Scoping Report for the Deschutes Basin Habitat Conservation Plan Environmental Impact Statement

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June 2018

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
DBBC	Deschutes Basin Board of Control
EIS	Environmental Impact Statement
ESA	federal Endangered Species Act of 1973
ITP	incidental take permit
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
The Services	U.S. Fish and Wildlife Service and National Marine Fisheries Service
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

Chapter 1
Introduction

1.1 Proposed Action Overview

The U.S. Fish and Wildlife Service (USFWS) is preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts associated with issuance of incidental take permits (ITPs) under the Endangered Species Act of 1973, as amended (ESA), for the proposed Deschutes Basin Habitat Conservation Plan (HCP) by USFWS and National Marine Fisheries Service (NMFS), referred to collectively as the Services.

The Deschutes Basin Board of Control (DBBC)[1] and the City of Prineville, Oregon, referred to collectively as the permittees, are preparing the Deschutes Basin HCP because their activities have the potential to incidentally take species listed under the ESA in the Deschutes Basin.

The species for which the ITPs would be issued to the permittees are collectively referred to as the *covered species.* The covered species for the Deschutes Basin HCP are three species listed as threatened under the ESA (Oregon spotted frog [*Rana pretiosa*], middle Columbia River steelhead trout [*Oncorhynchus mykiss*] and bull trout [*Salvelinus confluentus*] and two unlisted species (Chinook salmon [*Oncorhynchus tshawytscha*], and sockeye salmon [*Oncorhynchus nerka*]

The activities covered under the Deschutes Basin HCP, referred to as *covered activities*, include operation and maintenance of dams and reservoirs; operation and maintenance of diversions, pumps, and intakes; diversion of water for irrigation; return of flow to a river or creek; groundwater withdrawals and effluent discharges.

The Deschutes Basin HCP also includes a conservation strategy, a series of conservation measures implemented by the permittees to reduce the adverse effects of covered activities on the covered species. The ITPs also authorize any take that may result from the conservation strategy as well as monitoring measures. Conveyance and delivery of water to patron lands is not a covered activity in the Deschutes Basin HCP and therefore is not addressed in this chapter.

The EIS will evaluate the environmental impacts resulting from the issuance of an ITP for the Deschutes Basin HCP, as well as reasonable alternatives to the proposed action.

1.2 Purpose of the Proposed Action

The purpose of the federal action is to review and approve a request for an ITP for the Deschutes Basin HCP which, if granted, would authorize the incidental take of the covered species. The purpose of the ITP issuance is to comply with the ESA by providing protection and conservation of certain listed species while enabling the permittees to conduct legally authorized activities. The ITPs would also require implementation of the Deschutes Basin HCP.

[1] The DBBC consists of eight irrigation districts—Arnold, Central Oregon, Lone Pine, North Unit, Ochoco, Swalley, Three Sisters, and Tumalo.

Section 9 of ESA (16 United States Code [U.S.C.] 1531 et seq.) and its implementing regulations prohibit the take of animal species listed as endangered or threatened. The term *take* is defined in the ESA as: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct" (16 U.S.C. 1532(19)). *Harass* is further defined in the Service's regulations as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (50 Code of Federal Regulations [CFR] 17.3). *Harm* is further defined in the Service's regulations as "an act which actually kills or injures listed wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering" (50 CFR 17.3).

Under Section 10(a) of ESA, the Service may issue permits to authorize incidental take of listed animal species. *Incidental take* is defined by the ESA as take that is "…incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (50 CFR 17.3). Section 10(a)(1)(B) of ESA contains provisions for issuing ITPs to non-federal entities for take of endangered and threatened species, provided the applicant prepares a conservation plan (ESA Section 10(a)(2)(A)) and satisfies the issuance criteria provided in ESA Section 10(a)(2)(B), which require that:

- The taking will be incidental.
- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.
- The applicant will ensure that adequate funding for the HCP and procedures to deal with unforeseen circumstances will be provided.
- The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild.
- The applicant will ensure that other measures that the Service may require as being necessary or appropriate will be provided.
- The Service has received such other assurances as may be required that the HCP will be implemented.

1.3 NEPA Compliance

The National Environmental Policy Act (NEPA) states that any federal agency undertaking a "major federal action" likely to "significantly affect the quality of the human environment" must prepare an EIS (42 U.S.C. 4332(2)(C)). Significance is determined by evaluating the context and intensity of impacts, as defined in 40 CFR 1508.27. Based on these guidelines, the USFWS, as lead federal agency, has determined that issuance of an ITP under the proposed Deschutes Basin HCP may have significant effects on the human environment and requires preparation of an EIS before a decision to issue federal permits is made.

The EIS will consider the impacts of the proposed action—the issuance of an ITP—on the human environment. The EIS will also include analysis of a reasonable range of alternatives to the proposed action. Alternatives considered in the EIS may include, but are not limited to, variations in the permit term permit structure; the quantity of take permitted; the amount, location, and/or type of

conservation, monitoring, or mitigation provided ; the scope of covered activities; or a combination of these. Additionally, a no-action alternative will be evaluated in the EIS. The no-action alternative provides a baseline for comparing the effects of the proposed action and other action alternatives considered in the EIS.

The first formal step in the NEPA process is the scoping phase. The primary purpose of the scoping process is to provide interested parties such as the public, organizations, and agencies an opportunity to assist in developing the scope of the EIS analysis by identifying important issues and alternatives related to the proposed action that should be considered in the NEPA document.

This report summarizes comments, feedback, and input received during the 60-day scoping period for the Deschutes Basin HCP EIS. The scoping period for this effort began July 21, 2017, and closed on September 22, 2017.

Chapter 2
Scoping Activities

2.1 Scoping Notification

The scoping period was announced through a Notice of Intent (NOI) to Prepare a Draft Environmental Impact Statement for the Deschutes Basin HCP and to hold scoping meetings. The NOI was published in the Federal Register, a news release distributed to regional and local media, and public notice as described below. As noted above, the scoping period began July 21, 2017, and closed on September 22, 2017.

2.1.1 Notice of Intent

The Service published an NOI in the Federal Register (www.federalregister.gov) on July 24, 2017 (82 FR 34326). The NOI provides background information on the proposed action, as well as information on how to participate in the EIS scoping process. A copy of the NOI is provided in Appendix A, *NEPA Notice of Intent*.

2.1.2 News Release

A news release announcing the initiation of the scoping process and the four public meetings was sent to 878 media outlets throughout Oregon via Meltwater, a service company contracted by the Service for distribution of news bulletins and releases. Materials used for the news release are provided in Appendix B, *Scoping Display Advertisements, and Informational Flyer*.

2.1.3 Public Notice

Public notice of the initiation of the scoping process and the four public meetings was put on various community calendars in Central Oregon. The Deschutes Basin HCP Applicants also informed their patrons regarding the scoping meetings and the 60-day comment period. Materials used for the public notice are provided in Appendix B, *Scoping Display Advertisements, and Informational Flyer*.

2.2 Public Scoping Meetings

Four public scoping meetings were held in August 2017. The locations, dates, and times of the scoping meetings are as follows.

- August 14, 2017, Inn at Cross Keys Station, 66 NW Cedar Street, Madras, Oregon
  - 2:00–4:00 p.m.
  - 6:00–8:00 p.m.
- August 15, 2017, U.S. Forest Service, 63095 Deschutes Market Road, Bend, Oregon
  - 2:00–4:00 p.m.
  - 6:00–8:00 p.m.

The scoping meeting presentations are provided in Appendix C. Scoping meeting materials are presented in Appendix D.

Fifty-two written comments were received during the scoping period. Comments were received from the National Park Service and the Environmental Protection Agency; the Oregon Department of Fish and Wildlife and the Oregon Department of Environmental Quality; and the Crook County Court, Crook-Wheeler County Farm Bureau, the Jefferson County Farm Bureau, and the Oregon Farm Bureau. Appendix E present the comments received from public agencies. The Service did not receive comments from any Tribe.

Chapter 3
Summary of Comments Received

During the scoping period, 52 written comment submissions were received. Comments were received via letter and email. The Service identified 11 categories that encompassed the concerns and recommendations in the scoping comments. Comments are summarized in the sections below by each of these categories.

3.1 Management Issues and Goals

Sixty percent of commenters addressed management issues and goals.

3.1.1 Flows

Comments related to instream flows included the following suggestions and statements.

- The NEPA analysis should assess what flows are necessary in covered stream reaches to ensure recovery of the HCP's covered species.
- The objective and function of the HCP should be to achieve the minimum instream flow needs for the five covered species (Oregon spotted frog, bull trout, steelhead, sockeye salmon, and spring Chinook salmon).
- Flow needs must be identified in the Draft EIS and should include, but should not be limited to, instream water rights already set by the Oregon Department of Fish and Wildlife (ODFW) and the Oregon Water Resources Department.

3.1.2 Water Conservation

Comments related to water conservation included the following suggestions and statements.

- The HCP should require that all conserved water resulting from the HCP conservation measures be returned to the river and its tributaries.
- The HCP should describe in detail and mandate the process of transferring water rights to instream water rights. It should also require the DBBC districts and patrons to transfer their most senior water rights to instream flows.
- The HCP and ITP package of measures should include some provisions that require improvements in on-farm efficiencies as conservation measures, especially in Central Oregon Irrigation District (COID) and other low-efficiency districts.
- In addition to requiring improvements in on-farm efficiencies, the HCP could also use flow requirements for each of the covered parties to compel on-farm efficiencies.
- On-farm efficiency measures could include fallowing unproductive fields, planting less water-intensive crops, installing more efficient water application methods, and piping and/or lining private conveyances. These projects could be funded in part by grants through the Natural Resources Conservation Service's PL-566 program.

3.1.3 Water Quality

Comments related to water quality included the following suggestions and statements.

- The HCP must include conservation measures that result in improved water quality throughout the Basin. The HCP should condition the issuance of an ITP on the covered parties' maintenance of water quality standards pertinent to the health and survival of the covered species (e.g., dissolved oxygen, total dissolved gases, pH, and water temperature), including current Oregon Water Resources Department targets and future Total Maximum Daily Load standards set by the Oregon Department of Environmental Quality for the Deschutes River and its tributaries. Substandard water quality conditions in the Deschutes River Basin are largely caused by the activities of the covered parties, including warm surface water caused by artificial storage and release and agricultural run-off.
- The Draft EIS must consider impacts on water quality in the Deschutes Basin. This should include impacts not only to the upper Deschutes River and its tributaries, but also impacts on the river's lower 100 miles, which is a federally designated Wild and Scenic River and a treasured recreation destination. The Draft EIS should examine how these water quality impacts will affect resident and anadromous fish, birds, and other wildlife throughout the Deschutes Basin.
- The Draft EIS must take a close look at how water quality above and below the Pelton Round Butte Project will be impacted by management changes made pursuant to the HCP.
- The EIS analysis should include water quality in the covered reservoirs, including the Crane Prairie, Wickiup, Crescent, Prineville, and Ochoco reservoirs.

3.1.4 Groundwater

Comments related to groundwater included the following suggestion.

- The HCP should include an analysis of the conservation measures' impacts on groundwater and springs. This analysis should include local effects of conservation measures (including piping projects) on nearby springs and groundwater tables, as well as basin-wide effects on aquifers and springs.

3.1.5 Non-Essential Use

Comments related to non-essential water use included the following suggestions and statements.

- All unnecessary or nonessential designations of water should be eliminated to meet the goals of the HCP.
- The 2016 historical listing of a section of the Pilot Butte Canal by the National Park District is an example of a non-essential use of water that is detrimental to meeting the needs of ranchers, farmers, fish and wildlife, local residents, visitors, and a healthy/vibrant Deschutes River Basin.
- Additional non-essential uses of Deschutes River Basin water include preservation of property values, preservation of private water features, and preservation of open canal water views to private property owners bordering irrigation canals.

3.1.6 Piping

Comments related to piping included the following suggestions and statements.

- Piping canals and laterals for the purpose of conserving water and restoring flows to the Deschutes River should be supported. However, the water conserved from the projects should stay in the river so that the river and associated riparian ecosystems can be restored.
- Piping and/or lining of canals and laterals could have a negative effect of preventing the critical groundwater recharge service these conveyances currently provide. The Draft EIS analysis should include both local effects of conservation measures (including piping projects) on nearby springs and groundwater tables, as well as basin-wide effects on aquifers and springs.
- The current emphasis by the irrigation districts on big pipes is too narrow. While some piping of larger canals may be appropriate, it should not dominate the HCP and end up sinking the effort with its unrealistic cost. A diverse solution that draws on all approaches is best.
- The HCP should prioritize the piping and pressurization of smaller, on-farm laterals that serve individual users or small groups of users. Such projects are more cost-effective and they allow for continued spring and groundwater recharge from the larger, first-order canals and diversions while promoting efficient water use by individual users. Piping and pressurizing first-order diversions will only benefit those users whose laterals and on-farm irrigation systems are also pressurized.
- All piping projects should be designed to meet delivery needs. No extra diversion should be engineered or permitted.
- Water is not "lost" through leaking irrigation canals; rather, it recharges groundwater aquifers. Cold springs that are essential to threatened species (e.g., steelhead, bull trout) could be impacted if water is not able to seep into the ground from canals and ditches.
- Senior rights holders may lose incentive to conserve water through measures such as those currently employed by farmers in Jefferson County. Conservation measures must be developed and implemented. These measures could include use of drip irrigation, sprinklers, or pumpback systems; demand-based delivery; and a metered system that rewards irrigators for efficiency and conservation through lower bills.
- The HCP should condition the issuance of an irrigation district's ITP on the transfer of all rights to water conserved through PL-566 piping projects to instream flows.

3.1.7 Recreation

Comments related to recreation included the following suggestions and statements.

- The HCP should take into account the impacts of river recreation as flow regimes are altered.
- The HCP should assess adverse impacts on some forms of recreation, such as reservoir fishing, which is an important part of the local economy.

3.1.8 Hydropower

Comments related to hydropower included the following suggestions and statements.

- The HCP should include an analysis of the impacts of a hydropower plant being installed on Wickiup Dam—especially the possibility of invasive fish that prey on OSF being released from the reservoir into the river below the dam.
- The HCP should address effects of hydropower production, including accelerated degradation of channel morphology and wetland habitat affecting covered species, and how economic gain for irrigation districts related to hydropower production is an incentive for higher flows.
- The Draft EIS must note whether the Proposed Action includes facilities that generate hydropower and, if so, it must describe all facilities and infrastructure (both anticipated new construction and modifications to existing works) that are related to or necessary for power generation.
- On-farm deliveries should be metered and measured to ensure that extra water isn't diverted for hydropower. No extra diversion for hydropower should be engineered or permitted.
- Development of hydroelectric power facilities and revenue will create a disincentive to implement conservation systems, as drawing more river water would produce more revenue for the irrigation districts.

3.1.9 Diversion

Comments related to diversion included the following suggestions and statements.

- The Draft EIS should detail the status of fish screens, along with upstream and downstream passage facilities at each diversion. This should include the status of the Crescent Lake dam, Crane Prairie Reservoir dam, and Wickiup Reservoir dam fish screens and fish passage facilities.
- The Draft EIS should include information that confirms those facilities currently equipped with screens are sufficient to safely exclude juvenile and adult OSFs. The Draft EIS should also present the impacts associated with those diversions and dams that are not screened or adequately screened, including the North Unit Irrigation District North Canal Diversion screen.

3.1.10 Conservation

Commenters addressed several categories of conservation activities that include water, fish and wildlife, and economic resources.

3.2 Economics

Forty-four percent of commenters addressed analysis of economic impacts or sources of funding for the HCP.

3.2.1 Applicant Funding Mechanisms

Comments related to applicant funding mechanisms included the following suggestions and statements.

- As the entities largely responsible for the historic take of covered species in the Deschutes River Basin, as well as the entities seeking protection from liability under the ESA through this HCP and ITP, the eight DBBC irrigation districts should be the primary source of funding to implement the HCP's conservation measures.
- Any funding made available to the DBBC districts through the PL-566 program should actually benefit the Deschutes River or its tributaries, and not be used to meet the districts' other obligations, including the potential "firming up" of supply to junior irrigation districts.
- The HCP should consider more than just high-cost large capital projects, such as first-order canal and lateral piping projects, to increase water conservation to meet flow requirements.
- The HCP should consider "bottom-up" water conservation projects where smaller laterals and diversions are piped and pressurized.
- The HCP should consider market-based solutions where some irrigation district patrons can voluntarily reduce their water use for a small cost, leading to low-cost transfer of irrigation water rights to instream water rights.
- Prineville and the irrigation districts and/or individuals within the districts could earn water reduction credits that can be sold or traded between irrigation districts or to third party investors. Credits would be earned as water usage reduction projects are completed.
- The preferred method of the districts for achieving needed mitigation appears to be, as reflected in PL-566 proposals, big pipes which will cost nearly $1 billion. That is not practical or cost effective, as contrasted with piping of private laterals which was found by COID and the Farmers Conservation Alliance to be both cheap and effective. The COID and Farmers Conservation Alliance found that piping of COID's main canals would cost $700 million and conserve 89,500 acre-feet of water per year. The same study found that modernizing the district's private laterals would cost $36.5 million and conserve 35,284 acre-feet of water per year. Piping smaller private laterals in COID achieves 39% of the water savings at only 5% of the cost of main canal piping projects.

3.2.2 Effect on Local Economy

Comments related to effects on the local economy included the following suggestions and statements.

- The Draft EIS should consider the economic impacts of changes in management or irrigation availability caused by the HCP. Even slight changes in management can have serious consequences for local businesses, and economic information needs to be accurate, comprehensive, and on a scale that truly considers all farmers, businesses, and community members who are impacted by management changes.
- The U.S. Fish and Wildlife Service should do a thorough and comprehensive evaluation of the economic impacts that the proposed conservation measures could have on the overall economy of the Deschutes Basin The Draft EIS must analyze the socioeconomic impacts and benefits of its alternatives.

3.3 Environmental Conditions and Issues

Twenty-seven percent of commenters addressed concerns about environmental conditions and issues including but not limited to the environmental baseline, covered species, the ecology and life history of the covered species, ecosystem services, and climate change.

3.3.1 Environmental Baseline

Comments related to the environmental baseline included the following suggestions and statements.

- The HCP must set a baseline of current conditions that includes conservation measures already adopted by the DBBC districts, against which additional conservation measures required by the HCP will be measured. This is in addition to the setting of proper, biologically defensible instream flows.
- The HCP should not use current environmental and climate conditions as a baseline for stream flows. Instead, the HCP should anticipate these projected hydrological conditions in its analysis of the effect of proposed conservation measures on stream flows.
- The Draft EIS should be clear what flow regime constitutes the hydrologic baseline for purposes of assessing impacts and should describe the surface water/groundwater interaction in the scope area.
- The Draft EIS must use a technically credible and substantiated hydrologic baseline that is developed for changed climate conditions and that is not simply based on past hydrology.

3.3.2 Covered Species

Comments related to covered species included the following suggestions and statements.

- The EIS should include other sensitive species in the area of NEPA analysis, including redband trout.
- The HCP EIS must have a description of covered species habitat conditions and how each species' habitat conditions change with project operations, or how each species responds to those changes. Without this comprehensive discussion of changing habitat conditions and responses, there is no basis for analysis of impacts on covered species or their habitat.

3.3.3 Ecology/Life History of Covered Species

Comments related to the ecology/life history of covered species included the following suggestions and statements.

- The life history of native species should be addressed in the HCP.
- Very little is known about OSF biology and ecology in a reservoir environment, and a more comprehensive understanding of the frog's needs within the Applicant's managed irrigation delivery system is needed.
- The HCP should ensure that the timing of reservoir releases relates to and supports the life history of the OSF as well as listed and native fish species.

- There need to be binding minimum flows in the Crooked River system and Upper Deschutes River system that sustain and benefit all life history stages of those species for which the ITP is being proposed.
- Measures to address, contribute, and or otherwise meet biological objectives/needs for all life history stages of steelhead trout and Chinook salmon in Whychus Creek should be analyzed.
- Summer flows must be reduced and winter flows increased to meet all of the life history needs of the OSF and listed fish species and to improve habitat conditions. Summer flows also need to be reduced to approximate a more natural hydrograph.
- Information on the life history of the Oregon spotted frog in particular must be thoroughly provided, including the interrelated habitat needs of the Oregon spotted frog in relation to the other four covered species.

3.3.4 Ecosystem Services

Comments related to ecosystem services included the following suggestions and statements.

- The HCP's effects on ecosystem services, both positive and negative, should be analyzed and disclosed in the EIS. Of key importance in this context is the role of salmon as a provisioning species. Salmon produce highly valued food products harvested in various commercial, subsistence, and personal use fisheries across the North Pacific. Salmon are also a principal focus of the spiritual and cultural lives of diverse native communities in the Pacific Northwest.
- The ecosystem services of salmon and steelhead, which are the principal food item of many terrestrial wildlife species and a source of marine-derived nutrients to coastal lakes and streams, must be acknowledged, accounted for using quantitative (where feasible) or qualitative means, and fully considered in decision making.

3.3.5 Climate Change

Comments related to climate change included the following suggestions and statements.

- The Draft EIS must incorporate the best available science in assessing the efficacy of the alternatives in light of probable changes caused by the warming climate. To do so, the Draft EIS must include hydrologic analysis that is integrated with and based on credible and substantiated climate change modeling.
- If climate change threatens the species by impacting the quality or quantity of its habitat in the future, or increasing its vulnerability to pathogens or exotic species, this increased vulnerability should be taken into account by the EIS analysis.

3.4 Monitoring and Adaptive Management

Nineteen percent of commenters addressed monitoring and adaptive management requirements. Comments included the following suggestions and statements.

- It is important that all aspects of the HCP’s conservation measures be monitored as they are implemented.

- A robust and thorough adaptive management plan should be in place to ensure that all measures achieve their stated biological goals and objectives.
- Effects monitoring should be thoroughly addressed in the EIS analysis.
- The HCP should include a comprehensive and robust monitoring program that can identify the positive and negative effects of management actions.
- HCP should plan for and implement a detailed monitoring and evaluation program. This program should be used to make adjustments to the HCP and ITP as needed in order to continually protect covered species. If the conservation measures adopted in the HCP result in reduced populations of covered species, excessive take of species, or additional loss or degradation of covered species' habitat, then the HCP and ITP should be amended during the permit period. Such loss or degradation of covered species' habitat should include, but not be limited to, reduced flows in the Deschutes River and its tributaries, and degraded water quality including increases in water temperature.
- A comprehensive monitoring program should be implemented with triggers that make changes seasonally and/or annually as needed.

3.5 Permit Duration

Twelve percent of commenters addressed permit duration. Comments included the following suggestions and statements.

- Permit durations could range from 5 to 40 years. It is important that the advantages and disadvantages of a range of timeframes be thoroughly analyzed.
- The more difficult it is to make effective and timely adjustments to the issued ITP, the shorter the duration of the ITP should be.
- The duration of the ITP should not exceed the limits of the climate change models used in the EIS analysis for assessing predicted effects. An initial short duration permit with a required review of consequences of initial provisions and execution should be issued, after which the ITP could be renewed for progressively longer periods as information and practices are refined.
- Permit length should be commensurate with the current understanding of the covered species' biology and ecology.

3.6 New Information and Current Science

Twelve percent of commenters addressed new information and current science. Comments included the following suggestion.

- The EIS should use the most up-to-date information available on covered species, and apply the most recently developed analytical methods.

3.7 Alternatives

Twelve percent of commenters addressed alternatives to the action. Comments included the following suggestions and statements.

- The EIS should evaluate alternatives that set biological goals, objectives, and conservation measures that optimize Deschutes River flows for Oregon Spotted Frog and listed fish.
- Two specific alternatives should be evaluated: "run-of-the-river" and "supply-based" proposals, which seek to maximize reservoir stability, provide early spring flows that inundate riverine wetlands used by breeding frogs, reduce the impact of fall drawdown on frogs utilizing off-channel habitats, and provide winter flows that inundate off-channel winter habitat.
- The EIS should evaluate alternatives under a standard of technological and/or implementation practicability absent cost. The EIS should analyze the full range of efficiency, management, and water transfer measures (on farm, conveyance, water management, duty reduction, etc.) that will fully avoid adverse impacts on species, absent cost, to determine practicability.
- The EIS should evaluate an alternative where avoidance of all harm to species is achieved. Additionally, the EIS should analyze an alternative where the combination of avoidance, minimization, and mitigation leaves no remaining adverse impacts on the species—in other words, all impacts are offset. Finally, the EIS should analyze an alternative where a net benefit is achieved that will enhance species chances of recovery, as the legislative record for the ESA indicates was the intent of Congress. The EIS analyses of these alternatives should not be constrained by what the applicant deems economically practicable or feasible.
- The EIS should evaluate dry year alternatives where biological flows for fish/OSF are met, regardless of what is proposed by the Applicants in their draft Deschutes Basin Habitat Conservation Plan.
- Any and all alternatives analyses should include an analysis of the alternative under climate change scenarios. The Deschutes Basin Habitat Conservation Plan should be required to identify potential climate-related changes and develop specific management responses.
- The Draft EIS should select a range of alternatives that allows for evaluation of all major actions available to offset DBBC and City of Prineville impacts and not reduce the likelihood of recovery of Covered Species.
- Other specific alternatives should be considered, and the EIS analysis of each alternative should clearly articulate whether and to what degree they achieve the goals and objectives outlined in the purpose and need statement.
- The EIS should consider a Modified Flows Alternative with a range of enhanced upper Deschutes winter flows to help meet the needs of covered species. Flows could include 300 cfs, 450 cfs, and 600 cfs.
- The EIS should consider Middle Deschutes summer flows to improve conditions for fish species and improve water quality. Such a range should include 250 cfs (ODFW instream water right amount) but also lower flows such as 175 cfs (to understand how resources and water quality may be impacted especially if the lower Middle Deschutes flows occur in conjunction with additional cold water inflows from Tumalo Creek).

- In Whychus Creek, the alternative should consider flow ranges in the 45 cfs to 65 cfs range during irrigation season. In the Crooked River, the Draft EIS should analyze minimum flows below Bowman Dam of 80 cfs, 120 cfs, and 140 cfs. The ODFW has determined that a minimum of 80 cfs is necessary in the storage season to protect the resources in the tailwater fishery.
- The EIS should consider a Recovery Alternative which offers a vision for species recovery in the Deschutes watershed from which to assess how well implementation of the HCP Conservation Strategy will contribute to attaining the vision.
- The EIS should include a wide range of alternatives, included market-oriented solutions, piping of private laterals, storage, on-farm efficiencies, and some main canal piping.
- It is not possible for the public to identify and suggest proposed "reasonable alternatives" to the HCP because the public has not yet been permitted to read the HCP and does not know what is included in the document. The Draft HCP should be released to the public immediately and the scoping period should be extended to provide adequate time for the public to identify reasonable alternatives to the HCP for inclusion in the Draft EIS.
- EIS analysis should include those alternatives which provide for "certainty" in respect to necessary flows required as a basis for quality habitat condition in which each species is dependent. There is a need for binding minimum flows in the Crooked River system and Upper Deschutes River system that sustain and benefit all life history stages of those species for which the ITP is being proposed.

3.8 Action Area

Eight percent of commenters addressed the action area size and scope. Comments included the following suggestions and statements.

- The exact area that will be covered must be delineated in the Draft EIS.
- The Draft EIS should be clear about what area constitutes: 1) the "permit area" where the incidental take authorization applies; 2) the "plan area" that will be used for activities described in the HCP; and, 3) the area encompassed in the NEPA review.
- The NEPA scoping materials are unclear as to whether the Metolius River is included in the scope of the NEPA analysis. It is appropriate and necessary to include the Metolius River watershed.
- Given that the Proposed Action can directly and cumulatively affect species outside the designated HCP area, the NEPA scope should include the entire range of the species covered by the HCP. This is necessary to allow USFWS to make its required finding that the impact of take will not appreciably reduce the likelihood of survival and recovery of the species.

3.9 Current and Planned Activities

Three percent of commenters addressed examples of planned and current activities. Comments included the following suggestions and statements.

- The U.S. Bureau of Reclamation and Deschutes River Conservancy's Basin Study Work Group (BSWG) is actively forming policy ideas to conserve water and improve instream flows in the Basin. Some of their ideas might include new or re-imagined water storage options to better serve the DBBC districts while keeping more water in stream channels. If implemented, these ideas would drastically alter the baseline conditions the HCP is meant to address. The HCP should coordinate its conservation measures with the ideas and proposals of the BSWG.
- The practicability component of the HCP the cost estimates being generated by the BSWG process are concerning, and the cost estimates often discussed in BSWG are wildly expensive and astonishingly biased. The process has been directed and manipulated by the irrigators towards an outrageously over-engineered solution set that will likely fail the practicability test. The BSWG work products show that there are far cheaper and practical solutions.

3.10 Covered Activities, Avoidance, Minimization, and Mitigation

Three percent of commenters addressed covered activities that include avoidance, minimization, and mitigation measures. Comments included the following suggestions and statements.

- Conservation measures must avoid, minimize, and/or mitigate impacts to the maximum extent practicable, in that order.
- Measures should describe the specific actions that the permittee will implement to achieve the biological objectives in support of the HCP goals.
- Measures must be based on the biological needs of the species.
- As to the maximum extent practicable standard, the EIS should evaluate alternatives under a standard of technological and/or implementation practicability absent cost.

3.11 Covered Parties

Four percent of commenters addressed the HCP should require the DBBC districts to exercise authority over their users.

Chapter 4
Next Steps in Planning Process

The Service will consider all of the public scoping comments in its development of the EIS. Public scoping comments help identify issues for analysis and alternatives within the EIS. The Service will develop a reasonable range of alternatives to the proposed action, which will be carried forward for full analysis in the EIS. For each of the reasonable alternatives carried forward for full analysis, the EIS will identify potentially affected resources and assess potential impacts on each of those resources. If needed, measures to mitigate resource impacts will be included.

Following completion of the environmental review process, the Service will publish a Notice of Availability and a request for comments on the Draft EIS. The Draft Deschutes Basin HCP will be released for public review and comment concurrent with the Draft EIS. A comment period of no less than 60 days will follow the publication of the Draft EIS and may include meetings to accommodate public participation. The Service will consider all comments on the Draft EIS in the preparation of the Final EIS, which will include responses to all substantive comments received. Following the comment period, the Draft EIS may be modified based on the substantive comments received.

When complete, the Final EIS and responses to substantive comments will be made available to the public for a minimum 30-day review period. A Record of Decision will be issued by the Service following the review period of the Final EIS.

Appendix A

NEPA Notice of Intent

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including using appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Information Collection Requirement

Title: Security Appointment Center (SAC) Visitor Request Form and Foreign National Vetting Request.

Type of Request: New collection.

OMB Control Number: 1652–XXXX.

Form(s): TSA Form 2802.

Affected Public: Visitors to TSA facilities in the National Capital Region.

Abstract: The Secretary of the Department of Homeland Security (DHS) is authorized to protect property owned, occupied, or secured by the Federal Government. *See* 40 U.S.C. 1315. *See also* 41 CFR 102–81.15 (requires Federal agencies to be responsible for maintaining security at their own or leased facilities). DHS Instruction Manual 121–01–011–01 (Visitor Management for DHS Headquarters and DHS Component Headquarters Facilities (April 19, 2014)) requires all DHS components to vet visitors using the National Crime Information Center (NCIC) system before allowing them access to agency facilities. The Security Appointment Center (SAC) Visitor Request Form and Foreign National Vetting Request process manages risks posed by individuals entering the building who have not been subject to a criminal history records check. TSA will use the collected information (social security number, date of birth and, if a foreign visitor, passport information) to vet visitors via the NCIC system.

Number of Respondents: 24,702.

Estimated Annual Burden Hours: An estimated 412 hours annually.

Dated: July 19, 2017.

Christina A. Walsh,

TSA Paperwork Reduction Act Officer, Office of Information Technology.

[FR Doc. 2017–15490 Filed 7–21–17; 8:45 am]

BILLING CODE 9110–05–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R1–ES–2017–N064; FXES11140100000–178–FF01E00000]

Notice of Intent To Prepare a Draft Environmental Impact Statement for the Proposed Deschutes River Basin Habitat Conservation Plan in Oregon

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of intent; notice of public scoping meetings; request for comments.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), intend to prepare a draft environmental impact statement (EIS) in accordance with the requirements of the National Environmental Policy Act (NEPA) to evaluate the potential impacts on the human environment caused by alternatives to the Deschutes River Basin Habitat Conservation Plan (Deschutes River Basin HCP). The Deschutes River Basin HCP is being prepared in support of a request for an Endangered Species Act (ESA) incidental take permit (ITP) or ITPs authorizing incidental take of listed species caused by covered activities. The potential applicants for the ITP(s) include the City of Prineville, the Arnold Irrigation District, Central Oregon Irrigation District, North Unit Irrigation District, Ochoco Irrigation District, Swalley Irrigation District, Three Sisters Irrigation District, Tumalo Irrigation District, and the Lone Pine Irrigation District in Oregon. These eight irrigation districts comprise the Deschutes Basin Board of Control (DBBC). We are also announcing the initiation of a public scoping period to engage Federal, Tribal, State, and local governments and the public in the identification of issues and concerns, potential impacts, and possible alternatives to the proposed action for consideration in the draft EIS. The National Marine Fisheries Service (NMFS) is a cooperating agency in the draft EIS process.

DATES: The public scoping period begins with the publication of this notice in the **Federal Register**.To ensure consideration, please send your written comments postmarked no later than September 22, 2017. The Service will consider all comments on the scope of the draft EIS analysis that are received or postmarked by this date. Comments received or postmarked after this date will be considered to the extent practicable.

Public meetings: The Service will conduct four public scoping meetings: Two in Madras, Oregon, and two in Bend, Oregon. The two Madras scoping meetings will be held on August 14, 2017, from 2 to 4 p.m. and 6 to 8 p.m., respectively, and the two Bend scoping meetings will be held on August 15, 2017, from 2 to 4 p.m. and 6 to 8 p.m., respectively.

ADDRESSES: To request further information or submit written comments, please use one of the following methods and note that your information request or comment is in reference to the development of the Deschutes Basin HCP and the preparation of the associated draft EIS:

- *U.S. mail:* U.S. Fish and Wildlife Service, Bend Field Office, Attn: Peter Lickwar, 63095 Deschutes Market Road, Bend, Oregon 97701–9857.
- *In-person Drop-off, Viewing, or Pickup:* Call (541) 383–7146 to make an appointment during regular business hours to drop off comments or view received comments at the above location. Written comments will also be accepted at the public meetings.
- *Email: peter_lickwar@fws.gov.* Include ''Deschutes River Basin HCP–draft EIS'' in the subject line of the message.
- *Fax:* U.S. Fish and Wildlife Service at 541–383–7638; Attn: Peter Lickwar.

We request that you send comments by only one of the methods described above. See the Public Availability of Comments section below for more information.

Public meetings: The addresses of the scoping meetings are as follows:

Madras, Oregon: Inn at Cross Keys Station, 66 NW Cedar St, Madras, OR 97741.

Bend, Oregon: U.S. Forest Service Building, 63095 Deschutes Market Road, Bend, OR 97701.

FOR FURTHER INFORMATION CONTACT: Peter Lickwar, U.S. Fish and Wildlife Service, (see **ADDRESSES** above); email at *peter_lickwar@fws.gov* or telephone 541–383–7146. If you use a telecommunications device for the deaf, please call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION: The Service intends to prepare a draft EIS in accordance with the requirements of NEPA to evaluate the potential impacts on the human environment caused by alternatives to the Deschutes River Basin HCP. The Deschutes River Basin HCP is being prepared in support of a request for an ESA ITP or ITPs authorizing incidental take of listed species caused by covered activities. The potential applicants for the ITP(s) include the City of Prineville, the Arnold Irrigation District, Central

Oregon Irrigation District, North Unit Irrigation District, Ochoco Irrigation District, Swalley Irrigation District, Three Sisters Irrigation District, Tumalo Irrigation District, and the Lone Pine Irrigation District in Oregon. These eight irrigation districts (Districts) comprise the DBBC.

We are also announcing the initiation of a public scoping period to engage Federal, Tribal, State, and local governments and the public in the identification of issues and concerns, potential impacts, and possible alternatives to the proposed action for consideration in the draft EIS. The conservation measures in the Deschutes River Basin HCP would be designed to minimize and mitigate impacts caused by the take of covered listed species that may result from the storage, release, diversion and return of irrigation water by the Districts and the City of Prineville.

This notice was prepared pursuant to pursuant to section 10(c) of the ESA (16 U.S.C. 1531 *et seq.*), and the requirements of NEPA (42 U.S.C. 4321 *et seq.*), and its implementing regulations in the Code of Federal Regulations at 40 CFR 1506.6. The primary purpose of the scoping process is for the public and other agencies to assist in developing the draft EIS by identifying important issues and identifying alternatives that should be considered.

The NMFS is a cooperating agency in the draft EIS process, and intends to adopt the draft EIS to address the impacts of issuing an ITP addressing listed species under its jurisdiction.

Background

Section 9 of the ESA prohibits ''take'' of fish and wildlife species listed as endangered under section 4 (16 U.S.C. 1538 and 16 U.S.C. 1533, respectively). The ESA implementing regulations extend, under certain circumstances, the prohibition of take to threatened species (50 CFR 17.31). Under section 3 of the ESA, the term ''take'' means to ''harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct'' (16 U.S.C. 1532(19)). The term ''harm'' is defined by regulation as ''an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering'' (50 CFR 17.3). The term ''harass'' is defined in the regulations as ''an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering'' (50 CFR 17.3).

Under section 10(a) of the ESA, the Service may issue permits to authorize incidental take of listed fish and wildlife species. ''Incidental take'' is defined by the ESA as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Section 10(a)(1)(B) of the ESA contains provisions for issuing ITPs to non-Federal entities for the take of endangered and threatened species, provided the following criteria are met:

- The taking will be incidental;
- The applicant will, to the maximum extent practicable, minimize and mitigate the impact of such taking;
- The applicant will develop a proposed HCP and ensure that adequate funding for the plan will be provided;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- The applicant will carry out any other measures that the Service may require as being necessary or appropriate for the purposes of the HCP.

Regulations governing permits for endangered and threatened species are at 50 CFR 17.22 and 17.32.

Plan Area

The Plan Area for the Deschutes River Basin HCP covers approximately 10,700 square miles of land in central Oregon. Bounded by the Cascades Mountains on the west, the Ochoco Mountains on the east, and the Columbia River to the north, the Deschutes River Basin includes six major tributaries above Lake Billy Chinook. Tributaries to the Deschutes River above the lake include the Crooked River, Metolius River, Little Deschutes River, Crescent Creek, Tumalo Creek, and Whychus Creek. Major tributaries of the lower Deschutes River include Shitike Creek, Trout Creek, Warm Springs River, and the White River. The first water diversions in the Deschutes River Basin started in the late 1860s, however, irrigation districts did not start to form until circa 1900.

The eight irrigation districts (Districts) are quasi-municipal corporations formed and operated under Oregon State law to distribute water to irrigators within designated district boundaries. The Districts span Crook, Deschutes, Jefferson, Klamath, and Wasco counties in Oregon. The Districts lie along and utilize the waters of the Deschutes River and its tributaries, including the Little Deschutes River, Crescent Creek, Crooked River, Ochoco Creek, Tumalo Creek, Whychus Creek, and a number of smaller tributaries within the greater Deschutes River Basin. The City of Prineville (City), located in Crook County, is a municipality of about 7,350 residents. The City lies at the confluence of the Crooked River and Ochoco Creek, and has an economy based on agriculture and light industry.

The goals of the proposed Deschutes River Basin HCP are to avoid and minimize incidental take of the covered species associated with the Districts' and the City's activities, and to mitigate the impacts of unavoidable take, primarily by modifying irrigation water storage, release, and diversion operations in the Deschutes River Basin, including the mainstem Deschutes River and its tributaries. The Deschutes River Basin HCP would provide a district-wide permitting approach for the Districts and the City. The proposed term for the Deschutes River Basin HCP and ITP(s) is from 20 to 40 years.

Covered Activities

The Districts and the City are seeking incidental take authorization under the ESA for activities that they conduct, permit, or otherwise authorize. The proposed covered activities may include, but are not limited to: Operation and maintenance of storage dams and reservoirs; operation and maintenance of diversions, pumps, and intakes; operation and maintenance of water conveyance and delivery systems; diversion of water; return flow; and conservation measures and associated construction activities.

Covered Species

Covered species under the proposed Deschutes River Basin HCP include threatened and endangered species listed under the ESA, and currently unlisted species that have the potential to become listed during the life of the HCP. The Districts and the City are proposing to seek incidental take coverage for three federally listed species, and two non-listed species. The Deschutes River Basin HCP would provide long-term conservation and management of these species, which are discussed in more detail in the following paragraphs.

The Oregon spotted frog (*Rana pretiosa*) is a native aquatic species endemic to the Pacific Northwest. It was federally listed as threatened under the ESA on September 29, 2014 (79 FR 51658).

The bull trout (*Salvelinus confluentus*) is a member of the genus *Char,* and is native to Oregon. The bull trout has specific habitat requirements that influence its abundance and

distribution. The bull trout is seldom found in waters where temperatures exceed 59 to 64 degrees Fahrenheit. The final listing determination of threatened status for the bull trout in the coterminous United States was made on November 1, 1999 (64 FR 58910).

The steelhead (*Oncorhynchus mykiss*) in the Deschutes River Basin is part of the Middle Columbia River Distinct Population Segment that was listed by NMFS as threatened, effective on February 6, 2006 (71 FR 834). However, on January 15, 2013, NMFS issued a final rule that designated the steelhead upstream of the Pelton Round Butte Hydroelectric Project on the Deschutes River as a nonessential experimental population (78 FR 2893). This designation has an expiration date of 12 years from the effective date of the rule. Unlike other anadromous members of the family Salmonidae, steelhead do not necessarily die after spawning and sometimes spawn more than once.

The Districts and the City also propose to cover the following non-listed species under NMFS jurisdiction under the Deschutes River Basin HCP: The sockeye salmon (*Oncorhynchus nerka*), and the Middle Columbia River spring-run Chinook salmon (*Oncorhynchus tshawytscha*).

Draft Environmental Impact Statement

For purposes of NEPA compliance, preparation of an EIS is required for actions that are expected or have the potential to significantly impact the human environment (40 CFR 1500–1508).

To determine whether a proposed Federal action would require the preparation of an EIS, the Service must consider two distinct factors: Context and intensity (40 CFR 1508.27, Service and National Marine Fisheries Service HCP Handbook 2016). Context refers to the geographic scale (local, regional, or national) of significance of short and/or long-term effects/impacts of a proposed action. Intensity refers to the severity of the effects/impacts relative to the affected settings, including the degree to which the proposed action affects: an endangered or threatened species or designated critical habitat; public health or safety; scientific, historic or cultural resources; or other aspects of the human environment.

In determining whether the preparation of an EIS is warranted, we must also consider the ten components of intensity, as set forth under 40 CFR 1508.27(b):

1. Impacts that may be both beneficial and adverse. A significant impact may exist even if the Federal agency believes that on balance the effect will be beneficial.

2. The degree to which the proposed action affects public health or safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

5. The degree to which the potential impacts are highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA.

10. Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment.

In this case, and after considering the above factors, the Service has determined that the Deschutes River Basin HCP–ITP action has the potential to significantly impact the human environment for the following reasons:

The Deschutes River Basin encompasses 10,500 square miles in Central Oregon and the Deschutes River is a major tributary to the Columbia River. On that basis, the covered area is of local, regional, and national significance.

The Applicants store, manage, and release water from the Deschutes River and its reservoirs for irrigation and municipal purposes. Hundreds of miles of irrigation conveyance systems are managed by the Applicants. Under the Deschutes River Basin HCP, modernization of these conveyance systems, which is already underway, is a covered activity that is likely to result in water conservation for farmers and listed species, and take decades to complete. Some portions of the conveyance systems have been listed on the National Historic Register, and will require additional analysis under NEPA. The covered activities may affect four ESA-listed species (the Oregon spotted frog, steelhead, spring chinook and the bull trout) and their critical habitat that by virtue of their listings and designations are of local, regional, and national significance. Given the geographic scale of the HCP and the nature and scope of the covered activities and species, the context and intensity of potential adverse and beneficial impacts of implementing the HCP on the human environment are likely to be of local, regional, and national significance.

The Service performed internal NEPA scoping for the Deschutes River Basin HCP–ITP action in close coordination with NMFS as a cooperating agency. During that internal scoping process, Service and NMFS staff reviewed the proposed ITP action and the purpose and need for taking the action, and identified the environmental issues requiring detailed analysis as well as identified connected, similar, and cumulative actions. The internal scoping analysis concluded that the proposed ITP action:

- Involves instream flow and habitat restoration decisions that significantly affect biodiversity and ecosystem functions across a large geographic area;
- Involves management decisions that are significantly controversial;
- Has highly uncertain effects or involve unique or unknown risks to biological, physical or other factors;
- Establishes precedents for future actions with significant effects;
- Will contribute to other individually insignificant but cumulatively significant impacts;
- Will have positive effects on wetlands, rivers, and ecologically critical areas but may have adverse effects on historic resources (canals) and farmlands;
- May affect some areas covered by the National Historic Preservation Act;
- Will adversely affect endangered or threatened species, their critical habitat, or other non-target species; and
- Will have social or economic impacts interrelated with significant natural or physical environmental effects.

The Service also determined with NMFS that the proposed Deschutes River Basin HCP–ITP action: Is of sufficient size and complexity to warrant an EIS; is similar to previous HCP's issued in the Pacific Northwest that likewise required the preparation of an EIS; and may have significant effects on the human environment. On that basis and in accordance with

regulations at 40 CFR 1501.4, 1507.3, and 1508.27, the Service believes preparation of an EIS is warranted. As such, we do not intend to prepare an environmental assessment for this action.

Therefore, before deciding whether to issue an ITP(s) for the Deschutes River Basin HCP, we will prepare a draft EIS to analyze the environmental impacts associated with this action. As noted above, NMFS is a cooperating agency in the draft EIS process, and intends to adopt the draft EIS to address the impacts on the human environment of issuing an ITP(s) addressing listed species under its jurisdiction.

Under NEPA, a reasonable range of alternatives to a proposed project is developed and considered in the Service's environmental review document. In the draft EIS, the Service will consider the following alternatives: (1) No action (no ITP issuance); (2) the proposed action, which includes the issuance of take authorizations as described in the proposed Deschutes River Basin HCP; and (3) a range of additional reasonable alternatives. Alternatives considered for analysis in a draft EIS for an HCP may include: Variations in the permit term or permit structure; the level of take allowed; the level, location, or type of minimization, mitigation, or monitoring provided under the HCP; the scope of covered activities; the list of covered species; or a combination of these factors.

The draft EIS will identify and analyze the potential direct, indirect, and cumulative impacts of Service authorization of incidental take under permit issuance and of implementing the proposed Deschutes River Basin HCP on biological resources, land uses, utilities, air quality, water resources, cultural resources, socioeconomics and environmental justice, recreation, aesthetics, and other environmental issues that could occur with implementation of each alternative. The Service will also identify measures, consistent with NEPA and other relevant considerations of national policy, to avoid or minimize any significant impacts of the proposed action on the quality of the human environment. Following completion of the draft EIS, the Service will publish a notice of availability and a request for comment on the draft EIS and the applicants' permit application(s), which will include a draft of the proposed Deschutes River Basin HCP.

Public Scoping

The primary purpose of the scoping process is for the public to assist the Service, Districts, and the City in developing a draft EIS by identifying important issues and alternatives related to the applicants' proposed action. The scoping meetings will include presentations by the Service, Districts, and the City followed by informal questions and discussions. The Service welcomes written comments from all interested parties in order to ensure we identify a full range of issues and alternatives related to the proposed permit request. The Service requests that comments be specific. In particular, we seek comments on the following:

1. Management issues and goals to be considered in the development of the HCP;
2. Existing environmental conditions in the Districts and the City;
3. Other plans or projects that might be relevant to this proposed project;
4. Permit duration;
5. Areas and specific landforms that should or should not be covered;
6. Biological information concerning species in the proposed plan area;
7. Relevant data concerning these species;
8. Additional information concerning the range, distribution, population size, and population trends of the covered species;
9. Current or planned activities in the Plan Area and their possible impacts on the covered species;
10. Species that should or should not be covered;
11. Covered activities including potential avoidance, minimization, and mitigation measures;
12. Monitoring and adaptive management provisions;
13. Funding suggestions; and
14. Alternatives for analysis.

We will accept written comments at the public meetings. You may also submit written comments to the Service at our U.S. mail address, by email, or by fax (see **ADDRESSES** above). Once the draft EIS and draft HCP are prepared, there will be further opportunity for public comment on the content of these documents through an additional 90-day public comment period.

Public Availability of Comments

Comments and materials we receive, as well as supporting documentation we use in preparing the draft EIS, will become part of the public record and will be available for public inspection by appointment, during regular business hours, at the Service's Bend Field Office (see **FOR FURTHER INFORMATION CONTACT** section). Before including your address, phone number, email address, or other personal identifying information in your comment(s), you should be aware that your entire comment(s)—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment(s) to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Reasonable Accommodation

Persons needing reasonable accommodations to attend and participate in the public meeting should contact Peter Lickwar (see **FOR FURTHER INFORMATION CONTACT**). To allow sufficient time to process requests, please call no later than August 1, 2017. Information regarding the applicants' proposed action is available in alternative formats upon request.

Authority

The environmental review of this project will be conducted in accordance with the requirements of the NEPA of 1969 as amended (42 U.S.C. 4321 *et seq.*), Council on Environmental Quality Regulations (40 CFR parts 1500–1508), other applicable Federal laws and regulations, and applicable policies and procedures of the Service. This notice is furnished in accordance with 40 CFR 1501.7 of the NEPA regulations to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to be addressed in the draft EIS.

Theresa E. Rabot,

Deputy Regional Director, Pacific Region, U.S. Fish and Wildlife Service, Portland, Oregon.

[FR Doc. 2017–15479 Filed 7–21–17; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–23496; PPWOCRADN0–PCU00RP14.R50000]

Notice of Intent To Repatriate Cultural Items: Cincinnati Art Museum, Cincinnati, OH

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The Cincinnati Art Museum, in consultation with the appropriate Indian Tribes or Native Hawaiian organizations, has determined that the cultural items listed in this notice meet the definition of sacred objects. Lineal descendants or representatives of any Indian Tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request to the Cincinnati Art Museum. If no additional claimants come forward, transfer of

Appendix B

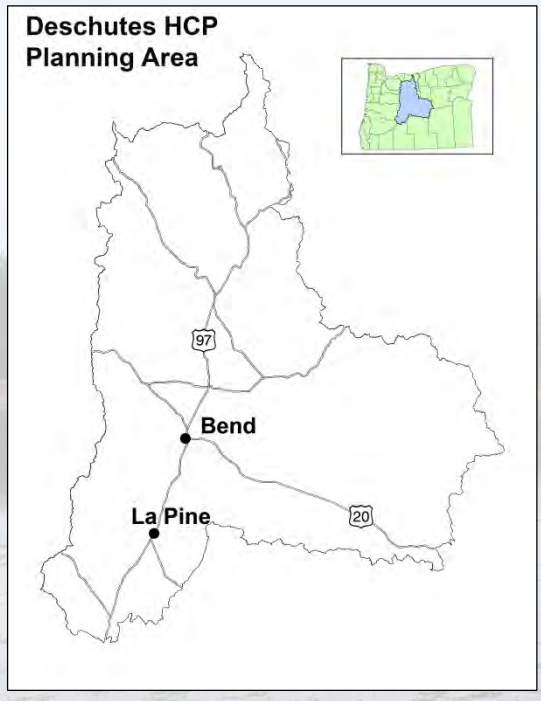
Scoping Display Advertisements and Informational Flyer

U.S. Fish & Wildlife Service

Deschutes River Basin

Habitat Conservation Plan (HCP)

Providing reliable water for farmers and residents in the Deschutes Basin while conserving fish, wildlife, and water resources for future generations.



U.S. Fish and Wildlife Service (Service) is working with the Deschutes Basin Board of Control, City of Prineville, NOAA Fisheries, the Bureau of Reclamation, and others to develop a 20-40 year HCP that will ensure sufficient, reliable water is available for the people and wildlife of the Deschutes River Basin.

This HCP will become part of an application for one or more Endangered Species Act incidental take permits authorizing the incidental take of listed species caused by activities covered under this plan (e.g., operation, maintenance, and construction of water storage and delivery systems).

The HCP will cover ~10,700 mi^2 of land in the Deschutes River Basin of central Oregon. This Basin includes six major tributaries above Lake Billy Chinook. (Credit: USFWS).

Species Addressed

Three Federally-threatened (T) and two non-listed (NL) species. The Service has jurisdiction over Oregon spotted frog (T) and bull trout (T). NOAA is lead for steelhead (T), sockeye salmon (NL), and spring Chinook salmon (NL).

Bull trout habitat in the Deschutes River Basin (Credit: USFWS)

What are HCPs?

HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded.

HCPs can apply to both listed and non-listed species, including those that are candidates or have been proposed for listing. Conserving species before they are in danger of extinction or are likely to become so can also provide early benefits and prevent the need for listing.

https://www.fws.gov/endangered/what-we-do/hcp-overview.html

Bull trout (Credit: J.Sartore/National Geographic)

Oregon spotted frog (Credit: T.Waterstrat/USFWS)

Upper Deschute River (Credit: B.Moran/USFWS)

Stay Connected:

Questions? Call: (541) 383-7146 and ask for Peter Lickwar or Bridget Moran.

Visit our Deschutes HCP Webpage: http://bit.ly/DeschutesHCP

Follow us on Facebook: http://bit.ly/OFWOfacebook

Appendix C

Scoping Meeting Presentations (DBBC and FWS)

Deschutes Basin Habitat Conservation Plan

NEPA Public Scoping

August 14, 2017 – Madras, OR

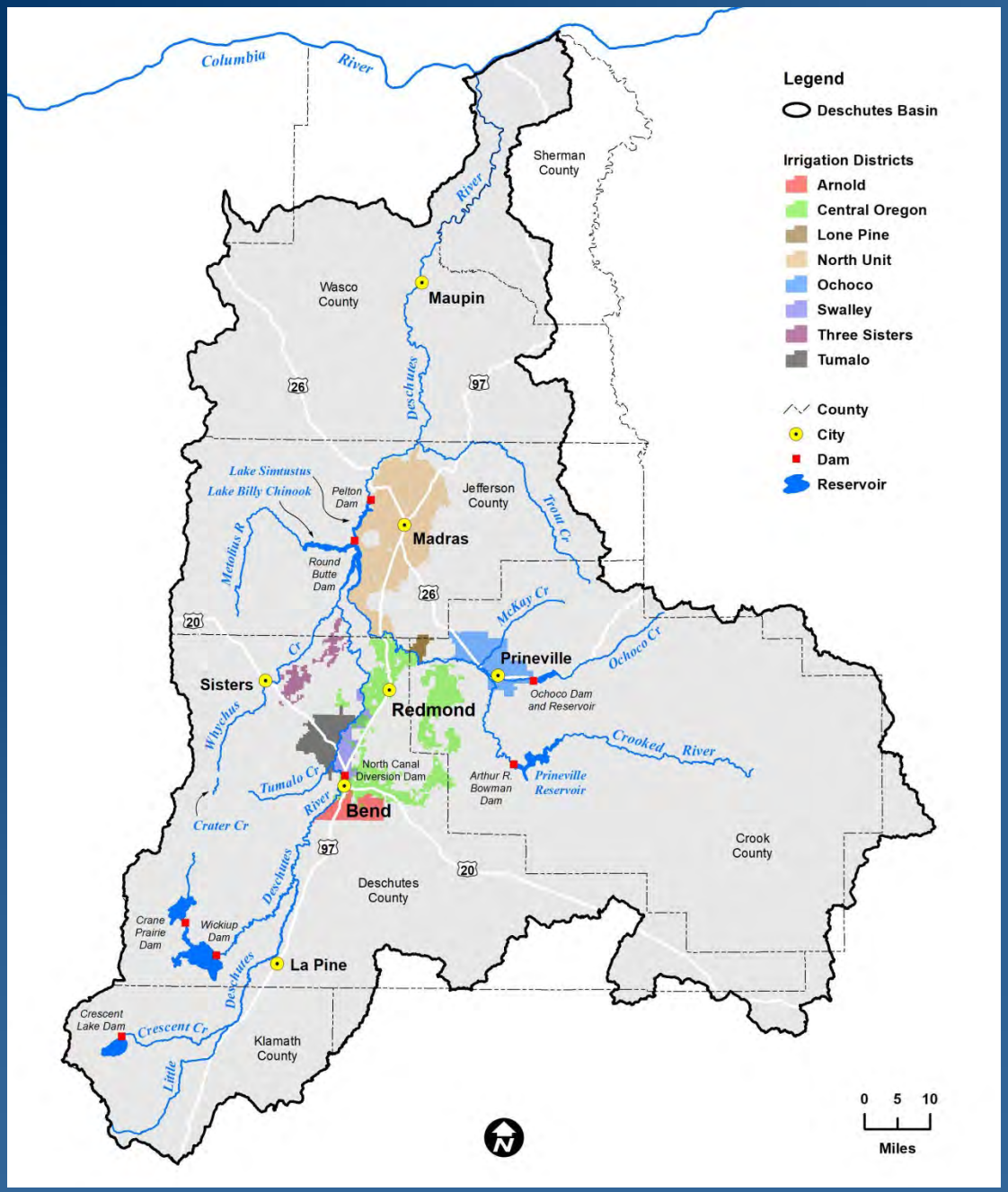
August 15, 2017 – Bend, OR

The Deschutes Basin Habitat Conservation Plan (DBHCP)

- An HCP is required for activities covered by an Incidental Take Permit issued under the Federal Endangered Species Act
- Deschutes Basin HCP will modify Irrigation District and City of Prineville activities to minimize and mitigate the impacts of those activities on the species covered by the Incidental Take Permits
- Has been in collaborative development since 2010

DBHCP Covered Parties

- Eight Irrigation Districts of the Deschutes Basin Board of Control (DBBC)
  - Arnold Irrigation District (AID)
  - Central Oregon Irrigation District (COID)
  - Lone Pine Irrigation District (LPID)
  - North Unit Irrigation District (NUID)
  - Ochoco Irrigation District (OID)
  - Swalley Irrigation District (SID)
  - Three Sisters Irrigation District (TSID)
  - Tumalo Irrigation District (TID)
- City of Prineville, Oregon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North Canal Diversion Dam
Arthur R. Bowman Dam
Prineville Reservoir
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Crook County
Deschutes County
Crane Prairie Dam
Wickiup Dam
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DBHCP Covered Species

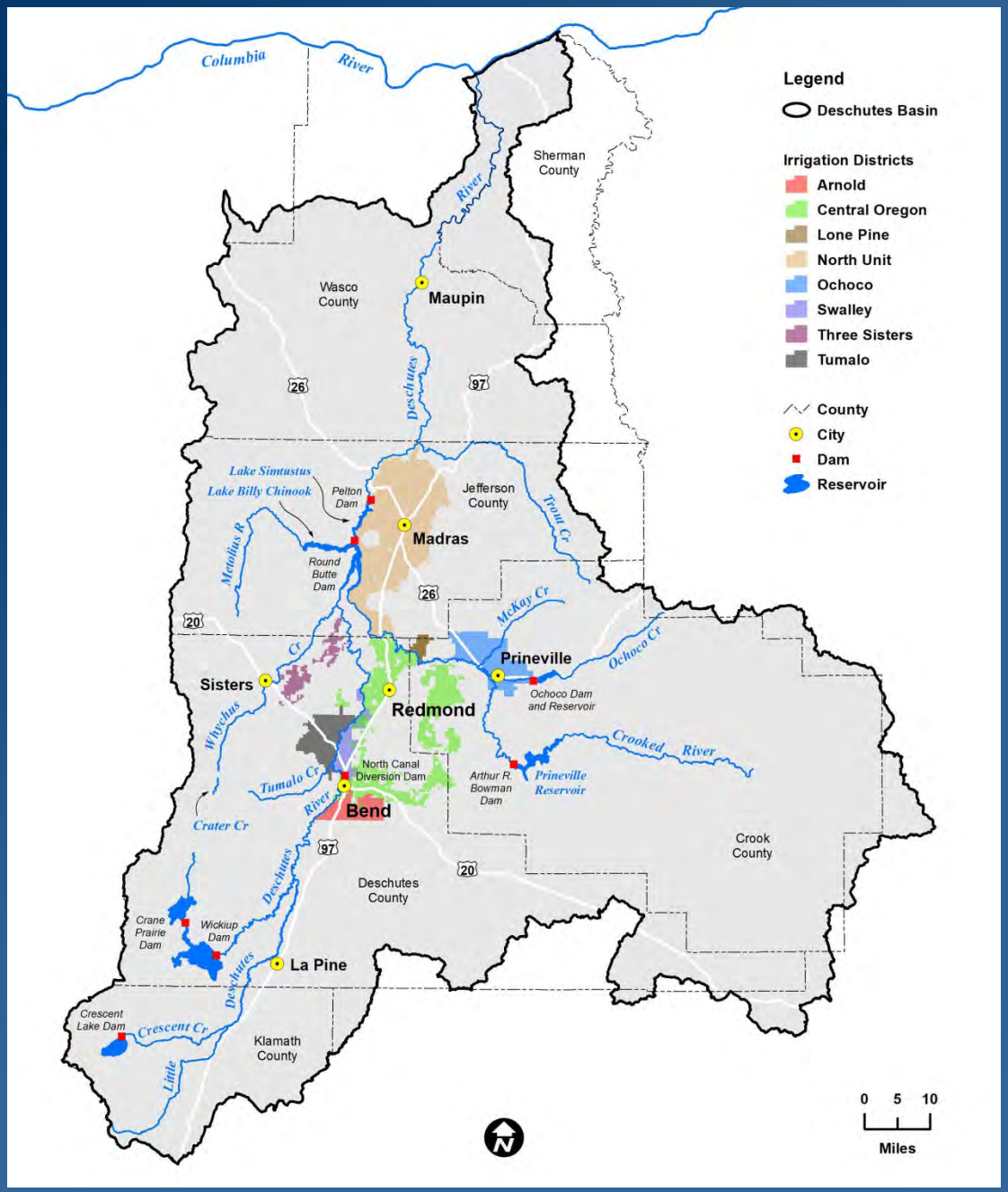
- Bull Trout
- Middle Columbia River Steelhead Trout
- Middle Columbia River Spring Chinook Salmon
- Deschutes River Summer/Fall Chinook Salmon
- Sockeye Salmon
- Oregon Spotted Frog

DBHCP Covered Activities

- Storage and Release of Irrigation Water
- Diversion of Irrigation Water
- Conveyance and Delivery of Irrigation Water
- Irrigation Return Flows
- Existing Hydropower
- City of Prineville Activities

Storage and Release of Water

- Five Main Storage Reservoirs
  - Crane Prairie Reservoir – Deschutes River; 4,900 acres
  - Wickiup Reservoir – Deschutes River; 11,200 acres
  - Crescent Lake Reservoir – Crescent Creek; 4,008 acres
  - Prineville Reservoir – Crooked River; 3,028 acres
  - Ochoco Reservoir – Ochoco Creek; 1,060 acres
- Reservoirs store water in fall, winter and early spring; and release water during irrigation season (Apr – Oct)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Wickiup Reservoir

Ochoco Reservoir

Storage and Release of Water

- Four Reregulating Reservoirs
  - Haystack – North Unit Main Canal; 230 acres
  - Upper Tumalo – Tumalo Feed Canal; 165 acres
  - Watson – Whychus Creek Main Canal; 80 acres
  - McKenzie Canyon – Whychus Creek Main Canal; 12 acres
- Operated to buffer short-term fluctuations in demand

Diversion of Water

- 19 Primary Diversion Structures
  - Divert stored water and live (natural) flow
  - Screened to prevent entrainment where fish are present
  - Passage for upstream and downstream movement where fish are present

North Canal Dam (Deschutes River)

North Canal Dam (Deschutes River)

Tumalo Creek Diversion

Tumalo Creek Diversion

Red Granary Diversion (Ochoco Creek)

Red Granary Diversion (Ochoco Creek)

Whychus Creek Diversion

Whychus Creek Diversion

Diversion of Water

- 112 Pumps and Small Diversions
  - Most are owned and operated by patrons
  - Very small diversion rates
  - Most are currently unscreened

Crooked River Patron Pump

Crooked River Patron Pump

Conveyance and Delivery of Water

- Collectively over 1,170 miles of canals, ditches and pipelines
- Old canals are the focus of on-going water conservation projects
- District authority/responsibility ends at point of delivery to patron

Pilot Butte Canal

Pilot Butte Canal Piping Project

Lone Pine Pipe at Crooked River

Return Flows

- 46 identified points where irrigation water is returned to natural water body
  - Operational spills from canals
  - Surface runoff at downstream ends of Districts

Lone Pine Return to Crooked River

Juniper Canyon Return to Crooked River

Existing Hydropower

- Eight hydropower generators on existing canals
  - Siphon – Central Oregon Canal
  - Juniper Ridge – Pilot Butte Canal
  - Ponderosa – Swalley Main Canal
  - Mile 45 – North Unit Main Canal
  - Monroe Drop – North Unit Main Canal
  - Watson – Whychus Creek Main Canal
  - Watson Net Meter Micro – Whychus Creek Main Canal
  - McKenzie – Whychus Creek Main Canal

Example of Hydraulic Head on the Pilot Butte Canal

Juniper Ridge Hydroelectric Project

City of Prineville Activities

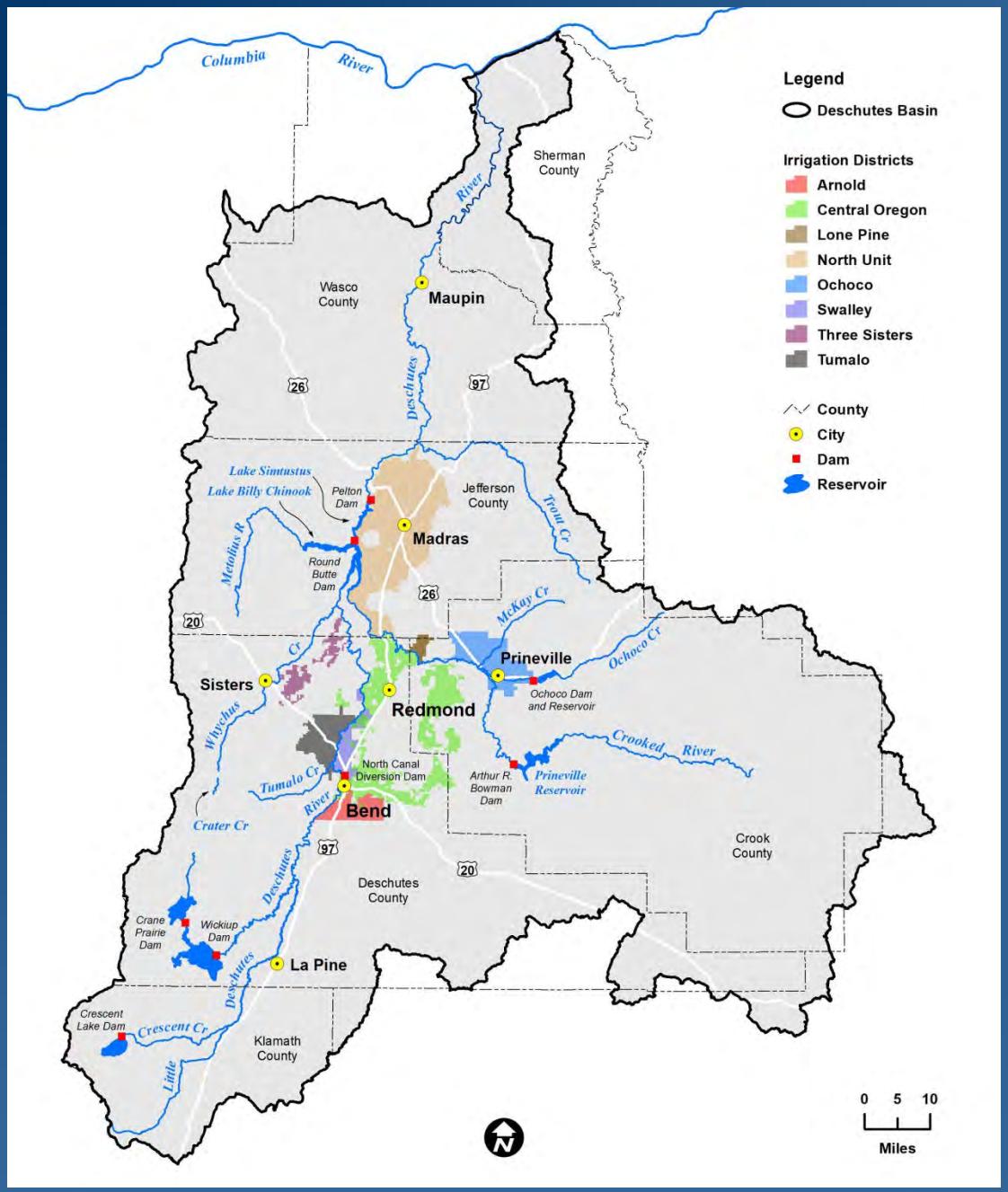
- Small diversions from Crooked River and Ochoco Creek (as OID patron)
- Groundwater pumping for municipal use
- Discharge of treated effluent to Crooked River

DBHCP Covered Lands

- Beds, banks and waters of the following:
  - Deschutes River (Crane Prairie Reservoir to mouth)
  - Crescent Creek (Crescent Lake Reservoir to mouth)
  - Little Deschutes River (Crescent Creek to mouth)
  - Tumalo Creek (lower 21.7 miles)
  - Whychus Creek (TSID Diversion to mouth)

DBHCP Covered Lands

- Crooked River (Prineville Reservoir to mouth)
- Ochoco Creek (Ochoco Reservoir to mouth)
- McKay Creek (Jones Dam to mouth)
- Lytle Creek (lower 5.7 miles)
- Trout Creek (Mud Springs Creek to mouth)
- Mud Springs Creek (lower 8 miles)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Term of the DBHCP

- To be determined (20 – 50 years)

Need for the DBHCP

Effects of the Covered Activities
on the
Covered Species

Oregon Spotted Frog

- **Distribution on the Covered Lands**
  - Crane Prairie Reservoir
  - Wickiup Reservoir
  - Deschutes River (Wickiup to Bend)
  - Crescent Creek (downstream of Crescent Dam)
  - Little Deschutes River

Oregon Spotted Frog

- **Affected by:**
  - Fluctuation of reservoir levels
  - Seasonal high and low stream flows
  - Rapid changes in stream flow
  - All related to storage and release of irrigation water

Bull Trout

- **Distribution on the Covered Lands**
  - Deschutes River (upstream to Big Falls)
  - Whychus Creek (upstream to RM 2.4)
  - Crooked River (upstream to Opal Springs)

Bull Trout

- **Affected by:**
  - Flow reductions during summer (irrigation diversions) and winter (irrigation storage)

Steelhead Trout

- **Distribution on the Covered Lands (current and potential)**
  - Deschutes River (upstream to Big Falls)
  - Trout Creek and lower Mud Springs Creek
  - Whychus Creek (upstream to RM 37)
  - Crooked River (upstream to Bowman Dam)
  - Ochoco Creek (upstream to Ochoco Dam)
  - McKay Creek (upstream to RM 19)

Steelhead Trout

- **Affected by:**
  - Flow reductions during summer (irrigation diversions) and winter (irrigation storage)
  - Return flows

Chinook Salmon

- **Distribution on the Covered Lands (current and potential)**
  - Deschutes River (upstream to Big Falls)
  - Whychus Creek (upstream to RM 37)
  - Crooked River (upstream to Bowman Dam)

Chinook Salmon

- **Affected by:**
  - Flow reductions during summer (irrigation diversions) and winter (irrigation storage)
  - Return flows

Sockeye Salmon

- **Distribution on the Covered Lands (current and potential)**
  - Deschutes River (upstream to Big Falls)
  - Whychus Creek (upstream to RM 2.4)
  - Crooked River (upstream to Opal Springs)

Sockeye Salmon

- **Affected by:**
  - Flow reductions during summer (irrigation diversions) and winter (irrigation storage)

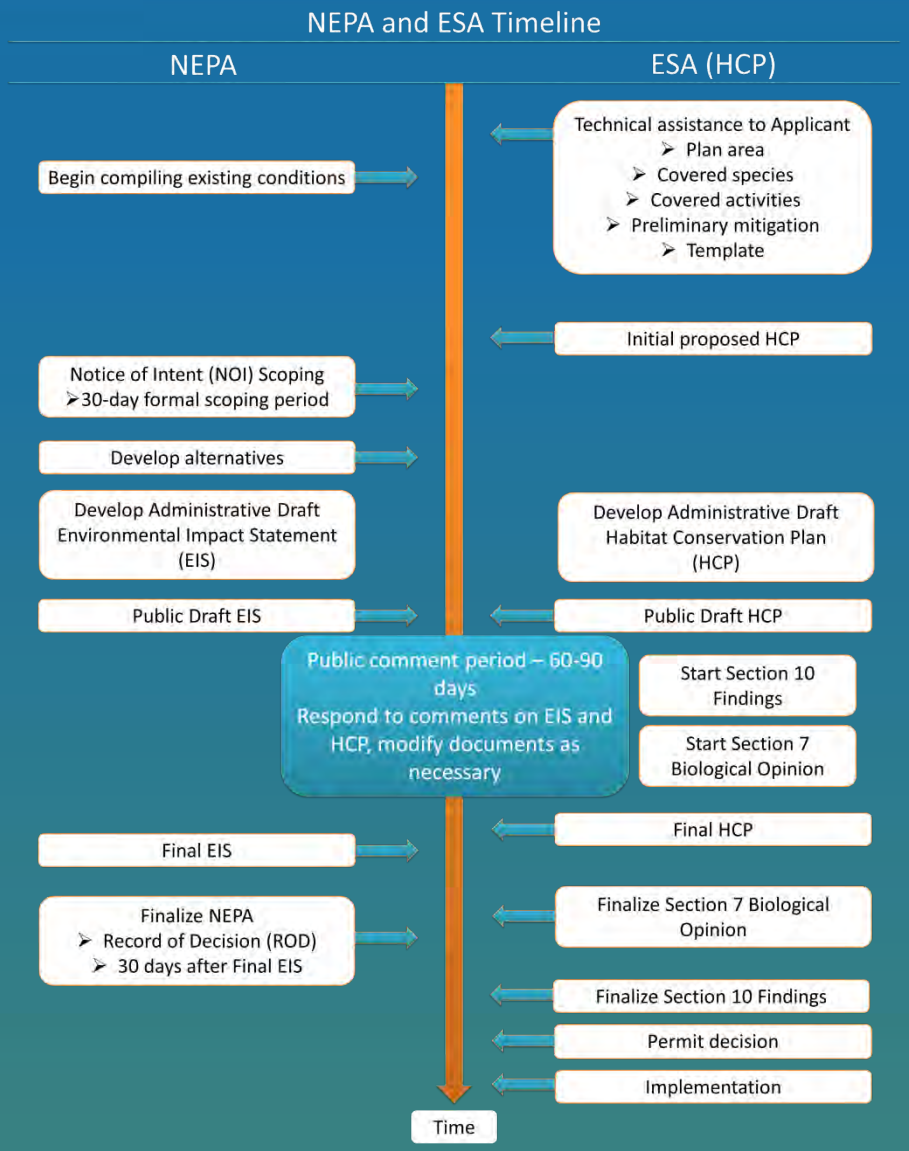
National Environmental Policy Act, the Endangered Species Act, and Habitat Conservation Plans

National Environmental Policy Act, the Endangered Species Act, and Habitat Conservation Plans

Why are we here?

- The DBBC and the City of Prineville are preparing a Habitat Conservation Plan (HCP) for several Deschutes River-dependent species.
- In response, USFWS will prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) for the HCP.
- Preparation of an EIS, triggers scoping.

ESA/NEPA Processes



Scoping

Why do Scoping?

- Scoping engages the public and asks for input
- The process identifies significant environmental issues for further analysis
- Other, less significant environmental issues, are identified but further analysis may not be necessary.

Scoping

- **Get involved to help us identify important issues**

- **Give us your comments**

  the public comment period goes through September 22, 2017

NEPA Options

	Categorical Exemption	Environmental Assessment	Environmental Impact Statement
Notice of Intent (NOI)	--	--	✓
Scoping	--	--	✓
Notice of Availability (NOA) of Draft HCP and Draft NEPA document	✓	✓	✓
Draft review period	30 days	30-60 days	60-90 days
Final document	--	Optional	✓
Responses to comments	--	Optional	✓
Final NOA	--	--	30 days
Decision document	Categorical Exclusion Questionairre	Finding of No Significant Impact (FONSI)	Record of Decision (ROD)

Scoping

We want comments on:

- Alternatives to the proposed action
- Measures to avoid, mitigate, or minimize effects
- Existing environmental conditions in the basin
- Permit duration
- Covered species and activities
- Biological goals and objectives of the HCP
- Any other significant issues

National Environmental Policy Act

The NEPA process:

- **Is required for the Service to approve an Applicants' HCP.**
- **Helps the Service make decisions based on our understanding of the environmental consequences of approving the HCP.**
- **Is used to identify and take actions that protect, restore, and enhance the environment.**
- **Analyzes the effects of all the alternatives considered.**

National Environmental Policy Act

NEPA considers the impacts of a federal action on elements of the human environment such as:

- water quality
- wetlands
- air quality
- socio-economic and cultural resources
- fish and wildlife species including ESA-listed

Environmental Impact Statement and Habitat Conservation Plans

The Service will prepare an EIS because the HCP is likely to:

- **Cover a significant portion of the basin**
- **Cover multiple species and multiple activities**
- **Cover water management activities in the basin**
- **Affect the human environment and listed species**

Environmental Impact Statement

What does an EIS include?

- Purpose and need for the action
- Alternatives (no action, proposed action, others)
- Affected environment
- Environmental effects of the alternatives
- Cumulative effects

Endangered Species Act

Endangered Species Act

Purpose

- To protect and recover imperiled species and the ecosystems upon which they depend.

Endangered Species Act

Species listed as endangered or threatened:

- **'Threatened' means a species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.**

- **'Endangered' means a species is in danger of extinction throughout all or a significant portion of its range.**

Endangered Species Act (ESA)

ESA protects endangered and threatened species and their habitats by prohibiting "take"

- Take means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct."

Endangered Species Act (ESA)

- **Section 9 of the ESA** states it is unlawful for anyone to take endangered or threatened species.

However….

- **Section 10 of the ESA** allows incidental take of threatened and endangered species, if take occurs under an approved habitat conservation plan.

Habitat Conservation Plans

- **Incidental Take** refers to take that results from carrying out an otherwise lawful activity (for example, residential and commercial development, or road construction)

- A **Habitat Conservation Plan** is a voluntary plan developed by a non-Federal applicant in order to receive an incidental take permit.

Habitat Conservation Plans

The Applicant's HCP must describe and include:

- **Impacts likely to result from the taking of the species**
- **Measures the applicants will take to minimize and mitigate impacts**
- **Adequate funding to perform those measures**
- **Alternative actions that would not result in take and reasons those alternatives are not being used**
- **Additional measures as required by the Service**

Habitat Conservation Plans

To approve the Applicant's HCP and issue an incidental take permit, the Service must determine:

- Taking is incidental
- The Applicants will, to the maximum extent practicable, minimize and mitigate the impacts of the taking
- The Applicants ensure adequate funding for the plan
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild
- Any measures required by the Service will be met

Next Steps/Timeline

- **NEPA Scoping**
  -Public comment period ends 9/22/2017

- **Draft EIS and draft HCP**
  – Public comment period (2018)

- **Final EIS and final HCP**
  – Public comment period (2019)

- **HCP Implementation**

Contact Us

Send comments to:

Peter Lickwar peter_lickwar@fws.gov

More information:
http://bit.ly/DeschutesHCP

August 14-15, 2017

Appendix D

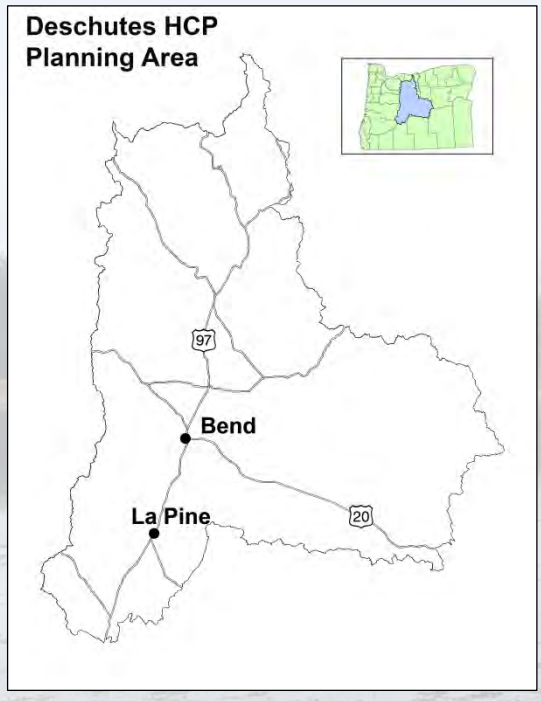
Scoping Meeting Materials

U.S. Fish & Wildlife Service

Deschutes River Basin

Habitat Conservation Plan (HCP)

Providing reliable water for farmers and residents in the Deschutes Basin while conserving fish, wildlife, and water resources for future generations.



U.S. Fish and Wildlife Service (Service) is working with the Deschutes Basin Board of Control, City of Prineville, NOAA Fisheries, the Bureau of Reclamation, and others to develop a 20-40 year HCP that will ensure sufficient, reliable water is available for the people and wildlife of the Deschutes River Basin.

This HCP will become part of an application for one or more Endangered Species Act incidental take permits authorizing the incidental take of listed species caused by activities covered under this plan (e.g., operation, maintenance, and construction of water storage and delivery systems).

The HCP will cover ~10,700 mi^2 of land in the Deschutes River Basin of central Oregon. This Basin includes six major tributaries above Lake Billy Chinook. (Credit: USFWS).

Species Addressed

Three Federally-threatened (T) and two non-listed (NL) species. The Service has jurisdiction over Oregon spotted frog (T) and bull trout (T). NOAA is lead for steelhead (T), sockeye salmon (NL), and spring Chinook salmon (NL).

Bull trout habitat in the Deschutes River Basin (Credit: USFWS)

What are HCPs?

HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded.

HCPs can apply to both listed and non-listed species, including those that are candidates or have been proposed for listing. Conserving species before they are in danger of extinction or are likely to become so can also provide early benefits and prevent the need for listing.

https://www.fws.gov/endangered/what-we-do/hcp-overview.html

Bull trout (Credit: J.Sartore/National Geographic)

Oregon spotted frog (Credit: T.Waterstrat/USFWS)

Upper Deschute River (Credit: B.Moran/USFWS)

Stay Connected:

Questions? Call: (541) 383-7146 and ask for Peter Lickwar or Bridget Moran.

Visit our Deschutes HCP Webpage: http://bit.ly/DeschutesHCP

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U.S. Fish & Wildlife Service

Habitat Conservation Plans Under the Endangered Species Act

Introduction

Why should we save endangered species? Congress answered this question in the introduction to the Endangered Species Act of 1973 (Act), recognizing that endangered and threatened species of wildlife and plants "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."

After this finding, Congress said that the purposes of the Act are ". . . to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [and] to provide a program for the conservation of such . . . species. . . ." Habitat Conservation Plans (HCPs) under section 10(a)(1)(B) of the Act provide for partnerships with non-Federal parties to conserve the ecosystems upon which listed species depend, ultimately contributing to their recovery.

What are HCPs?

HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded.

HCPs can apply to both listed and nonlisted species, including those that are candidates or have been proposed for listing. Conserving species before they are in danger of extinction or are likely to become so can also provide early benefits and prevent the need for listing.

Who needs an incidental take permit?

Anyone whose otherwise-lawful activities will result in the "incidental take" of a listed wildlife species needs a permit. The U.S. Fish and Wildlife Service (FWS) can help determine whether a proposed project or action is likely to result in "take" and whether an HCP is needed. FWS staff can also provide technical assistance to help design a project to avoid take. For example, the project could be designed with seasonal restrictions on construction to minimize disturbance to a species.

John Cleckler/USFWS

The endangered California tiger salamander is among the listed species included in the East Contra Costa County Habitat Conservation Plan.

What is the benefit of an incidental take permit and habitat conservation plan to a private landowner?

The permit allows the permit-holder to legally proceed with an activity that would otherwise result in the unlawful take of a listed species. The permit-holder also has assurances from the FWS through the "No Surprises" regulation.

What is "take"?

The Act defines "take" as ". . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes significant habitat modification that actually kills or injures a listed species through impairing essential behavior such as breeding, feeding, or sheltering.

Section 9 of the Act prohibits the take of endangered and threatened species. The purpose of the incidental take permit is to exempt non-Federal permit-holders—such as States and private landowners— from the prohibitions of section 9, not to authorize the activities that result in take.

What do habitat conservation plans do?

In developing habitat conservation plans, people applying for incidental take permits describe measures designed to minimize and mitigate the effects of their actions— to ensure that species will be conserved and to contribute to their recovery.

Habitat conservation plans are required to meet the permit issuance criteria of section 10(a)(2)(B) of the Act:

- (i) taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking;

- (iii) the applicant will ensure that adequate funding for the plan will be provided;

- (iv) taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

- (v) other measures, as required by the Secretary, will be met.

What needs to be in HCPs?

Section 10 of the Act and its implementing regulations define the contents of HCPs. They include:

- an assessment of impacts likely to result from the proposed taking of one or more federally listed species.

- measures that the permit applicant will undertake to monitor, minimize, and mitigate for such impacts, the funding available to implement such measures, and the procedures to deal with unforeseen or extraordinary circumstances.

- alternative actions to the taking that the applicant analyzed, and the reasons why the applicant did not adopt such alternatives.

- additional measures that the Fish and Wildlife Service may require.

HCPs are also required to comply with the Five Points Policy by including:

1. biological goals and objectives, which define the expected biological outcome for each species covered by the HCP;

2. adaptive management, which includes methods for addressing uncertainty and also monitoring and feedback to biological goals and objectives;

3. monitoring for compliance, effectiveness, and effects;

4. permit duration which is determined by the time-span of the project and designed to provide the time needed to achieve biological goals and address biological uncertainty; and

5. public participation according to the National Environmental Policy Act.

What are "No Surprises" assurances?

The FWS provides "No Surprises" assurances to non-Federal landowners through the section 10(a)(1)(B) process. Essentially, State and private landowners are assured that if "unforeseen circumstances" arise, the FWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the permit-holder. The government will honor these assurances as long as permit-holders are implementing the terms and conditions of the HCPs, permits, and other associated documents in good faith. In effect, the government and permit-holders pledge to honor their conservation commitments.

Are incidental take permits needed for listed plants?

There are no Federal prohibitions under the Act for the take of listed plants on non-Federal lands, unless taking those plants is in violation of State law. However, the FWS analyzes the effects of the permit on listed plant species because section 7 of the Act requires that issuing an incidental take permit may not jeopardize any listed species, including plants. In general, it is a good idea to include conservation measures for listed plant species in developing an HCP.

What is the process for getting an incidental take permit?

The applicant decides whether to seek an incidental take permit. While FWS staff members provide detailed guidance and technical assistance throughout the process, the applicant develops an HCP and applies for a permit. The components of a completed permit application are a standard application form, an HCP, an Implementation Agreement (if applicable), the application fee, and a draft National Environmental Policy Act (NEPA) analysis. A NEPA analysis may result in a categorical exclusion, an environmental assessment, or an environmental impact statement.

While processing the permit application, the FWS prepares the incidental take permit and a biological opinion under section 7 of the Act and finalizes the NEPA analysis documents. Consequently, incidental take permits have a number of associated documents.

How do we know if we have listed species on our project site?

For assistance, check with the appropriate State fish and wildlife agency, the nearest FWS field office, or the National Marine Fisheries Service (NMFS), for anadromous fish such as salmon.

What kinds of actions are considered mitigation?

Mitigation measures are actions that reduce or address potential adverse effects of a proposed activity on species included in an HCP. They should address specific conservation needs of the species and be manageable and enforceable. Mitigation measures may take many forms, including, but not limited to, payment into an established conservation fund or bank; preservation (via acquisition or conservation easement) of existing habitat; enhancement or restoration of degraded or a former habitat; establishment of buffer areas around existing habitats; modifications of land use practices, and restrictions on access. Which type of mitigation measure used for a specific HCP is determined on a case by case basis, and is based upon the needs of the species and type of impacts anticipated.

What is the legal commitment of a HCP?

Incidental take permits make binding the elements of HCPs. While incidental take permits have expiration dates, the identified mitigation may be in perpetuity. Violating the terms of an incidental take permit may constitute unlawful take under section 9 of the Act.

Who approves an HCP?

The FWS Regional Director decides whether to issue an incidental take permit, based on whether the HCP meets the criteria mentioned above. If the HCP addresses all of the requirements listed above, as well as those of other applicable laws, the FWS issues the permit.

What other laws besides the Endangered Species Act are involved?

In issuing incidental take permits, the FWS complies with the requirements of NEPA and all other statutes and regulations, including State and local environmental/planning laws.

Who is responsible for NEPA compliance during the HCP process?

The FWS is responsible for ensuring NEPA compliance during the HCP process. However, if the Service does not have sufficient staff resources, an applicant may, within certain limitations, prepare the draft NEPA

analysis. Doing so can benefit the applicant and the government by expediting the application process and permit issuance. In cases like this, the FWS provides guidance, reviews the document, and takes responsibility for its scope, adequacy, and content.

Does the public get to comment on our HCP? How do public comments affect our HCP?

The Act requires a 30-day period for public comments on applications for incidental take permits. In addition, because NEPA requires public comment on certain documents, the FWS operates the two comment periods concurrently. Generally, the comment period is 30 days for a Low Effect HCP, 60 days for an HCP that requires an environmental assessment, and 90 days for an HCP that requires an environmental impact statement. The FWS considers public comments in permit decisions.

What kind of monitoring is required for a HCP, and who performs it?

Three types of monitoring may be required: compliance, effectiveness, and effects. In general, the permit-holder is responsible for ensuring that all the required monitoring occurs. The FWS reviews the monitoring reports and coordinates with the permit-holder if any action is needed.

Does the Fish and Wildlife Service try to accommodate the needs of HCP participants who are not professionally involved in the issues?

Because applicants develop HCPs, the actions are considered private and, therefore, not subject to public participation or review until the FWS receives an official application. The FWS is committed to working with people applying for permits and providing technical assistance throughout the process to accommodate their needs.

However, the FWS does encourage applicants to involve a range of parties, a practice that is especially valuable for complex and controversial projects. Applicants for most large-scale, regional HCPs choose to provide extensive opportunities for public involvement during the planning process. Issuing permits is, however, a Federal action that is subject to public review and comment. There is time for such review during the period when the FWS reviews the information. In addition, the FWS solicits public involvement and review, as well as requests for additional information during the scoping process when an EIS is required.

Are independent scientists involved in developing an HCP?

The views of independent scientists are important in developing mitigation and minimization measures in nearly all HCPs. In many cases, applicants contact experts who are directly involved in discussions on the adequacy of possible mitigation and minimization measures. In other cases, the FWS incorporates the views of independent scientists indirectly through their participation in listing documents, recovery plans, and conservation agreements that applicants reference in developing their HCPs.

How does the FWS ensure that species are adequately protected in HCPs?

The FWS has strengthened the HCP process by incorporating adaptive management when there are species for which additional scientific information may be useful during the implementation of the HCP. These provisions allow FWS and NMFS to work with landowners to reach agreement on changes in mitigation strategies within the HCP area, if new information about the species indicates this is needed. During the development of HCPs, the FWS and NMFS discuss any changes in strategy with landowners, so that they are aware of any uncertainty in management strategies and have concurred with the adaptive approaches outlined.

What will the FWS do in the event of unforeseen circumstances that may jeopardize the species?

The FWS will use its authority to manage any unforeseen circumstances that may arise to ensure that species are not jeopardized as a result of approved HCPs. In the rare event that jeopardy to the species cannot be avoided, the FWS may be required to revoke the permit.

How can I obtain information on numbers and types of HCPs?

Our national HCP database displaying basic statistics on HCPs is available online from our Habitat Conservation Planning page at http://ecos.fws.gov/conserv_plans/servlet/gov.doi.hcp.servlets.PlanReportSelect?region=9&type=HCP.

U. S. Fish and Wildlife Service
Endangered Species Program
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203
703-358-2171
http://www.fws.gov/endangered/what-we-do/hcp-overview.html

April 2011

Appendix E

Agency and Tribal Cooperating Agency Letters

Weidner , Emily <emily_weidner@fws.gov>

Fwd: Scoping comments

1 message

Lickwar , Peter <peter_lickwar@fws.gov> Mon, Sep 25, 2017 at 9:27 AM
To: Emily Weidner <emily_weidner@fws.gov>

---------- Forwarded message ----------
From: LAMB Bonnie <bonnie.lamb@state.or.us>
Date: Fri, Sep 22, 2017 at 2:11 PM
Subject: Scoping comments
To: "Lickwar, Peter" <peter_lickwar@fws.gov>

Hi Peter – Here are DEQ's comments on the Deschutes HCP scoping process. Thanks for the opportunity to provide comments.

Bonnie

Bonnie Lamb

DEQ Basin Coordinator

475 NE Bellevue Dr., Suite 110

Bend, OR 97701

(541) 633-2027

--
Peter Lickwar
USFWS Bend, Oregon
Phone 541-383-7146

DEQ EIS Scoping Comments 092217.pdf
1607K

Oregon

Kate Brown, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Drive, Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

Date: September 22, 2917

To: Peter Lickwar

From: Bonnie Lamb

Re: Deschutes River Basin HCP Scoping

DEQ would like to offer the following comments for your consideration as the EIS and draft HCP are further developed. I provided extensive comments during the period 2012-2014 when I was involved in stakeholder and technical working groups. I trust that these earlier comments will be reviewed as well. I provided specific comment letters on Tasks 3-6 (June 28, 2012) and on Chapter 5 (November 20, 2014). In addition, I submitted "track changes" and/or email comments on many of the different Tasks and Chapters, including: Table A-2, Study 15 (Phases 1 and 2), Study 2 (Phases 1- 3), and Studies 3-6 (Phase 2). I have attempted to summarize some of these comments here, but not with the level of detail that I provided earlier. I can provide you with copies of my earlier comments if you do not have them in your files.

1. Most of the water bodies identified as part of the Plan Area are included on Oregon's 303(d) list of impaired water bodies for one or more of the following parameters: temperature, dissolved oxygen, pH, chlorophyll-*a*, turbidity, sedimentation, aquatic weeds/algae, *E. coli*, total dissolved gas, biological criteria, flow modification, habitat modification. Resident fish and aquatic life are identified as beneficial uses impacted by all of these parameters, with the exception of *E. coli* and aquatic weeds/algae.

   We have not completed Total Maximum Daily Loads, which would identify causes of the impairments, for any of these listings. However, based on preliminary modeling done in the Deschutes Basin as well as in other parts of the state, it is very likely that some of the covered activities could contribute to the impairments. The EIS and HCP should address the effects of the covered activities on known water quality impairments and indicate how proposed conservation measures will contribute to attainment of water quality standards. While not exhaustive, the following list describes some of the potential impacts of covered activities:

   - Irrigation return flows can contribute pollutants, including heat, nutrients, pathogens (including fish pathogens such as *C. shasta)*, sediments/turbidity, and pesticides, to water bodies which support listed species. These pollutants can in turn affect in-stream temperature, pH, dissolved oxygen, growth of aquatic plants or algae, and fish health.
   - Diversion of water and reduced flows below the point(s) of diversion can contribute to a number of water quality impairments, including temperature, dissolved oxygen, pH, chlorophyll-a, growth of aquatic weeds or algae, and biological criteria.
   - The storage of water in reservoirs can affect the quality of the water. By impounding water, conditions can be created which lead to the growth of aquatic weeds and algae and/or contribute to water quality impairments for dissolved oxygen, pH or temperature. Algal blooms have been documented in most of the reservoirs covered by the Plan. In addition, storage of water during the non-irrigation season results in reduced flows below the reservoir, which can expose stream banks to freeze-thaw processes.

- The timing and release of water from reservoirs can contribute to water quality impairments downstream in a number of ways: (1) impairments in the reservoirs (or constituents that contribute to impairment, such as nutrients) can be passed downstream; (2) increased flows below reservoirs early in the irrigation season can transport sediment downstream from stream banks which were exposed to freeze-thaw processes during the winter; (3) below Wickiup and Prineville Reservoirs, studies have demonstrated elevated total dissolved gas levels (exceeding state standards) at high flow release levels and ODFW has documented the presence of bubble-gas disease in fish in the Crooked River below Prineville Reservoir.
- The activities of the City of Prineville have the potential to affect water quality in Ochoco Creek and Crooked River through possible reductions in stream flow (diversions and groundwater pumping) and discharge of treated wastewater to the Crooked River.

2. During the earlier development of the HCP, the Bureau of Reclamation was contracted to do a review of existing water quality data in the Deschutes Basin (Phase 1 for Studies 3-6, dated March 2013). I reviewed that document and provided a number of comments. I would encourage you to look at these comments, as I am not going to repeat them all here. While the report provided a good start at compiling existing data, it missed quite a bit of data that I knew about. And there has been a quite a bit more data collected since that time, including some TMDL studies in the Upper and Little Deschutes Subbasins and toxics monitoring throughout the basin. In addition, DEQ's Pesticide Stewardship Program began a pilot monitoring program in the Agency Plains area in 2014. Data from this effort could inform the discussion of water quality associated with return flows. Let me know if you would like assistance accessing any of DEQ's data.
3. While I recognize the importance of developing conservation measures to protect the Oregon spotted frog, I would encourage the USFWS to pay equal attention to the habitat and water quality needs of the listed and non-listed fish species that will be covered by this HCP in the middle Deschutes reach above Lake Billy Chinook. While these fish cannot pass up the Deschutes River beyond Big Falls, the flow and water quality impacts of water management activities in and upstream of Bend can be seen in the Deschutes River downstream of Big Falls. Restoring flows in the middle Deschutes is also important for protecting non-listed resident aquatic species.
4. Groundwater discharge through springs along lower Whychus Creek, lower Crooked River and the lower portion of the middle Deschutes River provides a significant source of water to these reaches. In most cases this water provides important cold water habitat for aquatic species. Given the relationship between leaking canals and groundwater discharge above Lake Billy Chinook, it is likely that conservation measures (such as piping canals) will reduce spring flow. The EIS and HCP should model these impacts and develop appropriate mitigation measures, recognizing that leaving an additional 5 cfs of water instream at the point of diversion does not have the same water quality benefits as 5 cfs of spring water.
5. In September, 2014, Conservation Measures were presented to the HCP Working Group in a draft Chapter 5. In this draft, it was unclear what the biological or ecological goals of the proposed measures were. As Conservation Measures are developed through this current EIS/HCP effort, they should be developed to ensure that the biological needs of the covered species are met. This could include quantifying the amount of habitat provided and/or improvements in water quality.
6. Given the complexity of water management in the Deschutes Basin and the limitations of models, it will be very important to have an adequate monitoring program in place to evaluate the impacts of the covered activities and proposed conservation measures over time. For water quality, DEQ maintains a network of long-term ambient monitoring stations in the Deschutes Basin. While this information will be helpful, there are not enough of these stations and they are not monitored frequently enough to be used in understanding the effects of activities covered under the HCP. As part of their monitoring responsibilities under the HCP, the applicants should commit to contributing to the development of a more comprehensive water quality monitoring program in the Plan Area. A number of entities have expressed interest in having

such a monitoring program in place and DEQ will be glad to assist with development of a monitoring strategy.

7. While likely outside of the scope of the HCP, DEQ staff wanted to identify two other potentially related water quality issues.
    - Water quality standards and beneficial uses apply to the canals. Irrigation canals are subject to NPDES permits.
    - The covered activities have the potential to affect local drinking water sources. For reference, the only public water system using surface water within the Plan Area is the City of Bend which has an intake on Bridge Creek. (City of Sisters has an intake on Pole Creek in the Whychus Creek Watershed, however the source is currently listed as inactive/emergency.) There are ~250 federally recognized public water systems using groundwater in the Plan Area. At least 12 community water systems, including the Cities of Bend and Prineville as well as Deschutes Valley Water District, have wells within 500 feet of the covered lands. Wells within 500 feet of surface water are typically flagged by the Oregon Health Authority for potential hydraulic connection to the surface water body. Additional information on public water supply locations can be provided if needed.

As you are well aware, many of the water management changes that will be considered in the EIS/HCP process are also being evaluated as part of the on-going Deschutes Basin Study. I would encourage you to utilize the results of the Basin Study to help inform the Deschutes River Basin HCP.

Please feel free to contact me if you have any questions about these comments. I can be reached at lamb.bonnie@deq.state.or.us or (541) 633-2027. Thank you for the opportunity to provide comments.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

September 21, 2017

Peter Lickwar
U.S. Fish and Wildlife Service
Bend Field Office
63095 Deschutes Market Road
Bend, OR 97701-9857

Dear Mr. Lickwar:

The EPA has reviewed the July 24, 2017 Federal Register Notice of Intent from the US Fish and Wildlife Service to prepare a Draft Environmental Impact Statement for the Proposed Deschutes River Basin Habitat Conservation Plan in Oregon (EPA Project Number 17-0034-FWS). Our comments are in accordance with EPA responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act. Section 309 specifically directs the EPA to review and comment in writing on the environmental impacts associated with all major federal actions.

The Deschutes River Basin HCP is being prepared in response to a request for incidental take permits under the Endangered Species Act. ITPs under the ESA would authorize the incidental take of federally-listed species caused by permitted activities (i.e., the storage, release, diversion and return of irrigation water). Species proposed for inclusion in the HCP include three federally-listed species (Oregon spotted frog, bull trout, and steelhead) and two currently unlisted species that have the potential to become listed during the life of the HCP (sockeye salmon and spring Chinook salmon). The potential applicants for the ITPs include the Irrigation Districts that comprise the Deschutes Basin Board of Control: the Arnold Irrigation District, Central Oregon Irrigation District, North Unit Irrigation District, Ochoco Irrigation District, Swalley Irrigation District, Three Sisters Irrigation District, Tumalo Irrigation District, the Lone Pine Irrigation District, and the City of Prineville.

According to the NOI, the EIS will evaluate a no action alternative; the proposed action, which would include the issuance of take authorizations as described in the proposed HCP; and a range of additional reasonable alternatives. As the EIS is developed, we encourage the Service to develop materials (especially web-based materials) to help the public and decision-makers understand and engage in dialogue about these alternatives. We also stress the importance of structuring the alternatives analysis so that components of individual alternatives can be extracted or incorporated as appropriate in the Final EIS. It should be possible for a hybrid alternative to emerge through the planning process, so long as it is within the spectrum of the alternatives analyzed in the Draft EIS.

We commend the parties to the HCP for their recognition of the value and importance of aquatic habitats in the Deschutes Basin and for their proactive efforts to conserve them. We also appreciate the DBBC's support, along with that of the Bureau of Reclamation, of the Deschutes Basin Study Work Group. This work will be foundational to a robust analysis of HCP alternatives through the NEPA process.

Because the available scoping materials do not lay out specific alternative directions, it is difficult to offer detailed comments or suggestions on how alternatives might be modified. Our attached comments do, however, make suggestions related to providing an adequate range of alternatives and highlight key issues that we recommend be addressed as the EIS is developed. We appreciate the opportunity to participate early in the planning process. If you would like to discuss these comments, please contact me at (503) 326-2859 or by electronic mail at kubo.teresa@epa.gov.

Sincerely,

Teresa Kubo
Office of Environmental Review and Assessment

Enclosure:

1. EPA Region 10 Scoping Comments on the NOI to Prepare a Draft Environmental Impact Statement for the Deschutes River Basin Habitat Conservation Plan

EPA Region 10 Scoping Comments on the NOI to Prepare a Draft Environmental Impact Statement for the Deschutes River Basin Habitat Conservation Plan (HCP)
September 21, 2017

Range of Alternatives

EISs should include a range of alternatives, which meet the stated purpose and need, goals and objectives, and responds to issues identified during the scoping process. The alternatives analysis should compare alternatives with respect to how well they respond to the stated purpose and need, goals and objectives, and scoping issues.

The Council on Environmental Quality recommends that all reasonable alternatives be considered, even if some of them could be outside the capability of the applicant or the jurisdiction of the agency preparing the EIS.[1]

In the interest of providing an adequate range of alternatives, we recommend the inclusion of a conservation alternative, as well as an alternative that would emphasize meeting municipal and agricultural needs. We recommend the conservation alternative broadly seek to maximize habitat protection and restoration and include the following considerations:

- Stream flows in the Upper Deschutes that mimic the natural hydrograph of the river. In the Upper Deschutes that would mean higher winter flows and lower summer flows. This would require flow modification at Wickiup, Crane Prairie and Crescent reservoirs, as well as conservation actions by the relevant irrigation districts;
- Increasing Deschutes River flows in the Middle Deschutes from the current protected flow of 134 cfs to the instream flow target of 250 cfs and increasing stream flow in Tumalo Creek from the current protected flow of 17.2 cfs to 54 cfs. Multiple lines of evidence show reduced stream temperatures at higher stream flows would be achieved through stream flow restoration in the middle Deschutes River and Tumalo Creek;[2]
- Required minimum flows in the Crooked River (as determined by the relevant regulatory agencies) during periods of drought;
- The inclusion of shaping flows during reservoir storage season (March 1 – April 15) to improve Oregon Spotted Frog (OSF) breeding conditions and limit the potential for egg desiccation; and,
- Opportunities for habitat restoration (consider opportunities on Forest Service land such as Ryan Ranch; areas around Wickiup Reservoir that could be physically modified to improve or create habitat; opportunities on private land; opportunities on BLM land, such as the Casey Tract on the Little Deschutes),

Water Quality

Water quality degradation is one of EPA's primary concerns. We recommend that the EIS disclose which waters may be impacted by the proposed HCP, the nature of the potential impacts, and the specific pollutants likely to impact those waters. It should also report those waterbodies potentially affected by the project that are listed on the State's most current EPA-approved 303(d) list of impaired waters. The EIS should describe any existing restoration and enhancement efforts for those waters, and

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[1] http://ceq.hss.doe.gov/NEPA/regs/40/1-10.HTM#2

[2] http://www.upperdeschuteswatershedcouncil.org/wp-content/uploads/2016/12/2015-Middle-Deschutes-River-Instream-Flow-Restoration-and-Temperature-Response_FINAL.pdf

how the project will coordinate with Oregon DEQ as they develop TMDLs for the rivers and streams in the Upper Deschutes and Little Deschutes sub-basins. The EIS should also describe on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of water quality within impaired waters. The state designates, and EPA approves, the applicable beneficial uses and associated criteria for protecting surface waters. These, combined with anti-degradation provisions, are considered the state water quality standards. The anti-degradation provision of the CWA and State of Oregon WQS apply to those waterbodies where WQS are currently being met. This provision prohibits degrading the water quality unless a robust analysis shows that important economic and social development necessitates some degradation. The EIS evaluation should determine and discuss how the antidegradation provisions of the CWA and Oregon WQS would be met. See 40 CFR 131, as well as the State of Oregon WQS, for more information regarding beneficial uses, water quality criteria, and antidegradation policies and procedures.

Align Conservation Efforts with Current Landscape-Level Strategies
We support and encourage partnerships among federal, state, local, and non-governmental entities to strategically and collaboratively conserve, restore, and maintain aquatic and wetland habitat. We recommend that strategic efforts include the following:

- Identify and prioritize the largest, most intact habitat patches;
- Identify and establish corridors/connections between and among habitat patches;
- Provide redundancy of habitats in the landscape;
- Identify and protect important refugia and biodiversity hotspots for wetland dependent plant and animal species;
- Restore degraded habitats, particularly those with the greatest potential for restoration and for meeting landscape-level conservation strategies;
- Seek to complement, augment, and connect with the important conservation work occurring within the planning area (such as at Ryan Ranch);
- Seek management agreements with landowners of working lands that contain remnant and/or high quality habitat; and,
- Provide incentives to landowners to retain and maintain wetland habitats and to have compatible land uses.

Active Management to Restore and Maintain Aquatic Habitats in the Deschutes Basin.
Management activities, such as aquatic habitat and wetland restoration, the construction of cattle exclosure fencing, and the removal and control of invasive species will be an important component of species protection and recovery. These actions need to be legal, feasible with respect to cost/funding and logistics, and reasonably acceptable to jurisdictions, landowners, and neighbors. We support the inclusion of active management, as proposed above, among the covered activities.

Climate Considerations
The EIS should disclose the extent to which the HCP and potential issuance of an ITP would incorporate consideration of future climate. It is projected that the Pacific Northwest could see rising stream temperatures, which are expected to reduce cold-water fisheries habitat; changes in the timing and length of seasons, which would influence changes in the ranges, phenology, community composition, biotic interactions and behavior of plants, insects, and animals (including predatory species); and increased winter rainfall, which will be accompanied by a reduction in snow pack, earlier snowmelts,

and increased runoff. This will affect hydrology and reservoir operation, as well as the potential timing and intensity of wildfire. The EIS should discuss the relevant potential effects of predicted future climate scenarios on the proposed actions, and how the HCP and ITP(s) would incorporate mitigation, adaptation, and education measures.

Monitoring and Adaptive Management

Monitoring and adaptive management will be critical to the success of the HCP. We recommend that adaptive management plans include:

- A timeline for periodic reviews and adjustments, as well as a mechanism to consider and implement additional mitigation measures, as necessary;
- Specific thresholds that would trigger changes in management actions, monitoring or mitigation;
- Criteria for determining whether additional mitigation measures are needed; and,
- A commitment to implementation of the proposed monitoring plan.

Ecosystem Services

The HCP's effects on ecosystem services, both positive and negative, should be analyzed and disclosed in the EIS. Of key importance in this context is the role of salmon as a provisioning species. Salmon produce highly valued food products harvested in various commercial, subsistence, and personal-use fisheries across the North Pacific. Salmon are also a principal focus of the spiritual and cultural lives of diverse native communities in the Pacific Northwest.

Salmon and steelhead also provide many ecosystem supporting services. Salmon are the principal food item of many terrestrial wildlife species[3,4] and a source of marine-derived nutrients to coastal lakes and streams[5,6,7]. They also act as watershed engineers that structure streambed habitats and alter sediment composition during spawning[8]. We recommend that these services be acknowledged, accounted for using quantitative (where feasible) or qualitative means, and fully considered in decision making.

This analysis should include the following elements,[9] which are basic tenets of the NEPA process:

- Describe the Federal action;
- Identify and classify key ecosystem services in the location of interest, i.e., the affected environment;
- Assess the impact of the Federal action on ecosystem services relative to the baseline;
- Assess the effect of the changes in ecosystem services associated with the Federal action; and
- Integrate ecosystem services analyses into decision making.

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[3] Willson, M. F., and K. C. Halupka. 1995. Anadromous fish as keystone species in vertebrate communities. *Conservation Biology* 9(3):489–497.

[4] Merz, J. E., and P. B. Moyle. 2006. Salmon, wildlife, and wine: marine-derived nutrients in human-dominated ecosystems of central California. *Ecological Applications* 16(3):999–1009.

[5] Bilby, R. E., Fransen, B. R., and P. B. Bisson. 1996. Incorporation of nitrogen and carbon from spawning coho salmon into the trophic system of streams: evidence from stable isotopes. *Canadian Journal of Fisheries and Aquatic Sciences* 53:164–173

[6] Cederholm, C. J., M. D. Kunz, T. Murota, and A. Sibatani. 1999. Pacific salmon carcasses: essential contributions of nutrients and energy for aquatic and terrestrial ecosystems. *Fisheries* 24:6–15.

[7] Finney, B. P., I. Gregory-Eaves, J. Sweetman, M. S. V. Douglas, and J. P. Smol. 2000. Impacts of climate change on Pacific salmon abundance over the past 300 years. *Science* 290:795–799.

[8] Schindler, D. E., M. D. Scheuerell, J. W. Moore, S. M. Gende, T. B. Francis, and W. J. Palen. 2003. Pacific salmon and the ecology of coastal ecosystems. *Frontiers in Ecology and the Environment* 1(1):31–37.

[9] http://www2.epa.gov/eco-research/ecosystems-services

Cumulative Impacts
Cumulative impacts result when the effects of an action are added to other effects on a resource in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis.

In analyzing the HCP alternatives, we recommend the EIS characterize resources, ecosystems and communities in terms of their response to change and capacity to withstand stresses. The EIS should focus on resources which are "at risk" or have the potential to be significantly impacted under the various alternatives.

The EPA has issued guidance on how we are to provide comments to lead federal agencies on the assessment of cumulative impacts in Draft EISs, Consideration of Cumulative Impacts in EPA Review of NEPA Documents, which can be found on the EPA's web site at:
https://www.epa.gov/nepa/cumulative-impacts-guidance-national-environmental-policy-act-reviews.
The guidance states that in order to assess the adequacy of the cumulative impacts assessment, five key areas should be considered. The EPA tries to assess whether the cumulative effects analysis:

(1) Identifies resources, if any, that are being cumulatively impacted;
(2) Determines the appropriate geographic area (within natural ecological boundaries) and the time period over which the effects have occurred and would occur;
(3) Describes a benchmark or baseline;
(4) Looks at all past, present, and reasonably foreseeable future actions that have affected, are affecting, or would affect resources of concern; and,
(5) Includes scientifically defensible threshold levels.

Coordination with Tribal Governments
Development of the EIS should be conducted in consultation with all affected tribal governments, consistent with Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments). The EIS should discuss whether or not the proposed project would affect tribal natural and/or cultural resources and address any concerns of the tribes in accordance with federal tribal trust responsibilities.

NPS Comments on Deschutes River Basin HCP

Lee Kreutzer: LKreutzer@nps.gov 8/4/2017

Thank you for this opportunity to participate in scoping for the Deschutes River Basin Habitat Conservation Plan. This office of the National Park Service, National Trails Intermountain Region, administers the Oregon National Historic Trail (NHT). We ask the Fish and Wildlife Service to determine whether the NHT falls within the area of potential effect for this undertaking, and if so, if the undertaking has potential to affect the NHT. Please add this office to the contact list for the planning process. Our point of contact will be Lee Kreutzer, Cultural Resources Specialist, who can be reached via email at Lee_Kreutzer@nps.gov and by phone at 801-741-1012 ext 118.

Weidner , Emily <emily_weidner@fws.gov>

Fwd: ODFW Deschutes River Basin HCP - draft EIS Comments

1 message

Lickwar , Peter <peter_lickwar@fws.gov> Mon, Sep 25, 2017 at 9:29 AM
To: Emily Weidner <emily_weidner@fws.gov>

---------- Forwarded message ----------
From: Ted Wise <ted.g.wise@state.or.us>
Date: Fri, Sep 22, 2017 at 7:50 PM
Subject: ODFW Deschutes River Basin HCP - draft EIS Comments
To: "Lickwar, Peter" <peter_lickwar@fws.gov>
Cc: Brett Hodgson <brett.l.hodgson@state.or.us>

Dear Mr. Lickwar:

Attached is the September 22, 2017 Oregon Department of Fish and Wildlife Deschutes River Basin HCP - draft EIS Comment Letter.

Should you have any questions on our comments please don't hesitate to call or email.

Thank-you.

- Ted W.

****

Ted Wise

Oregon Department of Fish & Wildlife

East Region Hydropower Coordinator

61374 Parrell Road

Bend, Oregon 97702

Email: ted.g.wise@state.or.us

Office Phone: 541-633-1115

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Peter Lickwar

USFWS Bend, Oregon
Phone 541-383-7146

ODFW Comments _ DBHCP EIS Scoping 9-22-17.pdf
185K

Oregon
Kate Brown, Governor

Department of Fish and Wildlife
East Region
61374 Parrell Road
Bend, OR 97702
(541) 388-6363
FAX (541) 388-6281

September 22, 2017

Peter Lickwar
United States Fish and Wildlife Service
U.S. Fish and Wildlife Service, Bend Field Office
63095 Deschutes Market Road,
Bend, OR 97701

Subject: ODFW Comments for the 2017 Deschutes River Basin Habitat Conservation Plan - draft EIS Scoping Process

Dear Peter:

Please accept the Oregon Department of Fish & Wildlife (ODFW) comments for the Deschutes River Basin Habitat Conservation Plan (DBHCP) - draft Environmental Impact Statement (EIS).

These comments serve as part of ODFW's continued DBHCP involvement including previously submitted remarks pertinent to the draft Chapter 5 DBHCP document detailing proposed mitigation measures released in August of 2014 by the "potential applicants for the ITP(s) including the City of Prineville and members of the Deschutes Basin Board of Control (i.e., Arnold, Central Oregon, North Unit, Ochoco, Swalley, Three Sisters, Tumalo, and Lone Pine Irrigation Districts in Oregon), collectively hereafter referred to as the Applicant. Our comments detail information and analysis that ODFW feels is important to be included as part of the 2017 DBHCP draft EIS scoping process. The lack of detailed species biological information and the generalized description of the Applicant's operations makes it challenging to provide more than cursory comments at this time. ODFW's comments contained herein at this initial stage, therefore are general in scope and are presented based on the understanding that as more information, including alternatives, are developed further, additional input from our agency will be provided. A comprehensive and thorough description and analysis of the impacts and the effects and any proposed mitigation actions for, and through, the DBHCP EIS is profoundly important to the aquatic habitats and listed species for which the Applicants are requesting Incidental Take Coverage.

ODFW appreciates the opportunity to provide input on the proposed HCP EIS and is hopeful that through continued effort, a sustainable habitat conservation plan beneficial to fish and wildlife species and the Applicant will emerge. ODFW is committed to providing input and working with the United States Fish and Wildlife Service, National Marine Fisheries Service and the Applicant in the effort to craft a DBHCP that appropriately provides for the habitat considerations of those species for which Incidental Take Coverage is being sought. Should you have any questions pertaining to these comments please do not hesitate to contact me.

Sincerely,

Ted Wise
Hydropower Coordinator – East Region
Oregon Department of Fish Wildlife
61374 Parrell Road
Bend, Oregon 97701
541-633-1115
ted.g.wise@state.or.us

COMMENTS OF OREGON DEPARTMENT OF FISH AND WILDLIFE ON DESCHUTES BASIN MULTI-SPECIES HABITAT CONSERVATION PLAN – DRAFT ENVIRONMENTAL IMPACT STATEMENT

The stated action for this particular draft Environmental Impact Statement (EIS) scoping is the issuance of an Incidental Take Permit(s) (ITP) for a proposed Deschutes Basin Multi-species Habitat Conservation Plan (DBHCP). The ITP is to provide coverage from incidental take for four salmonid fishes and one amphibian. The Mid-Columbia Summer Steelhead Trout (*Oncorhynchus mykiss*) and Bull Trout (*Salvelinus confluentus*) are currently federally listed threatened and endangered species. The other two salmonids which are proposed for coverage are Chinook Salmon (*Oncorhynchus tshawytscha*) and one population of Sockeye Salmon/Kokanee (*Oncorhynchus nerka)*. One federally listed threatened and endangered amphibian is to be covered – the Oregon spotted frog (*Rana pretiosa*).

Oregon Department of Fish & Wildlife Summary Comments

- Detailed information should be included in the DBHCP/EIS document pertaining to a thorough understanding of the habitats and life histories of all the species for which Incidental Take Coverage is being sought.

- The Applicant and United States Fish and Wildlife Service (USFWS) should provide the information necessary to allow a comprehensive review of the Oregon Spotted Frog (OSF) needs in conjunction with the biological/habitat needs of the other species in the upper Deschutes River reaches. This includes the need for a better understanding of the stream flow needs as related to the aquatic, riparian and wetland habitats.

- In respect to the duration of the proposed ITP, it is important that advantages and disadvantages of a range of timeframes be thoroughly analyzed. This should include timeframes of 5,10,15, 20 and 25 years.

- The length of the issued ITP is important to consider in respect to the limitations of models used to analyze such considerations such as climate change and in respect to limitations presented by the available information for each species as affected by the Applicant's operations.

- The analysis of the appropriate length of the ITP should include ability of Applicant's ability to fund the necessary mitigation measures.

- The analysis of the term of the ITP should be based on the flexibility of using an adaptive management model that allows timely and appropriate adjustments to management actions, during the life of the permit. The more difficult it is to make effective and timely adjustments to the issued DBHCP ITP, the shorter the duration of the ITP should be.

- The DBHCP EIS should include an analysis of the instream flow necessary in the Deschutes River, Whychus Creek and Crooked River to support quality habitat conditions for all life stages of the species for which "incidental take coverage" is being requested. Analyzed instream flow scenarios for those areas affected by the Applicants' activities and infra-structure should be built on a sound biological basis.

- The draft EIS Plan should thoroughly detail/analyze how any proposed mitigation measures and will contribute to objectives of the ESA-recovery plan for Mid-Columbia steelhead.

- The DBHCP EIS analysis should include those alternatives which provide for “certainty” in respect to necessary flows required as a basis for quality habitat condition in which each species is dependent. There is a need for binding minimum flows in the Crooked River system and Upper Deschutes River system that sustain and benefit all life history stages of those species for which the ITP is being proposed. This includes in particular, mid-Columbia Summer Steelhead Trout, Chinook Salmon, Bull Trout and the Oregon Spotted Frog.

- The draft DBHCP/EIS should address cumulative effects of the Applicant’s activities in concert with other anthropologic impacts. A cumulative effects analysis should be in provided to adequately address effects of the Applicant’s past and future activities.

- The DBHCP/EIS should thoroughly describe and address the City of Prineville’s potential effects of future development and land uses on the covered species.

- An analysis is needed of the potential effects of climate change in relation to the proposed DBHCP.

- Compliance, effectiveness and effects monitoring should be thoroughly addressed in the EIS analysis.

- The effects/impacts of a no-action alternative to those species for which ITP coverage is being sought should be thoroughly examined. This should include limitations resulting from aspects of the current flow regimes for each of the stream systems on each of the species habitats and life history stages.

- The Summer Steelhead Trout population located in Deschutes River and tributaries downstream of the Pelton Round Butte Hydroelectric Project, Pelton Dam (RM 100) (Trout Creek, Sagebrush Creek, Mud Springs Creek), while federally listed under the Endangered Species Act (ESA) as a Threaten Species; are not part of the ESA 10(j) experimental designation given to Summer Steel Trout population that is above the Pelton Round Butte Project.

- The EIS should provide that alternatives analyzed are consistent with applicable Oregon Revised Statutes (ORS) and Oregon Administrative Rules (OAR).

Comments

ODFW recommends that in respect to enabling a sound analysis of the effects, impacts and potential mitigation measures commensurate with the impacts to the species, an adequate and thorough presentation of background information is necessary. ODFW recommends that the following information be included for each species proposed for ITP coverage:

I. Existing Information

A. Historical and Current Information Concerning Presence/Absence and Spatial and Temporal Distribution of Each Species on the Covered Lands
B. Life History
C. Biological Status
D. Species Habitat Condition Pre Covered Project Impacts.
E. Condition of Each Species' Existing Habitats
F. Habitat Capacity Estimates

II. Data Gaps
A. Presence/Absence and Spatial and Temporal Distribution Data Needs
B. Biological Status Data Needs
C. Habitat Data Needs

III. Effects of Covered Activities on the Species, Including Changes in Habitat Distribution, Abundance and Quality resulting from Covered Activities.

IV. Sensitivity of Each Species to Habitat Modifications Anticipated with Conservation Measures.

Information on historic and current habitats should be included for all species for which the Applicants are seeking coverage. A similar exercise was undertaken by the DBBC and City of Prineville in 2010 for assessing the implications of including redband trout as a covered species in the DBHCP (Biota Pacific Environmental Services 2010). For purposes of the redband trout assessment, "*covered lands included all surface waters, wetlands and riparian lands from the shoreline of all irrigation water reservoirs, including the irrigation supply network, downstream to elevation 1,945 feet above mean sea level, which is the maximum pool of Lake Billy Chinook*." In this vein the EIS analysis should provide context on historical fish production in areas above all the storage dams for which the applicants are requesting coverage. An example of this information is to be found in Study 14-2: Evaluation of Fish Passage Options for Ochoco Dam (R2 Resource Consultants, Inc. 2014). This study was completed in March of 2104, by R2 Resource Consultant, Inc. and Biota Pacific Environmental Sciences, Inc. for the Deschutes Basin Board of Control (DBBC) and the City of Prineville. This study in concert with other available resources should be utilized as a part of the basis for informing the effects analysis. Additional sources have discussed historic anadromous habitats above Bowman Dam. The effects of restricted access to areas of more favorable spawning and rearing habitats is certainly a consideration in respect to effects analysis of the Applicant's operations.

Fish screens and their operation are required by Oregon statutes. The DBHCP ITP EIS should include a detailed accounting of irrigation diversions and associated dams or obstructions for which the Applicants are requesting ITP coverage. ODFW recommends that the EIS include information detailing the presence or absence of screens or passage facilities. If a diversion or passage barrier is equipped with a screen and or fish passage facility, information on date of installation (age) and condition of the screen or passage facility should be included.

Stream flow alteration by the Applicant's water storage and diversion facilities affect fish habitat in many ways including: the amount and distribution of spawning and rearing habitat; the risk of damaging incubating eggs or larval fish by scour or desiccation; risk of stranding fish in low flows; conditions for upstream and downstream migration; the biophysical factors that form and maintain stream channels and the lack of access to historically productive upper basin spawning

and rearing habitats. Alteration of rivers and streams is also known to result in habitat fragmentation, as wetlands are drained or hydrologically altered.

The EIS should include a full ecological flow analysis which considers the frequency, magnitude, timing, rate of change, and duration of flow events necessary to support stream structure and function. The analysis of effects related to covered activities should account for those changes in river morphology, riparian habitats and wetlands, changes to water quality including water temperatures, changes in large woody debris inputs and blockages to historic habitats. These changes in habitats include effects to those riverine, riparian and wetland habitats inundated by the reservoirs proposed for ITP coverage. Changes in flow as a result of the Applicants' operations are significant in almost every month and reach. The DBHCP EIS should analysis the effects of significantly altered annual flow regimes resulting from the Applicant's infrastructure and operational activities on the riparian, wetlands, floodplains and general river geomorphology.

This statement should be expanded to include effects of altered flow regimes to riparian habitats, wetlands, river bank stability. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands is recognized as a major factor contributing to loss of biological diversity and ecological function in aquatic ecosystems, including floodplains. Alteration of natural flow regimes in rivers and streams and their floodplains and wetlands has a variety of impacts which include: Reduction of habitat due to change in area, frequency and duration of activating floodplains and terminal wetlands. Riparian zones and the organisms inhabiting them can be dramatically altered as a result of change in flow patterns along the length of the stream course. As noted by (Poff et al. 1997), six components of flow regimes: amplitude, magnitude, frequency, duration, timing, and rate of change of hydrologic conditions, strongly influence the structure and function of riparian ecosystems. With respect to magnitude, for example, the width of riparian vegetation communities and their biomass increase with mean and median annual flow volume and drainage size in alluvial river channels (Stromberg 1993).

The EIS should detail and analyze the effects down ramping and up ramping rates of flow releases at all the Applicant's storage reservoir dams and diversion dams on the river environment and those species proposed for ITP coverage.

Deschutes River, Little Deschutes River and Crescent Creek

There are a number of the Applicant's patrons that individually divert small amounts of water at 33 locations on the Deschutes River. There should be a clear accounting of whether or not a diversion or passage barrier is equipped with a screen and or fish passage facility. Information on date of installation (age) and condition of the screen or passage facility should be included. A map with the location of each diversion, regardless of size, should accompany the diversion descriptions. This informational need applies to all stream reaches within the Applicant's operational framework, including the Crooked River and its tributaries and Whychus Creek.

The diversion of between 1200 cfs and 1700 cfs of instream flow during the spring; summer and early fall should be analyzed for its effect on fish and OSF habitat and OSF life stages.

The Central Oregon Irrigation District (COID), Siphon Power Project (FERC License 3571), located at approximately rivermile (RM) 169.5, about two miles above Bend. The EIS should analyze the environmental effects on OSF of the project. Please include information on the specifics of COID's Siphon Power, including operations, aspects of diverted flow, the bypass reach flows and other information that is pertinent to the proposed DBHCP and the ITP.

Return flows

In previous documents it has been identified that there are eight return flows directly to the Deschutes River, five of these enter the river at one of the reservoirs associated with the Pelton Round Butte Hydroelectric Project, and the other three enter the river downstream of Pelton Reregulating Dam. The rivermile (RM) location should be included in a table format for each point where irrigation flows return to the river. In addition the origin of the water that is being returned to the river should also be included.

The potential for irrigation return flows originating in the Deschutes River to contribute infectious Ceratonova shasta (C. Shasta) actinospores into the Crooked River and Trout Creek needs to be examined. This situation may result in a higher potential for infection of susceptible fish, including Summer Steelhead Trout and Chinook Salmon. Preliminary work done by ODFW (Stocking 2008) and others (Zielinski et al. 2010.) indicate a concern that warrants further investigation and that this issue needs be addressed as part of the EIS analysis.

Storage, Release and Diversion of Irrigation Water

Crane Prairie Reservoir and Wickiup Reservoir serve as thermal heat sinks. Data collected by the Upper Deschutes Watershed Council (UDWC) in 2004, (UDWC 2004) indicates that warming occurs in Crane Prairie and Wickiup to the extent that the baseline temperature is so high that any downstream cooling influences, i.e. Fall River and Spring River, are insufficient to bring temperatures back down into a range that meets criteria and is favorable for fish. Thus the negative thermal influence of the storage and release of the water for irrigation begins at the reservoirs and continues downstream into Bend and into the middle Deschutes River reach and subsequently into the reach below Big Falls. The warmer water in the middle Deschutes river reach is, at least in part, potentially attributable to the upstream reservoirs. Additionally, the North Canal Dam impoundment is a point of potential heat uptake for any water that continues downstream into the middle Deschutes River reach. This information should be included as part of the EIS analysis including a thorough description of the ecological changes as a result of the impoundment of large quantities of water for irrigation.

Water Quality

Information on water quality in Crescent Lake, Crane Prairie Reservoir or Wickiup Reservoir should be included in the EIS. Is the water quality in any of these reservoirs degraded during the summer months, and do they experience algae blooms as temperatures warm, including large blooms of the blue-green algae *Aphanizomenon* or the cyanobacteria *Microcystis?*

Entrainment of Covered Species

The DBHCP EIS should detail the status of fish screens, along with upstream and downstream passage facilities at each diversion. This should include the status of the Crescent Lake dam, Crane Prairie Reservoir dam and Wickiup Reservoir dam fish screens and fish passage facilities. The EIS should include information that substantiates that those facilities currently equipped with screens are sufficient to safely exclude juvenile and adult OSFs and the impacts associated those diversions and dams that are not screened or adequately screened including the North Unit Irrigation District North Canal Diversion screen.

Middle Deschutes River Instream Flow during the Irrigation Season

Should conversions of irrigation water rights for purposes of meeting flow targets be proposed, these conversions should be analyzed for potential effects on spring inputs into the middle Deschutes reach. Mitigation actions that may be proposed to provide groundwater mitigation credits in exchange for surface flows should be analyzed in respect to impacts of groundwater withdrawals that may reduce spring and seep inputs into any portion of the middle Deschutes between Bend Lake Billy Chinook. Reducing the amount of spring inflow by allowing groundwater withdraws in exchange for the upper Deschutes River flows warmed in Crane Prairie Reservoir and Wickiup Reservoir and the upper reaches of the Deschutes multiplies the warming effect on the middle Deschutes River reach. Mitigation practices that counter act efforts to reduce instream temperature are cause for concern.

The use of temporary leases to meet instream flow targets should analyzed as to the long term assurances of this type of flow mitigation. Temporary leases by their nature are temporary and do not amount to a permanent transfer of a water right to instream use. The need for having the foundation of any instream flow program/effort being based on certificated permanent instream water should be analyzed in the EIS.

Oregon Spotted Frog Comments and Recommendations

Length of the DBHCP:

Typically, HCP's identify specific actions designed to protect federally listed species and provide assurances to the Applicant that only those actions specified in the HCP will be required during the life of the permit. A long lived HCP may be appropriate when the needs of the listed species and their responses to management actions are well understood, but a shorter term HCP is appropriate in situations where significant biological and ecological knowledge gaps exist and timely adjustments to management actions may be needed to protect a species. The latter description exemplifies the current situation with respect to the Oregon spotted frog (OSF) in the Upper Deschutes River Basin. Our understanding of the frog's ecological needs and ability to function within the managed irrigation system has improved over the last few years, but most of that knowledge relates to the riverine environment and is far from complete. To date very little is known about OSF biology and ecology in a reservoir environment. Clearly, a more comprehensive understanding of the frog's needs within the Applicant's managed irrigation delivery system is needed.

Considering the above discussion, ODFW recommends that either: The term of the HCP is limited to a maximum of 5 to 10 years so that, if necessary, appropriate management modifications can be made following permit expiration, or a longer term (15 – 25 years) HCP is developed using an adaptive management model that allows timely and appropriate adjustments to management actions, during the life of the permit, as our understanding of the frog's biology and ecology within the managed system improve.

Biological and Ecological Information Gaps:

The purpose of an HCP is to protect federally listed species that exist where anthropogenic activities might otherwise cause their destruction. This is achieved by providing the Applicant with an incidental take permit that allows limited take of a listed species while requiring the Applicant to follow specific management actions designed to minimize or mitigate take by conserving the habitat upon which the species depend, thereby contributing to the recovery of the species as a whole.

Execution of a successful HCP requires that the needs of the listed species and their responses to management actions are well understood. However, as previously mentioned, our biological and ecological understanding of the OSF ability to function within the managed irrigation system is far from complete. Although important knowledge has been gained in the riverine system significant knowledge gaps exist and very little is known about OSF biology and ecology in a reservoir environment.

In order to meet the purpose of the HCP, ODFW believes that its development must address critical biological and ecological information gaps such as:
**Note: Efforts to address some of these questions are currently underway, but many are not.*

OSF Biology and Ecology:

What is the timing of oviposition, hatching, metamorphosis and overwintering habitat use in the mainstem Deschutes River, Crane Prairie Reservoir, Crescent Creek and the Little Deschutes River?

What is the survival rate of OSF life history stages and the effective population size in the mainstem Deschutes River, Crane Prairie Reservoir, Crescent Creek and the Little Deschutes River?

What is the relative contribution of OSF life history stages to population persistence, stability, and growth?

Which life history stages are the most sensitive to management actions and most likely to limit population stability or growth?

What is the range of OSF movements (distance and pathway) between breeding, rearing and overwintering habitats?

Is OSF survival effected by the selection of low quality vs. high quality overwintering sites?

OSF Habitat:

What are the locations and relative quality of OSF overwintering habitat on the mainstem Deschutes River, Crane Prairie Reservoir, Crescent Creek and the Little Deschutes River?

What are the flow contributions of Big Marsh Creek to Crescent Creek and the Little Deschutes River?

What mix of wetland vegetation is best suited for OSF egg and larval survival and how can water elevations be managed in the mainstem Deschutes River, Crane Prairie Reservoir, Crescent Creek and the Little Deschutes River to meet the desired conditions?

What are the potential long-term changes in wetlands along the mainstem Deschutes if future more stable flows are realized?

What is the potential for restoration projects, such as Ryan Ranch, to assist in recovery of OSF in the Upper Deschutes Basin?

Irrigation System Management Effects on Habitat and OSF:

What are the surface elevations that will inundate or expose key vegetation zones of sedges and rushes, important to oviposition and tadpole survival, in Crane Prairie Reservoir?

How does the timing and different ramp up and ramp down flow rates influence the timing and survival rates associated with oviposition, hatching, early tadpole development, and movement to overwintering sites in the mainstem Deschutes River, Little Deschutes River and Crescent Creek?

Does the fall drawdown on the Deschutes River below Wickiup Reservoir result in standing of juvenile or adult OSF in isolated pools or habitat and if so what drawdown rates preclude standing?

What is the relationship between year round in-stream flows and key OSF habitats on the mainstem Deschutes River, Little Deschutes River and Crescent Creek?

Invasive Species:

What are the conditions and mechanisms that may allow non-native flora and fauna to depress OSF populations?

What are the locations of established non-native flora and fauna populations, capable of depressing OSF populations, in the Upper Deschutes River Basin and what are the mechanisms that allowed their establishment?

How do changes in water elevation in Crane Prairie Reservoir limit or exacerbate predation on OSF by non-native species such as brown bullheads?

How do changes in water elevation in Crane Prairie Reservoir limit or exacerbate the spread and establishment of non-native flora such as reed canary grass?

Will flow rates designed to benefit various OSF life history stages also benefit non-native flora and fauna in the mainstem Deschutes River, Little Deschutes River and Crescent Creek?

Monitoring:

Beyond the need to address OSF biological and ecological knowledge gaps, the HCP should include a comprehensive and robust monitoring program that can identify the positive and negative effects of management actions on:

- All OSF life history stages
- OSF population stability and status in both the riverine and reservoir environs

- OSF habitat responses to management actions, and
- Invasive flora and fauna capable of depressing OSF populations.

Whychus Creek

Overview of Current Conditions

A good description of the current flow condition of Whychus Creek is in part found in the TSID Main Canal Piping Project (Phases 4-6) grant application dated May 17, 2012 as prepared by the Deschutes Resources Conservancy (DRC) in conjunction with TSID. The current condition of Whychus Creek is described as, "*Flow alterations due to irrigation diversions have occurred since the late 1800s in Whychus Creek. The stream is severely over allocated as rights have been issued authorizing diversion of more water than typically flows in the creek. Presently, the creek enjoys natural flows from its headwaters until it reaches river mile 23, where a series of major irrigation diversions remove close to 90% of the flow for a 5-mile stretch (Golden and Aylward, 2006). Below the City of Sisters, springs and return flow gradually rewater the creek around river mile 18, though flows remain insignificant as compared to the natural hydrograph. These conditions persist each year starting in April and ending in October. Insufficient instream flow has led to a decrease in water quality including elevated water temperatures throughout much of the watershed. As a result, Whychus Creek has been listed on Oregon's 303(d) list since 1998 for temperature (DEQ, 2002). In addition to poor water quality, fish habitat has suffered as a result of irrigation withdrawals. Impacts include increases in the channel width to depth ratio, reduced pool habitat, loss of oxbows and sloughs, loss of riparian habitat, and diminished channel/floodplain connectivity (NPCC, 2004). The decline of water quality and fish habitat in Whychus Creek and its correlation to low instream flow is well documented in a variety of watershed assessments published by a wide array of natural resource agencies."* The above description of the current Whychus creek conditions should be included in the Overview of Current Conditions for the EIS.

The DBHCP EIS should include an analysis of the instream flow necessary in Whychus creek for providing quality habitat conditions supportive of each of the life stages of the species for which "incidental take" is being requested.

In previous documents there has been reference to "*one TSID patron that will divert water by pumping directly from Whychus Creek upstream of TSID's diversion and that this will be a covered activity*." The EIS should detail this particular diversion and include information as to whether or not it is screened to prevent fish entrainment and as to whether or not the pump/diversion is gaged to ensure proper usage of water.

Whychus Creek Flow

Measures to address, contribute and or otherwise meet biological objectives/needs for all life history stages of steelhead trout and Chinook salmon in Whychus Creek should be analyzed.

As noted previously discussed the pros and cons of being dependent on instream leases should be analyzed. The EIS should explore the positive aspects of having the foundation of any instream flow program/effort based on explicitly dedicated certificated permanent instream water.

Whychus Creek Fish Screens and Fish Passage

Upstream and downstream passage is required at all artificial obstructions in those Oregon waters in which migratory native fish are currently or have historically been present. Correspondingly ODFW's fish screen statute requires the owner or operator of a diversion located in waters in which native and naturally spawning fish are currently present, to address fish screen requirements. NMFS also has fish screening and passage laws that apply to the waters of Whychus Creek. Additionally, TSID's Water Right Certificate No. 87798 certificate issued in October of 2012, by the Oregon Water Resources Department (OWRD) for use of water for hydroelectric purposes contains a condition declaring that the "water right holder shall construct, operate and maintain all fish screens, by-pass devices and fish passages as required by the Oregon Department of Fish & Wildlife.

ODFW asks that a paragraph be included that accurately describes the current state of covered species in the Whychus Creek system. This should be information pertaining to the Summer Steelhead, Chinook Salmon and Sockeye Salmon re-introduction efforts. It should discuss the extent and sites of releases of Summer Steelhead Trout and Chinook Salmon fry, downstream movement of juvenile smolts and any information on returning adult Summer Steelhead Trout or Chinook Salmon that may have entered or attempted to enter the Whychus creek system

Water Temperature

The draft EIS should include an analysis of the results of progressively increasing the instream flows beyond 30.19 cfs. For example what are the benefits of increasing the permanent instream flow to 35 cfs, 40 cfs, etc… ?

The draft EIS should address those instream flows necessary to maintain the stream temperature at ODEQ criteria for all the life stages of steelhead trout and Chinook salmon? How does ensuring 30 cfs of flow at the Sisters OWRD gage affect the flow and temperature in the downstream reaches of Whychus Creek?

In recent years through extensive monitoring conducted by the Upper Deschutes Watershed Council (UDWC) it has been demonstrated that 20 cfs and 30 cfs instream minimum flow does not provide adequate summer stream temperatures for salmonids. In the manner of the DBHCP draft EIS should consider/analyze information pertaining to instream flow which provides in instream temperatures that meet ODEQ criteria for all the life stages of anadromous and resident salmonids found in Whychus creek.

Where is cold water refugia located in the Whychus Creek system?

The EIS should analyze flows needed to provide for more suitable bull trout habitat, including stream temperatures upstream of Alder Springs? Bull trout have recently been documented at approximately RM 6 in Whychus Creek (ODFW 2014) several miles above Alder Springs perhaps indicating they might move further up Whychus Creek if more suitable conditions are achieved.

Crooked River, Ochoco Creek, McKay Creek and Lytle Creek

The EIS should include discussion as to how dams and altered flow regimes impact the river ecosystem. Alteration to natural flow regimes can occur through reducing or increasing flows,

altering seasonality of flows, changing the frequency, duration, magnitude, timing, predictability and variability of flow events, altering surface and subsurface water levels and changing the rate of rise or fall of water levels. (Walker 1985; Gehrke *et al.* 1995; Kingsford 1995; Maheshwari *et al.* 1995; Poff *et al.* 1997; Boulton and Brock 1999; Robertson *et al*. 1999, 2001.

As mentioned in preceding comments, the effects of altering a river's natural flow regime can result in negative impacts to stream channel morphology, riparian habitats, water quality and many other aspects of the riverine environment. The Applicant's covered activities have altered flow regimes on the Crooked River. This can affect fish habitat in many ways, including: the amount and distribution of spawning and rearing habitat; the risk of damaging incubating eggs or larval fish by scour or desiccation; risk of stranding fish in low flows, conditions for up and downstream migration; the biophysical factors that form and maintain stream channels and the lack of access to historically productive upper basin spawning and rearing habitats. Alteration of rivers and streams is known to result in habitat fragmentation, as wetlands are drained or hydrologically altered. This can lead to changes in species composition as wetlands species are replaced by upland species; loss of genetic integrity when isolated habitats are too small to support viable populations; and increased numbers of competitor, predator, and parasite species tolerant of disturbed environments. Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands is recognized as a major factor contributing to loss of biological diversity and ecological function in aquatic ecosystems, including floodplains.

A significant water quality issue is dissolved gas (particularly nitrogen) super saturation during periods of releases of high volume of water from Bowman Dam. Due to the configuration of the outlet structure of Bowman Dam, atmospheric nitrogen is entrained in the Crooked River at levels that exceed the standards set by the Oregon Department of Environmental Quality when discharge exceeds approximately 600 cubic feet per second. At high enough levels of entrained nitrogen, deleterious effects are manifested in aquatic organisms through a condition known as gas bubble disease (Porter, T, and B. Hodgson. 2016).

The EIS should analyze water quality in Prineville Reservoir or Ochoco Reservoir. Is the water quality in any of these reservoirs degraded during the summer months, and do they experience algae blooms as temperatures warm, including blooms of the blue-green algae *Aphanizomenon or* the cyanobacteria *Microcystis?*

Under current conditions access to numerous miles of historic mainstem and headwater tributary spawning and rearing habitat is blocked by Ochoco Dam and Bowman Dam. The EIS should analysis the extent of the upstream historic habitats and benefits of having the access to historic habitats.

The EIS overview of current conditions for the OID and Crooked River Basin should include the status of fish screens and fish passage at all dams, diversions, infiltration galleries, pumps and locations where water is diverted on Johnson Creek, Dry Creek, McKay Creek and Lytle Creek. This applies to the passage and screening status of Bowman Dam and Ochoco Dam. A table should be included in the draft EIS which allows a reader to easily discern the status of each diversion, pump etc..

In respect to existing screens: It is important that if <u>an existing screen does not meet current</u> NMFS criteria that it be replaced with a screen that does meet current NMFS criteria including approach velocities, screen mesh etc… This should apply to older screens that at one time may have met standards, but are no longer compliant. Please include an analysis of the screens and or downstream and upstream fish passage facilities at Bowman Dam and Ochoco Dam.

ODFW asks that a paragraph be included that accurately describes the current state of covered species in the Crooked River system. This should be information pertaining to the Summer Steelhead and Chinook Salmon re-introduction efforts. It should discuss the extent and sites of releases of Summer Steelhead Trout and Chinook Salmon fry, downstream movement of juvenile smolts and any information on returning adult steelhead trout or Chinook salmon that may have entered or attempted to enter the Crooked River system.

How do flows at or near 3000 cfs affect the Crooked River channel morphology?

What is the historic recurrence timeframe for large flow events approaching 3000 cfs below Bowman Dam?

What studies have been to done to assess the benefits to fish habitat of higher flows as might have been experienced during natural conditions?

Ecological Flows or Seasonally Varying Flow are should be addressed. Flow variability with storage irrigation is much less than unregulated. Moderately high flows in March, April, May and other times can potentially provide many ecologically important benefits. At a minimum the DBHCP EIS should include Indicators of Hydrologic Alteration (IHA) model runs on existing, proposed and unregulated flows.

Previous efforts that modeled flow alternatives and assessed Crooked River environmental flows (Hardin 1993, Hardin 2011, Hardin, T. 2001, WPN 2010) should be incorporated into the EIS analysis in terms of flow scenarios that might provide more certainty of year round suitable habitat for summer steelhead and Chinook salmon.

Water Temperature

What are the net indirect effects on stream flow temperature of the reservoir releases and return flows?

What is the effect of the colder tail-water flows below Bowman Dam on Summer Steelhead Trout and Chinook Salmon habitat?

How does the current condition of riparian vegetation, channel morphology and habitat along the Crooked River and tributary streams affected by the irrigation diversions interrelate to current water temperature?

Oregon Department of Environmental Quality (ODEQ) has conducted modeling efforts demonstrating that increased flows past OID had significant temperature benefits. It is logical that these temperatures be examined in the DBHCP EIS analysis?

What are the temperatures of the tributaries flowing into the Crooked River above Prineville reservoir?

What are the temperatures immediately below the OID Crooked River diversion compared to temperatures immediately above the diversion during the irrigation season?

How would increasing flow affect the temperatures downstream of the OID Crooked River diversion?

What are the temperatures of the tributaries flowing into Ochoco reservoir?

Water Quality

How does water quality in Prineville and Ochoco Reservoirs affect the water quality (pH, turbidity) downstream of the dams throughout the year?

The DBHCP EIS should include a complete description of the effects and impacts of its infrastructure and operations. This acknowledgement of the full potential impacts of impoundment and alteration of flow regimes on the ecology of the affected streams is essential to proposing conservation measures that satisfactorily compensate for those effects.

Adequate flows necessary to recover and sustain healthy fish populations (specifically summer steelhead and Chinook salmon) need to be dependably available regardless of irrigation season timing. A flow regime that provides quality habitat conditions (not minimal) for all the stages of Summer Steelhead Trout, Chinook Salmon and other covered species in the Crooked River and its tributaries should be to the objective of "Conservation Measures" provided during the irrigation season.

What are the current ramping rate standards utilized by the Irrigation Districts or BOR downstream of their reservoir storage facilities? Rapid flow reductions can adversely affect fish populations by dewatering spawning, rearing, or foraging habitat and may strand fish. Smaller juvenile fish (less than about 50 mm long) are most vulnerable to potential stranding due to weak swimming ability and preference for shallower, near-shore habitats. River channel configuration, channel substrate type, time of day, and flow level before down-ramping (antecedent flow) are also key factors that determine stranding incidence.

Flows identified/analyzed in the DBHCP EIS should be based on scientific assessment that provides effective habitat for all life history stage requirements.

Please explain BOR's role in managing the flow releases out of Ochoco Reservoir?

What are the current flow conditions on Ochoco Creek during the irrigation season?

Please analyze the flows necessary to provide for adult migration, spawning, incubation, rearing and outmigration of Summer Steelhead and Chinook Salmon on Ochoco Creek?

How much habitat and what are the habitat conditions for anadromous fish above Jones Dam?

How much flow is diverted out of stream at Jones Dam during the irrigation season?

Please analyze what year round flow regime in McKay Creek would provide quality habitat for all life history stages of Summer Steelhead and Chinook Salmon?

The Crooked River Flow Assessment Report (Watershed Professionals Network 2011) conducted for the Deschutes River Conservancy and The Nature Conservancy should be incorporated into the discussion of environmental flows for the Crooked River. This report included IHA analyses for all the major Crooked River reaches. The IHA results quantify the hydrological differences between flow scenarios. Also, the input files for IHA are ~20 year daily

flow series, which can easily be used to generate flow exceedance curves by reach and scenario.

An example of the how differing flows can affect fish habitat is found in a study conducted for the Ochoco Irrigation District by Vaughn etc. al. 2010. Significant changes were observed in the wetted area of the Crooked River and associated fish habitats. An excerpt from this 2010 report reads, "*Stream segments were categorized into three different types of habitat: pools, glides, and riffles. In May, the 1.6 km study reach was comprised of 16 different habitat units of which 49% were pools, 23% glides, and 28% riffles. During the October sampling effort there were 23 habitat units within the same study reach. The proportion of habitat types changed as well and was now dominated by glide habitat, 76%, with the remaining area made up of 16% pools and only 9% riffles. <u>The increase in habitat units identified during the survey in the fall and the corresponding shift in dominant habitat type is expected due to the large decrease in flow observed during the second sampling effort.</u> The flow in October was only 35% of the flow we observed during our May surveys (90 cfs vs. 245 cfs), which reduced water velocity through the study reach and altered the length of area classified as riffle habitat. The lower flows decreased the average wetted channel width from 31 m to 28 m and decreased the average depth in glides, 0.8 m vs. 0.4 m, but did not affect maximum pool depth which held steady at 1.3 m during both seasons*."

Bull Trout Seasonal Foraging

Bull Trout are currently present immediately downstream of Deschutes Valley Water District's hydropower facility. Once upstream fish passage is constructed at this facility Bull Trout will once again have access to the lower reaches of the Crooked River above this point. Please analyze flow scenario(s) at which temperatures would be suitable during the various seasons of the year for Bull Trout foraging.

Trout Creek and Mud Springs Creek

Drain inputs should not be responsible for contributing to elevated temperatures or volumetric inputs of warmer water than in the Mud Springs Creek or Trout Creek system. Please include an analysis in the EIS on this point.

Sedimentation in Mud Springs is an acute issue. ODFW biologists who have operated a fish trap on lower Trout Creek since 1998 have observed turbidly issues emanating from Mud Springs Creek on an annual basis. Beginning in the mid-2000's high turbidity levels have been observed in Trout Creek throughout the irrigation season. The extreme turbidity inputs stop 3-4 days after the irrigation season ends around Oct 15th. This pattern was continuing still be observed into December 2014. The amount of sediment deposited over the spring and summer is quite significant and silt depths in pools can reach 2 - 3 feet deep directly below the confluence of Mud Springs. (T. Nelson per com 2014). This information should be included as part of the analysis for the ITP EIS.

ODFW recommends that conservation measures are needed to eliminate the temperature issues resulting from the 58 -11 and 61 -11 drain inputs into Mud Springs Creek.

ODFW recommends that conservation measures are needed to address the acute turbidity situation occurring annually in Mud Springs Creek during the irrigation period. The sediment

levels observed in Mud Springs and Trout Creek at the confluence of Mud Springs Creek have the potential to effect incubating Summer Steelhead Trout eggs and fry emergence.

Climate Change

Climate Change should be accounted for in the draft EIS analysis. If climate change threatens the species by impacting the quality or quantity of its habitat in the future, or increasing its vulnerability to pathogens or exotic species, that increased vulnerability should be taken into account by the EIS analysis. The duration of the ITP should not exceed the limits of the climate change models used in the EIS analysis for assessing predicted effects.

References

Biota Pacific Environmental Services 2010 Assessment of the Implications of Including Redband Trout as a Covered Species in the Deschutes Basin Multi-species Habitat Conservation Plan. Prepared for the Deschutes Basin Board of Control and City of Prineville. April 28, 2010

Cramer, S.P., and N.K. Ackerman 2009. Prediction of Stream Carrying Capacity for Steelhead: the Unit Characteristic Method. American Fisheries Society Symposium 71, 2009: 34 pp.

Gehrke, P.C., Brown, P., Schiller, C.B., Moffatt, D.B. and Bruce, A.M. 1995. River regulation and fish communities in the Murray Darling River system, Australia*. Regulated Rivers: Research and Management* **11**: 363-375.

Hardin, T. 1993. Crooked River instream flow study. Prepared for ODFW, BLM, and BOR. Oregon Department of Fish and Wildlife, Bend Office. By Hardin-Davis, Inc. Albany, OR. 18p + app.

Hardin, T. 2001. Physical habitat for anadromous species in the Crooked River below Bowman Dam. Report prepared for BOR, Boise, ID by Hardin-Davis Inc. Corvallis, OR. 4 p + app.

Hardin, T. 2011. Modeling of flow alternatives to balance fish, reservoir, and out of stream needs in the Crooked River below Prineville Reservoir. Information Document for Roy Elicker Director. Tim Hardin Instream Flow Specialist Water Quantity and Quality Section ODFW, Salem Oregon.
http://www.dfw.state.or.us/fish/water/docs/official%20white%20paper%20Crooked%20R%20flow%20alternatives.pdf

Kingsford, R.T. 1995. Ecological effects of river management in New South Wales. In *Conserving Biodiversity; Threats and Solutions.* pp. 144-161. Eds. R. Bradstock, T.D. Auld, D.A. Keith, R.T. Kingsford, D. Lunney and D. Sivertson, Surrey Beatty and Sons, Sydney.

Maheshwari, B.L., Walker, K.F. and McMahon, T.A. 1995. Effects of river regulation on the flow regime of the River Murray, Australia*. Regulated Rivers: Research and Management* **10**: 15-38.

Nelson, Tom 2014. Oregon Department of Fish and Wildlife Trout Creek Field Office. per com December 1, 2014

Poff, N.L., K.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The natural flow regime: a paradigm for river conservation and restoration. BioScience 47:769-784.

Porter, T, and B. Hodgson. 2016. Effects of a modified flow regime on the fish populations of the Crooked River below Bowman Dam. Oregon Department of Fish and Wildlife, Salem, OR.

Pusey B.J. & Arthington A.H. (2003) Importance of the riparian zone to the conservation and management of freshwater fish: a review. Marine and Freshwater Research, 54, 1–16.

(ODFW 2014). Oregon Department of Fish and Wildlife. Upper Deschutes Watershed, Bend office. Eric Moberly pers communication

R2 Resource Consultants, Inc. and Biota Pacific Environmental Services 2014. Study 14-2: Evaluation of Fish Passage Options for Ochoco Dam. Prepared for the Deschutes Basin Board of Control and City of Prineville. March 2014

Stocking R. 2008. 2008 Pelton Round Butte Project (FERC 2030) Fish Health Management Progress Report

Stromberg, J.C. 1993. Instream flow models for mixed deciduous riparian vegetation within a semiarid region. Regulated Rivers: Research & Management 8:225-235.

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: U.S. Geological Survey, OF 2007-1125, p. 37.

Upper Deschutes Watershed Council 2004. unpublished data.

Vaughan, J., S. Duery, T. Kassler, and I. Courter*. 2013. Crooked River Redband Trout Study. Cramer Fish Sciences. Gresham, Oregon. Report Prepared for Ochoco Irrigation District, Prineville, Oregon

Walker, K.F. 1985. A review of the ecological effects of flow regulation on the Lower River Murray, Australia. *Regulated Rivers: Research and Management* **8**: 103-119.

Watershed Professionals Network 2011. Final Summary Report Crooked River Environmental Flows Assessment March 18, 2011. Prepared for: The Nature Conservancy 821 SE 14th Avenue Portland, OR 97214 and The Deschutes River Conservancy 700 NW Hill Street Bend, OR 97701 Prepared by: Watershed Professionals Network 60065 River Bluff Trail Bend, OR 97702 www.watershednet.com

Zielinski, C. M. 2009. H. V. Lorz, and J. L. Bartholomew 2010. Detection of Myxobolus cerebralis in the Lower Deschutes River Basin, Oregon. North American Journal of Fisheries Management 30:1032–1040, 2010