

**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**

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## 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 (0.5 miles) 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

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<b>CHU—CHSU</b>	<b>Water Body Name</b>	<b>State</b>	<b>Information Documenting Bull Trout Occupancy</b>	<b>Essential Habitat Rationale</b>	<b>LLID</b>
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	<p>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).</p>	See CHU text	1181740 465575

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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

**Bull Trout Final Critical Habitat Justification**

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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