

RECLAMATION

Managing Water in the West

**Finding of No Significant Impact
Final Environmental Assessment
Cayuse Cove Slope Stabilization
Lake Roosevelt, Grand Coulee Project, Washington**



U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Boise, Idaho

May 2019

Mission Statements

U.S. Department of the Interior

Protecting America's Great Outdoors and Powering Our Future

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

U.S. Bureau of Reclamation

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Finding of No Significant Impact and Decision

Cayuse Cove Slope Stabilization

Lake Roosevelt, Grand Coulee Project, Washington

**U.S. Department of the Interior
Bureau of Reclamation**

Pacific Northwest Region

PN-FONSI 19-3

May 7, 2019

Introduction

The Bureau of Reclamation (Reclamation) has prepared this Finding of No Significant Impact in compliance with the Council on Environmental Quality regulations for implementing procedural provisions of the National Environmental Policy Act for the Cayuse Cove Slope Stabilization Project. This document briefly describes the Proposed Action, other alternatives considered, the scoping process, Reclamation's consultation and coordination activities, and Reclamation's finding. The Environmental Assessment (EA) fully documents the analyses of the potential environmental impacts from implementing the proposed changes.

A cooperating group consisting of members from Reclamation, Bonneville Power Administration (BPA), the Spokane Tribe of Indians, National Park Service (NPS), and the Washington State Department of Archaeology and Historic Preservation meet regularly to work on issues associated with the effects of Grand Coulee Dam operations and maintenance on the cultural resources of the Spokane Arm of Lake Roosevelt. This Federal Columbia River Power System (FCRPS) Lake Roosevelt Spokane Arm Cooperating Group (CG) identified Cayuse Cove as an area where natural and human-made causes of erosion, such as wind- and boat-induced wave action, freeze-thaw, recreational visitors, and reservoir operations, are putting sensitive cultural resources at risk. The CG identified Cayuse Cove as a priority site for preservation as a component of Reclamation and BPA's National Historic Preservation Act (NHPA) Section 106 compliance for the FCRPS.

Alternatives

The EA analyzed the No Action Alternative and the Proposed Action Alternative. These alternatives are described below.

Alternative 1 – No Action

Under the No Action alternative (EA Section 2.1), Reclamation would not construct the slope stabilization structure along the eroding shoreline and no efforts would be made to protect sensitive cultural resources at Cayuse Cove.

Alternative 2 – Proposed Action

The Proposed Action would stabilize the shoreline and halt bank erosion at the Cayuse Cove project site through the installation of fill-covered gabion baskets and a cellular containment system (Geoweb, a product registered by Presto, or a similar product, hereafter referred to as Geoweb) that would be reinforced with plantings of native shrub seedlings and grass seeds. Project staging would occur approximately 8 miles downstream of the project site at the Porcupine Bay Campground on Reclamation withdrawn lands that are managed by the NPS. Construction of the slope stabilization system would be constructed over a 4-year period in two phases, with construction proposed to begin in September 2020. The project has been designed carefully to consider the protection of the sensitive resources both during and after construction and to retain a natural aesthetic at this important cultural site. A complete description is included in the EA.

Finding of No Significant Impact

Reclamation determined that implementing the Proposed Action would not significantly affect the quality of the human environment. No environmental effects meet the definition of significance in context or intensity as defined at 40 CFR 1508.27. Therefore, an environmental impact statement is not required for this Proposed Action. This finding is based on the analysis in the EA and consideration of the context and intensity, as summarized below from the EA.

Context

The project is a site-specific action directly involving about 1.9 acres of lands that were withdrawn from the public domain by Reclamation for the purposes of dam and reservoir construction and operations. The study area extends from the Porcupine Bay Campground and boat launch upstream to the Cayuse Cove project site. The project is small in context, as it covers 950 feet of shoreline, compared to 414 miles of total shoreline in the Spokane Arm of Lake Roosevelt.

Intensity

The following discussion is organized around the 10 significance criteria described in 40 CFR 1508.27. These criteria were incorporated into the resource analysis and issues considered in the EA.

1. **Impacts may be both beneficial and adverse.** The Proposed Action would impact resources as described in the EA and summarized in Table A-1 below. Best management practices would be used to reduce impacts to resources and are incorporated into the design of the Proposed Action.

Table A-1. Summary of impacts to resources

Resource	EA Section	Overall Effects
Soils	3.1	Under the Proposed Action, soils would be subjected to short-term disturbances. However, installation of the gabion baskets and Geoweb would lead to long-term protection from soil erosion caused by natural and human-induced wave action in the Spokane Arm.
Recreation Values and Uses	3.2	Under the Proposed Action, recreational opportunities and access to the Porcupine Bay Campground and boat launch would remain available. The Proposed Action would cause temporary displacement of visitors and additional crowding at the boat ramp at the Porcupine Bay Campground during the construction window, outside of the peak recreation season. Additional congestion along waterways would occur due to use of barges; however, these impacts would be outside of peak recreation season. No significant impacts to recreation are anticipated from the Proposed Action.
Water Quality	3.3	Reclamation would complete bank stabilization work in accordance with terms and conditions of Nationwide Permit 13 and special conditions as defined by the U. S. Army Corps of Engineers (NWS-2017-588). Further, several best management practices would be implemented to protect water quality during construction and staging activities. No significant impacts to water quality are anticipated from the Proposed Action.
Vegetation	3.4	Minor, short-term disturbance could occur during installation of gabion baskets and Geoweb. The installation of gabion baskets and Geoweb would reduce natural and human-made wave action, protecting the shoreline from erosion. Decreased erosion offers the potential for some plant communities to establish or increase populations in the area. No significant impacts to vegetation are anticipated from the Proposed Action.
Noise	3.5	There would short-term, localized increases in noise due to construction activities. Noise impacts to adjacent landowners would be minimized through implementation of designated work hours and other best management practices. No significant impacts to noise are anticipated from the Proposed Action.
Wildlife	3.6	Minor, short-term localized disturbance of habitat may occur immediately adjacent to the shoreline stabilization system. However, long-term protection of the shoreline from soil erosion would allow vegetation species to establish, providing additional wildlife habitat. No adverse impacts are anticipated from the Proposed Action.
Fisheries	3.7	Under the Proposed Action, no quantifiable effects to the fisheries in the Spokane Arm of Lake Roosevelt are expected.

Resource	EA Section	Overall Effects
Threatened and Endangered Species	3.8	Bull trout are rare in the Spokane Arm of Lake Roosevelt. The hydrology and water quality analyses revealed that the Proposed Action would not affect bull trout habitat. No adverse impacts are anticipated from the Proposed Action.
Transportation	3.9	There may be brief interruptions in traffic when entering or leaving the staging area. However, no changes in local road traffic or transportation patterns are expected to occur as a result of the Proposed Action.
Cultural Resources	3.10	The Proposed Action would provide the shoreline and archeological site with immediate, long-term protection from erosion. Project engineers and archaeologists have worked closely with the Spokane Tribe of Indians and the other members of the Lake Roosevelt Spokane Arm Cooperating Group to design the project and place the shoreline stabilization system in an area that would not adversely affect known cultural resources. No adverse impacts are anticipated from the Proposed Action.
Indian Sacred Sites	3.11	Based on review of existing information and tribal consultation, no significant impacts to Indian sacred sites are anticipated from the Proposed Action.
Indian Trust Assets	3.12	Indian trust assets have not been identified in the project area, which occurs solely on Federal property. No significant impacts to Indian trust assets are anticipated from the Proposed Action.
Environmental Justice	3.13	No significant impacts to environmental justice are anticipated from the Proposed Action.

2. **The degree to which the selected alternative will affect public health or safety, or a minority or low-income population.** The proposal would have no significant impacts on public health or safety. The percentage of minority and low-income populations residing in Lincoln County is not over 50 percent, nor is it meaningfully greater in the area than in the State of Washington; therefore, this project complies with Executive Order 12898.
3. **Unique characteristics of the geographic area.** There are no park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas that would be affected by the Proposed Action. As described in the EA, use of the Porcupine Bay Campground and Boat Launch and construction would cause minor, short-term impacts to soils, recreation, vegetation, noise, wildlife, visual resources, and transportation. The top of the slope stabilization structure would be revegetated with a combination of nursery-plug native shrub seedlings and native grass seeds to vegetate

the stabilized shoreline over approximately 1 acre and blend the project into the natural surroundings.

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Reclamation provided for public notification and involvement by posting the Draft EA on the agency's website and by mailing letters to Federal, State, and local agencies and elected officials, interested parties, and Indian Tribes. One comment was received during the comment period; it was not addressed in this EA, as it was outside of the scope of this project. The effects of the Proposed Action on the quality of the human environment are not likely to be highly controversial, as defined in 43 CFR 46.30¹.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** There are no predicted effects on the human environment that are considered highly uncertain or that involve unique or unknown risks.
6. **The action will not establish a precedent for future actions with significant effects and will not represent a decision in principle about a future consideration.** The action is not precedent-setting, and there have been other stabilization projects within the Spokane Arm of Lake Roosevelt.
7. **Whether the action is related to other actions which are individually insignificant but cumulatively significant.** EA Sections 3.1 to 3.13 describe the impacts of past and present and reasonably foreseeable actions that have occurred or are ongoing in the study area. It has been determined through the evaluation of each resource that soils, recreational values and uses, water quality, vegetation, noise, wildlife, fisheries, threatened and endangered species, Indian sacred sites, Indian trust assets, transportation, and environmental justice would not be significantly affected by cumulative impacts; cultural resources would be positively impacted. Long-term shoreline erosion would be reduced at the Cayuse Cove project site by providing shoreline protection. Reclamation considered the cumulative impacts for the No Action and Proposed Action alternatives, and no significant cumulative impacts are expected.
8. **The degree to which the action may adversely affect sites, districts, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places.** Formal Section 106 consultation was conducted through an FCRPS treatment form. The form was signed by Reclamation, BPA, the Washington State Historic Preservation Office (SHPO), NPS, and the Spokane Tribe of Indians

¹ Controversial refers to circumstances where a substantial dispute exists as to the environmental consequences of the proposed action and does not refer to the existence of opposition to a proposed action, the effect of which is relatively undisputed (43 CFR 46.30).

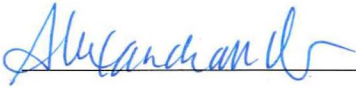
Business Council Chairperson, documenting concurrence with the Section 106 finding. The conclusion in the form was that construction of the stabilization structure and implementation of the Proposed Action would have No Adverse Effect on Identified Historic Properties (36 CFR 800.5 [d] [1]), as defined by the NHPA.

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 Endangered Species Act of 1973.** Reclamation concluded that there would be no effect on the species and critical habitat described in Section 3.8.
10. **Whether the listed action threatens a violation of Federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.** The Proposed Action would not violate any Federal, State, local, or Tribal law, regulation, or policy imposed for the protection of the environment. Other Federal agencies, along with State, local, and Tribal governments, were given the opportunity to participate in the environmental analysis process. The Proposed Action would provide long-term protection of the at-risk resources present at Cayuse Cove and would not impact Indian sacred sites or historic properties. As mentioned above, implementing the Proposed Action would not disproportionately affect minorities or low-income populations.

Decision

Based on the analysis in the EA, it is my decision to select the Proposed Action for implementation. The Proposed Action will best meet the purpose and need identified in the EA.

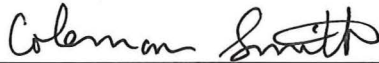
Recommended:



Alexandra Viscusi
Regional Environmental Compliance Officer
U.S. Bureau of Reclamation
Pacific Northwest Region
Pacific Northwest Regional Office
Boise, Idaho

5/6/19
Date

Approved:



Coleman Smith
Grand Coulee Power Manager
U.S. Bureau of Reclamation
Pacific Northwest Region
Grand Coulee Power Office
Grand Coulee, Washington

7 MAY 2019
Date

This page intentionally left blank.

RECLAMATION

Managing Water in the West

**Final Environmental Assessment
Cayuse Cove Slope Stabilization
Lake Roosevelt, Grand Coulee Project, Washington**



U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Boise, Idaho

May 2019

Mission Statements

U.S. Department of the Interior

Protecting America's Great Outdoors and Powering Our Future

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

U.S. Bureau of Reclamation

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Acronyms and Abbreviations

Acronym or Abbreviation	Meaning
ACB	Articulated concrete block
APE	Area of potential effect
BMP	Best Management Practice
BPA	Bonneville Power Administration
CG	Lake Roosevelt Spokane Arm Cooperating Group
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
dB	decibel
DPS	Distinct population segment
EA	Environmental assessment
Ecology	Washington Department of Ecology
ESA	Endangered Species Act
FCRPS	Federal Columbia River Power System
FONSI	Finding of No Significant Impact
ITA	Indian Trust Assets
Lake Roosevelt	Franklin Delano Roosevelt Lake
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	NOAA National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
Reclamation	U.S. Bureau of Reclamation
SHPO	State Historic Preservation Officer
Spokane Tribe	Spokane Tribe of Indians
SWPA	Systemwide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act
TCP	Traditional cultural property

Acronym or Abbreviation	Meaning
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
USFWS	U.S. Fish and Wildlife Service

Table of Contents

Acronyms and Abbreviations

1	Introduction	1
1.1	Purpose and Need for Action	2
1.2	Proposed Federal Action	2
1.3	Project History and Planning Context	3
1.4	Public Involvement	3
1.5	Regulatory Compliance	4
1.5.1	National Environmental Policy Act.....	4
1.5.2	Endangered Species Act (1973).....	4
1.5.3	Clean Water Act (33 U.S.C. 1251 et seq.).....	4
1.5.4	National Historic Preservation Act of 1966	5
1.5.5	Executive Order 13007 – Indian Sacred Sites.....	5
1.5.6	Secretarial Order 3175 – Department Responsibilities for Indian Trust Assets.....	6
1.5.7	Executive Order 12898 – Environmental Justice.....	6
2	Description of Alternatives.....	7
2.1	No Action.....	7
2.2	Proposed Action	7
2.2.1	Project Area Slope Stabilization	7
2.2.2	Project Staging	13
2.2.3	Project Design Features and Best Management Practices	13
2.2.4	Monitoring.....	16
2.3	Alternative Methods of Slope Stabilization Considered but Eliminated	16
2.3.1	Use Reno Mats Instead of Geoweb for Slope Stabilization	17
2.3.2	Use Articulated Concrete Block Instead of Geoweb.....	17
2.3.3	Use Riprap Instead of Geoweb	17
2.3.4	Use Ecology Blocks Instead of Gabion Baskets.....	18
2.3.5	Eliminate Gabion Baskets and Use 4-inch Pipe Crest Anchor Detail ...	18
2.4	Comparison of Alternatives	18
3	Affected Environment and Environmental Consequences.....	21
3.1	Soils	22
3.1.1	Affected Environment	22

3.1.2	Environmental Consequences	23
3.2	Recreation Values and Uses	24
3.2.1	Affected Environment	24
3.2.2	Environmental Consequences	25
3.3	Water Quality	26
3.3.1	Affected Environment	26
3.3.2	Environmental Consequences	27
3.4	Vegetation.....	28
3.4.1	Affected Environment	28
3.4.2	Environmental Consequences	30
3.5	Noise	30
3.5.1	Affected Environment	30
3.5.2	Environmental Consequences	31
3.6	Wildlife	31
3.6.1	Affected Environment	31
3.6.2	Environmental Consequences	32
3.7	Fisheries	32
3.7.1	Affected Environment	32
3.7.2	Environmental Consequences	33
3.8	Threatened and Endangered Species	33
3.8.1	Affected Environment	33
3.8.2	Environmental Consequences	35
3.9	Transportation.....	36
3.9.1	Affected Environment	36
3.9.2	Environmental Consequences	36
3.10	Cultural Resources	37
3.10.1	Affected Environment	37
3.10.2	Environmental Consequences	39
3.11	Indian Sacred Sites.....	41
3.11.1	Affected Environment	41
3.11.2	Environmental Consequences	42
3.12	Indian Trust Assets	42
3.12.1	Affected Environment	42
3.12.2	Environmental Consequences	43
3.13	Environmental Justice.....	43

3.13.1 Existing Environment.....	43
3.13.2 Environmental Consequences.....	44
4 Consultation and Coordination.....	46
4.1 National Historic Preservation Act.....	46
4.2 Endangered Species Act (1973) Section 7 Consultation.....	46
4.3 Tribal Coordination and Consultation	46
5 References.....	49

List of Figures

Figure 1. Location of Cayuse Cove.....	2
Figure 2. Cayuse Cove project area and staging area.....	8
Figure 3. Cayuse Cove slope stabilization Phases I and II	10
Figure 4. Slope stabilization application of Geoweb (partially constructed example)	11
Figure 5. Geoweb – Toe of protection detail.....	12
Figure 6. The material at the terrace is composed of alluvial material consisting of sand and gravel with cobbles	23
Figure 7. Traffic counts at Porcupine Bay.....	25
Figure 8. Cayuse Cove bank stabilization project area burned by the 2016 Hart Fire	29

List of Tables

Table 1. Summary Comparison of Alternatives and Potential Impacts to the Affected Environment	18
Table 2. Resources eliminated in the Impact Analysis.....	21
Table 3. Racial population summary of the Lincoln County and the State of Washington.....	44
Table 4. Income and poverty – State of Washington and Lincoln County.....	44

This page intentionally left blank.

1 Introduction

This environmental assessment (EA) analyzes the potential impacts from the construction of a slope stabilization system on approximately 950 feet of actively eroding shoreline on the south shore of the Spokane Arm of Lake Roosevelt in Lincoln County, northeastern Washington (see Figure 1 for a location map). The Bureau of Reclamation (Reclamation) and Bonneville Power Administration (BPA) are lead Federal agencies of the Federal Columbia River Power System (FCRPS) Project and are responsible for the operation and maintenance of Grand Coulee Dam, which impounds waters of the Columbia River to form Franklin Delano Roosevelt Reservoir (Lake Roosevelt). The shoreline of Lake Roosevelt comprises lands that were withdrawn from the public domain by Reclamation for the purposes of dam and reservoir construction and operations. These Federal lands are now jointly managed under the Lake Roosevelt Cooperative Management Agreement, otherwise known as the Five-Party Agreement (Five-Party 1990). The five managing partners are Reclamation, National Park Service (NPS), Confederated Tribes the Colville Reservation, Spokane Tribe of Indians (Spokane Tribe), and U.S. Bureau of Indian Affairs. The southern bank of the Spokane Arm, including associated recreational facilities, is managed by the NPS as the Lake Roosevelt National Recreation Area. The north bank is located within the Spokane Reservation and is managed by the Spokane Tribe.

Separate from the Five-Party Agreement, a cooperating group consisting of members from Reclamation, BPA, the Spokane Tribe, NPS, and the Washington State Department of Archaeology and Historic Preservation meet regularly to work on issues associated with the effects of Grand Coulee Dam operations and maintenance on the cultural resources of the Spokane Arm of Lake Roosevelt. This FCRPS Lake Roosevelt Spokane Arm Cooperating Group (CG) identified Cayuse Cove as an area where natural and human-made causes of erosion, such as wind- and boat-induced wave action, freeze-thaw, recreational visitors, and reservoir operations, are putting sensitive cultural resources at risk. The CG identified Cayuse Cove as a priority site for preservation as a component of Reclamation and BPA's National Historic Preservation Act (NHPA) Section 106 compliance for the FCRPS.

Upon completion of this EA and associated consultation and coordination activities, the Grand Coulee Power Manager will determine whether a Finding of No Significant Impact will be issued or if a Notice of Intent to prepare an environmental impact statement is required for this project. Reclamation is the lead Federal agency for this project and is preparing this EA in coordination with the other members of the CG.

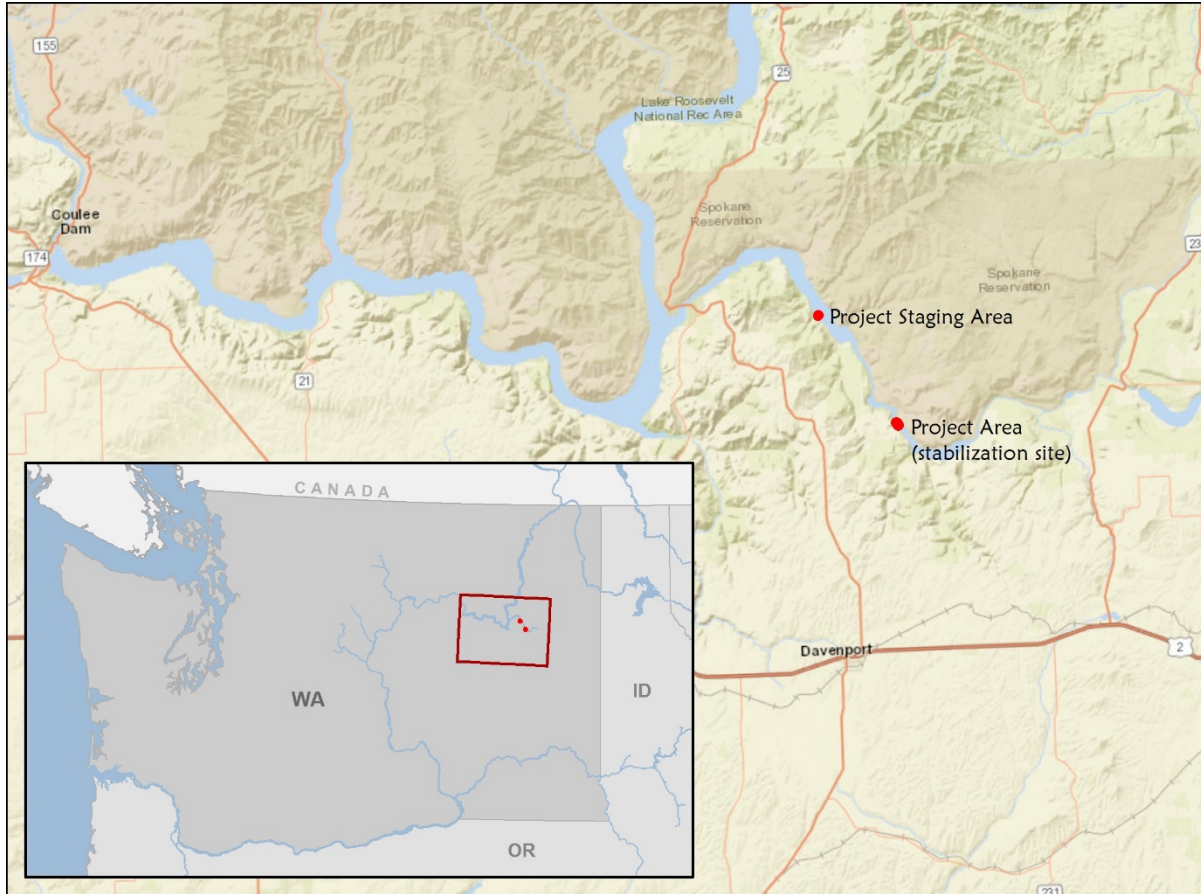


Figure 1. Location of Cayuse Cove

1.1 Purpose and Need for Action

Action is needed to halt shoreline erosion at Cayuse Cove, with minimum ground disturbance to prevent inadvertent exposure of sensitive cultural resources. The Proposed Action would protect the shoreline and sensitive resources from natural and human-caused erosion, including that from wind-driven wave action, seasonal reservoir drawdowns, and wake from boats. Wave action occurring when Lake Roosevelt is at or near the full-pool water surface elevation is destabilizing the top of the bank, causing it to erode and slump. In order to stop the erosion, it is necessary to create a barrier at the toe of the slope that will protect the shoreline and bank from the energy of the waves.

1.2 Proposed Federal Action

The Proposed Action would stabilize the shoreline and halt bank erosion at the Cayuse Cove project site through the installation of fill-covered gabion baskets and a cellular containment system (Geoweb, a product registered by Presto, or a similar product, hereafter referred to as Geoweb) that would be reinforced with plantings of native shrub seedlings and grass seeds. Project staging would occur approximately 8 miles downstream of the project site at the Porcupine Bay Campground on Reclamation withdrawn lands that are managed by the NPS.

Construction of the slope stabilization system would be phased over 4 years, with construction proposed to begin in September 2020. The project has been designed carefully to consider the protection of the sensitive resources both during and after construction and to retain a natural aesthetic at this important cultural site.

1.3 Project History and Planning Context

This project is an NHPA Section 106 treatment to resolve adverse effects to a historic property eligible for listing on the National Register of Historic Places (National Register). The Section 106 process is defined by the FCRPS System-wide Programmatic Agreement for the Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act (SWPA; BPA, Reclamation, and Corps 2009).

In May 2009, Reclamation and the Spokane Tribe Tribal Preservation Department staff conducted a geologic evaluation of shoreline erosion at 10 cultural resource sites on the Spokane Arm of Lake Roosevelt in eastern Washington. The purpose of the evaluation was to assess site conditions and processes causing bank instability and develop initial concepts for potential treatment alternatives and priorities. Following this initial evaluation, another site on the opposite shore of the Spokane River was selected as the priority (Reclamation 2011). Reclamation completed that stabilization project in 2016. During subsequent planning meetings, the FCRPS Spokane Arm CG identified Cayuse Cove as the next priority site with at-risk cultural resources. Initial design work on Cayuse Cove began in 2014, and the CG has worked through several iterations of the project design over the past 5 years. The nature and extent of the proposed treatment addressed in this EA are based largely on the results of the stakeholder input through the CG.

Project construction was originally scheduled to begin in September 2018. However, due to a landslide below Porcupine Bay Road in April 2017, the road accessing the project staging area has been closed for repair (Landers 2017). Therefore, the project was delayed to allow time for road repairs. The road is anticipated to reopen in spring 2019.

1.4 Public Involvement

Internal scoping was completed by the FCRPS Lake Roosevelt Spokane Arm CG during project conception, through design, and while initiating preparation of the EA. The CG discussed project issues and methods to prevent further erosion; potential exposure of sensitive cultural resources was discussed during a series of meetings and site visits.

The primary issues of concern are the continued erosion of the shoreline at Cayuse Cove and the associated potential for exposure and loss of cultural resources. Other issues of concern identified by the CG and other Reclamation staff include the potential effects of the Proposed Action on soils, recreation, water quality, vegetation, wildlife, threatened and endangered species, transportation, environmental justice, and noise. These concerns are addressed in this EA.

Reclamation mailed letters to Federal, State, and local agencies; elected officials; Indian tribes; and interest groups on June 2, 2017, notifying them in advance that the EA would be available for public comment in July 2017. Letters were sent to the same parties again on July 13, 2017 (Tribes), and July 19, 2017, announcing the comment period. In addition, Reclamation provided a news release to local-area media that announced the 2-week public comment period on the draft EA. The draft EA was posted to the website on July 19, 2017, and the comment period ended August 2, 2017. Reclamation received only one comment during the comment period; it was not addressed in this EA, as it was outside of the scope of this project.

1.5 Regulatory Compliance

This section summarizes the various laws, Executive Orders, and Secretarial Orders that apply to the proposed action. The legal and regulatory environment within which the Federal activity would be conducted depends on which alternative is implemented.

1.5.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that the action agency use a public disclosure process to determine whether there are any environmental impacts associated with proposed Federal actions. If there are no significant environmental impacts, Reclamation can sign a Finding of No Significant Impact to complete the NEPA compliance.

1.5.2 Endangered Species Act (1973)

The Endangered Species Act (ESA) requires that all Federal agencies ensure that their actions do not jeopardize the continued existence of listed species or destroy or adversely modify their critical habitat. As part of the ESA's Section 7 process, an agency must request information from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) on whether any threatened and endangered species occur within or near the action area. The agency then must evaluate impacts to those species. Consultation was not needed for this project because it was determined to have no effect on listed species or their critical habitat.

1.5.3 Clean Water Act (33 U.S.C. 1251 et seq.)

A Federal permit to conduct an activity that causes discharges into navigable waters is issued only after the State of Washington certifies that existing water quality standards would not be violated if the permit were issued. Reclamation submitted a Joint Aquatic Resource Project Application to Ecology to apply for Section 401 project review and certification. Ecology reviewed the project's Clean Water Act (CWA) Section 401 and Section 404 permit applications and determined they will not require an individual 401 certification for this project and may proceed as directed by the U.S. Army Corps of Engineers (Corps) in Nationwide Permit 13 (Ecology 2017).

Section 402(p) of the CWA provides that stormwater discharges associated with industrial activity that discharge to waters of the United States must be authorized by a National Pollutant Discharge Elimination System (NPDES) permit when construction footprints exceed 1 acre. The term *discharge*, when used in the context of the NPDES program, means the discharge of pollutants (40 CFR §122.2). The project would require a NPDES permit for the construction activities because the area of ground disturbance is more than 1 acre. A stormwater pollution prevention plan would be submitted to the State of Washington Department of Ecology for their approval prior to the start of construction.

Section 404 of the CWA regulates the discharge of dredge and fill materials into waters of the United States, including wetlands. The Corps oversees and issues Section 404 dredge-and-fill permits. Permit review and issuance follow a sequence process that encourages avoidance of impacts first, followed by minimizing any impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment. This sequence is described in the guidelines at Section 404(b)(1) of the CWA. Reclamation has been authorized to implement this project under Nationwide Permit 13 and special conditions as defined by the Corps (NWS-2017-588) (Corps 2017). Reclamation would complete all in-water work in accordance with the terms and conditions outlined in the permit.

1.5.4 National Historic Preservation Act of 1966

Section 106 of the NHPA, as amended, requires that Federal agencies consider the effects that their projects have on properties that are currently listed or are eligible for listing on the National Register. Regulations implementing Section 106 of NHPA, 36 CFR Part 800.8, encourage the coordination of two processes: (1) the review of possible impacts on the environment under NEPA, and (2) the assessment of effects of undertakings required under NHPA.

These regulations provide procedures that Federal agencies must follow to comply with the NHPA. For any undertaking, Federal agencies must determine if there are properties of National Register-quality in the project area, if so, the effects of the project on those properties, and the appropriate mitigation for adverse effects. In making these determinations, Federal agencies are required to consult with the State Historic Preservation Office (SHPO), Native American tribes with a traditional or culturally significant religious interest in the study area, the interested public and, in certain cases, the Advisory Council on Historic Preservation.

1.5.5 Executive Order 13007 – Indian Sacred Sites

Executive Order 13007, dated May 24, 1996, instructs Federal agencies to promote accommodation of access to, and protect the physical integrity of, American Indian sacred sites. A sacred site is a specific, discrete, and narrowly delineated location on Federal land. An Indian tribe or an Indian individual determined to be an appropriately authoritative representative of an Indian religion must identify a site as sacred by virtue of its established

religious significance to, or ceremonial use by, an Indian religion, provided that the tribe or individual is an appropriate authoritative representative of an Indian religion.

1.5.6 Secretarial Order 3175 – Department Responsibilities for Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States (with the Secretary of the Interior acting as trustee) for Indian tribes or Indian individuals. Examples of ITAs are lands, minerals, hunting and fishing rights, and water rights. In many cases, ITAs are on-reservation; however, they may also be found off-reservation.

The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and Executive Orders. These rights are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that officials from Federal agencies, including Reclamation, take all actions reasonably necessary to protect ITAs when administering programs under their control.

1.5.7 Executive Order 12898 – Environmental Justice

Executive Order 12898, dated February 11, 1994, instructs Federal agencies, to the greatest extent practicable and permitted by law, to make achieving environmental justice part of their mission by addressing, as appropriate, disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. Environmental justice means the fair treatment of people of all races, income, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative environmental impacts resulting from the execution of environmental programs.

2 Description of Alternatives

The decision to be made involves two alternatives: either implement shoreline stabilization measures to protect the Cayuse Cove site (the Proposed Action) or take no action. The preferred method to stabilize the shoreline – a combination of fill-covered gabion baskets and a cellular containment system – was developed in coordination with the FCRPS Lake Roosevelt Spokane Arm CG. Other methods of shoreline stabilization considered but not carried through for detailed analysis are described in Section 2.3.

2.1 No Action

Under the No Action alternative, Reclamation would not construct a physical slope stabilization structure along the eroding shoreline and no efforts would be made to protect sensitive cultural resources at Cayuse Cove.

2.2 Proposed Action

The Proposed Action would stabilize the shoreline and halt bank erosion at the Cayuse Cove project area (Figure 2) through the installation of fill-covered gabion baskets and a cellular containment system (Geoweb, a product registered by Presto, or a similar product) that would be reinforced with plantings of native shrub seedlings and grass seeds. The project was designed to substantially reduce the need for ground disturbance, and no disturbance beyond that included in the final design would be allowed unless explicitly authorized by the Reclamation Contracting Officer. The majority of construction materials would be placed on top of engineered fill in order to protect the sensitive resources present at the project area. Project staging would occur approximately 8 miles downstream of the project area (Figure 2). Construction of the slope armament would occur in two phases over a 4-year period. Components of this action are detailed in Sections 2.2.1 through 2.2.4.

2.2.1 Project Area Slope Stabilization

The slope stabilization would extend horizontally at the top of existing slope, for a total overall length of approximately 950 feet (Figure 3). The width of the area to be protected would range from 70 to 130 feet, for a total stabilization area of 83,600 square feet (1.9 acres). The slope stabilization would consist of layers, beginning with gravel bedding, followed by gabion baskets, and overlain with compacting backfill and the Geoweb slope stabilization system. Finally, vegetation would be planted on top. Construction of the slope stabilization system would require several steps and would occur in two phases. Construction would be barge-based, and the use of heavy equipment on the exposed shoreline would not be allowed. Construction would be timed based on pool elevation so that all construction activities would occur outside of the water.



Figure 2. Cayuse Cove project area and staging area

Geoweb, or a similar cellular containment system, is proposed as the primary slope stabilization system. It is a cellular sheet made from high-density polyethylene that has been in use for about 30 years in slope stabilization and other projects. The proposed cell size of the Geoweb is 12 inches by 12 inches; the proposed thickness is 8 inches, and each cell would be filled with well-graded angular infill. The materials would be resilient to freeze/thaw conditions and erosion caused by wave action. The Geoweb would be held in place using a tendon-and-anchor system, as recommended by the manufacturer. Staking on native soil to secure the Geoweb would not occur; staking would be limited to areas where fill has been placed.

Gabion baskets would be installed at the crest of the slope above the Geoweb for approximately 270 feet in the western portion of the project site, where the height of the cut bank and the severity of erosion are greatest (Figure 3). In this area, gabion baskets, combined with Geoweb, would make up the slope stabilization system. As the cut bank becomes lower and less pronounced moving east, the gabion basket height would transition from two baskets high to one basket high. As the cut bank height reduces to less than 2 feet, gabion baskets would no longer be used and the Geoweb would be the only stabilization method constructed.

The bottom edge of the Geoweb slope stabilization system would be anchored with a minimum of 2 feet of cover. The exposed Geoweb slope stabilization would extend from the upper elevations of 1293 feet minimum to 1295 feet maximum and continue downslope to elevation 1275 feet. The buried portion of Geoweb would be limited to a minimum elevation of 1271 feet. This would be the only area where excavation into existing site soils would occur.

The top of the Geoweb would be anchored with a combination of two methods, earth anchors and deadman anchors. Earth anchors would be installed every 3 feet for the first 15 feet at the northwest project end, and for the last 480 feet at the southeast portion of the project site. Deadman anchors would be installed every 3 feet for approximately 390 feet on the northwest portion of the project site (after the initial 15 feet of earth anchors). The earth anchors would be a duckbill type or equivalent and would penetrate existing ground. The deadman anchors would be 4-inch-diameter PVC pipes covered with a minimum of 3 feet of compacted fill.

Construction Schedule

The project would be constructed over a 3- to 4-year period in two phases, with construction proposed to begin in September 2020. All work would occur after Labor Day and before Memorial Day (i.e., September through May) to avoid peak recreation periods.

Phase I

Phase I of the slope stabilization would include the following steps:

- Development of the barge landing area, loading area, and staging area at the Porcupine Bay Campground.

- Staging construction materials and equipment at the Porcupine Bay Campground – access to the staging area would be from the existing highway system and county roads.
- Gravel bedding – gravel would be brought in from an approved borrow site and compacted for a minimum 6-inch bedding for the gabion baskets.
- Gabion baskets – a 270-foot-long row of gabion baskets (each 3 feet by 3 feet by 6 feet) would be constructed in the northwest portion of the project site at the top of the slope to prevent soft spots where fill placement is at the greatest depth (Figure 3). Baskets would be buried with compacted backfill upon the completion of Phase I.



Figure 3. Cayuse Cove slope stabilization Phases I and II

-
- Compacted backfill – compacted backfill from an approved borrow site would be placed above the gabion baskets and above the existing cut bank to provide a medium on which to place the Geoweb.
 - Geoweb installation – Geoweb (8 inches thick) or a similar product (see Figure 4 for an example of the product used) would be placed over the backfill from lake elevations 1293 feet to 1295 feet (3 to 5 feet above high water, or the full-pool elevation of Lake Roosevelt) to provide slope armament. The Geoweb would be constructed top-down from the crest anchors to an elevation of 1285 feet (Figure 5).



Figure 4. Slope stabilization application of Geoweb (partially constructed example)

- Topsoil would be placed from the upper limits of construction at a minimum depth of 9 inches above the Geoweb and compacted backfill. Topsoil would be placed on the Geoweb at a minimum depth of 4 inches for the top of the exposed Geoweb, and downslope to elevation 1288 feet. Areas with minimal erosion may require less topsoil to match the elevation of the surrounding area.
- Revegetation – a combination of nursery native shrub seedlings, native grass seeds, and planted coir wraps, or similar method, would be planted to vegetate the stabilized shoreline over approximately 1 acre (Figure 5).
 - A mix of native shrubs (10-cubic-inch plugs) would be planted over about a 0.6-acre area at a spacing of 3 feet in each direction, between elevations 1292 feet and 1300 feet.

- Native grass would be broadcast-seeded over all finished graded surfaces above elevation 1288 feet. Seeding would occur following the planting of plant plugs.
- Coir fiber wraps filled with topsoil and native plugs, exposed core mats in which plugs would be planted, or other similar method (e.g., coir logs) would be installed on the Geoweb between elevations 1288 feet and 1292 feet.

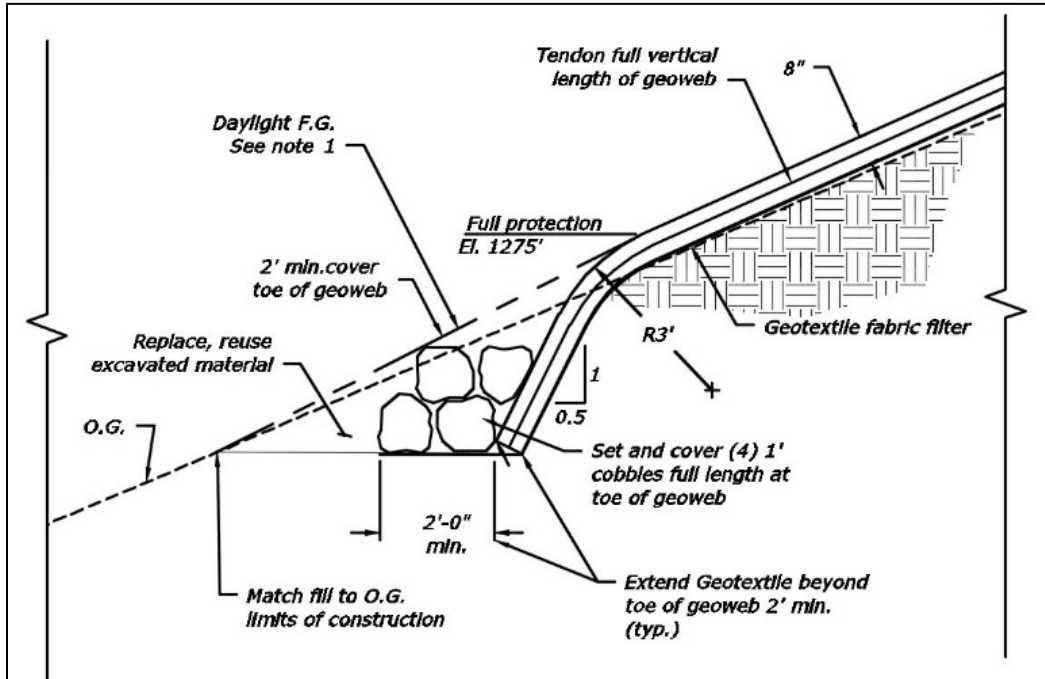


Figure 5. Geoweb – Toe of protection detail

- Irrigation – plants would be irrigated at the project site for 2 weeks after construction of each phase. Water would be drawn from the Spokane Arm with a pump outfitted with a self-cleaning fish screen.

Phase II

Phase II of the slope stabilization would include the following steps:

- Reactivate use of the barge landing, loading, and staging areas at the Porcupine Bay Campground.
- Geoweb installation completion – the remaining construction of the Geoweb materials would occur between elevations 1285 feet and 1271 feet minimum (Figure 5).
- Geoweb would be anchored along the entire bottom edge of the Geoweb slope stabilization at approximate elevation 1271 feet. A 2-foot cover of fill material and 1-foot-diameter cobbles would be used to anchor the bottom edge of the Geoweb. The lower limits for construction are estimated to be no lower than elevation 1271 feet. This method of construction at the bottom would require moderate excavation.

2.2.2 Project Staging

The staging, landing, and loading areas would be located at the NPS-managed Porcupine Bay Campground (Figure 2), approximately 8 miles downstream of the project site. The campground area consists of a boat launch, boat dock, swim beach, day-use area, toilets, and developed campsites. The swim beach, developed campsites, and road accessing the campground sites would not be used for project purposes.

Materials would be transported to the staging area by truck on state highways and county roads. Traffic would be controlled, and temporary signage would be posted at all access points to the staging, landing, and loading areas for public safety. Use of the campground for staging, landing, and loading would be in compliance with terms and conditions of an NPS Special Use Permit and would not occur during the peak recreation season (Memorial Day to Labor Day).

The staging area would be sited on about half of the campground's gravel overflow parking area (Figure 2). This approximately 0.5-acre area would be used for stockpiling construction materials and storing equipment during the construction period. The remaining portion of the gravel parking area would remain open to the public. The staging area would have dual access points, one for entry and the other for exit of vehicles.

The loading area would be located along the northern edge of the main parking lot, and possibly a segment of the northern boat launch (Figure 2). This approximately 0.4-acre area would be used to transfer materials from the staging area to a barge at the landing area. A portion of the loading area near the boat launch may also be used temporarily for staging to improve load time.

The staging and loading areas each would be encompassed by a chain-link fence with secure gates for restricted access. The existing bathroom facility adjacent to the main parking lot would be included in the fenced loading area, for public safety. Temporary, portable toilet facilities for public use would be furnished in non-fenced areas.

The general location of the landing area, where the barge would land and launch, is shown on Figure 2. The exact location would vary within this area depending on weather conditions and water surface elevation and would be selected by the barge operator. It is assumed that the barge would make two trips or more per day from the landing area to the project site: one in the morning to load materials, and at least one mid-day to replenish materials. After-hours during the construction period, the barge would anchor at a small cove downstream of the landing area, or as directed by the NPS (Figure 2).

2.2.3 Project Design Features and Best Management Practices

The following design features and BMPs would be implemented by the contractor as part of the design specifications to reduce the potential for impacts to the human and natural environment. Further detail on control methods would be detailed in the construction contract.

Dust Control

- Dust control and abatement would be provided during performance of work. Dust pollution would be prevented, controlled, and abated in work areas.

Air Pollution Control

- Reasonably available methods and devices would be used to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- Equipment and vehicles that show excessive exhaust emissions would not be operated until corrective repairs or adjustments reduce such emissions to acceptable levels.

Noise Control

- Noise levels of 80 decibels, as measured at noise-sensitive areas such as residences, would not be exceeded during the hours of 7:00 a.m. to 7:00 p.m. (daytime). Noise levels of 65 decibels would not be exceeded during the hours of 7:00 p.m. to 7:00 a.m. (nighttime).
- Only construction activities approved by contracting officer representative or contracting officer would be allowed during the hours of 7:00 p.m. to 7:00 a.m.
- Specialty mufflers would be provided for continuously running generators, pumps, and/or other stationary equipment to meet the decibel requirements above. Compression brakes would not be allowed. Equipment mufflers would be required.
- Operations producing high-intensity impact noise would be performed only weekdays during the hours of 7:00 a.m. to 7:00 p.m.

Invasive Species Control

Contractors would be required to ensure that all equipment entering the project and staging areas be free of noxious weeds, invasive species, and their propagules, in accordance with State of Washington law. This includes aquatic and terrestrial (i.e., land-dwelling) species.

Water Pollution Controls

Pollutants would be controlled through the use of sediment and erosion controls, wastewater and stormwater management controls, construction site management practices, and other controls, including state and local control requirements. All controls would be implemented in a manner that does not disturb, excavate, or penetrate native soil.

Sediment and erosion controls

- Sediment and erosion control methods, such as straw bales (certified weed-free) and silt barriers, would be implemented.
- Stormwater management measures would be implemented as required.

Wastewater and stormwater management controls

- Pollution prevention measures:

-
- Prevention measures to control silting and erosion, which would intercept and settle any runoff of sediment-laden waters, would be used for stockpiling earth and rock materials.
 - Wastewater from general construction activities would be prevented from entering flowing or dry watercourses without the use of approved turbidity control methods.
 - Stormwater runoff from upslope areas would be diverted away from disturbed areas.
 - Turbidity prevention measures:
 - Methods used for prevention of excess turbidity include, but are not limited to, gravel filter entrapment dikes, flocculating processes, combinations thereof, or other approved methods that are not harmful to aquatic life and do not disturb native soil.
 - Wastewaters discharged into surface waters shall meet conditions of the CWA Section 402 (NPDES) permit.
 - Prior to performing required construction for this project, discharges of dredged or fill material would meet the conditions of the Clean Water Act Section 404 permit.

Construction site management

- Contractor construction operations:
 - Construction activities would be performed using methods that would prevent entrance or accidental spillage of solid matter, contaminants, debris, or other pollutants or wastes into the Spokane Arm.
- Stockpiled or deposited materials:
 - Construction materials would not be stockpiled or deposited near or on the shoreline, where they could be washed away by high water or storm runoff, or could in any way encroach upon the watercourse.

Petroleum product storage tanks management

- A storage containment plan would be implemented that includes provisions for double-wall tanks, plastic lining, closed-top containers, berming or containment walls, or other measures for containment of mobile equipment fuels and liquids.
- If mobile equipment would be parked on the project site (Porcupine Bay Campground), drip pans would be placed under motors or engines to catch any drips or leaks from engine casings.

-
- Spill containment kits would be readily available in areas where liquids, petroleum, oils, and/or lubricants would be stored, either on land sites or on the watercraft being used in the project.
 - If boats would be fueled in or over water, spill containment kits would be readily available in areas where liquids, petroleum, oils, and/or lubricants are stored, either on land sites or on the watercraft being used in the project.

Vegetation

Shrubs and seeded areas would be irrigated for a minimum of 2 weeks following planting. Reclamation would complete 5 years of survival monitoring in accordance with the terms and conditions outlined in the Nationwide Permit 13 (NWS-2017-588). Individual plants that die would be replaced with native riparian species to meet the permit survival-performance standards.

Fish Protection

Irrigation pump intakes would be screened to prevent fish entry into pumps. The maximum screen opening size would be 3/32-inch.

2.2.4 Monitoring

Reclamation would contract with the Spokane Tribe Preservation Program to provide on-site cultural resources monitors for the duration of construction activities. These monitors would be present to observe the work and ensure that the plans for limited ground disturbance are followed. In the case that cultural resources are uncovered during construction work, the monitors would work with the Reclamation construction inspector and Contracting Officer to protect the find and ensure that proper protocols for inadvertent discoveries at Lake Roosevelt would be followed.

2.3 Alternative Methods of Slope Stabilization Considered but Eliminated

The FCRPS Lake Roosevelt Spokane Arm CG planned the project. The CG discussed several options to stabilize the Cayuse Cove banks during regular quarterly meetings from 2014 to 2017. One of the largest design-and-construction constraints considered in evaluating different methods was the need to minimize or avoid ground disturbance at the site and prohibit use of heavy equipment on the exposed shoreline. Another consideration was to apply a consistent approach to avoid altering habitat or otherwise changing the aesthetic and natural qualities of the site, since it is a part of the Lake Roosevelt National Recreation Area managed by NPS. The Proposed Action was developed through consideration and analysis of the use of three types of slope-stabilization methods: Geoweb, articulated concrete block, and ecology blocks. In addition, an alternative method of anchoring the top of the armament was considered.

A Value Engineering Team comprising engineers, an archaeologist, project managers, construction specialists, and a geologist conducted a Value Engineering study for the Cayuse Cove Slope Stabilization project. Using a 30 percent design of Geoweb slope stabilization with gabion baskets as a baseline, this study developed 10 proposals for completing the project objectives. In evaluating the proposals, the team considered issues of concern to internal and external project stakeholders, design assumption and constraints, and construction restrictions and limitations, and evaluated costs, potential risks, advantages, and disadvantages of each proposal. Each proposal consisted of a variant of the project baseline, including different methods of slope stabilization, revegetation, construction management, phasing, anchoring, and staging. Following completion and presentation of the Value Engineering study, the CG agreed upon a preferred alternative for final design, which is the Proposed Action in this EA.

Through careful consideration of the different alternative slope stabilization methods available while considering the project purpose and need, the Geoweb method of slope stabilization with gabion baskets was selected to be the preferred method and was carried through to the final engineering design. The other slope stabilization methods considered – articulated concrete block and ecology blocks – were eliminated from full analysis and design and are described briefly below.

2.3.1 Use Reno Mats Instead of Geoweb for Slope Stabilization

This proposal considered using Reno mats instead of Geoweb for slope stabilization. This option was eliminated primarily due to the difference in aesthetic qualities between the two methods. Reno mats are made of wire cages, which would be exposed and more visually prominent than the plastic webbing of Geoweb. In addition, use of Reno mats would be substantially more expensive than Geoweb (more than 30 percent increase in cost).

2.3.2 Use Articulated Concrete Block Instead of Geoweb

This proposal considered using articulated concrete block (ACB) instead of Geoweb for slope stabilization. This option was eliminated due to concerns regarding safety, aesthetics, and revegetation. Construction of the ACB would require a crane or large extended-reach excavator on the barge, which could pose stability issues and associated safety concerns. The ACB, once installed, would be visually unnatural, consisting of a large exposed expanse of concrete blocks on an otherwise natural shoreline. The spaces between the blocks would be planted with native vegetation, similar to plantings with the Geoweb; however, the spaces between the blocks would be smaller than those of the Geoweb, making them less conducive to planting. This proposal would also result in additional costs (more than 12 percent increase) compared to the Geoweb option.

2.3.3 Use Riprap Instead of Geoweb

Riprap was discussed as an alternative to Geoweb for slope stabilization early in the design process, prior to the Value Engineering study. This option was dismissed due to concerns

regarding aesthetic values and invasive species, plus previous stakeholder input. Riprap does not blend in with the landscape along the Spokane Arm of Lake Roosevelt, and crevices in the riprap provide potential habitat for invasive species such as northern pike. Further, this option would not be conducive to planting; thus, vegetation would not establish on the bank.

2.3.4 Use Ecology Blocks Instead of Gabion Baskets

This proposal considered using ecology blocks instead of gabion baskets at the slope crest and would result in only a 2 percent cost savings over the Proposed Action. This option was dropped primarily due to the need for heavy equipment to set the blocks in place.

Construction of the blocks would require a crane or large extended-reach excavator on the barge, which would limit the flexibility of the construction schedule due to the dependence on pool levels. Additionally, there would be a risk of the weep holes in the blocks becoming plugged, which could cause drainage issues.

2.3.5 Eliminate Gabion Baskets and Use 4-inch Pipe Crest Anchor Detail

This proposal was dismissed, as the use of gabion baskets along the cut bank edge of the west side of the project site is critical to controlling erosion and stabilizing the slope. The gabion baskets would provide structural stability for the crest of the slope, where the most bank erosion has occurred. Further, eliminating the baskets would require additional compaction of fill with a vibratory compactor, which could increase the risk of bank erosion and collapse during construction.

Pipe crest anchors were proposed above the gabion baskets. Replacing the gabion baskets with only the crest anchors would not meet the purpose and need of the project.

2.4 Comparison of Alternatives

Table 1. Summary Comparison of Alternatives and Potential Impacts to the Affected Environment

Resource	Proposed Action	No Action
Soils	There would be minor, short-term, localized disturbances to soils adjacent to the site as the stabilization structure is installed. The project would lead to long-term stabilization of the soils and shoreline bank protection. Soil composition would also change due to the high volume of fill used for stabilization and is discussed further in Section 3.1.2. The addition of vegetation would help stabilize the soil and reduce erosion and soil loss over time.	Soils that make up the shoreline would continue to be eroded by wave action. This would lead to bank slumping and moving into Lake Roosevelt and continue sediment loading into the Spokane Arm.

Resource	Proposed Action	No Action
Recreation Values and Uses	There would be temporary displacement of visitors and additional crowding at the boat ramp at the Porcupine Bay Campground during the construction window. Additional congestion along waterway would occur due to use of barge. Impacts would be outside of peak recreation season.	No Effect
Water Quality	Reduction in soil erosion and sediment loading into the Spokane Arm would occur.	Continued soil erosion and sediment loading into the Spokane Arm would occur.
Vegetation	There would be minor, short-term, localized disturbance and compaction of vegetation immediately adjacent to the site during installation of the stabilization structure. The majority of existing vegetation was severely burned in the 2016 Hart Fire. Disturbed and stabilized areas would be seeded or planted with native species to help stabilize soils and improve the appearance of the completed project.	Over the long term, as soil is lost from the site, the ability of the site to support vegetation would diminish. Given the small size of the affected area, the impacts to vegetation would be small.
Wildlife	There would be minor, short-term, localized disturbance of wildlife habitat immediately adjacent to the site during installation of the stabilization structure. Disturbed and stabilized areas would be seeded or planted with native species to help restore habitat values. Due to the severity of the 2016 Hart Fire, there has been a reduction in the available habitat for wildlife and foraging.	Over the long term, as soil and vegetation are lost from the site, the ability of the site to provide wildlife habitat would continue to diminish. Given the small size of the affected area, the impacts to wildlife habitat and species would be small.
Fisheries	There would be minor, short-term, localized disturbance to fish from barges anchoring near the shoreline. Fish that may occupy the area would likely relocate during construction activities. There is no suitable spawning habitat in the area due to slope and sediment type; therefore, spawning habitat would not be impacted.	Continued bank erosion would likely affect water quality in the form of suspended sediment and could affect availability of fish food sources.
Threatened and Endangered Species	No listed or sensitive species are known to occur at the site.	No listed or sensitive species are known to occur at the site.
Transportation	There may be brief interruptions in traffic when entering or leaving the staging area. No changes in local road traffic or transportation patterns are expected to occur as a result of the Proposed Action.	No Effect

Resource	Proposed Action	No Action
Cultural Resources	The Proposed Action would provide long-term protection of the Cayuse Cove archaeological site from erosion.	Long-term substantial effects would occur, including loss of irreplaceable cultural resources due to reservoir erosion.
Sacred Sites	No Effect	No Effect
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Noise	Short-term, localized noise impacts would occur due to construction activities. Effects would be mitigated using BMPs.	No Effect

3 Affected Environment and Environmental Consequences

This chapter describes existing physical, biological, natural, social, and cultural resources that could be affected by the action and identifies potential impacts, beneficial or adverse, to those resources that could result from each of the two alternatives.

The Affected Environment section describes the existing environment upon which the alternatives could have an effect, and the Environmental Consequences section describes the potential direct and indirect effects of those alternatives, if implemented, on the resources evaluated. This EA also discusses cumulative effects, which are effects that may result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects are only addressed for those resources where direct or indirect effects would be realized.

The No Action alternative describes the conditions of a specific resource if Reclamation takes no action and provides the basis to compare the action alternative.

Preliminary analysis indicated that the bank stabilization project has no potential to affect certain resources or is anticipated to affect certain resources to such a limited extent that a detailed discussion of those resources is not justified. Resources that were determined to be unaffected by the Proposed Action are summarized in Table 2. Resources or uses that may be affected by the No Action Alternative or the Proposed Action are analyzed in the remainder of this chapter.

Table 2. Resources eliminated in the Impact Analysis

Resource	Rationale for Elimination
Air Quality	There would be a slight increase in exhaust emissions from construction vehicles and worker transport. Proper maintenance of equipment would prevent any increase in regulated air-quality parameters over established limits. BMPs implemented as part of the project would avoid measurable air quality impacts. Examples of appropriate BMPs include dust suppression during construction, maintaining construction equipment exhaust emission controls according to manufacturer's instructions, and reducing emissions through carpooling of workers.
Energy	No disruption of power supply would occur under either alternative. Energy supplies would also not be impacted by the alternatives. Therefore, energy use is not addressed further in this EA.
Hazardous Materials and Waste	No hazardous contamination conditions are known to exist within the project and staging areas. Hazardous materials are discussed in the Water Pollution Control section (Section 2.2.3) and would be mitigated through BMPs. Therefore, hazardous materials and wastes are not addressed in this EA.
Infrastructure	There is no infrastructure within the areas to be used by the project under either alternative, and no infrastructure would be impacted by related actions; therefore, infrastructure is not addressed further in this EA.

Resource	Rationale for Elimination
Land Use	Land use would not change under either alternative; therefore, land use is not addressed further in this EA.
Public Health and Safety	There are no public health and safety concerns related to this project, and therefore, it is not addressed in this EA.
Realty	There are no realty-related issues for this project, and therefore, it is not addressed in this EA.
Visual Resources	There would be a temporary change to visual resources at the staging area and project site during construction. The slope protection system may be partially visible during drawdown of the lake until the vegetation becomes established. This short-term impact would occur over a small area; therefore, visual impacts are not further addressed in this EA.
Water Rights	Water for irrigating newly planted vegetation would be provided via Reclamation's water right.
Wild and Scenic Rivers	There are no Wild and Scenic Rivers in the project area; therefore, Wild and Scenic Rivers are not addressed further in this EA.
Wilderness	There is no wilderness in or near the project area.

3.1 Soils

This section describes current surficial geology, including soils, at the Cayuse Cove bank stabilization site. It also examines potential effects of each alternative on shoreline soils.

3.1.1 Affected Environment

The slope stabilization site would extend horizontally at the top of existing slope, for a total overall length of approximately 950 feet. The width of the area to be protected would range from 70 to 130 feet, for a total stabilization area of 83,600 square feet (1.9 acres). The terrace at Cayuse Cove is 10 feet above the Lake Roosevelt high-pool elevation of 1290 feet. The material at the toe of the terrace is composed of alluvial material consisting of sand and gravel with cobbles (USDA NRCS 2017). At the top of the terrace, the material consists of fine-grained sand and silt with fine gravel and cobbles (Figure 6). The bank material has little shear strength and is easily erodible. Wave action, most likely from wind and recreational boating, has caused significant erosion at the contact between the two terrace materials.



Figure 6. The material at the terrace is composed of alluvial material consisting of sand and gravel with cobbles

3.1.2 Environmental Consequences

No Action

Under the No Action alternative, the soils that make up the shoreline would continue to be eroded by wave action. This would lead to the bank slumping and moving into Lake Roosevelt and continued sediment loading into the Spokane Arm.

Proposed Action

The bank stabilization project would result in minor, short-term disturbances to soils adjacent to the site as the stabilization structure is installed. The project would lead to long-term stabilization of the soils and shoreline bank protection. Material for gabion baskets, topsoil, and fill would be obtained from an approved borrow source or quarry. Soil composition would also change due to the high volume of fill used for stabilization. Soil composition would consist of 2.5 inches of gravel fill, 0.5-inch of compacted fill, and topsoil for revegetation. The addition of vegetation would help stabilize the soil and reduce erosion and soil loss over time.

Cumulative Effects

Recreational activities, especially boating, are prevalent in and adjacent to the Spokane Arm. All of these activities are expected to continue in the future and could lead to additional erosion of the banks and a loss of soil. The addition of vegetation would help stabilize the soil and, as the vegetation continues to grow and reproduce, this will reduce erosion. Other

shoreline stabilization projects were completed along the Spokane Arm and are cumulatively adding to soil stabilization.

3.2 Recreation Values and Uses

3.2.1 Affected Environment

Recreational opportunities along the Spokane Arm are managed by the NPS as part of the Roosevelt National Recreation Area and by the Spokane Tribe on tribal lands. The river is a popular location for boating, fishing, and water sports. Available game fish species include rainbow trout, kokanee, walleye, yellow perch, and smallmouth bass. The fishing season is open year-round, except for sturgeon, which is closed year-round. The entire river right shoreline is part of the Spokane Indian Reservation, and users are subject to Spokane Tribal fees and rules.

Developed recreation facilities on the Spokane Arm nearest the project and staging areas include Detillion, Ponderosa, and Porcupine Bay Campgrounds. These facilities are managed by the NPS as part of the Lake Roosevelt National Recreation Area. Porcupine Bay is located 19 miles north of Davenport on State Highway 25 and is the closest developed site to Spokane, a major metropolitan area. Porcupine Bay, which is proposed for project staging activities, is approximately 8 miles downstream of Cayuse Cove. This highly used recreation site has 31 RV/tent sites. Recreational amenities include swim beach, boat dock, fishing, playground, horse shoes, picnic tables, an RV dump station, and ranger-guided programs in the summer.

Traffic counts collected at Porcupine Bay are used to extrapolate visitor use numbers and track user trends over time. Traffic counts provided by the NPS (Edwards 2017) demonstrate use trends between 1992 and 2016 (Figure 7). Traffic counts have grown from 6,102 in 1992 to 9,589 in 2010. The greatest visitation occurs in July and August in each year, with smaller peaks taking place in April and May. The 5-year averages for July and August are approximately 6,167 and 4,507 respectively. The 5-year averages are 2,989 in April and 2,936 vehicles in May. During September, the 5-year average is 4,167 vehicles.

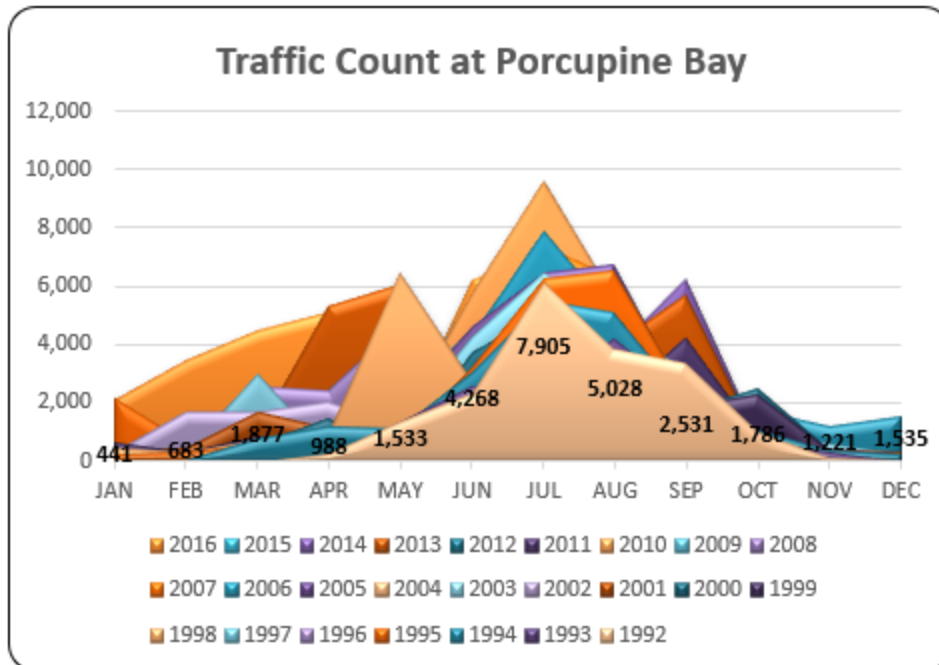


Figure 7. Traffic counts at Porcupine Bay²

According to the Upper Columbia River Recreational Use Survey (Scherer 2013), visitors travel a median of 75 miles and spend an average of 3.4 visitor days per year in the area. Recreational issues that were identified in the National Park Service’s General Management Plan (NPS 2000) included the lack of available campsites at popular facilities and overcrowding at the boat ramps. Concerns were also expressed about boating safety and lack of boating regulations. According the General Management Plan, “carry capacity is most often limited by the amount of area required for active water sports.” The area identified as being sensitive to overcrowding was the Spokane Arm of the reservoir, where the channel is narrow and active water sports are popular (NPS 2000). Visitor use characteristics, as defined in the 2013 recreational use survey, demonstrated that nearly twice as many visitors participated in water sports, including swimming and water skiing in the lower region of the upper Columbia River, between the Grand Coulee Dam and the Spokane River confluence, than in the middle or upper region of the park (Scherer 2013). Other recreational activities were comparable.

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, no construction activities would occur. Therefore, there would be no displacement or disruption of visitors from the associated construction activities.

² The access road to Porcupine Bay has been closed since April 2017 due to a major landslide, and therefore, no additional data are included in this analysis.

Proposed Action

Staging, landing, and loading areas would occupy approximately half of the overflow parking and boat ramp at Porcupine Bay outside of the peak recreational months of June through August. There would be moderate, short-term, direct impacts to visitors at the campground during the construction window. Some visitors would be temporarily displaced, and staging would disrupt normal recreational activities prior to Memorial Day and after Labor Day. Visitors would see a reduction of the total parking spaces available and experience additional crowding at the boat ramp. The greatest impacts would be seen during the months of April and September; there would be no impacts during the peak recreational period.

The slow-moving barge would add to the crowded waterway and could obstruct faster-moving watercraft. This would be a minor, short-term impact and would cease upon completion of construction.

Cumulative Effects

Implementing the Proposed Action or No Action Alternative would not result in cumulative impacts to recreational opportunities in the area. The short-term impacts at the Porcupine Bay Campground would be limited in scope and would cease at the conclusion of the project.

3.3 Water Quality

3.3.1 Affected Environment

Water quality of Lake Roosevelt is regulated by the State of Washington Department of Ecology (Ecology) under the framework of the CWA. Washington has established water quality standards for specific physical and chemical parameters in order to provide suitable conditions to support designated and potential uses. Some of these uses include agricultural water supply, domestic water supply, stock water supply, industrial water supply, commercial navigation, boating, wildlife habitat, harvesting, and aesthetics (Ecology 2016a). The designated uses of Lake Roosevelt include core salmonid summer habitat and extraordinary primary contact recreation, as well as nine additional standard uses. Extraordinary primary contact recreation is a designated use for some high-quality or special waters of the state. This designation and the associated water quality standards provide more stringent protection against waterborne disease than primary contact recreation standards.

Section 303(d) of the CWA requires states and tribes to identify water bodies that do not meet water quality standards. States and tribes must publish a list of these impaired waters every 2 years. The most recent approved 303(d) list for the State of Washington is the 2012 Integrated Report, approved by U.S. Environmental Protection Agency on July 26, 2016 (Ecology 2016b). For lakes, rivers, and streams on this list, states and tribes must develop water quality improvement plans known as total maximum daily loads (TMDLs). These TMDLs establish the amount of a pollutant a water body can carry and still meet water quality standards. Water temperature was identified as one of the primary water quality problems in the Columbia River segments near Grand Coulee Dam; low dissolved oxygen

and polychlorinated biphenyls (a persistent organic pollutant with toxicities similar to dioxins) were also identified as water quality concerns.

Tributary streams and rivers in the upper basin of the Columbia River, as well as landslides and erosion of unconsolidated sediments from the reservoir rim, deposit sediments in Lake Roosevelt (USGS 2002). Landslides and erosion along Lake Roosevelt have occurred and continue to occur, primarily in the unconsolidated Pleistocene terrace sediments present along 80 to 90 percent of the reservoir shoreline (Jones et al. 1961; Kiver and Stradling 1995; Bjorklund 2015). A massive landslide occurred on April 2, 2017, that is blocking access to Lake Roosevelt's Porcupine Bay Campground and boat launch. An increase in the amount of sediment loading into the Spokane Arm occurred at this site as a result of the slide. The road is anticipated to reopen in spring 2019.

3.3.2 Environmental Consequences

No Action

The No Action alternative would not alter the temperature and sediment conditions within Lake Roosevelt. The continued erosion of the shoreline would not significantly increase the sediment loading in the reservoir due to its size and low retention time.

Proposed Action

The Proposed Action is expected to reduce sediment loading and turbidity and thus improve water quality conditions within Lake Roosevelt. The action is expected to minimize erosion from the toe of the terrace, but due to the size and low retention time of Lake Roosevelt, this reduction in suspended sediment would not be noticeable in the offshore areas of the reservoir.

Permitting for this project was completed through the Joint Aquatic Resource Permits Application process. Reclamation has been authorized to implement this project by the Corps under the Nationwide Permit 13 (NWS-2017-588). Reclamation would complete all in-water work in accordance with the terms and conditions outlined in the permit.

Further construction of BMPs would be implemented to protect water quality.

Cumulative Effects

Implementing either the Proposed Action or No Action Alternative would not result in cumulative impacts to water resources. The operation of Grand Coulee Dam, especially the yearly raising and lowering of the water elevation in the Spokane Arm, will continue to impact the river banks and increase erosion and sediment loading into the Spokane Arm. The potential short-term impacts to water quality during construction activities would cease upon completion of the project. Implementation of the Proposed Action would have positive future impacts to the Spokane Arm while maintaining the integrity of the cultural resources in the vicinity and protect shoreline from future erosion and sediment loading.

3.4 Vegetation

3.4.1 Affected Environment

The landscape and vegetation regimes surrounding Lake Roosevelt vary across the area, from mixed conifer and ponderosa pine forests in the northern and eastern portions to semi-arid vegetation classes along the western portions of the reservoir. Additionally, grasslands, pastures, and occasional wetlands add to the wide range of plant diversity.

Vegetation in the project area consists of a combination of severely burned conifers and shrubs, as well as a variety of herbs and grasses. Fluctuating water levels from reservoir operations, combined with erosion from wave action, a south-facing aspect of the shoreline, and the climate regime, limit the population of near-shore vegetation.

In 2016, the Hart Fire burned approximately 1 acre of the Cayuse Cove project area (Figure 8). The Hart Fire Post-Fire Response Plan work was initiated in spring 2017; the detection surveys were completed along all roads and ORV trails, archaeological surveys were conducted prior to planting (occurring in summer 2017), and hazardous-tree assessments were conducted. The post-fire response plan will continue until summer 2019 to stabilize and rehabilitate the area burned by the Hart Fire in the Lake Roosevelt National Recreation Area. A site visit on April 12, 2017, showed that a new understory consisting of grasses and forbs has sprouted following the fire. There is a high likelihood for noxious and/or invasive plant species to invade or expand into the burned areas.

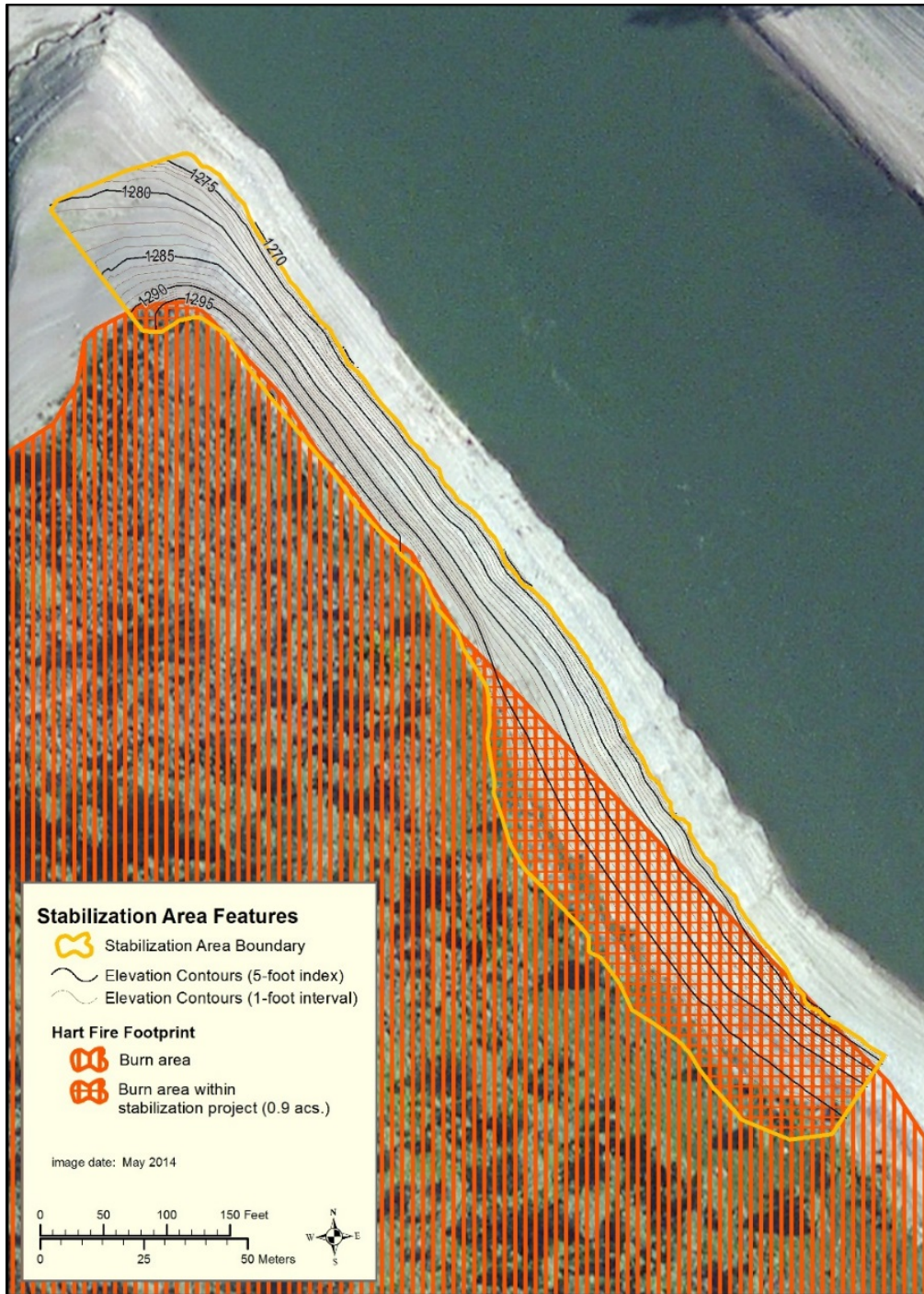


Figure 8. Cayuse Cove bank stabilization project area burned by the 2016 Hart Fire

3.4.2 Environmental Consequences

No Action

Over the long term, as soil is lost from the site, the ability of the site to support vegetation would diminish. Given the small size of the affected area, the impacts to vegetation would be small; however, there is a high likelihood of encroachment of invasive species since the Hart Fire.

Proposed Action

There would be minor, short-term, localized disturbance and compaction of vegetation immediately adjacent to the site as the stabilization structure is installed. Disturbed and stabilized areas would be seeded or planted with native species to help stabilize soils and improve the appearance of the completed project. The installation of Geoweb would reduce shoreline erosion from natural and human-made wave action. Decreased erosion offers the potential for some plant communities to establish or increase populations in the area. Approximately 1 acre of new vegetation would be established, resulting in an increase in total area of vegetation over existing conditions. In addition, this would help control invasive species that may be encroaching since the Hart Fire.

Cumulative Effects

Vegetation along the Cayuse Cove bank stabilization project area has been impacted by dam construction, subsequent water impoundment, and altered water flows, as well as wildfire and recreation. The majority of the vegetation in the project area was burned in the 2016 Hart Fire. The Hart Fire Post-Fire Response Plan was completed in 2016 and includes herbicide and manual control of a range of invasive species, especially knapweeds, rush skeletonweed, cheatgrass, yellow star thistle, toadflax, and Scotch thistle on NPS land within the boundaries of the Hart Fire. In addition, trail rehabilitation will also be completed in order to keep off-highway vehicles from spreading invasive species. Impacts due to dam operation, altered water flows, recreation, and non-native plant species are presently occurring and likely will continue to occur in the future. The Proposed Action would be unlikely to contribute to cumulative effects on vegetation within the analysis area due to the small level of disturbance. The project would be beneficial to the analysis area because it would treat a source of sediment and proposes to re-establish native riparian vegetation.

3.5 Noise

3.5.1 Affected Environment

Noise is defined as unwanted sound that is objectionable because it is disturbing or annoying due to its pitch or loudness. Pitch is the height or depth of a tone or sound. Higher-pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the intensity of sound waves combined with the reception characteristics of the ear.

A decibel (dB) is a unit of measurement that is used to indicate the relative amplitude of a sound. Sound levels in dB are calculated on a logarithmic scale. Subjectively, each 10 dB increase in sound level is generally perceived as approximately a doubling of loudness.

Excavating equipment would be required to remove sand and cobbles for anchoring the Geoweb, as well as for placing gabion baskets along the bank for stabilization. The excavation would occur from the barge and not on land. Excavation would also be required to take place when the reservoir is at its lowest elevation. The primary environmental effect of excavation is airborne noise.

Noise sources in the area of potential affect are predominantly boat recreation and natural. Accordingly, existing ambient noise levels are low. Motorboat recreation noise levels typically range from 85 to 115 dBA. Background noise levels in wilderness and rural areas typically range between 35 and 45 dBA. The closest private residence to the project is located approximately 0.3-mile southeast of the construction zone.

3.5.2 Environmental Consequences

No Action

Under the No Action alternative, no construction would occur at this location. Existing noise with its various components would remain at their current levels.

Proposed Action

There would be short-term, localized increases in noise due to construction activities. Noise would be produced at varying levels during equipment and material staging, barge loading, and slope stabilization. Construction activities would be performed only weekdays during the hours of 7:00 a.m. to 7:00 p.m., thus reducing the potential impacts to adjacent landowners. In addition, 80 dB (daytime) would not be exceeded, as measured at noise-sensitive areas such as residences, during the hours of 7:00 a.m. to 7:00 p.m. (see Section 2.2.3).

Cumulative Effects

No cumulative effects are anticipated on this resource as a result of the proposed project.

3.6 Wildlife

3.6.1 Affected Environment

The 2016 Hart Fire severely burned the majority of the vegetation community of native shrubs, grasses, and forbs, as well as the surrounding mixed conifers in and adjacent to the project area. These communities typically provide abundant and diverse habitats for wildlife species. Due to the severity of the burn, there is limited habitat available for nesting or foraging. In addition, for an approximately 3-month period, the lake drawdown separates the riparian habitats from the reservoir by an expanse of barren land. As a result of the reservoir fluctuation, erosion has caused banks to slough and has led to an overall loss of vegetation on the banks.

3.6.2 Environmental Consequences

No Action

Over the long term, as soil and vegetation are lost from the site due to erosion and sloughing of the bank, the ability of the site to provide wildlife habitat would diminish. Given the small size of the affected area, the impacts to wildlife habitat and species would be small.

Proposed Action

There would be minor, short-term disturbance of wildlife potentially using areas adjacent to the project site during construction. Due to the severe burn from the 2016 Hart Fire and lack of habitat, no migratory birds are expected to nest or forage in the stabilization site during construction. Long-term protection of the shoreline from soil erosion would allow vegetation communities to potentially thrive and grow, producing increased wildlife habitat for nesting and foraging. The Proposed Action would re-establish a minor amount of habitat that was lost during the Hart Fire and to erosion, allowing for wildlife to use the area and benefit from the Proposed Action.

Cumulative Effects

Implementing the Proposed Action or No Action Alternative would not result in cumulative impacts to wildlife. With the Proposed Action, there would be an increase in overall habitat over existing conditions that would allow additional species to occupy the area, resulting in a positive impact for the future.

3.7 Fisheries

3.7.1 Affected Environment

Currently, the lower Spokane Arm fish assemblage consists primarily of non-native warm-water species such as largemouth bass, yellow perch, tench, and brown trout. Historic stocks of native species that continue to inhabit the Spokane Arm below Spokane Falls include largescale sucker, redband shiner, northern pikeminnow, and chiselmouth. White sturgeon are present in the Spokane Arm subbasin, based on the collection of one individual (according to Scholz, as cited in Whalen 2000).

Though historically common throughout the subbasin, the native salmonid assemblage is now restricted to severely depressed populations of three species of salmonids, including kokanee, redband trout, and westslope cutthroat trout. Westslope cutthroat trout are believed to be fairly abundant in the Spokane Arm upstream of Post Falls in Idaho (according to Corsi, as cited in Whalen 2000).

Although bull trout are considered native in the subbasin, current observations are limited to anecdotal data and are believed to be migrants from tributaries in the upper basin, such as Lake Coeur d'Alene.

3.7.2 Environmental Consequences

No Action

The absence of bank stabilization would likely result in continued erosion of the bank. Increased erosion could worsen, as would downstream water quality from increased suspended solids. Increased sediment could have some negative biological impacts. Minimal sedimentation might affect aquatic and semi-aquatic species that would be available to fish as a food source.

Proposed Action

The operation of Grand Coulee Dam, especially the yearly raising and lowering of the water elevation in the Spokane Arm, will continue to impact the riverbanks and increase erosion. No construction activities would occur directly in the water. However, potential short-term impacts to fisheries could include temporary displacement from presence of the barge in the water during construction. Fish that may occupy the area would likely leave the area surrounding the barge during construction activities. These activities and potential short-term impacts would cease upon completion of the project. Due to the slope and sediment type, suitable spawning habitat for fish is lacking and would not be impacted.

Cumulative Effects

Grand Coulee Dam does not have a fish passage structure for all fish to move freely within the system. It is well documented that dam construction has eliminated or reduced fish passage through these facilities (FAO 2001). Development and recreational activities, especially boating, are prevalent in and adjacent to the Spokane Arm. All of these activities are expected to continue in the future. In the analysis area, recreation and development will likely increase in the future, which will likely increase erosion and sediment movement into the river. The operation of Grand Coulee Dam, especially the yearly raising and lowering of the water elevation in the Spokane Arm, will continue to impact the riverbanks and increase erosion.

The use of BMPs during implementation of the project would limit sediment input to the Spokane Arm. Since the project would reduce soil erosion and sediment loading into the Spokane Arm, long-term beneficial effects to aquatic species are anticipated.

3.8 Threatened and Endangered Species

3.8.1 Affected Environment

The following list of species and candidate species protected by the Endangered Species Act (ESA) was developed by accessing listed species for Lincoln County, Washington, at <https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=53043>.

Listed species: Bull trout (*Salvelinus confluentus*, *Threatened*); Yellow-billed cuckoo (*Coccyzus americanus*, *Threatened*)

Candidate species: North American wolverine (*Gulo gulo luteus*) – contiguous U.S. distinct population segment (DPS)

Yellow-billed Cuckoo

Life History and Ecology

Yellow-billed cuckoos (*Coccyzus americanus*) are medium-sized birds that average about 12 inches long and weigh approximately 2 ounces. Unlike some species of cuckoo, the yellow-billed is not a brood parasite (laying eggs in other bird's nests), but rather typically builds its own nest and raises its own young. The yellow-billed cuckoo prefers floodplain forests with thick deciduous vegetation. They fly south of the Amazon River basin in September to wintering habitat and return to North America in mid-May. Large insects, including caterpillars and cicadas, make up the bulk of the bird's diet, although cuckoos will occasionally eat small frogs and lizards. Breeding corresponds with the occurrence of tent caterpillars and cicadas.

Status and Distribution

On October 3, 2014, the USFWS issued a final rule under the Endangered Species Act of 1973 listing the western DPS of the yellow-billed cuckoo as a threatened species (USFWS 2014a).

The yellow-billed cuckoo has historically bred throughout much of North America; however, available data suggest that there have been significant declines in the species distribution west of the Rocky Mountains due to streamside habitat loss (USFWS 2014a). The yellow-billed cuckoo (western DPS) is known to, or believed to, occur in all Washington State counties (USFWS 2015). However, there is no suitable habitat adjacent to the project and staging areas.

Reasons for Decline

The loss of riparian habitat is reportedly the greatest threat to the species. Biologists have estimated that riparian habitat degradation due to agriculture, streamflow management, overgrazing, and exotic plant competition has reduced the yellow-billed cuckoo's riparian habitat by 90 percent in the West (USFWS 2014a).

Designated Critical Habitat

On August 15, 2014, the USFWS proposed a rule to designate critical habitat for the western DPS of the yellow-billed cuckoo. The agency has proposed 546,335 acres in Arizona, California, New Mexico, Colorado, Idaho, Nevada, Texas, Utah, and Wyoming as critical habitat. The project area and staging area are not located within the designated critical habitat (USFWS 2014b).

Bull Trout

Life History and Ecology

Bull trout (*Salvelinus confluentus*) are cold-water fish that live in pristine stream and lake habitats. They have specific habitat requirements, including cold water temperatures, clean stream substrates for spawning and rearing, and complex habitats with riffles, deep pools, undercut banks, and large woody debris, as well as connectivity between headwater spawning habitats and mainstem river or lake overwintering habitats (USFWS 2011). Bull trout express both resident and migratory life history forms, with migratory fish spawning in cold, high-mountain tributaries in the fall and overwintering in mainstem river habitats and lakes. Juvenile migratory fish typically rear in tributaries for 2 years and then out-migrate to lakes and mainstem rivers. Residents stay in spawning tributaries for their entire life cycle. Adults eat primarily fish, and juveniles feed on aquatic invertebrates (NatureServe 2011).

Status and Distribution

The USFWS issued a final rule listing the Columbia River and Klamath River populations of bull trout as threatened species under the ESA on June 10, 1998 (USFWS 1998). The most recent status review reaffirmed the listing (USFWS 2010).

Bull trout are known to use the mainstem Columbia River for feeding, migration, and overwintering habitat (USFWS 2008). Bull trout are rare in Lake Roosevelt and its tributaries, but a few have been documented (Spokane Tribe of Indians 2000; Lake Roosevelt Forum 2011).

Reasons for Decline

Habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, and past fisheries management practices, such as the introduction of non-native species, threaten the Columbia River DPS (USFWS 1998).

Designated Critical Habitat

The mainstem Columbia River downstream of Chief Joseph Dam is included in critical habitat that was designated for bull trout on October 18, 2010 (USFWS 2010). Designated critical habitat did not include Lake Roosevelt, the Columbia River below Grand Coulee Dam to Chief Joseph Dam, or tributaries entering these water bodies.

3.8.2 Environmental Consequences

No Action

Under the No Action alternative, Reclamation would not install any shoreline protection systems. Water quality, hydrology, and shoreline vegetation would remain the same as current conditions, and habitat for listed species would not change.

Proposed Action

Under the Proposed Action, Reclamation would install Geoweb bank stabilization. Reclamation examined the effects this alternative would have on water quality, as well as water and terrestrial habitat, to determine the potential to affect listed species in the area.

Yellow-billed Cuckoo

There would be no effect to the yellow-billed cuckoo or its habitat, as suitable habitat for this species is not present in or adjacent to the project area.

Bull Trout

Bull trout are rare in Lake Roosevelt and more uncommon, if found at all, in nearby tributaries such as the Spokane Arm. Based on the results of the water quality analyses, the Proposed Action would not affect bull trout habitat or the species.

Cumulative Effects

Implementing the Proposed Action or No Action alternatives would not result in cumulative impacts to threatened and endangered species.

3.9 Transportation

3.9.1 Affected Environment

Porcupine Bay Road is the main road for accessing the Porcupine Bay Campground and boat launch, as well as private residences. The Spokane Arm is a popular recreation area for boaters. Peak season for recreation is June through August (see Figure 7). The project area site is not accessible by overland travel, and therefore, barging would be the primary method for transporting materials to the project site.

3.9.2 Environmental Consequences

No Action

With the No Action alternative, no changes are expected in local road traffic or transportation patterns.

Proposed Action

Trucks hauling material for this project would use state highways and county roads as necessary to travel to transport materials to the staging area. Although there may be brief interruptions in traffic when entering or leaving the staging area, no changes in local road traffic or transportation patterns are expected to occur as a result of the proposed shoreline stabilization project. In addition, there would be minor impacts to recreational boaters due to the presence of a barge transporting materials to the project site.

Cumulative Impacts

Implementing the Proposed Action or No Action alternatives would not result in cumulative impacts to transportation.

3.10 Cultural Resources

3.10.1 Affected Environment

Background

The most common cultural resources at Lake Roosevelt can be grouped into three categories: archaeological sites, traditional cultural properties (TCPs), and buildings and structures. Archaeological sites are the remaining evidence of past use of a particular location. TCPs are specifically defined as places associated “with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1998). Historic buildings and structures are extant features that are at least 50 years old. The primary focus of this Cultural Resources section is archaeological site 45LI377, which the Proposed Action is designed to protect.

Past work to identify and evaluate cultural resources for the NHPA in the project area of potential effect (APE) has included literature review, pedestrian inventory, and site monitoring. Other work conducted by and for Reclamation and the other cooperating agencies of the Lake Roosevelt Spokane Arm CG in the project vicinity include the completion of an NPS 10-900 Determination of Eligibility Form for the Cayuse Cove archaeological site (45LI377) and several testing and emergency data recovery projects at various locations around the Cayuse Cove area. NPS handles Section 106 compliance for its recreation facilities, including at the Porcupine Bay Campground. NPS has conducted several inventory and testing projects at the proposed staging area.

TCP inventory occurs on the Spokane Arm similarly to archaeological and historical inventories, with ongoing inventories performed by the Spokane Tribe Preservation Program under contract to the lead Federal agencies to meet the requirements of the SWPA.

Archaeological Resources within the Project Area

The lower stretch of the Spokane Arm of Lake Roosevelt from Little Falls Dam to the confluence with the Columbia River contains dozens of archaeological sites on NPS-managed lands on the south shore and on Spokane Tribe-managed Federal lands on the north shore of the reservoir on the Spokane Reservation. The banks of the former Spokane River channel and the associated cultural resources have been subject to accelerated erosion and related disturbance and loss since the completion of Grand Coulee Dam in 1942.

Archaeological sites along the Spokane Arm of Lake Roosevelt include habitations, resource gathering and processing sites, rock images, and other types of human use areas. The sites date from about the end of the Pleistocene to modern times and indicate a long-term and

continuous human use of the Spokane and Columbia Rivers by the Spokane Tribe and their ancestors.

The APE for this assessment includes the area to be stabilized at Cayuse Cove and the staging and barge-loading and -launching area at the Porcupine Bay Campground (Figure 2).

Cayuse Cove (Stabilization Site)

Cayuse Cove area was first surveyed for archaeological sites in 1966, but it was not until 1999 that the Spokane Tribe Preservation Program conducted the first intensive survey of Cayuse Cove and recorded archaeological site 45LI377 (Jones 2008). Background research, combined with the archaeological work conducted since 2000, indicates that Cayuse Cove may be one of three ethnographic sites identified by John A. Ross as an important fishing and/or freshwater mussel collecting site (Ross 1991-1993). The site soils have produced a diversity of information about past lifeways, as demonstrated through artifacts and intact features (Arneson 2000, 2005a, and 2005b; Casserino 2014a; Harrison 2013; Harrison and Casserino 2015; Jones 2008 and 2010; Spokane Tribe of Indians 2006). The archaeological information collected from the site indicates it was used sporadically between 4,160 years before present and as late as 1,420 years before present (Harrison 2015). Based on the archaeological evidence, the Cayuse Cove archaeological site (45LI377) was determined to be eligible for listing on the National Register by the cooperating agencies (Casserino 2014b).

Cayuse Cove is reportedly the most rapidly eroding archaeological site on the Spokane Arm (Harrison and Casserino 2015), and the erosion has exposed large volumes of archaeological deposits. Of known sites on the Spokane Arm, this site has been identified as the most in danger of imminent destruction from erosion (Harrison and Casserino 2015). Grand Coulee Dam operations are the biggest impact to the integrity of the site. Waves, current, and reservoir pool fluctuations (from annual drawdown and refill) are the primary causes of this erosion (Harrison and Casserino 2015). The cut bank is subject to rapid erosion and slumping at high water, and bank calving during reservoir drawdowns for flood control and dam maintenance (Spokane Tribe of Indians 2006; Jones 2008, 2010; Harrison and Casserino 2015). Relic collecting/vandalism/looting and recreational ATV use on the beach have been a concern in past years, as well. Wake from ski boats is a growing concern, as it batters the cut bank during the summer months.

Porcupine Bay Campground (Staging Area)

Numerous cultural surveys and tests have been conducted in the Porcupine Bay area over the past 30 years (DePuydt 2012). James McKie and David Chance (1980) first surveyed the Porcupine Bay Campground in 1979, recording archaeological site 45LI0049; the site was not considered eligible for inclusion in the National Register. The site boundary was extended following survey by Ray DePuydt (1999); no evidence of intact subsurface cultural deposits was found. The most extensive survey above the high-water line in the Porcupine Bay area was conducted by Ray DePuydt in 2001 in the forested area between the campground and launch ramp; no evidence of buried cultural resources was found. No other

cultural resources or sites were recorded during archaeological surveys conducted in the Porcupine Bay area between 1980 and 2012 (DePuydt 2000, 2006, and 2012; Harry 1992; Hartzell-Scott 1994a, b; Riser 2011).

Traditional Cultural Properties

There are a number of TCPs along the Spokane Arm of Lake Roosevelt. Due to the sensitivity of TCPs to the Spokane Tribe, details of location and use of TCPs along the Spokane Arm are not disclosed. The Spokane Tribe have not identified any concern related to potential TCPs in the project area, and no TCPs were identified at the proposed construction and staging sites.

Buildings and Structures

There are no historic buildings or standing structures in the APE for the Cayuse Cove stabilization project.

3.10.2 Environmental Consequences

No Action Alternative

Archaeological

Cayuse Cove

Under the No Action alternative, a stabilization structure would not be installed at the project site. In the absence of a protective structure, the shoreline would continue to erode, and the determined-eligible archaeological site would continue to be damaged irreparably by natural and anthropogenic causes, and potentially completely lost.

Some (but not all) disturbance and loss to the archaeological site could be mitigated through continued periodic monitoring or additional data recovery by professional archaeologists; however, data recovery in cases such as this can be considered a substantial impact if the entire resource would be affected as a result.

Porcupine Bay Campground

The No Action alternative would not affect the archaeological site associated with Porcupine Bay Campground.

TCPs

The No Action alternative would have no effect on TCPs.

Buildings and Structures

The No Action alternative would not affect historical buildings and structures.

Proposed Action

Archaeological

Cayuse Cove

Installation of Geoweb and gabion basket structures along the eroding shoreline would provide immediate and long-term protection of the Cayuse Cove archaeological site from erosion. Protection and avoidance of impacts to cultural resources were considered in the design of this Section 106 project. Cultural resource impacts would be avoided and BMPs implemented, including completion of Section 106 consultation, continuation of Native American consultation, and continued development of the avoidance strategy in the stabilization design and contract specifications for the Proposed Action.

There is low potential for disturbance of cultural resources associated with the Proposed Action. Monitoring and archaeological testing conducted by the Spokane Tribe Preservation Program indicate that the intact site exists behind the cut bank, but that areas where the stabilization structure would be excavated into the slope (shoreline) would not impact in situ archaeological remains (Casserino 2016, Harrison and Casserino 2015). Project engineers and archaeologists worked closely with the Spokane Tribe Preservation Program and THPO to design the project in a manner that would minimize disturbance to the existing shoreline and resources. The shoreline protection system would be placed on fill brought into the site, and excavation would be limited to targeted locations that were determined by recent archaeological testing so as to not adversely affect in situ archaeological resources.

Barge-based construction would limit the types of disturbances normally caused by tracked vehicles during land-based construction. The use of fill and geotextile fabric as the base of the stabilization structure would provide a layer of protection for the natural ground surface below the Geoweb and gabion basket walls. Native plantings and additional fill over the gabion walls and Geoweb surfaces would help protect the structure from continued erosion from Lake Roosevelt and shield the site from increased interest from looters, boaters, and recreationalists. At most, minor direct or indirect impacts would be anticipated to the already disturbed areas of the archaeological site during construction. The construction of the stabilization structure would have No Adverse Effect on Identified Historic Properties (36 CFR 800.5 [d] [1]), as defined by the NHPA.

Porcupine Bay Campground

At the Porcupine Bay Campground, the staging and barging operations would be regulated by a Special Use Permit through NPS. There would be no new ground disturbance as a result of the staging and barge loading and landing operations; all work would be confined to previously disturbed areas covered with asphalt or gravel. No impacts to the previously recorded archaeological site at the campground would be expected as a result.

TCPs

The Proposed Action would have no effect on TCPs. The Spokane Tribe have not identified any TCPs that would be adversely affected by stabilization of the eroding Cayuse Cove cut bank, and no TCPs have been identified in the APE.

Buildings and Structures

The Proposed Action would not affect historical buildings and structures, as no buildings or structures of historic significance were identified in the APE.

Cumulative Impacts

The proposed project is designed to, and would result in, protection and preservation of an archaeological site at Cayuse Cove. Many cultural sites along Lake Roosevelt have been degraded over time by operations of the lake and other natural and anthropogenic causes. There have been a few Section 106 projects implemented or planned along the shorelines of Lake Roosevelt to minimize some of these impacts. This project, when combined with other bank stabilization and Section 106 projects on the Spokane Arm, would incrementally provide cumulative protection to cultural resource sites along the shoreline of Lake Roosevelt.

If the Proposed Action or another method of stabilization were not constructed, the erosion of the site would continue and the integrity of the significant archaeological site at Cayuse Cove would be impacted until the site is irreplaceably destroyed. This would add cumulatively to the impacts and loss of other important cultural resource sites along Lake Roosevelt. The Spokane Tribe would lose another of their substantial cultural connections to the Spokane River, and the archaeological information contained in the site soils would be permanently lost, thus impacting efforts to interpret and understand past lifeways in the Columbia Plateau.

No TCPs or historical buildings or structures would be impacted under the Proposed Action or No Action alternatives; therefore, there would be no cumulative impacts to these resources.

3.11 Indian Sacred Sites

Executive Order 13007, signed by President Clinton on May 24, 1996, defines a sacred site as:

Any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site [E.O. 13007, Section 1 (b) (iii)].

3.11.1 Affected Environment

Cayuse Cove sits within the traditional territory of the Spokane Tribe. The Spokane Tribe have not informed Reclamation of any sacred sites within the immediate vicinity of the proposed project area. A number of locations with traditional Indian place names and traditional cultural value are present along the Mainstem and Spokane Arm of Lake

Roosevelt, but the Spokane Tribe have not specifically identified Cayuse Cove, Porcupine Bay, or the surrounding TCPs and archaeological sites as having established religious significance or ceremonial use.

3.11.2 Environmental Consequences

No Action

The No Action alternative would not have any effect on sacred sites.

Proposed Action

The Spokane Tribe have not informed Reclamation of any sacred sites in the vicinity of Cayuse Cove or the Porcupine Bay Campground that would be impacted by the Proposed Action or No Action alternative.

Based upon the review of existing information and consultations with the Spokane Tribe THPO and Spokane Tribe Preservation Program, implementation of the Proposed Action or No Action alternative would not result in direct or indirect impacts to sacred sites.

Cumulative Impacts

There would be no direct or indirect impacts to Indian sacred sites from implementation of the alternatives. Therefore, there would be no cumulative impacts when considered with the other related actions.

3.12 Indian Trust Assets

3.12.1 Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Federally recognized Indian Tribes or individual Indians. ITAs may include land, minerals, Federally reserved hunting and fishing rights, Federally reserved water rights, and instream flows associated with trust land. The General Allotment Act of 1887 allotted land to some Tribes, while others were allotted land through treaty or specific legislation until 1934, when further allotments were prohibited. These allotments are considered ITAs.

As stated in the 1994 memorandum from President William J. Clinton, “Government-to-Government Relations with Native American Tribal Governments,” Reclamation is responsible for the assessment of project effects on Tribal trust resources and Federally recognized Tribal Governments. Reclamation is tasked to actively engage and consult with Federally recognized Tribal governments on a government-to-government level when its actions affect ITAs.

The U.S. Department of the Interior Departmental Manual Part 512.2 delegates the responsibility for ensuring protection of ITAs to the heads of bureaus and offices (Department of the Interior 1995). The Department is required to, “protect and preserve ITAs from loss, damage, unlawful alienation, waste, and depletion” (Department of the Interior

2000). Reclamation is responsible for determining whether a proposed project has a potential to affect ITAs.

Federally recognized Indian Tribes with trust land are beneficiaries of the Indian trust relationship when the United States acts as trustee. No one can sell, lease, or otherwise encumber ITAs without approval of the U.S. Government. While the majority of ITAs are located on-reservation, ITAs can also occur outside reservation boundaries. Consequently, the Spokane Tribe of Indians have a historical presence and cultural interest in the larger project area.

3.12.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no effect to ITAs.

Proposed Action

No ITAs have been identified in the project area, and the project would occur completely on land owned by Reclamation. Therefore, none of the alternatives would impact ITAs, since project impacts would be limited to Federal property.

Cumulative Effects

No cumulative effects are anticipated on this resource as a result of the proposed project.

3.13 Environmental Justice

3.13.1 Existing Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities, as well as the equity of the distribution of the benefits and risks. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group should bear a disproportionate share of negative impacts.

The Cayuse Cove bank stabilization would occur in Lincoln County. Currently, the Cayuse Cove area offers minority and low-income populations fishing, hunting, camping, picnic areas, swimming, and other recreational opportunities. While the areas are available throughout the year, visitation to the area is greatest during the summer months.

Table 3 summarizes the racial characteristics of Lincoln County within the project area and compared to the State of Washington overall. Information provided in the 2017 to 2018 Census of Population estimates was used to identify these populations. The 2017 to 2018 Census data for the White racial category comprise the greatest percentage for Lincoln County and the State of Washington (U.S. Census Bureau 2018).

Table 3. Racial population summary of the Lincoln County and the State of Washington

U.S. Census Bureau 2010 to 2017 Statistics	Lincoln County	State of Washington
Total Population, 2017 estimates	10,579	7,535,591
White alone (percent), Project area at Cayuse Cove, Lake Roosevelt 2015 (a)	94.2	79.5
Black or African American alone (percent), 2018 (a)	0.5	4.2
American Indian and Alaska Native alone (percent), 2018	1.9	1.9
Asian alone (percent), 2018 (a)	0.5	8.9
Native Hawaiian and other Pacific Islander alone (percent), 2018 (a)	0.2	0.8
Two or more races (percent), 2018	2.7	4.7
Hispanic or Latino (percent), 2018 (b)	3.4	12.7
White alone, not Hispanic or Latino (percent), 2018	91.3	68.7

(a) Includes persons reporting only one race

(b) Hispanics may be of any race, so also are included in applicable race categories

(c) Economic Census – Puerto Rico data are not comparable to U.S. Economic Census data

Low-income populations are identified by several socioeconomic characteristics. Specific characteristics used in this description of the existing environment, as categorized by the 2013 to 2017 Census data, are income (per capita income and median household income) and percentage of the population below poverty. Table 4 provides income and poverty information for the State of Washington and Lincoln County.

Table 4. Income and poverty – State of Washington and Lincoln County

Geographic Area	Per Capita Income	Median Household Income	People Below Poverty
Washington State	\$34,869	\$66,174	11.0%
Lincoln County	\$26,918	\$49,460	12.6%

*Information taken from U.S. Census Bureau: State and County Quick Facts for years 2013-2017 (U.S. Census Bureau 2018)

3.13.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no direct or indirect effects on minority and low-income populations. The reservoir would be operated as it has in the past. There would be no environmental justice effects to the area. The existing environmental conditions would remain intact and would not be affected.

Proposed Action

The Proposed Action would not involve major facility construction, population relocation, health hazards, hazardous waste, property takings, impacts to community facilities/resources or substantial economic impacts. This action would therefore have no adverse human health or environmental effects on minority and low-income population.

Cumulative Effects

No cumulative effects are anticipated on this resource as a result of the proposed project.

4 Consultation and Coordination

4.1 National Historic Preservation Act

The NHPA was enacted in 1966 and requires Federal agencies to consider project-related impacts to historic properties, which includes prehistoric and historic-period archeological sites, traditional cultural properties, and elements of the built environment. The process for implementing the NHPA is defined in Federal regulations (30 CFR 800) and includes consultation with the SHPO, THPO, and Advisory Council on Historic Preservation about Federal findings regarding project effects. This work at Lake Roosevelt, for the operations and maintenance of Grand Coulee Dam, is covered by the FCRPS SWPA. The Proposed Action's primary purpose is to satisfy the requirements of the SWPA and mitigate adverse effects to a National Register-eligible archaeological site.

Formal Section 106 consultation was conducted through a FCRPS treatment form. The form was signed by Reclamation, BPA, SHPO, NPS, and the Spokane Tribe of Indians Business Council Chair. The conclusion in the form was that construction of the stabilization structure and implementation of the Proposed Action would have No Adverse Effect on Identified Historic Properties (36 CFR 800.5 [d] [1]), as defined by the NHPA.

4.2 Endangered Species Act (1973) Section 7 Consultation

The ESA requires all Federal agencies ensure that their actions do not jeopardize the continued existence of listed species or destroy or adversely modify their critical habitat. As part of the ESA's Section 7 process, an agency must request information from the USFWS and NOAA Fisheries on whether any threatened and endangered species occur within or near the action area. The agency then must evaluate impacts to those species. If the action may affect any listed species, the agency must consult with the USFWS or NOAA Fisheries to ensure that the project will not jeopardize listed species or destroy or adversely modify their critical habitat. Reclamation did not request a list from NOAA, as there are no threatened or endangered listed species by NOAA above Grand Coulee. Reclamation requested a species list from USFWS on February 7, 2017, and an updated list on March 12, 2019. Reclamation analyzed the impacts of the project on the species listed and concluded that there would be no effect on listed species or their critical habitat with implementation of the proposed action.

4.3 Tribal Coordination and Consultation

Reclamation is proposing to install a stabilization structure at the request of the Spokane Tribe to protect archaeological resources along the Cayuse Cove shoreline from additional erosion. The project is a Section 106 mitigation/treatment designed to meet the stipulations of the FCRPS SWPA. Reclamation and BPA have partnered with the Spokane Tribe and the rest of the Lake Roosevelt Spokane Arm CG during the planning and design of the project and during the preparation of this EA. As a result, project planning and design include the

input of the Spokane Tribe THPO, Spokane Tribe Department of Natural Resources, and Spokane Tribe Preservation Program, in addition to the NPS and SHPO.

Reclamation will conduct ongoing consultation with the Spokane Tribe and SHPO if there are any required changes to project conditions, especially for those with the potential to affect historic properties. In such cases, Reclamation will contract with the Spokane Tribe to provide on-site monitors during project construction to ensure no sensitive resources are adversely affected during the installation process. As part of this process, prior to construction, Reclamation will notify the Spokane Tribe of the intent to proceed and deliver to them the project schedule. If project work encounters archaeological materials during construction, all ground-disturbing activities in the area of the archeological resource must stop. Construction will not resume until the construction crew completes all mitigation measures developed in consultation between Reclamation, the Spokane Tribe, and SHPO. Reclamation will inform the construction crew of the potential presence and recognition of archeological materials and will instruct the crew to avoid areas that may contain archaeological materials.

This page intentionally left blank.

5 References

- Arneson, Kathryn. 2000. Unpublished field notes for BPA, Cayuse Cove Investigations, FY00. On file at the Spokane Tribe of Indians Culture Office Wellpinit, Washington.
- _____. 2005a. Unpublished field notes for BPA, Cayuse Cove Investigations, FY05. On file at the Spokane Tribe of Indians Culture Office Wellpinit, Washington.
- _____. 2005b. Research Design for the Salvage of SIR-R4-0001, Cayuse Cove, Lincoln County, Washington. Submitted to Bonneville Power Administration. On file at the Spokane Tribe of Indians Culture Office, Wellpinit, Washington.
- Bjorklund, Mike. 2015. Personal Correspondence. February 11, 2015.
- BPA, Reclamation, Corps. 2009. Bonneville Power Administration, Bureau of Reclamation, and U.S. Army Corps of Engineers. 2009 Systemwide Programmatic Agreement for Management of Historic Properties Affected by the Multipurpose Operations of Fourteen Projects of the Federal Columbia River Power System for Compliance with Section 106 of the National Historic Preservation Act. On file at U.S. Bureau of Reclamation, Grand Coulee Power Office, Grand Coulee, WA.
- Casserino, Christopher M. 2014a. Draft Summary Report on Field Year 2013 ARPA Permit Conditions, ARPA Monitoring and Erosion Monitoring by the Spokane Tribe Archaeology and Historic Preservation Program. Report on file at Spokane Tribe of Indians Preservation Office, Wellpinit, Washington.
- _____. 2014b. National Register of Historic Places Registration Form 10-900: Cayuse Cove (45LI377). Report on file at Spokane Tribe of Indians Preservation Office, Wellpinit, Washington.
- _____. 2016. 2016 Emergency Data Recovery at Cayuse Cove (45LI377). Spokane Tribe of Indians Preservation Program, Wellpinit, Washington
- DePuydt, Ray. 1999. Archaeological Clearance Survey Form (99LARO11) for the Installation of Swim Beach Safety Booms at Porcupine Bay. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- _____. 2000. Archaeological Clearance Survey Form (00LARO12) for the Porcupine Bay Shore Stabilization Project. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- _____. 2001. Archaeological Clearance Survey Form (01LARO12) for the Porcupine Bay Development Project. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- _____. 2006. Archaeological Clearance Survey Form (06LARO02) for the Porcupine Bay Dock Retrofit. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.

-
- _____. 2012. Archaeological Clearance Survey Form 12laro017 for the Installation of Barbecues at Porcupine Bay. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- Department of the Interior. 1995. U.S. Department of the Interior Departmental Manual Part 512.2. Departmental Responsibilities for Indian Trust Resources. Available at: https://www.usbr.gov/native/policy/DM_Final_12-1-95_512%20DM%202.pdf.
- Department of the Interior. 2000. Secretarial Order 3215 – Principles for the Discharge of the Secretary's Trust Responsibility. Available at: <https://www.doi.gov/sites/doi.gov/files/migrated/cobell/commission/upload/5-4-USDOI-Order-No-3215-Principles-for-the-Discharge-of-the-Secretarys-Trust-Responsibility.PDF>
- Edwards, John. 2017. Traffic Counts (Unpublished). Lake Roosevelt National Recreation Area North District Office. Kettle Falls, Washington.
- Food and Agriculture Organization of the United Nations. 2001. “Environmental Issues, Dams and Fish Migration”. *Dams, Fish and Fisheries: Opportunities, Challenges, and Conflict Resolution. FAO Fisheries Technical Paper 419*. Rome, Italy.
- Harrison, James B. 2013. Final Summary Report on Field Year 2012 ARPA Permit Conditions, ARPA Monitoring and Erosion Monitoring by the Spokane Tribe Historic Preservation Program. Spokane Tribe of Indians Preservation Program, Wellpinit, Washington.
- Harrison, James B. and Christopher M. Casserino. 2015. 2014 Shovel Testing at Cayuse Cove, Spokane River, Washington. Spokane Tribe of Indians Preservation Program, Wellpinit, Washington.
- Hartzell-Scott, Paula. 1994a. *Archaeological Clearance Survey Form (94CODA22G) for the Expansion of the Parking Area Immediately West of the Existing Boat Launch Parking Lot at Porcupine Bay Campground*. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- _____. 1994b. *Archaeological Clearance Survey Form (94CODA23A) for the Expansion of the Porcupine Bay Day Use Parking Area*. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, WA.
- Jones, P.O., Embody, D.R., and Peterson, W.L., 1961. Landslides along the Columbia River Valley, Northeastern Washington: U.S. Geological Survey Professional Paper 367.
- _____. 2008. Indigenous Occupation of Cayuse Cove SIR-R4-0001: Phase II Investigations and Determination of Eligibility, Lake Roosevelt Reservoir Archaeology 2007. Report Produced for BPA and Reclamation Under BPA CRC Contract No. 24464, Amendment 03. Funded by BPA and Reclamation For the FCRPS Cultural Resources Management Program. Submitted to Washington State Department of Archaeology and Historic Preservation, Olympia, Washington. On file at the Spokane Tribe of Indians Culture Office, Wellpinit, Washington.

-
- _____. 2010. Site Assessment and Erosion Monitoring Report: Annual Inspection of Site Condition by the Spokane Tribe of Indians, Lincoln County, Lake Roosevelt National Recreation Area.
- Kiver E. P. and Stradling D.F. 1995. *Geology of the Franklin D. Roosevelt Reservoir Shoreline: Glacial Geology, Terraces, Landslides, and Linements*. Department of the Interior, Bureau of Reclamation, Pacific Northwest Region
- Lake Roosevelt Forum. 2011. *Enjoy Lake Roosevelt's Fishing*. <http://www.lrf.org/Env/Env-History.html>. Accessed September 30, 2011.
- Landers, Rich. 2017. "Landslide blocks Porcupine Bay access possibly for months." *The Spokesman-Review*. April 4, 2017. Spokane, Washington. Retrieved From: <http://www.spokesman.com/stories/2017/apr/04/landslide-blocks-porcupine-bay-access-possibly-for/>.
- McKie, James and David Chance. 1980. An Archaeological Survey of Fourteen Development Areas, Coulee Dam National Recreation Area. University of Idaho Anthropological research Manuscript Series No. 61. Laboratory of Anthropology, University of Idaho. Moscow, Idaho.
- National Park Service. 2000. General Management Plan Lake Roosevelt National Recreation Area. National Park Service. United States Department of Interior. Grand Coulee, Washington. <https://www.nps.gov/laro/getinvolved/planning.htm> accessed 5/15/2017.
- NatureServe. 2011. Bull Trout. NatureServe Explorer: An Online Encyclopedia of Life. Accessed January 8, 2015. <http://explorer.natureserve.org/servlet/NatureServe?searchName=Salvelinus+confluentus>
- Parker, Patricia L. and Thomas F. King. 1998. Guidelines for the Evaluation and Documentation of Traditional Cultural Properties. Second revised edition of formerly National Register Bulletin Number 38. First published in 1990 and first revised in 1992. Washington, District of Columbia: National Register of Historic Places, National Park Service, United States Department of the Interior.
- Riser, J. Lauran. 2011. Archaeological Clearance Survey Form (11LARO14) for the Porcupine Bay Swim Beach Boom and Anchor Repair. Report on file at Lake Roosevelt National Recreation Area North District Office, Kettle Falls, Washington.
- Ross, John A. 1991-1993. An Ethnoarchaeological Cultural Resource Survey of the Spokane Indian Reservation: Phase I-III, Volume XII. Eastern Washington University, Cheney, Washington. Unpublished manuscript on file at the Spokane Tribe of Indians, Wellpinit, Washington.
- Scherer, Nora et al. 2013. Upper Columbia River Recreational Use Survey: Summary of Visitor Characteristics Final Report. Industrial Economics Incorporated Cambridge, Massachusetts.

-
- Spokane Tribe of Indians. 2000. *Annual Report 1998, Part A. Lake Roosevelt Fisheries Evaluation Program, Creel Survey and Population Status Analysis*. Spotts, J.V., J.P. Shields, K.D. Underwood, and T.C. Cichosz. Department of Natural Resources. Prepared for the Bonneville Power Administration, Division of Fish and Wildlife. Portland, Oregon. Project Number 199404300.
- _____. 2006. Salvage Archaeological Investigations at SIR-R4-001, Cayuse Cove, Lincoln County, Washington. Spokane Tribe Archaeology and Preservation Program. Wellpinit, Washington.
- U.S. Army Corps of Engineers. 2017. Joint Aquatic Resource Permit NWS-2017-588. Nationwide permit and associated terms and conditions for the Cayuse Cove bank stabilization project.
- U.S. Census Bureau. 2018. American Fact Finder. Accessed April 2019
<https://www.census.gov/quickfacts/fact/table/wa,lincolncountywashington,US/PST045218>
- USDA NRCS 2017. United States Department of Agriculture. Natural Resources Conservation Service. 2016. Web Soil Survey (WSS).
<https://websoilsurvey.sc.egov.usda.gov/app/HomePage.htm> Accessed on: 2/22/2017
- U.S. Fish and Wildlife Service. 1998. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants, Determination of Threatened Status for the Klamath River and Columbia River Distinct Population Segments of Bull Trout. *Federal Register*. Vol. 63, No. 111.
<http://www.gpo.gov/fdsys/pkg/FR-1998-06-10/pdf/98-15319.pdf>
- _____. 2008. Bull Trout (*Salvelinus confluentus*) Five Year Review: Summary and Evaluation. USFWS, Portland, Oregon. 53 pp.
- _____. 2010. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for Bull Trout in the Coterminous United States; Final Rule. *Federal Register*. Vol. 75, No. 200. <http://www.gpo.gov/fdsys/pkg/FR-2010-10-18/pdf/2010-25028.pdf#page=2>
- _____. 2011. Bull trout (*Salvelinus confluentus*). <http://www.fws.gov/pacific/bulltrout> Accessed October 1, 2011.
- _____. 2014a. Endangered and Threatened Wildlife and Plants, Determination of Threatened Status for the Western Distinct Population of the Yellow-billed Cuckoo (*Coccyzus americanus*), Final Rule. *Federal Register*. Vol. 79, No. 192..
<http://www.gpo.gov/fdsys/pkg/FR-2014-10-03/pdf/2014-23640.pdf>
- _____. 2014b. Endangered and Threatened Wildlife and Plants, Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*). *Federal Register*. Vol. 79, No. 218.
<http://www.gpo.gov/fdsys/pkg/FR-2014-11-12/pdf/2014-26685.pdf>

-
- _____. 2015. U.S. Counties within Washington in which the Yellow-Billed Cuckoo, Western U.S. DPS is known to or is believed to occur. Accessed January 7, 2015.
<http://ecos.fws.gov/speciesProfile/profile/countiesByState?entityId=6901&state=Washington>
- U.S. Geological Survey. 2002. *Vertical Distribution of Trace-Element Concentrations and Occurrence of Metallurgical Slag Particles in Accumulated Bed Sediments of Lake Roosevelt, Washington*. Scientific Investigations Report 2004-5090
<http://pubs.usgs.gov/sir/2004/5090/section2.html>
- Washington State Department of Ecology. 2016a. Washington Administrative Code Chapter 173-201A, *Water Quality Standards for Surface Waters of the State of Washington*, Publication No. 06-10-091. Washington State Department of Ecology, Water Quality Program, Olympia, Washington.
<http://www.ecy.wa.gov/programs/wq/swqs/currEPAapprswqs.html>.
- _____. 2016b. *2016 Washington State Water Quality Assessment*. Washington State Department of Ecology, Water Quality Program, Olympia, Washington.
<http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html>.
- _____. 2017. "RE: U.S. Army Corps of Engineers Reference# NWS-2017-588 Nationwide Permit# 13 for Bureau of Reclamation Cayuse Cove bank stabilization on the Spokane Ann of Lake Roosevelt in Lincoln County." Washington State Department of Ecology, Shorelands and Environmental Assistance Program, Spokane, Washington. Email.
- Whalen, J. 2000. Draft Spokane River Subbasin Summary. Prepared for the Northwest Power Planning Council. November 15, 2000.