; Job Creek from its confluence with the Valley Creek upstream 0.1 km (0.06 mi) contains FMO habitat; Elk Creek from its confluence with the Valley Creek upstream 20.1 km (12.5 mi) to its headwaters provides spawning and rearing habitat; Meadow Creek from its confluence with the Valley Creek upstream 4.0 km (2.5 mi) to its confluence with Trap Creek provides spawning and rearing habitat; East Fork Valley Creek from its confluence with the Valley Creek upstream 7.5 km (4.7 mi) to its headwaters provides spawning and rearing habitat; and Prospect Creek from its confluence with the Valley Creek upstream 4.7 km (2.9 mi) to its headwaters provides spawning and rearing habitat.

(O) Redfish Lake Creek from its confluence with the Salmon River upstream 1.0 km (0.6 mi) to the outlet of Little Redfish Lake; Little Redfish Lake (25.8 ha (63.7 ac)); Redfish Lake Creek from the inlet of Little Redfish Lake to the outlet of Redfish Lake 2.6 km (1.6 mi); Redfish Lake (608.4 ha (1,503.4 ac)); and Redfish Lake Creek from the inlet of Redfish Lake upstream 0.1 km (0.1 mi) to a barrier contain FMO habitat and Fishhook Creek from its confluence with Redfish

Lake Creek upstream 6.6 km (4.1 mi) to an unnamed tributary entering from the west provides spawning and rearing habitat.

(P) Fourth of July Creek from its confluence with the Salmon River upstream 3.8 km (2.3 mi) to a water diversion contains FMO habitat and Fourth of July Creek from at water diversion upstream 16.3 km (10.1 mi) to its headwaters provides spawning and rearing habitat.

(Q) Alturas Lake Creek from its confluence with the Salmon River upstream 11.3 km (7.0 mi) to Perkins Lake; Perkins Lake (19.4 ha (48.0 ac)); Alturas Lake Creek from its confluence with Perkins Lake upstream 0.5 km (0.3 mi) to Alturas Lake; and Alturas Lake (338.2 ha (835.6 ac)) contain FMO habitat and Alturas Lake Creek from the inlet to Alturas Lake upstream 13.4 km (8.3 mi) to its headwaters provides spawning and rearing habitat.

(R) Yellowbelly Creek from its confluence with Alturas Lake Creek upstream 3.5 km (2.2 mi) to the outlet of Yellowbelly Lake; Yellowbelly Lake (79.4 ha (196.1 ac)); and Yellowbelly Creek from the inlet to Yellowbelly Lake upstream 5.3 km (3.3 mi) to Farley Lake outlet contain FMO habitat.

(S) Pettit Lake Creek from its confluence with Alturas Lake Creek upstream 1.9 km (1.2 mi) to the outlet of Pettit Lake; Pettit Lake (160.8 ha (397.4 ac)); and Pettit Lake Creek from the inlet to Pettit Lake upstream 0.9 km (0.6 mi) to a fish barrier contain FMO habitat.

(T) Cabin Creek from its confluence with Perkins Lake upstream 4.0 km (2.5 mi) to an unnamed tributary entering from the west contains FMO habitat.

(U) Alpine Creek from its confluence with Alturas Lake Creek upstream 8.6 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(V) Pole Creek from its confluence with the Salmon River upstream 16.9 km (10.5 mi) to its headwaters contains FMO habitat.

(W) Beaver Creek from its confluence with the Salmon River upstream 14.4 km (9.0 mi) to its headwaters contains FMO habitat.

(X) Hell Roaring Creek from its confluence with the Salmon River upstream 8.5 km (5.3 mi) to Hell Roaring Lake contains FMO habitat. Hell Roaring Lake contains 24.3 hectares (60.o acres) of FMO habitat.

(Y) Bayhorse Creek from its confluence with the Salmon River upstream 13.6 km (8.4 mi) to Bayhorse Lake #1 contains FMO habitat.

(Z) Champion Creek from its confluence with the Salmon River upstream 16.4 km (10.2 mi) to its headwaters contains spawning and rearing habitat.

Table 80. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Salmon River Basin–Upper Salmon River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Morgan Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1141677 446116.1
Salmon River Basin–Upper Salmon River	Morgan Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1141677 446116.2
Salmon River Basin–Upper Salmon River	Challis Creek	ID	(T. Curet and D. Garren, pers. comm. 2010)	Rationale provided in Salmon River Basin CHU justification text	1141861 445697.1
Salmon River Basin–Upper Salmon River	Challis Creek	ID	(T. Curet and D. Garren, pers. comm. 2010)	Rationale provided in Salmon River Basin CHU justification text	1141861 445697.2
Salmon River Basin–Upper Salmon River	UNNAMED - off Corral Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142239 448045
Salmon River Basin–Upper Salmon River	East Fork Herd Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1142333 440579
Salmon River Basin–Upper Salmon River	West Fork Herd Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1142333 440580
Salmon River Basin–Upper Salmon River	West Fork Morgan Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142428 446812
Salmon River Basin–Upper Salmon River	East Pass Creek	ID	Tom Montoya (Service in litt. 2002c,pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1142436 440765
Salmon River Basin–Upper Salmon River	Corral Creek	ID	(StreamNet 2009, pg. 31)	Rationale provided in Salmon River Basin CHU justification text	1142475 447792
Salmon River Basin–Upper Salmon River	Meridian Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1142510 440112

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Van Horn Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142560 447573
Salmon River Basin–Upper Salmon River	Lick Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142707 447221
Salmon River Basin–Upper Salmon River	Mill Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142746 445611.1
Salmon River Basin–Upper Salmon River	Mill Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1142746 445611.2
Salmon River Basin–Upper Salmon River	Herd Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1143002 441537
Salmon River Basin–Upper Salmon River	East Fork Salmon River	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1143265 442682.1
Salmon River Basin–Upper Salmon River	East Fork Salmon River	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1143265 442682.2
Salmon River Basin–Upper Salmon River	Bear Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1143607 445690
Salmon River Basin–Upper Salmon River	North Fork Bowery Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1143998 440318
Salmon River Basin–Upper Salmon River	Kinnikinic Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144015 442582
Salmon River Basin–Upper Salmon River	Lodgepole Creek	ID	Tom Curet (Service in litt. 2002c, pg. 6)	Rationale provided in Salmon River Basin CHU justification text	1144081 445396
Salmon River Basin–Upper Salmon River	Big Boulder Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7; SNF 2010, pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1144281 441177

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Long Tom Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144289 440270
Salmon River Basin–Upper Salmon River	Little Boulder Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144423 440993
Salmon River Basin–Upper Salmon River	Squaw Creek - mouth to Martin Cr	ID	Tom Montoya (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144543 442492.1
Salmon River Basin–Upper Salmon River	Squaw Creek - Martin Cr to headwaters	ID	Tom Montoya (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144543 442492.2
Salmon River Basin–Upper Salmon River	Bowery Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144601 440320
Salmon River Basin–Upper Salmon River	Germania Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144612 440393
Salmon River Basin–Upper Salmon River	Willow Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144892 444279
Salmon River Basin–Upper Salmon River	West Pass Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144897 439876
Salmon River Basin–Upper Salmon River	Martin Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1144939 443873
Salmon River Basin–Upper Salmon River	Thompson Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1145172 442501
Salmon River Basin–Upper Salmon River	UNNAMED - off McKay Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145251 444775
Salmon River Basin–Upper Salmon River	Ibex Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1145252 439532

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	McKay Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145504 444887
Salmon River Basin–Upper Salmon River	South Fork East Fork Salmon River	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145542 439291
Salmon River Basin–Upper Salmon River	West Fork East Fork Salmon River	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145542 439292
Salmon River Basin–Upper Salmon River	Slate Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145629 442557
Salmon River Basin–Upper Salmon River	Twelvemile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145637 444776
Salmon River Basin–Upper Salmon River	Elevenmile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145785 444670
Salmon River Basin–Upper Salmon River	Tenmile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1145815 444652
Salmon River Basin–Upper Salmon River	Silver Rule Creek	ID	(StreamNet 2009, pg. 28)	Rationale provided in Salmon River Basin CHU justification text	1145965 442072
Salmon River Basin–Upper Salmon River	Livingston Creek	ID	(USRITAT 1998, pg. 67; Mark Moulton in Service in litt. 2002, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1146028 441944
Salmon River Basin–Upper Salmon River	Ninemile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1146043 444454
Salmon River Basin–Upper Salmon River	Eightmile Creek	ID	(StreamNet 2009, pg. 27)	Rationale provided in Salmon River Basin CHU justification text	1146195 444263
Salmon River Basin–Upper Salmon River	Sixmile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1146371 444131

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Fivemile Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1146540 444050
Salmon River Basin–Upper Salmon River	Warm Springs Creek	ID	Tom Curet (Service in litt. 2002c, pg. 7)	Rationale provided in Salmon River Basin CHU justification text	1146747 442543
Salmon River Basin–Upper Salmon River	Jordan Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147202 443786.1
Salmon River Basin–Upper Salmon River	Jordan Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147202 443786.2
Salmon River Basin–Upper Salmon River	Cabin Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147223 443523
Salmon River Basin–Upper Salmon River	Martin Creek	ID	(StreamNet 2009, pg. 30)	Rationale provided in Salmon River Basin CHU justification text	1147244 441369
Salmon River Basin–Upper Salmon River	Pigtail Creek	ID	(StreamNet 2009, pg. 29)	Rationale provided in Salmon River Basin CHU justification text	1147259 441291
Salmon River Basin–Upper Salmon River	West Fork Yankee Fork	ID	(StreamNet 2009, pg. 30)	Rationale provided in Salmon River Basin CHU justification text	1147266 443514
Salmon River Basin–Upper Salmon River	Yankee Fork	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147337 442696.1
Salmon River Basin–Upper Salmon River	Yankee Fork	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147337 442696.2
Salmon River Basin–Upper Salmon River	Deadwood Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1147763 443757
Salmon River Basin–Upper Salmon River	Lightning Creek	ID	(StreamNet 2009, pg. 26)	Rationale provided in Salmon River Basin CHU justification text	1147954 443878

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Pole Creek	ID	(StreamNet 2009, pg. 26; Service in litt. 2002, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148087 439261
Salmon River Basin–Upper Salmon River	Beaver Creek	ID	(StreamNet 2009, pg. 26; Service in litt. 2002, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148158 439096
Salmon River Basin–Upper Salmon River	Basin Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1148167 442635
Salmon River Basin–Upper Salmon River	Fourth of July Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148358 440323.1
Salmon River Basin–Upper Salmon River	Fourth of July Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148358 440323.2
Salmon River Basin–Upper Salmon River	Alturas Lake Creek (Below Lake)	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148362 440040.1
Salmon River Basin–Upper Salmon River	Alturas Lake Creek (Above Lake)	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148362 440040.2
Salmon River Basin–Upper Salmon River	Alturas Lake Creek (Above Lake)	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148362 440040.3
Salmon River Basin–Upper Salmon River	Yellowbelly Lake - Alturas Lk Cr to Yellowbelly Lk	ID	(StreamNet 2009, pg. 26; IDFG 2006)	Rationale provided in Salmon River Basin CHU justification text	1148391 439918.1
Salmon River Basin–Upper Salmon River	Yellowbelly Ck-Yellowbelly Lk to Farley Lk outlet	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148391 439918.2
Salmon River Basin–Upper Salmon River	Petitt Lake Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148410 439876.1
Salmon River Basin–Upper Salmon River	Petitt Lake Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9; SNF 2010 pg. 3)	Rationale provided in Salmon River Basin CHU justification text	1148410 439876.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Cabin Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148424 439282
Salmon River Basin–Upper Salmon River	East Basin Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1148490 442766
Salmon River Basin–Upper Salmon River	Short Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 8)	Rationale provided in Salmon River Basin CHU justification text	1148709 442908
Salmon River Basin–Upper Salmon River	Redfish Lake Creek - inlet to ~ 0.1 km upstream	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148991 441690.1
Salmon River Basin–Upper Salmon River	Redfish Lake Creek – L Redfish Lk to Redfish Lk	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148991 441690.2
Salmon River Basin–Upper Salmon River	Redfish Lake Creek - mouth to L. Redfish Lk	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148991 441690.3
Salmon River Basin–Upper Salmon River	Redfish Lake Creek - mouth to Redfish Lk	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148991 441690.4
Salmon River Basin–Upper Salmon River	Sunday Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1149053 443494
Salmon River Basin–Upper Salmon River	Alpine Creek	ID	(StreamNet 2009, pg. 25)	Rationale provided in Salmon River Basin CHU justification text	1149066 438957
Salmon River Basin–Upper Salmon River	Fishhook Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149195 441429
Salmon River Basin–Upper Salmon River	Valley Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149272 442250.1
Salmon River Basin–Upper Salmon River	Valley Creek	ID	Tom Curet and Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149272 442250.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Goat Creek	ID	(StreamNet 2009, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1149416 442191
Salmon River Basin–Upper Salmon River	Iron Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149475 442228
Salmon River Basin–Upper Salmon River	Prospect Creek	ID	Tom Montoya (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149864 443943
Salmon River Basin–Upper Salmon River	Job Creek	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1150014 442427
Salmon River Basin–Upper Salmon River	Elk Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150244 442927
Salmon River Basin–Upper Salmon River	East Fork Valley Creek	ID	(StreamNet 2009, pg. 24)	Rationale provided in Salmon River Basin CHU justification text	1150479 443575
Salmon River Basin–Upper Salmon River	Meadow Creek - mouth to Trap	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1150517 443058
Salmon River Basin–Upper Salmon River	Salmon River - Alturas Lk Creek to headwater	ID	Tom Curet (Service in litt. 2002c, pg. 9; USFS 1999a, pg. 2-6; Elle et al. 1994, pg. 60	Rationale provided in Salmon River Basin CHU justification text	1167926 458560.1
Salmon River Basin–Upper Salmon River	Salmon River - mouth to Alturas Lk Creek	FMO	(USFS 1999a, pg. 2-6; 1994, pg. 60; Schill et al. 1994, pg. 23)	Rationale provided in Salmon River Basin CHU justification text	1167926 458560.2
Salmon River Basin–Upper Salmon River	Alturas Lake	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148612 439136
Salmon River Basin–Upper Salmon River	Little Redfish Lake	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149087 441610
Salmon River Basin–Upper Salmon River	Perkins Lake	ID	(Service in litt. 2009a)	Rationale provided in Salmon River Basin CHU justification text	1148406 439289

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Salmon River Basin–Upper Salmon River	Petit Lake	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148788 439795
Salmon River Basin–Upper Salmon River	Redfish Lake	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1149316 441171
Salmon River Basin–Upper Salmon River	Yellowbelly Lake	ID	Mark Moulton (Service in litt. 2002c, pg. 9)	Rationale provided in Salmon River Basin CHU justification text	1148756 440010
Salmon River Basin–Upper Salmon River	Bayhorse Creek	ID	USRITAT 1998, pp. 81, 82	Rationale provided in Salmon River Basin CHU justification text	1142558 443783
Salmon River Basin–Upper Salmon River	Hell Roaring Creek	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1148416 440235
Salmon River Basin–Upper Salmon River	Hell Roaring Lake	ID	T. Curet and D. Garren, pers. comm. 2010	Rationale provided in Salmon River Basin CHU justification text	1149357 440246
Salmon River Basin–Upper Salmon River	Champion Creek	ID	SNF 2010, pg. 3	Rationale provided in Salmon River Basin CHU justification text	1148383 440259

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 28. Upper Snake Recovery Unit—Little Lost River Critical Habitat Unit

Chapter 28. Little Lost River Critical Habitat Unit

The Little Lost River CHU is essential for maintaining bull trout distribution within this unique geographic region of the Upper Snake River RU. This CHU occurs in southeastern Idaho within a hydrologically closed system, resulting in isolated populations. This CHU occurs in a unique ecological setting and contains many individuals that are subjected to few threats. Due to the unique geologic history of this area, resident populations may also contain unique genes that further promote persistence. This CHU is in the southeasternmost portion of the Upper Snake RU (see Appendix 1 for more detailed information).

Located within Butte, Custer, and Lemhi Counties in east-central Idaho, near the town of Arco, Idaho, designated critical habitat in the Little Lost River CHU includes 89.2 km (55.4 mi) of streams designated as critical habitat.

The following water bodies are included in this CHU (see Table 81):

(A) Sawmill Creek from its confluence with Bell Mountain Creek upstream 32.6 km (20.3 mi) contains FMO habitat. Mill Creek from its confluence with Sawmill Creek upstream 4.5 km (2.8 mi) to a barrier falls; Warm Creek from its confluence with Sawmill Creek upstream 3.2 km (2.0 mi); Smithie Fork from its confluence with Sawmill Creek upstream 6.3 km (3.9 mi) to its headwaters; Firebox Creek from its confluence with Sawmill Creek upstream 1.9 km (1.2 mi); and Right Fork Little Lost River from its confluence with Sawmill Creek upstream 0.8 km (0.5 mi) to its headwaters all provide spawning and rearing habitat.

(B) Squaw Creek from its confluence with Sawmill Creek upstream 8.5 km (5.1 mi) to its headwaters; North Fork Squaw Creek from its confluence with Squaw Creek upstream 5.1 km (3.2 mi) to its headwaters; and an unnamed tributary from its confluence with Squaw Creek upstream 1.0 km (0.6 mi) all provide spawning and rearing habitat.

(C) Iron Creek from its confluence with Sawmill Creek upstream 5.6 km (3.5 mi) to its headwaters; Hawley Creek from its confluence with Iron Creek upstream 3.3 km (2.1 mi) to its headwaters; Jackson Creek from its confluence with Iron Creek upstream 3.6 km (2.3 mi) to its headwaters; and Left Fork Iron Creek from its confluence with Iron Creek upstream 1.1 km (0.7 mi) all provide spawning and rearing habitat.

(D) Timber Creek from its confluence with Sawmill Creek upstream 8.0 km (5.0 mi) to its headwaters; Camp Creek from its confluence with Timber Creek upstream 2.4 km (1.5 mi) to its headwaters; Redrock Creek from its confluence with Timber Creek upstream 1.2 km (0.7 mi); and Slide Creek from its confluence with Timber Creek upstream 0.4 km (0.3 mi) to its headwaters all provide spawning and rearing habitat.

Table 81. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Little Lost River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Little Lost River–None	Sawmill Creek	ID	(Gamett 1999, pg. 72-77; LLRITAT 1998, pg. 63-64, 127-128)	Rationale provided in Little Lost CHU justification text	1129730 437665
Little Lost River–None	North Fork Squaw Creek	ID	(Gamett 1999, pg. 89-90, 209-210; LLRITAT 1998, pg. 132)	Rationale provided in Little Lost CHU justification text	1133255 443586
Little Lost River–None	UNNAMED - off Squaw Creek	ID	(Gamett 1999, pg. 89)	Rationale provided in Little Lost CHU justification text	1133255 443586
Little Lost River–None	North Fork Squaw Creek	ID	(Gamett 1999, pg. 89-90, 209-210; LLRITAT 1998, pg. 132)	Rationale provided in Little Lost CHU justification text	1133296 443555
Little Lost River–None	Warm Creek	ID	Gamett 1999, pg. 96-97; LLRITAT 1998, pg. 134)	Rationale provided in Little Lost CHU justification text	1133374 443059
Little Lost River–None	Mill Creek	ID	(Gamett 1999, pg. 81, 192-194)	Rationale provided in Little Lost CHU justification text	1133525 443710
Little Lost River–None	Squaw Creek	ID	(Gamett 1999, pg. 89, 208; LLRITAT 1998, pg. 132))	Rationale provided in Little Lost CHU justification text	1133564 443344
Little Lost River–None	Right Fork Little Lost River	ID	(Service 2002a, pg. 25; Gamett 1999, pg. 126-127, 285)	Rationale provided in Little Lost CHU justification text	1133776 444461
Little Lost River–None	Firebox Creek	ID	(Gamett 1999, pg. 67-68, 269; LLRITAT 1998 pg. 24)	Rationale provided in Little Lost CHU justification text	1133795 444427
Little Lost River–None	Smithie Fork	ID	(Gamett 1999, pg. 86-88; LLRITAT 1998, pg. 24, 131-132)	Rationale provided in Little Lost CHU justification text	1133933 444300
Little Lost River–None	Iron Creek	ID	(Gamett 1999, pg. 71, 162-163; LLRITAT 1998 pg. 141)	Rationale provided in Little Lost CHU justification text	1133997 443794
Little Lost River–None	Iron Creek	ID	(Gamett 1999, pg. 71, 162-163; LLRITAT 1998 pg. 141)	Rationale provided in Little Lost CHU justification text	1133997 443794
Little Lost River–None	Hawley Creek	ID	(Gamett 1999, pg. 68, 121, 159)	Rationale provided in Little Lost CHU justification text	1134033 443787.1
Little Lost River–None	Hawley Creek	ID	(Gamett 1999, pg. 68, 121, 159)	Rationale provided in Little Lost CHU justification text	1134033 443787.2
Little Lost River–None	Timber Creek	ID	(Gamett 1999 pg. 27, 94-95, 104, 146, 222-223; LLRITAT 1998, pg. 55, 134)	Rationale provided in Little Lost CHU justification text	1134084 443944
Little Lost River–None	Jackson Creek	ID	(Gamett 1999, pg. 72, 164)	Rationale provided in Little Lost CHU justification text	1134117 443801

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Little Lost River–None	Camp Creek	ID	(Gamett 1999, pg. 58-59)	Rationale provided in Little Lost CHU justification text	11341734 44113.1
Little Lost River–None	Camp Creek	ID	(Gamett 1999, pg. 58-59)	Rationale provided in Little Lost CHU justification text	1134173 444113.2
Little Lost River–None	Redrock Creek	ID	(Gamett 1999, pg. 84, 197-198)	Rationale provided in Little Lost CHU justification text	11341854 44138
Little Lost River–None	Left Fork Iron Creek	ID	(Gamett 1999, pg. 71)	Rationale provided in Little Lost CHU justification text	1134338 443873
Little Lost River–None	Iron Creek	ID	(Gamett 1999, pg. 71, 162-163; LLRITAT 1998 pg. 141)	Rationale provided in Little Lost CHU justification text	1134338 443874
Little Lost River–None	Slide Creek	ID	(Gamett 1999, pg. 86, 199)	Rationale provided in Little Lost CHU justification text	1134363 444317

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 29. Columbia Headwaters Recovery Unit—Coeur d'Alene River Basin Critical Habitat Unit

Chapter 29. Coeur d'Alene River Basin Critical Habitat Unit

The Coeur d'Alene River Basin CHU is essential maintaining bull trout distribution within this unique geographic region of the Columbia Headwaters RU because it represents the most downstream extent of bull trout in the Columbia Headwaters RU. Bull trout local populations that were known to be historically present have not been recently documented in large portions of the Coeur d'Alene Lake basin. Reestablishing local populations that are broadly distributed throughout the CHU has been identified as necessary for bull trout recovery. The bull trout population that occurs in this CHU (currently primarily located in the headwaters of the upper Saint Joe River system, which is a major tributary to Coeur d'Alene Lake) has been isolated from other bull trout populations for at least 10,000 years by natural falls on the Spokane River (the outflow of Coeur d'Alene Lake). Losing this population would represent a loss of unique genetic and adaptive characteristics and result in a significant gap in range of bull trout with no opportunity for natural recolonization (see Appendix 1 for more detailed information).

Located in Kootenai, Shoshone, Benewah, Bonner, and Latah Counties in Idaho, the Coeur d'Alene River Basin CHU includes the entire Coeur d'Alene Lake basin in northern Idaho. A total of 819.6 km (509.3 mi) of streams and 12,606.9 ha (31,152.2 ac) of lake surface area are designated as critical habitat. There are no subunits within the Coeur d'Alene River Basin CHU.

The following water bodies are included in this CHSU (see Table 82):

(A) Coeur d'Alene Lake, approximately 12,606.9 ha (31,152.2 ac) in surface area provides FMO habitat.

(B) Coeur d'Alene River from its confluence upstream 59.3 km (36.9 mi) to the confluence of the North Fork and South Fork of the Coeur d'Alene River provides FMO habitat. North Fork Coeur d'Alene River from its confluence with the South Fork Coeur d'Alene River upstream 107.3 km (66.7 mi) to Martin Creek provides FMO habitat. The North Fork Coeur d'Alene River from its confluence with Martin Creek upstream 15.4 km (9.6 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(C) Cougar Creek from its confluence with the North Fork Coeur d'Alene River upstream 15.2 km (9.5 mi) is unoccupied but is anticipated to provide spawning and rearing habitat.

(D) Steamboat Creek from its confluence with the North Fork Coeur d'Alene River upstream 8.2 km (5.1 mi) to its confluence with East Fork Steamboat Creek and West Fork Steamboat Creek is unoccupied but is anticipated to provide spawning and rearing habitat. East Fork Steamboat Creek upstream 8.6 km (5.4 mi) and West Fork Steamboat Creek upstream 6.9 km (4.3 mi) from their confluence with Steamboat Creek to their headwaters are unoccupied but are anticipated to provide spawning and rearing habitat.

(E) Prichard Creek from its confluence with the North Fork Coeur d'Alene River upstream 4.7 km (2.9 mi) to its confluence with Eagle Creek, and Eagle Creek from its confluence with Prichard Creek upstream 1.6 km (1.0 mi) to its confluence with the West Fork Eagle Creek are unoccupied but are anticipated to provide FMO habitat. West Fork Eagle Creek from its confluence with Eagle Creek upstream 14.9 km (9.3 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(F) Shoshone Creek from its confluence with the North Fork Coeur d'Alene River upstream 17.9 km (11.2 mi) to Clinton Creek is unoccupied but is anticipated to provide FMO habitat. Shoshone Creek from its confluence with Clinton Creek upstream 11.9 km (7.4 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat. Falls Creek from its confluence with Shoshone Creek upstream 7.0 km (4.4 mi); Sentinel Creek from its confluence with Shoshone Creek upstream 3.2 km (2.0 mi); Ulm Creek from its confluence with Shoshone Creek upstream 3.7 km (2.3 mi); and Little Lost Fork from its confluence with Shoshone Creek upstream 3.9 km (2.4 mi) are all unoccupied but are anticipated to provide spawning and rearing habitat.

(G) Downey Creek from its confluence with the North Fork Coeur d'Alene River upstream 5.5 km (3.4 mi) to its confluence with East Fork Downey Creek and West Fork Downey Creek is unoccupied but is anticipated to provide spawning and rearing habitat. North Grizzly Creek from its confluence with Downey Creek upstream 4.7 km (3.0 mi); East Fork Downey Creek from its confluence with Downey Creek upstream 2.6 km (1.6 mi); and West Fork Downey Creek from its confluence with Downey Creek upstream 3.4 km (2.1 mi) to their headwaters are all unoccupied but are anticipated to provide spawning and rearing habitat.

(H) Yellow Dog Creek from its confluence with the North Fork Coeur d'Alene River upstream 8.2 km (5.1 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(I) Tepee Creek from its confluence with the North Fork Coeur d'Alene River upstream 14.2 km (8.8 mi) to its confluence with Big Elk Creek is unoccupied but is anticipated to provide FMO habitat. Tepee Creek from its confluence with Big Elk Creek upstream 13.6 km (8.4 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat. Independence Creek from its confluence with Tepee Creek upstream 9.9 km (6.2 mi) is unoccupied but is anticipated to provide FMO habitat. Independence Creek from its confluence with North Creek upstream 15.2 km (9.4 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat. Big Elk Creek from its confluence with Tepee Creek upstream 9.0 km (5.6 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(J) Spruce Creek from its confluence with the North Fork Coeur d'Alene River upstream 9.2 km (5.7 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(K) Buckskin Creek from its confluence with the North Fork Coeur d'Alene River upstream 6.9 km (4.3 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(L) Mosquito Creek from its confluence with the North Fork Coeur d'Alene River upstream 4.8 km (3.0 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(M) St. Joe River from its confluence with Coeur d'Alene Lake upstream 151.5 km (94.1 mi) to its confluence with Simmons Creek provides FMO habitat. The upper St. Joe River from its confluence with Simmons Creek upstream 58.9 km (36.6 mi) to Rambikur Falls (just below St. Joe Lake) provides spawning and rearing habitat.

(N) Marble Creek from its confluence with the St. Joe River upstream 25.8 km (16.1 mi) to Homestead Creek provides FMO habitat. Marble Creek upstream of Homestead Creek 15.0 km (9.3 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat. Boulder Creek from its confluence with Marble Creek upstream 13.2 km (8.2 mi) to its headwaters; Homestead Creek from its confluence with Marble Creek upstream 2.5 km (1.6 mi) to a barrier falls; Freezout Creek from its confluence with Marble Creek upstream 6.4 km (4.0 mi) to its headwaters; and Delaney Creek from its confluence with Marble Creek upstream 1.1 km (0.7 mi) to a barrier falls are unoccupied but are anticipated to provide spawning and rearing habitat.

(O) Quartz Creek from its confluence with the St. Joe River upstream 4.0 km (2.5 mi) provides spawning and rearing habitat. Entente Creek from its confluence with Quartz Creek upstream 6.0 km (3.7 mi) provides spawning and rearing habitat.

(P) Gold Creek from its confluence with the St. Joe River upstream 10.6 km (6.6 mi) provides spawning and rearing habitat.

(Q) Simmons Creek from its confluence with the St. Joe River upstream 18.7 km (11.6 mi) to its headwaters provides spawning and rearing habitat. Dolly Creek from its confluence with Simmons Creek upstream 3.5 km (2.2 mi) provides spawning and rearing habitat.

(R) Fly Creek from its confluence with the St. Joe River upstream 9.8 km (6.1 mi) to its headwaters at Twin Lakes provides spawning and rearing habitat.

(S) Beaver Creek from its confluence with the St. Joe River upstream 10.5 km (6.6 mi) to its headwaters and Bad Bear Creek from its confluence with Beaver Creek upstream 5.0 km (3.1 mi) to its headwaters provide spawning and rearing habitat.

(T) Red Ives Creek from its confluence with the St. Joe River upstream 9.2 km (5.7 mi) to its headwaters provides spawning and rearing habitat.

(U) Timber Creek from its confluence with the St. Joe River upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(V) Ruby Creek from its confluence with the St. Joe River upstream 6.7 km (4.2 mi) to its headwaters and My Creek from its confluence with Ruby Creek upstream 2.9 km (1.8 mi) to its headwaters provide spawning and rearing habitat.

(W) Bean Creek from its confluence with the St. Joe River upstream 7.3 km (4.5 mi) to its headwaters; North Fork Bean Creek from its confluence with Bean Creek upstream 3.1 km (2.0 mi) to its headwaters; Tinear Creek from its confluence with Bean Creek upstream 5.8 km (3.6 mi) to its headwaters; and Mill Creek from its confluence with Tinear Creek upstream 3.4 km (2.1 mi) to its headwaters provide spawning and rearing habitat.

(X) Heller Creek from its confluence with the St. Joe River upstream 6.0 km (3.7 mi) to its headwaters and Sherlock Creek from its confluence with Heller Creek upstream 7.4 km (4.6 mi) to its headwaters provide spawning and rearing habitat.

(Y) Cascade Creek from its confluence with the St. Joe River upstream 1.7 km (1.1 mi) provides rearing habitat.

(Z) Blue Bells Creek from its confluence with the St. Joe River upstream 1.2 km (0.7 mi) provides rearing habitat.

(AA) Yankee Bar Creek from its confluence with the St. Joe River upstream 3.3 km (2.0 mi) to its headwaters provides spawning and rearing habitat.

(BB) California Creek from its confluence with the St. Joe River upstream 4.7 km (2.9 mi) to its headwaters provides spawning and rearing habitat.

(CC) Medicine Creek from its confluence with the St. Joe River upstream 4.7 km (2.9 mi) provides spawning and rearing habitat.

(DD) Wisdom Creek from its confluence with the St. Joe River upstream 6.1 km (3.8 mi) provides spawning and rearing habitat.

Table 82. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Coeur d'Alene River Basin CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Bad Bear Creek	ID	Bull trout documented in this watershed downstream in Beaver Creek (Hardy et al. 2008; Watson and Hillman 1997).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1154367 470637
Coeur d'Alene River Basin–None	Bean Creek	ID	Bull trout redds documented (Hawdon in litt. 2009), and juvenile bull trout documented during surveys (Grunder 2009).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152704 470050
Coeur d'Alene River Basin–None	Beaver Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153552 470829
Coeur d'Alene River Basin–None	Big Elk Creek	ID	Bull trout have not been documented, but habitat has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats has been identified as necessary for recovery (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162751 478037
Coeur d'Alene River Basin–None	Bluebells Creek	ID	Juvenile bull trout documented during surveys (Hawdon in litt. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151574 470410
Coeur d'Alene River Basin–None	Boulder Creek	ID	Historically occupied, but not documented in more recent surveys. Habitat is connected and in good condition (Hawdon pers. comm. 2009). Recolonization of unoccupied habitats has been identified as necessary for recovery (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160187 472267
Coeur d'Alene River Basin–None	Buckskin Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162254 479872.1
Coeur d'Alene River Basin–None	Buckskin Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162254 479872.2
Coeur d'Alene River Basin–None	California Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151592 470407
Coeur d'Alene River Basin–None	Cascade Creek (St. Joe trib)	ID	Juvenile bull trout documented during surveys (Hawdon in litt. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151710 470444

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Coeur d'Alene River	ID	The Coeur d'Alene River provides migratory habitat to bull trout that utilized tributary habitats in the recent past (Apperson et al. 1988; USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1167627 476453
Coeur d'Alene River Basin–None	Cougar Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161907 476402
Coeur d'Alene River Basin–None	Delaney Creek	ID	Historically present downstream. Likely provides high quality SR habitat for bull trout (DuPont et al. 2008). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159975 470621
Coeur d'Alene River Basin–None	Dolly Creek	ID	Bull trout redds have been documented in adjacent stream (Simmons Creek) in past years (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152536 471258
Coeur d'Alene River Basin–None	Downey Creek	ID	Historically present, but not documented in recent surveys. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160365 477783
Coeur d'Alene River Basin–None	Eagle Creek	ID	Bull trout documented in the recent past (USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159208 476444
Coeur d'Alene River Basin–None	East Fork Downey Creek	ID	Historically present downstream, but not documented in recent surveys. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160739 477456
Coeur d'Alene River Basin–None	East Fork Steamboat Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161988 477161
Coeur d'Alene River Basin–None	Entente Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1154932 472307
Coeur d'Alene River Basin–None	Falls Creek	ID	Documented in the 1990s (USFS 1998b), but not in recent years. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159538 477873

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Fly Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153848 471132
Coeur d'Alene River Basin–None	Freezeout Creek	ID	Historically present downstream. Likely provides high quality SR habitat for bull trout (DuPont et al. 2008). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160079 470712
Coeur d'Alene River Basin–None	Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1154076 471511
Coeur d'Alene River Basin–None	Heller Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152198 470607
Coeur d'Alene River Basin–None	Homestead Creek	ID	Historically present downstream. Likely provides high quality SR habitat for bull trout (DuPont et al. 2008). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160571 471089
Coeur d'Alene River Basin–None	Independence Creek	ID	Bull trout have not been documented, but habitat is connected and would serve as a migratory corridor for future recovery of a local population. It has also been identified as necessary for recovery (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162082 478773.1
Coeur d'Alene River Basin–None	Independence Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162082 478773.2
Coeur d'Alene River Basin–None	Little Lost Fork	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160007 478625
Coeur d'Alene River Basin–None	Marble Creek	ID	Documented in recent years (IDFG 1999). Habitat is connected and would provide migratory habitat for future recovery of local populations in upstream tributaries.	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160207 472508
Coeur d'Alene River Basin–None	Marble Creek	ID	Historically present. Likely provides high quality SR habitat for bull trout (DuPont et al. 2008). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160207 472508.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Marble Creek	ID	Historically present. Would provide migratory habitat for potential recolonized bull trout local populations upstream (DuPont et al. 2008). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160207 472508.2
Coeur d'Alene River Basin–None	Medicine Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151488 470283
Coeur d'Alene River Basin–None	Mill Creek	ID	Juvenile bull trout documented during surveys (Grunder 2009).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152263 469969
Coeur d'Alene River Basin–None	Mosquito Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162445 480182
Coeur d'Alene River Basin–None	My Creek	ID	Bull trout documented during survey (Hawdon in litt. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153756 469712
Coeur d'Alene River Basin–None	North Fork Bean Creek	ID	Juvenile bull trout documented during surveys (Grunder 2009).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152338 470048
Coeur d'Alene River Basin–None	North Fork Coeur d'Alene River	ID	Numerous bull trout have been documented in the recent past between the S. Fork Coeur d'Alene River and Tepee Creek (USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162568 475575.1
Coeur d'Alene River Basin–None	North Fork Coeur d'Alene River	ID	Numerous bull trout have been documented in the recent past between the S. Fork Coeur d'Alene River and Tepee Creek (USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162568 475575.2
Coeur d'Alene River Basin–None	North Fork Coeur d'Alene River	ID	Numerous bull trout have been documented in the recent past between the S. Fork Coeur d'Alene River and Tepee Creek (USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162568 475575
Coeur d'Alene River Basin–None	North Grizzly Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160530 477528
Coeur d'Alene River Basin–None	Prichard Creek	ID	Bull trout documented in the recent past (USFS 1998b).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159756 476578
Coeur d'Alene River Basin–None	Quartz Creek	ID	A bull trout redd was documented just upstream in Entente Creek (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1155163 472012
Coeur d'Alene River Basin–None	Red Ives Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153512 470557

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Ruby Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153669 469830
Coeur d'Alene River Basin–None	Sentinel Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160004 478609
Coeur d'Alene River Basin–None	Sherlock Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152180 470636
Coeur d'Alene River Basin–None	Shoshone Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159713 477026.1
Coeur d'Alene River Basin–None	Shoshone Creek	ID	Bull trout have not been documented, but were documented upstream in Falls Creek in the 1990s (USFS 1998b). Would serve as a migratory corridor for future recovery of local populations upstream, and has been identified as necessary for recovery (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159713 477026.2
Coeur d'Alene River Basin–None	Simmons Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1154001 471373
Coeur d'Alene River Basin–None	Spruce Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1162251 479824
Coeur d'Alene River Basin–None	St. Joe River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1168011 474569.1
Coeur d'Alene River Basin–None	St. Joe River	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1168011 474569.2
Coeur d'Alene River Basin–None	Steamboat Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161537 476618

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Tepee Creek	ID	Bull trout have not been documented, but habitat is connected and would serve as a migratory corridor for future recovery of local populations upstream and identified as necessary for recovery (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161317 478805.1
Coeur d'Alene River Basin–None	Tepee Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161317 478805.2
Coeur d'Alene River Basin–None	Timber Creek	ID	Bull trout documented during survey (L. Hawdon in litt. 2008), and during redd surveys in 1994 (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1153684 470180
Coeur d'Alene River Basin–None	Tinear Creek	ID	Juvenile bull trout documented during surveys (Grunder 2009).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1152297 470024
Coeur d'Alene River Basin–None	Ulm Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160004 478610
Coeur d'Alene River Basin–None	West Fork Downey Creek	ID	Historically present downstream, but not documented in recent surveys. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160739 477457
Coeur d'Alene River Basin–None	West Fork Eagle Creek	ID	Historically present, but not documented in recent surveys. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1159033 476522
Coeur d'Alene River Basin–None	West Fork Steamboat Creek	ID	Bull trout have not been documented, but habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1161988 477162
Coeur d'Alene River Basin–None	Wisdom Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151329 470090
Coeur d'Alene River Basin–None	Yankee Bar Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1151912 470490

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Coeur d'Alene River Basin–None	Yellow Dog Creek	ID	Historically present, but not documented in recent surveys. Habitat is connected and has been identified as suitable for bull trout SR (Lider pers. comm. 2009). Recolonization of unoccupied habitats is necessary for recovery in this core area (Service 2002a).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1160487477763
Coeur d'Alene River Basin–None	Coeur d'Alene Lake	ID	Subadult and adult bull trout occupy Coeur d'Alene Lake for FMO (PBTTAT 1998c).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1168026475480
Coeur d'Alene River Basin–None	South End Coeur d'Alene Lake	ID	Subadult and adult bull trout occupy Coeur d'Alene Lake for FMO (PBTTAT 1998c).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1167366473652
Coeur d'Alene River Basin–None	South End Coeur d'Alene Lake	ID	Subadult and adult bull trout occupy Coeur d'Alene Lake for FMO (PBTTAT 1998c).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1166877473438
Coeur d'Alene River Basin–None	South End Coeur d'Alene Lake	ID	Subadult and adult bull trout occupy Coeur d'Alene Lake for FMO (PBTTAT 1998c).	Rationale provided in Coeur d'Alene River Basin CHU justification text	1166895473669

Chapter 30. Columbia Headwaters Recovery Unit—Kootenai River Basin Critical Habitat Unit

Chapter 30. Kootenai River Basin Critical Habitat Unit

The Kootenai River Basin CHU is essential for maintaining bull trout distribution within this unique geographic region of the Columbia Headwaters RU. This CHU is a uniquely configured transboundary watershed, flowing in a horseshoe pattern that both originates (eastern or upstream arm) and ends (at Kootenay Lake) in British Columbia. This CHU is essential to bull trout recovery because it contains the strongest adfluvial core area population across the range of the species (10,000 + adults in Lake Koocanusa) and also supports the single largest spawning run of adult bull trout (3,000–5,000 adults annually) in the Wigwam River, British Columbia. These high population levels produce a harvestable surplus, allowing closely regulated angler utilization in Lake Koocanusa and provide numerous opportunities for research and evaluation of a high-density (i.e., recovered) bull trout population. The core area populations (Lake Koocanusa, Kootenai River, Bull Lake) represent working models for creating and sustaining bull trout recovery opportunities in other heavily managed watersheds (see Appendix 1 for more detailed information).

The Kootenai River Basin CHU is located in the northwestern corner of Montana and the northeastern tip of the Idaho panhandle and includes the Kootenai River watershed upstream and downstream of Libby Dam. The Kootenai River flows in a unique horseshoe configuration, entering the United States from British Columbia, Canada, and then traversing across northwest Montana and the northern Idaho panhandle before returning to British Columbia from Idaho where it eventually joins the upper Columbia River drainage. The Kootenai River Basin CHU includes two CHSUs: the downstream Kootenai River CHSU in Boundary County, Idaho, and Lincoln County, Montana, and the upstream Lake Koocanusa CHSU in Lincoln County, Montana. The entire Kootenai River Basin CHU includes 522.5 km (324.7 mi) of streams and 12,089.2 ha (29,873.1 ac) of lake and reservoir surface area designated as critical habitat.

30.1. Kootenai River Critical Habitat Subunit

Located in Boundary and Bonner Counties in Idaho and Lincoln County in Montana, the Kootenai River CHSU includes the downstream portion of the Kootenai River drainage up to Libby Dam. A total of 526.1 km (326.9 mi) of streams and 470.3 ha (1,162.3 ac) of Bull Lake surface area is designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 83):

(A) The Kootenai River from the Canadian border with Idaho upstream 184.2 km (114.4 mi) to Libby Dam provides FMO habitat.

(B) Long Canyon Creek from its confluence with the Kootenai River upstream 24.0 km (15.0 mi) provides spawning and rearing habitat.

(C) Trout Creek from its confluence with the Kootenai River upstream 1.4 km (0.8 mi) provides FMO habitat.

(D) Ball Creek from its confluence with the Kootenai River upstream 1.4 km (0.8 mi) provides FMO habitat.

(E) Myrtle Creek from its confluence with the Kootenai River upstream 5.1 km (3.1 mi) provides FMO habitat.

(F) Deep Creek from its confluence with the Kootenai River upstream 6.9 km (4.3 mi); Caribou Creek from its confluence with the Deep Creek upstream 0.8 km (0.5 mi); and Snow Creek from its confluence with Caribou Creek upstream 0.5 km (0.3 mi) provide FMO habitat.

(G) Moyie River from its confluence with the Kootenai River upstream 2.5 km (1.6 mi) provides FMO habitat.

(H) Boulder Creek from its confluence with the Kootenai River upstream 2.1 km (1.3 mi) provides spawning and rearing habitat.

(I) Callahan Creek from its confluence with the Kootenai River upstream 12.3 km (7.7 mi) to the confluence with North Fork and South Fork Callahan Creeks; North Fork, Callahan Creek from the confluence with Callahan Creek 17.2 km (10.7 mi) to the headwaters; and South Fork, Callahan Creek from the confluence with Callahan Creek 15.5 km (9.7 mi) to the headwaters provide spawning and rearing habitat.

(J) O'Brien Creek from its confluence with the Kootenai River upstream 44.3 km (27.5 mi) to its headwaters provides spawning and rearing habitat.

(K) Quartz Creek from its confluence with the Kootenai River upstream 17.7 km (11.0 mi) to its headwaters and its tributary, West Fork Quartz Creek, from its confluence with Quartz Creek upstream 10.0 km (6.2 mi) to its headwaters provides spawning and rearing habitat.

(L) Pipe Creek from its confluence with the Kootenai River upstream 31.9 km (19.8 mi) to the confluence of its East Fork, and East Fork Pipe Creek from its confluence upstream 13.6 km (8.4 mi) to its headwaters provide spawning and rearing habitat.

(M) The mainstem of Libby Creek upstream 39.1 km (24.3 mi) from its confluence with the Kootenai River to its upper reaches provides FMO habitat for migratory bull trout. The uppermost reach of Libby Creek, roughly upstream 5.7 km (3.6 mi) from the confluence of Howard Creek provides spawning and rearing habitat. Bear Creek, from its confluence with Libby Creek upstream 13.2 km (8.2 mi) to its headwaters also provides spawning and rearing habitat.

(N) Fisher River from its confluence with the Kootenai River upstream 47.2 km (29.4 mi) to the confluence of West Fisher Creek provides FMO habitat. West Fisher Creek from its confluence with the Fisher River upstream 17.9 km (11.1 mi) to its headwaters provides spawning and rearing habitat.

(O) Bull Lake, its associated tributaries, and downstream portions of Lake Creek contain a separate bull trout core area population that is completely isolated from two-way migratory connection with the Kootenai River by Troy Dam. This population is unusual in that the adult spawners that use Bull Lake as FMO habitat run downstream from Bull Lake to spawn, using Lake Creek as a downstream corridor to access spawning areas in Keeler Creek. Bull Lake (506.0 ha (1,296.0 ac)) and 13.0 km (8.1 mi) of Lake Creek to the confluence of Keeler Creek provide FMO habitat. Keeler Creek from its confluence with Lake Creek upstream 9.9 km (6.1 mi) and its tributaries North Fork Keeler Creek from its confluence with Keeler Creek upstream 3.7 km (2.3 mi) and South Fork Keeler Creek from its confluence with Keeler Creek upstream 1.6 km (1.0 mi) provide spawning and rearing habitat.

Table 83. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Kootenai River Basin–Kootenai River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Kootenai River Basin–Kootenai River	Ball Creek	ID	Documented bull trout during surveys (Gidleyin litt. 2009).	Rationale provided in Kootenai River CHSU justification text	1164095 487873
Kootenai River Basin–Kootenai River	Bear Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	3-36 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1153025 481103
Kootenai River Basin–Kootenai River	Boulder Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Kootenai River CHSU justification text	1160515 486249
Kootenai River Basin–Kootenai River	Bull Lake	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Leary et al. (2008), KTOI and MFWP (2004).	Identified as a core area (Service 2002a).	1158524 482470
Kootenai River Basin–Kootenai River	Callahan Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Migratory corridor connecting Kootenai River to a local population designated in the draft Bull Trout Recovery Plan (Service 2002a).	1155256 482732
Kootenai River Basin–Kootenai River	Callahan Creek, N Fk	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Kootenai River CHSU justification text	1160043 482606
Kootenai River Basin–Kootenai River	Callahan Creek, S Fk	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Kootenai River CHSU justification text	1160043 482605
Kootenai River Basin–Kootenai River	Caribou Creek	ID	Bull trout documented during surveys (Baconrind in litt. 2009;Paragamian pers. comm. 2009).	Rationale provided in Kootenai River CHSU justification text	1163988 486638
Kootenai River Basin–Kootenai River	Deep Creek	ID	Migratory corridor for bull trout observed upstream (C. Baconrind in litt.. 2009; V. Paragamian pers. comm. 2009).	Rationale provided in Kootenai River CHSU justification text	1163833 487079
Kootenai River Basin–Kootenai River	East Fork Pipe Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153706 483656
Kootenai River Basin–Kootenai River	Fisher River	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Migratory corridor connecting Kootenai River to a local population designated in the draft Bull Trout Recovery Plan (Service 2002a).	1151925 482158

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Kootenai River Basin–Kootenai River	Keeler Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Leary et al. (2008), KTOI and MFWP (2004).	8-125 bull trout redds per year in 10 counts conducted over 1999-2008, including South Fork Keeler (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1155102 482134
Kootenai River Basin–Kootenai River	Kootenai R	ID	Documented bull trout during telemetry studies (Walters 2002; Partridge 2003).	Rationale provided in Kootenai River CHSU justification text	1165027 489999.1
Kootenai River Basin–Kootenai River	Kootenai River	MT	Documented bull trout during telemetry studies (Walters 2002; Partridge 2003).	Rationale provided in Kootenai River CHSU justification text	1165027 489999.2
Kootenai River Basin–Kootenai River	Kootenai River	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Sylvester et al. (2008), KTOI and MFWP (2004).	Migratory corridor connecting Kootenai River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1165027 489999
Kootenai River Basin–Kootenai River	Kootenai River	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Hensler and Benson (2008), Sylvester et al. (2008), KTOI and MFWP (2004).	Migratory corridor connecting Kootenai River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1165027 489999
Kootenai River Basin–Kootenai River	Lake Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Migratory corridor connecting Bull Lake to Keeler Creek local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1155237 482706
Kootenai River Basin–Kootenai River	Libby Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Migratory corridor connecting Kootenai River to a local population designated in the draft Bull Trout Recovery Plan (Service 2002a).	1153213 482331.1
Kootenai River Basin–Kootenai River	Libby Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153213 482331.2
Kootenai River Basin–Kootenai River	Long Canyon Creek	ID	Documented bull trout during surveys in the lower reaches (Gidleyin litt. 2009; Partridge 2003).	Rationale provided in Kootenai River CHSU justification text	1165264 489614.1
Kootenai River Basin–Kootenai River	Long Canyon Creek	ID	Documented bull trout during surveys (Gidley in litt. 2009; Partridge 2003).	Rationale provided in Kootenai River CHSU justification text	1165264 489614.2
Kootenai River Basin–Kootenai River	Moyie River	ID	Documented bull trout during telemetry studies (Walters 2002).	Rationale provided in Kootenai River CHSU justification text	1161862 487149
Kootenai River Basin–Kootenai River	Myrtle Creek	ID	Documented bull trout during surveys (Gidley in litt. 2009; V. Paragamian pers. comm. 2009).	Rationale provided in Kootenai River CHSU justification text	1164107 487395

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Kootenai River Basin–Kootenai River	North Callahan Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	0-30 bull trout redds per year in 6 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1160043 482606
Kootenai River Basin–Kootenai River	North Fork Keeler Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	4-82 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1155345 482032
Kootenai River Basin–Kootenai River	O'Brien Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Leary et al. (2008), KTOI and MFWP (2004).	34-79 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1155157 482654
Kootenai River Basin–Kootenai River	Pipe Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Leary et al. (2008), KTOI and MFWP (2004).	0-36 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153619 482524
Kootenai River Basin–Kootenai River	Quartz Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	8-52 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153814 482617
Kootenai River Basin–Kootenai River	Snow Creek	ID	Bull trout documented during surveys (Baconrindin litt.. 2009; V. Paragamian pers. comm. 2009).	Rationale provided in Kootenai River CHSU justification text	1164021 486637
Kootenai River Basin–Kootenai River	South Callahan Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	1-10 bull trout redds per year in 6 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1160043 482605
Kootenai River Basin–Kootenai River	South Fork Keeler Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008).	0-43 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1155421 482010
Kootenai River Basin–Kootenai River	Trout Creek	ID	Bull trout documented during surveys (Baconrindin litt. 2009; Gidley in litt. 2009).	Rationale provided in Kootenai River CHSU justification text	1164103 488395
Kootenai River Basin–Kootenai River	West Fisher Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), Leary et al. (2008), KTOI and MFWP (2004).	1-27 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1152227 480410

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Kootenai River Basin–Kootenai River	West Fork Quartz Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	10-109 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153912 482844

30.2. Lake Koocanusa Critical Habitat Subunit

The Lake Koocanusa CHSU is essential to bull trout conservation because it is amongst the most secure and stable bull trout refugium across the range of the species and may provide a very important stronghold against potential extinction. The adfluvial population that is the sole life history form present in the CHSU originated from fluvial stocks in the Kootenai River trapped upstream of Libby Dam, which successfully adapted to the newly expanded habitat and have provided a strong and resilient core area population. There are low numbers of nonnative fish in this CHSU and most of the spawning and rearing habitat is in British Columbia. The most important spawning stream, the Wigwam River, supports 1,500–2,500 bull trout redds annually. The strong bull trout population has provided an opportunity to allow anglers to utilize the bull trout resource, harvesting a closely regulated number of fish despite ESA listing. Conservation of this bull trout CHSU in the United States provides our Canadian counterparts with strong incentive for continued cooperation in broader bull trout recovery efforts (see Appendix 1 for more detailed information).

Naturally fluvial migratory populations of bull trout that historically existed in the upper Kootenai River watershed in Montana and British Columbia converted to an adfluvial life history pattern with the construction of Libby Dam in 1973. Libby Dam backs up water some 144.8 km (90 mi), with the upper 65.5 km (40.7 mi) portion at full pool in British Columbia, Canada. Bull trout adults living in Lake Koocanusa spawn primarily in Canada. This CHSU is located entirely in Lincoln County, Montana. Approximately 62.5 km (38.8 mi) of streams and 18,818.0 ha (46,500.2 ac) of reservoir surface area are designated as critical habitat. The following water bodies are included in this CHSU (see Table 84):

(A) Lake Koocanusa (18,818.0 ha (46,500.2 ac)) provides FMO habitat for a large (over 10,000 adults) population of bull trout that mostly use the upper Kootenay River watershed in British Columbia for spawning and rearing. The Grave Creek population and a small portion of the Wigwam River local population spawn in the United States.

(B) The Tobacco River from its confluence with Lake Koocanusa upstream 21.7 km (13.5 mi) to Grave Creek provides migratory (FMO) habitat. Grave Creek from its confluence with the Tobacco River upstream 25.5 km (15.9 mi) to its headwaters and its tributaries, Clarence Creek upstream 6.2 km (3.9 mi) to its headwaters and the lower reaches of Blue Sky Creek upstream 2.0 km (1.3 mi), provide spawning and rearing habitat.

(C) The Wigwam River in British Columbia is one of the most heavily used spawning and rearing habitats for bull trout anywhere in the range of the species; with over 2,000 redds enumerated annually. The uppermost 7.0 km (4.4 mi) of the Wigwam River wraps back into the United States, providing a small portion of the spawning and rearing habitat. Bull trout that spawn in the Wigwam River use FMO habitat primarily in the United States in Lake Koocanusa.

Table 84. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Kootenai River Basin–Lake Koocanusa CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Kootenai River Basin–Lake Koocanusa	Blue Sky Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	0-20 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population (i.e., a portion of the Grave Creek local population) in the draft Bull Trout Recovery Plan (Service 2002a).	1144629 485342
Kootenai River Basin–Lake Koocanusa	Clarence Creek	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	9-52 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population (i.e., a portion of the Grave Creek local population) in the draft Bull Trout Recovery Plan (Service 2002a).	1144755 485321
Kootenai River Basin–Lake Koocanusa	Grave Creek	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	85-173 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1145706 484753
Kootenai River Basin–Lake Koocanusa	Tobacco River	MT	Documented in MFISH database (MFWP 2009a), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Demonstrated to be an important migratory corridor connecting local populations in grave Creek, designated in the draft Bull Trout Recovery Plan (Service 2002a), to Lake Koocanusa.	1150739 485345
Kootenai River Basin–Lake Koocanusa	Wigwam River	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	635-2,285 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b), nearly all of which are in B.C. U.S. redd counts (in the very head end of the system are 6-33 annually as part of this total. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1144756 490152
Kootenai River Basin–Lake Koocanusa	Lake Koocanusa	MT	Documented in MFISH database (MFWP 2009a), Ardren, DeHaan, and Dunnigan (2007), Dunnigan et al. (2003, 2004, 2005, 2007, 2008), KTOI and MFWP (2004).	Identified as a core area (Service 2002a).	1152435 487268

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 31. Columbia Headwaters Recovery Unit—Clark Fork River Basin Critical Habitat Unit

Chapter 31. Clark Fork River Basin Critical Habitat Unit

The Clark Fork River Basin CHU is essential maintaining bull trout distribution within this unique geographic region of the Columbia Headwaters RU in large part because it represents the evolutionary heart of the migratory adfluvial bull trout life history form. Flathead Lake and Lake Pend Oreille are the two largest lakes in the range of the species, and bull trout from those core areas historically grew to be large and migrated upstream up to 322 km (200 mi) to spawning and rearing habitats. These habitats were partially fragmented by hydroelectric dams and other manmade barriers but are increasingly being reconnected with dam removal (Milltown Dam) and improved fish passage (Cabinet Gorge, Noxon Rapids, Thompson Falls). The resident life history form of bull trout is minimally present in this CHU and fluvial bull trout play a reduced role relative to adfluvials. The two major lakes (Flathead and Pend Oreille), as well as over 20 additional core areas established in smaller headwater lakes that are isolated from Flathead and Pend Oreille to varying degrees, are the primary refugia for the naturally occurring adfluvial form of bull trout across their range. Groundwater-fed coldwater spawning and rearing habitat is critical to supporting bull trout in this CHU. Extensive portions of the headwater habitat are within protected areas (Glacier National Park and Bob Marshall and Great Bear Wilderness) and portions of the spawning and rearing habitat extend northward into British Columbia. Bull trout remain relatively abundant in portions of this CHU but are depressed in other areas (see Appendix 1 for more detailed information).

The Clark Fork River Basin CHU includes the northeastern corner of Washington (Pend Oreille County), the panhandle portion of northern Idaho (Boundary, Bonner, and Kootenai Counties), and most of western Montana (Lincoln, Flathead, Sanders, Lake, Mineral, Missoula, Powell, Lewis and Clark, Ravalli, Granite, and Deer Lodge Counties). This unit includes 12 CHSUs, organized primarily on the basis of major watersheds: Lake Pend Oreille, Pend Oreille River, and lower Priest River (Lake Pend Oreille); Priest Lakes and Upper Priest River (Priest Lakes); Lower Clark Fork River; Middle Clark Fork River; Upper Clark Fork River; Flathead Lake, Flathead River, and Headwater Lakes (Flathead); Swan River and Lakes (Swan); Hungry Horse Reservoir, South Fork Flathead River, and Headwater Lakes (South Fork Flathead); Bitterroot River; Blackfoot River; Clearwater River and Lakes; and Rock Creek. The Clark Fork River Basin CHU includes 5,356 km (3,328 mi) of streams and 119,620 ha (295,587 ac) of 45 lakes and reservoirs proposed as critical habitat.

31.1. Priest Lakes Critical Habitat Subunit

The Priest Lakes CHSU is essential to bull trout conservation because it is the only major watershed occupied by bull trout in the most downstream portion (Pend Oreille River) of the Clark Fork River Basin CHU. Its high elevation with relatively secure and un-entered spawning and rearing habitat in headwater reaches of the Upper Priest River may prove resilient during ongoing climate change. While artificially isolated from other bull trout populations, losing this CHSU would create a gap in the range of the species with no opportunity for natural recolonization at this time (see Appendix 1 for more detailed information).

Located primarily in Idaho (Boundary and Bonner Counties) the Priest Lakes CHSU includes the entire drainage of the Priest River upstream from Outlet Dam, including Priest and Upper Priest Lakes and the Upper Priest River. The extreme headwaters lie in British Columbia, Canada, and its headwaters of several west side drainages are in Pend Oreille County, Washington. A total of 175.4 km (109.0 mi) of streams and 9,984 ha (24,671 ac) of lake surface area are designated as critical habitat.

The following water bodies are included in this CHSU (see Table 85):

(A) Priest Lake (9,442 ha (23,331 ac)) provides FMO habitat.

(B) Indian Creek from its confluence with Priest Lake upstream 5.2 km (3.2 mi) to its confluence with South Fork Indian Creek and North Fork Indian Creek; South Fork Indian Creek from its confluence upstream 5.9 km (3.6 mi) to its headwaters; and North Fork Indian Creek from its confluence upstream 6.3 km (3.9 mi) provide spawning and rearing habitat.

(C) Granite Creek from its confluence with Priest Lake upstream 13.9 km (8.7 mi) provides FMO habitat; spawning and rearing habitat occurs for an additional 3.9 km (2.4 mi) upstream to its confluence with North Fork Granite Creek and South Fork Granite Creek. The South Fork Granite Creek from its confluence with Granite Creek upstream 11.3 km (7.0 mi); the North Fork Granite Creek from its confluence with Granite Creek upstream 11.2 km (7.0 mi); and Tillicum Creek from its confluence with the North Fork Granite Creek upstream 1.2 km (0.7 mi) to barrier falls provide spawning and rearing habitat.

(D) Two Mouth Creek from its confluence with Priest Lake upstream 15.7 km (9.8 mi) to its headwaters provides spawning and rearing habitat.

(E) Lion Creek from its confluence with Priest Lake upstream 18.2 km (11.3 mi) to its headwaters provides spawning and rearing habitat.

(F) Priest River Thorofare, a 4.4 km (2.8 mi) long channel between Upper Priest and Priest Lakes, provides FMO habitat.

(G) Caribou Creek from its confluence with Priest River Thorofare upstream 8.4 km (5.2 mi) provides FMO habitat and may provide spawning and rearing habitat.

(H) Upper Priest Lake (542 ha (1,340 ac)) provides FMO habitat.

(I) Trapper Creek from its confluence with Upper Priest Lake upstream 7.2 km (4.5 mi) provides spawning and rearing habitat.

(J) The Upper Priest River from its confluence with Upper Priest Lake upstream 2.2 km (1.4 mi) to its confluence with Hughes Fork provides FMO habitat. The Upper Priest River from its confluence with Hughes Fork upstream 28.7 km (17.8 mi) to a barrier falls provides spawning and rearing habitat.

(K) Hughes Fork from its confluence with the Upper Priest River upstream 15.7 km (9.8 mi); Gold Creek from its confluence with Hughes Fork upstream 5.0 km (3.1 mi); Jackson Creek from its confluence with Hughes Fork upstream 1.6 km (1.0 mi); and Bench Creek from its confluence with Hughes Fork upstream 1.2 km (0.7 mi) provide spawning and rearing habitat.

(L) Cedar Creek from its confluence with the Upper Priest River upstream 3.8 km (2.3 mi) provides spawning and rearing habitat.

(M) Lime Creek from its confluence with the Upper Priest River upstream 1.6 km (1.0 mi) provides spawning and rearing habitat.

(N) Rock Creek from its confluence with the Upper Priest River upstream 1.9 km (1.2 mi) provides spawning and rearing habitat.

(O) Malcom Creek from its confluence with the Upper Priest River upstream 0.9 km (0.6 mi) provides rearing habitat.

Table 85. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Priest Lakes CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Priest Lakes	Bench Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170019 488689
Clark Fork River Basin–Priest Lakes	Caribou Creek	ID	Juvenile bull trout documented in 2003 (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168641 487475
Clark Fork River Basin–Priest Lakes	Cedar Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1169586 488797
Clark Fork River Basin–Priest Lakes	Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1169733 488213
Clark Fork River Basin–Priest Lakes	Granite Creek	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008), and documented bull trout presence (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168578 486404.1
Clark Fork River Basin–Priest Lakes	Granite Creek	ID	Bull trout redd documented in 2006 (T. Anderson in litt. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168578 486404.2
Clark Fork River Basin–Priest Lakes	Granite Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168578 486404.3
Clark Fork River Basin–Priest Lakes	Hughes Fork	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1169232 488054
Clark Fork River Basin–Priest Lakes	Indian Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168755 485982
Clark Fork River Basin–Priest Lakes	Jackson Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170006 488558
Clark Fork River Basin–Priest Lakes	Lime Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1169643 488942

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Priest Lakes	Lion Creek	ID	Juvenile bull trout documented in 2004 (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168413 487345
Clark Fork River Basin–Priest Lakes	Malcom Creek	ID	Juvenile bull trout documented in 2004 (DuPont et al 2008).	Rationale provided in Priest Lakes CHSU justification text	1169392 489817
Clark Fork River Basin–Priest Lakes	North Fork Granite Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170287 487001.1
Clark Fork River Basin–Priest Lakes	North Fork Granite Creek	WA	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170287 487001.2
Clark Fork River Basin–Priest Lakes	North Fork Indian Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1167889 486338.1
Clark Fork River Basin–Priest Lakes	North Fork Indian Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1167889 486338.2
Clark Fork River Basin–Priest Lakes	Rock Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1169702 489064
Clark Fork River Basin–Priest Lakes	South Fork Granite Creek	ID	Bull trout presence documented 1994-1998 (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170287 487011.1
Clark Fork River Basin–Priest Lakes	South Fork Granite Creek	WA	Bull trout presence documented 1994-1998 (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1170287 487011.2
Clark Fork River Basin–Priest Lakes	South Fork Indian Creek	ID	Presumed occupied based on bull trout occupancy in adjacent stream (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1167889 486347.1
Clark Fork River Basin–Priest Lakes	South Fork Indian Creek	ID	Presumed occupied based on bull trout occupancy in adjacent stream (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1167889 486347.2
Clark Fork River Basin–Priest Lakes	The Thorofare	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168428 487401

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Priest Lakes	Tillicum Creek	ID	Presumed occupied based on bull trout occupancy in adjacent stream (Hardy et al. 2008) and historic documentation (Baconrind in litt. 2009).	Rationale provided in Priest Lakes CHSU justification text	1170700 487248
Clark Fork River Basin–Priest Lakes	Trapper Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168984 487929
Clark Fork River Basin–Priest Lakes	Two Mouth Creek	ID	Bull trout presence documented 1994-1998 (DuPont et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168524 486871
Clark Fork River Basin–Priest Lakes	Upper Priest River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168636 487661.1
Clark Fork River Basin–Priest Lakes	Upper Priest River	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Priest Lakes CHSU justification text	1168636 487661.2
Clark Fork River Basin–Priest Lakes	Priest Lake	ID	Subadult and adult bull trout occupy Priest Lake for FMO (PBTTAT 1998b).	Rationale provided in Priest Lakes CHSU justification text	1168650 485882
Clark Fork River Basin–Priest Lakes	Upper Priest Lake	ID	Subadult and adult bull trout occupy Upper Priest Lake for FMO (PBTTAT 1998b).	Rationale provided in Priest Lakes CHSU justification text	1168890 487846

31.2. Lake Pend Oreille Critical Habitat Subunit

The Lake Pend Oreille CHSU is essential to bull trout conservation because it is among the more secure and stable bull trout refugia across the range of the species and may provide a very important stronghold against potential extinction. Adfluvial bull trout comprise the predominant life history form present in the CHSU, and the CHSU has averaged over 800 bull trout redds annually over the last 10 years with a high of greater than 1,250 redds in recent years. Lake Pend Oreille not only provides important FMMO habitat to bull trout local populations in Lake Pend Oreille tributaries and Pend Oreille River tributaries but to bull trout populations in the Lower Clark Fork River CHSU. Bull trout local populations have not been recently documented in Pend Oreille River tributaries that were known to be historically present. Reestablishing local populations that are broadly distributed throughout the CHSU has been identified as necessary for bull trout recovery (see Appendix 1 for more detailed information).

Located in Washington (Pend Oreille County) and Idaho (Boundary, Bonner, and Kootenai Counties), the Lake Pend Oreille CHSU includes the Pend Oreille River from the crest of Boundary Dam in Washington upstream to Lake Pend Oreille, the lower portion of the Priest River drainage (downstream from Outlet Dam), Lake Pend Oreille, the Clark Fork River upstream of Lake Pend Oreille to Cabinet Gorge Dam, and their respective tributaries. A total of 708.2 km (440.0 mi) of streams/rivers and 33,581 ha (82,980 ac) of Lake Pend Oreille surface area are designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 86):

(A) The Pend Oreille River from the crest of Boundary Dam upstream 162.2 km (100.8 mi) to Lake Pend Oreille (Long Bridge at Sandpoint, Idaho) provides FMO habitat.

(B) Slate Creek from its confluence with the Pend Oreille River upstream 1.2 km (0.8 mi) to a barrier falls provides FMO habitat.

(C) Sullivan Creek from its confluence with the Pend Oreille River upstream 8.8 km (5.4 mi) provides FMO habitat; an additional 27.6 km (17.2 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(D) Cedar Creek from its confluence with the Pend Oreille River upstream 16.1 km (10.0 mi) to its headwaters provides spawning and rearing habitat.

(E) Ruby Creek from its confluence with the Pend Oreille River upstream 21.0 km (13.1 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(F) LeClerc Creek from its confluence with the Pend Oreille River upstream 1.9 km (1.2 mi) to the confluence of the West Branch of LeClerc Creek and the East Branch of LeClerc Creek provides FMO habitat. West Branch of LeClerc Creek from the confluence of LeClerc Creek upstream 24.7 km (15.4 mi) to its headwaters; East Branch of LeClerc Creek from its confluence with LeClerc Creek upstream 20.8 km (12.9 mi) to its headwaters; and Fourth of July Creek from its confluence with the East Branch of LeClerc Creek upstream 0.7 km (0.5 mi) to a barrier falls provide spawning and rearing habitat. Middle Branch of LeClerc Creek from its confluence with the East Branch of LeClerc Creek upstream 11.3 km (7.0 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(G) Mill Creek from its confluence with the Pend Oreille River upstream 2.1 km (1.3 mi) provides FMO habitat. Mill Creek upstream for an additional 12.4 km (7.7 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat.

(H) Tacoma Creek from its confluence with the Pend Oreille River upstream 1.9 km (1.2 mi) is unoccupied but is anticipated to provide FMO habitat. Tacoma Creek upstream for an additional 32.7 km (20.3 mi) to its headwaters is unoccupied but is anticipated to provide spawning and rearing habitat. South Fork of Tacoma Creek from its confluence with Tacoma Creek upstream 16.2 km (10.1 mi) to its headwaters and the North Fork South Fork Tacoma Creek from its confluence with the South Fork Tacoma Creek upstream 10.9 km (6.7 mi) to its headwaters, are both unoccupied but are anticipated to provide spawning and rearing habitat.

(I) Calispell Creek from its confluence with the Pend Oreille River upstream 11.1 km (6.9 mi) to Calispell Lake is unoccupied but is anticipated to provide FMO habitat. Smalle Creek from its confluence with Calispell Creek upstream 5.5 km (3.4 mi) is unoccupied but is anticipated to provide FMO habitat; an additional 5.0 km (3.1 mi) to a barrier falls is unoccupied but is anticipated to provide spawning and rearing habitat. The East Fork of Smalle Creek from its confluence with Smalle Creek upstream 6.7 km (4.2 mi) to a barrier falls is unoccupied but is anticipated to provide spawning and rearing habitat. Calispell Lake totaling roughly 190.6 ha (471 ac) of lake surface area is unoccupied but is anticipated to provide FMO habitat. Winchester Creek from its confluence with Calispell Lake upstream 5.9 km (3.6 mi) is unoccupied but is anticipated to provide FMO habitat; an additional 10.4 km (6.5 mi) to a barrier falls is unoccupied but is anticipated to provide spawning and rearing habitat.

(J) Indian Creek from its confluence with the Pend Oreille River upstream 8.5 km (5.3 mi) to its headwaters provides spawning and rearing habitat.

(K) The lower Priest River from its confluence with the Pend Oreille River upstream 70.5 km (43.8 mi) to Outlet Dam at Priest Lake provides FMO habitat.

(L) The East River from its confluence with the Priest River upstream 4.0 km (2.5 mi) and the Middle Fork East River from its confluence with the East River upstream 2.5 km (1.5 mi) provide FMO habitat; spawning and rearing habitat in the Middle Fork East River occurs for an additional 9.7 km (6.0 mi) upstream. Uleda Creek from its confluence with the Middle Fork East River upstream 3.2 km (2.0 mi) provides spawning and rearing habitat. Keokee Creek from its confluence with the Middle Fork East River upstream 2.3 km (1.4 mi) provides rearing habitat for Middle Fork East River bull trout. North Fork East River from its confluence with the East River upstream 8.4 km (5.2 mi) provides FMO habitat; presumed spawning and rearing habitat occurs for an additional 3.9 km (2.4 mi) upstream.

(M) Lake Pend Oreille (does not include impounded reach of the Pend Oreille River from Albeni Falls Dam to the Long Bridge at Sandpoint, Idaho) totaling roughly 33,581 ha (82,980 ac) of lake surface area provides FMO habitat.

(N) The Pack River from its confluence with Lake Pend Oreille upstream 53.4 km (33.2 mi) provides FMO habitat; spawning and rearing habitat occurs for an additional 9.4 km (5.8 mi) upstream to a barrier falls. Grouse Creek from its confluence with the Pack River upstream 13.4 km (8.3 mi) provides FMO habitat; spawning and rearing habitat occurs for an additional 12.9 km (8.0 mi) upstream.

(O) Trestle Creek from its confluence with Lake Pend Oreille upstream 14.4 km (8.9 mi) provides spawning and rearing habitat.

(P) Strong Creek from its confluence with Lake Pend Oreille upstream 3.1 km (1.9 mi) provides spawning and rearing habitat.

(Q) Gold Creek from its confluence with Lake Pend Oreille upstream 2.7 km (1.7 mi) and West Gold Creek from its confluence with Gold Creek upstream 4.9 km (3.0 mi) provide spawning and rearing habitat.

(R) North Gold Creek from its confluence with Lake Pend Oreille upstream 2.0 km (1.3 mi) provides spawning and rearing habitat.

(S) Granite Creek from its confluence with Lake Pend Oreille upstream 10.1 km (6.3 mi) and Sullivan Springs from its confluence with Granite Creek upstream 2.1 km (1.3 mi) provide spawning and rearing habitat.

(T) Johnson Creek from its confluence with the south channel of the Clark Fork River delta at its confluence with Lake Pend Oreille upstream 1.2 km (0.7 mi) provides spawning and rearing habitat.

(U) The Clark Fork River from its confluence with Lake Pend Oreille upstream 14.5 km (9.0 mi) to Cabinet Gorge Dam provides FMO habitat.

(V) Lightning Creek from its confluence with the Clark Fork River upstream 14.3 km (8.9 mi) provides FMO habitat; spawning and rearing habitat occurs for an additional 15.2 km (9.5 mi) upstream to a barrier falls. Morris Creek from its confluence with Lightning Creek upstream 3.5 km (2.2 mi); East Fork Creek from its confluence with Lightning Creek upstream 6.5 km (4.1 mi); Savage Creek from its confluence with East Fork Creek upstream 5.9 km (3.7 mi); Char Creek from its confluence with East Fork Creek upstream 3.4 km (2.1 mi); Porcupine Creek from its confluence with Lightning Creek upstream 3.0 km (1.9 mi); Wellington Creek from its confluence with Lightning Creek upstream 1.0 km (0.6 mi); and Rattle Creek from its confluence with Lightning Creek upstream 6.0 km (3.7 mi) provide spawning and rearing habitat.

Table 86. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Lake Pend Oreille CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Calispell Creek	WA	Currently unoccupied, but would serve as a migratory corridor for future recovery of local populations in upstream tributaries, which has been identified as necessary (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1172894 483436
Clark Fork River Basin–Lake Pend Oreille	Calispell Lake	WA	Currently unoccupied, but would serve as a migratory corridor for future recovery of local populations in upstream tributaries, which has been identified as necessary (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173332 482736
Clark Fork River Basin–Lake Pend Oreille	Cedar Creek	WA	Bull trout documented during surveys (KNRD and WDFW 1997; C. Vail in litt. 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1174109 487417.1
Clark Fork River Basin–Lake Pend Oreille	Cedar Creek	WA	Bull trout documented during surveys (KNRD and WDFW 1997; C. Vail in litt. 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1174109 487417.2
Clark Fork River Basin–Lake Pend Oreille	Char Cr	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1160671 482620
Clark Fork River Basin–Lake Pend Oreille	Clark Fork River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008), and bull trout captured below Cabinet Gorge Dam.	Rationale provided in Lake Pend Oreille CHSU justification text	1162072 481455
Clark Fork River Basin–Lake Pend Oreille	E. Fork Small Creek	WA	Currently unoccupied, but would provide SR habitat for future recovery of a local population, which has been identified as necessary (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173543 483276
Clark Fork River Basin–Lake Pend Oreille	East Branch LeClerc Creek	WA	Bull trout documented during numerous surveys (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172818 485338

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	East Fork Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161121 482406
Clark Fork River Basin–Lake Pend Oreille	East River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168518 483527
Clark Fork River Basin–Lake Pend Oreille	Fourth of July Creek	WA	Bull trout documented during surveys (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172720 485556
Clark Fork River Basin–Lake Pend Oreille	Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163700 482683
Clark Fork River Basin–Lake Pend Oreille	Granite Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164647 480992
Clark Fork River Basin–Lake Pend Oreille	Grouse Creek	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164773 484027.1
Clark Fork River Basin–Lake Pend Oreille	Grouse Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164773 484027.2
Clark Fork River Basin–Lake Pend Oreille	Indian Creek	WA	Adult bull trout captured in a trap (Andonaegui 2003)	Rationale provided in Lake Pend Oreille CHSU justification text	1171515 482425
Clark Fork River Basin–Lake Pend Oreille	Johnson Cr	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1162290 481388

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Keokee Creek	ID	Juvenile bull trout captured during recovery project conducted from 2005-2007 (Gidley in litt. 2007; DuPont in litt. 2005).	Rationale provided in Lake Pend Oreille CHSU justification text	1166967 483893
Clark Fork River Basin–Lake Pend Oreille	LeClerc Creek	WA	Serves as a migratory corridor for bull trout observed in upstream tributaries (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172828 485181
Clark Fork River Basin–Lake Pend Oreille	Lightning Creek	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161909 481397.1
Clark Fork River Basin–Lake Pend Oreille	Lightning Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161909 481397.2
Clark Fork River Basin–Lake Pend Oreille	Lunch Creek	WA	Also referred to as Sweet Creek, has had several bull trout observations, most recently in 2000 by WDFW (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1173882 488197
Clark Fork River Basin–Lake Pend Oreille	Middle Branch Le Clerc Creek	WA	Unoccupied but designated because bull trout have been documented in three other LeClerc Creek tributaries (Andonaegui 2003), and restoration activities are ongoing in Middle Branch Le Clerc Creek to aide recovery and restore connectivity.	Rationale provided in Lake Pend Oreille CHSU justification text	1172609 485854
Clark Fork River Basin–Lake Pend Oreille	Middle Fork East River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168189 483714.1
Clark Fork River Basin–Lake Pend Oreille	Middle Fork East River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168189 483714.2
Clark Fork River Basin–Lake Pend Oreille	Middle Fork East River	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168189 483714.3

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Mill Creek	WA	A bull trout was documented in a lower reach (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172649 484893.1
Clark Fork River Basin–Lake Pend Oreille	Mill Creek	WA	A bull trout was documented in a lower reach (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172649 484893.2
Clark Fork River Basin–Lake Pend Oreille	Mill Creek	WA	Surveys have failed to document presence in the upper reach, but a 14 in. bull trout was documented in a lower reach (Andonaegui 2003). Mill Creek was also identified as necessary for recovery (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1172649 484893
Clark Fork River Basin–Lake Pend Oreille	Morris Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161170 482240
Clark Fork River Basin–Lake Pend Oreille	N.F. of S. Fork Tacoma Creek	WA	Bull trout have not been documented, but habitat is connected and accessible to bull trout, and would provide SR habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173614 483991
Clark Fork River Basin–Lake Pend Oreille	North Fork East River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168189 483724.1
Clark Fork River Basin–Lake Pend Oreille	North Fork East River	ID	Bull trout redd documented in 2004 (Hardy et al. 2008), and bull trout and or bull trout/brook trout hybrids captured in 2006 (C. Tretter in litt. 2006).	Rationale provided in Lake Pend Oreille CHSU justification text	1168189 483724.2
Clark Fork River Basin–Lake Pend Oreille	North Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164560 479751
Clark Fork River Basin–Lake Pend Oreille	Pack River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163700 482693.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Pack River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163700 482693.2
Clark Fork River Basin–Lake Pend Oreille	Pack River	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163700 482693.3
Clark Fork River Basin–Lake Pend Oreille	Pend Oreille River	ID	Occupied based on telemetry data (DuPont et al. 2007).	Rationale provided in Lake Pend Oreille CHSU justification text	1173521 489999.1
Clark Fork River Basin–Lake Pend Oreille	Pend Oreille River	ID	Occupied based on telemetry data (DuPont et al. 2007).	Rationale provided in Lake Pend Oreille CHSU justification text	1173521 489999.2
Clark Fork River Basin–Lake Pend Oreille	Pend Oreille River	WA	Documented use by subadult and adult bull trout (Geist et al. 2004; J. Olson in litt. 2008, 2009).	Rationale provided in Lake Pend Oreille CHSU justification text	1173521 489999.3
Clark Fork River Basin–Lake Pend Oreille	Porcupine Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161227 482673
Clark Fork River Basin–Lake Pend Oreille	Priest River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168927 481728.1
Clark Fork River Basin–Lake Pend Oreille	Priest River	ID	Seasonal use (migration) based on redd surveys upstream (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1168927 481728.2
Clark Fork River Basin–Lake Pend Oreille	Rattle Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161721 483264

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Ruby Creek	WA	Bull trout have not been documented, but habitat is connected and accessible to bull trout, and would provide SR habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173416 485562
Clark Fork River Basin–Lake Pend Oreille	S. Fork Tacoma Creek	WA	Bull trout have not been documented, but habitat is connected and accessible to bull trout, and would provide SR habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173226 483937.1
Clark Fork River Basin–Lake Pend Oreille	S. Fork Tacoma Creek	WA	Bull trout have not been documented, but habitat is connected and accessible, and would provide SR habitat for recovered local population in the future (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173226 483937.2
Clark Fork River Basin–Lake Pend Oreille	Savage Cr	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1160964 482479
Clark Fork River Basin–Lake Pend Oreille	Slate Creek	WA	Numerous bull trout caught at the mouth (Andonaegui 2003) seeking cold water.	Rationale provided in Lake Pend Oreille CHSU justification text	1173318 489232.1
Clark Fork River Basin–Lake Pend Oreille	Slate Creek	WA	Numerous bull trout caught at the mouth (Andonaegui 2003) seeking cold water.	Rationale provided in Lake Pend Oreille CHSU justification text	1173318 489232.2
Clark Fork River Basin–Lake Pend Oreille	Small Creek	WA	Bull trout have not been documented, but would provide SR habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173073 483207.1
Clark Fork River Basin–Lake Pend Oreille	Small Creek	WA	Bull trout have not been documented, but would provide migratory habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173073 483207.2
Clark Fork River Basin–Lake Pend Oreille	Strong Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163458 482485

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	Sullivan Creek	WA	A bull trout was documented in a lower reach (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1173700 488652.1
Clark Fork River Basin–Lake Pend Oreille	Sullivan Creek	WA	Bull trout have not been documented, but this water body is designated because connectivity restoration is planned. A bull trout was documented in a lower reach (Andonaegui 2003), and it has been identified as necessary for recovery (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173700 488652.2
Clark Fork River Basin–Lake Pend Oreille	Sullivan Creek	WA	A bull trout was documented in a lower reach (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1173700 488652.3
Clark Fork River Basin–Lake Pend Oreille	Sullivan Springs	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164114 480882
Clark Fork River Basin–Lake Pend Oreille	Tacoma Creek	WA	Bull trout have not been documented, but would provide SR habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1172876 483925.1
Clark Fork River Basin–Lake Pend Oreille	Tacoma Creek	WA	Bull trout have not been documented, but would provide migratory habitat for future recovery of a local population (Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1172876 483925.2
Clark Fork River Basin–Lake Pend Oreille	Trestle Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1163689 482800
Clark Fork River Basin–Lake Pend Oreille	Uleda Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1167065 483877
Clark Fork River Basin–Lake Pend Oreille	Wellington Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1161620 482903

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lake Pend Oreille	West Branch LeClerc Creek	WA	Bull trout documented during numerous surveys (Andonaegui 2003).	Rationale provided in Lake Pend Oreille CHSU justification text	1172818 485348
Clark Fork River Basin–Lake Pend Oreille	West Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164511 479535.1
Clark Fork River Basin–Lake Pend Oreille	West Gold Creek	ID	Occupied based on annual spawning surveys (Hardy et al. 2008).	Rationale provided in Lake Pend Oreille CHSU justification text	1164511 479535.2
Clark Fork River Basin–Lake Pend Oreille	Winchester Creek	WA	Currently unoccupied, but would provide FMO and SR habitat for future recovery of a local population, which has been identified as necessary ((Andonaegui 2003; Service 2002a).	Rationale provided in Lake Pend Oreille CHSU justification text	1173382 482699
Clark Fork River Basin–Lake Pend Oreille	Lake Pend Oreille	ID	Subadult and adult bull trout occupy Lake Pend Oreille for FMO (PBTTAT 1998a).	Rationale provided in Lake Pend Oreille CHSU justification text	1164103 481516

31.3. Lower Clark Fork River Critical Habitat Subunit

The Lower Clark Fork River CHSU is essential to bull trout conservation because it provides an important portion of the spawning and rearing habitat for Lake Pend Oreille, as well as an essential migratory corridor for bull trout from Lake Pend Oreille to be able to access productive watersheds upstream of this CHSU. Historic fragmentation of the CHSU due to three privately owned mainstem hydroelectric dams (Cabinet Gorge, Noxon Rapids, and Thompson Falls) seriously compromised access and productivity of this habitat for bull trout for nearly a century. However, ongoing and planned near-term fish passage efforts (both fishways and trap and transport programs) have improved the longer-term prognosis for bull trout connectivity, and this CHSU is expected to provide a critical linkage to recovering bull trout in the entire Clark Fork River CHU in the future. Continuing efforts to suppress nonnative fish will remain an important component of the recovery efforts, which are largely well funded by a long term FERC license agreement with Avista Corp (see Appendix 1 for more detailed information).

The Lower Clark Fork River CHSU includes three mainstem Clark Fork River impoundments (Cabinet Gorge, Noxon, and Thompson Falls Reservoirs); the Clark Fork River upstream of Thompson Falls Dam to the confluence of the Flathead River; the lower Flathead River drainage (downstream from Kerr Dam); and tributaries to these waters. With the exception of the lowermost boundary at Cabinet Gorge Dam (Bonner County, Idaho), the Lower Clark Fork River CHSU is located in the northwestern corner of Montana in Sanders, Lake, and Missoula Counties. A total of 474.9 km (295.1 mi) and 3,933.1 ha (9,719.0 ac) of surface area is designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 87):

(A) Cabinet Gorge Reservoir (1,295 ha (3,200 ac)) on the Clark Fork River provides FMO habitat for bull trout. A trap and transport program supervised by the Service and conducted under the Avista Corporation's Fish Passage and Native Salmonid Restoration Program is artificially restoring connectivity around Cabinet Gorge Dam. Bull trout originating from Lake Pend Oreille that are captured downstream of the dam and genetically assigned to natal waters upstream are released at locations within the Lower and Middle Clark Fork River CHSUs that provide access to those spawning and rearing habitats from which they originated.

(B) Bull River from its confluence with Cabinet Gorge Reservoir upstream 39.8 km (24.7 mi) to its headwaters provides FMO habitat. The East Fork Bull River from its confluence with the Bull River upstream 12.8 km (8.0 mi) and the South Fork Bull River from the confluence upstream 3.6 km (2.2 mi) provide spawning and rearing habitat.

(C) Rock Creek from its confluence with Cabinet Gorge Reservoir upstream 13.5 km (8.4 mi) to a natural barrier provides spawning and rearing habitat.

(D) Noxon Reservoir (3,237 ha (8,000 ac)) provides FMO habitat for bull trout. It extends upstream from Noxon Rapids Dam nearly to the base of Thompson Falls Dam at full pool.

(E) The following tributaries to Noxon Reservoir provide spawning and rearing habitat upstream: Swamp Creek from its confluence with Noxon Reservoir upstream 18.7 km (11.6 mi) to natural barriers near its headwaters; Vermilion River from its confluence with Noxon Reservoir (Clark Fork River) upstream 17.1 km (10.6 mi) to a natural barrier at Vermilion Falls; Graves Creek from its confluence with the Clark Fork River (upper pool of Noxon Reservoir) upstream 5.0 km

(3.1 mi) to a natural barrier; Prospect Creek from its confluence with the Clark Fork River upstream 32.4 km (20.2 mi) to its source; Crow Creek (also known as West Fork Crow Creek) from its confluence with Prospect Creek upstream 2.0 km (1.2 mi) to its source; Cooper Gulch from its confluence with Prospect Creek upstream 6.4 km (4.0 mi) to its source and East Fork Crow Creek from its confluence with Prospect Creek upstream 0.7 km (0.4 mi) to its source.

(F) The Clark Fork River mainstem, 70.6 km (43.9 mi) upstream from Thompson Falls Dam to its confluence with the Flathead River provides FMO habitat for bull trout from potentially several different core areas. Thompson Falls Reservoir, a run-of-river impoundment included in this stream reach, is not considered a lake due to the lack of storage capacity behind the dam.

(G) Thompson River from its confluence with Clark Fork River upstream 24.7 km (15.3 mi) to its confluence with Fishtrap Creek contains FMO habitat. The following Thompson River tributaries provide spawning and rearing habitat: West Fork Thompson River from its mouth upstream 8.7 km (5.4 mi) to the confluence of Lakes Creek; Fishtrap Creek from its confluence with the Thompson River upstream 17.5 km (10.9 mi) to its confluence with West Fork Fishtrap Creek; Beatrice Creek from its confluence with Fishtrap Creek upstream 4.5 km (2.8 mi) to its headwaters; and West Fork Fishtrap Creek from its mouth upstream 7.0 km (4.3 mi)to near its source.

(H) The lower Flathead River from its confluence with the Clark Fork River 41.3 km (25.7 mi) upstream to its confluence with the Jocko River is occupied by bull trout at low abundance levels and provides FMO habitat for maintaining the migratory life history form.

(I) The Jocko River from its confluence with the Flathead River upstream 52.9.0 km (32.9 mi) to its confluence with the South Fork Jocko River provides FMO habitat. Spawning and rearing habitat extends upstream in the North Fork Jocko River from its confluence with the Jocko River upstream 9.9 km (6.1 mi) to a natural barrier approximately midway to its source and in the South Fork Jocko River from its confluence with the Jocko River upstream 15.1 km (9.4 mi) to a natural barrier approximately midway to its source.

(J) Mission Creek, Post Creek, and Dry Creek are heavily dewatered and altered Flathead River tributaries, so their lower reaches are not designated to be designated as bull trout critical habitat. However, two headwater reservoirs and a natural lake continue to provide FMO habitat with upstream spawning and rearing habitat designated as bull trout critical habitat: Mission Creek, 1.4 km (0.8 mi) upstream of and including Mission Reservoir (117 ha (289 ac)) to a manmade barrier; Post Creek, 6.4 km (4.0 mi) upstream of and including McDonald Lake (101 ha (250 ac)) to a natural barrier; and Dry Lake Creek, 6.8 km (4.2 mi) upstream of and including Tabor Reservoir (111 ha (274 ac)) to a natural barrier.

Table 87. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Lower Clark Fork River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lower Clark Fork River	Beatrice Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann (2003).	1-13 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b).	1151014 477940
Clark Fork River Basin–Lower Clark Fork River	Beatrice Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann (2003).	1-13 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b).	1151014 477940
Clark Fork River Basin–Lower Clark Fork River	Bull River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a, Bernall and Locker 2008, Lockard et al. 2008).	1155046 480157
Clark Fork River Basin–Lower Clark Fork River	Cabinet Gorge Reservoir	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Haddix and Gillin (2006), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007a, 2007b, 2008), Moran and Lockard (2005), Moran et al. (2006), Storaasli and Moran 2008, Service (2008c).	Initially identified as a core area (Service 2002a); now considered as part of a core area complex (Service 2006a).	1158731 480360
Clark Fork River Basin–Lower Clark Fork River	Clark Fork River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Haddix and Gillin (2006), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, Stover et al. (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2006, 2007a, 2007b, 2008), Moran and Lockard (2005), Moran et al. (2006), Storaasli and Moran 2008, Service (2008c).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a, Bernall and Locker 2008, Lockard et al. 2008).	1162072 481455.1
Clark Fork River Basin–Lower Clark Fork River	Clark Fork River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Haddix and Gillin (2006), Horn and Tholl 2008,Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, Stover et al. (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2006, 2007a, 2007b, 2008), Moran and Lockard (2005), Moran et al. (2006), Storaasli and Moran 2008, Service (2008c).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a, Bernall and Locker 2008, Lockard et al. 2008).	1162072 481455.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lower Clark Fork River	Cooper Gulch	MT	Documented in MFISH database (MFWP 2009a), Storaasli and Moran (2009).	1-6 bull trout redds per year in 6 counts conducted over 2003-2008 (Storaasli and Moran 2009). Important spawning tributary to upper Prospect Creek.	1156046 475445
Clark Fork River Basin–Lower Clark Fork River	Crow Creek	MT	Documented in MFISH database (MFWP 2009a), Storaasli and Moran (2009).	Redds have not been documented despite searches in 2003-2008 (Storaasli and Moran 2009). Occupied by multiple year classes of bull trout and considered important as a cod-water thermal refugia (see comment letter #114, MFWP 2010).	1155434 475384
Clark Fork River Basin–Lower Clark Fork River	Dry Lake Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1139298 472630
Clark Fork River Basin–Lower Clark Fork River	East Fork Bull River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard and Carlson (2005), Lockard and Moran (2006),Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Moran and Storaasli (2005, 2008), Storaasli and Moran 2008).	4-32 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1154653 480630
Clark Fork River Basin–Lower Clark Fork River	East Fork Crow Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	Important SR tributary of Prospect Creek, designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1155575 475245
Clark Fork River Basin–Lower Clark Fork River	Fishtrap Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Liermann (2003), Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	0-17 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1150573 477130
Clark Fork River Basin–Lower Clark Fork River	Flathead River	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting Clark Fork River to local populations designated in the Jocko River headwaters as designated in the draft Bull Trout Recovery Plan (Service 2002a).	1147748 473651

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lower Clark Fork River	Flathead River	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting Clark Fork River to local populations designated in the Jocko River headwaters as designated in the draft Bull Trout Recovery Plan (Service 2002a).	1147748 473651
Clark Fork River Basin–Lower Clark Fork River	Graves Creek	MT	Documented in MFISH database (MFWP 2009a).	5-10 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1154079 476812
Clark Fork River Basin–Lower Clark Fork River	Graves Creek	MT	Documented in MFISH database (MFWP 2009a).	5-10 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1154079 476812
Clark Fork River Basin–Lower Clark Fork River	Jocko River	MT	Documented in MFISH database (MFWP 2009a), Bernall and Lockard (2008).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a, Bernall and Locker 2008, Lockard et al. 2008).	1143035 473218
Clark Fork River Basin–Lower Clark Fork River	McDonald Lake	MT	Hansen and Dos Santos (1997).	Identified as part of a core area complex (Service 2002a).	1139774 474212
Clark Fork River Basin–Lower Clark Fork River	Mission Creek	MT	Documented in MFISH database (MFWP 2009a), .	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142853 473541
Clark Fork River Basin–Lower Clark Fork River	Mission Reservoir	MT	Hansen and Dos Santos (1997).	Identified as part of a core area complex (Service 2002a).	1140083 473192
Clark Fork River Basin–Lower Clark Fork River	North Fork Jocko River	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1139236 472010
Clark Fork River Basin–Lower Clark Fork River	Noxon Rapids Reservoir	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Haddix and Gillin (2006), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007a, 2007b, 2008), Moran and Lockard (2005), Moran et al. (2006), Storaasli and Moran 2008, Service (2008c).	Initially identified as a core area (Service 2002a); now considered as part of a core area complex (Service 2006a).	1156745 478924
Clark Fork River Basin–Lower Clark Fork River	Post Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141680 473603

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lower Clark Fork River	Prospect Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2004b, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	Demonstrated to be an important migratory corridor connecting local population designated in the draft Bull Trout Recovery Plan (Service 2002a) to the Clark Fork River.	1153575 475917.1
Clark Fork River Basin–Lower Clark Fork River	Prospect Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2004b, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	6-20 bull trout redds per year in 7 counts conducted over 2001-2007 (Storaasli and Moran 2008). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153575 475917.2
Clark Fork River Basin–Lower Clark Fork River	Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008, Service (2006a).	1-6 bull trout redds per year in 5 counts conducted over 2001-2007 (Storaasli and Moran 2008). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1154428 475830
Clark Fork River Basin–Lower Clark Fork River	Saint Mary's Lake	MT	Hansen and Dos Santos (1997).	Identified as part of a core area complex (Service 2002a).	1139227 472614
Clark Fork River Basin–Lower Clark Fork River	South Fork Bull River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	1-10 bull trout redds per year in 7 counts conducted over 2001-2007 (Storaasli and Moran 2008). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1154854 481134
Clark Fork River Basin–Lower Clark Fork River	South Fork Jocko River	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138520 471950
Clark Fork River Basin–Lower Clark Fork River	Swamp Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008,Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b, 2007c), Storaasli and Moran 2008 .	0-7 bull trout redds per year in 6 counts conducted over 2001-2007 (Storaasli and Moran 2008). Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1157000 479220

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Lower Clark Fork River	Thompson River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Liermann (2003), Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	Migratory corridor connecting Clark Fork River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1152390 475760
Clark Fork River Basin–Lower Clark Fork River	Vermilion River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	15-53 bull trout redds per year in 7 counts conducted over 2001-2007 (Storaasli and Moran 2008). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1153303 474856
Clark Fork River Basin–Lower Clark Fork River	West Fork Fishtrap Creek	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Liermann (2003), Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	1-13 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1151433 478163
Clark Fork River Basin–Lower Clark Fork River	West Fork Thompson River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Horn and Tholl 2008, Liermann (2003), Lockard et al. (2003, 2008), Lockard Carlson, and Hintz (2004), Lockard, Weltz, and Stender (2004), Moran (2004a, 2005a, 2005b, 2006, 2007b), Storaasli and Moran 2008.	3-14 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1151725 476498

31.4. Middle Clark Fork River Critical Habitat Subunit

The Middle Clark Fork River CHSU is essential to bull trout conservation, primarily as a migratory linkage between the Lower Clark Fork River CHSU and Upper Clark Fork River CHSU. With the removal of Milltown Dam and fish passage at other downstream facilities, such linkage is increasingly important. The migratory corridor that provides for bull trout from Lake Pend Oreille and the Lower Clark Fork River CHSU to access the Blackfoot River, Rock Creek, and potentially Bitterroot River CHSU and Upper Clark Fork River CHSU is critically important. In addition, a number of important spawning and rearing tributaries (e.g., St. Regis River, Fish Creek, and Rattlesnake Creek) enter the Clark Fork in this CHSU. Long-term protection of water quality and quantity, especially satisfactory thermal conditions, are amongst the critical elements of a recovery strategy in the mainstem Clark Fork River corridor. Protecting water quality is especially relevant given the demonstrated effects of climate change related increases in water temperatures, which are approaching summer thermal maxima largely unsuitable for bull trout in this CHSU (see Appendix 1 for more detailed information).

The Middle Clark Fork River CHSU includes the mainstem of the Clark Fork River in western Montana and all its tributary watersheds from the confluence of the Flathead River upstream to the confluence of the Blackfoot River (except for the Bitterroot River drainage, which is its own CHSU). Of the waters located within the Middle Clark Fork River CHSU, 565.4 km (351.3 mi) of streams are designated as critical habitat for bull trout, all occurring in Mineral and Missoula Counties in Montana.

The following water bodies are included in this CHSU (see Table 88):

(A) The Clark Fork River from its confluence with the Flathead River upstream approximately 228.3 km (141.8 mi) to its confluence with the Blackfoot River provides occupied FMO habitat, generally at low bull trout abundance levels.

(B) The Saint Regis River from its confluence with the Clark Fork River upstream 20.2 km (12.5 mi) to its confluence with Twelvemile Creek provides FMO habitat. The headwater portions of the Saint Regis River upstream of Twelvemile Creek, based on updated survey information, are not believed to be occupied by bull trout and hence are not designated as critical habitat. Occupied bull trout spawning and rearing habitat designated as critical habitat extends upstream from its confluence with the Saint Regis River in the following tributaries: Little Joe Creek, from its mouth upstream 4.0 km (2.5 mi) to its forks; South Fork Little Joe Creek from its mouth upstream 14.0 km (8.7 mi) to its headwaters; North Fork Little Joe Creek from its mouth upstream 14.4 km (8.9 mi) to its headwaters; Ward Creek from the St. Regis River upstream 11.5 km (7.2 mi) to its headwaters; and Twelvemile Creek from the St. Regis River upstream 21.6 km (13.4 mi) to its headwaters.

(C) Cedar Creek from its confluence with the Clark Fork River upstream 24.7 km (15.4 mi), Oregon Gulch from its confluence with Cedar Creek upstream 5.4 km (3.3 mi), and Lost Creek from its confluence with Oregon Gulch upstream 10.3 km (6.4 mi) to its headwaters provide spawning and rearing habitat.

(D) Trout Creek from its confluence with the Clark Fork River upstream 23.6 km (14.6 mi) to its upper reaches upstream of Cement Creek provides spawning and rearing habitat.

(E) Fish Creek from its confluence with the Clark Fork River upstream 14.6 km (9.1 mi) to its forks provides FMO habitat. Spawning and rearing habitat extends upstream in the following Fish Creek tributaries: North Fork Fish Creek from its mouth upstream 14.3 km (8.9 mi) to its source; West Fork Fish Creek from its confluence with Fish Creek upstream 28.1 km (17.5 mi) to its source; South Fork Fish Creek from its confluence with Fish Creek upstream 15.6 km (9.7 mi) to its confluence with Cache Creek; and Cache Creek from its confluence with South Fork Fish Creek upstream 15.8 km (9.8 mi) to its headwaters.

(F) Petty Creek from its confluence with the Clark Fork River upstream 18.6 km (11.6 mi) to its headwaters provides spawning and rearing habitat.

(G) Albert Creek from its confluence with the Clark Fork River upstream 16.1 km (10.0 mi) to its source provides spawning and rearing habitat.

(H) Grant Creek from its confluence with the Clark Fork River upstream 27.0 km (16.8 mi) to its headwaters provides spawning and rearing habitat.

(I) Rattlesnake Creek from its confluence with the Clark Fork River upstream provides FMO habitat in its lower reaches (up to Mountain Water Company Dam) and spawning and rearing habitat to its source for a total of 37.5 km (23.3 mi).

Table 88. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Middle Clark Fork River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Middle Clark Fork River	Albert Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1142287 469737
Clark Fork River Basin–Middle Clark Fork River	Cache Creek	MT	Documented in MFISH database (MFWP 2009a).	Considered one of the most important spawning tributaries in the Fish Creek drainage with historical documentation of runs of fluvial bull trout and evidence of recent migratory occupancy based on radioed bull trout from the Clark Fork River (MFWP in litt. 2010).	1146393 468137
Clark Fork River Basin–Middle Clark Fork River	Cedar Creek	MT	Documented in MFISH database (MFWP 2009a).	2-12 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1148625 471781
Clark Fork River Basin–Middle Clark Fork River	Clark Fork River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Schmetterling (2003), Schmetterling and McEvoy (2000).	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1162072 481455
Clark Fork River Basin–Middle Clark Fork River	Fish Creek	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a) to the Clark Fork River.	1146995 470036
Clark Fork River Basin–Middle Clark Fork River	Grant Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1140884 468932
Clark Fork River Basin–Middle Clark Fork River	Little Joe Creek	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting St. Regis River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a); may occasionally support spawning.	1151202 472968

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Middle Clark Fork River	Lost Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR habitat in the headwaters of Cedar Creek, contributing to designated local populations identified in the draft Bull Trout Recovery Plan (Service 2002a).	1150122 471280
Clark Fork River Basin–Middle Clark Fork River	North Fork Fish Creek	MT	Documented in MFISH database (MFWP 2009a).	1-15 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1148045 469069
Clark Fork River Basin–Middle Clark Fork River	North Fork Little Joe Creek	MT	Documented in MFISH database (MFWP 2009a).	6-12 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b).	1151400 472694
Clark Fork River Basin–Middle Clark Fork River	Oregon Gulch	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1149673 471432
Clark Fork River Basin–Middle Clark Fork River	Petty Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1144460 469924
Clark Fork River Basin–Middle Clark Fork River	Rattlesnake Creek	MT	Documented in MFISH database (MFWP 2009a), Knotek et al. (2004).	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a) to the Clark Fork River.	1139839 468672.1
Clark Fork River Basin–Middle Clark Fork River	Rattlesnake Creek	MT	Documented in MFISH database (MFWP 2009a), Knotek et al. (2004).	12-33 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1139839 468672.2
Clark Fork River Basin–Middle Clark Fork River	Saint Regis River	MT	Documented in MFISH database (MFWP 2009a).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1150891 472969
Clark Fork River Basin–Middle Clark Fork River	South Fork Fish Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1146950 469270
Clark Fork River Basin–Middle Clark Fork River	South Fork Little Joe Creek	MT	Documented in MFISH database (MFWP 2009a).	4-20 bull trout redds per year in 5 counts conducted over 1999-2008 (MFWP 2009b).	1151400 472695

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Middle Clark Fork River	Trout Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1148286 471431
Clark Fork River Basin–Middle Clark Fork River	Twelvemile Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR habitat in the headwaters of the Saint Regis River, contributing to designated local populations identified in the draft Bull Trout Recovery Plan (Service 2002a).	1152909 473494
Clark Fork River Basin–Middle Clark Fork River	Ward Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1152329 473120
Clark Fork River Basin–Middle Clark Fork River	West Fork Fish Creek	MT	Documented in MFISH database (MFWP 2009a).	6-19 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1146955 469271

31.5. Upper Clark Fork River Critical Habitat Subunit

The Upper Clark Fork River CHSU is essential to bull trout conservation because it is the uppermost extension of the migratory habitat for bull trout originating in Lake Pend Oreille or downstream portions of the Clark Fork River. Bull trout population levels are depressed and the habitat is fragmented due mostly to impacts from past land and water use activities. As a result, recovery potential may be limited, but some strongholds remain (e.g., Flint Creek and Warm Springs Creek headwaters) and it's important to secure these strongholds to sustain the genetic attributes those populations may represent. Long-term protection of water quality and quantity, especially satisfactory thermal conditions, are amongst the most important elements of the recovery strategy in the upper Clark Fork River corridor. Recovery is especially relevant given the marginal summer thermal maxima largely unsuitable for bull trout that are frequently recorded in this CHSU (see Appendix 1 for more detailed information).

The Upper Clark Fork River CHSU includes the Clark Fork River headwaters in western Montana upstream from the confluence of the Blackfoot River, with the exception of the Blackfoot River, Clearwater River, and Rock Creek drainages, which are separate CHSUs. Of the waters located within the Upper Clark Fork River CHSU, 441.9 km (274.6 mi) of stream are designated as critical habitat for bull trout in Missoula, Granite, Powell, and Deer Lodge Counties.

The following water bodies are included in this CHSU (see Table 89):

(A) The Clark Fork River from the confluence of the Blackfoot River upstream approximately 207.3 km (128.8 mi) to its confluence with Warm Springs Creek provides FMO habitat for migratory bull trout.

(B) Harvey Creek from its confluence with the Clark Fork River upstream 24.9 km (15.5 mi) to its headwaters provides spawning and rearing habitat.

(C) Flint Creek is occupied by bull trout at low abundance. From its confluence with the Clark Fork River upstream 68.0 km (42.3 mi) to its confluence with Boulder Creek, Flint Creek provides FMO habitat, with spawning and rearing habitat in the upper reaches to its source at Georgetown Lake. Boulder Creek from its confluence with Flint Creek upstream 22.5 km (14.0 mi), and South Boulder Creek from its confluence with Flint Creek upstream 13.7 km (8.5 mi) to their headwater provide spawning and rearing habitat.

(D) The lower 17.0 km (10.6 mi) of Warm Springs Creek functions as FMO habitat. The remaining upper 32.6 km (20.2 mi) of Warm Springs Creek to its headwaters provides occupied migratory and spawning and rearing habitat supporting primarily resident bull trout. Spawning and rearing habitat in the upper tributaries of Warm Springs Creek includes the following: Barker Creek from its confluence with Warm Springs Creek upstream 8.0 km (5.0 mi) to its headwaters at Barker Lake; Foster Creek from its confluence with Warm Springs Creek upstream 15.8 km (9.8 mi) to its headwaters; Twin Lakes Creek from its confluence with Warm Springs Creek upstream 14.5 km (9.0 mi) to its headwaters; and the entire 17.6 km (10.9 mi) of Storm Lake Creek.

Table 89. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Upper Clark Fork River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Upper Clark Fork River	Barker Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on the best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1131154 461629
Clark Fork River Basin–Upper Clark Fork River	Boulder Creek	MT	Documented in MFISH database (MFWP 2009a).	5-18 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132368 464785
Clark Fork River Basin–Upper Clark Fork River	Clark Fork River	MT	Documented in MFISH database (MFWP 2009a), Bernall (2007), Bernall and Lockard (2008), Schmetterling (2003), Schmetterling and McEvoy (2000).	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1162072 481455
Clark Fork River Basin–Upper Clark Fork River	Clark Fork River	MT	Though historically occupied (based on anecdotal information), recent occupancy (since 1973) not demonstrated in MFISH (MFWP 2009a) or other sources. It is believed sporadic occupancy occurs in this reach, but may be undetectable with current sampling regime.	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1162072 481455
Clark Fork River Basin–Upper Clark Fork River	Flint Creek	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1131454 466536.1
Clark Fork River Basin–Upper Clark Fork River	Flint Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1131454 466536.2
Clark Fork River Basin–Upper Clark Fork River	Foster Creek	MT	Documented in MFISH database (MFWP 2009a).	1-12 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b).	1131195 461644
Clark Fork River Basin–Upper Clark Fork River	Harvey Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann et al. (2009).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1133719 467068

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Upper Clark Fork River	South Boulder Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1132143 464412
Clark Fork River Basin–Upper Clark Fork River	Storm Lake Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1132089 461614
Clark Fork River Basin–Upper Clark Fork River	Twin Lakes Creek	MT	Documented in MFISH database (MFWP 2009a).	7-27 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1131525 461688
Clark Fork River Basin–Upper Clark Fork River	Warm Springs Creek	MT	Documented in MFISH database (MFWP 2009a).	8-29 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1127710 461870
Clark Fork River Basin–Upper Clark Fork River	Warm Springs Creek	MT	Though historically occupied (based on anecdotal information), recent occupancy not demonstrated in MFISH (MFWP 2009a) or other sources. It is believed sporadic occupancy occurs in this reach, but may be undetectable with current sampling regime.	Migratory corridor connecting local population designated in the headwaters in the draft Bull Trout Recovery Plan (Service 2002a) with downstream habitat.	1127710 461870

31.6. Bitterroot River Critical Habitat Subunit

The Bitterroot River CHSU is essential to bull trout conservation because it is one of several occupied major watersheds that form the headwaters of the Clark Fork River Basin CHU. Though the migratory form of bull trout is seriously reduced in the Bitterroot River CHSU, an artificially adfluvial population occurs in the Painted Rocks Reservoir core area at the head of the West Fork Bitterroot River and is relatively secure. Improving fish passage conditions in the mainstem Clark Fork River may contribute to a greater future presence of the migratory form of bull trout in the Bitterroot River (see Appendix 1 for more detailed information).

The Bitterroot CHSU includes the entire Bitterroot River drainage along the southwestern border of Montana, upstream from its confluence with the Clark Fork River in Missoula and Ravalli Counties in Montana. Of the waters located within the Bitterroot CHSU, 813.8 km (505.7 mi) of streams and 265 ha (655 ac) of Painted Rocks Reservoir surface area are designated as critical habitat for bull trout.

The following water bodies are included in this CHSU (see Table 90):

(A) The Bitterroot River from its confluence with the Clark Fork River upstream 135.4 km (84.2 mi) to the confluence of the East and West Forks Bitterroot River provides FMO habitat for migratory bull trout.

(B) Lolo Creek from its confluence with the Bitterroot River upstream 48.4 km (30.1 mi) to near its headwaters provides FMO habitat for migratory bull trout. Its tributaries, Mormon Creek upstream 11.3 km (7.0 mi) to its headwaters and South Fork Lolo Creek upstream 20.2 km (12.6 mi) to its headwaters provide spawning and rearing habitat.

(C) Burnt Fork Bitterroot River upstream 24.4 km (15.1 mi) from its confluence with the Bitterroot River to its Middle reaches provides FMO habitat. The upper reaches of the Burnt Fork 16.8 km (10.5 mi) to its headwaters provides spawning and rearing habitat. A tributary, Gold Creek, upstream 4.6 km (2.9 mi) provides spawning and rearing habitat.

(D) Fred Burr Creek from its confluence with the Bitterroot River upstream 4.1 km (2.6 mi) to Fred Burr Reservoir provides FMO habitat and an additional 10.1 km (6.3 mi) of spawning and rearing habitat occurs upstream of the reservoir in its headwaters.

(E) Blodgett Creek upstream 30.6 km (19.1 mi) from its confluence with the Bitterroot River to near its headwaters provides both FMO and spawning and rearing habitat.

(F) Skalkaho Creek from its confluence with the Bitterroot River upstream 38.5 km (23.9 mi) to its headwaters and its tributaries, Daly Creek from its confluence with Skalkaho Creek upstream 13.6 km (8.5 mi) to Skalkaho Falls and Railroad Creek from its confluence with Skalkaho Creek upstream 5.8 km (3.6 mi) to its source provide spawning and rearing habitat.

(G) Sleeping Child Creek from its confluence with the Bitterroot River upstream 38.5 km (23.9 mi) to its headwaters and its tributaries, Two Bear Creek from its confluence with Sleeping Child Creek upstream 10.7 km (6.7 mi) to its source and Divide Creek from its confluence with Sleeping Child Creek upstream 14.7 km (9.2 mi) to its source provide spawning and rearing habitat.

(H) Lost Horse Creek from its confluence with the Bitterroot River upstream 31.2 km (19.3 mi) provides FMO habitat in its lower reaches and spawning and rearing habitat in its upper reaches to near its source.

(I) Tin Cup Creek from its confluence with the Bitterroot River upstream 20.1 km (12.5 mi) provides FMO habitat in its lower reaches and spawning and rearing habitat in its upper reaches to near its confluence with the outlet stream from Kerlee Lake.

(J) The West Fork of the Bitterroot River from its confluence with the East Fork upstream 35.9 km (22.3 mi) to Painted Rocks Reservoir provides FMO and spawning and rearing habitat. Spawning and rearing habitat also extends upstream in the following tributaries: Boulder Creek from its confluence with the West Fork Bitterroot River upstream 4.2 km (2.6 mi) to Boulder Creek Falls and Nez Perce Fork upstream 20.0 km (12.4 mi) from its confluence with the West Fork to near its headwaters.

(K) The East Fork Bitterroot River from its confluence with the West Fork, which forms the Bitterroot River, upstream 59.3 km (36.9 mi) to its headwaters provides FMO habitat. Spawning and rearing habitat extends upstream in the following tributaries: Warm Springs Creek from its confluence with the East Fork Bitterroot River upstream 17.0 km (10.6 mi) to near its source; Tolan Creek from its confluence with the East Fork Bitterroot River upstream 12.3 km (7.7 mi) to near its source; Meadow Creek from its confluence with the East Fork Bitterroot River upstream 13.7 km (8.5 mi) to its headwaters; Moose Creek from its confluence with the East Fork Bitterroot River upstream 10.6 km (6.6 mi) to a natural barrier in its upper reaches; Martin Creek from its confluence with Moose Creek upstream 14.9 km (9.3 mi) to its headwaters; Lick Creek from its confluence with Moose Creek upstream 3.2 km (2.0 mi) to its headwaters; and Reynolds Creek from its confluence with Moose Creek upstream 3.4 km (2.1 mi) to its source.

(L) Painted Rocks Reservoir (265 ha (655 ac)) located in its headwaters of the West Fork Bitterroot River is FMO habitat for an artificially isolated adfluvial migratory population of bull trout (formerly fluvial and part of the Bitterroot River core area prior to construction of the dam). Tributary stream segments provide spawning and rearing habitat and because the populations are isolated from two-way connectivity by West Fork Dam, Painted Rocks is considered a separate core area. The West Fork of the Bitterroot River upstream 24.1 km (15.0 mi) from Painted Rocks Reservoir and the following tributaries are all considered spawning and rearing habitat: Little Boulder Creek from its confluence with Painted Rocks Reservoir upstream 4.7 km (2.9 mi) to its upper reaches; Slate Creek from its confluence with Painted Rocks Reservoir upstream 14.1 km (8.8 mi) to its source; Blue Joint Creek from its confluence with Painted Rocks Reservoir upstream 28.0 km (17.4 mi) to a natural barrier near its headwaters; Overwhich Creek from its confluence with the West Fork Bitterroot River upstream 23.2 km (14.4 mi) to a natural barrier; Hughes Creek from its confluence with the West Fork Bitterroot River upstream 26.1 km (16.2 mi) to its source; and Deer Creek from its confluence with the West Fork Bitterroot River upstream 20.1 km (12.5 mi) to its headwaters.

Table 90. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Bitterroot River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Bitterroot River	Bitterroot River	MT	Documented in MFISH database (MFWP 2009a).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1141176 468612
Clark Fork River Basin–Bitterroot River	Blodgett Creek	MT	Documented in MFISH database (MFWP 2009a), Brassfield et al. (2006).	Migratory corridor connecting Bitterroot River to a local population designated in the draft Bull Trout Recovery Plan (Service 2002a).	1141549 462939.1
Clark Fork River Basin–Bitterroot River	Blodgett Creek	MT	Documented in MFISH database (MFWP 2009a), Brassfield et al. (2006).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141549 462939.2
Clark Fork River Basin–Bitterroot River	Blue Joint Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142932 456998
Clark Fork River Basin–Bitterroot River	Boulder Creek	MT	Documented in MFISH database (MFWP 2009a), Brassfield et al. (2006).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1142382 458169
Clark Fork River Basin–Bitterroot River	Burnt Fork Bitterroot River	MT	Documented in MFISH database (MFWP 2009a), Leary et al. (2009).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140989 465421.1
Clark Fork River Basin–Bitterroot River	Burnt Fork Bitterroot River	MT	Documented in MFISH database (MFWP 2009a), Leary et al. (2009).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1140989 465421.2
Clark Fork River Basin–Bitterroot River	Daly Creek	MT	Documented in MFISH database (MFWP 2009a), Leary et al. (2009).	30-77 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b).	1139104 461683
Clark Fork River Basin–Bitterroot River	Deer Creek	MT	Documented in MFISH database (MFWP 2009a).	3-16 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143196 455947

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Bitterroot River	Divide Creek	MT	Documented in MFISH database (MFWP 2009a).	See text for rationale for this CHSU	1139670 460639
Clark Fork River Basin–Bitterroot River	East Fork Bitterroot River	MT	Documented in MFISH database (MFWP 2009a).	0-5 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1141266 459399
Clark Fork River Basin–Bitterroot River	Fred Burr Creek	MT	Documented in MFISH database (MFWP 2009a).	Migratory corridor connecting Bitterroot River to a local population designated in the draft Bull Trout Recovery Plan (Service 2002a).	1141519 463483.1
Clark Fork River Basin–Bitterroot River	Fred Burr Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141519 463483.2
Clark Fork River Basin–Bitterroot River	Gold Creek	MT	Documented in MFISH database (MFWP 2009a).	See text for rationale for this CHSU	1139022 463982
Clark Fork River Basin–Bitterroot River	Hughes Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143030 456220
Clark Fork River Basin–Bitterroot River	Lick Creek	MT	Documented in MFISH database (MFWP 2009a).	See text for rationale for this CHSU	1137168 459384
Clark Fork River Basin–Bitterroot River	Little Boulder Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142804 457177
Clark Fork River Basin–Bitterroot River	Lolo Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1140604 467428

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Bitterroot River	Lost Horse Creek	MT	Documented in MFISH database (MFWP 2009a), Brassfield et al. (2006).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1141716 461183.1
Clark Fork River Basin–Bitterroot River	Lost Horse Creek	MT	Documented in MFISH database (MFWP 2009a), Brassfield et al. (2006).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1141716 461183.2
Clark Fork River Basin–Bitterroot River	Martin Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of East Fork Bitterroot River, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137233 459296
Clark Fork River Basin–Bitterroot River	Meadow Creek	MT	Documented in MFISH database (MFWP 2009a).	1-21 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1137797 459077
Clark Fork River Basin–Bitterroot River	Moose Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of East Fork Bitterroot River, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137307 459222
Clark Fork River Basin–Bitterroot River	Mormon Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations (SR tributary of Lolo Creek) for future plan revisions (Service in litt. 2009a).	1141137 467558
Clark Fork River Basin–Bitterroot River	Nez Perce Fork	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1142668 458016

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Bitterroot River	O'Brien Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1155157 482654
Clark Fork River Basin–Bitterroot River	Overwhich Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143062 456745
Clark Fork River Basin–Bitterroot River	Painted Rocks Reservoir	MT	Documented in MFISH database (MFWP 2009a).	Identified as a core area (Service 2002a).	1142938 457007
Clark Fork River Basin–Bitterroot River	Railroad Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of Skalkaho Creek, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138846 461578
Clark Fork River Basin–Bitterroot River	Reynolds Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of East Fork Bitterroot River, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137169 459469
Clark Fork River Basin–Bitterroot River	Skalkaho Creek	MT	Documented in MFISH database (MFWP 2009a), Leary et al. (2009), Nelson et al. (2002).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141619 462196
Clark Fork River Basin–Bitterroot River	Slate Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142928 457005
Clark Fork River Basin–Bitterroot River	Sleeping Child Creek	MT	Documented in MFISH database (MFWP 2009a), Nelson et al. (2002).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141584 461614
Clark Fork River Basin–Bitterroot River	South Fork Lolo Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations (SR tributary of Lolo Creek) for future plan revisions (Service in litt. 2009a).	1142641 467622

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Bitterroot River	Tin Cup Creek	MT	Documented in MFISH database (MFWP 2009a).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations for future plan revisions (Service in litt. 2009a).	1141674 460164
Clark Fork River Basin–Bitterroot River	Tolan Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of East Fork Bitterroot River, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1139118 458563
Clark Fork River Basin–Bitterroot River	Two Bear Creek	MT	Documented in MFISH database (MFWP 2009a).	Important portion of the SR complex located in the headwaters of Sleeping Child Creek, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1140084 461113
Clark Fork River Basin–Bitterroot River	Warm Springs Creek	MT	Documented in MFISH database (MFWP 2009a).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1140250 458601
Clark Fork River Basin–Bitterroot River	West Fork Bitterroot River	MT	Documented in MFISH database (MFWP 2009a).	2-5 bull trout redds per year in 2 counts conducted over 1999-2000 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141267 459398

31.7. Rock Creek Critical Habitat Subunit

The Rock Creek CHSU is essential to bull trout conservation because it is one of several occupied major watersheds that form the headwaters of the Clark Fork River Basin CHU. Most of the drainage is on National Forest System lands and habitat protection has historically been emphasized. Extensive networks of spawning and rearing habitat have contributed to a relatively strong bull trout population in the watershed. However, concerns exist about declines in bull trout populations and increases in nonnative competitors (e.g., brook trout and brown trout) seen in the past decade. The Rock Creek CHSU remains a strong bull trout refugium in the Clark Fork River headwaters and will become increasingly important as improving fish passage conditions in the mainstem Clark Fork River contribute to greater future presence of the migratory form (see Appendix 1 for more detailed information).

The Rock Creek CHSU includes the entire watershed of Rock Creek in Missoula and Granite Counties in Montana from its confluence with the Clark Fork River to its headwaters. Within the Rock Creek CHSU, 345.9 km (214.9 mi) of streams and 170 ha (420 ac) of East Fork Reservoir surface area are designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 91):

(A) Rock Creek from its confluence with the Clark Fork River upstream 83.4 km (51.8 mi) to its headwater forks provides FMO habitat for bull trout.

Tributaries described below in (B) through (H) provide spawning and rearing habitat for a mix of both migratory and resident bull trout populations found throughout the Rock Creek drainage:

(B) Ranch Creek from its confluence with Rock Creek upstream 16.8 km (10.4 mi) to its headwaters.

(C) Welcome Creek from its confluence with Rock Creek upstream 8.5 km (5.3 mi) to its headwaters.

(D) Butte Cabin Creek from its confluence with Rock Creek upstream 10.2 km (6.3 mi) to its headwaters.

(E) Alder Creek from its confluence with Rock Creek upstream 6.1 km (3.8 mi) to its headwaters.

(F) Hogback Creek from its confluence with Rock Creek upstream 7.3 km (4.6 mi) to its headwaters.

(G) Stony Creek from its confluence with Rock Creek upstream 18.1 km (11.2 mi) to its source and its tributary Little Stony Creek from its confluence with Stony Creek upstream 8.3 km (5.2 mi) to its source.

(H) West Fork Rock Creek from its confluence with Rock Creek upstream 35.8 km (22.2 mi) to its headwaters and its tributaries, Ross Fork Rock Creek, from its confluence with West Fork Rock Creek upstream 33.9 km (21.1 mi) to its headwaters; North Fork Rock Creek from its confluence with West Fork Rock Creek upstream 5.6 km (3.5 mi) to its headwaters; Sand Basin Creek from its confluence with West Fork Rock Creek upstream 7.6 km (4.7 mi) to its headwaters, and Bowles Creek from its confluence with West Fork Rock Creek upstream 6.8 km (4.2 mi) to its headwaters.

(I) Middle Fork Rock Creek upstream 37.1 km (23.0 mi) from its confluence with East Fork Rock Creek (forming the mainstem Rock Creek) to its source and its tributaries, Copper Creek upstream 19.2 km (11.9 mi) and Carpp Creek upstream 11.6 km (7.2 mi), to their sources.

(J) East Fork Rock Creek upstream to East Fork Dam and beyond (22.5 km (14.0 mi)) is occupied FMO and spawning and rearing habitat. Its tributary, Meadow Creek, provides 7.2 km (4.5 mi) of spawning and rearing habitat. East Fork Reservoir (170 ha (420 ac)) provides FMO habitat and its headwaters of East Fork Rock Creek are used for spawning and rearing. There is currently no upstream fish passage at the dam.

Table 91. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Rock Creek CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Rock Creek	Alder Creek	MT	Documented in MFISH database (MFWP 2009a).	2-28 bull trout redds per year in 9 counts conducted over 1996-2009 (MFWP 2009b).	1137765 464707
Clark Fork River Basin–Rock Creek	Bowles Creek	MT	Documented in MFISH database (MFWP 2009a).	Redds not documented but likely, based on observations of multiple year classes of juvenile fish.	1137473 461920
Clark Fork River Basin–Rock Creek	Butte Cabin Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	0-16 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137673 465199
Clark Fork River Basin–Rock Creek	Carpp Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	8-32 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1135243 460327
Clark Fork River Basin–Rock Creek	Copper Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	4-16 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1135375 460824
Clark Fork River Basin–Rock Creek	East Fork Reservoir	MT	Documented in MFISH database (MFWP 2009a).	On-stream reservoir on East Fork Rock Creek, a designated local population (Service 2002a).	1133746 461182
Clark Fork River Basin–Rock Creek	East Fork Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	6-49 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134991 462000
Clark Fork River Basin–Rock Creek	Hogback Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	1-11 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137016 464098
Clark Fork River Basin–Rock Creek	Little Stony Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	0-29 bull trout redds per year in 12 counts conducted over 1998-2009 (MFWP 2009b).	1136814 462931
Clark Fork River Basin–Rock Creek	Meadow Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann et al. (2009).	0-14 bull trout redds per year in 8 counts conducted over 1995-2004 (MFWP 2009b). Increasing importance as a migratory spawning tributary once passage is provided over East Fork Dam.	1134393 461570

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Rock Creek	Middle Fork Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	7-33 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135214 462237
Clark Fork River Basin–Rock Creek	North Fork Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann et al. (2009). Mud lake in headwaters also supports bull trout.	Increasing importance as a migratory spawning tributary with recent passage improvements.	1136963 462126
Clark Fork River Basin–Rock Creek	Ranch Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	7-25 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136697 465911
Clark Fork River Basin–Rock Creek	Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1136831 467256
Clark Fork River Basin–Rock Creek	Ross Fork	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001).	2-11 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135246 462245
Clark Fork River Basin–Rock Creek	Sand Basin Creek	MT	Documented in MFISH database (MFWP 2009a), Liermann et al. (2009).	Increasing importance as a migratory spawning tributary with recent habitat improvements.	1137031 461972
Clark Fork River Basin–Rock Creek	Stony Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	10-37 bull trout redds per year in 10 counts conducted over 1999-2008, including Little Stony (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136033 463487
Clark Fork River Basin–Rock Creek	Welcome Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	2-15 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137009 465612
Clark Fork River Basin–Rock Creek	West Fork Rock Creek	MT	Documented in MFISH database (MFWP 2009a), Carnefix (2001), Liermann et al. (2009).	0-3 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135215 462237

31.8. Blackfoot River Critical Habitat Subunit

The Blackfoot River CHSU is essential to bull trout conservation because it is one of several occupied major watersheds that form the headwaters of the Clark Fork River Basin CHU. Several decades of extensive habitat restoration and habitat protection efforts (e.g., Blackfoot Challenge) have led to gradually improving conditions for native fish, especially on private lands. Landownership patterns that include large undeveloped ranches and extensive conservation easements provide long-term habitat security. The Blackfoot River CHSU is the strongest bull trout refugium in the Clark Fork River headwaters and will become increasingly important as improving fish passage conditions in the mainstem Clark Fork River contribute to greater future connectivity for the migratory life history form (see Appendix 1 for more detailed information).

The Blackfoot River CHSU include the entire Blackfoot River drainage of western Montana, located in Missoula, Powell, and Lewis and Clark Counties, with the exception of its tributaries in the Clearwater River, which forms its own CHSU. Of the waters located within the Blackfoot River CHSU, 446.3 km (277.3 mi) of streams are designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 92):

(A) The Blackfoot River from its confluence with the Clark Fork River upstream 191.0 km (118.7 mi) to near its headwaters (to the confluence of Alice Creek) provides mainly FMO habitat for bull trout. The very headwater reach of the Blackfoot River upstream of Alice Creek 9.2 km (5.7 mi) to its source provides spawning and rearing habitat.

The following tributaries within the Blackfoot River Drainage provide spawning and rearing habitat for bull trout populations:

(B) Gold Creek from its confluence with the Blackfoot River upstream 19.4 km (12.1 mi) to a barrier falls near the Lolo National Forest boundary and its tributary the entire West Fork of Gold Creek upstream for 13.0 km (8.1 mi).

(C) Belmont Creek from its confluence with the Blackfoot River upstream 13.5 km (8.4 mi) to its source.

(D) Cottonwood Creek from its confluence with the Blackfoot River upstream 23.6 km (14.7 mi) to its source at Cottonwood Lake.

(E) Monture Creek from its confluence with the Blackfoot River upstream 40.2 km (25.0 mi) to its headwaters; its tributary Dunham Creek from its confluence with Monture Creek upstream 23.2 km (14.4 mi) to its headwaters; and its tributary Lodgepole Creek from its confluence with Dunham Creek upstream 11.7 km (7.2 mi) to its source.

(F) The North Fork Blackfoot River from its confluence with the Blackfoot River upstream 40.9 km (25.4 mi) to a natural barrier at North Fork Falls.

(G) Poorman Creek from its confluence with the Blackfoot River upstream 18.9 km (11.8 mi) to its headwaters.

(H) The Landers Fork from its confluence with the Blackfoot River upstream 18.1 km (11.2 mi) to a barrier falls near the confluence of Byrnes Creek (just downstream from the Scapegoat

Wilderness) and its tributary, Copper Creek, from its confluence with Landers Fork upstream 23.6 km (14.7 mi) to its headwaters.

Table 92. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Blackfoot River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Blackfoot River	Belmont Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	3-11 bull trout redds per year in 5 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135693 469538
Clark Fork River Basin–Blackfoot River	Blackfoot River	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006), Schmetterling (2003), Schmetterling and McEvoy (2000).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1138907 468712.1
Clark Fork River Basin–Blackfoot River	Blackfoot River	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a). May occasionally support spawning.	1138907 468712.2
Clark Fork River Basin–Blackfoot River	Copper Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	4-34 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1125550 470066
Clark Fork River Basin–Blackfoot River	Cottonwood Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132811 470250
Clark Fork River Basin–Blackfoot River	Dunham Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	4-11 bull trout redds per year in 6 counts conducted over 1999-2008 (MFWP 2009b).	1131556 471026
Clark Fork River Basin–Blackfoot River	Gold Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	1-30 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136765 469186
Clark Fork River Basin–Blackfoot River	Landers Fork	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1125621 469656
Clark Fork River Basin–Blackfoot River	Lodgepole Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	Important portion of the SR complex located in the headwaters of Monture Creek, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132027 471824

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Blackfoot River	Monture Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	18-94 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132358 470199
Clark Fork River Basin–Blackfoot River	North Fork Blackfoot River	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	41-123 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1131290 469848
Clark Fork River Basin–Blackfoot River	Poorman Creek	MT	Documented in MFISH database historically (1972 and 1989; MFWP 2009a), but not recently (2007; Pierce et al. 2008).	Determined to be a second highest tier restoration priority and likely to support migratory bull trout spawning in the future (Pierce et al. 2008).	1126887 469363
Clark Fork River Basin–Blackfoot River	West Fork Gold Creek	MT	Documented in MFISH database (MFWP 2009a), Pierce et al. (2004), Pierce and Podner (2006).	Designated as a local population (Gold Creek) in the draft Bull Trout Recovery Plan (Service 2002a).	1136852 469960

31.9. Clearwater River and Lakes Critical Habitat Subunit

The Clearwater River and Lakes CHSU is essential to bull trout conservation and a significant bull trout resource in a somewhat unique habitat, a chain of connected lakes, each with separate bull trout populations that share an interconnected system of spawning and rearing streams. To date, the lakes have not been compromised by introduction of nonnative lake trout (though northern pike (*Esox lucius*) are problematic), making the CHSU important for the long-term persistence of the naturally occurring adfluvial life history form of bull trout in the Clark Fork River drainage. Improved fish passage over a series of small barrier dams is being implemented and shows promise to increase the security and stability of bull trout populations in this unique stream–lake system (see Appendix 1 for more detailed information).

The Clearwater River and Lakes CHSU includes the Clearwater River basin, a tributary to the Blackfoot River drainage in Missoula and Powell Counties in Montana. Of the waters located within the Clearwater CHSU, 160.8 km (99.9 mi) of streams and 1,107 ha (2,735 ac) of lake surface area in eight lakes are designated as critical habitat for bull trout.

The following water bodies are included in this CHSU (see Table 93):

(A) Salmon Lake (263 ha (650 ac)) provides FMO habitat for populations of bull trout that spawn in upstream tributaries.

(B) The Clearwater River from its downstream juncture with Salmon Lake upstream to its source in Clearwater Lake provides FMO and spawning and rearing habitat for bull trout. FMO habitat for bull trout populations occurs in a 48.3 km (30.0 mi) reach of the Clearwater River downstream of its confluence with the East Fork Clearwater River. Upstream from its confluence with the East Fork Clearwater River, 9.5 km (5.9 mi) of the mainstem Clearwater River is used for spawning and rearing.

(C) Placid Lake (76 ha (187 ac)) provides FMO habitat. Placid Creek from its confluence with Placid Lake upstream 15.3 km (9.5 mi) to its headwaters provides spawning and rearing habitat as does its tributary Boles Creek from its confluence with Placid Creek upstream 16.4 km (10.2 mi) to its headwaters.

(D) Morrell Creek from its confluence with the Clearwater River upstream 29.3 km (18.2 mi) to its headwaters provides spawning and rearing habitat.

(E) Seeley Lake (415 ha (1,025 ac)) provides FMO habitat for the Clearwater River FMO. Spawning and rearing habitat is in the West Fork Clearwater River or other upstream tributaries.

(F) The West Fork Clearwater River upstream 17.5 km (10.9 mi) from its confluence with the Clearwater River to the confluence of Marshall Creek provides FMO habitat. Spawning and rearing habitat occurs in the upper 5.6 km (3.5 mi) to its headwaters.

(G) Marshall Lake (34 ha (85 ac)) is a small lake on Marshall Creek. It is considered FMO habitat for bull trout and Marshall Creek from the lake upstream 7.0 km (4.3 mi) to its headwaters provides bull trout spawning and rearing habitat. The lower reaches of Marshall Creek, from the West Fork Clearwater River upstream 4.0 km (2.5 mi) to Marshall Lake provides bull trout FMO habitat.

(H) Lake Inez (119 ha (294 ac)); Lake Alva (121 ha (299 ac)); Rainy Lake (28 ha (69 ac)); and Clearwater Lake (51 ha (126 ac)), interconnected by the Clearwater River, provide FMO habitat for bull trout. Spawning and rearing occurs in connected headwater tributaries.

(I) The East Fork Clearwater River from its confluence with the Clearwater River upstream 8.0 km (4.9 mi) to its headwaters provides spawning and rearing habitat.

Table 93. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Clearwater River and Lakes CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Clearwater River and Lakes	Boles Creek	MT	Documented in MFISH database (MFWP 2009a) and Pierce et al. (2008).	High biological ranking and priority for restoration (Pierce et al. 2008) with multiple year classes of bull trout present.	1135461 471190
Clark Fork River Basin–Clearwater River and Lakes	Clearwater Lake	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135599 473854
Clark Fork River Basin–Clearwater River and Lakes	Clearwater River	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a). May occasionally support spawning.	1133776 469644.1
Clark Fork River Basin–Clearwater River and Lakes	Clearwater River	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a). May occasionally support spawning.	1133776 469644.2
Clark Fork River Basin–Clearwater River and Lakes	Clearwater River, E Fk	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Important portion of the SR complex located in the headwaters of Clearwater River, a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135807 473523
Clark Fork River Basin–Clearwater River and Lakes	Lake Alva	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135824 473134
Clark Fork River Basin–Clearwater River and Lakes	Lake Inez	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135668 472816
Clark Fork River Basin–Clearwater River and Lakes	Lake Marshall	MT	Documented in MFISH database (MFWP 2009a), Berg, R.K. (2003).	On-stream lake on Marshall Creek, a recent evaluation led to recommendation to add this stream to the list of designated important local populations and further consider Marshall Lake as a separate core area (Service in litt. 2009a).	1136502 472882

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Clearwater River and Lakes	Marshall Creek (lower)	MT	Not documented in electrofishing surveys in MFISH database (MFWP 2009a), but documented use by migratory adult fish through radio telemetry (Benson 2009).	Important migratory corridor linking to West Fork Clearwater River (Benson 2009).	1135966 472791
Clark Fork River Basin–Clearwater River and Lakes	Marshall Creek (upper)	MT	Documented in MFISH database (MFWP 2009a), Berg, R.K. (2003).	Although not initially designated as a local population (Service 2002a), more recent analysis based on best available science has resulted in a recommendation to add this stream to the list of designated important local populations and further consideration as its own core area for future plan revisions (Service in litt. 2009a).	1135966 472791
Clark Fork River Basin–Clearwater River and Lakes	Morrell Creek	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	4-33 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134599 471410
Clark Fork River Basin–Clearwater River and Lakes	Placid Creek	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135205 471177
Clark Fork River Basin–Clearwater River and Lakes	Placid Lake	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135253 471186
Clark Fork River Basin–Clearwater River and Lakes	Rainy Lake	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135947 473393
Clark Fork River Basin–Clearwater River and Lakes	Salmon Lake	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1134043 470933
Clark Fork River Basin–Clearwater River and Lakes	Seeley Lake	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009c).	Identified as part of a core area complex (Service 2002a).	1135103 471940
Clark Fork River Basin–Clearwater River and Lakes	West Fork Clearwater River	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	Important portion of the SR complex located in the headwaters of Clearwater River (Benson 2009), a designated local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135504 472559.1

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Clearwater River and Lakes	West Fork Clearwater River	MT	Documented in MFISH database (MFWP 2009a), Benson (2009), Berg, R.K. (2003), MFWP (2008, 2009b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135504 472559.2

31.10. Flathead Lake, Flathead River, and Headwater Lakes Critical Habitat Subunit

The Flathead CHSU is essential to bull trout conservation and includes Flathead Lake (the largest freshwater lake in the western United States), which historically provided FMO habitat for a very large population of adfluvial migratory bull trout that traveled up to 241 km (150 mi) upstream in three major forks (North, Middle, and South) to spawn and rear in over 20 streams, including a portion of the North Fork Flathead River in British Columbia, Canada. Along with Lake Pend Oreille in Idaho, it could be argued that Flathead Lake represents the evolutionary heart of the migratory adfluvial bull trout life history form. Due to the size and scope of this bull trout core area, it is essential to recovery. In addition, about 20 separate headwater lakes are arrayed in 15 core areas with varying degrees of connectivity, and they provide resiliency and redundancy to support the bull trout network in this CHSU. Many of these are in protected and unaltered habitat within Glacier National Park. An extensive network of high-quality spawning and rearing habitat, including many streams with groundwater influence, have historically contributed to a relatively strong bull trout population in the CHSU and may make this CHSU one of the more important bull trout complexes under a variety of changing climate scenarios. However, widespread negative influence of nonnative lake trout introduction and their ongoing expansion has seriously curtailed the existing bull trout productivity in much of this CHSU (see Appendix 1 for more detailed information).

The Flathead CHSU include the entire Flathead River basin upstream from Kerr Dam (outlet of Flathead Lake), with the exception of the Swan River drainage (upstream from Bigfork Dam) and the South Fork Flathead River drainage (upstream from Hungry Horse Dam), which form separate CHSUs. The Flathead CHSU is located in Flathead and Lake Counties in Montana. Flathead Lake is the largest natural freshwater lake in the western United States.

Of the waters located within the Flathead CHSU, 857.6 km (532.9 mi) of streams and 57,085 ha (141,069 ac) of lake and reservoir surface area in 21 lakes are designated as critical habitat for bull trout.

The following water bodies are included in this CHSU (see Table 94):

(A) The entire Flathead Lake basin (49,854 ha (123,190 ac)) to the high water mark provides FMO habitat for at least 18 upstream local populations of bull trout.

(B) The Flathead River from its confluence with Flathead Lake upstream 85.4 km (53.1 mi) to its forks; the Middle Fork Flathead River from its confluence with the North Fork upstream 140.2 km (87.1 mi) to its headwaters; and the North Fork Flathead River from its confluence with the Middle Fork upstream 92.7 km (57.6 mi) to the Canadian border provide FMO habitat for these local populations of bull trout.

Tributaries to the Middle Fork Flathead River described in (C) through (M) provide spawning and rearing habitat upstream for local bull trout populations that share FMO habitat in Flathead Lake, the Flathead River, and its forks:

(C) Nyack Creek from its confluence with the Middle Fork Flathead River upstream 11.4 km (7.1 mi) to a barrier falls.

(D) Park Creek from its confluence with the Middle Fork Flathead River upstream 20.1 km (12.5 mi) to a barrier falls near the upper National Park Service patrol cabin.

(E) Ole Creek from its confluence with the Middle Fork Flathead River upstream 12.7 km (7.9 mi) to a naturally dewatered reach near the trail junction, just upstream of Debris Creek.

(F) Bear Creek from its confluence with the Middle Fork Flathead River upstream 17.8 km (11.0 mi) to a barrier near the confluence of Skyland Creek.

(G) Long Creek from its confluence with the Middle Fork Flathead River upstream approximately 8.3 km (5.2 mi).

(H) Granite Creek from its confluence with the Middle Fork Flathead River upstream 13.1 km (8.2 mi) to its headwaters.

(I) Morrison Creek from its confluence with the Middle Fork Flathead River upstream 22.1 km (13.7 mi) to its headwaters and its tributary, Lodgepole Creek, from its confluence with Morrison Creek upstream 12.5 km (7.8 mi) to its headwaters.

(J) Schafer Creek from its confluence with the Middle Fork Flathead River upstream 5.9 km (3.7 mi) to a natural barrier near the confluence of Rouge Creek and its tributary, Dolly Varden Creek, from its confluence with Schafer Creek upstream 12.1 km (7.5 mi) to Dolly Varden Falls near the confluence of Argosy Creek.

(K) Clack Creek from its confluence with the Middle Fork Flathead River upstream 4.0 km (2.5 mi) to a natural barrier (approximately one-third the distance up its watershed to a point near the trail junction to Trilobite Lakes).

(L) Bowl Creek from its confluence with the Middle Fork Flathead River upstream 7.9 km (4.9 mi) to its confluence with Basin Creek and its tributaries, Basin Creek from its confluence with Bowl Creek upstream 10.1 km (6.3 mi) to a natural barrier in its upper reaches and Scalp Creek from its confluence with Bowl Creek upstream 4.6 km (2.9 mi) to its headwaters.

(M) Strawberry Creek from its confluence with the Middle Fork Flathead River upstream 18.5 km (11.5 mi) to its headwaters and its tributaries, Trail Creek from its confluence with Strawberry Creek upstream 7.3 km (4.5 mi) to its confluence with Jeff Creek; Gateway Creek from its confluence with Strawberry Creek upstream 9.3 km (5.8 mi) to its headwaters; and East Fork Strawberry Creek from its confluence with Strawberry Creek upstream 4.9 km (3.1 mi) to its headwaters.

Tributaries to the North Fork Flathead River described in (N) through (S) provide spawning and rearing habitat upstream for local bull trout populations that share FMO habitat in Flathead Lake, the Flathead River, and its forks:

(N) Big Creek from its confluence with the North Fork Flathead River upstream 25.3 km (15.7 mi) to its source and its tributaries and Hallowat Creek from its confluence with Big Creek upstream 11.7 km (7.2 mi) to its headwaters.

(O) Coal Creek from its confluence with the North Fork Flathead River upstream 32.3 km (20.1 mi) to its headwaters and its tributaries, Cyclone Creek from its confluence with Coal Creek upstream 7.3 km (4.6 mi) to Cyclone Lake; Dead Horse Creek from its confluence with Coal Creek upstream 1.6 km (1.0 mi) to natural barriers in its lower reaches; South Fork Coal Creek from its confluence with Coal Creek upstream 10.2 km (6.3 mi) to a natural barrier;

and Mathias Creek from its confluence with South Fork Coal Creek upstream 4.6 km (2.9 mi) to a natural barrier.

(P) Red Meadow Creek from its confluence with the North Fork Flathead River upstream 19.0 km (11.8 mi) to its source at Red Meadow Lake.

(Q) Whale Creek from its confluence with the North Fork Flathead River upstream 22.9 km (14.3 mi) to Whale Creek Falls, as well as 4.4 km (2.7 mi) of its tributary Shorty Creek, to its headwaters.

(R) Trail Creek from its confluence with the North Fork Flathead River upstream 13.3 km (8.3 mi) to a natural barrier near the confluence of Thoma Creek.

(S) Kishinehn Creek from its confluence with the North Fork Flathead River upstream 8.3 km (5.2 mi) to where it crosses the international border into Canada.

The lakes and their upstream occupied tributary segments described in (T) through (II) are designated as bull trout critical habitat. These bull trout populations are isolated to varying degrees from being fully-connected with Flathead Lake and are considered separate core areas because of that isolation.

(T) Whitefish Lake (1,356 ha (3,351 ac)) provides FMO habitat. Swift Creek from Whitefish Lake upstream 26.5 km (16.5 mi) to the confluence of its West Fork provides FMO habitat in the lower reaches and spawning and rearing habitat in the upper reaches. West Fork Swift Creek from its confluence with Swift Creek upstream 12.6 km (7.8 mi) to its headwaters provides spawning and rearing habitat.

(U) Upper Whitefish Lake (36 ha (89 ac)) provides FMO habitat. East Fork Swift Creek from its confluence with Upper Whitefish Lake upstream 9.5 km (5.9 mi) to its headwaters provides spawning and rearing habitat.

(V) Upper Stillwater Lake (225 ha (556 ac)) provides FMO habitat. The Stillwater River from its confluence with Stillwater Lake upstream 35.3 km (21.9 mi) to its headwaters provides FMO habitat in the lower reaches and spawning and rearing habitat in the upper reaches. Its tributary, Fitzsimmons Creek, from its confluence with the Stillwater River upstream 9.5 km (5.9 mi) to its headwaters provides spawning and rearing habitat.

(W) Lake McDonald (2,761 ha (6,823 ac)) provides FMO habitat as does 6.4 km (4.0 mi) of its tributary, McDonald Creek, from the Middle Fork Flathead River to Lake McDonald and from Lake McDonald upstream to McDonald Falls.

(X) Lincoln Lake (16 ha (40 ac)) provides FMO habitat and Lincoln Creek from the lake upstream 0.8 km (0.5 mi) to Beaver Chief Falls provides spawning and rearing habitat.

(Y) Harrison Lake (166 ha (410 ac)) provides FMO habitat and its tributary, Harrison Creek, from the lake upstream 6.9 km (4.3 mi) to its headwaters provides spawning and rearing habitat.

(Z) Lake Isabel (17 ha (42 ac)) provides FMO habitat and its tributary, Park Creek, from the lake upstream 1.0 km (0.6 mi) to its headwaters (and including Upper lake Isabel) provides spawning and rearing habitat.

(AA) Trout Lake (86 ha (213 ac)) and Arrow Lake (23 ha (57 ac)) provide FMO habitat, and Camas Creek between Trout and Arrow Lakes as well as 10.9 km (6.8 mi) upstream of Arrow Lake to a falls midway between Arrow and Camas Lakes provides spawning and rearing habitat.

(BB) Logging Lake (444 ha (1,097 ac)) provides FMO habitat and its tributary, Logging Creek, from its confluence with the lake upstream 1.8 km (1.1 mi) to a falls downstream of Grace Lake provides spawning and rearing habitat.

(CC) Cyclone Lake (49 ha (121 ac)) provides FMO habitat and Cyclone Creek from its confluence with Cyclone Lake upstream 7.3 km (4.5 mi) to its headwaters provides rearing habitat for bull trout believed to spawn primarily in the lake outlet.

(DD) The pools of Lower Quartz Lake (67 ha (166 ac)) and the Upper Quartz Lakes Complex (Middle Quartz Lake, Quartz Lake, and Cerulean Lake) (399 ha (986 ac)) provide FMO habitat. Segments of Quartz Creek, totaling 9.0 km (5.6 mi) from the inlet of Lower Quartz Lake to Middle Quartz Lake to Quartz Lake to Cerulean Lake, as well Rainbow Creek, a tributary of Quartz Creek, from its confluence upstream 1.8 km (1.1 mi) to its upper reaches provide spawning and rearing habitat.

(EE) Bowman Lake (690 ha (1,705 ac)) provides FMO habitat and its tributary, Bowman Creek, from the inlet to Bowman Lake upstream 10.6 km (6.6 mi) to its headwaters, as well as its tributary, Pocket Creek, upstream 3.7 km (2.3 mi) from its confluence with Bowman Creek to a barrier falls downstream of Pocket Lake provide spawning and rearing habitat.

(FF) Akokala Lake (9 ha (23 ac)) provides FMO habitat and its tributary, Akokala Creek, upstream 5.1 km (3.2 mi) from the lake inlet to its headwaters provides spawning and rearing habitat.

(GG) Kintla Lake (687 ha (1,698 ac)) provides FMO habitat and Kintla Creek from Kintla Lake upstream 3.9 km (2.4 mi) to a natural barrier provides spawning and rearing habitat.

(HH) Upper Kintla Lake (191 ha (472 ac)) provides FMO habitat and Kintla Creek from Upper Kintla Lake upstream 7.9 km (4.9 mi) to its upper reaches provides spawning and rearing habitat, though spawning has also been documented in the outlet of Upper Kintla Lake.

(II) Frozen Lake (12 ha (30 ac)) provides FMO habitat; a portion of the lake on the outlet end is in British Columbia, Canada and is not designated as critical habitat. Frozen Creek from the lake inlet upstream 4.8 km (3.0 mi) to its headwaters (all in the United States) provides spawning and rearing habitat.

Table 94. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Akokala Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1141986 488790
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Arrow Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1138851 487063
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Bowman Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1141611 488643
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Cerulean Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	Identified as part of a core area complex (Service 2002a).	1140573 488720
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Cyclone Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1143012 487052
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Flathead Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Hansen and Evarts (2005, 2006, 2008), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), Sylvester et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1141336 478854
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Frozen Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	Identified as a core area (Service 2002a).	1146805 489989

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Harrison Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al (2007), . (2008), and Meeuwig et al (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1137712 485164
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Kintla Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1143066 489589
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Lake Isabel	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), Deleray et al. (1999), Grisak and Marotz (2003).	Identified as a core area (Service 2002a).	1134936 484221
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Lake McDonald	MT	Documented in MFISH database (MFWP 2009a), Dux (2005), Fredenberg (2002), Fredenberg et al. (2007), (2008), and Meeuwig et al (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1139259 485834
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Lincoln Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1137705 485907
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Logging Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1140745 487581
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Lower Quartz Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	Identified as a core area (Service 2002a).	1141720 488067

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Middle Quartz Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	Identified as part of a core area complex (Service 2002a).	1141421 488223
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Quartz Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), (2008), Meeuwig et al (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	Identified as part of a core area complex (Service 2002a).	1141021 488289
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Trout Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1139098 486803
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Upper Kintla Lake	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al (2007), (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Identified as a core area (Service 2002a).	1141757 489756
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Upper Stillwater Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1146371 485875
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Upper Whitefish Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1145788 486866
Clark Fork River Basin - Flathead Lake, Flathead River, and Headwater Lakes	Whitefish Lake	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1143814 484509

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Akokala Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al (2007a, 2007b, 2008a, 2008b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142844 487868
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Basin Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	Important portion of the SR complex located in the headwaters of Middle Fork Flathead River, contributing to designated local populations identified in the draft Bull Trout Recovery Plan (Service 2002a).	1129950 479662
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Bear Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-15 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135660 482336
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Big Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	11-40 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141631 486038
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Bowl Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	0-6 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1130569 479964
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Bowman Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al (2007), Meeuwig (2008), and Meeuwig et al (2007a, 2007b, 2008a, 2008b).	0-2 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142809 487833
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Camas Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141411 486301

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Clack Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	4-13 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1130887 480119
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Coal Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-17 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141927 486904
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Cyclone Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-5 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b), but the sole SR habitat for the Cyclone Lake core area.	1142377 486648
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Dead Horse Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Designated as a local population (i.e., portion of Coal Creek local population) in the draft Bull Trout Recovery Plan (Service 2002a).	1142782 486633
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Dolly Varden Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	5-40 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132444 480664
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	East Fork Strawberry Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	Portion of the Strawberry Creek local population; 1-9 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1130301 480639
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	East Fork Swift Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1145500 486545

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Fitzsimmons Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	4-6 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b) and along with the Stillwater River the sole SR habitat for Upper Stillwater Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1147330 487354
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Flathead River	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Hansen and Evarts (2005, 2006, 2008), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), Sylvester et al. (2008), and Weaver et al. (2006).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1147748 473651
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Frozen Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	No bull trout redd counts conducted over 1999-2008, but 10 redds in 1997 and the sole SR habitat for a disjunct core area in Frozen Lake (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1146772 489999
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Gateway Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	Important portion of the SR complex located in the headwaters of Middle Fork Flathead River, contributing to designated local populations identified in the draft Bull Trout Recovery Plan (Service 2002a).	1130214 480299
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Granite Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	8-37 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1133757 481446
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Hallowat Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	2-32 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population (i.e., a portion of the Big Creek local population) in the draft Bull Trout Recovery Plan (Service 2002a).	1143160 485745
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Harrison Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	0-15 bull trout redds per year in 5 counts conducted over 1999-2008 (MFWP 2009b) and the sole SR habitat for Harrison Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138438 484893

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Kintla Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	No bull trout redd counts conducted over 1999-2008 (MFWP 2009b), but 52 redds enumerated in the outlet of Upper Kintla Lake in 1994 and Kintla Creek is the sole SR habitat for two core areas (Kintla Lake and Upper Kintla Lake. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143736 489145
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Kishenehn Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	4-23 bull trout redds per year in 3 counts conducted over 1999-2008, much of drainage is in B.C. (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1144111 489500
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Lincoln Creek	MT	Documented in MFISH database (MFWP 2009a),Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138843 484952
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Lodgepole Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	3-19 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132635 481152
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Logging Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	0-20 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b) and the sole SR habitat for Logging Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1141819 486707
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Long Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	9-17 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135287 481569
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Mathias Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-2 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b), but important rearing habitat for a depressed population that spawns in Coal Creek.	1144218 486692

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	McDonald Creek	MT	Documented in MFISH database (MFWP 2009a), Dux (2005), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1140049 485064
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Middle Fork Flathead River	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140688 484681
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Morrison Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	10-50 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1133101 481104
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	North Fork Flathead River	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	35-76 bull trout redds per year in 5 counts conducted over 1999-2008 in B.C. headwaters; a portion of which are migratory fish using this corridor (MFWP 2009b). Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140717 484691
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Nyack Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	13-16 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137962 484515
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Ole Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	14-44 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135977 482827
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Park Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Fredenberg et al. (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), Muhlfeld et al (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-23 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136133 483098

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Park Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), and Meeuwig et al. (2007a, 2007b, 2008a, 2008b).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136133 483098
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Quartz Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg (2002), Fredenberg et al. (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	4-51 bull trout redds per year in 6 counts conducted over 1999-2008 (MFWP 2009b) and supporting most of the SR habitat for Quartz Lakes core area. Lower Quartz Creek had 1-3 bull trout redds per year (2004-2009) and supports most of the SR habitat for Lower Quartz Lake core area (MFWP 2009b and Downs 2009). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142235 487135
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Rainbow Creek	MT	Documented in MFISH database (MFWP 2009a), Fredenberg et al. (2007), Meeuwig (2008), Meeuwig et al. (2007a, 2007b, 2008a, 2008b), and Tennant et al. (2008).	12-28 bull trout redds per year in 2 counts conducted over 2008-2009 (Downs 2009) and important accessory SR habitat for Quartz Lakes core area.	1140539 488918
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Red Meadow Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	1-5 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143239 488049
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Scalp Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), and Deleray et al. (1999).	Important portion of the SR complex located in the headwaters of Middle Fork Flathead River, contributing to designated local populations identified in the draft Bull Trout Recovery Plan (Service 2002a).	1130406 479824
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Schafer Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	4-19 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132501 480712
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Shorty Creek	MT	Documented in MFISH database (MFWP 2009a).	0-12 bull trout redds per year in 4 counts conducted over 1997-2008 (MFWP 2009b).	1145933 488510

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	South Fork Coal Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	1-3 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b), but important rearing habitat for a depressed population that spawns in Coal Creek. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143446 486802
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	South Fork Flathead River	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), Sylvester et al. (2008), and Weaver et al. (2006).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140880 483881
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Stillwater River	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	12-34 bull trout redds per year in 7 counts conducted over 1999-2008 (MFWP 2009b) and along with Fitzsimmons Creek the sole SR habitat for Upper Stillwater Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1142635 481638
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Strawberry Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	1-9 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1130569 479963
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Swift Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	2-7 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b) and along with West Fork Swift Creek the sole SR habitat for Whitefish Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1144203 484795
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Trail Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	0-21 bull trout redds per year in 3 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1130193 480135
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Trail Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	14-51 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143855 489237

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	West Fork Swift Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	1-12 bull trout redds per year in 8 counts conducted over 1999-2008 (MFWP 2009b) and along with Swift Creek the sole SR habitat for Whitefish Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1145500 486544
Clark Fork River Basin–Flathead Lake, Flathead River, and Headwater Lakes	Whale Creek	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), and Weaver et al. (2006).	27-72 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1143515 488494

31.11. Swan River Critical Habitat Subunit

The Swan River CHSU is essential to bull trout conservation because this CHSU has historically been robust bull trout resource in Montana and includes three lakes, each with a separate bull trout core population, that share an interconnected system of spawning and rearing streams. An extensive network of high-quality spawning and rearing habitat, with strong groundwater influences, historically contributed to the strong bull trout population in the watershed and may enable this CHSU to remain one of the more resistant systems under changing climate scenarios. In the 1990s, Swan Lake was compromised by nonnative lake trout, which subsequently expanded dramatically and the CHSU is now the site of an important lake trout suppression experiment that has implications for the longer-term persistence of the adfluvial life history form of bull trout in the Flathead drainage. The strong bull trout population has provided a harvestable surplus, allowing angler utilization of the bull trout resource to continue despite ESA listing. The core area populations (Swan Lake, Holland Lake, and Lindbergh Lake) represent working models for creating and sustaining bull trout recovery opportunities in heavily managed timber-producing watersheds (see Appendix 1 for more detailed information).

The Swan River CHSU includes the entire Swan River drainage upstream from Bigfork Dam (near the Swan River's confluence with Flathead Lake) in Lake and Missoula Counties in Montana. Of the waters located within the Swan CHSU, 247.9 km (154.0 mi) of stream and 1,545 ha (3,817 ac) of lake surface area in three lakes are designated as bull trout critical habitat.

The following water bodies are included in this CHSU (see Table 95):

(A) Swan Lake (1,085 ha (2,680 ac)) provides FMO habitat for multiple upstream tributary populations of bull trout. Swan River from Swan Lake approximately 87.3 km (54.2 mi) upstream to Lindbergh Lake provides FMO habitat.

Tributaries described in (B) through (I) provide spawning and rearing habitat for migratory bull trout that reside as adults in FMO habitat of Swan Lake and the Swan River:

(B) Lost Creek from its confluence with the Swan River upstream 2.8 km (1.7 mi) to the confluence of the North and South Forks and its tributaries, North Fork Lost Creek from the confluence of the forks upstream 7.6 km (4.7 mi) to a barrier falls and South Fork Lost Creek from the confluence of the forks upstream 7.3 km (4.5 mi) to a barrier falls.

(C) Soup Creek from its confluence with the Swan River upstream 11.1 km (6.9 mi) to a series of natural upstream fish passage barriers in the high gradient upper reaches.

(D) Woodward Creek from its confluence with the Swan River upstream 6.0 km (3.7 mi) to an annually dewatered channel on the northernmost fork and its tributary; South Woodward Creek, from its confluence with Woodward Creek upstream 4.7 km (2.9 mi) to approximately where the stream turns from a southerly to a westerly direction.

(E) Goat Creek from its confluence with the Swan River upstream 15.7 km (9.8 mi) to its confluence with Bethal Creek near its headwaters and its tributary, Squeezer Creek, from its confluence with Goat Creek upstream 8.5 km (5.3 mi) to a barrier falls in its midreaches.

(F) Lion Creek from its confluence with the Swan River upstream 11.5 km (7.1 mi) to a natural barrier falls approximately halfway up the drainage.

(G) Piper Creek from its confluence with the Swan River upstream 15.5 km (9.6 mi) to its source at Piper Lake.

(H) Jim Creek from its confluence with the Swan River upstream 16.9 km (9.9 mi) to the lowermost Jim Lake.

(I) Cold Creek from its confluence with the Swan River upstream 21.1 km (13.1 mi) to its source and its tributary, North Fork Cold Creek, 7.5 km (4.7 mi) from its confluence with Cold Creek to its source at Lower Cold Lake.

(J) Elk Creek from its confluence with the Swan River upstream 16.9 km (10.5 mi) to the confluence of the North and South Fork Elk Creeks.

The following lakes and their attached upstream occupied tributary segments described in (K) and (L) are designated as bull trout critical habitat. These bull trout populations are considered separate core areas because of isolation.

(K) Lindbergh Lake (293 ha (725 ac)) provides FMO habitat; the upper Swan River upstream 7.6 km (4.7 mi) from Lindbergh Lake to near its headwaters provides spawning and rearing habitat.

(L) Holland Lake (167 ha (412 ac) provides FMO habitat and Holland Creek from Holland Lake to a natural barrier falls upstream 0.8 km (0.5 mi) provides spawning and rearing habitat.

Table 95. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Swan River and Lakes CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Swan River and Lakes	Cold Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	2-25 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137557 475837
Clark Fork River Basin–Swan River and Lakes	Elk Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	152-261 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137413 475435
Clark Fork River Basin–Swan River and Lakes	Goat Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	46-80 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138284 477489
Clark Fork River Basin–Swan River and Lakes	Holland Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	4-13 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b) and the sole SR habitat for Holland Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136748 474413
Clark Fork River Basin–Swan River and Lakes	Holland Lake	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	Identified as a core area (Service 2002a).	1135975 474480
Clark Fork River Basin–Swan River and Lakes	Jim Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	18-95 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137923 476482
Clark Fork River Basin–Swan River and Lakes	Lindbergh Lake	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	Identified as a core area (Service 2002a).	1137335 473813
Clark Fork River Basin–Swan River and Lakes	Lion Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	75-136 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138152 476807
Clark Fork River Basin–Swan River and Lakes	Lost Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a), most spawning and rearing occurs upstream in North and South Forks.	1138483 478699

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Swan River and Lakes	North Fork Cold Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	2-25 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138110 475621
Clark Fork River Basin–Swan River and Lakes	North Fork Lost Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	No bull trout redd counts since 1999 but 5-13 per year in 7 counts conducted over 1982-1998 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138242 478731
Clark Fork River Basin–Swan River and Lakes	Piper Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	2-18 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138150 476752
Clark Fork River Basin–Swan River and Lakes	Soup Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	2-12 bull trout redds per year in 18 counts conducted over 1991-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138427 478368
Clark Fork River Basin–Swan River and Lakes	South Fork Lost Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	11-26 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138242 478730
Clark Fork River Basin–Swan River and Lakes	South Woodward Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	10-20 bull trout redds per year in 2 counts conducted over 2007-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138570 477540
Clark Fork River Basin–Swan River and Lakes	Squeezer Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	59-123 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1138154 477501
Clark Fork River Basin–Swan River and Lakes	Swan Lake	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	Identified as a core area (Service 2002a).	1138953 479547
Clark Fork River Basin–Swan River and Lakes	Swan River	MT	Documented in MFISH database (MFWP 2009a), Cox and Guy (2007), Swan Valley Bull Trout Working Group (2009), and Weaver (2006).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140797 480592.1
Clark Fork River Basin–Swan River and Lakes	Swan River	MT	Documented in MFISH database (MFWP 2009a), Cox and Guy (2007), Swan Valley Bull Trout Working Group (2009), and Weaver (2006).	5-16 bull trout redds per year in 2 counts conducted over 1999-2008 (MFWP 2009b) and the sole SR habitat for Lindbergh Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1140797 480592.2

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Swan River and Lakes	Woodward Creek	MT	Documented in MFISH database (MFWP 2009a) and Weaver (2006).	53-116 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1138449 477768

31.12. South Fork Flathead and Hungry Horse Reservoir Critical Habitat Subunit

The South Fork Flathead CHSU is essential to bull trout conservation because it is among the most secure and stable bull trout refugium across the range of the species. This CHSU is essential for bull trout recovery as a very important stronghold against potential extinction. The adfluvial population of bull trout that is the sole life history form present in the CHSU originated from Flathead Lake from adult and juvenile fish trapped upstream of Hungry Horse Dam, which adapted to the new habitat and have provided a strong and resilient core area population. Few nonnative fish occur in this CHSU, and most of the spawning and rearing habitat is in protected and unaltered habitat within the Bob Marshall Wilderness, including two of three core areas. The strong bull trout population and high level of habitat security has provided an opportunity to allow anglers to utilize the bull trout resource, harvesting a closely regulated number of fish, despite ESA listing. An extensive network of high-quality spawning and rearing habitat, including many streams with groundwater influence, makes this CHSU one of the more resistant systems under a variety of changing climate scenarios (see Appendix 1 for more detailed information).

The South Fork Flathead CHSU include the entire South Fork Flathead River drainage upstream from Hungry Horse Dam (located 9.0 km (5.6 mi) upstream from the South Fork's confluence with the mainstem Flathead River) in Flathead, Missoula, Powell, and Lewis and Clark Counties in Montana. Of the waters located within the South Fork Flathead CHSU, 349.1 km (216.9 mi) of streams, as well as 9,988 ha (24,679 ac) of lake and reservoir surface area in three water bodies are designated as critical habitat for bull trout.

The following water bodies are included in this CHSU (see Table 96):

(A) Hungry Horse Reservoir (9,632 ha (23,800 ac)) and the South Fork Flathead River upstream 103.3 km (64.2 mi) from the full pool level of Hungry Horse Reservoir to its source at the confluence of Youngs and Danaher Creeks provide occupied FMO habitat for migratory populations of bull trout.

Tributaries described in (B) through (K) provide spawning and rearing habitat:

(B) Wounded Buck Creek from its confluence with Hungry Horse Reservoir upstream 6.1 km (3.8 mi) to a series of natural cascades in the upper reaches of the drainage.

(C) Wheeler Creek from its confluence with Hungry Horse Reservoir upstream 5.8 km (3.6 mi) to a natural barrier falls just upstream of the confluence of Trapper Creek.

(D) Sullivan Creek from its confluence with Hungry Horse Reservoir upstream 24.7 km (15.3 mi) to its headwaters and its tributary, Quintonkon Creek, from its confluence with Sullivan Creek upstream 5.3 km (3.3 mi) to a natural barrier falls approximately halfway up the drainage.

(E) Spotted Bear River from its confluence with the South Fork Flathead River upstream 32.9 km (20.4 mi) to Dean Falls, just upstream from the confluence of Slim Creek, provides FMO habitat.

(F) Bunker Creek from its confluence with the South Fork Flathead River upstream 17.9 km (11.1 mi) to a barrier falls above its confluence with String Creek provides spawning and rearing habitat.

(G) Little Salmon Creek from its confluence with the South Fork Flathead River upstream 28.7 km (17.8 mi) to its source.

(H) White River from its confluence with the South Fork Flathead River upstream 13.1 km (8.1 mi) to Needle Falls (located upstream from the confluence of the South Fork White River).

(I) Gordon Creek from its confluence with the South Fork Flathead River upstream 26.5 km (16.5 mi) to a barrier falls in its upper reaches near its confluence with George Creek.

(J) Youngs Creek from its confluence with Danaher Creek upstream 28.7 km (17.8 mi) to the confluence of Ross Creek near its headwaters, and Babcock Creek (a tributary to Youngs Creek) from its mouth upstream 7.3 km (4.5 mi) to its confluence with Otis Creek provide spawning and rearing habitat.

(K) Danaher Creek from its confluence with Youngs Creek to form its headwaters of the South Fork Flathead River upstream 33.5 km (20.8 mi) to its source, and Rapid Creek (a tributary to Danaher Creek) from its confluence upstream 2.9 km (1.8 mi) to the confluence of Fiction Creek.

The following lakes and attached stream segments designated as critical habitat describe bull trout populations isolated to varying degrees from full connectivity with Hungry Horse Reservoir and each is considered a separate core area. The lakes (FMO) and upstream spawning and rearing habitat are designated as critical habitat.

(L) Big Salmon Lake (324 ha (800 ac)) provides FMO habitat. Big Salmon Creek upstream 7.3 km (4.6 mi) from Big Salmon Lake to a barrier falls just upstream from the confluence of Spud Creek provides spawning and rearing habitat.

(M) Doctor Lake (32 ha (79 ac)) provides FMO habitat and the entire length of Doctor Creek (5.3 km (3.3 mi)), occurring both upstream and downstream of Doctor Lake, provides spawning and rearing habitat.

Table 96. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Babcock Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	Important portion of the SR habitat in Youngs Creek, contributing to a designated local population identified in the draft Bull Trout Recovery Plan (Service 2002a).	1132689 473661
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Big Salmon Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	27-75 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b) and the sole SR habitat for Big Salmon Lake core area. Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1133565 476338
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Big Salmon Lake	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	Identified as a core area (Service 2002a).	1133871 476020
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Bunker Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134152 478298
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Danaher Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	7 bull trout redds in 1 count conducted in1999 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1131825 474453
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Doctor Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134575 474288
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Doctor Lake	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), Deleray et al. (1999), Grisak and Marotz (2003).	Identified as a core area (Service 2002a).	1134814 474036

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Gordon Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), Deleray et al. (1999), Grisak and Marotz (2003).	99-142 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132236 474788
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Hungry Horse Reservoir	MT	Documented in MFISH database (MFWP 2009a), CSKT and MFWP (2004), Deleray et al. (1999), Muhlfeld et al. (2005, 2007, 2008), Steed et al. (2008), Sylvester et al. (2008), and Weaver et al. (2006).	Identified as a core area (Service 2002a).	1137983 482012
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Little Salmon Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	50-138 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1133600 476545
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Quintonkon Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	4-48 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b).	1137068 480260
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Rapid Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	0 bull trout redds in 1 count conducted in1999 (MFWP 2009b).	1130540 473716
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	South Fork Flathead River	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), Deleray et al. (1999), Rosenthal and Hensler (2008), and Sylvester et al. (2008).	Demonstrated to be an important migratory corridor for local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1140880 483881
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Spotted Bear River	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	13 bull trout redds in one count conducted in 1999 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1135255 479243

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Sullivan Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	18-74 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1136727 480633
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Wheeler Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	4-25 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1137125 481096
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	White River	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	70-90 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1132976 475879
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Wounded Buck Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	3-47 bull trout redds per year in 10 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1139220 482987
Clark Fork River Basin–Hungry Horse Reservoir, South Fork Flathead River	Youngs Creek	MT	Documented in MFISH database (MFWP 2009a), Boyer et al. (2008), CSKT and MFWP (2004), and Deleray et al. (1999).	61-132 bull trout redds per year in 4 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1131825 474454

Bull Trout Final Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy

Chapter 32. Saint Mary Recovery Unit—Saint Mary River Basin Critical Habitat Unit

Chapter 32. Saint Mary River Basin Critical Habitat Unit

The Saint Mary River Basin CHU is essential maintaining bull trout distribution within this unique geographic region of the Saint Mary RU because it represents the only bull trout population east of the Continental Divide in the United States. The genetic information to date indicates bull trout in the Saskatchewan River basin (primarily of Alberta, Canada) originated from a cross-divide transfer of fish from the Columbia Basin, probably during the Wisconsin Glaciation, which ended about 10,000 years ago. The headwaters of the South Saskatchewan system include the Crowsnest, Carbondale, Castle, Belly, and Saint Mary Rivers. Of these, only the Saint Mary River system has extensive bull trout habitat in the United States, with much of the spawning and rearing habitat occurring in Montana. FMO habitat occurs primarily downstream in portions of the watershed in southwestern Alberta. Thus, preservation of the southernmost extension of bull trout east of the Continental Divide is dependent on actions in the Saint Mary River Basin CHU (see Appendix 1 for more detailed information).

We are proposing to designate critical habitat for bull trout in identified stream segments and lakes in the Saint Mary River Basin CHU in Montana. The entire U.S. portion of the Saint Mary River drainage, which forms the Saint Mary River Basin CHU, is located in Glacier County, Montana. The total stream distance designated as critical habitat in Montana is about 116.8 km (72.6 mi), and the five lakes have a surface area of about 2,555.4 ha (6,314.5 ac).

Most high elevation waters in Glacier National Park were historically fishless. Due to natural migration barriers, bull trout occupancy in its headwaters of the Belly River drainage (directly west of and adjacent to the Saint Mary River drainage) was confined to only a very minor portion of the U.S habitat near the international border. Due to this restricted U.S. distribution and the fact that all FMO habitat for these populations is in Alberta, Canada, the Belly River headwaters in unroaded backcountry of Glacier National Park are not included in this critical habitat designation.

The following water bodies are included in this CHU (see Table 97):

(A) The entire mainstem of the Saint Mary River in the United States, including 26.7 km (16.6 mi) of the River upstream of the international border, is FMO habitat. Designated critical habitat in the Saint Mary River Basin CHU includes the basins of Lower Saint Mary Lake (886 ha (2,189 ac)) and Saint Mary Lake (1,571 ha (3,883 ac)) to their high water marks. A very short 0.3 km (0.2 mi) reach of the upper Saint Mary River, upstream of Saint Mary Lake to the base of Saint Mary Falls, provides spawning and rearing habitat.

(B) Divide Creek from its junction with the Saint Mary River (between the Saint Mary Lakes) upstream 7.2 km (4.5 mi) to a natural barrier provides spawning and rearing habitat.

(C) Swiftcurrent Creek from its confluence with the Saint Mary River upstream 4.1 km (2.5 mi) to the confluence of Boulder Creek provides FMO habitat. Boulder Creek from its confluence with Swiftcurrent Creek upstream 13.6 km (8.4 mi) to its headwaters provides spawning and rearing habitat.

(D) Kennedy Creek from its confluence with the Saint Mary River upstream 22.0 km (13.7 mi) to a natural barrier at the outlet of Poia Lake provides spawning and rearing habitat. Its tributary, Otatso Creek, from its junction with Kennedy Creek upstream 13.4 km (8.3 mi) to a natural barrier located near the Glacier National Park boundary with the Blackfeet Indian Reservation provides spawning and rearing habitat.

(E) The upper mainstem of Lee Creek (12.5 km (7.8 mi)) and its tributary Middle Fork Lee Creek (4.3 km (2.7 mi)) upstream to fish passage barriers in their upper reaches, provide spawning and rearing habitat. These drainages start in the United States and flow north into Alberta; the fish migrate from FMO habitat in portions of the Saint Mary River system in Alberta, Canada.

The following lakes and attached stream segments designated as critical habitat for bull trout are isolated to varying degrees from full connectivity with the Saint Mary River and are considered separate core areas. In these cases, the lake and its upstream spawning and rearing habitat are identified.

(F) The basin of Red Eagle Lake (55 ha (136 ac)) provides FMO habitat and its tributary, Red Eagle Creek, from the lake upstream approximately 1.5 km (1.0 mi) to an unnamed barrier falls provides spawning and rearing habitat.

(G) The basin of Cracker Lake (17 ha (42 ac)) provides FMO habitat for a population of bull trout believed to have been introduced by miners in the early 20th century. Its tributary, Canyon Creek, from the lake upstream 1.5 km (1.0 mi) provides spawning and rearing habitat.

(H) The two interconnected basins of the Slide Lakes (18 ha (45 ac)) provide FMO habitat. Upstream reaches of Otatso Creek from the Slide Lakes upstream 6.6 km (4.1 mi) to an unnamed barrier falls, including a short reach of stream between the lake basins, are spawning and rearing habitat. Table 97. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and the site-specific rationale in the Saint Marry River CHU/CHSU

Table 97. Water body segments designated as critical habitat for bull trout, including documentation of occupancy and site-specific rationale in the Saint Mary River Basin CHU/CHSU

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Saint Mary River Basin–None	Boulder Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	13-58 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134598 488389
Saint Mary River Basin–None	Divide Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of sporadic bull trout spawning, but routine rearing (Mogen and Kaeding 2007).	1134375 487508
Saint Mary River Basin–None	Kennedy Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	11-27 bull trout redds per year in 9 counts conducted over 1999-2008 (MFWP 2009b). Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a).	1134094 489054
Saint Mary River Basin–None	Lee Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of sporadic bull trout spawning, but routine rearing (Mogen and Kaeding 2007).	1136006 489982
Saint Mary River Basin–None	Middle Fork Lee Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of sporadic bull trout spawning, but routine rearing (Mogen and Kaeding 2007).	1135499 489983
Saint Mary River Basin–None	Otatso Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of sporadic bull trout spawning, but routine rearing (Mogen and Kaeding 2007).	1134645 489145
Saint Mary River Basin–None	Saint Mary River	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Migratory corridor connecting Saint Mary River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1133271 489984

CHU—CHSU	Water Body Name	State	Information Documenting Bull Trout Occupancy	Essential Habitat Rationale	LLID
Saint Mary River Basin–None	Swiftcurrent Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Migratory corridor connecting Boulder Creek and Saint Mary River to local populations designated in the draft Bull Trout Recovery Plan (Service 2002a).	1134241 488336
Saint Mary River Basin–None	Canyon Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of bull trout SR activity (Mogen and Kaeding 2007).	113619 2487988
Saint Mary River Basin–None	Red Eagle Creek	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Designated as a local population in the draft Bull Trout Recovery Plan (Service 2002a). Evidence of bull trout SR activity (Mogen and Kaeding 2007).	1134808 487077
Saint Mary River Basin–None	Cracker Lake	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as a core area (Service 2002a).	1136442 487436
Saint Mary River Basin–None	Lower St. Mary Lake	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as part of a core area complex (Service 2002a).	1134227 487955
Saint Mary River Basin–None	Otatso Lake	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as part of a core area complex (Service 2002a).	1136768 488918
Saint Mary River Basin–None	Red Eagle Lake	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as a core area (Service 2002a).	1135065 486518
Saint Mary River Basin–None	Slide Lakes - lower pool	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as part of a core area complex (Service 2002a).	1136157 489049
Saint Mary River Basin–None	Slide Lakes - upper pool	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as part of a core area complex (Service 2002a).	1136252 489018
Saint Mary River Basin–None	St. Mary Lake	MT	Documented in MFISH database (MFWP 2009a), Mogen and Kaeding (2004, 2005a, 2005b, 2006, 2007), and Service (2008f).	Identified as part of a core area complex (Service 2002a).	1135091 486985

Literature Cited

Adams, S. 1994. Bull trout distribution and habitat use in the Weiser River drainage, Idaho. M.S. Thesis, University of Idaho, Moscow. 96 p.

Adelsberger, C. M., and M. C. Nelson. 2009. Goat Creek bull trout spawning ground survey 2009. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Al-Chokhachy, R., and P. Budy. 2008. Demographic characteristics, population structure, and vital rates of a fluvial population of bull trout in Oregon. Transactions of the American Fisheries Society 137:1709–1722.

Anchor Environmental, L.L.C. 2002. Letter to Jim Muck, U.S. Fish and Wildlife Service, from Anchor Environmental, L.L.C., submitting bull trout tissue samples from Middle Fork Nooksack River. July 29, 2002.

Anderson, E. 2004. Email message to Judy DeLa Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, from Eric Anderson, Washington Department of Fish and Wildlife, Yakima Regional Office, Yakima, Washington. Subject: Bull trout Andrew Murdoch caught in the Yakima River mainstem below I-82.

Anderson E. and M. Mizell. 2010. 2010 Draft: An Investigation into the migratory behavior, habitat use and genetic composition of fluvial and resident bull trout (*Salvelinus confluentus*) in the Yakima River basin. Yakima Basin radio telemetry report. Washington Department of Fish and Wildlife, Yakima Regional Office, Yakima, Washington. 104 p.

Andersen, T. 2008. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Todd Andersen, Kalispel Tribe. Subject: Granite Creek (Priest Lake) bull trout redd observations in the Priest River basin. August 27, 2008.

Andonaegui, C. 2003. Bull trout habitat limiting factors for Water Resource Inventory Area (WRIA) 62 (Pend Oreille County, Northeast Washington State). Washington State Conservation Commission, Olympia, Washington. April 4, 2003.

Anglin, D.R., D.G. Gallion, M. Barrows, C. Newlon, P. Sankovich, T. J. Kisaka, and H. Schaller. 2008. Bull Trout distribution, movements and habitat use in the Walla Walla and Umatilla River basins: 2004 annual progress report. U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington.

Apperson, K.A., M. Mahan, W.D. Horton, and C.M. Falter. 1988. Study completion report. Idaho Department of Fish and Game, Boise, Idaho. Project F-73-R-10.

Archibald, P., and E. Johnson. 2007. 2007 Mad River bull trout spawning survey. U.S. Forest Service, Wenatchee National Forest, Entiat Ranger District, Washington.

Ardren, W., P. DeHaan, and J. Dunnigan. 2007. Genetic analysis of bull trout in the Kootenai River basin. Final report submitted to Montana Fish, Wildlife and Parks. U.S. Fish and Wildlife Service, Conservation Genetics Laboratory, Abernathy Fish Technology Center, Longview, Washington.

Ardren, W., P. DeHaan, and J. O'Reilly. 2007. Genetic analysis of bull trout in Odell Lake, Oregon. Abernathy Fish Technology Center, Longview, Washington.

Ardren, W.B., P.W. DeHaan, C.T. Smith, E.B. Taylor, R. Leary, C. Kozfkay, L. Godfrey, M. Diggs, W. Fredenberg, J. Chan, C.W. Kilpatricks, M.P. Small, D.K. Hawkins. 2010. Unpublished. Genetic structure, evolutionary history, and conservation units of bull trout in the coterminous United States.

Arrigoni, J. 2004. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Arrigoni, Tulalip Tribes, Tulalip, Washington. Subject: Upstream limits of bull trout critical habitat designation. September 2, 2004. 1:03 p.m.

Baconrind, C. 2009. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Chad Baconrind, U.S. Forest Service. Subject: Bull trout observations in the Priest River and Kootenai River basins, Idaho. May 27, 2009.

Bailey, T. 2009. Email message to Mary Hanson, U.S. Fish and Wildlife Service (IPA contractor) from T. Bailey, Oregon Department of Fish and Wildlife. Subject: Bull trout in restoration projects in the Powder River Basin. August 2009.

Banish, N. 2002. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from N. Banish, Washington Department of Fish and Wildlife. Subject: Matheny Creek bull trout. July 26, 2002. 7:26 p.m.

Basham, L. 2000. Memorandum to Margaret Filardo from Larry Basham, Fish Passage Center, Portland, Oregon. Re: ESA listed bull trout at smolt monitoring sites. April 10, 2000.

Beauchamp, D. A., and M.F. Shepard. 2008. Evaluation of factors affecting kokanee production in Lake Billy Chinook. Washington Cooperative Fisheries and Wildlife Research Unit School of Aquatic and Fisheries Sciences, University of Washington. Seattle, Washington.

Behnke, R. J. 1992. Native trout of western North America. American Fisheries Society Monograph 6. Bethesda, Maryland.

Bellerud, B. L., S. L. Gunckel, A. R. Hemmingsen, D. V. Buchanan, and P. J. Howell.1997. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1996 Annual Report. Bonneville Power Administration, Portland, Oregon. Project No. 1995-054-00. BPA Report DOE/BP-34342-2.

Benson, A. 2009. Effects of barriers on migratory bull trout and application of a conceptual framework to evaluate tradeoffs associated with dam removal in the Clearwater River drainage, Montana. M.S. Thesis, University of Montana, Missoula.

Berg, R.K. 2003. Fish population status in eight major lakes in the Clearwater River drainage, Montana, 1995–2002. Montana Fish, Wildlife and Parks, Helena, Montana. Federal Aid Report F-113-R1and F-113-R2.

Berge, H. 2003. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from H. Berg, King County Department of Natural Resources and Parks, Seattle, Washington. Subject: Char in Lk Washington. January 17, 2003. 12:14 p.m.

Berge, H.B., and B.V. Mavros. 2001. King County bull trout program: 2000 bull trout surveys. King County Department of Natural Resources, Seattle, Washington.

Bernall, S. 2007. Lake Pend Oreille, Idaho, bull trout gill netting genetic assignment summary. Final report—2006. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Bernall, S. and L. Lockard. 2008. Upstream fish passage studies. Annual progress report—2007. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

BioAnalysts, Inc. 2004. Movement of bull trout within the Mid-Columbia River and tributaries 2001–2004. Final. Prepared by BioAnalysts, Inc., Boise, Idaho, for Chelan, Douglas, and Grant Public Utility Districts. May 26, 2004.

BioAnalysts, Inc. 2009. Movement of radio-tagged bull trout through Rocky Reach and Rock Island dams and reservoirs: 2005–2009. Prepared for Chelan County Public Utility District, Wenatchee, Washington. 38 p.

Boyer, M.C., G. Michael, M. Schnee, L. Fried, and K. Tempel. 2008. Hungry Horse mitigation program 2007 annual report. Bonneville Power Administration, Portland, Oregon. BPA Project Number 199101903, BPA Document ID #P107001.

Brassfield, R., J. Geffre, and J. Rokosch. 2006. Bull trout presence in eight tributaries of the Bitterroot River. U.S. Forest Service, Bitterroot National Forest, Hamilton, Montana.

Brenkman, S. 1998. Factors influencing spawning migration of bull trout (*Salvelinus confluentus*) in the North Fork of the Skokomish River, Olympic National Park, Washington. M.S. Thesis, Oregon State University, Corvallis, Oregon.

Brenkman, S. 2003a. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Brenkman, Olympic National Park, Port Angeles, Washington. Subject: Irely Lake. January 21, 2003. 8:04 a.m.

Brenkman, S. 2003b. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Brenkman, Olympic National Park, Port Angeles, Washington. Subject: RM in Cedar and Klalloch (sic). April 1, 2003. 3:54 p.m.

Brenkman, S. 2003c. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Brenkman, Olympic National Park, Port Angeles, Washington. Subject: Copalis. March 28, 2003. 10:22 a.m.

Brenkman, S., and S. Corbett. 2003a. Seasonal movements of threatened bull trout (*Salvelinus conflutentus*) in the Hoh River basin and coastal Washington. Abstract. Northwest Scientific Association meeting 2003, Forks, Washington.

Brenkman, S., and S. Corbett. 2003b. Radio tracking of bull trout in the Hoh River basin and coastal Washington. Draft. In: Flight summary for April, 25, 2003.

Brenkman, S. J., and S. C. Corbett. 2005. Extent of anadromy in bull trout and implications for conservation of a threatened species. North American Journal of Fisheries Management 25:1073–1081.

Brenkman, S., and J. Meyer. 1999. Distribution and spawning migration of bull trout (*Salvelinus confluentus*) in the Hoh River basin, Washington. Olympic National Park, Port Angeles, Washington.

Brenkman, S., and J. Meyer. 2001. Data sources related to native char distributions in the Elwha, North Fork Skokomish, and Hoh River basins. Olympic National Park, Port Angeles, Washington.

Brenkman, S., G.R. Pess, C.E. Torgersen, K.K. Kloehn, J.J. Duda, and S.C. Corbett. 2008. Predicting recolonization patterns and interactions between potamodromous and anadromous salmonids in response to dam removal in the Elwha River, Washington State, USA. Northwest Science 82 (Special Issue):91–106.

Brennan Dubbs, N. 2005. Email message to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from N. Brennan Dubbs, U.S. Fish and Wildlife Service, Lacey, Washington. Subject: Bull trout in Lake Creek. April 11, 2005. 12:01 p.m.

Brix, R. 1974. 1974 data report of juvenile salmonid seining in Grays Harbor and tributary rivers and electro-fishing and river seining in the Chehalis River in the vicinity of Washington Public Power Supply System's project nos. 3 and 5. State of Washington Department of Fisheries, Olympia, Washington.

Brown, L. G. 1992. Draft management guide for the bull trout *Salvelinus confluentus* (Suckley) on the Wenatchee National Forest. Washington Department of Fish and Wildlife, Wenatchee, Washington. 104 p.

Buchanan, D. V., M. L. Hanson, and R. M. Hooton. 1997. Status of Oregon's bull trout: distribution, life history, limiting factors, management considerations, and status. Technical Report to Bonneville Power Administration, Portland, Oregon. Contract No. 1994BI34342, Project No. 199505400, (BPA Report DOE/BP-34342-5). 185 p.

Buckman, R.C., W.E. Hosford, and P.A. Dupee. 1992. Malheur River bull trout investigations. In: Proceedings of the Gearhart Mountain bull trout workshop. Oregon chapter of the American Fisheries Society, Corvallis, Oregon.

Budy, P., P. Mackinnon, T. Bowerman, and G.P. Thiede. 2008. Bull trout population assessment in northeastern Oregon: a template for recovery planning, annual progress report for 2007. Unpublished draft report. U.S. Geological Survey, Utah Cooperative Fish and Wildlife Research Unit, Utah State University.

Burchell, R.D. 2007. Bull trout distribution and abundance in the water on and bordering the Warm Springs Reservation. Project No. 2007-157-00.

Bureau of Land Management (BLM). 1998a. Biological assessment for activities associated with Bureau of Land Management lands (domestic grazing) within the Pine Creek watershed. Baker Resource Area, Vale District, Bureau of Land Management. November 19, 1998. 64 p.

Bureau of Land Management (BLM). 1998b. Lemhi River sub-basin assessment—an assessment of resource conditions and issues within the watersheds of the Lemhi River valley. Salmon, Idaho. 411 p.

Bureau of Land Management (BLM). 2000a. Lower Salmon River subbasin biological assessment of ongoing and proposed Bureau of Land Management activities on sockeye salmon, fall chinook salmon, spring/summer chinook salmon, steelhead trout, bull trout, and BLM sensitive species. February 2000. 257 p.

Bureau of Land Management (BLM). 2000b. Lower Salmon River subbasin biological assessment of ongoing and proposed Bureau of Land Management activities on sockeye salmon, fall chinook salmon, spring/summer chinook salmon, steelhead trout, bull trout, and BLM sensitive species. March 2000. 449 p.

Bureau of Land Management (BLM). 2010. Letter to U.S. Fish and Wildlife Service from BLM. Re: Proposed critical habitat. January 14, 2010.

Bureau of Land Management and U.S. Forest Service (BLM and USFS). 1998. Bull trout Section 7 consultation Lemhi River watershed.

Bureau of Land Management and U. S. Forest Service (BLM and USFS). 2001a. Pahsimeroi River sub-basin review. U. S. Department of Agriculture, Salmon-Challis National Forest, Challis Ranger District, Challis, Idaho. 185 p.

Bureau of Land Management and U. S. Forest Service (BLM and USFS). 2001b. Pahsimeroi watershed biological assessment. U. S. Department of Agriculture, Salmon-Challis National Forest, Challis Ranger District, Challis, Idaho. 160 p.

Bureau of Reclamation (BOR). 2010. Letter to U.S. Fish and Wildlife Service from BOR. Re: Reclamation comments on the revised designation of critical habitat for bull trout in the coterminous United States and draft economic analysis. March 30, 2010.

Burley, C. 1997. Letter to Leslie Propp, U.S. Fish and Wildlife Service, Lacey, Washington, from C. Burley, Washington Department of Fish and Wildlife, responding to questions on the draft Washington State salmonid stock inventory: bull trout/Dolly Varden.

Burns Paiute Tribe 1998. Survey information on Crooked Creek (tributary to Lake Creek) in the Malheur River basin. Available from: the tribal office, Burns, Oregon.

Burton, T. 1999. Biological assessment of ongoing actions, upper Deadwood River bull trout subpopulation watershed. Boise National Forest, Boise, Idaho. September 30, 1999. 28 p.

Byrne, J. 2009. Email message to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Byrne, Washington Department of Fish and Wildlife, Vancouver, Washington. Subject: Comments to bull trout critical habitat. June 05, 2009. 11:21 a.m.

Byrne, J., R. McPeak, and B. McNamara. 2000. Bull trout population assessment in the Columbia River Gorge. FY2000 annual report. Washington Department of Fish and Wildlife Fish Program. Unpublished report. Available at: http://www.efw.bpa.gov/cgi-bin/ws.exe/websql.dir/FW/PUBLICATIONS/. 91 p.

Carnefix, G. 2001. Movement patterns of fluvial bull trout in relation to habitat parameters in the Rock Creek drainage, Missoula and Granite Counties, Montana. M.S. thesis, University of Montana, Missoula, Montana.

Cappellini, M. M. J. 2001. Movements of bull trout (*Salvelinus confluentus*), spring Chinook (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*) in Icicle Creek Washington. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Cavender, T. M. 1978. Taxonomy and distribution of the bull trout, *Salvelinus confluentus* (Suckley), from the American Northwest. California Fish and Game 64:139–174.

Chan, J.R. 2001. Collection report for activities conducted under scientific collection permit number 00–305. 2000 *Salvelinus confluentus* Curiosity Society Workshop. U.S. Fish and Wildlife Service, Lacey, Washington.

Chandler, J. A. 2000. Bull trout collections associated with the Mainstem Snake River and Summary of 1999 Findings. Idaho Power Company, Boise, Idaho. 4 p.

Chandler, J. A., M. A. Fedora, and T. R. Walters. 2001. Pre- and post-spawn movements and spawning observations of resident bull trout in the Pine Creek watershed, eastern Oregon. In: Brewin, M. K., A. J. Paul, and M. Monita, editors. Bull Trout II Conference Proceedings, Trout Unlimited Canada, Calgary, Alberta. p. 167–172.

Chandler, J. A., and T. J. Richter. 2000. Downstream fall migrations of native salmonids from major tributaries associated with the Hells Canyon Complex—Snake River. Draft Challenge Cost Share Report prepared for the Lower Snake River District Office, Bureau of Land Management. Idaho Power Company, Boise, Idaho.

Chang, K. 2003. Annual report of activities, permit TE-037794-0, for the year 2002. U.S. Forest Service. January 27, 2003.

Chatel, J. 2008. GIS shapefile (sf_boise_river.shp). Provided to the U.S. Fish and Wildlife Service by John Chatel, Aquatics Program Manager, Sawtooth National Forest, Twin Falls, Idaho.

Chelan County Public Utilities Department (Chelan PUD). 2006. Final bull trout telemetry report. Chelan, Douglas, and Grant Counties, Oregon.

City of Seattle. 2000. Fisheries Study of Chester Morse Lake, Masonry Pool, and major tributaries of the Upper Cedar River watershed. Final Report to City of Seattle. Prepared by R2 Resource Consultants, Redmond, Washington.

City of Tacoma, National Marine Fisheries Service, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs, Washington Department of Fish and Wildlife, Washington Department of Ecology, and Skokomish Indian Tribe. 2009. (City of Tacoma, NMFS, USFS, Service, BIA, WDFW, WDE, and Skokomish Indian Tribe) Settlement agreement for the Cushman Project. FERC Project no. 460.

Claire, E.W. and M.E. Gray. 1993. Bull trout in the John Day fish district. Unpublished report. Oregon Department of Fish and Wildlife, John Day, Oregon.

Clearwater Basin Bull Trout Technical Advisory Team (CBBTTAT). 1998a. Bull trout assessment for the Lochsa and Selway subbasins (including the Middle Fork of the Clearwater upstream of the South Fork). Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho, Boise, Idaho. August 1998.

Clearwater Basin Bull Trout Technical Advisory Team (CBBTTAT). 1998b. Main Salmon River (Chamberlain) subbasin bull trout problem assessment. Boise, Idaho. 50 p.

Clearwater Basin Bull Trout Technical Advisory Team (CBBTTAT). 1998c. North Fork Clearwater River basin bull trout problem assessment. Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho. May 1998.

Clearwater Basin Bull Trout Technical Advisory Team (CBBTTAT). 1998d. South Fork Clearwater River bull trout problem assessment. Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho. November 1998.

Clearwater BioStudies, Inc. (CBI). 1992. Habitat conditions and salmonid abundance in selected streams within the West Fork Squaw Creek drainage, Powell Ranger District, summer 1991. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 1994. Habitat conditions and salmonid abundance in eight streams within the Upper North Fork Clearwater Area, North Fork Ranger District, summer 1993. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 1996a. Habitat conditions and salmonid abundance in selected streams within the White Sand drainage, Powell Ranger District, summer 1994 and 1995.Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 1996b. Habitat conditions and salmonid abundance at monitoring stations on Crooked Fork, Pack Creek, Walton Creek, and Warm Springs Creek, Powell Ranger District, August 1995. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 1997. Habitat conditions and salmonid abundance in the upper Crooked Fork drainage, Powell Ranger District, summer 1996. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 1999. Habitat conditions and salmonid abundance in selected tributaries to Moose Creek, North Fork Ranger District, summer 1998. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Clearwater BioStudies, Inc. (CBI). 2000. Habitat conditions and salmonid abundance in streams within the Windy Creek drainage, North Fork Ranger District, summer 1999. Consultant report to the U.S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Cole, M. B., M. P. Killian, and A. P. Harris. 2003. Last fish surveys for eastern Washington Water Typing Model development. Final report prepared for Washington Department of Natural Resources and Washington Department of Fish and Wildlife. ABR, Inc., Environmental Research and Services, Forest Grove, Oregon. 16 p.

Collins, M., J. Jorgensen, and K. Murdoch. 2008. The integrated status and effectiveness monitoring program: Entiat River status and trend snorkel surveys and rotary smolt trap operation in Nason Creek, March 2007 through March 2008. Funded by Bonneville Power Administration. Yakama Nation, Toppenish, Washington. Project No. 2003-017-00. Contract No. 33338.

Confederated Salish and Kootenai Tribes and Montana Fish, Wildlife and Parks (CSKT and MFWP). 2004. Flathead subbasin plan. A report prepared for the Northwest Power and Conservation Council. Portland, Oregon.

Connor, E. 1999. Memo to Chelan Co PUD. Re: Lake Chelan (FERC #637)/Chelan Riverfield trip, November 8, 1999. R2 Resource Consultants, Redmond, Washington. Project Number 1168.

Connor, E. 2001. Email message to Judy De La Vergne, Fish and Wildlife Biologist, Central Washington Field Office, US Fish and Wildlife Service, Wenatchee, Washington, from E. Connor, R2 Resource Consultants, Redmond, Washington. Subject: Bull trout in Lower Chelan River. January 22, 2001. 1:53 p.m.

Connor, E. 2003a. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from E. Connor, Seattle City Light, Seattle, Washington. Subject: Local popn's in upper Skagit. January 24, 2003. 2:57 p.m.

Connor, E. 2003b. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from E. Connor, Seattle City Light, Seattle, Washington. Subject: Prey base in Upper Skagit core area. April 2, 2003. 2:29 p.m.

Connor, E. 2003c. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from E. Connor, Seattle City Light, Seattle, Washington. Subject: Spawning below Diablo Dam? October 17, 2003. 4:37 p.m.

Connor, E. 2003d. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from E. Connor, Seattle City Light, Seattle, Washington. Subject: Roland Creek observation. December 31, 2003. 9:10 a.m.

Contor, C., E. Hoverson, and P. Kissner. 1995. Umatilla basin natural production monitoring and evaluation. Prepared by the Confederated Tribes of the Umatilla Indian Reservation, Fisheries Program, for the U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon. Annual progress report 1993-1994. DOE/BP-75349-1.

Cook,J.R., and J.M. Hudson. 2008. Effective population size and connectivity of bull trout in the Imnaha River subbasin. 2006 Annual Report. U. S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington. 16 p.

Cook, J., J. M. Hudson, and B. Silver. 2009. Lewis River patch analysis. U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington. 15 p.

Cooper, R. 2002. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington from R. Cooper, Washington Department of Fish and Wildlife, Montesano, Washington. Subject: BT redds in Gray Wolf. November 12, 2002. 3:51 p.m.

Cooper, R. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from R. Cooper, Washington Department of Fish and Wildlife, Montesano, Washington. Subject: Char catch at Ennis Creek. February 14, 2003. 3:34 p.m.

Cooper, M., and S. Mallas. 2004. Peshastin Creek smolt monitoring program. Draft annual report. March 2004–December 2004. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Cope, E. D. 1879. The fishes of Klamath Lake, Oregon. American Naturalist 13:784–785.

Corbett, S. 2004. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Corbett, Olympic National Park, Port Angeles, Washington. Subject: Raft River BT. January 12, 2004. 2:12 p.m.

Corley, D. 1997. Upper South Fork Boise River key watershed assessment for bull trout. Boise National Forest, Boise, Idaho. 46 p.

Cox, B.S., and C.S. Guy. 2007. Sampling and tracking data for lake trout from Swan Lake, 2006. U.S. Geological Survey. Montana Cooperative Fishery Research Unit. Montana State University, Bozeman, Montana.

Coyle, T., D. Karl, and G. Mendel. 2000. Assessment of salmonids and their habitat conditions in the Walla Walla River basin. Project No. 1998-02000. BPA Report DOE/BP 00000485-1. 116 p.

Craig, S. 2000. Summary of reconnaissance snorkel survey, upper Carbon River, tributary of the Puyallup River, Washington. U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, Lacey, Washington.

Craig, S. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Craig, U.S. Fish and Wildlife Service, Lacey, Washington. Subject: Native char observation Cook Creek. March 03, 2003. 3:41 p.m.

Currence, N. 2003. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from N. Currence, Nooksack Tribe, Deming, Washington. Subject: Information about the char photo Scott Lentz forwarded this week. December 12, 2003.

Currence, N. 2007. Nooksack Tribe bull trout surveys within the Nooksack basin. Final report. Nooksack Tribe, Deming, Washington. Cooperative Agreement No. 1345103J008.

Dachtler, N. 2001. Data form for recording bull trout captured in the Humptulips River, June 1995.Reported to Shelley Spalding, U.S. Fish and Wildlife Service. U.S. Forest Service, Deschutes National Forest, Bend, Oregon.

Dachtler, N. 2002. Deschutes National Forest aquatic resource monitoring report. Deschutes National Forest, Bend, Oregon.

Dambacher, J. M., M. W. Buktenica, and G. L. Larson. 1992. Distribution, abundance, and habitat utilization of bull trout and brook trout in Sun Creek, Crater Lake National Park, Oregon. Proceedings of the Gearhart Mountain Bull Trout Workshop. Oregon Chapter of the American Fisheries Society, Corvallis, Oregon.

David Evans and Associates and R2 Resources Consultants. 1998a. Salmon Creek 1998 stream survey—Snohomish, Washington. Prepared for U.S. Forest Service, Mt. Baker–Snoqualmie National Forest, North Bend Ranger District, North Bend, Washington.

David Evans and Associates and R2 Resources Consultants. 1998b. Trout Creek 1998 stream survey—Snohomish, Washington. Prepared for U.S. Forest Service, Mt. Baker–Snoqualmie National Forest, North Bend Ranger District, North Bend, Washington.

DeHaan, P. 2009. Email message to Jeffrey Chan, Fish Biologist, U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, Lacey, Washington, from P. DeHaan, U.S. Fish and Wildlife Service, Abernathy Fish Technology Center, Longview, Washington. Subject: Species ID results. April 14, 2009. 8:30 a.m.

DeHaan, P., M. Diggs, W. Ardren. 2007. Genetic population structure of bull trout in the Malheur River Basin, Oregon. Draft report. Submitted to Lawrence Schwabe, Burns Paiute Tribe. U.S. Fish and Wildlife Service, Abernathy Fish Technology Center, Longview, Washington.

DeHaan, P., W. Ardren, and G. Mendel. 2007. Genetic analyses of bull trout from the Tucannon River basin, WA. Draft. U.S. Fish and Wildlife Service, Longview, Washington.

DeHann, P., M. Diggs, and W. Ardren. 2008. Analysis of genetic variation in Metolius River basin bull trout populations. Abernathy Fish Technology Center, Longview, Washington.

Deleray, M., L. Knotek, S. Rumsey, and T. Weaver. 1999. Flathead Lake and river system fisheries status report. Montana Fish, Wildlife and Parks, Kalispell, Montana.

Donaldson, I.J., and F.K. Cramer. 1971. Fish wheels of the Columbia. Binford and Mort Publishing, Portland, Oregon.

Downen, D. 2003. Unpublished survey data. Washington Department of Fish and Wildlife.

Downen, M. R. 2009. 2007 (sic) Skagit bull trout monitoring program. Annual report submitted to Seattle City Light, Seattle, Washington. Washington Department of Fish and Wildlife, La Connor, Washington.

Downs, C. 2009. 2009 annual report for bull trout recovery actions conducted in Glacier National Park, Montana. Prepared for U.S. Fish and Wildlife Service. Glacier National Park, Montana.

Doyle, J. 2008. Threatened and endangered species, annual bull trout (*Salvelinus confluentus*) monitoring report, 2007. North Fork Lewis River Hydroelectric Projects: Merwin, FERC no. 935; Yale, FERC no. 2071; Swift no. 1, FERC no. 2111; Swift No. 2, FERC no. 2213. PacifiCorp Energy, Portland, Oregon. 46 p.

Doyle, J. 2009a. Email message to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Doyle, PacifiCorp Energy, Portland, Oregon. Subject: Bull trout in Swift Creek. September 14, 2009. 08:39 a.m.

Doyle, J. 2009b. Threatened and endangered species, annual bull trout (*Salvelinus confluentus*) monitoring report, 2008. North Fork Lewis River Hydroelectric Projects: Merwin, FERC no. 935; Yale, FERC no. 2071; Swift no. 1, FERC no. 2111; Swift No. 2, FERC no. 2213. PacifiCorp Energy, Portland, Oregon. 45 pp.

Doyle, J., S. Zyskowski, J. Riedel, and R. Glesne. 2000. Chilliwack River monitoring 1998–1999 progress report. North Cascades National Park, Sedro-Woolley, Washington.

Drake, D. 1995. Summary of 1993 bull trout surveys in Mount Rainier National Park. National Park Service, Mount Rainier National Park, Ashford, Washington.

Dunnigan, J., J. DeShazer, L. Garrow, T. Ostrowski, M. Benner, and B. Marotz. 2007. Libby mitigation program, 2005 annual progress report: Mitigation for the construction and operation of Libby Dam. Bonneville Power Administration, Portland, Oregon. Project Number 1995-00400. BPA Document ID #P103655.

Dunnigan, J., J. DeShazer, L. Garrow, T. Ostrowski, M. Benner, and B. Marotz. 2008. Libby mitigation program, 2006 annual progress report: Mitigation for the construction and operation of Libby Dam. Bonneville Power Administration, Portland, Oregon. Project Number 1995-00400. BPA Document ID #P106973.

Dunnigan, J., J. DeShazer, L. Garrow, T. Ostrowski, and B. Marotz. 2004. Mitigation for the construction and operation of Libby Dam. Annual report 2003. Bonneville Power Administration, Portland, Oregon. Project No. 1995-00400. BPA Report DOE/BP 00006294-5. 225 p.

Dunnigan, J., J. DeShazer, L. Garrow, T. Ostrowski, and B. Marotz. 2005. Mitigation for the construction and operation of Libby Dam. Annual report 2004–2005. Bonneville Power Administration, Portland, Oregon. Project No. 1995-00400. BPA Report DOE/BP-00006294-7.

Dunnigan, J., B. Marotz, J. DeShazer, L. Garrow, T. Ostrowski. 2003. Mitigation for the construction and operation of Libby Dam. Bonneville Power Administration, Portland, Oregon. Project No. 1995-00400. BPA Report DOE/BP-00006294-3. 225 p.

DuPont, J. 1998. Memo to Don Aldrich, Senior Resource Manager-Forestry, Payette Lakes Area, Idaho Department of Lands, from J. DuPont, Idaho Department of Lands, Boise, Idaho. Re: Fish survey on Olive and Grouse Creeks. July 13, 1998

DuPont, J. 2000. Memo to Don Aldrich, Senior Resource Manager-Forestry, Payette Lakes Area, Idaho Department of Lands, from J. DuPont, Idaho Department of Lands, Boise, Idaho. Re: Evaluation of fisheries in Hornet, Johnson, and Goodrich Creeks. October 18, 2000.

DuPont, J. 2005. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Joe DuPont, Idaho Department of Fish and Game. Subject: Bull trout observations in Keokee Creek, Idaho. November 10, 2005.

DuPont, J., R.S. Brown, and D.R. Geist. 2007. Unique allucustrine migration patterns of a bull trout population in the Pend Oreille River drainage, Idaho. North American Journal of Fisheries Management 27:1268–1275.

DuPont, J., M. Liter, and N. Horner. 2008. Panhandle Region Little North Fork Clearwater River and Priest River tributary investigations 2004. Idaho Department of Fish and Game, Coeur d'Alene, Idaho.

DuPont, J., and T. Kennedy. 2000. Weiser River key watershed bull trout problem assessment. Southwest Basin Native Fish Watershed Advisory Group. February 2000. 61 p.

Dux, A.M. 2005. Distribution and population characteristics of lake trout in Lake McDonald, Glacier National Park: implications for suppression. M.S. thesis, Montana State University, Bozeman, Montana.

Ecotrust. 2002. Unpublished day snorkeling data from Hutchinson, Wanlick, and Maple Creeks. Ecotrust, Portland, Oregon.

Elle, S., R. Thurow, and T. Lamansky. 1994. Rivers and streams investigations job performance report. Job 2B. Angler exploitation of Rapid River bull trout and incidental harvest of bull trout by steelhead trout anglers. 25 p.

Ellings, C. 2004. Nisqually River native char (*Salvelinus* spp.) verification of presence, Ducks Unlimited in partnership with Nisqually National Wildlife Refuge. July 26, 2004.

Ereth, M. 2002. Documentation of observation of bull trout by Marty Ereth on February14, 2002, in the Wishkah River at river mile 22.8 and documentation of observation of bull trout by Paul Peterson on August 20, 2002, in Skokomish River at river mile 2.0. Skokomish Indian Tribe, Department of Natural Resources, Skokomish Nation, Washington.

Ereth, M. 2003a. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from M. Ereth, Skokomish Indian Tribe, Department of Natural Resources, Skokomish Nation, Washington. Subject: December 16 bull trout meeting notes (Skobob Creek bull trout). January 28, 2003. 10:43 a.m.

Ereth, M. 2003b. Memo to Shelley Spaulding (sic), Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from Marty Ereth, Skokomish Indian Tribe, Department of Natural Resources, Skokomish Nation, Washington. Re: Skokomish stream catalog excerpts (Lower Vance Creek and Lower Skokomish River/Nalley /Slough). March 19, 2003.

Ereth, M. 2003c. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from Marty Ereth, Skokomish Tribe, Department of Natural Resources, Skokomish Nation, Washington. Subject: Jerry Richert HPAs for NF Skokomish and mainstem dike breaches? July 1, 2003. 3:18 p.m.

Faler, M. P., and T. B. Bair. 1996. Distribution, migration patterns, and habitat characterization of adfluvial bull trout in tributaries to the North Fork Lewis River. Unpublished report. U.S. Forest Service, Wind River Ranger District, Carson, Washington.

Federal Energy Regulatory Commission (FERC). 1997. Final environmental impact statement, six proposed hydroelectric projects in the Nooksack River basin, Washington. Office of Hydropower Licensing, Washington D.C. FERC/EIS-0069F

Federal Energy Regulatory Commission (FERC). 2002. Final environmental impact statement, Warm Creek and Clearwater Creek hydroelectric projects, Washington. Office of Hydropower Licensing, Washington, D.C. FERC/EIS-120F.

Fies, T., B. Lewis, S. Marx, J. Fortune, and M. Manion. 1996. Upper Deschutes River subbasin fish management plan. Oregon Department of Fish and Wildlife. Bend, Oregon.

Fisher, B. 2010. 2010. Letter to U.S. Fish and Wildlife Service from B. Fisher. Re: Bull trout habitat and barriers. Bull trout proposed critical habitat comment letter no. 13.

Flatter, B. 1998. Life history and population status of migratory bull trout (*Salvelinus confluentus*) in Arrowrock Reservoir, Idaho. Prepared for U.S. Bureau of Reclamation. Idaho Department of Fish and Game, Nampa, Idaho. 78 p.

Fransen, S. 2006. Data form for recording bull trout/Dolly Varden observations on December 4, 2004, in the lower mainstem Humptulips River. Reported to Shelley Spalding, U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, Olympia, Washington from Steve Fransen, NOAA Fisheries.

Fredenberg, W. 2002. Further evidence that lake trout displace bull trout in mountain lakes. Intermountain Journal of Sciences 8 (3):143–152.

Fredenberg, W., M.H. Meeuwig, and C.S. Guy. 2007. Action plan to conserve bull trout in Glacier National Park, Montana. U.S. Fish and Wildlife Service, Kalispell, Montana.

Freudenthal, J. 2000. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Freudenthal, Clallam County, Port Angeles, Washington. Subject: Bull trout sightings. February 10, 2000. 12:48 p.m.

Freudenthal, J. 2001. Data form for recording bull trout/Dolly Varden observations in Siebert Creek in May 1999. Submitted by Joel Freudenthal, Jefferson County.

Freymond, B. 2001. Data form for recording bull trout/Dolly Varden observations in mid-1990s in Goodman Creek at river mile 1.4. Submitted by Bill Freymond, Washington Department of Fish and Wildlife.

Freymond, B. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from B. Freymond, Washington Department of Fish and Wildlife, Montesano, Washington. Subject: Tasks and new genetics paper (Cedar and Kalaloch Creek bull trout). January 16, 2003. 12:49 p.m.

Gamett, B.L. 1999. The history and status of fishes in the Little Lost River drainage, Idaho. Lost River Ranger District, Salmon-Challis National Forest; Upper Snake Region, Idaho Department of Fish and Game; Idaho Falls District, Bureau of Land Management; Sagewillow, Inc. May 1999. 313 p.

Geist, D.R., R.S. Brown, A.T. Scholz, and B. Nine. 2004. Movement and survival of radio-tagged bull trout near Albeni Falls Dam. Prepared for the Department of the Army, Seattle District, Corps of Engineers, Seattle, Washington.

Germond, J., T. Bailey, C. Contor, P. Kissner, M. Northrop, and J. Sanchez. 1996. Bull trout population summary Umatilla River basin. Oregon Department of Fish and Wildlife, Pendleton, Oregon.

Gidley, C. 2007. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Cathy Gidley, Idaho Department of Fish and Game. Subject: Bull trout observations in Keokee Creek, Idaho. September 17, 2007.

Gidley, C. 2009. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Cathy Gidley, Idaho Department of Fish and Game. Subject: Bull trout observations in the Kootenai River basin, Idaho. April 1, 2009.

Gilpin, M. 1997. Letter to Shelly Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from M. Gilpin, Montana Department of Fish, Wildlife and Parks, Helena, Montana. Re: Bull trout connectivity on the Clark Fork River. 5 pages.

Ging, G. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from G. Ging, U.S. Fish and Wildlife Service, Lacey, Washington. Subject: Salmon River bull trout update. February 13, 2003. 8:23 a.m.

Glasgow, J. 2005a. Letter from J. Glasgow, Washington Trout, Duvall, Washington. Re: Bull trout observations in the Snoqualmie River, King County, Washington. July 13, 2005.

Glasgow, J. 2005b. Tolt River snorkel surveys 1989–2003 char observed during summer steelhead surveys. Unpublished data. Washington Trout, Duvall, Washington. July 19, 2005.

Glesne, R. 1993. Dolly Varden/bull trout and brook trout records for North Cascades National Park Complex. National Park Service.

Goetz, F. 1989. Biology of the bull trout, *Salvelinus confluentus*, a literature review. U.S. Department of Agriculture, Forest Service, Willamette National Forest, Eugene, Oregon.

Goetz, F. 1991. Bull trout life history and habitat study. Final report to Deschutes National Forest 43-04GG-9-1371. Oregon State University, Corvallis, Oregon.

Goetz, F. 2003. Unpublished ultrasonic telemetry data from the Snohomish River basin and Puget Sound. U.S. Army Corps of Engineers, Seattle, Washington.

Goetz, F., E. Jeanes, and E. Beamer. 2004. Bull trout in the nearshore. Preliminary draft (June). U.S. Army Corps of Engineers, Seattle, Washington.

Goetz, F., E. Jeanes, and C. Morello. 2007. Puget Sound bull trout migration and habitat use study, Nooksack River and estuary and northeast Puget Sound nearshore. Progress report prepared for the U.S. Fish Wildlife Service. U.S. Army Corps of Engineers, Seattle, Washington, and R2 Resource Consultants, Redmond, Washington. USFWS Interagency Agreement # 13410-6-H001.

Gonzales, D. 1998. Evaluate the life history of native salmonids in the Malheur Basin, 1998 annual report. Burns Paiute Tribe, Burns Oregon, and Bonneville Power Administration, Portland, Oregon. Project No. 9701900.

Gray, S. W. 2007. Determine the origin, movements, and relative abundance of bull trout in Bonneville Reservoir. Washington Department of Fish and Wildlife. BPA Contract No. 000026628. Project No. WA2003-06500.

Green, B. 1989. Glacier Creek small hydro project (FERC No. 4738) additional fish information. U.S. Forest Service. December 29, 1989.

Greenberg, E., and M. Appy. 2003. Memorandum from R2 Resource Consultants. Re: Bull trout study A-38 progress report, Baker River hydroelectric project. R2 Resource Consultants, Inc., Redmond, Washington. November 18, 2003.

Grisak, G., and B. Marotz. 2003. South Fork Flathead watershed westslope cutthroat trout conservation program. 2002 annual report. Bonneville Power Administration, Portland, Oregon. BPA Project 1991-01903. BPA Report DOE/BP-00005043-1. 143 p.

Gross, M. 2002. Bull trout investigations on the northern Washington coast. Field work in the fall of 2001. Washington Department of Fish and Wildlife.

Grunder, S. 1999. Hells Canyon group key watersheds bull trout problem assessment. Southwest Basin Native Fish Technical Group, Nampa, Idaho. 68 p.

Grunder, S. 2009. 2009 Idaho bull trout conservation program plan and 2008 Idaho bull trout take report. Idaho Department of Fish and Game, Boise, Idaho.

Haddix, T., and G. Gillin. 2006. Fish behavior in the tailrace of Thompson Falls Dam. Results of 2005 radio telemetry. Final report. Prepared for PPL Montana. GEI Consultants, Missoula, Montana.

Hammer, S. 2003. Adult bull trout escapement from WDFW facilities statewide (1995–2001). Unpublished data. Washington Department of Fish and Wildlife.

Hansen, B., and J. DosSantos. 1997. Distribution and management of bull trout populations on the Flathead Indian Reservation, Western Montana, USA. In: Mackay, W. C., M. K. Brewin, and M. Monita, editors. 1997. Proceedings—Friends of the Bull Trout Conference. Bull Trout Task Force (Alberta), c/o Trout Unlimited Canada, Calgary.

Hansen, B., and L. Evarts. 2005. Hungry Horse mitigation: Flathead Lake 2003–2004 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 199101901. BPA Document #DOE/BP-00004100-4.

Hansen, B., and L. Evarts. 2006. Hungry Horse mitigation: Flathead Lake 2004–2005 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 199101901. BPA Document #DOE/BP-00019923-1.

Hansen, B., and L. Evarts. 2008. Hungry Horse mitigation: Flathead Lake annual progress report 2007. Bonneville Power Administration, Portland, Oregon. Project No. 199101901. BPA Document ID #P109541.

Hanson, J., and E. Schriever. 2006. Regional fisheries management investigations Lochsa River bull trout. Distribution and life history characteristics of bull trout in the Lochsa River basin. Annual report 2005. Idaho Department of Fish and Game, Boise, Idaho.

Hanson, J., E. Schriever, and J. Erhardt. 2006. Regional fisheries management investigations North Fork Clearwater River bull trout. Bull trout life history investigations in the North Fork Clearwater River basin. Final report 2000–2006. Idaho Department of Fish and Game, Boise, Idaho.

Hardy, R., R. Ryan, and J. Fredericks. 2008. Chapter 6. Bull trout redd counts. Draft. Idaho Department of Fish and Game, Boise, Idaho.

Harke, V. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from V. Harke, U.S. Fish and Wildlife, Lacey, Washington. Re: Salmon River bull trout. December 12, 2003. 11:01 a.m.

Hartill, J., and S. Jacobs. 2007. Distribution and abundance of bull trout in the Sprague River (Upper Klamath Basin), 2006. Oregon Department of Fish and Wildlife, Corvallis, Oregon.

Hawdon, L. 2008. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Lisa Hawdon, U.S. Forest Service. Subject: Bull trout observations in the St. Joe River basin, Idaho. June 25, 2008.

Hawdon, L. 2009. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Lisa Hawdon, U.S. Forest Service. Subject: Bull trout redd counts in the St. Joe River basin, Idaho. October 20, 2009.

Hemmingsen, A. R. 1999. Middle Fork John Day bull trout sampling, 1999 draft summary. Unpublished draft report. Oregon Department of Fish and Wildlife, Corvallis, Oregon.

Hemmingsen, A. R., D.V. Buchanan, and P.J. Howell. 1996. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1996 annual report. Project No. 1994-054-00. Bonneville Power Administration, Portland, Oregon.

Hemmingsen, A. R., B. L. Bellerud, D.V. Buchanan, S. L. Gunckel, J. K. Shappart, and P. J. Howell. 2001. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1997 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 95-54. Contract number 94B134342.

Hemmingsen, A. R., B. Bellerud, S. L. Gunckel, and P. J. Howell. 2001. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1998 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 1995-054-00.

Hemmingsen, A. R., S. L. Gunckel, and P. J. Howell. 2001. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 1999 annual report. Project No. 1994-054-00. BPA Report DOE/BP-34342-3.

Hemmingsen, A. R., S. L. Gunckel, P. M. Sankovich, and P. J. Howell. 2001. Bull trout life history, genetics, habitat needs, and limiting factors in central and northeast Oregon, 2000 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 1994 054-00. BPA Report DOE/BP- 00004101-1.

Hemstrom, S. 2010. Letter to U.S. Fish and Wildlife Service from Chelan County PUD, Wenatchee, Washington. Re: Habitat in Chelan River and consultation for FERC relicensing. Proposed Bull Trout Critical Habitat Rule Comment Letter No. 260.

Hensler, M., and N. Benson. 2008. Angler survey of experimental recreational bull trout fishery for Lake Koocanusa, Montana, 2007–2008. Montana Fish, Wildlife and Parks, Kalispell, Montana.

Hering, D., and M. Buktenica. 2008. Sun Creek fish inventory and bull trout movement study. Crater Lake National Park Fisheries Program 2008 annual report, Section 10(a)(1)(a).Crater Lake National Park Recovery Permit # TE-181716.

Herzog, B. 1993. The White River Highway 410's hidden treasure. Salmon Trout Steelheader magazine. Frank Amato Publications, Inc., Portland, Oregon. October–November.

Hilgert, P. 2000. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from P. Hilgert, R2 Resource Consultants, Redmond, Washington. Subject: Bull trout training (Bull trout observations in Quilcene, Dosewallips, Duckabush, and Hamma Hamma). August 25, 2000. 10:37 a.m.

Hillman, T. 2009. Memo from T. Hillman. Re: Abundance and total numbers of Chinook salmon and trout in the Chiwawa River Basin, Washington, 2008. In:Hillman, T., M. Miller, J. Miller, M. Tonseth, T. Miller, K. Truscott, and A. Murdoch. 2009. Monitoring and evaluation of the Chelan PUD Hatchery Program. 2008 annual report. Prepared for: HCP Hatchery Committee, Wenatchee, Washington.

Hiss, J.M., and R.C. Wunderlich. 1994. Salmonid availability and migration in the middle Elwha River system. U.S. Fish and Wildlife Service, Western Washington Fishery Resource Office, Olympia, Washington.

Hooper, T. 2004. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from T. Hooper, NOAA Fisheries, Lacey, Washington. Subject: Wynoochee. January 26, 2004. 9:41 a.m.

Horn, C., and T. Tholl. 2008. Native salmonid abundance and tributary habitat restoration monitoring. Comprehensive report 2005–2007, including summarized data 1999–2007. Avista Corporation, Noxon, Montana.

Huddle, D. 1995. Internal Washington Department of Fish and Wildlife memorandum on native char and redd observations through 1994. Washington Department of Fish and Wildlife. February 2, 1995.

Humling, M. 2009. Eightmile Creek bull trout survey and barrier observations. U.S. Forest Service, Methow Ranger District, Winthrop, Washington.

Idaho Department of Environmental Quality (IDEQ). 2001. Middle Salmon River—Chamberlain Creek subbasin assessment and Crooked Creek total maximum daily load. April 30, 2001. IDEQ, Boise, Idaho. 165 p.

Idaho Department of Fish and Game (IDFG). 1999. Monitoring bull trout and westslope cutthroat movements in the St. Joe River using radio telemetry. Draft. IDFG, Coeur d'Alene, Idaho.

Idaho Department of Fish and Game (IDFG). 2001. South Fork Clearwater River bull trout investigations. Unpublished manuscript. IDFG, Lewiston, Idaho.

Idaho Department of Fish and Game (IDFG). 2002. Fish information (FIS) GIS database, parr monitoring database, and Region 7 database, Arcveiw geographic information database. IDFG, Boise, Idaho. Compact disc.

Idaho Department of Fish and Game General Parr Monitoring (IDFG/GPM). 2002. Snorkel survey database for the Clearwater and Salmon drainages. Idaho Department of Fish and Game, Boise, Idaho.

Idaho Office of Species Conservation (IDOSC). 2010. Letter to U.S. Fish and Wildlife Service from IDOSC. Re: State of Idaho's comments to Federal Register FWS-R1-2009-0085 Proposed Rules Endangered and Threatened Wildlife and Plants, revised designation of critical habitat for bull trout in the conterminous United States. April 5, 2010.

Jeanes, E., and C.M. Morello. 2006. Native char utilization, lower Chehalis River and Grays Harbor estuary, Aberdeen, Washington. Prepared for U.S. Army Corps of Engineers, Seattle District. R2Resource Consultants, Redmond, Washington.

Jeanes, E., C.M. Morello, and M.H. Appy. 2003. Native char utilization, lower Chehalis River and Grays Harbor estuary, Aberdeen, Washington. Prepared for U.S. Army Corps of Engineers, Seattle District. R2 Resource Consultants, Redmond, Washington.

Jesson, D., D. Biffard, E. Connor, and T. Blackbird. 2002. Upper Skagit watershed native char project: year three study (2003–2004).

Jimenez, J., and D. Zaroban. 1998. Deadwood, Middle Fork and South Fork Payette Rivers key watersheds bull trout problem assessment. Southwest Basin Native Fish Watershed Advisory Group. November 1998. 102 p.

Johnson, D.W., R. R. Petersen, D. R. Lycan, J. W. Sweet, M. Neuhaus, and A. L. Schaedel. 1985. Atlas of Oregon lakes. Oregon State University Press, Corvallis, Oregon.

Johnson, G.L. 1993. Nevada bull trout historical account. Nevada Department of Wildlife, Elko, Nevada. 2 p.

Johnson, G.L. 1996. Slide Creek drainage, East Fork Jarbidge River survey report, July 27–August 10, 1993. Nevada Department of Wildlife, Elko, Nevada. 7 p.

Johnson, G.L. 1999. The status of the bull trout in Nevada. Nevada Division of Wildlife, Reno, Nevada. 17 p. + maps.

Johnson, G.L., and R. Haskins. 2000. Section 6 annual project report, recovery action bull trout, Eastern Region 1999. Nevada Division of Wildlife, Reno, Nevada. 16 p. + appendices.

Johnson, G.L., and D.E. Weller. 1994. The status of the bull trout in Nevada. Presented to the U.S. Fish and Wildlife Service, Reno, Nevada. Nevada Department of Conservation and Natural Resources, Division of Wildlife, Reno, Nevada. 14 p.

Johnston, J. 1989. Ross Lake: the fish and fisheries. Washington Department of Wildlife, Fisheries Management Division, Olympia, Washington. Report 89-6.

Johnston, J. 1999. Email message to Fred Seavey, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Olympia, Washington, from J. Johnston, Washington Department of Fish and Wildlife, La Connor, Washington. Subject: Fish surveys on Clearwater and Warmwater Creeks. August 12, 1999. 10:13 a.m.

Johnston, J. 2000. Internal Washington Department of Fish and Wildlife letter. Re: Boulder Creek and char use. Washington Department of Fish and Wildlife, La Connor, Washington. August 2, 2000.

Kalispel Natural Resource Department and Washington Department of Fish and Wildlife (KNRD and WDFW). 1997. Kalispel resident fish project, annual report 1995. Prepared for Bonneville Power Administration, Portland, Oregon. Project Number 95-01.

Keizer, L., ed. 1990. Henning's Washington fishing guide. Helstrom Publications, Inc., Portland, Oregon.

Kellet, M. 2008. GIS Shapefile (BT_streams_08update.shp). Provided to the U.S. Fish and Wildlife Service by Michael Kellet, Forest Fisheries Biologist, Boise National Forest, Boise, Idaho. July 2008.

Kelly Ringel, B. M. 1997. Analysis of fish populations in Icicle Creek, Trout Creek, Jack Creek, Peshastin Creek, Ingalls Creek, and Negro Creek, Washington 1994 and 1995. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B., and L. Murphy. 1999. Survey of fish populations in French Creek, Washington 1998. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M. 2003. Survey of fish populations in Chiwaukum Creek, Washington 2001. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M. 2007a. Progress report Icicle Creek water temperatures: November 1, 2005–October 31, 2006. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M. 2007b. Memo on Alder Creek and Beaver Creek fish exclusion projects prior to culvert replacements. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. 2010a. 2008 Wenatchee and Entiat watersheds bull trout spawning ground surveys. Draft, in review. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. 2010b. 2007 Wenatchee and Entiat watersheds bull trout spawning ground surveys. Draft, in review. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M., and J. DeLa Vergne. 2000. Wenatchee basin bull trout radio telemetry study updates. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M., and J. DeLa Vergne. 2001. Wenatchee basin bull trout radio telemetry study updates. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kelly Ringel, B. M., and J. DeLa Vergne. 2010. Seasonal movements of adult bull trout in the Wenatchee River Basin, Washington. Draft, in review. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Kenney, D. 2002. Bull trout sampling summary (4th field Hydrologic Unit Code) South Fork Boise River. U.S. Forest Service, Sawtooth National Forest, Fairfield Ranger District. January 2002.

King County Department of Natural Resources (KCDNR). 2000. Literature review and recommended sampling protocol for bull trout in King County. KCDNR, Seattle, Washington.

Klott, J. 1994. Memo from J. Klott, Bureau of Land Management, to Bull Trout Task Force participants. Re: February 2, 1994 Bull Trout Task Force meeting, Twin Falls, Idaho. 4 p. February 25, 1994.

Knotek, L., R. Rashap, and D. Schmetterling. 2004. Rattlesnake Creek fisheries assessment and enhancement 1999–2003. Montana Fish, Wildlife and Parks, Missoula, Montana.

Kootenai Tribe of Idaho and Montana Fish, Wildlife and Parks (KTOI and MFWP). 2004. Kootenai subbasin plan. Prepared for: Northwest Power and Conservation Council, Portland, Oregon.

Kraemer, C. 2001. Draft core area description for Lower Skagit core area. Washington Department of Fish and Wildlife, Olympia, Washington.

Kraemer, C. 2003a. Email message and attachment to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from C. Kraemer, Washington Department of Fish and Wildlife, Mill Creek, Washington. Subject: Comments on Puget Sound plan. January 14, 2003. 2:29 p.m.

Kraemer, C. 2003b. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from C. Kraemer, Washington Department of Fish and Wildlife, Mill Creek, Washington. Subject: Samish River. April 25, 2003. 8:00 a.m.

Kraemer, C. 2003c. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from C. Kraemer, Washington Department of Fish and Wildlife, Mill Creek, Washington. Subject: Re: few tributary questions (Alma and Irene Creeks). October 9, 2003. 11:14 a.m.

Kraemer, C. 2003d. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from C. Kraemer, Washington Department of Fish and Wildlife, Mill Creek, Washington. Subject: Chowich and Martin Creeks on Sauk. April 4, 2003. 2:25 p.m.

Ladley, R., E. Marks, M. Parnel, A. Berger, T. Sebastian, and B. Smith. 2007. Movement and spawning distribution of bull trout within the White River, Washington. Draft report. Puyallup Tribal Fisheries Department, Tacoma, Washington.

Leary, R., S. Painter, and S. Amish. 2008. Unpublished file report documenting hybrid status from char sampled in four streams in the Kootenai River drainage. University of Montana Conservation Genetics Laboratory, Division of Biological Sciences, University of Montana, Missoula, Montana.

Leary, R., S. Painter and A. Lodmell. 2009. Unpublished file report documenting hybrid status from char sampled in streams in the Bitterroot River drainage. University of Montana Conservation Genetics Laboratory, Division of Biological Sciences, University of Montana, Missoula, Montana.

Lesko, E. 2000. Results of bull trout monitoring activities in the North Fork Lewis River—1999. Unpublished report. PacifiCorp, Hydro Relicensing, Portland, Oregon. 6 p.

Lesko, E. 2002. Results of bull trout monitoring activities in the North Fork Lewis River—2001. PacifiCorp Hydro Relicensing, Portland, Oregon. 14 p.

Lesko, E. 2003. Results of bull trout monitoring activities in the North Fork Lewis River—2002. PacifiCorp Hydro Relicensing, Portland, Oregon.

Liermann, B. W. 2003. Thompson River fishery investigations: comprehensive report—2000 to 2002. Montana Tributary Habitat Acquisition and Recreational Fishery Enhancement Program, Appendix B. Montana Fish, Wildlife and Parks, Thompson Falls, Montana. Prepared for: Avista Corporation, Noxon, Montana.

Liermann, B., J. Lindstrom, and R. Kreiner. 2009. An assessment of fish populations and riparian habitat in tributaries of the upper Clark Fork River Basin: phase II. Montana Fish, Wildlife and Parks, Helena, Montana.

Light, J., L. Herger, and M. Robinson. 1996. Upper Klamath Basin bull trout conservation strategy. Part 1: a conceptual framework for recovery. Final. Klamath Basin Bull Trout Working Group, Klamath Falls, Oregon.

Little Lost River Interagency Technical Advisory Team (LLRITAT). 1998. Little Lost key watershed bull trout problem assessment. Prepared for the State of Idaho. June 29, 1998. 176 p.

Lockard, L., and M. Carlson. 2005. Brown trout exclusion study—East Fork Bull River. Final report 2003–2005. Fish passage / native salmonid restoration program. Avista Corp., Spokane, Washington.

Lockard, L., M. Carlson, and L. Hintz. 2003. Fisheries investigations and monitoring. Annual progress report—2002. Fish passage / native salmonid restoration program. Avista Corp., Spokane, Washington.

Lockard, L., M. Carlson, and L. Hintz. 2004. Fisheries investigations and monitoring. Annual progress report—2003. Fish passage / native salmonid restoration program. Avista Corp., Spokane, Washington.

Lockard, L. and S. Moran. 2006. Proposed non-native fish suppression project in the East Fork Bull River 2006–2013. Prepared pursuant to: Clark Fork Settlement Agreement, Appendix C. Avista Corp., Spokane, Washington.

Lockard, L., R. Weltz, J. Stover, and S. Skaggs. 2008. Tributary trapping and downstream juvenile bull trout transport program. Annual progress report—2008. Fish passage / native salmonid restoration program, Appendix C. Avista Corp., Noxon, Montana.

Lockard, L., R. Weltz, and L. Stender. 2004. Downstream juvenile bull trout transport program. Annual progress report—2003. Fish passage / native salmonid restoration program, Appendix C. Avista Corp., Spokane, Washington.

Lohr, S., S. Duke, T. Cummings, and W. Fredenberg. 2001. Listing of bull trout as a threatened species in the United States and initial steps in recovery planning. In: M. K. Brewin, A. J. Paul, and M. Monita, editors. Proceedings—Bull Trout II Conference. p. 199–205.

Lummi Nation. 2003. Unpublished native char data from Hovander Trap, 1994–2002.

M.A. Whelen and Associates Ltd and The Steelhead Society Habitat Restoration Corporation (TSSHRC). 1996. Chilliwack watershed stream inventory and level 1 fish habitat assessment, late summer 1995. Prepared for Ministry of Environment Lands and Parks, Lower Mainland, Region 2, Surrey, British Columbia.

Mahoney, B. D, M. B. Lambert, T. J. Olsen, E. Hoverson, P. Kissner, and J. D. M. Schwartz. 2006. The Walla Walla Basin natural production monitoring and evaluation project: 2004–2005 progress report. Prepared for: U.S. Department of Energy, Bonneville Power Administration, Portland, Oregon. Confederated Tribes of the Umatilla Indian Reservation, Fisheries Program, Pendleton, Oregon. BPA Project Number 2000-039-00.

Marks, E. 2009. Email message and attachments to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, Puyallup Tribal Fisheries. Subject: Bull trout data for 2008. May 12, 2009. 8:13 a.m.

Marks, E.L., T.G. Sebastian, R.C. Ladley, and B.E. Smith. 2002. 2001–2002 annual salmon, steelhead and char report: Puyallup River Watershed. Puyallup Tribal Fisheries, Puyallup, Washington.

Martin, S. W., M. A. Schuck, K. D. Underwood, and A. T. Scholz. 1992. Investigations of bull trout (*Salvelinus confluentus*), steelhead trout (*Oncorhynchus mykiss*), and spring Chinook salmon (*O. tshawytscha*) interactions in Southeast Washington Streams.1991 annual report. U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife. Project No. 90-53. Contract No. De B179-91BP17758. 206 p.

Maudlin M., T. Coe, N. Currence, and J. Hansen. 2002. South Fork Nooksack River Acme-Saxon reach restoration planning. Lummi Nation and Nooksack Tribe, Bellingham and Deming, Washington.

Mayer, K., M. Schuck, and D. Hathaway. 2007. Assess salmonids in the Asotin Creek watershed. 2006 annual report. Prepared for Bonneville Power Administration, Portland, Oregon. Project Number 2002-053-00.

Mayer, K., M. Schuck, and D. Hathaway. 2008. Assess salmonids in the Asotin Creek watershed. 2007 annual report. Prepared for Bonneville Power Administration, Portland, Oregon. Project Number 2002-053-00.

Mayer, K., M. Schuck, S. Wilson, and B.J. Johnson. 2006. Assess salmonids in the Asotin Creek watershed. 2005 annual report. Prepared for Bonneville Power Administration, Portland, Oregon. Project Number 2002-053-00.

McGee, M., J. Lund, L. Pillers, and R. Nelson. 2001. Biological assessment for the potential effects of managing the Payette National Forest in the Weiser River section 7 watershed on Columbia River bull trout and biological evaluation for westslope cutthroat trout. In: Volume 3, ongoing and new action. Payette National Forest, McCall, Idaho. 131 p.

McHenry, M. 2002. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from M. McHenry, Lower Elwha S'Klallam Tribe, Port Angeles, Washington. Subject: Bull trout data. December 2, 2002. 3:36 p.m.

McHenry, M. 2003. Email message and attachment to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from M. McHenry, Lower Elwha S'Klallam Tribe, Port Angeles, Washington. Subject: Elwha comments (Little River temperature data). February 14, 2003. 3:33 p.m.

McLeod, K., editor. 1944. Fishing guide to the Northwest. Sixth edition. Western Publishing Co., Inc., Seattle, Washington.

McMahon, T., A. Zale, J. Selong, and R. Barrows. 1999. Growth and survival temperature criteria for bull trout. Annual report 1999 (year two).Montana State University and the U.S. Fish and Wildlife Service, Bozeman Fish Technology Center, Bozeman, Montana.

McMichael, G. 2004. Email message to Eric Anderson, Washington Department of Fish and Wildlife, Yakima Regional Office, Yakima, Washington, from Geoffrey McMichael, Battelle Pacific Northwest Laboratory, Richland, Washington. Subject: Bull trout Andrew Murdoch caught in the mainstem Yakima River below I-82.

McMillan, J. 2002. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. McMillan, Wild Salmon Center, Portland, Oregon. Subject: Finally! (Bull trout observation in Nolan Creek). May 9, 2002. 11:52 a.m.

Meacham, P. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from P. Meacham, Washington Department of Fish and Wildlife. Subject: Lower Dungeness BT (bull trout observations during non-native, Atlantic salmon, fish surveys). October 1, 2003. 11:23 a.m.

Meeuwig, M.H. 2008. Ecology of lacustrine-adfluvial bull trout populations in an interconnected system of natural lakes. Ph.D. dissertation. Montana State University, Bozeman, Montana.

Meeuwig, M.H., C.S. Guy, and W.A. Fredenberg. 2007a. Research summary for action plan to conserve bull trout in Glacier National Park, Montana. U.S. Geological Survey, Montana Cooperative Fishery Research Unit, Department of Ecology, Montana State University, Bozeman, Montana.

Meeuwig, M.H., C.S. Guy, and W.A. Fredenberg. 2007b. Sampling appendix for action plan to conserve bull trout in Glacier National Park, Montana. U.S. Geological Survey, Montana Cooperative Fishery Research Unit, Department of Ecology, Montana State University, Bozeman, Montana.

Meeuwig, M.H., C.S. Guy, and W.A. Fredenberg. 2008a. Influence of landscape characteristics on fish species richness among lakes of Glacier National Park, Montana. Intermountain Journal of Sciences 14(1-3):1–16.

Meeuwig, M.H., C.S. Guy, S.T. Kalinowski, and W.A. Fredenberg. 2008b. Landscape influences on genetic differentiation among bull trout populations in a stream-lake network. In press. Molecular Ecology.

Mendel, G. 2008. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Steve Martin, Snake River Salmon Recovery Board. Subject: Tucannon River bull trout population summary. July 16, 2008.

Mendel, G., D. Karl, T. Coyle, and M. Gembala. 2001. Brief assessment of salmonids and their habitats in George, Ten Mile, and Couse Creeks in Asotin County, 2000. Washington Department of Fish and Wildlife, District Fish Management. Report # 4 for Asotin County Conservation District. Dayton, Washington.

Mendel, G., J. Trump, and M. Gembela. 2003. Assessment of salmonids and their habitat conditions in the Walla Walla River basin of Washington: 2002 annual report. Washington Department of Fish and Wildlife, Dayton, Washington.

Mendel, G, J. Trump, and M. Gembala. 2006. Assessment of salmonids and their habitat conditions in the Walla Walla River basin within Washington: 2005 annual report (March 1, 2005 to March 1, 2006). Washington Department of Fish and Wildlife, Fish Program, Fish Management Division, Dayton, Washington. Project Number 199802000. Bonneville Power Administration, Portland, Oregon. Contract Number 00021599.

Mendel, G., J. Trump, M. Gembala, and C. Fulton. 2006. Baseline assessment of salmonids in tributaries of the Snake and Grande Ronde rivers in southeast Washington. 2005 final report. Prepared for: Asotin County Conservation District, United States Fish and Wildlife Service. Washington Department of Fish and Wildlife, Fish Program, Fish Management Division, Dayton, Washington.

Mendel, G., J. Trump, M. Gembala, S. Blankenship, and T. Kassler. 2007. Assessment of salmonids and their habitat conditions in the Walla Walla River basin within Washington: 2006 annual report (March 1, 2006 to March 1, 2007). Washington Department of Fish and Wildlife Fish Program, Fish Management Division, Dayton, Washington. Project Number 199802000. Bonneville Power Administration, Portland, Oregon. Contract Number 00021599.

Mendel, G., J. Trump, M. Gembala, and C. Fulton. 2008. Baseline assessment of salmonids in tributaries of the Snake and Grande Ronde rivers in southeast Washington. 2006–2007 final report. Prepared for: Asotin County Conservation District, United States Fish and Wildlife Service. Washington Department of Fish and Wildlife, Fish Program, Fish Management Division, Dayton, Washington.

Metzger, R. 2009. Email message to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from R. Metzger, Olympic National Forest, U.S. Forest Service, Olympia, Washington. Subject: Bull trout caught in the Wynoochee. September 8, 2009. 12:28 p.m.

Meyer, W. 2004. Email to Judy DeLa Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, from William Meyer, Washington Department of Fish and Wildlife, Yakima Regional Office, Ellensburg, Washington. Subject: Bull trout habitat conditions within Taneum Creek.

Meyer, J. and D. Averill. 1994. Evaluate status and trends of selected native fish stocks in Olympic National Park. Progress report.

Meyer, J., and C. Hamstreet. 2001. Data form for recording bull trout/Dolly varden observations. 1980s Quilcene River observation. U.S. Fish and Wildlife Service, Lacey, Washington.

Mid Columbia River Fishery Resource Office (MCRFRO). 2006. 2005 annual permit report: U.S. Fish and Wildlife Service, MCRFRO, Leavenworth, Washington. USFWS Permit MCFRO-9.

Mid Columbia River Fishery Resource Office (MCRFRO). 2007. 2006 annual permit report. U.S. Fish and Wildlife Service, MCRFRO, Leavenworth, Washington. USFWS Permit MCFRO-10

Mid Columbia River Fishery Resource Office (MCRFRO). 2008. 2007 annual permit report. U.S. Fish and Wildlife Service, MCRFRO, Leavenworth, Washington. USFWS Permit MCFRO-11.

Miller, T. 2008. Memo from T. Miller. Re: Fish trapping at the Chiwawa, Upper Wenatchee, and Lower Wenatchee smolt traps during 2008. In: Hillman, T., M. Miller, J. Miller, M. Tonseth, T. Miller, K. Truscott, and A. Murdoch. 2009. Monitoring and evaluation of the Chelan PUD Hatchery Program. 2008 annual report. Prepared for: HCP Hatchery Committee, Wenatchee, Washington.

Molesworth, J. 1997. Memo to Barb Kelly, U.S. Fish and Wildlife Service, from Jennifer Molesworth, Fisheries Biologist, U.S. Forest Service, Methow Valley Ranger District, Winthrop, Washington. Re: Listing recent bull trout redd counts and bull trout observations in the Methow River basin.

Mogen, J.T., and L.R. Kaeding. 2004. Bull trout (*Salvelinus confluentus*) use of tributaries of the Saint Mary River, Montana. U.S. Fish and Wildlife Service, Bozeman, Montana.

Mogen, J.T., and L.R. Kaeding. 2005a. Identification and characterization of migratory and nonmigratory bull trout populations in the St. Mary River drainage, Montana. Transactions of the American Fisheries Society 134:841–852.

Mogen, J.T., and L.R. Kaeding. 2005b. Large-scale, seasonal movements of radio tagged, adult bull trout in the St. Mary River drainage, Montana and Alberta. Northwest Science 79(4):246–253.

Mogen, J.T., and L.R. Kaeding. 2006. Investigations of bull trout (*Salvelinus confluentus*) in the Saint Mary River drainage, Montana. Report for 2005. U.S. Fish and Wildlife Service, Bozeman, Montana.

Mogen, J.T., and L.R. Kaeding. 2007. Investigations of bull trout (*Salvelinus confluentus*) in the Saint Mary River drainage, Montana. Report for 2006. U.S. Fish and Wildlife Service, Bozeman, Montana.

Mongillo, R.E. 1993. The distribution and status of bull trout/Dolly Varden in Washington state. Washington Department of Wildlife, Olympia, Washington. 51 p.

Montana Fish, Wildlife and Parks (MFWP). 2008. Environmental assessment. Lake Inez Dam fish passage project. Montana Fish, Wildlife and Parks, Missoula, Montana.

Montana Fish, Wildlife and Parks (MFWP). 2009a. MFISH database, online fish distribution and population data. Available at: http://fwp.mt.gov/fishing/mfish/default.aspx.

Montana Fish, Wildlife and Parks (MFWP). 2009b. Montana bull trout redd count database. Submitted to the U.S. Fish and Wildlife Service as a 2008 annual report and 2009 conservation plan for bull trout in Montana (January 1, 2008–December 31, 2008) pursuant to Section 6(c)(1) of the Endangered Species Act. Electronic database. Montana Fish, Wildlife and Parks, Helena, Montana.

Montana Fish, Wildlife and Parks (MFWP). 2009c. Draft environmental assessment: Rainy Dam interim fish passage project. Montana Fish, Wildlife and Parks, Missoula, Montana.

Montana Fish, Wildlife and Parks (MFWP). 2010. Letter from Montana Fish, Wildlife and Parks to U.S. Fish and Wildlife Service, regarding proposed bull trout critical habitat. Critical habitat comment letter.

Moore, T. 2005. Trapper Creek PIT tagging and mark-recapture population estimate. Interim report. Oregon Department of Fish and Wildlife, Corvallis, Oregon.

Moore, T. 2006. Distribution and abundance of bull trout and redband trout in Leonard and Deming creeks, July and August 2005. Oregon Department of Fish and Wildlife, Corvallis, Oregon.

Moore, T., S. Starcevich, S. Jacobs, P. Howell. 2006. Migratory patterns, structure, abundance, and status of bull trout populations from subbasins in the Columbia Plateau, 2005 annual report. 47 p. Project No. 199405400. BPA Report DOE/BP-00022664-1.

Moran, S. 2004a. Fish abundance studies. Fisheries survey of the Prospect Creek Drainage, Montana—2003. Avista Corporation, Noxon, Montana.

Moran, S. 2004b. Lower Clark Fork River, Montana—Avista project area—2003 annual bull and brown trout redd survey report. Avista Corp., Noxon, Montana.

Moran, S. 2005a. Fish abundance studies. Fisheries survey of the Bull River drainage, Montana—2005 final report. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Moran, S. 2005b. Lower Clark Fork River, Montana—Avista project area—2004 annual bull and brown trout redd survey report. Avista Corp., Noxon, Montana.

Moran, S. 2006. Lower Clark Fork River, Montana—Avista project area—2005 annual bull and brown trout redd survey report. Avista Corp., Noxon, Montana.

Moran, S. 2007a. Fish capturing facilities development and testing studies. Development and evaluation of fish capturing facilities: Cabinet Gorge Fish Hatchery ladder and experimental mobile trap. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Moran, S. 2007b. Lower Clark Fork River, Montana—Avista project area—2006 annual bull and brown trout redd survey report. Fish passage / native salmonid program, Appendix C. Avista Corp., Noxon, Montana.

Moran, S. 2007c. Fish abundance studies. Fisheries survey of the Swamp Creek and Mosquito Creek, Montana—2006. Fish passage / native salmonid restoration program, Appendix C. Avista Corp., Noxon, Montana.

Moran, S. 2008. Fish capturing facilities development and testing studies. Development and evaluation of fish capturing facilities: Cabinet Gorge Fish Hatchery ladder and thrust block waterfall trap. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Moran, S., L. Hintz, and L. Lockard. 2006. Fish capturing facilities development and testing studies. Development and evaluation of fish capturing facilities: Cabinet Gorge Fish Hatchery ladder and experimental mobile trap. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Moran, S., and L. Lockard. 2005. Fish capturing facilities development and testing studies. Development and evaluation of fish capturing facilities: Cabinet Gorge Fish Hatchery ladder and experimental mobile trap. Fish passage / native salmonid restoration program. Avista Corp., Noxon, Montana.

Moran, S., and J. Storaasli. 2005. Exotic species suppression and recreational fishery enhancement for Cabinet Gorge Reservoir. Experimental two-liter plastic bottle juvenile trapping of the East Fork Bull River, Montana—2004. Fish passage / native salmonid program. Avista Corp., Noxon, Montana.

Moran, S., and J. Storaasli. 2008. Non-native fish suppression project in the East Fork Bull River drainage, Montana. Annual progress report—2007. Fish passage / native salmonid program, Appendix C. Avista Corp., Noxon, Montana.

Morrill, D.C., and M.L. McHenry. 1995. 1994 Elwha River fish community study draft report. Lower Elwha S'Klallam Tribe, Fisheries Department. Port Angeles, Washington.

Mount Rainier National Park (MRNP). 2001. Unpublished fish survey data. Ashford, Washington.

Mount Rainier National Park (MRNP). 2009.Mount Rainier National Park bull trout distribution map. Ashford, Washington.

Muhlfeld, C.C., D.H. Bennett, R.K. Steinhorst, B. Marotz, and M. Boyer. 2008. Using bioenergetics modeling to estimate consumption of native juvenile salmonids by nonnative northern pike in the Upper Flathead River system, Montana. North American Journal of Fisheries Management 28:636–648.

Muhlfeld, C., M. Boyer, S. Glutting, R. Hunt, D. Belcer,and B. Marotz. 2007. Hungry Horse mitigation program; investigations of the Flathead River Native Species Project. 2005–2006 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 199101903. BPA Document ID #P104146.

Muhlfeld, C., S. Glutting, R. Hunt, D. Daniels, M. Boyer, J. Wachsmuth, and B. Marotz. 2005. Hungry Horse mitigation program; investigations of the Flathead River Native Species Project. 2004–2005 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 199101903. BPA Document ID #DOE/BP-00005043-5.

Mullan, J. W., K. R. Williams, G. Rhodus, T. W. Hillman, and J. D. McIntyre. 1992. Production and habitat of salmonids in Mid-Columbia River tributary streams. U.S. Fish and Wildlife Service, Leavenworth, Washington. Report No. FRI/FAO-86-15. 68 p. plus appendices.

Murphy, P., and T. Cochnauer. 1998. Report of the high lakes fisheries project in the Clearwater National Forest, 1997. Idaho Department of Fish and Game, Lewiston, Idaho.

National Marine Fisheries Service (NMFS). 2000. Report for 2000 field collection for research project: utilization of nutrients from spawning salmon by juvenile chinook and steelhead in the Columbia and Snake River basins. U.S. Department of Commerce. 5 p.

National Marine Fisheries Service (NMFS). 2007. Upper Columbia spring Chinook salmon and steelhead recovery plan. Federal Registrar: Vol.72, No. 194/Tuesday, October 9, 2007/Notices, p. 57303–57307. Department of Commerce, National Oceanic and Atmospheric Administration, NMFS Northwest Region, Portland, Oregon. 307 p. plus appendices.

National Marine Fisheries Service (NMFS). 2008. Endangered Species Act section 7(a)(2) consultation biological opinion and Magnuson-Stevens Fishery Conservation and Management Act essential fish habitat consultation on the Willamette River Basin Flood Control Project. Submitted to the US Army Corps of Engineers, Bonneville Power Administration, and Bureau of Reclamation. NMFS Northwest Region, Portland, Oregon.

National Park Service (NPS). 2009. Dam removal-overview. Olympic National Park. Available at: http://www.nps.gov/olym/naturescience/dam-removal-overview.htm.

National Research Council (NRC). 2004. Endangered and threatened fishes in the Klamath River basin: causes of decline and strategies for recovery. National Academy Press, Washington, D.C.

Nelson, M.C. 2004. Movements, habitat use, and mortality of adult fluvial bull trout isolated by seasonal subsurface flow in the Twisp River, WA. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Nelson, M. C., and R. D. Nelle. 2007. Upper Columbia Recovery Unit bull trout telemetry project: 2005 progress report for the Methow core area. U.S. Fish and Wildlife Service, Leavenworth, Washington. January 24, 2007.

Nelson, M. C., and R. D. Nelle. 2008. Seasonal movements of adult fluvial bull trout in the Entiat River, Washington, 2003–2006. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Nelson, M. C., D. B. Conlin, and R. D. Nelle. 2007. Upper Columbia Recovery Unit bull trout telemetry project: 2006 progress report for the Methow core area. U.S. Fish and Wildlife Service, Leavenworth, Washington. April 6, 2007.

Nelson, M. C., A. Johnsen, D. Pearson, and R. D. Nelle. 2009. Seasonal movements of adult fluvial bull trout in Icicle Creek, WA, 2008 annual report. U.S. Fish and Wildlife Service, Leavenworth, Washington.

Nelson, M.L., T.E. McMahon, and R.F. Thurow. 2002. Decline of the migratory form in bull charr, *Salvelinus confluentus*, and implications for conservation. Environmental Biology of Fishes 64:321–332.

Nelson, R.L. 1998. Biological assessment of the potential effects of managing the Payette National Forest in the Brownlee Reservoir section 7 watershed on Columbia River bull trout. In: Volume 1, ongoing actions. Payette National Forest, Council and Weiser Ranger Districts. 44 p.

Nelson, T. 2003. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from T. Nelson, Washington Department of Fish and Wildlife. Subject: Clearwater River observation? October 31, 2003. 2:24 p.m.

Nelson, T.C., and P.A. Caverhill. 1999. Chilliwack Lake char angler survey 1998. Submitted to: B.C. Ministry of Environment, Lands, and Parks, Lower Mainland Region, Fish and Wildlife Management, Surrey, British Columbia. LGL Limited Environmental Research Associates, King City, Ontario, Canada.

Nevada Department of Wildlife (NDOW). 1993. Federal aid job progress reports F20-29, 1993. Stream Fishery Management, Job Number 206.Nevada Department of Wildlife, Elko, Nevada. 5 p.

Nevada Department of Wildlife (NDOW). 2001. Job progress report, native game fish, January 1, 2000 to December 31, 2000. Nevada Department of Wildlife, Elko, Nevada. 24 p.

Newberry, D.D. 2000. Biological assessment of ongoing actions on the Boise National Forest in the Gold Fork River bull trout subpopulation watershed on the Columbia River bull trout population. Boise National Forest, Cascade Ranger District. May 2000. 66 p.

Nooksack Tribe. 2002. Unpublished data on bull trout observations.

Nooksack Tribe. 2003. Memorandum from T. Coe to N. Currence. Re: February 13, 2003 snorkel survey of mainstem and lower Anderson Creek.February 19, 2003.

Norgore, M., and A.W. Anderson. 1921. Report on a biological survey of the Nooksak (sic) River during the summer of 1921. University of Washington, Seattle, Washington.

Nowak, M.C. 2004. Powder subbasin summary. Prepared for: Northwest Power Planning Council, Portland, Oregon. Cat Tracks Wildlife Consulting, Union, Oregon.

Ogg, L. 2003a. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L. Ogg, U. S. Forest Service, Olympia, Washington. Subject: FMO and mouths of rivers (Purdy Creek bull trout). March 6, 2003. 10:00 a.m.

Ogg, L. 2003b. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L Ogg, U. S. Forest Service, Olympia, Washington. Subject: (Bull trout in South Fork Skokomish River tributaries). February 10, 2003. 3:34 p.m.

Ogg, L. 2003c. Email message and attachments to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L. Ogg, U. S. Forest Service, Olympia, Washington. Subject: Water temperature for Satsop and Brown Creek. June 5, 2003. 9:05 a.m.

Ogg, L. 2003d. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L. Ogg, U. S. Forest Service, Olympia, Washington. Subject: Water temperature in the Satsop. June 10, 2003. 11:07 a.m.

Ogg, L. 2004. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L. Ogg, U.S. Forest Service, Olympia, Washington. Subject: Bull trout, sightings and the Dungeness. June 7, 2004. 12:31 p.m.

Ogg, L. 2006. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from L. Ogg, U.S. Forest Service, Olympia, Washington. Subject: DRMT meeting (bull trout in Valley and Morse Creeks). May 24, 2006. 12:32 p.m.

Ogg, L. W., and M. R. Stutsman. 2002. Summary report of the Olympic National Forest bull trout recovery project 1995–2001. Unpublished report. U.S. Forest Service, Hood Canal Ranger District, Hoodsport, Washington.

Olson, J. 2008. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Jason Olson, Kalispel Tribe of Indians. Subject: Bull trout data and observations in the Pend Oreille River, Washington. July 7, 2008.

Olson, J. 2009. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Jason Olson, Kalispel Tribe of Indians. Subject: Bull trout data and observations in the Pend Oreille River, Washington. July 1, 2009.

Olympic National Park (ONP). 2001. Unpublished data.

Olympic Peninsula Recovery Team (OPRT). 2003a. Importance of anadromous reaches within foraging, migration, and overwintering habitat for bull trout. Meeting notes from March 5, 2003, at U.S. Fish and Wildlife Service, Lacey, Washington.

Olympic Peninsula Recovery Team (OPRT) 2003b. Importance of FMO habitat outside of core areas for bull trout. Meeting notes from March 12, 2003, at U.S. Fish and Wildlife Service, Lacey, Washington.

Olympic Peninsula Recovery Team (OPRT). 2003c. Distribution of spawning and rearing habitat and FMO habitat within bull trout core areas. Meeting notes from January 14, 2003, at U.S. Fish and Wildlife Service, Lacey, Washington.

Oregon Chapter of the American Fisheries Society (OCAFS). 1993. Petition to the U.S. Fish and Wildlife Service to list bull trout in the upper Klamath Basin under the Endangered Species Act. OCAFS, Corvallis, Oregon.

Oregon Department of Environmental Equality (ODEQ). 2001. Link Creek water temperature. Laboratory Analytical Storage and Retrieval (LASAR) database. Available from: ODEQ, Salem, Oregon.

Oregon Department of Environmental Quality (ODEQ). 2009. Water quality limited streams database. Oregon's 2004/2006 integrated report. Available at: http://www.deq.state.or.us/wq/assessment/rpt0406/results.asp on 10-14-09.

Oregon Department of Fish and Wildlife (ODFW). 1968. Oregon State Game Commission fish sampling records from Sycan River.

Oregon Department of Fish and Wildlife (ODFW). 1997. ODFW aquatic inventory surveys 1990 through 1997. Available from: ODFW, Corvallis, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2000a. Memorandum from Tim Unterwegner, ODFW District Fish Biologist, to Mary Hanson. Re: Comments on the draft outline for the bull trout John Day River Recovery Unit recovery plan. ODFW, John Day, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2000b. Spawning survey records for Umatilla River in Oregon. ODFW, Pendleton, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2001. Review of T & E, sensitive and stocks of concern. Unpublished report. ODFW, South Willamette Watershed District, Springfield, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2002. Spawning survey records for Walla Walla River in Oregon. ODFW, Pendleton, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2003. Email message from Tim Unterwegner, District Fish Biologist, ODFW, Salem, Oregon, to Mary Hanson, U.S. Fish and Wildlife Service. October 31, 2003.

Oregon Department of Fish and Wildlife (ODFW). 2006. North Fork Catherine Creek 2006 redd count data. ODFW, La Grande, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2007a. Progress reports. Hood River bull trout abundance, life history, and habitat connectivity. ODFW, Fish Division.

Oregon Department of Fish and Wildlife (ODFW). 2007b. Status of bull trout (*Salvelinus confluentus*) in the Middle Fork Willamette Basin ten years after implementation of the 1998 rehabilitation plan. Upper Willamette Bull Trout Working Group.

Oregon Department of Fish and Wildlife (ODFW). 2007c. Spawning survey records for Umatilla River in Oregon from 1994 to 2007. Pendleton, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2008a. Redd survey data. Available at: High Desert Regional Office, Bend, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2008b. Unpublished data on fish counts over Leaburg Dam. Submitted to: U.S. Fish and Wildlife Office by J. Ziller, District Biologist, ODFW, Springfield, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2009a. Email message to Mary Hanson, U.S. Fish and Wildlife Service, Portland, Oregon, from Jeff Neal, Assistant District Fish Biologist, ODFW. September 9, 2009

Oregon Department of Fish and Wildlife (ODFW). 2009b. Email message to Mary Hanson, U.S. Fish and Wildlife Service, Portland, Oregon, from Jeff Neal, Assistant District Fish Biologist, ODFW. September 14, 2009.

Oregon State Game Commission (OSGC). 1948. Annual report 1947. Oregon Department of Fish and Wildlife, Fisheries Division, Portland, Oregon.

Ostwald, M. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from M. Ostwald, U.S. Fish and Wildlife Service, Lacey, Washington. Subject: Quinault Lake. February 12, 2003. 2:55 p.m.

Overman, N. 2005. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from N. Overman, University of Washington, Washington Coop. Fish and Wildlife Unit, Seattle, Washington. Subject: Lake Washington char. March 31, 2005. 4:54 p.m.

PacifiCorp and Cowlitz County PUD. 2000. 1999 technical study status reports for the Lewis River hydroelectric projects. Merwin Hydroelectric Project, FERC No. 935; Yale Hydroelectric Project, FERC No. 2071; Swift No. 1 Hydroelectric Project, FERC No. 2111; and Swift No. 2 Hydroelectric Project, FERC No. 2213.

PacifiCorp and Cowlitz County PUD. 2001. 2000 technical study status reports for the Lewis River hydroelectric projects. Merwin Hydroelectric Project, FERC No. 935; Yale Hydroelectric Project, FERC No. 2071; Swift No. 1 Hydroelectric Project, FERC No. 2111; and Swift No. 2 Hydroelectric Project, FERC No. 2213.

Panhandle Bull Trout Technical Advisory Team (PBTTAT). 1998a. Coeur d'Alene Lake bull trout problem assessment. Draft. Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho.

Panhandle Bull Trout Technical Advisory Team (PBTTAT). 1998b. Lake Pend Oreille key bull trout problem assessment. Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho.

Panhandle Bull Trout Technical Advisory Team (PBTTAT). 1998c Priest River bull trout problem assessment. Draft. Collaborative, multi-agency scientific assessment of bull trout status prepared for the State of Idaho. December 1998.

Partridge, F. 2003. 2002 Idaho bull trout conservation program plan and 2001 Idaho bull trout take report. Idaho Department of Fish and Game, Boise, Idaho.

Partridge, F. 2006. 2006 Idaho bull trout conservation program plan and 2005 Idaho bull trout take report. Idaho Department of Fish and Game, Boise, Idaho.

Partridge, F. 2008. 2008 Idaho bull trout conservation program plan and 2007 Idaho bull trout take report. Idaho Department of Fish and Game, Boise, Idaho.

Partridge, F., K. Frank, and C. Warren. 2000. Southwest Idaho bull trout restoration (South Fork Boise River) completion report. Idaho Department of Fish and Game, Boise, Idaho. Threatened and Endangered Species Report, Project E-21-1, Section 6, Endangered Species Act. 38 p.

Pautzke, C.F. 1943. Nooksack river system. Washington Department of Fish and Game description of basin by chief biologist. Washington Department of Fish and Game, Olympia, Washington.

Payette National Forest (PNF). 2010. Documentation of actions to finalize proposed bull trout critical habitat. U.S. Forest Service, PNF, McCall, Idaho.

Pentilla, D. 2004. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington from D. Pentilla, Washington Department of Fish and Wildlife, La Conner, Washington. Subject: Forage fish. January 26, 2004. 11:08 a.m.

Perkins, R. 2009. Bull trout spawning survey report, 2008. Oregon Department of Fish and Wildlife, Malheur Fish District, Ontario, Oregon.

Pess, G. 2003. Unpublished Stillaguamish bull trout data, 1996 to 2003.National Oceanic and Atmospheric Administration Fisheries, Northwest Fisheries Science Center.

Peters, R. 1995. Unpublished data of bull trout observations made during snorkel surveys in the Dungeness River. U.S. Fish and Wildlife Service, Lacey, Washington.

Peters, R. 2001. Data form for recording bull trout/Dolly Varden observations on July, 7, 1993, of a single char in the Clearwater River at river mile 30.0.Reported to: Shelley Spalding, U.S. Fish and Wildlife Service by Roger Peters, U.S. Fish and Wildlife Service,

Peters, R. 2009. Email to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, U.S. Fish and Wildlife Service, Lacey, Washington. Subject: Subpermit FWSWWFWO-11 of permit TE-702631 (Vance Creek bull trout). February 3, 2009.

Petersen, J. H., and E. E. Kofoot. 2002. Conditions for growth and survival of bull trout in Beulah Reservoir. Annual report for 2001. Report for the U.S. Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho. 43 p.

Pierce, R., R. Anderson, and C. Podner. 2004. The Big Blackfoot River restoration progress report for 2002 and 2003. Montana Fish, Wildlife and Parks, Missoula, Montana.

Pierce, R. and C. Podner. 2006. The Big Blackfoot River fisheries restoration report for 2004 and 2005. Montana Fish, Wildlife and Parks, Missoula, Montana.

Pierce, R., C. Podner, M. Davidson, L. Knotek, and J. Thabes. 2008. The Big Blackfoot River fisheries and restoration investigations for 2006 and 2007. Montana Fish, Wildlife and Parks, Missoula, Montana.

Pine/Powder Bull Trout Workshop (P/PBTW). 1999. Flip chart notes from Powder/Pine Bull Trout Workshop on June 23, 1999. Baker City, Oregon.

Platts, W.S., M. Hill, T. Hillman, and M.D. Miller. 1993. Preliminary status report on bull trout in California, Idaho, Montana, Nevada, Oregon, and Washington. Consultant report to the Intermountain Forest Industry Association, Coeur d'Alene, Idaho.

Potter, S. 2003. Email message to Shelley Spalding, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from S. Potter, Quinault Nation, Taholah, Washington. Subject: Char documentation. March 31, 2003. 12:54 p.m.

Powder Basin Watershed Council (PBWC). 2000. Pine Creek watershed assessment. Volume 1 of 2. PBWC, Baker City, Oregon. August 2000. 178 p.

Powers, P. 2005. Email message to Paul Powers, US Forest Service Deschutes National Forest, Crescent Ranger District, Crescent, Oregon, from Jennifer O'Reilly, U.S. Fish and Wildlife Service, Bend, Oregon. Subject: Bull trout distribution in Odell Lake. January 19, 2005.

Proebstel, D. S., R. J. Behnke, S. M. Noble. 1998. Identification of salmonid fishes from tributary streams and lakes of the mid-Columbia basin. Joint publication by U.S. Fish and Wildlife Service, Leavenworth, Washington, and World Salmonid Research Institute, Colorado State University, Fort Collins, Colorado. 165 p.

Quinault Indian Nation. 2002. Unpublished data of bull trout captured while seining for salmon in the Queets River from 1977 to 1995.

Quinault Indian Nation. 2005. Unpublished data of bull trout captured while seining for salmon in the Queets River from 1995 to 2005.

R2 Resource Consultants. 2003. Habitat conditions of tributary reaches accessible to anadromous and adfluvial salmonids and estimated salmonid production potentials: Baker River basin. Draft. Baker River Hydroelectric Project (FERC No. 2150), Washington.

R2 Resource Consultants and Puget Sound Energy. 2005. Native char investigations. Results of 2004 activities and proposed 2005 activities. Draft. Baker River Hydroelectric Project (FERC No 2150), Washington.

R2 Resource Consultants and Puget Sound Energy. 2006. Native char investigations. Results of 2005 activities. Draft. Baker River Hydroelectric Project (FERC No 2150), Washington.

Raekes, C. 2008. Chiwawa Watershed bull trout monitoring results 2008. U.S. Forest Service, Wenatchee National Forest, Leavenworth Ranger District, Washington.

Rahel, F. J., and J. D. Olden. 2008. Assessing the effects of climate change on aquatic invasive species. Conservation Biology 22(3):521–533.

Ratliff, D. E., and P. J. Howell. 1992. The status of bull trout populations in Oregon. In: P. J. Howell and D. V. Buchannan, editors. Proceedings—Gearhart Mountain Bull Trout Workshop, Oregon Chapter of the American Fisheries Society, Corvallis, Oregon. p. 10–17.

Recovery Unit Team (RUT). 2001. Transcript of Oregon Department of Fish and Wildlife bull trout Powder/Snake tributaries meeting. Oregon Department of Fish and Wildlife, Baker City, Oregon. April 17, 2001.

Reighn, C. 2002. Notes on bull trout presence and habitat use in the Anderson Ranch critical habitat subunit. U.S. Fish and Wildlife Service, Boise, Idaho. June 2002.

Rieman, B. 2003. Peer review of the U.S. Fish and Wildlife Service proposed critical habitat rule and draft recovery plan for bull trout in the Columbia and Klamath Rivers.

Rieman, B. E., and G. L. Chandler. 1999. Emperical evaluation of temperature effects on bull trout distribution in the Northwest. US Forest Service, Rocky Mountain Research Station, Boise, Idaho. Contract No. 1295742-01-0. 44 p.

Rieman, B. E., and J. Clayton. 1997. Wildfire and native fish: issues of forest health and conservation of sensitive species. Fisheries 22 (11): 6–15.

Rieman, B. E., D. Lee, G. Chandler, and D. Myers. 1997. Does wildfire threaten extinction for salmonids? Responses of redband trout and bull trout following recent large fires on the Boise National Forest. Proceedings—Fire Effects on Rare and Endangered Species and Habitats Conference, Nov. 13–16, 1995 in Coeur d' Alene, Idaho. U.S. Forest Service, Intermountain Research Station, Boise, Idaho.

Rieman, B. E., and J. D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. U.S. Forest Service, Intermountain Research Station, Boise, Idaho. General Technical Report INT-302.

Rieman, B. E., D. Isaak, S. Adams, D. Horan, D. Nagel, C. Luce, and D. Myers. 2007. Anticipated climate warming effects on bull trout habitats and populations across the Interior Columbia River Basin. Transactions of the American Fisheries Society 136:1552–1565.

Roberts, B. 2000. Report: Upper Napias Creek redd survey summary. September 6, 2000 through September 27, 2000. U. S. Forest Service, Salmon and Cobalt Ranger District. 2 p.

Roberts, B. 2001. Report: Upper Napias Creek redd survey summary. August 3, 2001 through October 4, 2001. U. S. Forest Service, Salmon and Cobalt Ranger District. 3 p.

Rose, B.P., and M. G. Mesa. 2009. Minimum pool and bull trout prey base investigations at Beulah Reservoir—Final report 2008. U.S. Geological Survey Open-File Report 2009–1068. 54 p.

Rosenthal, L., and M. Hensler. 2008. Angler survey of experimental recreational bull trout fishery for Hungry Horse Reservoir and South Fork Flathead River, Montana for the 2007–2008 season. Montana Fish, Wildlife and Parks, Kalispell, Montana.

Roy, J. 2002. Meeting Notes from May 20, 2002 meeting in Boise, Idaho, between Chris Reighn, Johnna Roy (U.S. Fish and Wildlife Service), and Don Newberry (Boise National Forest) to discuss bull trout recovery in the North Fork Payette core area.

Rudolph, J. 2005. Email message to Karen Myers, Fish and Wildlife Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Rudolph, Pierce County, Tacoma, Washington. Subject: June Creek. October 14, 2005. 9:50 a.m.

Salow, T.D. 2001. Population structure and movement patterns of adfluvial bull trout (*Salvelinus confluentus*) in the North Fork Boise River Basin, Idaho. M.S. thesis, Boise State University, Boise, Idaho.130 p.

Samora, B. 1997. Letter to Leslie Propp, U.S. Fish and Wildlife Service, from B. Samora, Mount Rainier National Park, Asford, Washington, providing fish survey information on tributaries to the Carbon River in Mount Rainier National Park. April 1997.

Samora, B. 1998. Letter to Leslie Propp, U.S. Fish and Wildlife Service, from B. Samora, Mount Rainier National Park, providing summary of bull trout observations from 1993 and 1995 fish surveys. February 1998.

Sankovich, P., S. Gunckel, A. Hemmingsen, I. Tattam, P. Howell. 2003. Migratory patterns, structure, abundance, and status of bull trout populations from subbasins in the Columbia Plateau. 37 p. Project No. 1994-05400. BPA Report DOE/BP-00004101-2.

Satterthwaite, T. 1979. Physical and biological survey. Deschutes National Forest, Crescent Ranger District, Crescent, Oregon.

Sausen,G. 2001. Imnaha River Basin bull trout spawning surveys. Summarized data. U.S. Forest Service, Wallowa-Whitman National Forest. 10 p.

Sausen, G. 2009. 2008 Bull trout redd monitoring in the Wallowa Mountains. 2008 annual report. 50 p.

Sawtooth National Forest (SNF). 2010. Edits and rationale for draft bull trout critical habitat changes. U.S. Forest Service, SNF, Twin Falls, Idaho.

Schiff, D., J. Peterson, and E. Schriever. 2005. Regional fisheries management investigations Lochsa River bull trout. Distribution, abundance, and life history characteristics of bull trout in the Lochsa River basin. Annual report 2004. Idaho Department of Fish and Game, Boise, Idaho.

Schill, D., R. Thurow, and P. Kline. 1994. Wild trout evaluations job performance report. Seasonal movement and spawning mortality of fluvial bull trout in Rapid River, Idaho. 40 p.

Schmetterling, D.A. 2003. Reconnecting a fragmented river: movements of westslope cutthroat trout and bull trout after transport upstream of Milltown Dam, Montana. North American Journal of Fisheries Management 23:721–731.

Schmetterling, D.A., and D.H. McEvoy. 2000. Abundance and diversity of fishes migrating to a hydroelectric dam in Montana. North American Journal of Fisheries Management 20:711–719.

Schuett-Hames, J. 1999. Email message to Andrew Phay, Whatcom Conservation District, from J. Schuett-Hames, Washington Department of Ecology, Olympia, Washington. Subject: native char observations for fish distribution mapping.

Schuett-Hames, J. 2004. Letter to Jim Doyle, U.S. Forest Service, and others from J. Schuett-Hames, Washington Department of Ecology, Lacey, Washington, regarding bull trout observation in the Upper Greenwater. June 12, 2004. And attached additional older information pieced together about bull trout/Dolly Varden observations in the upper White River watershed. July 6, 2004.

Schwabe, L., J. Fenton, K. Fenn, R. Perkins, W. Ardren, P. DeHaan, D. Campton. 2004. Evaluation of the life history of native salmonids in the Malheur River basin. Cooperative bull trout/redband trout research project, 2003–2004 annual report. Project No. 199701900. BPA Report DOE/BP-00006313-5.209 p.

Schwabe, L., J. Fenton, R. Perkins, J. Wenick, T. Walters, R. Rieber, A. Mauer, A. Miller, J. Soupir, C. Tait. 2003. Evaluation of the life history of native salmonids in the Malheur River basin, 2002 annual report.143 p.Project No. 1997-01900. BPA Report DOE/BP-00006313-3.

Schwabe, L., S. Namitz, J. Fenton, R. Perkins, P. Spruell, D. Gonzalez, J. Wenick, W. Bowers, R. Rieber, A. Mauer, H. Roerick, S. Bush, C. Tait. 2001. Evaluation of the life history of native salmonids in the Malheur River basin, 2000–2001 annual report. Project No. 1997-01900. BPA Report DOE/BP-00006313-2. 189 p.

Schwabe, L., M. Tiley, R. Perkins. 2000. Malheur River basin cooperative bull trout/redband trout research project, FY 1999 annual report. Report to Bonneville Power Administration. Project No. 199701900. BPA Report DOE/BP-00006313-1. Contract No. 00006313. 120 p.

Seals, J. 2000. Middle Fork John Day bull trout study—year 2. Unpublished report. Available from: Oregon Department of Fish and Wildlife, John Day District, John Day, Oregon.

Seattle Public Utilities (SPU). 2009. Distribution maps of bull trout in the Chester Morse Lake system. Available at: http://www.seattle.gov/UTIL/About_SPU/Water_System/Water_Sources_&_Treatment/CedarRiverBiodiversity/Fish/SPU01_003064.asp#P26_4684.

Servheen, G. 2001. Draft salmon subbasin summary. Northwest Power Planning Council, Portland, Oregon. 208 p.

Shannon, J. 2001. Memorandum to Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, from J. Shannon, Taylor Associates, Inc., Seattle, Washington. Re: Take permit annual report. January 19, 2001.

Shannon, J. 2003. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, U.S. Fish and Wildlife Service, Lacey, Washington, from J. Shannon, Taylor Associates, Inc., Seattle, Washington. Subject: Duwamish char. May 16, 2003. 3:39 p.m.

Shannon, J. 2004. Summary tables of Gorge Lake and Stetattle Creek bull trout observations and two photos. Taylor Associates, Inc., Seattle, Washington.

Silver, B., J. Cook, J.M. Hudson, and T.A. Whitesel. 2009. White Salmon River bull trout: patches, occupancy and distribution, 2008 progress report. U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington. 21 p.

Simenstad, C.A., A.J. Wick, and J.R. Cordell, R.M. Thom, G.D. Williams. 2001. Decadel development of a created slough in the Chehalis River estuary: Year 2000 results. Report to U.S. Army Corps of Engineers, Seattle District, Washington.

Small, M.P., W.R. Ardren, P. Hilgert, and J. Von Bargen. 2008. Genetic analysis of bull trout in the Baker River basin, Washington. Washington Department of Fish and Wildlife, Molecular Genetics Lab, Conservation Unit, Olympia, Washington.

Southwest Basin Native Fish Technical Group (SBNFTG). 1998. Draft South Fork Salmon River Group bull trout problem assessment. SBNFTG, Boise, Idaho. 41 p.

Spangler, R.E. 1997. Distribution, abundance, and microhabitat use of juvenile bull trout in two small tributaries of the South Fork Clearwater River, Idaho. M.S. thesis. University of Idaho, Moscow. April 1997.

Spruell, P., and F. W. Allendorf. 1997. Nuclear DNA analysis of Oregon bull trout. Final report to the Oregon Department of Fish and Wildlife. Wild Trout and Salmon Genetics Laboratory, Division of Biological Sciences, University of Montana. Missoula, Montana. Report 97/5.

Spruel, P., A.A. Hemmingsen, P.J. Howell, N. Kanda, and F.W. Allendorf. 2003. Conservation genetics of bull trout: geographic distribution of variation at microsatellite loci. Conservation Genetics 4:17–29.

Starkes, J. 2003. Email message to Fred Goetz, Fisheries Biologist, U.S. Army Corps of Engineers, Seattle, Washington, from J. Starkes, Pentec Environmental, Edmonds, Washington. Subject: Char recapture. February 21, 2003. 9:49 a.m.

Steed, A., R. Hunt, D. Belcer, and S. Glutting. 2008. Investigations of the Hungry Horse mitigation program, 2006–2007 annual report. Bonneville Power Administration, Portland, Oregon. Project No. 199101903. BPA Document ID #P107020.

Steed, R. 1999. Gold Fork and Squaw Creek key watersheds bull trout problem assessment. Southwest Basin Native Fish Watershed Advisory Group. April 1999. 103 p.

Steed, R., T. Burton, R. Danehy, D. Greegor, S. Grunder, T. Kennedy, and D. Parrish. 1998. Boise River key watersheds bull trout problem assessment.Southwest Basin Native Fish Watershed Advisory Group. January 1998. 58 p.

Stevenson, J. R., D. J. Snyder, and P. Westhagen. 2006. Bull trout radio telemetry monitoring associated with up and downstream passage through Rocky Reach and Rock Island dams and reservoirs, 2005. Annual report. Prepared for: Chelan County Public Utility District, Wenatchee, Washington. BioAnalysts Inc., Boise, Idaho.

Stevenson, J. R., D. J. Snyder, and P. Westhagen. 2007. Movements of radio-tagged bull trout through Rocky Reach and Rock Island dams and reservoirs: 2006. Annual report. Prepared for: Chelan County Public Utility District, Wenatchee, Washington. BioAnalysts Inc., Boise, Idaho.

Stevenson, J. R., D. J. Snyder, S. J. Mallas, and P. Westhagen. 2008. Movements of radio-tagged bull trout through Rocky Reach and Rock Island dams and reservoirs: 2007. Annual report. Prepared for: Chelan County Public Utility District, Wenatchee, Washington. BioAnalysts Inc., Boise, Idaho.

Stevenson, J. R., D. J. Snyder, S. J. Mallas, and P. Westhagen. 2009. Movements of radio-tagged bull trout through Rocky Reach and Rock Island dams and reservoirs: 2008. Annual report. Prepared for: Chelan County Public Utility District, Wenatchee, Washington. BioAnalysts Inc., Boise, Idaho.

Stillwater Sciences. 2006. Fish population distribution and abundance at the Carmen-Smith Hydroelectric Project, upper McKenzie River basin, Oregon. Final report. Prepared for: Eugene Water & Electric Board, Eugene, Oregon. Stillwater Sciences, Arcata, California.

Storaasli, J., and S. Moran. 2008. Lower Clark Fork River, Montana—Avista project area—2007 annual bull and brown trout redd survey report. Fish passage / native salmonid program, Appendix C. Avista Corp., Noxon, Montana.

Storaasli, J., and S. Moran. 2009. Lower Clark Fork River, Montana—Avista project area—2008 annual bull and brown trout redd survey report. Fish passage / native salmonid program, Appendix C. Avista Corp., Noxon, Montana.

StreamNet. 2009. North Fork John Day subbasin: bull trout. Online data. StreamNet, Portland, Oregon. Available at: http://q.streamnet.org/Request.cfm?cmd=BuildQuery&NewQuery=BuildCriteria&Required=Species,HUC4&DataCategory=23&Species=14&HUC4=17070202&ID=1184063449155&_Count=1. Accessed on: September 23, 2009 and September 7, 2010.

StreamNet. 1998. Fish data for the Northwest. Available at: http://www.streamnet.org. Accessed on: 1998.

StreamNet. 2009. StreamNet generalized fish distribution—bull trout, Pacific Northwest. database selected for Idaho only. Idaho database updated 2004.Available at: http://www.streamnet.org. Accessed on: July 2009.210 p.

Suckley and Cooper. 1860. Reports: explorations and surveys, to ascertain the most practicable and economical rout for a railroad from the Mississippi River to the Pacific Ocean. Vol. XII. Book II. Thomas H. Ford, Washington. 48 p.

STS Heislers Creek Hydro L.P. 1994. Heislers Creek hydroelectric project, draft application for license, FERC project no. 11389. Vols. 1 and 2. March 1994.

Swan Valley Bull Trout Working Group. 2009. 2008 Progress report. Available at: http://www.montanatu.org/issuesandprojects/svbtwg.htm.

Sylvester, R., A. Steed, J. Tohtz, and B. Marotz. 2008. Evaluation of the biological effects of the Northwest Power Conservation Council's mainstem amendment on the fisheries upstream and downstream of Hungry Horse and Libby Dams, Montana. Annual report July 1, 2006–June 30, 2007. Bonneville Power Administration, Portland, Oregon. Project Number 2006-008-00. BPA Document ID #P107043.

Temple, G. 2010. Email message to Judy DeLaVergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, from Gabe Temple, Washington Dept of Fish and Wildlife. Subject: Bull trout location in the Little Naches and Quartz Creek during surveys conducted in 2010.

Tennant, L., C. Guy, and R.E. Gresswell. 2008. Spawning demographics and early life history of bull trout *Salvelinus confluentus* in Quartz Lake, Glacier National Park, Montana. Annual report. Montana Cooperative Fishery Research Unit, Montana State University, Bozeman, Montana.

Thiesfeld, S.L., R.H. McPeak, and B.S. McNamara. 2001. Bull trout population assessment in the White Salmon and Klickitat Rivers, Columbia River Gorge, Washington. Washington Department of Fish and Wildlife, fiscal year 2001 annual report. Prepared for: Bonneville Power Administration. Project No. 199902400. BPA Report DOE/BP-00004474-1. Contract No. 00004474.77 p.

Torgersen, C.E., D.P. Hockman-Wert, D.S. Bateman, D.W. Leer, and R.E. Gresswell. 2007. Longitudinal patterns of fish assemblages, aquatic habitat, and water temperature in the Lower Crooked River, Oregon. USGS Open-File Report 2007–1125.

Tretter, C. 2006. Email message to Scott Deeds, U.S. Fish and Wildlife Service, from Chris Tretter, Idaho Department of Lands. Subject: Bull trout data and observations in North Fork East River, Idaho. July 13, 2006.

Underwood, K.D., S.W. Martin, M L. Schuck, and A.T. Scholz. 1995. Investigations of bull trout (*Salvelinusconfluentus*), steelhead trout (*Oncorhynchusmykiss*), and spring chinook salmon (*O. tshawytscha*) interactions in southeast Washington Streams.1992 final report. U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Portland, Oregon.

Upper Salmon River Interagency Technical Advisory Team (USRITAT). 1998. Upper Salmon River key watershed bull trout problem assessment. Draft.

U.S. Army Corps of Engineers (USACOE). 2003. Summary of annual char counts at Buckley trapping facility on the White River, Washington. Available at: http://www.nws.usace.army.mil/PublicMenu/Doc_list.dfm?sitename=MM&pagename=FISHCOUNTS.

U.S. Army Corps of Engineers (USACOE). 2005. Summary of annual char counts at Buckley trapping facility on the White River, Washington. Available at: http://www.nws.usace.army.mil/PublicMenu/Doc_list.cfm?sitename=MM&pagename=FISHCOUNTS.

U.S. Commision on Fish and Fisheries. 1913. Duckabush Fish Hatchery log. Available from: Service, Idaho Fish and Wildlife, Boise, ID.

U.S. Fish and Wildlife Service (Service). 2000. Bull trout spawning ground surveys of Panther Creek, Mill Creek, and Nason Creek, Washington, 1999. Service, Mid-Columbia River Fishery Resource Office, Leavenworth, Washington.

U.S. Fish and Wildlife Service (Service). 2002a. Draft recovery plan for bull trout (*Salvelinus confluentus*) in the conterminous United States: Klamath River, Columbia River, and St. Mary–Belly River distinct population segments. Service, Portland, Oregon.

U.S. Fish and Wildlife Service (Service). 2002b. Final bull trout critical habitat listing rule. Federal Register Notice. Service, Regional Office, Portland, Oregon.

U. S. Fish and Wildlife Service (Service). 2002c. Summary of meetings with individual biologists to discuss bull trout presence, absence, and habitat conditions. March–June 2002. Available from Service, Idaho Fish and Wildlife Office, Boise, Idaho. 19 p.

U.S. Fish and Wildlife Service (Service). 2004a. Draft Recovery Plan for the Coastal-Puget Sound Distinct Populations Segment of Bull Trout (*Salvelinus confluentus*) Volume I (of II). Service, Puget Sound Management Unit, Portland, Oregon.

U.S. Fish and Wildlife Service (Service). 2004b. Draft recovery plan for the Jarbidge River distinct population segment of bull trout (*Salvelinus confluentus*). Service, Portland, Oregon. 132 + xiii p.

U.S. Fish and Wildlife Service (Service). 2004c. Meeting notes and data for the 2004 *Salvelinus confluentus* curiosity society meeting. Re: Field surveys in Chiwaukum Creek, Upper Chiwawa River, Lake Wenatchee, and the Twisp River. Service, Mid Columbia River Fisheries Resource Office, Leavenworth, Washington.

U.S. Fish and Wildlife Service (Service). 2005a. Bull trout observation locations for Washington: database for freshwater and marine foraging, migration, and overwintering habitat.

U.S. Fish and Wildlife Service (Service) 2005b. Surveys for bull trout distribution and abundance in Icicle and Jack Creeks, Chelan County, Washington. Draft report. Service, Central Washington Field Office, Wenatchee, Washington.

U.S. Fish and Wildlife Service (Service). 2006a. Biological opinion on the effects to grizzly bears, bull trout, and bull trout critical habitat from the implementation of proposed actions associated with plan of operation for the Revett RC Resources Incorporated Rock Creek Copper/Silver Mine as proposed by the U.S. Forest Service, Kootenai National Forest. Service, Montana Ecological Services Field Office, Helena, Montana.

U.S. Fish and Wildlife Service (Service). 2006b. Lake Chelan Dam FERC relicensing project biological opinion. Service, Central Washington Field Office, Wenatchee, Washington.

U.S. Fish and Wildlife Service (Service). 2006c. 2006 Mill Creek culvert replacement project biological opinion for the Federal Highway Administration. Service, Upper Columbia Fish and Wildlife Office, Spokane, Washington. Reference No. 1-9-05-F-283. 75 p.

U.S. Fish and Wildlife Service (Service) 2007. Continued and initial operation of a trap and haul fish facility and post-construction monitoring and evaluation program associated with Cougar Reservoir water temperature control project. Biological opinion submitted to the U.S. Army Corps of Engineers, Portland District.

U.S. Fish and Wildlife Service (Service). 2008a. 2008 Final Grande Ronde bull trout core area status assessment. Grande Ronde River Bull Trout Core Area Status Assessment Team, Service, Oregon Fish and Wildlife Office, Portland, Oregon, and La Grande Field Office, La Grande, Oregon.

U.S. Fish and Wildlife Service (Service). 2008b. Biological opinion for the operations and maintenance of the Leavenworth National Fish Hatchery through 2011. Central Washington Field Office, Wenatchee, Washington. Service Reference Numbers 13260-2008-F-0040. 115 p.

U.S. Fish and Wildlife Service (Service). 2008c. Biological opinion for Thompson Falls hydroelectric project. Bull trout consultation, Federal Energy Regulatory Commission Docket No. 1869-048–Montana, PPL Montana, LLC, Licensee. Service, Montana Ecological Services Field Office, Helena, Montana.

U.S. Fish and Wildlife Service (Service). 2008d. Service, Portland, Oregon. 55 p.

U.S. Fish and Wildlife Service (Service). 2008e. Bull trout core area assessment template—Middle Fork John Day core area. Unpublished document.

U.S. Fish and Wildlife Service (Service). 2008f. Bull trout core area assessment template—Upper John Day core area. Unpublished document.

U.S. Fish and Wildlife Service (Service). 2008g. Continued operation and maintenance of the Willamette River basin project and effects to Oregon chub, bull trout, and bull trout critical habitat designated under the Endangered Species Act. Submitted to the U.S. Army Corps of Engineers, Bonneville Power Administration, and Bureau of Reclamation. Service, Oregon Fish and Wildlife Office, Portland, Oregon.

U.S. Fish and Wildlife Service (Service). 2008h. Core area template for the Upper South Fork Payette River.

U. S. Fish and Wildlife Service (Service). 2008i. Genetic analysis of bull trout in the upper Klamath River basin, Oregon. Service, Abernathy Fish Technology Center, Longview, Washington.

U.S. Fish and Wildlife Service (Service). 2008j. Methow River basin bull trout telemetry study draft report. Service, Mid-Columbia River Fisheries Resource Office, Leavenworth, Washington.

U.S. Fish and Wildlife Service (Service). 2008k. Priest Rapids Dam FERC relicensing project biological opinion. Service, Central Washington Field Office, Wenatchee, Washington.

U.S Fish and Wildlife Service (Service). 2008l. Summary of bull trout spawning ground surveys and other bull trout counts in the Wenatchee, Entiat and Methow Watersheds 1988–2008. Submitted to StreamNet. Service, Mid Columbia River Fishery Resource Office, Leavenworth, Washington. UpCoBullRedds 88-2008 Table_final.docx.

U.S. Fish and Wildlife Service (Service). 2009a. Memorandum from Bob Kibler, U.S. Fish and Wildlife Service, Idaho State Office, to Ben Matibag, U.S. Fish and Wildlife Service, Idaho State Office. Re: Proposed bull trout critical habitat-additional streams and lakes. October 14, 2009.

U.S. Fish and Wildlife Service (Service). 2009b. Notes from 2006–2009 genetics surveys. Service, Central Washington Field Office, Wenatchee, Washington.

U.S. Fish and Wildlife Service (Service). 2009c. Rocky Reach Dam FERC relicensing project biological opinion. Service, Central Washington Field Office, Wenatchee, Washington. 187 p.

U.S. Fish and Wildlife Service (Service). 2009d. Biological opinion for the Jack and Indian Creek culvert replacement project. Service, Central Washington Field Office, Wenatchee, Washington. Service reference numbers 13260-2009-F-0110. 3 p.

U.S. Fish and Wildlife Service (Service). 2010. Assemblage of emails and documents used in Figure 3. Service, Portland, Oregon.

U.S. Forest Service (USFS). 1982. Unpublished stream survey data for Cripple Creek.

U.S. Forest Service (USFS). 1990a. Recreation/fish and wildlife challenge-cost share proposal summary. USFS, Olympic National Forest, Olympia, Washington.

U.S. Forest Service (USFS). 1990b. Maklaks Creek stream survey. USFS, Crescent Ranger District, Deschutes National Forest, Bend, Oregon.

U.S. Forest Service (USFS). 1991. Unpublished stream survey data for Greenwater River.

U.S. Forest Service (USFS). 1992a. Bear Creek stream survey. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992b. Cold Creek level II stream survey report. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992c. Cummings Creek level II stream survey report. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992d. Little Tucannon River stream survey. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992e. Meadow Creek stream survey. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992f. Sheep Creek stream survey. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1992g. Turkey Creek stream survey. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1993a. Charley Creek level II stream survey report. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1993b. George Creek level II stream survey report. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1995a. Upper Powder River high priority bull trout watershed. Draft analysis of low, medium, and high risk projects screened in August 1995 and recommended course of action for bull trout recovery. USFS, Wallowa-Whitman National Forest, Baker City, Oregon.

U.S. Forest Service (USFS). 1995b. Upper Eagle Creek high priority bull trout watershed. Draft analysis of low, medium, and high risk projects screened in August 1995 and recommended course of action for bull trout recovery. USFS, Wallowa-Whitman National Forest, Baker City, Oregon.

U.S. Forest Service (USFS). 1995c. Upper North Powder River high priority bull trout watershed. Draft analysis of low, medium, and high risk projects screened in August 1995 and recommended course of action for bull trout recovery. USFS, Wallowa-Whitman National Forest, Baker City, Oregon.

U.S. Forest Service (USFS). 1996a. Charley Creek level II stream survey, v9.6. Unpublished report. USFS, Pomeroy Ranger District, Pomeroy, Washington.

U.S. Forest Service (USFS). 1996b. Trapper Creek level III stream survey. USFS, Crescent Ranger District, Deschutes National Forest, Crescent, Oregon.

U.S. Forest Service (USFS). 1996c. West Fork of Hood River watershed analyses. USFS, Mt. Hood National Forest, Hood River Ranger District, Parkdale, Oregon.

U.S. Forest Service (USFS). 1997. Slate Creek survey. USFS, Okanogan-Wenatchee National Forest, Methow Valley Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 1998a. Asotin Creek watershed biological assessment of ongoing activities for consultation on bull trout by the Umatilla National Forest with the U.S. Fish and Wildlife Service. USFS, Umatilla National Forest, Pendleton, Oregon.

U.S. Forest Service (USFS). 1998b. Biological assessment Coeur d'Alene River basin. USFS, Panhandle National Forests, Coeur d'Alene, Idaho.

U.S. Forest Service (USFS). 1998c. Granite Creek snorkeling transect data. USFS, Okanogan-Wenatchee National Forest, Methow Valley Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 1998d. Odell Creek level II stream inventory. USFS, Deschutes National Forest, Crescent Ranger District, Crescent, Oregon.

U.S. Forest Service (USFS). 1999a. Biological assessment of on-going and proposed Forest Service and Bureau of Land Management activities on federally listed and Forest Service sensitive fish species in the 4th Hydrologic Unit Code: Lower Salmon River cumulative effect watershed. USFS, Nez Perce National Forest, White Bird, Idaho.

U.S. Forest Service (USFS). 1999b. Crystal Creek stream survey. USFS, Deschutes National Forest, Crescent Ranger District, Bend, Oregon.

U.S. Forest Service (USFS). 1999c. Unnamed tributary #1 to Odell Creek stream survey. USFS, Deschutes National Forest, Crescent Ranger District, Bend, Oregon.

U.S. Forest Service (USFS). 1999d. Lower Selway 4th code HUC fish, wildlife and plant biological assessment. USFS, Nez Perce National Forest, Fenn, Idaho.

U.S. Forest Service (USFS). 1999e. Section 7 watershed biological assessment Lochsa River drainage Clearwater subbasin: determination of effects of ongoing activities based on the matrix of pathways and indicators of watershed condition for steelhead trout, fall Chinook salmon, and bull trout. USFS, Clearwater National Forest, Orofino, Idaho. 230 p.

U.S. Forest Service (USFS). 1999f. Final biological assessment Upper Powder River watershed. USFS, Wallowa-Whitman National Forest, Baker Ranger District, Baker City, Oregon.

U.S. Forest Service (USFS). 1999g. Odell watershed analysis. USFS, Deschutes National Forest, Crescent Ranger District, Bend, Oregon.

U.S. Forest Service (USFS). 2000a. Biological assessment of ongoing actions in the Middle Fork Payette River bull trout subpopulation watershed. USFS, Boise National Forest, Boise, Idaho. 46 p.

U.S. Forest Service (USFS). 2000b. Ruby Creek snorkel survey: October 18, 2000. USFS, Okanogan-Wenatchee National Forest, Methow Valley Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 2001a. Biological assessment for the potential effects of managing the Payette National Forest in the Little Salmon River section 7 watershed on Snake River spring/summer and fall chinook salmon, Snake River steelhead, and Columbia River bull trout and biological evaluation of Westslope cutthroat trout: Volume 15 ongoing and new actions. USFS, Payette National Forest, McCall, Idaho. 202 p.

U.S. Forest Service (USFS). 2001b. Selway and Middle Fork Clearwater Rivers subbasin assessment. Draft. USFS, Nez Perce National Forest, Clearwater National Forest, and Bitterroot National Forest.

U.S. Forest Service (USFS). 2001c. Bull trout monitoring results 2001 a summary of redd surveys for Chiwawa, White, Upper Wenatchee, and Peshastin watersheds. USFS, Wenatchee National Forest, Leavenworth, Washington.

U.S. Forest Service (USFS). 2002a. Email message to Steve Hemstrom, USFS, from Del Groat, U.S. Fish and Wildlife Service. Subject: Tucannon River and Asotin Creek bull trout spawning survey data collected from 1994 to 2001.

U.S. Forest Service (USFS). 2002b. Fish distribution information from the Boise National Forest aquatic survey database. Compact Disk. USFS, Boise National Forest, Boise, Idaho.

U.S. Forest Service (USFS). 2002c. Upper Skagit River watershed native char project: upper Canyon Creek habitat surveys, upper Canyon Creek snorkel surveys, Canyon and Ruby Creek bull trout spawning surveys 2001. USFS, Okanogan-Wenatchee National Forests, Methow Valley Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 2003a. Bull trout redd survey summary 1995–2003. Okanogan-Wenatchee National Forests, Methow Valley Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 2003b. Deschutes National Forest aquatic resource monitoring report, 2002. USFS, Deschutes National Forest, Bend, Oregon.

U.S. Forest Service (USFS). 2003c. Maklaks Creek level II stream inventory. USFS, Deschutes National Forest, Crescent Ranger District, Crescent, Oregon.

U.S. Forest Service (USFS). 2004. Fish surveys on the Crescent Ranger District. USFS, Deschutes National Forest, Crescent Ranger District, Bend, Oregon.

U.S. Forest Service (USFS). 2005a. Crystal Creek presence absence survey via AFS protocol. Available at: USFS, Deschutes National Forest, Crescent Ranger District, Crescent, Oregon. July 26, 2005.

U.S. Forest Service (USFS). 2005b. Database for fish observations by stream location for the Okanoga National Forest. Provided to B. Kelly Ringel, U.S. Fish and Wildlife Service, by Pierre Dawson, USFS. Okanoga National Forest, Wenatchee, Washington. February 8, 2010.

U.S. Forest Service (USFS). 2006a. Database for fish observations by stream location for the Wenatchee National Forest. Provided to B. Kelly Ringel, U.S. Fish and Wildlife Service, by Pierre Dawson, USFS. USFS, Wenatchee National Forest, Wenatchee, Washington. February 8, 2010.

U.S. Forest Service (USFS). 2006b. Report of Stormy Creek bull trout at culvert removal project. Okanogan-Wenatchee National Forests, Entiat Ranger District, Wenatchee, Washington.

U.S. Forest Service (USFS). 2007. Fish monitoring report for the Clearwater National Forest. USFS, Clearwater National Forest, Orofino, Idaho. Available at: http://www.fs.fed.us/r1/clearwater/Aquatics/aquatics.htm.

U.S. Forest Service (USFS). 2008a. Bull trout spawning surveys of Entiat and Mad River, 2008. USFS, Okanogan-Wenatchee National Forest, Entiat Ranger District, Entiat, Washington.

U.S. Forest Service (USFS). 2008b. Methow Sub-basin bull trout redd survey report, 2008. USFS, Okanogan National Forest, Methow Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 2009a. Bull trout presence data for the Selway River—GIS database provided by Abby Kirkaldie, South Zone GIS Coordinator, Bitterroot National Forest. July 2, 2009.

U.S. Forest Service (USFS). 2009b. Bull trout presence data for the South Fork Clearwater River—GIS database provided by Gregory Harris, Geospatial and Resource Information Manager, Nez Perce National Forest. July 7, 2009.

U.S. Forest Service (USFS). 2009c. Email message to Mary Hanson, U.S. Fish and Wildlife Service, Portland, Oregon, from Kristy Groves, South Zone Fish Biologist, USFS. September 8, 2009.

U.S. Forest Service (USFS). 2009d. Methow Sub-basin bull trout red survey report 2009. Draft. USFS, Okanogan National Forest, Methow Ranger District, Winthrop, Washington.

U.S. Forest Service (USFS). 2009e. Annual Report to the U.S. Fish and Wildlife Service on activities occurring under 10(a)(1)(A) recovery permit # 001822-4. USFS, Willamette National Forest, Springfield, Oregon.

U.S. Forest Service (USFS). 2009f. Trapper Creek juvenile snorkel survey data from 1996 to 2009. Available at: Deschutes National Forest, Crescent Ranger District, Crescent, Oregon.

U.S. Forest Service (USFS). 2009g. Annual report for 2008 activities conducted under Federal Fish and Wildlife Permit #TE-001618-3. U.S. Forest Service, Fremont-Winema National Forests, Lakeview, Oregon. 2p.

U.S. Forest Service (USFS). 2010a. Email message and attachment from Justin Call, USFS, to B. Kelly Ringel, U.S. Fish and Wildlife Service, Leavenworth, Washington. Subject: Database for bull trout data for ICEMP project (Bull trout query 2004–2009 USFS snorkel and EF surveys). July 2, 2010.

U.S. Forest Service (USFS). 2010b. Letter from USFS Washington, D.C. Office to U.S. Fish and Wildlife Service. Re: Additional Forest Service comments on proposed revised bull trout critical habitat designations. Critical habitat comment letter number 304 and enclosure. April 5, 2010.

U.S. Forest Service and Bureau of Land Management (USFS and BLM). 1999a. Biological assessment of ongoing/proposed activities for bull trout (*Salvelinus confluentus*) in the east face of the Elkhorns–Powder River/Haines, North Powder River/Wolf Creek. USFS, Wallowa-Whitman National Forest, Baker Ranger District and BLM, Baker Resource Area of the Vale District, Baker City, Oregon.

U.S. Forest Service (USFS) and Bureau of Land Management (BLM). 1999b. Joint aquatic and terrestrial programmatic biological assessment for federal lands within the Deschutes Basin for fiscal year 1999. BLM, Prineville Office and USFS, Deschutes and Ochoco National Forests.

U.S. Forest Service and National Park Service (USFS and NPS). 2003. Wildlife annual report collection summary for 2000 and 2002.

U.S. Geological Survey (USGS). 2007a. 2007 Section 10 permit report and data table. USGS, Western Fisheries Research Center, Columbia River Research Laboratory, Cook, Washington.

U. S. Geological Survey (USGS). 2007b. Table of bull trout sampled for genetics. USGS Methow River project. USGS, Western Fisheries Research Center, Columbia River Research Laboratory, Cook, Washington.

U.S. Geological Survey (USGS). 2008. Movement and distribution of bull trout in the upper Jarbidge River watershed, Nevada. Preliminary draft report for Jarbidge River Bull Trout Recovery Team review. USGS, Western Fisheries Research Center, Columbia River Research laboratory, Cook, Washington. 90 p.

Upper Salmon River Interagency Technical Advisory Team (USRITAT). 1998. Upper Salmon River key watershed bull trout problem assessment. Draft. 161 p.

Vail, C. 2003. Email to Scott Deeds, U.S. Fish and Wildlife Service, from Curt Vail, Washington Department of Fish and Wildlife, regarding a bull trout captured on Cedar Creek (Pend Oreille River), Washington. July 31, 2003.

Walters, J. 2002. Kootenai River fisheries investigations: rainbow and bull trout recruitment. Annual progress report April 1, 2000–March 31, 2001. Idaho Department of Fish and Game, Boise, Idaho.

Washington Department of Ecology (WDOE). 2002. Evaluating standards for protecting aquatic life in Washington's surface water quality standards. Temperature criteria. Draft discussion paper and literature summary. Revised December 2002. WDOE, Olympia, Washington. Publication number 00-10-070.

Washington Department of Fish and Wildlife (WDFW). 1994. South Fork Nooksack River spring Chinook fry capture study and 1994 habitat reconnaissance and attached unpublished data.

Washington Department of Fish and Wildlife (WDFW). 1997. Washington state salmonid stock inventory: bull trout/Dolly Varden. Washington Department of Fish and Wildlife, Fish Management.

Watry, C.B., and D.L. Scarnecchia. 2008. Adfluvial and fluvial life history variations and migratory patterns of a relict charr, *Salvelinus confluentus*, stock in west-central Idaho, USA. Ecology of Freshwater Fish 17: 231–243.

Washington Department of Fish and Wildlife (WDFW). 1998. 1998 Washington salmonid stock inventory: bull trout/Dolly Varden. WDFW, Olympia, Washington. 437 p.

Washington Department of Fish and Wildlife (WDFW). 2000. Critical spawning habitat for herring, surf smelt, sand lance and rock sole in Puget Sound, Washington. A guide for local governments and interested citizens. WDFW, Olympia, Washington. 151 p.

Washington Department of Fish and Wildlife (WDFW). 2002. StreamNet, bullchar. (Washington State bull trout and Dolly Varden distribution data layer).

Washington Department of Fish and Wildlife (WDFW). 2004. Washington state salmonids stock inventory, bull trout/Dolly Varden. WDFW, Olympia, Washington.

Washington Department of Fish and Wildlife (WDFW). 2008. 2008 annual spawning survey data table. WDFW, Yakima Regional Office, Yakima, Washington. 2 p.

Washington Department of Fish and Wildlife (WDFW). 2009. Distribution maps. WDFW, Olympia, Washington.

Washington Department of Fish and Wildlife (WDFW). 2010. Letter to Ted Koch, Bull Trout Regional Coordinator, U.S. Fish and Wildlife Service, from WDFW. Re: Bull trout critical habitat designation. March 15, 2010.

Washington Department of Fish and Wildlife and U.S. Forest Service (WDFW and USFS). 2001. Nooksack basin spawn survey records.

Washington Department of Fish and Wildlife and U.S. Forest Service (WDFW and USFS). 2002. Nooksack basin spawning survey records.

Washington Department of Game. 1957. A survey of the resident game fish resources on the North Fork of the Lewis River with a post flooding management plan. Prepared by: A. Kray, Washington Department of Game, Seattle, Washington.

Watershed Sciences, LLC. 2002a. Aerial remote sensing surveys in the Methow, Entiat, and Wenatchee River sub-basins: thermal infrared and color videography. May 16, 2002. A report to Pacific Watershed Institute, Olympia, Washington. Watershed Sciences, LLC, Corvallis, Oregon. 40 p.

Watershed Sciences LLC. 2002b. Aerial remote sensing surveys in the Nooksack River basin: thermal infrared and color videography: Final report to Nooksack Tribe. Watershed Sciences LLC, Corvallis, Oregon.

Watershed Sciences. 2002c. Aerial surveys in the Wenatchee River Basin: thermal infrared and color videography. Dec 22, 2002. Preliminary report to Pacific Watershed Institute, Olympia, Washington. Watershed Sciences, Corvallis, Oregon. 22 p.

Watson, G., and T. Hillman. 1997. Factors affecting the distribution and abundance of bull trout: an investigation into hierarchical scales. North American Journal of Fish Management 17(2):237–252.

Washington State Conservation Commission (WSCC). 1999. Salmon and steelhead habitat limiting factors, Water Resource Inventory Area 18. WSCC, Lacey, Washington.

Washington State Conservation Commission (WSCC). 2000. Salmon and steelhead habitat limiting factors in the north Washington coastal streams of WRIA 20. WSCC, Lacey, Washington.

Watry, C.B., and D.L. Scarnecchia. 2008. Adfluvial and fluvial life history variations and migratory patterns of a relict charr, *Salvelinus confluentus*, stock in west-central Idaho, USA. Ecology of Freshwater Fish 17:231–243.

Weaver, T. 2006. Forest-Wide Fisheries Monitoring—Swan Drainage. Montana Fish, Wildlife and Parks, Kalispell, Montana.

Weaver, T., M. Deleray, and S. Rumsey. 2006. Flathead Lake and river system fisheries status report. Montana Fish, Wildlife and Parks, Kalispell, Montana. DJ Report No. F-113-R1-R4. SBAS Project No. 3130.

Webster, J. 2001. Data form for recording bull trout/Dolly Varden observations in the Satsop River by Jay Webster, U.S. Forest Service.

Weigel, D. 2002. Email message from Dana Weigel. Subject: Bull trout data for the North Fork Clearwater River and Lochsa River. April 5, 2002.

Werdon, S.J. 2000. Jarbidge River watershed stream temperature monitoring 1999. Preliminary draft. U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office, Reno, Nevada. 10 p. plus appendices.

Wild Fish Conservancy (WFC). 2007. A study of ecological recovery and recolonization in Icicle Creek. 2007 progress report. WFC, Duvall, Washington.

Wild Fish Conservancy (WFC). 2009. Upper bull trout survey results. WFC, Duvall, Washington.

Wright, B. 2009. Email message to Jeffrey Chan, Fish Biologist, Washington Fish and Wildlife Office, Lacey, Washington, from B. Wright, National Park Service, Mount Rainier National Park, Ashford, Washington. Subject: ? about North Puyallup River. August 10, 2009. 10:43 a.m.

Confederated Tribes and Bands of the Yakama Nation (Yakama Nation). 2002. Letter to U.S. Fish and Wildlife Service from the Yakama Nation, Yakima, Washington. Re: Habitat in Cowiche, Teanaway, and several other tributaries. Proposed bull trout critical habitat rule public comment letter.

Zajac, D. 2002. Record to the file February 15, 2002. Subject: Bull trout captured at Quinault National Fish Hatchery. U.S. Fish and Wildlife Service, Lacey, Washington.

Zapel, E. 2001. Email message to Cape Powers, City of Bellingham, Bellingham, Washington, from E. Zapel, Northwest Hydraulics Consulting, Seattle, Washington. Subject: Nooksack fish ladder. October 16, 2001. 3:27 p.m.

Ziller, J. S., and G. A. Taylor. 2000. Using partnerships for attaining long term sustainability of bull trout *Salvelinus confluentus* populations in the upper Willamette basin, Oregon. In:

Wild Trout VII Management in the New Millenium: Are We Ready? Yellowstone National Park. October 1–4, 2000.

Zyskowski, S. 1991. Canyon Creek fish summary and unpublished snorkel data for 1989 and 1990. U.S. Forest Service. June 3, 1991.

Zyskowski, S. 2002. Email message to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, Lacey, Washington, from S. Zyskowski, National Park Service, North Cascades National Park, Sedro-Woolley, Washington. Subject: Bull trout surveys on Diablo Lake tributaries. December 3, 2002. 9:11 a.m.

Zyskowski, S. 2003. Email message plus attachment to Jeffrey Chan, Fisheries Biologist, Western Washington Fish and Wildlife Office, Lacey, Washington, from S. Zyskowski, National Park Service, North Cascades National Park, Sedro-Woolley, Washington. Subject: Chilliwack, upper Skagit, etc. writeup review. January 23, 2003. 2:32 p.m.

Personal Communications

Anderson, E.. 2009a. Conversation between Eric Anderson, Washington Department of Fish and Wildlife, Yakima Regional Office, Yakima, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington about bull trout redds located in the Upper Yakima and 2006–2008 redd surveys.

Anderson, E. 2009b. Conversation between Eric Anderson, Washington State Department of Fish and Wildlife, Yakima Regional Office, Yakima, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout distribution and the justification of stream segments in the Yakima River Basin.

Appy, M. 2004. Conversation between M. Appy, R2 Resource Consultants, Redmond, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, Lacey, Washington, clarifying survey results in Bull Trout Study A-38 Progress Report for Baker relicensing. January 27, 2004.

Bailey, T. 2008. Conversation between T. Baily, Oregon Department of Fish and Game, La Grande, Oregon and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding the Bull Tout Core Area Assessment Meeting for the Grande Ronde River Core Area. September 25, 2008.

Barkdull, B. 2009. Telephone conversation between B. Barkdull, Fisheries Biologist, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, discussing recent bull trout observations on the Samish River. September 11, 2009.

Barr, J. 2003. Telephone conversation between J. Barr, Fisheries biologist, Nisqually Tribe, Olympia, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, regarding bull trout sighting at Clear Creek Hatchery. January 6, 2003.

Bienz, C. 2009. Conversation between C. Bienz, The Nature Conservancy, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Boehne, P. 2009. Conversation between P. Boehne. U.S. Forest Service, Wallowa-Whitman Nationa Forest and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde Critical Habitat Unit.

Brostrom, J. 2002. Telephone conversation between Jody Brostrom, Idaho Department of Fish and Game, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout data and observations in the Clearwater River basin, Idaho.

Byrne, A. 2002. Telephone conversations between Alan Byrne, Idaho Department of Fish and Game, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations in Gedney Creek in the Selway River basin, Idaho. May 1, 2002.

Byrne, J. 2002. Telephone conversations between Jim Byrne, Washington Department of Fish and Wildlife, Vancouver, Washington, and Marv Yoshinaka, U.S. Fish and Wildlife Service, regarding bull trout occurrences in lower Columbia River tributaries. March 5 and August 27, 2002.

Byrne, J. 2009. Conversation between J. Byrne, Fisheries Biologist, Washington Department of Fish and Wildlife, Vancouver, Washington, and Jeffrey Chan, U.S. Fish and Wildlife Service, discussing the recent observation of bull trout in Drift Creek within the Lewis River system. September 16, 2009.

Castle, P. 2003. Conversation between P. Castle, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding bull trout distribution in the Skagit, Stillaguamish, and Nooksack River systems. March 21, 2003.

Crabtree, D. 2008. Conversation between D. Crabtree, U.S. Forest Service, Umatilla National Forest, Walla Walla, Washington and Gretchen Sausen, U.S. Fish and Wildlife Service regarding the Bull Tout Core Area Assessment Meeting for the Grande Ronde River Core Area. September 25, 2008..

Crabtree, D. 2009.Telephone conversation between D. Crabtree, U.S. Forest Service, Umatilla National Forest, Walla Walla, Washington and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde Critical Habitat Unit.

Curet, T. 2002. Conversation between T. Curet, Idaho Department of Fish and Game, and Chris Reighn, U.S. Fish and Wildlife Service, regarding bull trout in the Upper Salmon core area.

Curet. T., and D. Garren. 2010. Conversation between Tom Curet, Idaho Fish and Game, and Dan Garren, Idaho Fish and Game, and Ben Matibag, U.S. Fish and Wildlife Service, in Idaho Falls, Idaho. February 11, 2010.

Dachtler, N. 2002a. Telephone conversation between Nate Dachtler, U.S. Forest Service, Deschutes National Forest, Bend, Oregon, and Barb Kelly Ringel, U.S. Fish and Wildlife Service, Leavenworth, Washington, discussing critical habitat for Odell Lake Recovery Unit, Trapper Creek Falls. March 19, 2002.

Dachtler, N. 2002b. Telephone conversation between Nate Dachtler, U.S. Forest Service, Deschutes National Forest, Bend, Oregon, and Barb Kelly Ringel, U.S. Fish and Wildlife Service, Leavenworth, Washington, discussing critical habitat for Odell Lake Recovery Unit, Maklaks Creek and unnamed tributaries to Odell Creek. June 5, 2002.

Dachtler, N. 2009. Telephone conversation between N. Dachtler U.S. Forest Service, Deschutes National Forest, Bend, Oregon, and Biance Streif, U.S. Fish and Wildlife Service, regarding additional occupied bull trout streams in the Metolius River basin. September 3, 2009. 1 p.

Dillion. J. 2010. Conversation between Jeff Dillon, Idaho Department of Fish and Game, and Ben Matibag, U.S. Fish and Wildlife Service, regarding Idaho Department of Fish and Game comments on proposed critical habitat for bull trout in Nampa, Idaho. February 23, 2010.

Downen, M. 2002. Conversation between M. Downen, Washington Department of Fish and Wildlife, La Connor, Washington, and Ed Connor, Seattle City Light, Seattle, Washington, regarding bull trout catches in Diablo Lake.

Dunphy, G. 2002. Conversation between G. Dunphy, Lummi Nation, Bellingham, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding native char observations in Nooksack basin.

Feldhausen, S.2002. Telephone conversation between S. Feldhausen, Fisheries Biologist, Bureau of Land Management, Salmon, Idaho, and Carol Evans, U.S. Fish and Wildlife Service, Chubbuck, Idaho, regarding fish distribution in the Lemhi drainage. April 3, 2002.

Fransen, S. 2005. Conversation between S. Fransen, NOAA Fisheries, Lacey, Washington, and Gwill Ging, U.S. Fish and Wildlife Service (retired), regarding January 4, 2005, native char capture on Humptulips River.

Graham, J. 2008. Comments from J. Graham, Confederated Tribes of the Warm Springs Reservation, Oregon, regarding John Day core area assessment meeting in John Day, Oregon. August 12, 2008.

Green, B. 2003. Conversation between B. Green, U.S. Forest Service, Mt. Baker-Snoqualmie National Forest, Sedro Woolley, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding char use and suitable habitat in Nooksack basin.

Groat, D. 2002. Personal communication between D. Groat,U.S. Fish and Wildlife Service, and Steve Hemstrom, U.S. Fish and Wildlife Service, regarding recreational fishing for bull trout in the Little Tucannon River, Washington, in the 1970s; recreational fishing for large bull trout in the Asotin Creek, Washington; timber harvest rules or A9 Sensitive Botanical Area in Sheep Creek, Washington; and riparian observations in Bear Creek, Washington. U.S. Forest Service.

Hawdon, L. 2009. Phone conversation between Lisa Hawdon, U.S. Forest Service, and Scott Deeds, U.S. Fish and Wildlife Service, regarding bull trout habitat in the Marble Creek watershed, Idaho. August 24, 2009

Hering, D. 2009. Conversation and email correspondence between D. Hering, Crater Lake National Park, National Park Service, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Hopkins, D. 2002. Conversation between D. Hopkins, U.S. Forest Service, Okanogan National Forest, Winthrop, Washington, and Ed Connor, Seattle City Light, Seattle, Washington, regarding upper Skagit River char.

Howell, P. 2005. Conversation between P. Howell, U. S. Forest Service, Pacific Northwest Forestry and Range Sciences Laboratory, La Grande, Oregon, and Gretchen Sausen, U.S. Fish and Wildlife Service, La Grande Field Office, regarding the bull trout 5 year review process and the Grand Ronde Core Area.

Huddle, D. 2002a. Conversation between D. Huddle, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding char distributions at Nooksack char mapping meeting in Mount Vernon.

Huddle, D. 2002b. Conversation between D. Huddle, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding char distributions at second Nooksack char mapping meeting in LaConner to update Streamnet.

Huddle, D. 2003. Conversation between D. Huddle, Washington Department of Fish and Wildlife, La Connor, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, Lacey, Washington, regarding bull trout use in tributaries to Lake Shannon. February 27, 2003.

Jakober, M. 2002. Conversation between M. Jakober, Fisheries Biologist, U.S. Forest Service, Bitterroot National Forest, Sula Ranger District, Sula, Montana, and Kendra Womack, U.S. Fish and Wildlife Service, regarding bull trout presence in, and use of, Big Harrington Creek.

Jakober, M. 2009. Phone conversation between Mike Jakober, U.S. Forest Service, and Scott Deeds, U.S. Fish and Wildlife Service, regarding bull trout observations/habitat in the Selway River watershed, Idaho. July 9, 2009.

Jateff, B. 2009. Conversation between Bob Jateff, Washington State Department of Fish and Wildlife, Ephrata Regional Office, Twisp, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout distribution and the justification of stream segments in the Methow River Basin.

Kelly Ringel, B. M. 2001. Conversation between Barb Kelly Ringel, U.S. Fish and Wildlife Service, Mid Columbia River Fish Resource Office, Leavenworth, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout distribution in Buttermilk Creek and the Twisp River.

Kelly Ringel, B. M. 2002. Conversation between Barb Kelly Ringel, U.S. Fish and Wildlife Service, Mid-Columbia River Fish Resource Office, Leavenworth, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout distribution and the Twisp River.

Kenaston, K. 2009. Conserversation between K. Kenaston, Biologist, Oregon Department of Fish and Wildlife, and Brad Goehring, regarding bull trout in the Hood River basin.

Key, E. 2002. Phone conversations between Edward Key, Clearwater National Forest, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations in the North Fork Clearwater River basin, Idaho.

Kraemer, C. 2002. Conversation between C. Kraemer, Washington Department of Fish and Wildlife, Mill Creek, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding char observations in Nooksack basin from when he worked in the basin.

Krupka, J. 2009. Conversation between Jeff Krupka, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, and Judy De La Vergne, U.S Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding new bull trout spawning in unnamed tributary up the North Fork Tieton River.

Lee, J. 2003. Conversation between J. Lee, Whatcom County, Bellingham, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding Nooksack River bull trout observations.

Lider, E. 2009. Phone conversation between Ed Lider, U. S. Forest Service, and Scott Deeds, U.S. Fish and Wildlife Service, regarding suitable habitat for bull trout in the Coeur d'Alene River basin, Idaho. August 17, 2009.

Lovatt, B. 2009. Conversation between B. Lovatt, U.S. Forest Service, Wallowa-Whitman National Forest, La Grande, Oregon, and Gretchen Sausen U.S. Fish and Wildlife Service, La Grande Field Office regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde Critical Habitat Unit.

Lovtang, J. 2009. Telephone conversation between Jens Lovtang, Confederated Tribes of the Warm Springs, and Biance Streif, U.S. Fish and Wildlife Service, regarding bull trout observations in Lake Creek, tributary to the mainstem Metolius River. September 3, 2009.

Lucas, R. 1998. Telephone conversation between R. Lucas, Fisheries Biologist, Washington Department of Fish and Wildlife, Vancouver, Washington, and Joe Hiss, U.S. Fish and Wildlife Service, regarding bull trout and Plum Creek land exchange. October 19, 1998.

Marx, S. 2000. Telephone conversation between Steve Marx, Oregon Department of Fish and Wildlife, Bend, Oregon and Mary Hanson, Oregon Department of Fish and Wildlife, Portland, Oregon discussing bull trout observation in Davis Lake. July 19, 2000.

Mays, D. 2002a. Phone conversation between David Mays, Nez Perce National Forest, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations in the North Fork Clearwater River basin, Idaho. April 1, 2002.

Mays, D. 2002b. Conversation between D. Mays, Fisheries Biologist, U.S. Forest Service, Nez Perce National Forest, Elk City Ranger District, Elk City, Idaho, and Kendra Womack, U.S. Fish and Wildlife Service, regarding, bull trout use of Big Mallard, Little Mallard, and Rhett Creeks; presence and location of barriers.

McGrath, S. 2003. Conversation between S. McGrath, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding native char tissue sample collection locations in South Fork Nooksack and "Pine Creek".

Mendel, G. 2002. Conversation between G. Mendel, Washington Department of Fish and Wildlife, Dayton, Washington, and John Stephenson, U.S. Fish and Wildlife Service, regarding bull trout caught at the Tucannon River Hatchery anadromous fish trap; habitat conditions, biological indicators, and fish populations in George Creek, Washington; bull trout presence and habitat conditions in Charley Creek, Washington; habitat conditions and fish presence in Wormell Creek, Washington; habitat conditions and fish presence in Hefflefinger Creek, Washington; the timing of annual peak air and stream temperatures in Asotin County; and bull trout life history forms in Asotin Creek, Washington.

Mendel, G. 2009.Telephone conversation between G. Mendel, Washington Department of Fish and Wildlife, Dayton, Washington and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde Critical Habitat Unit. August 24, 2009.

Miller, A. 2009.Conversation between A. Miller, U.S. Forest Service, Wallowa-Whitman National Forest, Enterprise, Oregon and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde and Imnaha critical habitat units.

Molesworth, J. 2002. Conversation between J. Molesworth, U.S. Forest Service, Okanogan National Forest, Winthrop, Washington, and Ed Connor, Seattle City Light, Seattle, Washington, regarding fish surveys in Ruby Creek drainage.

Munson, K. 2002. Conversation between K. Munson, biologist, U.S. Forest Service, Nez Perce National Forest, Salmon River Ranger District, Idaho, and Snake River Fish and Wildlife Office, U.S. Fish and Wildlife Service, regarding bull trout presence, limitations, and barriers in Slate Creek and its tributaries.

Murdoch, A. 2007. Conversation between Andrew Murdock, Washington Department of Fish and Wildlife, Ephrata Regional Office, Wenatchee, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout caught below I-82 in the Yakima River mainstem.

Murphy, P. 2002a. Phone conversation between Pat Murphy, U.S. Forest Service, and Johnna Roy, U.S. Fish and Wildlife Service, regarding bull trout observations/habitat in the Lochsa River watershed, Idaho. January 9, 2002.

Murphy, P. 2002b. Phone conversation between Pat Murphy, U.S. Forest Service, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations/habitat in the North Fork Clearwater River watershed, Idaho. March 26, 2002.

Murphy, P. 2002c. Phone conversation between Pat Murphy, U.S. Forest Service, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations/habitat in the North Fork Clearwater River watershed, Idaho. March 22, 2002.

Murphy, P. 2002d. Phone conversation between Pat Murphy, U.S. Forest Service, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations/habitat in the North Fork Clearwater River watershed, Idaho. May 15, 2002.

Murphy, P. 2009. Phone conversation between Pat Murphy, U.S. Forest Service, and Scott Deeds, U.S. Fish and Wildlife Service, regarding bull trout observations/habitat in the North Fork Clearwater River watershed, Idaho. July 10, 2009.

Nielson, R. 2001. Conversation between R. Neilson, URS Consulting, and Bianca Streif, U.S. Fish and Wildlife Service, regarding bull trout in the Columbia River.

Oregon Department of Fish and Wildlife (ODFW). 2009. Phone conversation between Colleen Fagen, Eastern Oregon Hydro Coordinator, ODFW, and Mary Hanson, U.S. Fish and Wildlife Service IPA contractor, Portland, Oregon. October 14, 2009.

Ogg, L. 2004. Conversation between Larry Ogg, U.S. Forest Service, Olympic National Forest, Olympia, Washington, and Shelley Spalding, USFWS-WWFWO, regarding redd surveys in Dungeness River. December 8, 2004.

Paradis, W. 2002. Phone conversations between Wayne Paradis, Nez Perce National Forest, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations in the North Fork Clearwater River basin, Idaho. April 16, 2002.

Paragamian, V. 2009. Phone conversation between Vaughn Paragamian, Idaho Department of Fish and Game, and Scott Deeds, U.S. Fish and Wildlife Service, regarding bull trout observations in the Kootenai River basin, Idaho. July 1, 2009.

Perkins, R. 2009. Telephone conversation between R. Perkins, Oregon Department of Fish and Wildlife, and Mary Hanson, U.S. Fish and Wildlife Service (IPA), regarding potential bull trout populations in the Malheur Basin. August 20, 2009.

Peterson, A. 2004. Conversation between A. Peterson, Fisherman, Sedro Woolley, Washington, and Ned Currence, Nooksack Tribe, regarding bull trout capture on the Samish River. June 16, 2004.

Raade, M. 2009. Conversation between M. Raade, Klamath Falls Fish and Wildlife Office, U.S. Fish and Wildlife Service, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Reiss, K. Yuki. 2009. Conversation between K. Yuki Reiss, Yakima Salmon Recovery Board, Yakima, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding the distribution and justification of segments of habitat in the Yakima Basin, Yakima.

Renfro, B. 2009. Conversation between Brent Fenfro, Washington Department of Fish and Wildlife, Ellengsburg, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout habitat in Cold Creek above Keechelus Dam.

Reynolds, K. 2003. Conversation between K. Reynolds, U.S. Fish and Wildlife Service, Lacey, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, Lacey, Washington, regarding angler catches of bull trout in the lower Carbon River and photo of adult captured by B. Pearson at the confluence with Puyallup River.

Sahlfeld, D. 2002. Conversation between D. Sahlfeld, Washington Department of Fish and Wildlife, La Connor, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, regarding char use in Nooksack watershed during first fish mapping party at Mount Vernon.

Sahlfeld, D. 2003. Conversation between D. Sahlfeld, Washington Department of Fish and Wildlife, La Connor, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, at the bull trout survey coordination meeting. September 25, 2003.

Sankovich, P. 2008, 2009. Conversation between P. Sankovich, U.S. Fish and Wildlife Service, La Grande Field Office, La Grande, Oregon, and John Stephenson, U.S. Fish and Wildlife Service regarding bull trout in the Umatilla River.

Sausen, G. 2009. Conversation between Gretchen Sausen, U.S. Fish and Wildlife Service, La Grande Field Office, La Grande, Oregon, and Biance Streif U.S. Fish and Wildlife Service, regarding distribution of bull trout known occupied and proposed unoccupied habitat maps in the Grande Ronde and Imnaha critical habitat unit.

Schriever, E. 2002. Phone conversation between Ed Schriever, Idaho Department of Fish and Game, and Chuck Huntington, Clearwater BioStudies, Inc., regarding bull trout observations in the Clearwater River basin, Idaho. April 4, 2002.

Schultz, L. 2009. Conversation between L. Schultz, Klamath Falls Fish and Wildlife Office, U.S. Fish and Wildlife Service, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Shrier, F. 2002. Conversation between F. Shrier, PacifiCorp, and Tim Cummings, U.S. Fish and Wildlife Service, regarding bull trout sightings in Lake Merwin, Lewis River. March 2, 2002.

Smith, R. 2009. Conversation and email between R. Smith, Oregon Department of Fish and Wildlife, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Smith, T. 2009. Conversation between T. Smith, U.S. Forest Service, Fremont-Winema National Forests, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Stagner, E. 2003. Conversation between E. Stagner, U.S. Fish and Wildlife Service, Lacey, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, Lacey, Washington, regarding bull trout observations in the Puyallup system.

Thiesfeld, S. 2002. Telephone conversation between, S. Thiesfeld, Fisheries Biologist, Washington Department of Fish and Wildlife, Vancouver, Washington, and Joe Hiss, U.S. Fish and Wildlife Service, regarding bull trout in Klickitat River watershed. April 30, 2002.

Thomas, J. 2009. Conversation between Jeff Thomas, U.S. Fish and Wildlife Service, Mid Columbia Fisheries Resource Office, Yakima Sub Office, Yakima, Washington, and Judy De La Vergne, U.S. Fish and Wildlife Service, Central Washington Field Office, Wenatchee, Washington, regarding bull trout distribution and justification of stream segments in the Yakima Basin.

Tinniswood, W. 2009.Conversation and email correspondence between W. Tinniswood, Oregon Department of Fish and Wildlife, and Nolan Banish, U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

Toba, D. 2003. Conversation between D. Toba, Washington Department of Fish and Wildlife, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding a bull trout in the Samish River. November 9, 2003.

Whitesel, T. 2009. Telephone conversation between T. Whitesel, Biometrician, U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office, Vancouver, Washington, and Jeffrey Chan, U.S. Fish and Wildlife Service, regarding bull trout patch map for White Salmon River system. September 21, 2009.

Wise, T. 2009. Telephone conversation between Ted Wise, Oregon Department of Fish and Wildlife, Bend, Oregon, and Jennifer O'Reilly, U.S. Fish and Wildlife Service, Bend, Oregon, regarding bull trout observation near Odell Lake outlet near Sunset Cove. August 12, 2009.

Wright, B. 2009. Telephone conversation between B. Wright, Biological Science Technician, National Park Service, Mount Rainier National Park, Ashford, Oregon, and Jeffrey Chan, U.S. Fish and Wildlife Service, discussing and clarifying details of bull trout distribution within Mount Rainer National Park. August 6, 2009.

Zakel, J. 2006. Telephone conversation between J. Zakel, Oregon Department of Fish and Wildlife (retired), La Grande, Oregon, and Gretchen Sausen, U.S. Fish and Wildlife Service, regarding presence of bull trout in Catherine Creek.

Zyskowski, S. 2002. Conversation between S. Zyskowski, National Park Service, North Cascades National Park, Sedro Woolley, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding distributions during first char fish mapping meeting at Mount Vernon**.**

Zyskowski, S. 2003a. Conversation between S. Zyskowski, National Park Service, North Cascades National Park, Sedro Wooley, Washington, and Jeff Chan, U.S. Fish and Wildlife Service, Lacey, Washington, regarding Swift Creek surveys.

Zyskowski, S. 2003b. Conversation between S. Zyskowski, National Park Service, North Cascades National Park, Sedro Woolley, Washington, and Ned Currence, Nooksack Tribe, Deming, Washington, regarding char use in Nooksack watershed and habitat.