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MILL CREEK FLOOD CONTROL PROJECT OPERATIONS AND MAINTENANCE
WALLA WALLA, WASHINGTON

MILL CREEK FLOOD CONTROL PROJECT

Supplemental Environmental Assessment
under the
National Environmental Policy Act of 1970

ADMINISTRATIVE RECORD – DO NOT DESTROY

PROJECT FILE NUMBER: PM-EC-2017-0010

July 2023

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EXECUTIVE SUMMARY

The Mill Creek Flood Control Project (MCFCP) is located in southeastern Washington's Walla Walla County and provides flood risk management and recreational benefits to the city of Walla Walla and adjacent areas. The major components of the MCFCP include the Mill Creek Diversion Dam, an off-stream storage reservoir and dam (Bennington Lake and Mill Creek Storage Dam), and the 7-mile improved Mill Creek channel (stabilized channel), which runs through the city of Walla Walla to the city of College Place. U.S. Army Corps of Engineers (USACE) owns, operates, and maintains both dams, Bennington Lake, the uppermost 1 mile of the stabilized channel, and surrounding lands including Rooks Park and related facilities known collectively as the Mill Creek Project (Project). The Mill Creek Flood Control Zone District (MCFCZD) maintains the rest of the stabilized channel. This Supplemental Environmental Assessment (SEA) pertains only to the USACE-managed project lands.

The largest recorded pre-project flood in Walla Walla County occurred in 1931. To address the need for flood risk management, continuous retaining walls through the city were completed in 1933 and the MCFCZD was organized in 1935 to assume flood management responsibilities. Between 1935 and 1939, the Mill Creek channel through the middle of Walla Walla was constructed by the Works Progress Administration. The president of the Walla Walla Chamber of Commerce, Virgil B. Bennington, lobbied Congress for better flood protection for the city due to ongoing flooding concerns. Congress authorized the Project in the Flood Control Act of 1938 and project construction was completed in 1942.

The National Environmental Policy Act (NEPA) was signed into law in 1970, and the subsequent operations and maintenance Environmental Impact Statement for the project was completed in 1975 (Corps 1975a). Since that time, the operations and maintenance (O&M) of the project has changed, the infrastructure is aging, and environmental concerns have arisen that were not addressed in the original (O&M EIS). In particular, the EIS did not adequately address potential effects to aquatic resources (e.g., fish) and steelhead and bull trout have since been listed for protection under the Endangered Species Act (ESA), and critical habitat has been designated for those species. Current O&M has been found to harm protected steelhead and bull trout. In addition, water quality has become impaired in Mill Creek, and the Project passively contributes to undesirable water quality conditions. In accordance with 40 C.F.R. § 1502.9(d), federal agencies are required to supplement existing NEPA documentation if "(i) The agency makes substantial changes to the proposed action. . .; or (ii) There are significant new circumstances or information relevant to environmental concerns[.]" See also, 33 C.F.R. § 230.13(b). This EA is intended to supplement the O&M EIS by comprehensively incorporating any substantial changes to the O&M of the Project (e.g., levee vegetation maintenance; fish passage improvement construction projects, and updating all applicable compliance requirements established since the original EIS was complete, etc.) and evaluation of any potential significant effects associated with current O&M (e.g., ESA listed species/habitat, water quality, etc.).

During normal operations, which are directed by the Washington Department of Ecology, the natural flow in Mill Creek passes either through or over the diversion dam and downstream through the MCFCP. During flood operations, USACE assumes operational control of Mill Creek flow, which is regulated by diverting water to the storage reservoir. When flood flow is diverted to the reservoir, it passes through the intake canal. Flood diversions are not screened because operating the screens at this water depth would damage the screen motors and allow fish to pass over the screens. If fish are incidentally diverted to the reservoir, they are likely to eventually die.

The USACE has considered alternatives to the current operations and maintenance of the Project that could improve environmental conditions, including those for ESA-listed fish, while ensuring that flood risk management and recreational benefits provided to the public continue. An O&M Supplemental Environmental Impact Statement (SEIS) process was initiated with a Notice of Intent on February 17, 2017 public scoping was conducted from May 21 through June 12, 2017, and a draft SEIS 46-day public comment period was conducted June 8 through July 23, 2018. There were seven alternatives considered in the draft SEIS.

Subsequently, Endangered Species Act (ESA) consultations with the National Marine Fisheries Service and United States Fish and Wildlife Service (the Services) for Mill Creek O&M began in September 2018. Progress on the O&M SEIS document was placed in hiatus while ESA consultations were being conducted. The Services issued Biological Opinions in December 2020 (NMFS 2020 and USFWS 2020; Appendix C). During the two-year period when ESA consultation was taking place for O&M, the USACE continued working on a related Mill Creek General Investigation Feasibility Study and then issued a Finding of No Significant Impact for an integrated Mill Creek Flood Risk Management General Investigation Feasibility Study and Environmental Assessment (GI Study/EA) in September 2021 (Corps 2021), which is incorporated herein by reference which is available upon request.

As part of the GI Study/EA (Corps 2021), the USACE reevaluated the Mill Creek Flood flow diversion trigger. It was determined that a diversion trigger of 1,700 cubic feet per second (cfs) year-round would be the best-balanced operation for flood risk reduction and would have less impact on ESA-listed species than the historic operation diversion trigger of 1,400 cfs year-round. Also, in February 2020 during the Mill Creek O&M ESA consultation process, the largest Mill Creek flood on record to date occurred. This record flood reaffirmed that a higher diversion trigger could be more beneficial to reducing flood risk.

Given the GI Study/EA (Corps 2021) determined that a 1,700 cfs diversion trigger provides the best-balanced operation for flood risk reduction, three alternatives in the draft O&M SEIS addressing different diversion triggers were removed from further analysis. Further, it was determined that a SEA meets NEPA requirements for evaluating the remaining four alternatives. The alternatives include measures pertaining to maintenance, repair, and minor improvements; structural changes to improve fish passage; and downstream flood risk management made by other entities. This O&M

SEA was prepared consistent with the previous NEPA document (i.e., the draft O&M SEIS) with exception that three alternatives related to different diversion triggers were removed. This SEA includes consideration and incorporation, as appropriate, of the public input received through scoping and public review engagements for the draft O&M SEIS.

After a thorough analysis of the effects of the four alternatives on 14 environmental resources (including biological, physical, cultural, and socioeconomic), combined with consideration of recently completed ESA consultations and information gained from the 2020 flood event, the USACE selected a preferred Alternative 3, Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements, which is described more in-depth in Section 3 below. The preferred alternative best satisfies the purpose and need for the proposed action and improves environmental conditions at the Project.

MILL CREEK FLOOD CONTROL PROJECT OPERATIONS AND MAINTENANCE
ENVIRONMENTAL ASSESSMENT

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
APHIS	Animal and Plant Health Inspection Service
BiOp	biological opinion
CAA	Clean Air Act
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
Comp Plan	Lower Snake River Fish and Wildlife Compensation Plan
USACE	U.S. Army Corps of Engineers
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CWA	Clean Water Act
DSAC	Dam Safety Action Class
EA	Environmental Assessment
Ecology	Washington Department of Ecology
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
MCFCP	Mill Creek Flood Control Project
MCFCZD	Mill Creek Flood Control Zone District
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
PFMC	Pacific Fishery Management Council
PIT	passive integrated transponder
PL	Public Law
Project	Mill Creek Project
RPA	Reasonable and Prudent Alternative
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDFW	Washington Department of Fish and Wildlife

CHAPTER 1 - INTRODUCTION

Chapter 1 presents general background information related to the Mill Creek Project, the reason for preparing this Environmental Assessment, and the purpose and need of the proposed Federal action.

The U.S. Army Corps of Engineers Walla Walla District (USACE) has prepared this Supplemental Environmental Assessment (SEA) to update the National Environmental Policy Act (NEPA) compliance for operations and maintenance (O&M) of the Mill Creek Project (Project) because changes in the O&M activities and environmental conditions within the Project area have occurred since the original 1975 Environmental Impact Statement (EIS) (Corps 1975a) was completed. In accordance with 40 C.F.R. § 1502.9(d), federal agencies are required to update existing NEPA documentation if "(i) The agency makes substantial changes to the proposed action. . . ; or (ii) There are significant new circumstances or information relevant to environmental concerns[.]" Also, 33 C.F.R. § 230.13(b). USACE proposes to operate and maintain the Project in accordance with its authorized purposes and in compliance with the ESA and all other applicable treaties, laws, and regulations.

1.1 LOCATION AND OVERVIEW OF THE MILL CREEK FLOOD CONTROL PROJECT AND MILL CREEK PROJECT

The Mill Creek Flood Control Project (MCFCP) is located in Walla Walla County, in southeastern Washington. It begins about 2 miles east of Tausick Way Bridge and ends at Gose Street Bridge, as shown by the orange dots in Figure 1-1. The primary purpose of the MCFCP is to provide protection from floods to the city of Walla Walla and adjacent downstream areas bordering Mill Creek, Yellowhawk Creek, and Garrison Creek, which flow to the west.

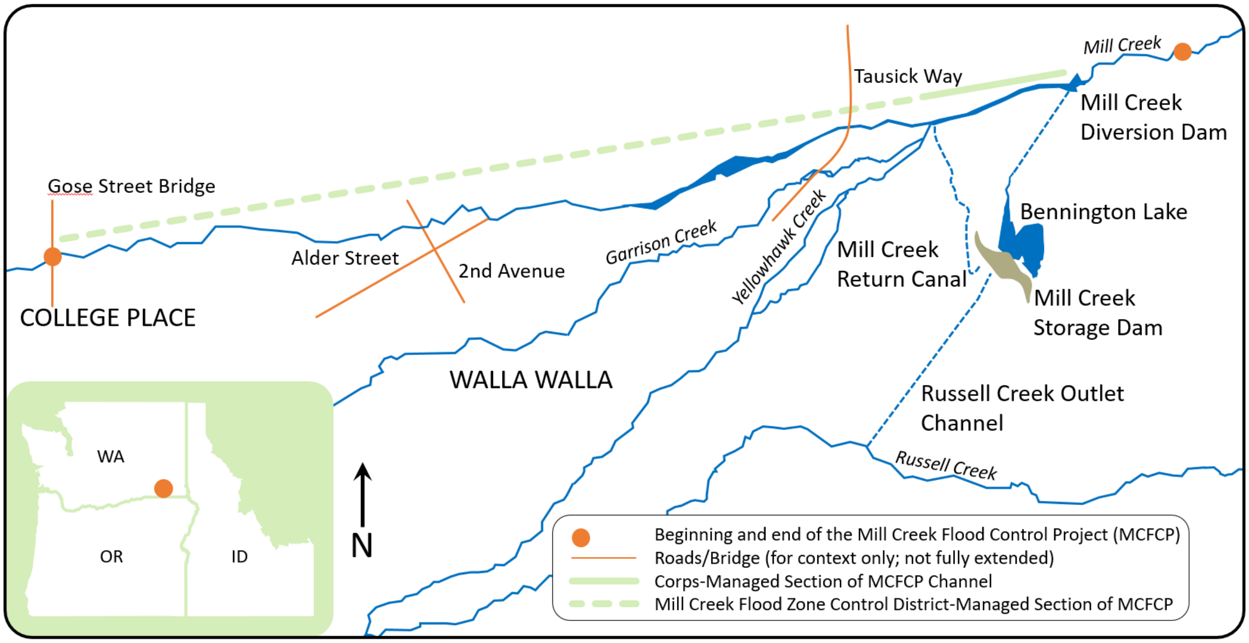


Figure 1-1. Mill Creek Flood Control Project

The major components of the MCFCP include the Mill Creek Diversion Dam, an off-stream storage reservoir (Bennington Lake) and Mill Creek Storage Dam (storage dam), and the Mill Creek channel (stabilized channel), which is approximately 7 miles long. USACE owns, operates, and maintains both dams and approximately 1 mile of the channel, which together are called the Mill Creek Project (hereafter referred to as the Project). The Mill Creek Flood Control Zone District (MCFCZD) is responsible for maintaining the rest of the improved channel downstream of the Project. This SEA only pertains to the Project.

Bennington Lake is located slightly less than a mile south of Mill Creek in the adjacent Russell Creek watershed. Yellowhawk and Garrison Creeks originate from Mill Creek near the downstream end of the Project and flow southwest to the Walla Walla River. Titus Creek also originates from Mill Creek about 1 mile upstream from the Project and reenters Mill Creek downstream from the Project.

Vehicle access to the Project is provided from Reservoir Road via Tausick Way and from Rooks Park Road via Mill Creek Road. Non-motorized traffic can also access the Project via a paved trail.

1.2 MILL CREEK PROJECT HISTORY AND AUTHORITY

Figure 1-2 is a timeline highlighting events related to the Project's authorized purposes and actions related to NEPA and other laws. The Project history is described in this section, and additional information about the NEPA actions are included in Section 1.3.

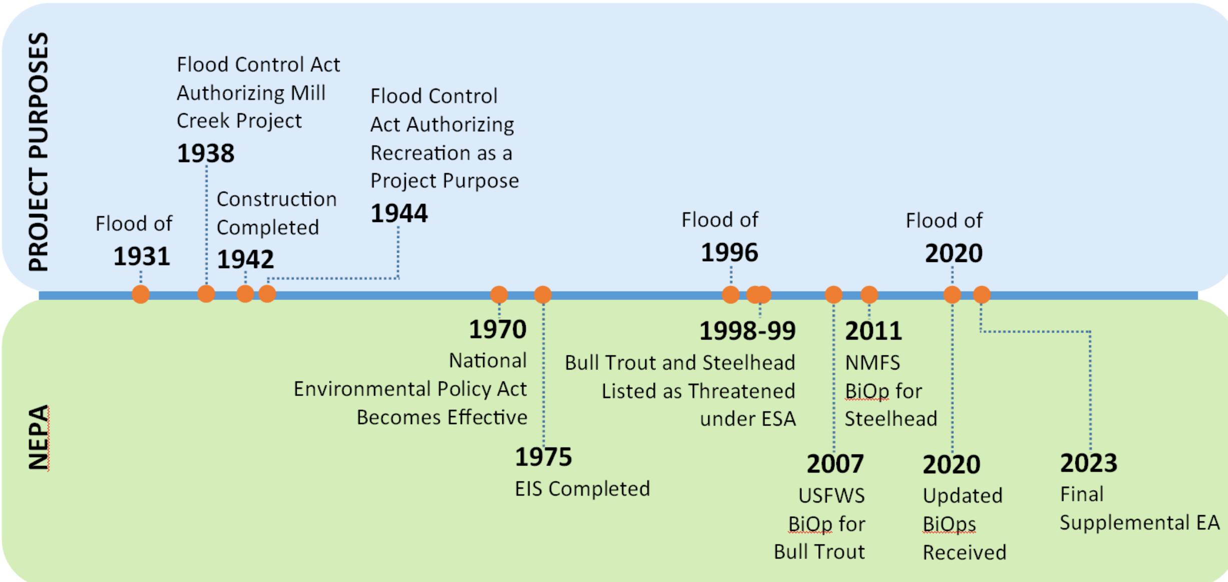


Figure 1-2. Mill Creek Project Timeline
Note: ESA=Endangered Species Act; USFWS=U.S. Fish and Wildlife Service; BiOp=biological opinion; NMFS=National Marine Fisheries Service.

Prior to 1931, flood risk management improvements in Mill Creek were accomplished by local interests (city and county governments and individuals). These improvements consisted of intermittent concrete retaining walls bordering both sides of the channel, mostly within the Walla Walla city limits. In 1931, the largest pre-Project flood occurred for which information is available (flood details and comparison to the 1996 flood are shown in Figure 1-3 at the end of this section). A flood of slightly larger magnitude occurred in February 2020.

To address the need for more adequate flood risk management, continuous retaining walls through the city were completed in 1933. In 1935, the MCFCZD was organized to assume flood management responsibilities. Between 1935 and 1939, the Mill Creek channel from Tausick Way Bridge to Gose Street Bridge was constructed by the Works Progress Administration.

Public concern over the frequent flooding of Walla Walla prompted Virgil B. Bennington, then president of the Walla Walla Chamber of Commerce, to lobby the U.S. Congress for flood protection. The MCFCP was authorized by Congress in 1938 (Public Law [PL] 75-761) (Flood Control Act of 1938) to provide flood risk management for the city of Walla Walla and its adjacent lands. The Act stated:

Name History of Reservoir

The off-stream storage reservoir was called Mill Creek Reservoir from 1938 to 1972, and Mill Creek Lake until 1992. In 1992, the lake was renamed after the late Virgil B. Bennington.

> *The plan for protection of the city of Walla Walla, Washington, and adjacent lands by means of a reservoir and related works, as set forth in House Document*

> *Numbered 578, Seventy-fifth Congress, third session, is approved and for the execution of this plan there is hereby authorized $1,608,000.*

Project construction was completed in 1942. At that time, the Project consisted of the Mill Creek Diversion Dam; the off-stream reservoir, Bennington Lake; and the first division works, which was designed to distribute some of the excess flow into Yellowhawk and Garrison Creeks. A concrete-lined auxiliary outlet channel from Mill Creek Storage Dam to Russell Creek was later added to the Project, along with additional drainage facilities at the toe of the storage dam. Table 1-1 shows the Project improvements and O&M activities that have generally occurred since the Project was completed in 1942. Recent, current or ongoing O&M activities are considered part of the future O&M of the Project and incorporated herein by reference.

Table 1-1. Project Improvements and O&M Activities at the Mill Creek Project

Year	Action
1942	Project construction complete
1944	Lined Russell Creek Outlet Channel with concrete
1948	Lined Mill Creek channel with concrete from Roosevelt Street to Mullan Avenue
1951	Reinforced channel stabilizers with concrete
1956	Installed water flow monitoring station downstream from the diversion dam
1963	Constructed parking area, water system, and comfort stations at Rooks Park
1971	Replaced manually operated gates with power lift gates at diversion dam
1975	Initial Project EIS was completed. Constructed footbridge across Mill Creek at Rooks Park
1981	Rehabilitated the Mill Creek Storage Dam
1981	Rehabilitated Bennington Lake intake canal
	Constructed fish ladders at the diversion dam and the division dam
	Installed cutoff wall to prevent seepage within the Mill Creek Storage Dam
1983	Rehabilitated the Mill Creek Return Canal
	Completed minor rehabilitation of various Project structures
	Completed Phase 2 planting described in Mill Creek Master Plan
1984-86	Rehabilitated the Mill Creek channel
1985	Installed new debris barriers in front of the intake gates at the diversion dam
	Rehabilitated fish ladder in the diversion dam
	Installed barrier wall system in the diversion dam forebay for debris management
1986	Paved bike path
	Placed rocks in channel for fish habitat
1988	Made decision to drain the lake for safety purposes until a thorough investigation of the seepage problem at the storage dam could be completed and evaluated
1989	Examined alternatives to reduce seepage at the lake, including installing liner
1989	Constructed Rooks Park comfort station
1990	Concluded the Project could be operated safely without a liner
1996	Removed silt from diversion dam forebay
1998	Bull trout listed under ESA
1999	Steelhead listed under ESA
2001	Constructed Bennington Lake fish screen
2002	Constructed right bank levee extension
2004	Critical Habitat designated for bull trout
	Began video fish monitoring
2005	Critical Habitat designated for steelhead
2008	Received dam safety rating
2009	Installed Garrison Creek fish screen
2009	Installed electric motors at the diversion dam
2010	Installed diversion dam toe drain
2011	Removed silt from diversion dam forebay
2012	Constructed low-flow channel prototype weirs
2015	Removed vegetation from federally owned portion of levee to improve integrity
2016	Re-compacted and re-sloped federally owned portion of levee

As stated in Section 2-02 of the Water Control Manual for Mill Creek Flood Control Project (hereinafter referred to as the Water Control Manual) (Corps 2006; Appendix A, currently being updated); "The primary purpose of the Mill Creek Projects is to provide the greatest overall protection from floods to the City of Walla Walla and adjacent downstream areas bordering Mill Creek." 33 C.F.R. § 222.5 (Water Control Management), states:

> "Water control plans will be developed for reservoirs, locks and dams, reregulation and major control structures and interrelated systems to conform with objectives and specific provisions of authorizing legislation and applicable Corps of Engineers reports... giving appropriate consideration to all applicable Congressional Acts relating to operation of Federal facilities, *i.e.* ... National Environmental Policy Act of 1969 (Pub. L. 91-190)... (33 C.F.R. 222.5(f)(1))."

Engineer Regulation [ER] 1110-2-240 (Water Control Management) states:

> 2.2.a In general, the goal of water control management is to conform a project's operation to its authorizing legislation, to criteria defined in [USACE] reports prepared in the planning and design of a particular project or system, and applicable congressional acts relating to the purpose of federal facilities or systems...
>
> 2-3 ...e. [USACE] water control management activities shall be carried out in accordance with the [USACE] role as an environmental steward. Thus, all [USACE] water control management activities shall be guided by the [USACE] Environmental Principles in accordance with authorized or approved purposes and comply with the National Environmental Policy Act ... and other applicable environmental laws, executive orders, and regulations.

See also, Engineer Manual 1110-2-3600 (Management of Water Control Systems), dated 10 October 2017.

House Document No. 578, referenced in the Flood Control Act of 1938, proposed to allow for a maximum of 5,000 cubic feet per second (cfs) of flood water to flow in Mill Creek through the city of Walla Walla.

However, by 1967 the results from hydraulic model studies indicated the leveed reaches of the improved channel were not stable for discharges above 3,500 cfs. Also, the natural channel from the Gose Street Bridge to the mouth of Mill Creek had a capacity of only approximately 1,400 cfs before minor overbank flooding and flows in excess of 1,700 cfs could start flooding homes and erode channel banks, roadways, and bridge abutments. (See 1967 Revised Reservoir Regulation Manual, which is incorporated herein by reference). The current Water Control Manual for the Project (Corps 2006; Appendix A) is being updated to include 1,700 cfs as an initial diversion trigger for diverting flood flows into Bennington Lake (Section 3-03), although somewhat higher flows may be tolerated depending on anticipated flood risk.

Under the existing Water Control Manual (Corps 2006; Appendix A, currently being updated), the Project was operated under several Interim Risk Reduction Measures (IRRM) from 2008 through 2017 due to an unfavorable 2008 Dam Safety Action Class (DSAC) rating for Bennington Dam (See, Section 2.2 below). This interim action raised the flow level at which water was diverted to Bennington Lake to 3,500 cfs (with a 2,500-diversion trigger) as a temporary measure to reduce potential major flood risks associated with filling the lake. However, the IRRM operating restrictions were removed in 2017, with operations returning to normal. Recreation was authorized at the Project under Section 4 of the Flood Control Act of 1944 (PL 78-534), as amended by the Flood Control Acts of 1946, 1954, and 1962. The Act allows Federal waters to be open for public use (e.g., boating, fishing, and other recreational purposes) and provides for ready access to and from areas along the shores of the project maintained for general use, when in the public interest. This Act states:

> *The Chief of Engineers, under the supervision of the Secretary of the Army, is authorized to construct, maintain, and operate public park and recreational facilities at water resource development projects under the control of the Secretary of the Army, and to permit the construction, maintenance, and operation of such facilities.*

Approximately 62 acres of land were purchased at the Project as part of the Lower Snake River Fish and Wildlife Compensation Plan (Comp Plan) (Corps 1975b), authorized by the Water Resource Development Act of 1976 (PL 94-587). These lands were transferred to the Project on July 7, 1992, to compensate for the lost habitat and hunter opportunity from construction of the Federal dams on the lower Snake River and should be managed to provide habitat and hunting. In the Mill Creek Master Plan (Corps 2016), these lands are classified as mitigation. No mitigation authority other than that provided by the Comp Plan exists at the Project, and no additional fish and wildlife authority exists at the Project.

1.3 NEPA HISTORY FOR THE MILL CREEK PROJECT

NEPA was signed into law by President Nixon on January 1, 1970, many years after construction of the Project. An EIS was prepared in 1975 for O&M of the Project, rehabilitation of a return outlet to Mill Creek, and raising a portion of the diversion dam embankment (Corps 1975a). The 1975 EIS does not (arguably) contain the level of detail required by the 1978 Council of Environmental Quality Regulations for Implementing the Procedural Provision of the NEPA (40 Code of Federal Regulations [CFR] 1500-1508) or USACE implementing regulations, Engineer Regulation 200-2-2 (Corps 1988), nor adequately disclose compliance with applicable laws, regulations, executive orders and policies.

FLOOD OF
1931

This flood was a result of intense rainfall on saturated ground. A total of 6.65 inches of rain fell at Kooskooskie (a small town 11 miles upstream of Walla Walla). The estimated discharge was 6,000 cfs.

FLOOD OF
1996

Mill Creek watershed was covered with snow, and temperatures reached a low of -25ºF. A rapid temperature rise to about 60ºF melted much of the snow. Then, over an inch of rain fell, melting much of the remaining snow.

BEFORE

Mill Creek Project

- At the height of the flood, the entire Walla Walla business district and a large part of the residential district were flooded.
- There was extensive damage to highways and bridges, railroads, buildings, and city streets.
- Adjacent to the city, losses to farm lands, buildings, and livestock were substantial.

AFTER

Mill Creek Project

- Mill Creek overflowed its banks upstream of the Project and caused major damage to many homes in the upper basin.
- Below the Project, flows were reduced from 6,000 cfs to 3,500 cfs by diverting water to Bennington Lake. The reservoir almost completely filled.
- Only minor flooding occurred within Walla Walla. Major damages were avoided.

Figure 1-3. Flood Events of 1931 and 1996
Photo: USACE

The 1975 EIS did not consider impacts to ESA-listed species because there were no ESA-listed species at the Project at that time, nor were there measures required to address operational impacts, as provided in subsequent biological opinions (BiOp) resulting from ESA consultations with National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS) (together, the Services). The 1975 EIS lacks environmental information necessary to inform decisions related to current and future O&M activities.

USACE has prepared several NEPA documents to address O&M activities and structural and operational changes to the Project since completion of the 1975 EIS. USACE considered preparing a SEIS in 1988 for a proposed liner in Bennington Lake to stop water seepage through the dam, however USACE abandoned the lake lining project because of funding issues and terminated preparation of a final SEIS. Several Environmental Assessments (EAs) have been prepared for various actions at the Project since 1975. Table 1-2 lists the completed EAs. For all other proposed O&M or structural changes at the Project USACE has prepared reports documenting that these types of actions would be excluded from more detailed NEPA analysis. Any NEPA documentation described below, which addresses ongoing/continuing O&M activities, is incorporated herein by reference.

Table 1-2. Completed Environmental Assessments for Mill Creek Project

Date	Project Name
August 1975	Bennington Lake Fish Passage Facilities
July 1984	Mill Creek Farm Type Access Road
June 1995	Mill Creek Rehabilitation Project
June 1996	Mill Creek Right Bank Levee Extension
June 1996	Rehabilitation Project
October 1996	Mill Creek Surplus Land Sale
September 1997	Seepage Relief System Repair Mill Creek
September 2002	Mill Creek Right Bank Levee Extension
September 2011	Office and Maintenance Building Replacement
October 2011	Prototype Low-Flow Channel (3 Weirs)
September 2015	Levee Vegetation Removal and Levee Repair

Since the 1975 EIS (Corps 1975a) was published, two species located within the Project area, Columbia Basin bull trout (*Salvelinus confluentus*) and Middle Columbia River steelhead (*Oncorhynchus mykiss*), have been listed under the ESA. Critical habitat has also been designated in the Project area. The 1975 EIS did not fully address potential effects to these fish (or their habitat) from Project O&M and flood operations. An important decision to be informed by this SEA is how to manage the USACE flood risk management mission/operations while minimizing or avoiding effects to ESA-listed fish and critical habitat. Further, Mill Creek has been identified as impaired for several water quality parameters under the Clean Water Act (CWA) that could be exacerbated by USACE actions.

The Project is now more than 50 years old and is considered a historic property. All of the Project's original structures built in the 1940s are considered contributing resources to the historic Project. These elements include:

- Mill Creek Diversion Dam and associated structures.
- Mill Creek Storage Dam.
- First and Second Division Works.
- Stabilized Channel.

1.4 PURPOSE AND NEED FOR ACTION

The purpose of the proposed action is to continue the O&M of the Project for the authorized purposes of flood risk management, as required by the original Project authorization (P.L. 75-761) and applicable regulations, and recreation (P.L. 78-534), while minimizing or avoiding (to the extent possible) adverse environmental effects to ESA-listed fish and associated critical habitat (such as low-flow channels and fish ladder improvements)and incorporating operational and structural changes.

The action is needed to maintain flood risk management and recreational missions, while protecting natural and cultural resources at the Project, which has aging infrastructure. Changes in the O&M of the Project, and associated environmental effects/concerns, have occurred over time, and were not adequately evaluated in the original 1975 O&M EIS.

Alternative actions to meet the purpose and need were developed. Alternatives considered must: (1) provide greatest overall flood risk management for Walla Walla and surrounding communities; (2) provide public recreation opportunities; (3) comply with applicable Federal and State laws, regulations, USACE policy, and associated implementation guidance; (4) be environmentally acceptable; and (5) be technically feasible.

1.5 NEPA FOR FUTURE MILL CREEK PROJECT ACTIONS

There will be future O&M actions that occur at the Project that have not been identified or evaluated in this SEA, but which fall within the general intent of O&M. The level if NEPA compliance for those future actions would be evaluated on a case-by-case basis. Such actions may be categorically excluded from detailed NEPA analysis, and a record of environmental consideration would be prepared in such cases, confirming no extraordinary circumstances exist. Other future actions may require future EAs to evaluate alternatives and determine if there would be any significant effects on the quality of the human environment. If it is determined there would be likely significant effects an EIS would be prepared.

CHAPTER 2 - MILL CREEK PROJECT OPERATIONS AND MAINTENANCE

Chapter 2 describes the features of the Project and how each is currently operated and maintained. This description of the current O&M provides the baseline for analyzing the alternatives developed in Chapter 3.

2.1 OVERVIEW OF FLOOD DIVERSION OPERATIONS

The analysis provided in this SEA is regarding normal O&M and general (anticipated) flood risk management operations. Unusual (emergency) actions necessary to reduce imminent risk to life or substantial property damages may require alternative environmental compliance procedures..

TERMINOLOGY

The **diversion trigger** is the initial Mill Creek flow that when exceeded will prompt USACE to divert flood water to Bennington Lake. It is currently set at 1,700 cfs, which is typically the starting regulated flow.

Regulated flow is the remaining downstream flow in Mill Creek after flood water is diverted to Bennington Lake. The regulated flow is controlled by the amount of water diverted.

An **emergency** is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action is not undertaken within a time period less than the normal time needed under standard procedures.

During flood events USACE operates the Project to store excess flood water that would otherwise cause flood damage. By reducing flood flows through the city of Walla Walla and adjacent areas, the risk of property damage and loss of life caused by flooding is reduced. USACE operates the Project during such events according to the Water Control Manual (Corps 2006; Appendix A, currently being updated). The Water Control Manual is currently being updated to reflect a recent determination from the GI Study/EA (Corps 2021) that a 1,700 cfs diversion trigger provides the best-balanced operation for flood risk reduction. A 1,700 cfs diversion trigger will be used hereafter in this SEA.

During normal non-flood operations, which are directed by the Washington Department of Ecology (Ecology), the natural flow in Mill Creek passes either through or over the diversion dam and downstream through the MCFCP. During flood operations, USACE assumes operational control of Mill Creek flow, which is regulated by diverting water to Bennington Lake when necessary.

Diversions to Bennington Lake for flood management typically begin when the Mill Creek flow exceeds 1,700 cubic feet per second (cfs) at the U.S. Geological Survey (USGS) Gage 14015000, Mill Creek at Walla Walla, Washington. This flow amount is referred to as the *diversion* *trigger*. The remaining flow downstream of the diversion dam after flood water is diverted is called *regulated flow* (natural flow – water diverted = regulated flow).

Flows above 1,700 cfs are diverted to Bennington Lake until the flood event is over or until the lake elevation reaches established limits. When the lake level exceeds the established limits, the regulated flow can be increased up to a maximum of 3,500 cfs as the flood flow increases. An initial regulated flow of 1,700 cfs passing the Project office gage is used to limit flows in the lower, natural channel reach (below Gose Street Bridge) to approximately natural channel capacity and provide flood risk reduction for the more frequently expected floods (Corps 2006).

The objective is for USACE to keep the regulated flow between 1,700 cfs and 3,500 cfs, to minimize flood damage to the extent possible as described in the Water Control Manual (Corps 2006; Appendix A, currently being updated) .

Potential Downstream Impacts

Downstream impacts at different flows are described below:

1,400 to 1,700 cfs

Downstream of the Gose Street Bridge, which is at the end of the MCFCP, the channel has a capacity of approximately 1,400 cfs. Flows in this range can cause minor overbank flooding, and some channel erosion may occur in the natural channel reach. Flooding of pastureland, with the potential to cause costly property damage and creating safety hazards at bridge crossings, may also occur. Debris accumulation and sediment deposition can increase flooding.

Figure 2-1. Flooding at Property near Last Chance Road Bridge

Flooding occasionally occurs at flows below 1,400 cfs. For example, during the spring of 2017, there were three relatively high-flow events, occurring on March 10 (1,400 cfs), March 16 (1,470 cfs), and March 19 (1,100 cfs). There were no flooding impacts recorded due to the March 10 event; however, as the flows receded, a significant amount of debris accumulated just upstream of the Last Chance Road Bridge, which is 3 miles downstream from Gose Street Bridge. There was flooding and damage to one property during the second and third events due to debris reducing the capacity of the bridge (Figure 2-1).

Above 1700 cfs

On a normal basis, flows above 1,700 cfs begin flooding structures and increasing damage and safety hazards.

3,500 cfs and Above

The maximum channel capacity in some areas through Walla Walla is approximately 3,500 cfs. Flows above this amount can overtop the levees and cause extensive damage within Walla Walla and College Place. Flows above this amount have been modeled to show that they would de-stabilize weirs and potentially breach levees.

Regulating Mill Creek Flows

When Mill Creek flow reaches 1,000 cfs, USACE initiates a multifaceted decision process in accordance with the Water Control Manual (Corps 2006; Appendix A, currently being updated) to determine whether to divert water to Bennington Lake and how much to divert. Factors considered in this process include the following:

- Predicted amount of precipitation.
- Snowpack data.
- Forecasted temperature.
- Ground conditions (i.e., whether it is frozen).
- Probability of another flood before the lake can be drained.
- Increases or decreases in flow levels at upstream USGS Gages 14013000 and 14013700.
- Expected or reported damage to property, structures, infrastructure, etc.
- The amount of water currently in Bennington Lake (e.g., whether it is empty, half full, etc.).

Although this decision process is initiated at 1,000 cfs, a diversion will not actually occur until Mill Creek flow is anticipated to exceed 1,700 cfs. Throughout this report, this threshold is referred to as the diversion trigger, which is also the initial regulated flow amount. Subsequent to the initial diversion trigger, the Water Control Manual (Corps 2006; Appendix A, currently being updated) indicates to increase the amount being diverted as the flood progresses and Bennington Lake fills. In other words, the diversion trigger is only the starting point for diversions. The amount being diverted changes in response to actual conditions and is designed to provide the maximum flood damage reduction possible.

The National Weather Service River Forecast Center provides a river flow forecast for the Walla Walla River at Touchet, Washington (USGS Gage 14018500) and near Kooskooskie, Washington (USGS Gage 14013000). USACE uses the forecasts to predict the potential Mill Creek inflow. Due to the high slope of the stream and watershed, it is very difficult to accurately forecast inflow on Mill Creek.

If a flood event is forecast to be of short duration (less than 6 hours) with a peak inflow less than 2,000 cfs, the regulated flow may be held at 1,700 cfs. However, if the weather forecast and resulting inflow forecast indicate the possibility of a higher flow or longer duration event, USACE will increase the regulated flow up to 3,500 cfs per the Water Control Manual (Corps 2006; Appendix A, currently being updated).

Increasing the regulated flow up to 3,500 cfs would maximize flood risk management benefits to the city of Walla Walla by filling Bennington Lake slower and leaving storage space available for succeeding flood water. However, because increased regulated flow results in increased flooding downstream of the MCFCP, this is a carefully evaluated decision. During flood events, USACE personnel are dispatched to observe flooding and any damages. The reports of downstream damage, coupled with inflow forecasts, could cause USACE to change the volume of water being diverted.

Diversions are coordinated to allow a regulated flow of no more than 3,500 cfs to remain in Mill Creek, while the excess is diverted into Bennington Lake via the intake canal, resulting in relatively short-duration diversions during flood flow. Flow is closely monitored so adjustments can be made during high-flow events. Balancing regulated flow and diversions is carefully analyzed and coordinated by USACE personnel.


Bennington Lake at Sunrise
Source: Corps

Table 2-1 shows the frequency of Mill Creek diversions since 1945. In the nearly 72 years between 1945 and 2017, the total duration of diversions was 519 hours, or less than 22 days.

Table 2-1. Flood Events Requiring Diversions to Bennington Lake

Date	Natural Peak Flow (cfs)[1]	Regulated Peak Flow (cfs)	Duration over 1,400 cfs (hours)[2]
1906	5,200		
1931	6,000		
December 28, 1945	2,900	2,700	21
December 12, 1946	1,700	1,600	--
January 7, 1948	1,700	1,480	--
January 22, 1950	1,800	1,730	--
February 11, 1951	1,840	1,810	--
January 18, 1953	1,700	1,630	28
November 25, 1964	1,822	1,750	3
December 2, 1964	1,738	1,320	4
December 23, 1964	3,300	2,400	50
January 29, 1965	2,810	1,660	77
January 6, 1969	3,317	2,330	53
January 19, 1971	1,940	1,340	39
January 16, 1974	1,690	1,430	--
January 25, 1975	2,370	1,600	16
December 7, 1975	2,360	1,500	24
December 2, 1977	1,744	1,400	8
February 13, 1977	1,601	1,420	6
February 14, 1982	2,050	1,730	15
February 21, 1982	1,740	1,580	24
February 23, 1986	2,050	1,359	8
February 9, 1996	6,350	3,800	48
January 1, 1997	2,640	1,640	18
February 1, 1997	2,550	1,650	13
February 1, 2003	2,220	1,500	24
January 29, 2004	1,840	1,590	14
March 16, 2017	1,470	1,420	5
December 29, 2017	2,030	1,530	21
February 4, 2018	1,570	1,470	5
April 8, 2019	2,600	1,470	120
February 7, 2020	7,450	4,700	58

Notes: [1] Natural peak flow is the highest volume of flow reached during the flood event.
[2] "--" is unknown.

2.2 INTERIM DIVERSION TRIGGER FOR DAM SAFETY

The 1996 flood highlighted some dam safety issues. As a result, an operational restriction was imposed to limit flows into Bennington Lake until Mill Creek flow reached 3,500 cfs (with a diversion trigger of 2,500). This addressed concerns regarding seepage through the right abutment and failure of a toe drain in Mill Creek Storage Dam. In 1998, a new drainage and relief well system was installed and in 2001, a grouting project was implemented for 590 feet of the dam. Following the grouting project, Bennington Lake was tested in 2002 by raising the lake elevation to 1,225 feet for approximately 30 days. This test demonstrated that seepage had been minimized. However, the diversion trigger remained at 2,500 cfs.

A safety assessment of the Mill Creek Storage Dam was conducted in May 2008. The dam received the most severe DSAC rating of “1,” which is classified as “Very High Urgency.” This DSAC rating was primarily due to potential dam seepage and piping issues within the foundation of the dam when Bennington Lake is more than 17 percent full for an extended period of time (elevation 1,214 feet). There is an impermeable concrete wall that does not allow seepage through the dam at this elevation or below.

In October 2009, the DSAC rating was reclassified as a “2” rating, which is “High Urgency.” This reclassification was based on a better understanding of the failure risk and an analysis that showed the risk for dam failure under normal operations was not as high as originally estimated. Upon further study, the DSAC rating was changed in August 2011 to a “3” rating, which means “Moderate Urgency.” This additional study determined that the probability for failure while operating the Project is within tolerable limits and that USACE should continue to utilize the structure when needed to provide flood protection benefits to Walla Walla and surrounding areas.

The operating restrictions were removed in 2017, with operations returning to normal.

2.3 CURRENT OPERATIONS BY PROJECT FEATURE

Sections 2.3.1 through 2.3.7 include descriptions of each of the major features of the Project and an explanation of how they are operated. These sections are further divided into specific components, as applicable.


Source: Corps

In the PDF version of this document, click on the colored dots in Figure 2-2 to access the sections that discuss the major features of the Project. Note that the photos in these sections have a corresponding border color. Click on the "You Are Here" maps in these sections to get back to Figure 2-2.

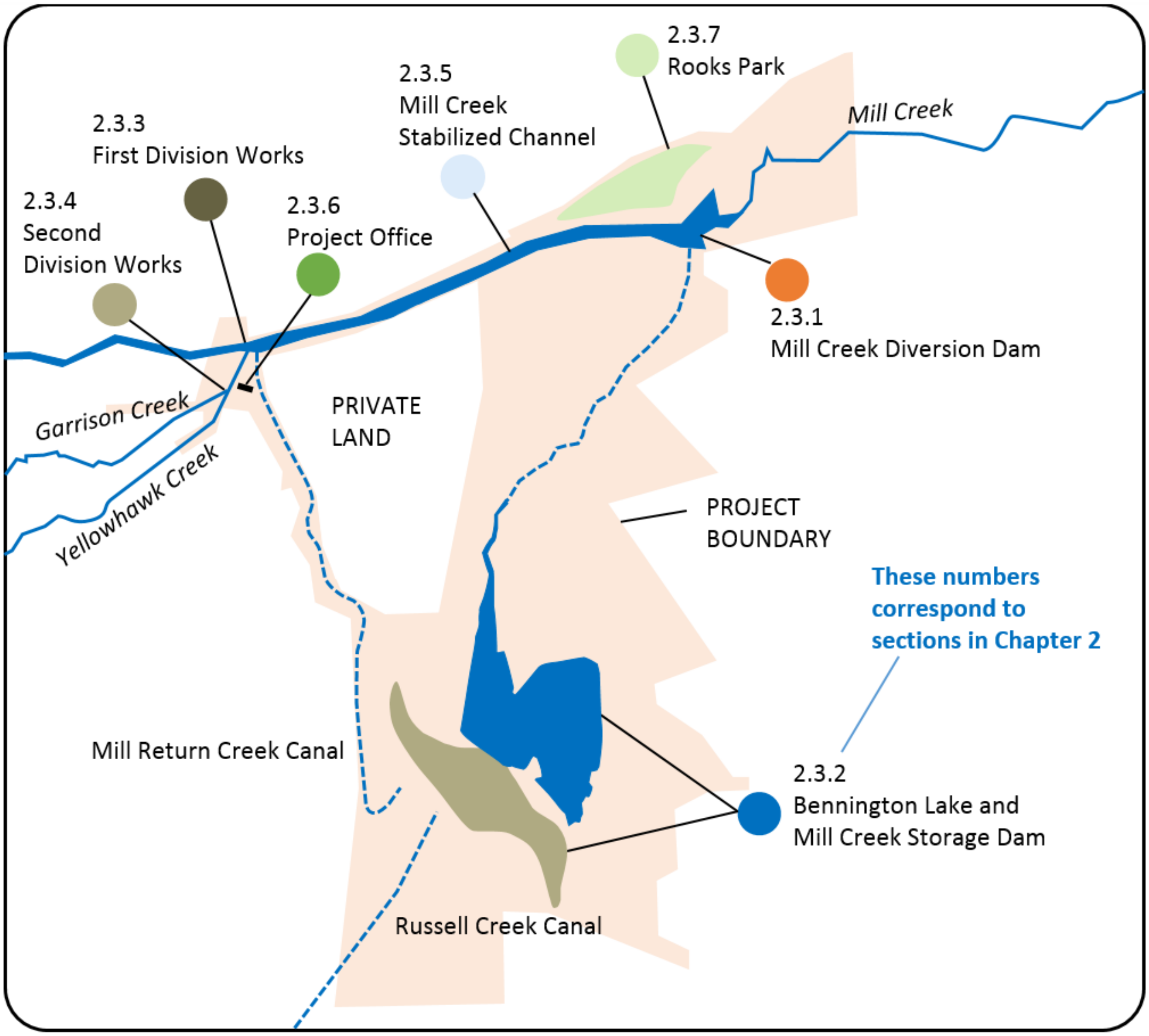


Figure 2-2. Mill Creek Project Overview

2.3.1 Mill Creek Diversion Dam and Associated Structures

The diversion dam is located on Mill Creek at river mile 11.4. Associated structures consist of the low-flow outlet, fish ladder, spillway, intake canal headworks, diversion dam dike, and debris barriers (Figure 2-3).

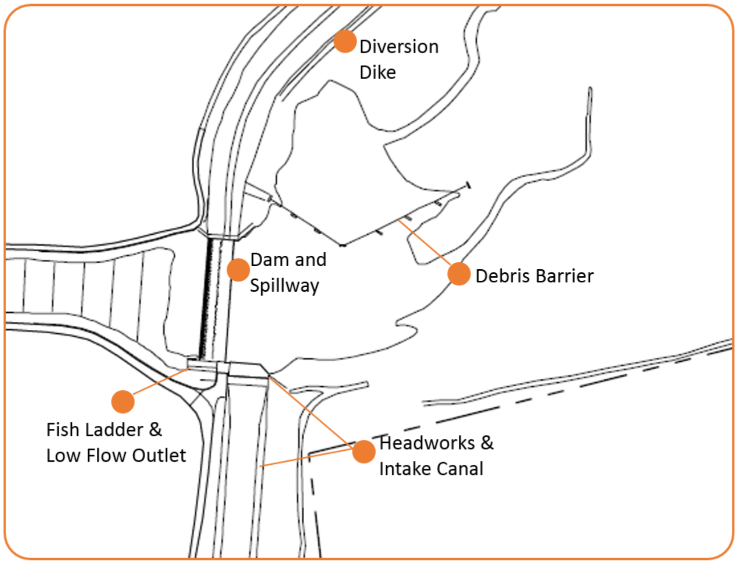


Figure 2-3. Mill Creek Diversion Dam and Associated Structures

Mill Creek Diversion Dam, Low-Flow Outlet, and Spillway

The purpose of the diversion dam is to raise the water level behind the dam during floods to make it possible to divert floodwaters from Mill Creek through the intake canal headworks and intake canal and into the storage reservoir, Bennington Lake. For flow less than 400 cfs, which is the maximum capacity of the outlet, water passes through the dam via the low-flow outlet and fish ladder (Section 2.2.1.2). For flows above 400 cfs, the outlet is closed and water passes over the spillway.

The low-flow outlet is located on the south side of the spillway (Figure 2-4) and passes water through the dam into the stabilized channel. The amount of flow passing through the outlet is controlled by a 6-foot-wide by 8-foot-high automatic gate. A small *stilling basin* (19.5 feet wide, 4 feet long, and 2 feet deep) is located downstream of the low-flow outlet channel and fish ladder. It is used to reduce the energy of the water and helps prevent erosion of the south bank, which is protected by riprap (large rocks).

TERMINOLOGY

A **stilling basin** is a depression below a dam to reduce the velocity and turbulence of the flow downstream of the spillway.

Under normal flow (below 400 cfs), the dam is operated to maintain enough water depth in the forebay to operate the fish ladder. As flow fluctuates, a sensor monitors the water level and adjusts the outlet gate automatically. Normally, the forebay water level varies from elevation 1,254.5 and 1,255.5 feet, well below the top of the diversion dam (elevation 1,261 feet). When flow higher than 400 cfs is forecast to last more than 24 hours, the low-flow outlet and fish ladder gates are manually closed, the forebay fills, and all flow passes over the spillway (if conditions warrant, some of the flow is diverted to Bennington Lake). Large amounts of fine sediment are also trapped upstream of the dam, reducing the supply of sediment downstream.

Figure 2-4. Mill Creek Diversion Dam Low-Flow Outlet

Figure 2-5. Mill Creek Diversion Dam Spillway

The spillway is 250 feet long and 14 feet high, with a crest elevation of 1,261 feet. It is designed to pass 17,000 cfs at a forebay elevation of 1,268 feet. The spillway has a short downstream concrete stilling basin with concrete energy dissipaters, and it discharges into the Mill Creek stabilized channel. The stilling basin and energy dissipaters help prevent erosion directly downstream of the dam. Figure 2-5 shows the spillway in operation.

Situations potentially threatening the function of the low-flow outlet would occur if flow was restricted (e.g., the gate did not operate properly, or debris was lodged under the gate). These situations are not considered emergencies, but would require prompt attention. It is possible that a large log could become wedged under the gate during high flow, which would alter the ability of the Mill Creek Diversion Dam to operate correctly. It may be necessary for a crane to remove any trapped logs from the low-flow outlet.

Diversion Dam Fish Ladder

The Mill Creek Diversion Dam fish ladder (Figure 2-6) was constructed in 1982 to allow better upstream fish passage around the dam. It is located at the south end of the dam, adjacent to, and south of, the low-flow outlet. The ladder replaced the original south low-flow outlet and gate.

Figure 2-6. Mill Creek Diversion Dam Fish Ladder

The ladder is 6.5 feet wide, 86 feet long, and about 6 feet high. A 24-inch-wide by 81-inch-high slide gate at the exit is designed to operate fully open under normal conditions. The exit used to be operated partially closed to minimize debris (e.g., trees, limbs, and brush) problems. However, this method was abandoned because of increased water velocity through the exit, which may have reduced fish passage.

The water passes through seven weirs with 12-inch-wide vertical slots. The ladder is covered by a walkway grating. The grating creates shade over about 50 percent of the ladder. A series of large concrete blocks was added on the north side of the ladder entrance to concentrate the flow to help fish find the fish ladder entrance and create deeper water for improved passage.

The fish ladder is designed to operate at flow less than 400 cfs and at forebay elevations ranging from 1,253 to 1,256 feet. The optimal operation range is between 1,254.5 and 1,255.5 feet, which is maintained automatically by the low-flow outlet gate during normal flows of less than 400 cfs. The ladder is operated year-round, except during maintenance or when flow is expected to exceed 400 cfs. During periods of higher flow, the ladder is manually closed. If flow is projected to reach or exceed 400 cfs for longer than 24 hours, the low-flow outlet is closed, the forebay fills, and water flows over the spillway.

Even if the ladder remained in operation (exit gate left fully open), it would likely be impassable to fish due to the high-water level differences (spillway crest at elevation 1,261 feet and the ladder's normal operating range of elevation 1,253 to 1,256 feet) and the high water velocity through the ladder exit. From 2000 to 2016, flow exceeded 400 cfs from 1 to 26 days per year (Table 2-2). 2017 had higher than average flow, with 12 days above 400 cfs in February and 23 days above 400 cfs in March. 2018-2020 also had higher than average flows with 36, 30, and 28 days above 400 cfs. For comparison, in 1996, a major flood year, there were 18 days above 400 cfs in February and a total of 28 days during the year over 400 cfs.

When Mill Creek flow is below 400 cfs, most of the water is passed through the low-flow outlet. Flow through the ladder varies from about 20 to 42 cfs. As flow recedes, as much water as possible is passed through the fish ladder, and the remainder is passed through, or leaks around, the low-flow outlet gate. Once the risk of needing the lake for flood storage has passed, some screened water (diverted through fish screens) is also diverted to fill Bennington Lake to benefit fish and wildlife and recreation.

Table 2-2. Days Exceeding 400 cfs, by Month2000 through 2020

Year	Jan	Feb	Mar	Apr	May	Jun	Jul-Oct	Nov	Dec	Total
1996		18		4				1	5	28
2000		1			1					2
2001										0
2002	1	3	3	3						10
2003	2	3	9							14
2004	3	2			2					7
2005			1						1	2
2006	4		1	7				2	3	17
2007	2									2
2008				1	1	2				4
2009	7		3	16						26
2010						3			3	6
2011	6		3	7						16
2012	1	2	6	3						12
2013			2	3						5
2014			9						1	10
2015		3								3
2016		1	3							4
2017		12	23	4	1				3	43
2018	12	7	3	12					2	36
2019	6		8	16						30
2020	8	12			4				4	28
Ave	2.5	2.2	3.5	3.4	0.4	0.2	0	0.1	0.8	13.2

Note: Mill Creek flows were measured at the Walla Walla gauging station near the Project office.
Source: USGS 2018

Water levels within the ladder vary from 0.5 to 2 feet at the entrance, to 1 to 1.5 feet at the intermediate weirs, to 1 to 2 feet at the exit. The wide range of water levels at the entrance is caused by the varying amount of flow through the low-flow outlet and the water level in the stilling basin below the entrance.

Fish passage could be restricted if the exit gate did not operate properly or if debris became lodged within the ladder. Another potential problem could occur if the low-flow outlet gate or its control system malfunctioned, resulting in the loss of control over the forebay level and the amount of water passing through the fish ladder.

Intake Canal and Intake Canal Headworks

The intake canal headworks consists of four intakes, each with an 8-foot-high by 18-foot-wide gate (Figure 2-7). The total design capacity of all the gates is 7,000 cfs. The gates are controlled manually, but are powered by electric motors. If power is lost, they can be operated by other means, including by hand.

Figure 2-7. Intake Canal Headworks

The intake canal is 1,800 feet long and lined with concrete (Figure 2-8). The typical channel cross-section is trapezoidal with a 60-foot bottom width and steep side slopes. The last 300 feet of the channel expands to a width of 225 feet before entering a soil and rock channel leading to Bennington Lake. The expanded section has a series of concrete diffuser blocks (Figure 2-9) that dissipate energy to reduce erosion before the water enters the soil and rock channel.

Figure 2-8. Intake Canal (looking toward Bennington Lake)

Repairs were made in 2012 to the area where the concrete portion of the canal ends and the unlined channel begins. Large rock was added to protect against erosion that could have undermined the concrete.

The headworks and intake canal, in combination with the dam, work together to divert water from Mill Creek into Bennington Lake. A small amount of water (up to 30 cfs) is diverted during the spring high flows to benefit fish and wildlife with a conservation pool and during certain high-flow events to reduce flood damages.

Diversions for Fish and Wildlife Propagation and Recreation

After the threat of flooding has passed, but prior to the end of the water right on June 15, USACE, on behalf of the Washington Department of Fish and Wildlife (WDFW), may divert up to 30 cfs from Mill Creek to fill Bennington Lake for public recreation, which includes fishing for trout and other fish stocked by WDFW and others. Flow up to 30 cfs is passed down the intake canal until the lake reaches an elevation of 1,205 feet. This typically takes 10 to 15 days to complete. Then only enough water is diverted to maintain the lake level at 1,205 feet until flow in the creek declines to 40 cfs. This is only necessary if the lake has not already been filled by winter and early spring flood flow. Water diverted purposely to benefit fish and wildlife for recreation is less turbid than flood flow.

Figure 2-9. Diffuser Blocks in the Intake Canal to Dissipate Energy

Figure 2-10. Rotating Drum Fish Screens

Recreation diversions pass through two rotating drum fish screens (Figure 2-10) installed in front of the easternmost intake gate. The screens were installed in 2001 by USACE and WDFW to avoid entraining ESA-listed fish into Bennington Lake when it is filled for public recreation.

The screens are each approximately 8 feet wide and 7.5 feet in diameter and can pass up to 30 cfs. They are designed to operate with a water depth from about 4.9 feet to 6.4 feet (65 percent to 85 percent of the height of the screen). The screens can only operate when the forebay is at or below 1,255.5 feet (and flows less than 400 cfs).

Operating the screens with a water depth greater than 6.4 feet (over 85 percent of the height) would damage the screen motors and could cause fish to be pinned against the screens and then carried over the screen.

TERMINOLOGY

Stoplogs are beams placed across a channel, typically made of wood, concrete, or steel, to adjust the water level or flow by adding or removing individual beams.

Removable trash racks (Figure 2-11) are located about 10 feet upstream of the rotating drum fish screens. These closely spaced metal bars prevent debris from damaging the screens. *Stoplogs* downstream of the screens ensure proper flow through the screens.

An overhead crane is used to raise the screens for safe storage when flow rises above 400 cfs and for maintenance. The trash racks and stoplogs are also removed when flow rises above 400 cfs.

Figure 2-11. Trash Racks in front of Rotating Drum Fish Screens

Flood Diversions

When Mill Creek flow is between 1,700 cfs and 3,500 cfs, flow can be diverted to Bennington Lake through the intake canal headworks and down the intake canal, which has a maximum capacity of up to 7,000 cfs. In the rare occurrence that the lake is unable to take in any more flood water, the intake canal gates would be closed so that no more water is added (Section 2.1 provides additional information about flood diversions).

Earthen Dike (Forebay Dike)

The north earthen dike forms the northern boundary of the Mill Creek Diversion Dam and confines water to the main channel. The dike extends upstream 2,200 feet from the north end of the spillway (Figure 2-12). The top of this embankment varies in elevation from 9 to 19 feet higher than the spillway.

Figure 2-12. Mill Creek Diversion Dam Forebay with Debris Barrier

Debris Barriers

Two debris barriers in the forebay help keep debris from damaging or plugging Project components. The first debris barrier is a 550-foot-long, steel crib and cable structure (Figure 2-12) that captures many of the floating logs. Figure 2-13 is a photo that was taken in 2011 when the forebay was being cleaned. The bridge in the photo, which provided temporary access to the area no longer exists. The second debris barrier is a 90-foot-long steel panel fence located at the intake canal headworks. It helps limit large debris from clogging the gates and plugging the rotating drum fish screens in the intake canal headworks. There is also a measurement gage on this structure that shows the water surface elevation.

Figure 2-13. Mill Creek Diversion Dam Forebay Debris Barrier

The failure of a debris barrier could cause a large amount of debris to plug the low-flow outlet, fish ladder exit, intake canal headworks, and bridges in the concrete portion of the channel, which would cause severe interference with flow control and fish passage.

Although the first debris barrier is designed to catch the majority of the large floating debris, it is important that both barriers be monitored closely during a major flood event. If a significant amount of debris is bypassing the barriers, then the Mill Creek Diversion Dam forebay area and downstream structures (e.g., first division works, covered channel sections, and bridges) need to be checked more frequently during the flood event.

2.3.2 Bennington Lake and Mill Creek Storage Dam

Bennington Lake is an off-channel, flood storage reservoir (Figure 2-14) with a surface area ranging from about 20 to over 200 acres, and a depth ranging from about 10 to 80 feet. The surface area is approximately 52 acres at the recreational lake elevation of 1,205 feet.

Figure 2-14. Bennington Lake and Dam

The storage dam was constructed with compacted soil. It is 3,200 feet long with a 20-foot width at the crest and 800-foot width at the base, and it is 125 feet high with a crest elevation of 1,270 feet.

The intake tower (Figure 2-15) is located in the lake near the storage dam. It is used to release water from Bennington Lake into the Mill Creek Return Canal and the Russell Creek Outlet Channel to evacuate the reservoir and make space available for a future flood event. Water above elevation 1,212 feet enters the intake tower over two weirs to a 54-inch sloped sluice gate inside the tower. When the water elevation is below the crest of the weirs, water enters the intake tower through a 48-inch vertical sluice gate (elevation 1,187 feet) to the 54-inch sloped sluice gate.

Figure 2-15. Bennington Lake Intake Tower

The 54-inch sluice gate controls the inlet leading to a 42-inch outlet conduit that extends through the dam. Discharge from the 42-inch outlet conduit is controlled by a Howell-Bunger® and butterfly valve system at the downstream toe of the dam. The Howell-Bunger® valve controls flows entering a 36-inch conduit that connects to the Lower Valve House and discharges into Russell Creek Canal. The butterfly valve controls flow entering a 42-inch conduit that connects to the Upper Valve House and discharges into Mill Creek Return Canal. The 42-inch conduit at the Upper Valve House is only functional when pool elevations are above 1,212 feet.

Normal operation of Bennington Lake occurs when the lake is below elevation 1,212 feet (overflow elevation of the intake tower). The recreational lake elevation is 1,205 feet. All valves and pipes are closed to maintain the recreational lake elevation as long as possible. Evaporation and seepage can cause the lake to fall to an elevation of about 1,185 feet (20 surface acres) by the end of summer. Each fall, the lake is drained via the Russell Creek Canal to enable inspection and maintenance of the intake tower.

When Mill Creek flow exceeds 1,700 cfs, floodwaters are diverted to Bennington Lake to the maximum allowable level (1,265 feet, or about 225 surface acres). If the lake rises above elevation 1,212 feet, water can be released from the lake through the intake tower to the Mill Creek Return Canal. If the lake elevation does not reach, or falls below 1,212 feet, water is released through the Russell Creek Outlet Channel. In an emergency situation, above elevation 1,212 feet, both the return canal and the outlet channel could be used at the same time, and if the lake elevation is higher than the Mill Creek elevation at the diversion dam, water could be drained back to Mill Creek using the intake gates and spillway. The lake should not be maintained above 1,235 feet for more than 15 days to limit high water pressures at the toe of the dam. Water must be rapidly released to below elevation 1,235 feet, even if some downstream flood damage could occur.

Threats to the function of the Bennington Lake outlet works consist of non-operating valves that do not allow proper flow distribution; loss of electricity; and loss of communication, such as telecommunications needed for effective emergency operations.

2.3.2.1 Mill Creek Return Canal

The Mill Creek Return Canal (Figure 2-16) is about 1-mile long and includes various sections of shotcrete-lined open channel, corrugated metal pipe, and unlined (earthen) open channel. The canal is designed to carry a flow of up to 190 cfs. Water discharges from the canal into Mill Creek just upstream of the first division works and Project office.

Figure 2-16. Mill Creek Return Canal

The canal is used to return water to Mill Creek in a controlled manner when releasing water from Bennington Lake after flood diversions have filled the lake to an elevation above 1,212 feet. This occurs about every 5 to 10 years on average; however, the last time the return canal was used was 20 years ago in 1997 after a flood event. It was also used in 1996, 2019, and 2020.

Emergencies that could threaten the function of the Mill Creek Return Canal are bank failure, excessive erosion at the outlet into Mill Creek, and debris blocking the channel.

2.3.2.2 Russell Creek Outlet Channel

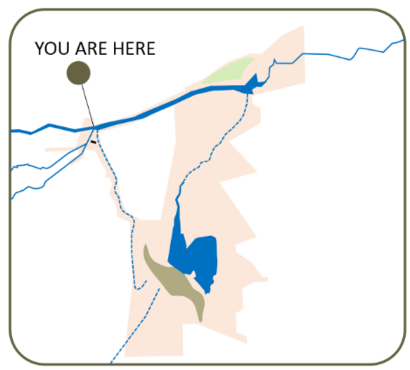
The Russell Creek Outlet Channel (Figure 2-17) is a 7,300-foot-long, concrete-lined, open channel, with a design discharge capacity of 250 cfs. The channel discharges into Russell Creek, a tributary of Yellowhawk Creek, about 1.25 miles from the Mill Creek Storage Dam.

Figure 2-17. Russell Creek Outlet Channel

The outlet channel is used to drain the lake in a controlled manner for annual maintenance and to send water to Russell Creek after flood diversions have filled Bennington Lake to an elevation above 1,212 feet. The Russell Creek Outlet Channel was last used for flood diversion in 1996 to release floodwaters from Bennington Lake.

Emergencies potentially threatening the functionality of Russell Creek Outlet Channel are bank failure, excessive flooding to Russell Creek downstream, and channel blockage due to debris build-up.

2.3.3 First Division Works



The first division works is a water control structure on Mill Creek, located just north of the Project office at river mile 10.5 where Mill Creek diverges into the Yellowhawk/Garrison canal.

The first division works structure was originally constructed for flood risk management purposes. As originally designed, 1,400 cfs of flood water could be diverted from Mill Creek into Yellowhawk Creek (900 cfs) and Garrison Creek (500 cfs). In 1964, the Project's Water Control Manual (Corps 2006; Appendix A, currently being updated) was revised to prohibit further use of Yellowhawk or Garrison Creeks for flood risk management purposes because of development and associated encroachments along these creeks. Yellowhawk and Garrison Creeks now have a flow capacity of about 60 cfs and 10 cfs, respectively.

Currently, the first division works structure is used for Ecology directed diversion of non-flood flow from Mill Creek to Yellowhawk and Garrison Creeks for non-flood purposes, including improving fish habitat and providing irrigation water to meet downstream water rights. The first division works includes a dam (referred to as the division dam) with four vertical lift gates, a fish ladder on Mill Creek, and a headworks to the Yellowhawk/Garrison canal with a fish passage slot on Yellowhawk Creek. The components of the first division works and their operations are described in the following paragraphs.

Figure 2-18. Dam at First Division Works

Figure 2-19. Yellowhawk/Garrison Canal Headworks

Division Dam

Each vertical lift gate on the division dam (Figure 2-18) is 25 feet wide by 2 feet high. When the gates are closed (lowered), they create a 2-foot-high weir that raises the water level to divert water through the Yellowhawk/Garrison canal headworks, while excess flow passes over the lift gates and through the fish ladder.

The gates can be raised above the division dam's bridge deck during flood operations. The opening created by all the gates being fully raised is 96 feet wide by 6 feet high.

Headworks

The headworks (Figures 2-19 and 2-20) is a concrete structure with three intakes, located just south of the vertical lift gates. The center intake includes a 14-foot-wide by 6-foot-high gate.

Gates completely seal off the left intake, which was once used to help pass floodwaters into the Yellowhawk/Garrison canal. The right intake is also covered by a gate, with the exception of a 16-inch-wide slot to allow for fish passage. The bottom of the slot is at the same elevation as the stream bottom. A water depth of 1 to 3 feet at the slot creates corresponding water velocities ranging from about 8 to 14 feet per second.

Fish Ladder

A fish ladder was constructed at the first division works on the right (north) bank of Mill Creek in 1982 (Figure 2-21). The ladder is 8 feet wide, 40 feet long, and 6 feet high. The three-step ladder has an 18-inch-wide vertical slot entrance, 21-inch-high intermediate weir, and 18-inch-wide vertical slot exit. A slide gate at the exit is 18 inches wide by 36 inches high and, when fully open, provides an open slot for optimal fish passage. Design capacity was 15 cfs, but a later analysis (Corps 2011) indicated that, with operational adjustments, the ladder can pass as little as 3.8 cfs during low-flow and 20.7 cfs during high flow of 400 cfs or more. This ladder was replaced with a new ladder that meets fish passage criteria in 2020.

Figure 2-20. Yellowhawk/Garrison Headworks (looking upstream)

The ladder provides upstream fish passage when all four vertical lift gates are in the fully lowered position for diverting water into the Yellowhawk/Garrison canal. USACE conducts weekly visual inspections of the ladder for debris accumulations year-round and twice weekly during the fish passage period (late January to mid-June).

Yellowhawk/Garrison Canal

The Yellowhawk/Garrison canal (Figure 2-22) is approximately 500 feet long and 30 feet wide and extends from the first division works to second division works, where it splits into Yellowhawk and Garrison Creeks (Section 2.3.4). The banks of the canal are well vegetated, and a footbridge (Figure 2-23) crosses the creek between the parking lot and the Project office. The canal flows through two culverts beneath Reservoir Road before terminating at the second division works.

Figure 2-21. Division Dam Fish Ladder

Figure 2-22. Yellowhawk/Garrison Canal

Figure 2-23. Yellowhawk/Garrison Footbridge

First Division Works Operations

As described below, when flow is below 400 cfs, Ecology has the responsibility for flow regulation, and the Ecology watermaster directs the amount of water diverted into the Yellowhawk/Garrison canal in order to provide flow for fish and fish habitat. During flood events, USACE operates the first division works to minimize flooding downstream areas along Yellowhawk and Garrison Creeks.

Mill Creek Flow Less than 400 cfs

When Mill Creek flow is below 400 cfs, USACE operates the first division works according to a Memorandum of Understanding between USACE and Ecology (or as requested by Ecology) to maintain adequate flow for fish and fish habitat in Yellowhawk Creek. The division dam vertical lift gates are lowered (closed) to fill the forebay, and the headworks is adjusted to allow approximately 30 cfs into the Yellowhawk/Garrison canal. Further adjustments are made to maintain a minimum of 0.9 foot (~ 25 cfs) in Yellowhawk Creek. Any remaining flow in Mill Creek is passed down Mill Creek through the division dam, with 10 cfs maintained in the fish ladder.

When Mill Creek flow is between 40 cfs and 70 cfs, USACE does not make any gate changes at the first division works that would cause flow to change more than 5 cfs. When Mill Creek flow is between 10 cfs and 40 cfs, fish downstream of the division dam may become trapped or are in danger because flows are too low and temperatures are too high. In an attempt to address this concern, USACE manages flow (rapid, temporary flow changes), as outlined in the Fish Passage Plan for Mill Creek Project (hereinafter referred to as Fish Passage Plan) (Corps 2007). The Yellowhawk/Garrison headworks is operated to decrease Mill Creek flow by 5 cfs in the morning and increase flow by 5 cfs in the evening. This fluctuation is intended to provide a signal to fish downstream of the division works dam to move from that area before it becomes too warm for them.

When flow in Mill Creek downstream of the division works dam falls below 10 cfs, the 5-cfs fluctuation is discontinued, and a 6-inch low-flow restrictor plate is installed in the fish ladder exit. All flow is directed to the fish ladder in an attempt to improve passage at that location. During the summer low-flow season, however, the slide gate at the exit is sometimes used to partially close off the ladder to divert more water to the canal.

Mill Creek Flow from 400 to 1,700 cfs

Although flooding officially exists at the Project when natural flow in Mill Creek exceeds 1,700 cfs, flood risk management operations actually begin when Mill Creek flow exceeds 400 cfs. When flow exceeds 400 cfs, the USACE raises (opens) the two center vertical lift gates of the division works dam and maintains flow to Yellowhawk Creek at 0.9 foot (~25 cfs). When flow on Mill Creek exceeds 1,000 cfs, the USACE opens all four vertical lift gates of the division dam and continues maintaining flow into Yellowhawk Creek at 0.9 foot (~25 cfs).

Mill Creek Flow above 1,700 cfs

When flow in Mill Creek exceeds 1,700 cfs, the USACE assumes control of all flow on Mill Creek, Yellowhawk Creek, and Garrison Creek for flood risk management purposes. USACE maintains flow to Yellowhawk Creek at 0.9 foot unless a lower flow is determined necessary due to flooding impacts downstream.

Unexpected Flooding at Flow below 400 cfs

In the event unexpected flooding somewhere downstream occurs or debris accumulations cause overbank flooding, USACE would reduce the flow to Yellowhawk and Garrison Creeks to minimize flooding. This would continue until the emergency has passed, or as otherwise directed by Ecology.

2.3.4 Second Division Works

The second division works is located at the downstream end of the Yellowhawk/Garrison canal, about 500 feet from the first division works and Mill Creek. It consists of a control structure that divides the flow between Yellowhawk and Garrison Creeks.

2.3.4.1 Garrison Creek Fish Screen

TERMINOLOGY

A **fish screen** is a barrier across a stream to allow water to pass, but keep fish from entering.

After determining Garrison Creek did not provide adequate passage for migratory fish, a stainless steel fish screen (Figure 2-24) was added to the Garrison Creek intake in 2009, based on a cooperative partnership between several agencies: the Walla Walla County Conservation District, Bonneville Power Administration, WDFW, the

Washington Salmon Recovery Funding Board, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and USACE (Corps 2007). The screen was designed with an appropriate flow velocity through the screen to prevent small fish from being pinned against the screen. The screen includes an automatic cleaning system with a sweeper and an air bubbler to reduce debris and ice build-up.

Figure 2-24. Garrison Creek Screen at the Second Division Works

The fish screen cleaner is operated automatically by sensing water levels on the upstream and downstream sides of the screen. When the cleaner senses a difference of two or more inches, the sweeper cycles automatically across the screen. The screen air bubbler also activates when the sweeper is operating. The bubbler operates 24 hours per day, seven days per week when air temperatures are 20°F (-6.7°C) or less.

2.3.4.2 Yellowhawk Weir and Fish Passage

A weir with wooden stoplogs is located at the second division works where Yellowhawk Creek starts (Figure 2-25). The weir is designed to create enough water depth for the Garrison Creek fish screen to pass sufficient water volume and work properly.

Figure 2-25. Yellowhawk Stoplogs

There is a roughened channel (made of boulders) (Figure 2-26) to create small steps for fish to ascend to transition between Yellowhawk Creek and the pooled water. The roughened channel keeps water velocity low enough for fish to navigate. On the downstream side of the screen, a small slide gate regulates flow into Garrison Creek.

Figure 2-26. Roughened Channel

There are no operations involved with the roughened channel. The roughened channel is inspected weekly for the presence of any blockages such as limbs or logs.

The Garrison Creek slide gate is manually operated at the direction of Ecology.

2.3.5 Mill Creek Stabilized Channel

The purpose of the Mill Creek stabilized channel is to protect creek banks and increase the capacity of Mill Creek to pass high flow (design capacity is 3,500 cfs). The portion of the stabilized channel (Figure 2-27) operated and maintained by USACE begins at the Mill Creek Diversion Dam and extends for about one mile to the boundary of the Federal footprint, just downstream of the first division works. This area also includes the north and south levees lining the channel. The MCFCZD is responsible for O&M of the lower 6 miles of the Mill Creek stabilized channel, from the Project boundary to Gose Street.

Figure 2-27. Mill Creek Stabilized Channel

Figure 2-28. Low-Flow Weirs

The Project portion of the stabilized channel has a trapezoidal cross section, with a varying bottom width and banks with a 1-foot vertical rise for every 2-foot horizontal side slope. Levees on both sides of the channel have minimum top widths of 13 feet and have large, angular riprap on the streamside slopes. The riprap covers a layer of wire-bound rock.

Levee vegetation consists primarily of grass and small shrubs. The channel bottom width transitions from 250 feet at the Mill Creek Diversion Dam to 120 feet just a few hundred feet downstream of the dam. The 120-foot channel width continues to the first division works where it transitions to 65 feet wide. Concrete-capped stabilizing weirs spanning the entire channel width, spaced 60 feet apart, control the slope of the channel. The Project portion of the stabilized channel contains 84 weirs; 79 between Mill Creek Diversion Dam and the first division works, and five downstream of the first division works.

Water depth downstream of the stabilizing weirs varies from about 1 foot to up to 5 feet in some areas. Several large rocks were placed in the channel for fish habitat in 1986 and replaced in 1997. Prototype low-flow weirs (Figure 2-28) were installed in three of the channel-spanning weirs in 2012 to test the concept. These low-flow weirs are intended to improve fish passage conditions during low-flow periods. They appear to function as designed (Corps 2013b).

The north levee runs along the north bank (right bank looking downstream) of the Mill Creek stabilized channel (Figure 2-29) between the Mill Creek Diversion Dam and the division dam. The levee is surfaced with a paved pedestrian/bike trail. There is a covered picnic shelter adjacent to the division works dam.

Figure 2-29. North Levee

Figure 2-30. South Levee

The south levee (Figure 2-30) runs along the south bank (left bank looking downstream) of the stabilized channel between the Mill Creek Diversion Dam and the division works dam. There is also a restroom about halfway between the Project office and the Mill Creek Diversion Dam.

USACE owns a narrow strip of land along the south side of the channel that extends 1,350 feet from the toe of the levee just upstream of the Mill Creek Return Canal to an area upstream (about river mile 11). Lands south of the USACE boundary in this area are privately owned. Near the Project office, the levee contains an area with a parking area.

The Mill Creek stabilized channel and levees are static structures. Operation is dependent on natural stream flow and operation of the diversion dam and first division works. Water depth over the weirs within the Project area ranges from about 6 feet during flood events to less than 1 inch during the summer.

Situations that could threaten the function of the Mill Creek stabilized channel include bank failure, debris restrictions, and excessive flow overtopping the levees. The levees are regularly inspected for seepage or damage, and during high-flow events levees are inspected at least daily.

2.3.6 Project Office and Associated Structures

The current Project office (Figure 2-31) was completed in 2013 to replace the original 1939 office. The current office is used by Project personnel and also provides areas for storage of supplies and equipment. There are four other buildings nearby: a storage and maintenance/chemical storage building, shop, equipment shed, and pump house. All structures, equipment, and chemicals used or stored in this area meet all Federal and State regulations. The area also includes a parking area, public restroom, lawn area, bulletin board, and drinking fountain.

Figure 2-31. Project Office

2.3.7 Rooks Park and Related Facilities

Rooks Park is a day-use park located along Mill Creek near the north levee. The 18-acre park has a large grassy area with shade trees, a pond, a playground (Figure 2-32), picnic tables, a large picnic pavilion (Figure 2-33), barbecue grills, trails, benches, a restroom, drinking fountains, a public parking lot, and a park host recreational vehicle camping site. The lawn area has a sprinkler irrigation system supplied by water from a well located in the maintenance building.

Figure 2-32. Rooks Park Play Area

The pond at Rooks Park is part of the original Mill Creek channel and is supplied by water from Mill Creek, which flows in a small channel through the park. The water entering the park from Mill Creek is screened to prohibit fish from entering the channel and pond. However, this screen does not meet current screening criteria. Flow is maintained through the pond year-round to avoid stagnation and provide nuisance vegetation abatement. Flow returns to Mill Creek through a culvert with a flapper valve.

A paved trail (Figure 2-34) on the north levee of Mill Creek passes through the park. Visitors use the trail, but motor vehicles are prohibited. A footbridge crosses Mill Creek just downstream from the diversion dam, providing pedestrian access between the north and south levees.

Figure 2-33. Rooks Park Pavilion

The domestic well and pump located in Rooks Park supplies drinking water to the park host, a drinking fountain, as well as the restroom. The drinking water system and restroom require seasonal start-up and shutdown. The restroom at the park is on a septic system.

Figure 2-34. North Levee Paved Trail

2.4 CURRENT MAINTENANCE

This section describes the current maintenance activities of each component of the Project. It is not an exhaustive list of all current maintenance activities. Minor activities such as general administration; equipment purchases; custodial actions; erosion control; painting; and repair, rehabilitation, or replacement of existing structures and facilities are not expected, individually or cumulatively, to have significant effects on the quality of the human environment. Such minor maintenance activities are not specifically listed, but are intended to be covered by this EA.

Lowering the Diversion Dam Forebay

Some maintenance activities require lowering the diversion dam forebay. Lowering the forebay to an adequate level can only occur when Mill Creek flows are less than 100 cfs (as measured at the USGS gage near the Project office). To draw down the forebay for maintenance, the low-flow outlet radial gate is opened slowly over a 2- to 3-hour period to lower the water level below the intake canal headworks gates.

USACE typically limits these annual maintenance activities to a single, 8-hour period in January or February (forebay lowered to 1,252 feet), and a 5-day period in August or September during low flows (forebay lowered to 1,248 feet). Occasionally, there are other times that the forebay may need to be lowered for short periods of time, on an as needed basis. The table below lists the maintenance activities that require the forebay to be lowered, as well as frequency and the time of year these maintenance activities occur.

Table 2-3. Maintenance Requiring the Forebay to Be Lowered

Maintenance Activity	Frequency	Timing
Forebay – sediment removal	Every 5-10 years	August/September
Low-Flow Outlet Gate – gate maintenance	Every 6 months	August/September
Low-Flow Outlet Gate – cable maintenance	Annually	August/September
Low-Flow Outlet – remove debris blocking low-flow outlet	Periodically	As needed
Fish Ladder Exit – install and maintain fish monitoring equipment	Annually	Installation: January/February Removal: August/September
Intake Canal Headworks – gate maintenance	Annually	August/September
Intake Canal Headworks – cycle gates	Biannually	January/February August/September
Intake Canal Headworks – sediment removal	Annually	August/September
Rotating Drum Fish Screens – sill maintenance	Annually	June

Pest Management

All pest management activities indicated in the sections below will be conducted in accordance with the Integrated Pest Management Plan (Corps 2013a) and its associated NEPA evaluation. These activities include manual, biological, and chemical pest management, including vegetation management and rodent control. Any problem rodents or unwanted wildlife are removed through a contract with the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), and can involve lethal removal if necessary. Any aquatic applications of pesticides are also in accordance with the Aquatic Pest Management Plan BiOps (NMFS 2017 and USFWS 2017).

2.4.1 Mill Creek Diversion Dam and Associated Structures

Mill Creek Diversion Dam and Forebay

Normal maintenance of the dam consists of visually inspecting the concrete for cracks and cleaning sediment deposits from inside the dam. The relief drain holes in the downstream face of the dam are also cleaned annually, which is done in the late summer because it is a relatively dry time of year. Mowing/grazing in the forebay area occurs during low water periods.

Large amounts of sediment can accumulate in the forebay of the diversion dam, and periodic removal is required (every 5-10 years). Sediment removal requires the forebay to be lowered. Work is performed with heavy equipment, such as bull dozers, excavators, loaders, and dump trucks.

The method of removing large amounts of sediment in the future would depend in part on the volume of material (typically 5,000-8,000 cubic yards) and its distribution. Disposal of materials would be on USACE lands at Mill Creek, until no longer feasible. USACE last cleaned out the forebay in 2018 and material was disposed of by the contractor.

Future clean-outs would likely be necessary after floods or other large flow events when debris and sediment accumulate in the forebay.

Mill Creek Diversion Dam Spillway

Spillway maintenance consists of annual visual inspections of the concrete and energy dissipaters. Repairs are performed using standard industry concrete repair materials and standard tools.

The riprap immediately downstream of the concrete spillway and stilling basin is repaired by placing large rocks with heavy machinery when the area is dry. The 1996 flood displaced some of the rock, which was replaced in 2013 to repair the eroded area. This type of streambed erosion below the spillway is uncommon and has only occurred once. The area of repair varies depending upon the flows, but typically less than an acre of work is needed.

Low-Flow Outlet

The low-flow outlet gate is cleaned, greased, and inspected for damage every 6 months. Cables are lubricated annually. This work requires the forebay to be lowered and is typically performed in August or September during low flows. Periodically, lowering the forebay is also required to remove debris blocking the low-flow gate. As mentioned at the beginning of Section 2.4, the low-flow outlet gate is used to lower the water in the forebay to perform these maintenance activities, as well as other types of maintenance (Table 2-3).

The low-flow outlet is the lowest point of the forebay, which remains clear and does not need to be cleaned.

Mill Creek Diversion Dam Fish Ladder

The entire ladder is visually checked for debris several times each week unless the ladder is closed. If debris is found during an inspection, it can sometimes be removed without dewatering. The ladder is dewatered to check for and remove debris each month (twice each month from March through May). The walkway grating over the ladder partially obstructs the view into the ladder. Dewatering the ladder is the most efficient way to detect and remove debris. Fully closing the ladder is required for personnel to safely enter. Some water remains in the ladder even when the exit is fully closed. The fish ladder exit gate control is cleaned and greased every 6 months.

Lowering the forebay may be required in order to install and maintain fish monitoring equipment at the ladder exit. USACE typically installs the equipment in January or February and removes it in August or September during low flows if the equipment wasn’t removed earlier. Forebay lowering is also periodically required to remove debris blocking the fish ladder opening.

Intake Canal and Intake Canal Headworks

The concrete of the intake canal headworks and the canal are visually inspected each year for cracks and deterioration. Repairs are made with standard concrete repair materials.

Intake headworks gate maintenance includes regular inspection for debris and damage. Annual maintenance includes oiling the gears used to raise and lower the gates and lubricating the gate cables. The gates are cycled (fully opened and closed) twice each year. The forebay must be lowered in advance of these maintenance activities. Once the water level is below the bottom of the intake gates, the gates can be tested and maintained without releasing water down the canal. This work is typically performed in August or September during low flows.

Sediment can also interfere with operation of various gates at the intake canal headworks, and annual removal is required. The forebay must be lowered to complete this action. A small loader and dump truck are used to remove sediment on the concrete entryways of the intake canal headworks and in the intake canal, and sediment is disposed of in an upland site below the storage dam. Debris removal does not always require lowering the forebay. Project personnel attempt to make debris removal coincide with spring and late summer maintenance periods, but additional days are occasionally required.

Rotating Drum Fish Screens

Prior to annual installation of the rotating drum screens, the forebay is drawn down to elevation 1,248 feet to clean the sills below the drums if needed. A small, walk-behind loader is used to clean the sills of excessive mud and debris. Maintaining the screens also includes daily checks for debris and damage when the screens are in use. The fish screen gear box is greased with standard industry grease while screens are operating. The crane gear unit and cables that raise and lower the screens are lubricated after June 15 each year while the crane is over the concrete decking.

Diversion Dike

Dike surfaces, the drain at the base of the dike, and groundwater level sensors are visually inspected monthly, with more frequent inspections occurring during flood flows. Annual dike maintenance includes removing woody vegetation, mowing, grazing, and repairing any abnormalities on the dike within 50 feet of its base. Some repairs could require use of a backhoe or dump truck. Burrowing rodents that have potential to damage the dike are removed from the area.

Debris Barriers

Debris accumulates in the forebay during high flows. After every high-water event of greater than 400 cfs, crews remove debris piled against the crib and cable barrier. To reduce potential riparian zone and stream impacts, this barrier is only accessed by foot. A riparian zone is the interface, or boundary between land and a stream.

Normal clean-out activities include removing debris by hand and using chainsaws to cut large debris from the debris barrier and to cut larger debris into smaller lengths. All debris is moved downstream of the barrier and left in place until high water carries it downstream through the low-flow outlet or over the spillway.

Debris lodged against the shear wall is dislodged with a 20-foot pole and allowed to pass through the low-flow outlet or over the spillway. A mobile crane could be used from the top of the dam to remove debris that is too large to remove by hand and would not require the forebay to be lowered.

Turnbuckles on the debris cable barrier are tightened each year. This does not require the forebay to be lowered since the turnbuckles are not under water when this action is taken.

Mowing/grazing occurs approximately 30 feet upstream and downstream of the debris barrier in order to ensure the barrier does not collect too much sediment.

2.4.2 Bennington Lake and Dam

The concrete portion of the intake tower is visually inspected each year and repaired, if necessary. Repairs may require heavy equipment.

Gate valve maintenance includes cleaning, lubrication, and fully opening and closing the valves to insure they work properly. To accomplish this, USACE begins to slowly drain Bennington Lake beginning on November 1 by releasing water through Russell Creek Outlet Channel. This usually takes about 2 to 4 weeks. The amount of water released varies and depends on existing flows in Russell Creek. USACE does not release more than 20 cfs.

The gear box is checked each year for contamination and oil level. The gear box is also visually inspected for leaky seals. When inspecting the oil in the gear box, it is filled with standard gear oil at the oil reservoir inside the gatehouse on top of the dam. The oil is changed approximately every 5 years, or when necessary.

At the Bennington Lake recreation area, the drinking water system and irrigation system require seasonal start-up and shutdown. This consists of turning water on and off, setting air pressure in the tank that pressurizes the water system, and opening and closing the ultraviolet sterilization system. The restroom is open year-round, and is on a septic system. The septic tank is treated monthly with bacterial additive and requires occasional pumping. The boat ramp requires periodic inspections and repairs.

Mill Creek Return Canal

The concrete structures and canal lining are visually inspected every six months for cracking or other deterioration, and any necessary repairs are made when the channel is dry. The drain piping under the canal is also visually inspected at least annually, or more often, if necessary, to ensure it drains freely. Maintenance of the canal also requires vegetation removal. Herbicide treatment is typically applied in May through June, on an as-needed basis, and does not occur every year. Grass in the canal near the Project office is regularly mowed. Woody vegetation is cut and removed using chainsaws and mowers. Sediment is removed when needed using large equipment (e.g., walk-behind loader, skid steer, backhoe, or dump truck) where required.

Russell Creek Outlet Channel

The outlet works has a butterfly valve, gate valve, and Howell-Bunger® valve. These valves must be greased and fully cycled each year, using standard hydraulic oil in the gear box and standard grease using grease guns. All concrete structures and the canal lining are inspected for cracking or deterioration every 6 months and are repaired as necessary. Channel maintenance requires chemical control of vegetation in and along the channel. Woody vegetation is cut and removed as needed. Any excess sediment build-up in the canal is removed when needed using large equipment.

2.4.3 First Division Works

First division works maintenance includes visually inspecting and cycling all gates fully opened and fully closed every 6 months. Cables are lubricated once each year. Concrete is visually inspected annually, and cracks and deteriorated areas are patched with a mortar sealant (standard concrete repair materials). The radial gate is opened periodically, especially after high flows, to remove floating debris, which is then transported downstream.

First Division Works Fish Ladder

Ladder maintenance includes greasing the exit gate annually using standard industry grease, lubricating the gate stem on occasion, and inspecting for debris several times per week. In order to remove any debris potentially blocking fish passage, the fish ladder is entered from downstream and any debris is removed by hand.

Yellowhawk/Garrison Canal

Woody debris is removed from culverts in the Yellowhawk/Garrison canal under Reservoir Road as needed. Debris must also be removed periodically from an area near the USACE downstream boundary on Yellowhawk Creek to maintain clear passage for fish and accuracy on the Yellowhawk Creek staff gage. Debris from this area and the culverts under Reservoir Road is removed using hand tools.

2.4.4 Second Division Works

Maintenance at the second division works primarily involves visually inspecting the concrete each year and repairing cracks and any deteriorated concrete with a mortar sealant. The untreated timber bulkheads that create the Yellowhawk forebay are also visually inspected annually. While in use, the gates are visually checked for debris and damage.

Sediment accumulates in the forebay upstream of the Garrison Creek fish screen. The sediment is removed every five years at the same time as concrete inspections. Removal is accomplished using a backhoe and dump truck.

Garrison Creek Fish Screen

The cable for the cleaner brush on the Garrison Creek fish screen must be greased each year with standard industry grease. Large debris that accumulates on or near the fish screen must be removed manually, using hand tools or heavy equipment.

Yellowhawk Weir and Fish Passage

Maintenance of the Yellowhawk Creek fish ladder is seldom necessary. Occasionally, limbs or small logs need to be removed from the exit.

2.4.5 Mill Creek Stabilized Channel

Within the Project boundary, the channel bottom is checked for exposed rebar, which is removed with a Project tractor and winch. The levees and channel are visually inspected each month for rodent damage (primarily beaver and gopher) and erosion. If erosion damage is detected, repairs are made by compacting gravel into the eroded area with heavy equipment. This is usually done in the summer when flows are minimal. In the event of levee damage due to high flow, repairs are made as needed. In emergency situations, this could occur while flow is still high.

The channel and levees are also visually inspected for excess vegetation. Excess vegetation is cut and removed with both power (e.g., mower, hedge trimmer, chainsaw) and hand tools, as needed. Larger woody debris is removed with chainsaws and heavy equipment. USACE also controls excess vegetation with goat herds (Figure 2-35) or herbicides. Such treatments are managed in such a way as to avoid or minimize potential environmental effects under separate environmental reviews. A licensed applicator applies herbicides approved for use near water by both EPA, Ecology, and USACE (2017) Aquatic Pest Management Plan. Spraying is normally done in May or June (sometimes as late as September), and on an "as-needed" basis.

Figure 2-35. Managing Vegetation with Goats

Culverts and flapper gates are visually inspected regularly, as well as inspected by a remotely operated camera when the creek is dry. The valve stem threads are cleaned and greased once a year. The flapper gates are manually operated, and obstructions are removed every 6 months.

North and South Levees

Woody vegetation is removed from the north and south levee slopes annually. The landside of the levees are mowed as needed, usually twice during the summer. The south levee restroom and bulletin board are repainted annually. The restroom is cleaned on a regular basis, and the holding tank is pumped as necessary.

USACE is required to follow all applicable Engineering Regulations, policies, etc., established for the management of levee vegetation. Engineering Technical Letter 1110-2-583, Engineering and Design: Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (Corps 2014), is the governing standard for vegetation on all flood risk management projects for which USACE bears responsibility for design, operation, maintenance, inspection, or certification.

A levee maintenance project, which started in 2015, included removing the tree roots and other organic material from the top 2 feet of the landside levee surface, replacing and compacting the soil, and then planting native grass. The levee would be mowed as needed to facilitate inspections.

2.4.6 Project Office and Associated Structures

Maintenance includes normal upkeep to Project buildings and grounds, such as mowing and lawn care, painting structures, and de-icing sidewalks and the footbridge. The office septic system requires occasional pumping, approximately every five years. The septic tank is treated monthly with a bacterial additive.

2.4.7 Rooks Park and Related Facilities

The lawn is mowed each week during the growing season and fertilized annually. The paved trail and parking lot require chemical vegetation maintenance on the gravel shoulder. A licensed applicator applies an approved herbicide. Trees posing public safety hazards within the park are trimmed or removed.

The paved trail is marked with a broken yellow centerline and repainted on an as-needed basis. Damage to the trail is repaired as needed. The lines and speed bumps in the paved parking lot are repainted as needed.

The footbridge is periodically inspected visually for structural integrity. The footbridge boards are pressure treated and do not require water sealant. Broken or missing boards and bolts are replaced as needed.

Other wooden and metal facilities at Rooks Park are painted or water-sealed as needed. The synthetic wood benches do not require sealant.

The restroom and park host septic systems require occasional pumping, approximately every five years. The septic tanks are treated monthly with a bacterial additive.

2.5 CURRENT O&M ACTIONS NOT ADDRESSED IN THE 1975 EIS

The following current/ongoing O&M activities were not adequately addressed in the 1975 EIS. Many of the actions listed below are referenced in the O&M descriptions in this chapter. All of these actions are included in the alternatives discussed in Chapter 3.

General

- Updating pest management (invasive species) actions to ensure compliance with requirements.
- Performing levee vegetation maintenance – maintaining removed woody vegetation from the levee prism and the 15-foot clear zone beyond the originally designed toe of the levees.

- Periodically removing and disposing of sediment from the forebay of the Mill Creek Diversion Dam to provide room for flood flow.
- Debris barrier maintenance.
- Allowing swimming in the reservoir.
- Field mowing to encourage new growth of grasses and to help manage invasive plants.
- Mowing and cutting to manage invasive plants such as teasel, poison hemlock, and Russian olive.
- Repairing/replacing riprap below the weirs. Periodic channel survey would be required to determine the extent of any damages.
- Creating/maintaining Christmas tree piles for wildlife habitat.
- Performing trail repair (minor grubbing, fill placement, installation of grade control structures).
- Managing property boundaries and fencing.
- Removing debris from the Russell Creek canal.
- Performing road, levee, and parking lot maintenance.
- Using an existing Memorandum of Understanding with Ecology to continue to allow diversion of flow down Yellowhawk Creek during low-flow periods.
- Harvesting willow cuttings from the diversion dam forebay for stream restoration projects in other nearby areas.

Minor Fish Passage Improvements

- Conducting fish salvage with in the Project, as necessary, during O&M activities that have the potential to strand fish.
- Performing in-water work during identified in-water work windows.
- Taking specific precautions to minimize effects of operating vehicles in or near streams.
- Conducting fish passage monitoring.
- Continuing to operate and maintain the Project fish screens.
- Striving to make recreational diversions to Bennington Lake when those diversions will not reduce flow in the stabilized channel below 40 cfs.
- Managing streamflow during low flow to improve fish passage.
- Lowering the diversion dam forebay to remove debris that could be blocking fish passage.

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CHAPTER 3 - FORMULATION OF ALTERNATIVES

Chapter 3 presents measures related to the purpose of the proposed action. These measures, which include the current O&M actions presented in Chapter 2, were used to develop alternatives. This chapter also presents brief summaries of potential impacts of each alternative discussed in Chapter 4.

NEPA requires Federal agencies to develop and evaluate a reasonable range of alternatives. USACE used the following steps to develop the alternatives presented in this EA.

PURPOSE AND NEED

The purpose of the proposed action is to continue the O&M of the Project for the authorized purposes of flood risk management, as required by the original Project authorization (P.L. 75-761) and applicable regulations, and recreation (P.L. 78-534), while addressing (to the extent possible) adverse environmental effects and avoiding or minimizing effects to ESA-listed fish and associated critical habitat, and incorporating operational and structural changes.

The action is needed to maintain flood risk management and recreational missions, while protecting natural and cultural resources at the Project, which has aging infrastructure.

1. The purpose and need for the proposed action were identified.

2. Changes and improvements to the Project, defined as measures, were developed to potentially address the purpose and need. Measures do not need to completely address all aspects of the purpose and need, but have to reasonably contribute to fulfilling them. Measures considered were actions that could be taken by USACE or by other agencies or individuals.

3. Measures were organized into three categories: (1) Project Maintenance, Repair, and Minor Improvements; (2) Major Fish Passage Improvements; and (3) Downstream Flood Risk Management by others (this category is outside the USACE authority, but in accordance with NEPA, USACE is required to consider alternatives outside of its authority if they satisfy the action's purpose and need.)

4. Technical effectiveness and environmental acceptability were used to identify measures used to formulate alternatives.

5. A reasonable range of alternatives was developed by assembling effective and acceptable measures into groups that would meet the purpose and need.

Sections 3.1 and 3.2 provide detail descriptions of the steps listed above.

3.1 MEASURES

Various measures were developed during development of the draft O&M SEIS to address the purpose and need of the proposed action. Measures were based on input from a multidisciplinary team, operational needs of the Project, and public and agency scoping comments. All measures, except Measure 2, Diversion Trigger, have been retained for analysis in this O&M SEA.[1] Remaining measures (i.e., Measures 1, 3, and 4) fall into one of three categories: (1) Project Maintenance, Repair, and Minor Improvements; (2) Major Fish Passage Improvements; and (3) Downstream Flood Risk Management by Others. Table 3-1 presents an overview of the measures, which are described in Sections 3.1.1 through 3.1.4. The measures represent either no change to current actions or a change to current actions. Numbering of measures/submeasures from the previous draft O&M SEIS have been retained for consistency.

Table 3-1. Overview of Measures

Measures		
Project Maintenance, Repair, and Minor Improvement Measures	**Major Fish Passage Improvement Measures[1]**	**Downstream Flood Risk Management by Others Measures**
MEASURE 1a **No Change** – Maintain existing O&M actions with no additional Project maintenance, repairs, and minor improvements.	MEASURE 3a **No Change** – Maintain existing fish passage actions.	MEASURE 4a **No change** – Non-Federal organizations do not implement new downstream actions to reduce flood damage potential.
MEASURE 1b **Change** – Maintain existing O&M actions with additional Project maintenance, repairs, and minor improvements.	MEASURE 3b **Change** – Implement major fish passage improvements (low-flow channel, and passage improvements at both diversion dam and first division works).	MEASURE 4b **Change** – Non-Federal organizations implement new downstream actions to reduce flood damage potential.

3.1.1 Project Maintenance, Repair, and Minor Improvement Measures

This section describes measures related to Project maintenance, repairs, and minor improvements. Some of these projects were completed, as noted below, under separate environmental review since this NEPA process for the Project began.

[1] Measure 2, Diversion Trigger, has been removed given the GI Study/EA (Corps 2021) determined that a 1,700 cfs diversion trigger provides the best-balanced operation for flood risk reduction.

MEASURE 1a

No Change – Current O&M actions with no additional Project maintenance, repairs, and minor improvements.

Measure 1a consists of the current ongoing actions that occur at the Project as described in Chapter 2, including some actions that were not discussed in the 1975 EIS. A list of these actions is provided in Sections 2.3, 2.4, and 2.5. No additional maintenance, repair, and minor improvement actions would be conducted. Only ongoing actions would be implemented. Minor ongoing O&M actions (e.g., general administration, equipment purchases, custodial actions, erosion control, painting, and repair, rehabilitation or replacement of existing structures and facilities) are not expected (individually or cumulatively) to have significant effects on the quality of the human environment. Such minor ongoing O&M actions are not specifically identified, but this category of actions is intended to be generally addressed by this EA as known ongoing O&M activities.

MEASURE 1b

Change – Current O&M actions with additional Project maintenance, repairs, and minor improvements.

Measure 1b includes current ongoing O&M actions (Measure 1a) and the following additional maintenance, repair, and minor improvement actions, which are outside of routine actions that have been performed in the past:

General

1. <u>Automatic Gates at Reservoir Road and Rooks Park</u>. Automatic access gates would be installed where manual gates are currently located. This would enforce closure times, reduce after-hours vandalism, and remotely control access when needed for flood response or other emergencies. Local emergency services and adjacent farmers would be given appropriate access.

2. <u>Maintenance Yard Expansion</u>. The maintenance yard area would be expanded because the existing one is too small for the amount of equipment required to meet the Project mission. Currently, some equipment and materials have needed to be placed outside of the fenced area, making them susceptible to vandalism or theft. The existing well house within the yard would be left in place. There are several utilities that would need to be located and avoided.

3. <u>Performing Maintenance on Yellowhawk and Garrison Creeks</u>. This action includes removing overgrown vegetation in the division dam tailrace and on the banks of Yellowhawk and Garrison Creeks within the Project to allow better access for inspection. Sediment removal from the channel would be conducted as needed. Beaver dams and other fish passage barriers would be removed. This maintenance would include in-water work.

4. <u>Yellowhawk/Garrison Creek Forebay Cleanout</u>. There is sediment accumulation at the second division works. Buildup of silt and reed canary grass will eventually clog the fish screen and other outlets. The silt and vegetation would be removed periodically as needed. Heavy equipment would be used to remove the material. The material would

be disposed of near the Russell Creek outlet channel in an area previously cleared for this use. This action would include in-water work.

5. Repair Reservoir Road. Reservoir Road is in disrepair with cracking and pitting on the surface. A 1.3-mile section of the road would be chip sealed or resurfaced. The Bennington Lake parking lot would also be improved with a hard surface to reduce future maintenance. This project was completed in 2020.

6. Repair 42” Concrete Cylinder Pipe to Mill Creek Return Canal. Cracks have been found in the 500-foot-long, 42-inch-diameter pipe that extends from the lake to the return canal. Cracks and damage may cause problems from leakage during lake dewatering after a flood. The pipe would be repaired or replaced.

7. Repair Return Canal Conduit Deficiencies. The outer, protective coating on the 54-inch-diameter, underground pipe that is part of the Mill Creek Return Canal is cracked and peeling. One section, about 35 feet from the downstream end, has a damaged section with a hole through the concrete covering. The pipe would be repaired.

8. Return Canal Bank Armor Rehabilitation. The Mill Creek Return Canal does not currently have sufficient capacity (at least 190 cfs) near the Project office. Full use of the canal as designed could flood the office building. The canal has reduced capacity due to sedimentation and sloughing side slopes. Woody vegetation is now present and must be removed. A 120-foot section needs to be built up to prevent overtopping. This work would restore the designed channel capacity. This work was completed in 2018.

9. Return Canal and Russell Creek Canal Expansion Joints Rehabilitation. The joint sealant in some of the expansion joints in the return canal and the Russell Creek canal is missing or pulled out of the joints, and some of it is cracked. The expansion joint sealant would be replaced where it is damaged or missing. The return canal work was completed in 2018. The Russell Creek canal work is still pending.

10. Jones Ditch as Side Channel Habitat. Jones Ditch is an irrigation canal that passes through a culvert in the south levee between the diversion dam and the division dam. The waterway has potential for year-round fish habitat. The intake gate would be modified so that water would be diverted constantly and consistently. Some habitat restoration work may also be conducted within the ditch. The ditch’s culvert under Reservoir Road may need to be replaced to allow better fish passage conditions for ESA-listed fish. Some in-water work would occur.

11. Jones Ditch Culvert Replacement or Relining. The Jones Ditch culvert has several leaks in the bottom of the pipe. The culvert through the south levee would be replaced or relined. Some in-water work would be required to isolate the work area from Mill Creek.

12. Screen Jones Ditch Culvert. If Jones Ditch is not used as fish habitat, USACE would screen the intake to exclude fish from entering the ditch. This action would require in-water work.

13. Food Plots for Pollinating Insects. Plants beneficial to pollinating insects would be planted in multiple areas around the Project where appropriate to improve habitat conditions for pollinators.

14. Benches and Shelters. Additional benches and weather shelters would be constructed for recreationists. Work would include minor concrete work and minor excavation in previously disturbed areas.

15. Interpretive Center. An amphitheater/outdoor classroom facility would be constructed at the Project near the community college.

16. Interpretive Displays and Signage. Displays or signage would be located along roads or trails. Potentially, a large display could be made by placing an old tainter gate in the parking island in the office parking lot.

17. Replace Recreation-Based Wooden Fences with Boulders. Most Project fences that are not used for safety or security would be replaced with boulders. Fences require maintenance and replacement. Boulders do not.

18. Prescribed Burning to Manage Vegetation. Some vegetation within the Project would be maintained periodically with fire. Any prescribed burns would be coordinated and permitted by Ecology. A fire management plan would also be prepared.

19. Repair the Edges of the Paved Trails. The asphalt paved trails are deteriorating along the edges due to erosion of the gravel foundation. The gravel foundation would be restored where needed, and the asphalt would be repaired.

Bennington Lake

20. Volunteer Site at Bennington Lake. Construct and operate a volunteer host camping site at Bennington Lake similar to the Rooks Park host site. The site would need electrical and potable water utilities and possibly a septic system. Volunteers at Bennington Lake would improve security and visitor safety, and decrease contract cleaning and grounds maintenance costs, better implementing O&M for the future.

21. Bennington Lake Parking Lot Upgrade. The Bennington Lake parking lot would be re-configured to increase available parking space and reduce vandalism. Currently it is an open parking lot with parking bumpers along the outside edges. Placing parking bumpers, curbs, or islands in the center of the lot would reduce unused space and increase parking spaces. The lot would still accommodate horse trailers.

22. Intake Tower Silt Removal. Approximately 6 feet of silt has accumulated around the intake tower in Bennington Lake. Silt within a 100-foot radius around the intake tower would be removed. This would facilitate access to the tower to perform inspections and maintenance on the gates. Work would occur during winter after the lake has been drained and prior to the flood season.

23. Bennington Lake Shoreline and Swim Beach Access. There is presently no designated foot traffic access to the lake shoreline or swim beach. During the 1996 flood, the beach was covered with 2 feet of silt, much of which is still there. The mud would be removed and a trail reestablished. Two shade structures would also be built near the swim beach.

24. Stairway Access to Bennington Lake Shoreline. An American Disabilities Act (ADA) accessible stairway or ramp would be constructed from the restroom and parking lot to the shoreline. This stairway would increase safety and reduce erosion problems caused by foot traffic.

25. Strong Motion Accelerograph Replacement. The earthquake damage sensor would be replaced with a new sensor. Soon, the existing sensor will no longer be supported by the manufacturer, so obtaining parts and performing repairs will not be feasible.

26. Power Service to the Lower Valve House. There is currently no power to the lower valve house. Power now requires a portable generator. Permanent power at this site could be used for general power purposes, to power an electric motor to operate the valve, to power monitoring equipment, and for security lighting. An electrical powerline would be routed to this site.

27. Toe Drain Outflow Pipe Cleaning. The storage dam drainpipe system consists of three series of pipe networks. The pipe networks tie into 48-inch manholes and divert seepage through a 30-inch corrugated metal pipe. This pipe carries seepage water approximately 2,500 feet down the Russell Creek Outlet Channel. The pipe would be cleaned of accumulated sediment.

28. Move Emergency Material Stockpile at Bennington Lake. The emergency material stockpile at Bennington Lake would be moved to free up the parking lot where the stockpile is currently located. The new stockpile location would be immediately to the south of the current location. Some additional fill material would be needed to level the location.

29. Upgrade the Water Seepage Monitoring System. The existing water seepage monitoring system requires Project personnel to visit each monitoring location in various weather conditions. Some of the monitoring sites are on steep slopes that are difficult to access. This action would automate the Project's water seepage monitoring system, which would include a vibrating wire pressure sensor at each monitoring location. Real-time data collection would improve monitoring and management.

Rooks Park

30. Rooks Park Restroom Rehabilitation. The Rooks Park restroom would be remodeled to include new fixtures and lighting to increase energy efficiency and reduce maintenance. Low-flow toilets and sinks with motion sensors would reduce water usage. New hand dryers with motion sensors would be more efficient.

31. Replace the Irrigation System. The existing irrigation system in Rooks Park is in poor condition and requires frequent maintenance. The irrigation system would be replaced.

32. ADA Access Trail in Rooks Park. A paved access trail meeting ADA criteria would be constructed to provide universal access from the parking lot to the restroom, playground, and Mill Creek Recreation Trail. The access trail would direct foot traffic and reduce erosion caused by foot traffic. This project was completed in 2020.

Diversion Dam and Intake Canal Headworks

33. Install Safety Stops on the Intake Canal Gates. There are no safety stop mechanisms on the intake canal gates. Currently an 8-inch by 8-inch wooden beam is used to support the open gates during maintenance in the intake canal headworks. Permanent safety stops would be designed and installed according to modern standards. This project was completed in 2020.

34. Debris Barrier Rehabilitation. The current debris barrier consists of large, steel structures and wooden poles connected with heavy gauge wire rope. Some of the poles would be replaced. The debris barrier does not provide protection to the entire forebay. This may be a problem in the future due to recent fires in the watershed upstream of the Project area, which could cause an increase in debris flowing into the Project. The debris barrier may be extended to cover the entire forebay.

35. Bollards and Concrete Pads for Portable Light Towers. Light towers would be installed for inspection of the Mill Creek storage dam while it is being utilized for flood storage. A concrete pad would allow for a flat area to park a trailer and a bollard would be for securing the tower trailer and help to identify it.

36. Grouted Riprap Scour Repair. A large eroded area of grouted riprap 3 to 5 feet wide and 6 feet deep at the toe of the diversion dam has been undercut. This area would be refilled with large riprap and grouted. This work was completed in 2019.

37. Low-Flow Outlet Radial Gate Rehabilitation. The low-flow outlet radial gate at the diversion dam has been in operation since the dam was constructed. The last major rehabilitation was in 1984. The gate would be inspected, tested, and repaired or replaced if needed. The automatic gate control is no longer serviceable and would be replaced. This action was completed in 2022.

38. Spillway Expansion Joint Resealing. The expansion joints on the surface of the diversion dam spillway are failing. The joints would be cleaned of debris and sediment.

New impermeable sealant that would bond to the concrete and expand and contract as needed would be applied to the joints. This work was completed in 2019.

39. Improve Stoplog Seals. The stoplogs used to dewater the fish screen compartment leak and do not allow the compartment to be dewatered effectively. New seals would be designed and installed on the stoplogs.

40. Repair the Diffuser Blocks in the Intake Canal. The concrete blocks used to dissipate the energy of the water in the intake canal are deteriorating due to their age. These blocks would be repaired or replaced. This work was completed in 2019.

Division Dam

41. Modify the Division Dam Corbels. The division dam corbels are cracked and deteriorating due to their age. The corbels support the slabs where the division dam gates are mounted. If the slabs failed, the gates would be inoperable, making diversions to Yellowhawk/Garrison Creeks impossible. The corbels would be repaired to better support the gates. This work was completed in 2020.

42. Improve the Safety Rails Over the Division Works. The existing safety rails at the first division works do not meet Occupational Safety and Health Administration standards. The rail openings are too large and the top rail is too low. There is also no curb on the edge of the bridge. These deficiencies would be corrected to meet safety and ADA requirements.

43. Enhance Habitat along Yellowhawk Creek. This action could include adding curves to the channel, placing woody debris, and planting vegetation for shade as Yellowhawk Creek is one of the most important fish passage channels in the Mill Creek complex. Restoring lost habitats would better support ESA-listed fish.

The channel currently follows the right bank and there is some potential for habitat improvement if it was meandering from bank to bank. This action would include in-water work.

44. Yellowhawk/Garrison Creek Needle Gates Replacement. Two sets of creosote-treated wood needle gates control flow into the Yellowhawk/Garrison Creek canal. Individual timbers in these gates need to be replaced periodically. There is also a slot with a metal slide gate in the downstream gate for fish passage. The upstream gate would be replaced with a solid concrete wall. The downstream gate would be replaced with a concrete or metal wall with a fish passage opening controlled by a slide gate. This action would require in-water work to dewater the work area. This work was completed in 2019.

3.1.2 Major Fish Passage Improvement Measures

This section describes measures related to managing fish passage and habitat for ESA-listed fish at the Project. Maintenance of existing fish management actions would continue to be conducted under each measure.

Measure 3a

No Change – Maintain existing fish passage actions.

Based on ESA consultations with the Services, the following list of measures to improve conditions for fish have been implemented and have become a routine part of annual O&M activities.

- Prepared a Fish Passage Plan for Project O&M (Corps 2007) and will continue operations in accordance with this plan.
- Constructed a fish screen for Garrison Creek and will continue associated operations.
- Constructed an intake fish screen for Rooks Park Pond and will continue associated operations.
- Modified the diversion dam spillway shutdown process and will continue associated operations.
- Constructed a fish screen in the Bennington Lake intake canal for recreation diversions and will continue associated operations.
- Initiated seasonal low flow management for fish passage.
- Initiated fish salvage procedures within the Project when areas are dewatered.
- Started monitoring fish passage.
- Established in-water work windows.
- Prepared an Integrated Pest Management Plan (Corps 2013a) and an Aquatic Pest Management Plan (Corps 2017) and will continue operations in accordance with these plans.

MEASURE 3b

Change – Implement major and minor fish passage improvements.

The following actions, identified through recently completed ESA consultations (2020) with USFWS and NMFS, are considered major fish passage improvements. Some have recently been completed as noted.

1. New Diversion Dam Fish Ladder. The existing diversion dam fish ladder can be a partial or complete fish passage barrier at some flows and does not meet current fish passage criteria, as noted in BiOps from USFWS (2007 and 2020) and NMFS (2011 and 2020). The water velocities inside the ladder are often too high, and the heights fish must jump are too high, causing fish to struggle while passing the structure. The location of low-flow outlet partially blocks the fish ladder entrance *attraction flow*, and the entrance becomes increasingly harder for upstream migrating salmonids to locate as flow increases. A new fish ladder that meets current fish passage criteria and operates over a wider flow range would be constructed. The stilling basin may also be modified to prevent stranding adult fish and improve downstream passage conditions for juvenile fish.

TERMINOLOGY

Attraction flow is the path fish follow into a ladder, which has slightly higher velocity than the surrounding water.

Although the final design of a new ladder has not been determined, construction would include some in-water work and removal of a small amount of vegetation. The area around the construction site would be closed to the public while the work is being performed.

The new ladder would be constructed over a two-year period beginning in June 2024. It would be constructed on the right bank (north side of Mill Creek) near Rooks Park. Construction equipment would include excavators, loaders, cranes, dump trucks, concrete trucks, and other vehicles.

The following steps would occur. Five pine trees that are within the construction footprint would be removed prior to the bird nesting season. A temporary cofferdam would be placed around the construction site to allow construction to proceed in the dry. Part of the existing levee would be removed and replaced by concrete the concrete walls of the ladder. The area would be excavated to appropriate depths to allow concrete forms to be placed. Concrete would be placed to form the bulk of the ladder structure.

Once complete, the new ladder would be operated at a wider range of flows than the existing ladder to allow for fish passage for longer periods. The existing ladder would remain available for use if needed in the future.

2. New Division Dam Fish Ladder. A new ladder was completed in 2020.

The previous division dam fish ladder did not meet current fish passage criteria. Like the diversion dam ladder, the high velocities and heights fish must jump are a concern, and the entrance attraction flow is poor. The new fish ladder meets current fish passage criteria and operates over a wider flow range. A new fish ladder at this site was required by the USFWS and NMFS as a result of the 2020 ESA consultations.

3. Low-Flow Channel. During low-flow periods, fish passage in the Mill Creek channel becomes difficult due to inadequate water depth over the weirs. Improved fish passage conditions is required under current ESA BiOps (NMFS 2020 and USFWS 2020;

Appendix C). Also, water temperatures are high (in excess of 20°C, a critical threshold) during summer, which can have a negative effect on fish. Concentrating flow into a low-flow channel could improve fish passage and may result in cooler water.

Low-flow weirs have been installed into three weirs. New low-flow weirs would be installed in the remaining 84 weirs. Construction would include in-water work and temporarily dewatering sections of the channel to facilitate construction. Construction would begin in June 2024 and take at least two construction seasons (June 15 to October 31 each year) to complete. Part of the Mill Creek Project would be closed during construction for public safety.

The following steps would occur. A coffer dam would be placed upstream of the work area and water would be routed in a pipe through the work area. The existing weirs would be sawcut and concrete would be removed from each of the weirs. Excavators and skidsteer loaders would prepare the work area for concrete forms. Concrete would be pumped into the forms to create new, low-flow weirs and energy dissipation boxes below the weirs.

4. Numerating Diverted Fish. Trap nets or similar methods would be used to capture and count fish during or after a flood event if an unscreened diversion of flood flow into Bennington Lake occurs. This data would be used to quantify how many and what types of fish might be lost in the lake during flood diversions.

3.1.3 Downstream Flood Risk Management by Non-Federal Organizations Measures

Measure 4a

No Change – Non-Federal organizations do not implement new downstream actions to reduce flood

Local non-Federal land managers/owners would continue flood risk management actions downstream of the MCFCP as they have in the past, such as repairs to bridge abutments following high flow events. Some properties and existing structures would remain within the floodplain and could receive damages at flow above 1,400 cfs. Any damaged structures or properties would be repaired by these local land managers/owners after a flood.

Measure 4b

Change – Non-Federal organizations implement downstream actions to reduce flood damage potential.

Landowners or other non-Federal organizations would either protect flood prone structures or properties with levees or similar approaches, or would remove them from the floodplain. The County or State would reinforce or replace bridges to withstand higher flow and would perform their own analyses to determine best feasible approaches. Work at bridges could require some in-water work and temporary road closures or detours. Bridges that may need to be further evaluated include:

- Hussey Road Bridge
- Wallula Road Bridge
- Last Chance Road Bridge
- Swegle Road Bridge
- A railroad bridge near Whitman Mission

3.2 ALTERNATIVES

Measures were combined to form alternatives for how to operate and maintain the Project. Alternatives must meet the following criteria:

- Provide authorized flood risk management for Walla Walla and adjacent lands.
- Provide public recreation opportunities.
- Comply with applicable Federal and State laws and regulations, USACE policy, and associated guidance.
- Be environmentally acceptable.
- Be technically feasible.

Four alternatives meeting the purpose and need were developed and are described in the following sections. As shown in Table 3-3, each of the alternatives contains one measure in each of the three categories: Project Maintenance, Repair, and Minor Improvements; Major Fish Passage Improvements; and Downstream Flood Risk Management by Others. Measures were combined into alternatives that potentially fully satisfy the purpose and need for the proposed action.

Note: Given the GI Study/EA (Corps 2021) determined that a 1,700 cfs diversion trigger provides the best-balanced operation for flood risk reduction, three alternatives in the draft O&M SEIS addressing different diversion triggers (i.e., Alternatives 4, 5, and 7) were removed from further analysis. Numbering of Alternatives 1 through 3 from the previous draft O&M SEIS have been retained for consistency. Alternative 4 in this document was previously Alternative 6 in the draft O&M SEIS.

Table 3-2. Alternatives and Measures Summary

	MEASURES		
	Project Maintenance, Repair, and Minor Improvement Measures	**Major Fish Passage Improvement Measures**	**Downstream Flood Risk Management by Others Measures**
Alt 1	MEASURE 1a **No Change** – Maintain existing O&M with no additional Project maintenance, repairs, and minor improvements.	MEASURE 3a **No Change** – Maintain existing fish passage actions.	MEASURE 4a **No change** – Non-Federal organizations do not implement new downstream actions to reduce flood damage potential.
Alt 2	MEASURE 1b **Change** – Maintain existing O&M with additional Project maintenance, repairs, and minor improvements.	MEASURE 3a **No Change** – Maintain existing fish passage actions.	MEASURE 4a **No change** – Non-Federal organizations do not implement new downstream actions to reduce flood damage potential.
Alt 3	MEASURE 1b **Change** – Maintain existing O&M with additional Project maintenance, repairs, and minor improvements.	MEASURE 3b **Change** – Implement major fish passage improvements.	MEASURE 4a **No change** – Non-Federal organizations do not implement new downstream actions to reduce flood damage potential.
Alt 4	MEASURE 1b **Change** – Maintain existing O&M with additional project maintenance, repairs, and minor improvements.	MEASURE 3b **Change** – Implement major fish passage improvements.	MEASURE 4b **Change** – Non-Federal organizations implement new downstream actions to reduce flood damage potential.

3.2.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Alternative 1, the No Action Alternative, is a continuation of existing O&M of the Project for flood risk management, recreation, and fish management, as described in Sections 2.3, 2.4, and 2.5. The diversion trigger would remain at 1,700 cfs per the Water Control Manual (Corps 2006); Appendix A, currently being updated). Alternative 1 provides the baseline to which all the other alternatives are compared. No new or improved O&M, flood risk management, or fish passage improvements would be implemented.

3.2.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

In addition to the O&M actions currently performed at the Project (as included in Alternative 1), Alternative 2 would include additional minor maintenance, repair, and improvements. The actions in Measure 1b, which include many repairs and minor Project improvements, would be implemented as funding is received. The diversion trigger would remain at 1,700 cfs per the Water Control Manual (Corps 2006; Appendix A, currently being updated). No major fish passage improvements would be implemented.

3.2.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements

Alternative 3 is the same as Alternative 2 except for the addition of major fish passage improvements to address priority fish passage concerns that include passage at the diversion dam, the division dam, and the stabilized channel, as described in Measure 3b. These structures would be constructed, operated, and maintained by the USACE. In addition, efforts would be taken to quantify the number of fish diverted to Bennington Lake during flood diversions.

3.2.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 is the same as Alternative 3 except for the addition of work downstream of the MCFCP by non-Federal organizations to reduce flood risk to structures (bridges and homes), as described in Measure 4b.

Since the Project was completed, there has been significant development within the floodplains of Mill Creek, Yellowhawk Creek, and Garrison Creek on private lands where USACE does not hold flowage easements. Resolving this issue is outside of the scope of O&M of the existing Project. This development has constrained how USACE can operate the Project for flood risk management. Not as much water can be kept in the channels before flooding becomes an issue. Yellowhawk Creek and Garrison Creek are especially constrained. Floodways that could once contain 900 and 500 cfs respectively, now contain a maximum flow of only 60 and 10 cfs before flooding becomes an issue.

In Alternative 4, non-Federal organizations such as Walla Walla County, the City of Walla Walla, or non-governmental organizations would conduct flood risk management in areas downstream of the MCFCP to prepare for future floods and a higher diversion trigger and regulated flow down the Mill Creek channel, as described in Measure 4b.

This is the only alternative analyzed containing Measure 4b. However, non-Federal organizations could take these actions at any time, which would reduce flood damages downstream of the MCFCP. Implementing Measure 4b would influence USACE decisions on how to manage the Project for flood risk management purposes. It is possible that a higher diversion trigger could be used, which would benefit both fish and flood risk management.

3.3 MEASURES AND ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

USACE considered additional measures and alternatives as well, but eliminated them from further consideration as not meeting the purpose and need (in whole/part), primarily technical feasibility. Any alternatives that included measures deemed infeasible were discarded. The following were considered and eliminated.

- Abandon Project
- 3,500 cfs diversion trigger
- Setback levees
- Screen flood diversions

Abandoning the Project altogether was eliminated because it would not meet the USACE flood risk management or recreation authorized purposes. Setting the diversion trigger at 3,500 cfs was eliminated because there would be no margin of error to account for quickly rising flow that could exceed channel capacity (unacceptable risk to life and property safety). Setback levees were eliminated because there is limited land available and other technical challenges beyond the scope of O&M of an existing Project. Screening flood diversions was eliminated because constructing a screen large enough to handle the potential flood flow would require about 7,500 square feet of screen area to meet current fish screening criteria. There is simply not enough space available for a screen of this size at the intake canal headworks and thus it is technically infeasible.

3.4 PREFERRED ALTERNATIVE

The USACE preferred alternative is Alternative 3, Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements. This alternative was chosen after an analysis of the potential effects on multiple environmental and socioeconomic resources (as detailed in Section 4) and a determination that Alternative 3 best satisfied the purpose and need statement.

Alternative 4 would have the greatest overall benefit, but relies upon the actions of others that are not reasonably certain to occur. Alternative 3 allows for better flexibility in flood risk management while still meeting the intent of improved conditions for ESA-listed fish to help offset operational impacts discussed in Chapter 4. Table 3-4 ranks the alternatives according to the evaluation criteria.


Source: Corps

Table 3-3. Alternatives Ranking Matrix

	CRITERIA				
	Provide Flood Risk Management	**Provide Public Recreation Opportunities**	**Comply with Laws, Policies, and Guidance**	**Environmentally Acceptable**	**Technically Feasible**
Alt 1	Best downstream; least Walla Walla	Yes, no change	No, potentially violates ESA	No, does not comply with ESA biological opinions; unacceptable outcome for fish	Yes, no change
Alt 2	Best downstream; least Walla Walla	Yes, no change	No, potentially violates ESA	No, does not comply with ESA biological opinions; unacceptable outcome for fish	Yes, improves operability
Alt 3	Best downstream; least Walla Walla	Yes, no change	Yes	Yes, very good to best fish outcome	Major and minor improvements feasible
Alt 4	Best Walla Walla, with downstream risk mitigated	Yes, no change	Meets ESA biological opinions, including diversion	Yes, best fish outcome	Major and minor improvements feasible, feasibility to others unknown

Alternatives 1 and 2 cannot be selected as the preferred alternative as they violate the compliance and environmentally acceptable criteria. Alternative 3 is much improved for these criteria over Alternatives 1 and 2. Alternative 3 is an improvement over current conditions for flood risk to Walla Walla, and has almost all of the improvements for fish, while limiting potential minor downstream flood damage risks, and thus is a balanced, reasonable, and implementable alternative.

CHAPTER 4 - AFFECTED ENVIRONMENT AND CONSEQUENCES

This chapter describes the existing environmental conditions of the Project and surrounding area and provides an analysis of the anticipated effects that would occur for each alternative, including the No Action Alternative, which provides a comparison to the other alternatives.

An analysis of fourteen environmental resources relevant to the Project and surrounding area are presented in this chapter, including biological, physical, cultural, and socio-economic resources. Collectively, these resources are referred to as the affected environment. The analysis includes descriptions of these resources and an evaluation and comparison of the anticipated effects, or consequences (beneficial or adverse), of the alternatives developed in Chapter 3. Several terms are used to compare the context and intensity of effects caused by the various alternatives. These terms are defined below. In addition, cumulative effects to key resources are included at the end of the chapter.

Intensity Terms

Negligible – Unmeasurable or minimal

Minor – Small or low

Moderate – Average, medium, or mild

Major – Great or serious

Temporal Context Terms

Immediate – Occurs as the action is conducted

Short-term – Occurs for a few days

Moderate duration – Occurs for a few months

Long-term – Occurs for a year or more

Permanent – Occurs indefinitely

TERMINOLOGY

Significant effects are those whose context and intensity together indicate important effects to the human environment for consideration in decision-making.

Intensity refers to the severity of the impact, in whatever context(s) it occurs.

Context is the temporal, geographic, biophysical, and social context in which the effects will occur.

Direct, **indirect**, and **cumulative** effects must be considered in total to determine the significance of an effect.

4.1 AESTHETICS/VISUAL RESOURCES

Aesthetic or visual resources are the natural and cultural features of the landscape that can be seen and that contribute to the public's enjoyment of the environment. The aesthetic quality of an area is a subjective factor to quantify. It is a measure of one's perception of how pleasing an area is. Many people visit the Project because of its aesthetic value, and visitors enjoy visual resources through a variety of landforms, wildlife, fisheries, recreation, and vegetation. Some also enjoy the constructed Project features, such as the concrete channels and dams and earthen levees.

Many characteristics contribute to the aesthetic value of the Project. The Project offers nearly 620 acres of public lands open for recreation, adjacent to flood risk management structures. The Project is surrounded by agricultural crop lands and rural residences that vary in appearance by season and crop rotation. Mill Creek flows along the northern portion of the Project and presents visitors the opportunity to view the stream and many native wildlife species.

Rooks Park is an 18-acre day-use park nestled in large trees and open lawn areas. Bennington Lake provides a 52-acre lake for water-related activities, surrounded by lands and trails open for access by foot, bike, or horse. From the top of the Mill Creek Storage Dam, there are views of the Blue Mountains and a panorama of the Walla Walla Valley.

In fall of 2015, there was a major change to the aesthetics of the Project. Trees were removed from the levees and the levees were repaired. While many people did not agree with removing the trees and vegetation from the Project levees, many others have complimented the clean look of the levees and expressed appreciation for the reassurance that the levees are structurally sound. However, in the first year after the levees were repaired, noxious weeds outcompeted native grass that was planted, creating a somewhat displeasing appearance.

4.1.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

In general, the aesthetic value of the existing Project is high under current O&M. Thousands of people visit the Project each year to recreate and relax. Project personnel maintain much of the Project area with the intent of providing a quality setting for visitors.

Alternative 1 would directly provide for continued enjoyment of the Project, generally maintaining the existing condition. However, only routine actions that have been performed in the past would be implemented. No additional maintenance, repair, and minor improvement actions would be conducted.

Noxious weeds within the Project, including on the levees, would continue to be treated under USACE Integrated Pest Management Plan. Treatment of noxious weeds by mowing or using goats or herbicides would continue.

The recreation opportunities at the Project and its park-like setting indirectly increase the aesthetic value of the city of Walla Walla by providing a place nearby where residents can visit at little to no cost. Bennington Lake provides the only public lake within many miles of the city.

Along with the other parks and recreational features in and around Walla Walla, the Project adds to and improves the visual and aesthetic quality and value of the area.

Alternative 1 would maintain the current aesthetics. Implementing this alternative would not result in notable direct, indirect, or cumulative effects in the short term or long term. There would be no significant change to aesthetics from this alternative.

4.1.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would have higher aesthetic value than Alternative 1. All of the O&M actions currently performed at the Project would continue, including those pertaining to recreation, and additional minor maintenance, repair, and improvements would be implemented as funding becomes available. Actions such as improving trails, installing new signage and interpretive displays, replacing fences, installing benches and shelters, and constructing an interpretive center or outdoor classroom would enhance the Project's aesthetic value.

There would be slightly higher beneficial effects from Alternative 2 than Alternative 1 due to the recreational improvements that enhance aesthetics. There would be direct, short-term, negative impacts during implementation of the various O&M actions due to construction-related activities. In the long term, there would be a moderate, direct and indirect improvement on aesthetics. There would be no anticipated cumulative effects from implementing this alternative.

4.1.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have higher aesthetic value than Alternative 2. All of the actions included in Alternative 2 would be conducted, as well as major fish passage improvements. Environmental improvements are generally aesthetically pleasing to people. There could be moderate, short-term, negative direct and indirect impact to aesthetics during construction of the various structures as people are forced to avoid the work areas, but these impacts would be temporary and less than significant.

Once the actions have been completed, Alternative 3 would have higher aesthetic value than Alternative 2. There would be no anticipated cumulative effects from implementing this alternative.

4.1.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would temporarily have more negative direct and indirect, short-term effects on aesthetics than Alternative 3, but once flood risk management work (repair or replace bridges, protect/move structures, etc.) is complete, the aesthetic value would increase due to the appearance of the new and improved structures. There would be very little flood damage for flow up to 3,500 cfs. There would be no anticipated cumulative effects from implementing this alternative.

4.2 AQUATIC RESOURCES

Aquatic resources, such as fish, aquatic insects, crayfish, and amphibians, are dependent on water. Fish species presently in the Project area of Mill Creek include rainbow trout/steelhead (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*), Chinook salmon (*Oncorhynchus tshawytscha*), mountain whitefish (*Prosopium williamsoni*), bridgelip sucker (*Catostomus columbianus*), redside shiner (*Richardsonius balteatus*), freshwater sculpin (*Cottus* spp.), dace (*Rhinichtys* spp.), and brook lamprey (*Lampetra richardsonii*).

Amphibians typically found in the area are Pacific tree frogs (*Hyla regila*), and bullfrogs (*Rana catesbeina*). Common aquatic insects in the creek are mayflies (*Ephemeroptera* spp.), caddisflies (*Trichoptera* spp.), dragonflies (*Odonata* spp.), and stoneflies (*Plecoptera* spp.).

Spring Chinook are important to the region from a social, economic, environmental, and cultural standpoint. Native spring Chinook salmon went extinct from Mill Creek in about 1925, due to the Nine Mile Dam on the Walla Walla River, which was built in 1905. In 2000, the Confederate Tribes of the Umatilla Indian Reservation (CTUIR) began reintroducing hatchery adult spring/summer Chinook into Mill Creek. These fish spawned naturally, and the first adult salmon returned to Mill Creek in 2004. Small numbers of salmon have returned to Mill Creek annually. The decreased number of Chinook from the watershed reduced the amount of juvenile salmon available to bull trout as food, as well as reduced the amount of ocean-derived nutrients to the watershed, which once benefitted all of the fish species in the creek.

The Project provides two distinct aquatic resource habitats: Bennington Lake and Mill Creek (to include Yellowhawk and Garrison Creek distributaries). Bennington Lake is an artificial lake, constructed for temporary storage of diverted flood water. When not used for flood storage, the lake is used for recreation. The lake is typically refilled each year to elevation 1,205 for the recreation season by diverting screened water from Mill Creek. The water level in the lake decreases over the summer primarily due to evaporation. The lake is shallow with a mud/pebble substrate.

Washington State-stocked hatchery rainbow trout are the main aquatic resource in Bennington Lake. Water quality and fish habitat conditions deteriorate as summer progresses. By the end of summer, fishing harvest and poor water quality eliminate trout from the lake.

Mill Creek flows approximately 6,000 feet through the Project area. Above the diversion dam, the creek provides high quality riparian and aquatic habitats due to the free-flowing nature of the stream and natural processes that remain there, although peak water temperature during summer sometimes exceeds 75ºF (dangerous to protected fish species). Below the diversion dam, the creek is contained within a constructed channel, bordered by levees on both sides. Water temperatures are even higher in this section of the creek. Concrete-capped weirs, which are built into the streambed and span the width of the channel, are designed to dissipate energy during high flow and limit streambed erosion.

The channel is wide and shallow, with deeper areas below some of the weirs. These areas can be up to 5 feet deep even during the summer low-flow period. Large rocks were placed in the channel between the diversion dam and the division dam in 1986 as fish habitat. Habitat conditions in the creek are generally poor. A GIS analysis in 2012 (prior to the trees being removed from the levees) revealed stream shade produced by the minimal amount of vegetation along the channel was approximately 1,132 ft^2, or 0.19 percent, of the area of the channel. The wide and shallow creek configuration and east-west orientation with little shade contribute to the high water temperature, which can exceed 80°F during the summer. Warm water holds less dissolved oxygen, which is needed by aquatic species.

Below the division dam, the channel sometimes has minimal to no flow. During the summer low-flow period, almost all of the water in the creek is diverted into Yellowhawk and Garrison Creeks with little to no flow remaining in Mill Creek. Flow in Mill Creek remains very low for several miles below the division dam, creating extremely poor aquatic habitat conditions within this reach and where the channel flows through a tunnel under downtown portions of the city of Walla Walla. Flow and water quality within this tunneled area are actually better than the wide, shallow reach upstream of the concrete channel.

4.2.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

In Alternative 1, direct, negative effects to aquatic resources would be minor and occur during future actions containing in-water work. Aquatic habitat in Bennington Lake would continue to degrade seasonally as summer progresses and temperature rises.

Upstream of the diversion dam, aquatic habitat would remain much the same as the current condition. However, riparian vegetation cover (mainly provided by reed canary grass, an invasive species) along the channel would be affected periodically by forebay sediment removal activities. Habitat conditions within Mill Creek downstream from the diversion dam would remain poor. Fish passage conditions at the diversion dam and division dam would not improve. This alternative does not fully address the management of invasive species within the project forebay or surrounding areas upstream of the Project.

The indirect, negative effect of degraded aquatic resources occurs seasonally each year below the division dam during the dry season because of very low flow and high temperature caused in part by the channel configuration and upstream water withdrawals. There are also negative indirect effects on aquatic habitat in Yellowhawk Creek. Flow in Yellowhawk Creek remains stable throughout the year. Sediment and debris build up in some areas because there is no high flow to carry the deposited material downstream. Current O&M has been found to have significant effects to ESA-listed species.

The impacts from Project O&M on aquatic resources added to other effects from water withdrawal from the creek cause significant negative cumulative effects on this resource.

4.2.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would have similar effects on aquatic resources as Alternative 1 with the exception of new actions that include in-water work (e.g., clearing sediment from the Garrison Creek fish screen area, improving habitat along the Yellowhawk/Garrison Creek canal, replacing the needle gates at the first division works, and work at Jones Ditch). These actions would have direct, short-term, negative effects on the immediate area during construction, but would have no long-term negative effects. There would be moderate, beneficial long-term effects on aquatic resources from these actions by improving fish passage conditions into the future, and thus there would be no significant impacts in total.

4.2.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements

In the long term, Alternative 3 would directly benefit aquatic resources by providing better fish passage through the Project resulting in greater benefits to aquatic resources than Alternative 2. There would be short-term, negative impacts during construction of the structures, such as noise, ground disturbance, and turbidity. Measures would be taken to avoid or minimize impacts during construction and ensure less than significant impacts. Bennington Lake would not be affected.

There would also be major, positive cumulative impacts on aquatic resources by improving passage when added to the effects of other habitat improvement projects in Mill Creek, such as those conducted by the Tri-State Steelheaders and the CTUIR. These benefits would be significant relative to protected species.

4.2.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements / Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

In the long term, Alternative 4 would directly benefit aquatic resources by providing better fish passage through the Project and in areas downstream of the MCFCP resulting in greater benefits to aquatic resources than Alternative 3. Alternative 4 would temporarily have more negative direct and indirect, short-term effects than Alternative 3 associated with flood risk management work (repair or replace bridges, protect/move structures, etc.). There could be temporary, minor, direct effects to fish during bridge construction or repair from noise disturbance and potential turbidity, but measures would be taken to avoid or minimize impacts.

4.3 TERRESTRIAL RESOURCES/WILDLIFE

Many terrestrial wildlife species are abundant along the riparian corridors associated with the Project. Mammals, birds, amphibians, and reptiles inhabit the Project throughout the year. Mammals common to the area include white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), bats (silver-haired [*Lasioncycteris noctivagams*] and hoary [*Lasiurus cinerus*]), and a variety of small rodents (e.g., deer mouse [*Peromyscus maniculatus*] and Montane vole [*Microtus montanus*]). Occasionally, bobcat (*Lynx rufus*), black bear (*Ursus americanus*), and even cougar (*Puma concolor*) and moose (*Alces alces)* have been seen in the area.

Common birds include wild turkey (*Meleagris gallopavo*), belted kingfisher (*Megaceryle alcyon*), California quail (*Lophrtyx californicus*), ring-necked pheasant (*Phasianus colchicus*), swallows (*Tachycineta* spp. and *Hinundo* spp.), sparrows (*Melospiza melodia*), woodpeckers (*Picoides* spp.), various other songbirds, ducks (*Anas* spp.), Canada geese (*Branta canadensis*), hawks (*Buteo* spp.), osprey (*Pandion haliaetus*), and owls (common barn owl [*Tyto alba*], western screech owl [*Otus kennicotti*], great horned owl [*Bubo virginianus*], snowy owl [*Nyctea scandiaca*], northern pygmy owl [*Glaucidium gnoma*], long-eared owl [*Asio otus*], and short-eared owl [*Asio flammeus*]). On occasion, bald eagles (*Haliaeetus leucocephalus*) can be seen as well. The project is also visited by many neo-tropical birds which migrate through the area. These birds depend on riparian vegetation for forage and shelter. The area immediately adjacent to the creek provides very limited wildlife habitat quality. Although some wildlife can be found around the Project area, the large number of people recreating in the area influences wildlife numbers.

USACE manages habitat in the Project area to benefit multiple species. The current vegetation provides habitat for a variety of wildlife species. The nature of the Project's location, situated adjacent to the stream among a variety of agricultural properties and having few roads to the east, provides food and escape cover for wildlife.

Wildlife is affected by a wide array of natural habitat changes and human activity. Negative impacts to wildlife numbers can occur from predation and starvation, especially during severe winters. Heavy human use in an area can displace certain species. Most wildlife avoid high-density recreation areas, but could come into contact with humans in low-density recreation areas. The impact of heavy human use such as recreation is mitigated by timing of human use and locations of highest density use. Recreational hunting is limited at the Project due to specified hunting seasons and restrictions on hunting locations. Overnight recreation use is by special use permit only. Human use is highest during early and mid-summer, reducing impacts during much of the wildlife reproduction season.

4.3.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

The direct effects to terrestrial resources would not change from the existing condition for Alternative 1. Wildlife would continue to be managed indirectly through habitat management. Project O&M provides benefit to wildlife by developing and maintaining habitat.

The most likely avenue for harm to birds at the Project would be through vegetation maintenance. To avoid harming bird nests, eggs, or young, vegetation removal is conducted after the bird nesting season when possible. If vegetation removal work must be conducted during the nesting season, Project personnel would look for nests before cutting vegetation each day and avoid active nests.

There would be moderate direct, indirect, and cumulative impacts on terrestrial resources from this alternative over the long term.

4.3.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Some of the new O&M actions included in Alternative 2 would benefit terrestrial resources slightly greater than Alternative 1. Wildlife habitat improvements would be made by actions such as planting plants for pollinators, using Jones Ditch as side channel habitat, and enhancing habitat along Yellowhawk Creek. Prescribed burning would have minor, moderate duration negative impacts on wildlife habitat as construction actions would temporarily disturb the area, but would improve habitat in the long term. There could be moderate, indirect negative impact from the debris barrier rehabilitation or extension, and the addition of benches and shelters. There would be no long-term, negative direct or cumulative effects on terrestrial resources from this alternative. Impacts to terrestrial resources would not be significant.

4.3.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements

Alternative 3 would have the same direct effects on terrestrial resources as Alternative 2 related to additional maintenance, repair, and minor improvements. Indirectly, there could be some increased benefit to wildlife compared to Alternative 1 if anadromous fish populations increase due to the improved fish passage conditions through the Project, particularly predators, but the entire system benefits from the added nutrient cycle of healthy anadromous fish coming upstream to spawn and die. There could be moderate, cumulative benefits to wildlife once fish are able to pass unobstructed through the entire Mill Creek channel. A higher population of fish would provide more food and nutrients to Mill Creek for terrestrial resources.

4.3.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements / Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar direct effects on terrestrial resources as Alternative 3. There could be slightly higher short-term, negative impacts on terrestrial resources from Alternative 4 due to additional construction work downstream of the MCFCP when compared to Alternative 3. However, most wildlife would avoid the work areas during construction. Once construction is complete, there would be no additional long-term impacts from construction and maintenance due to the work by others. There would be no cumulative effects on this resource.

4.4 THREATENED AND ENDANGERED SPECIES

A species list from USFWS was obtained on July 5, 2017 (Consultation Code: 01EWFW00-2017-SLI-1139), identifying three ESA-listed species, all categorized as threatened, that could be found at the Project. These species are indicated below, followed by a brief description of each.

- Middle Columbia River steelhead (*Oncorhynchus mykiss*).
- Columbia Basin Bull trout (*Salvelinus confluentus*).
- Western Yellow-billed cuckoo (*Coccyzus americanus*).

Mid-Columbia steelhead and Columbia Basin bull trout are known to be found in Mill Creek in the Project area. Western yellow-billed cuckoo is not known to occur in the area and may no longer nest in Washington. This bird has not been identified in bird surveys conducted on the Project.

Steelhead

Mid-Columbia River steelhead were listed as threatened under the ESA in August 1999, generally due to overfishing, loss of habitat, hydropower development, poor ocean conditions, and hatchery practices. Critical habitat was originally designated in March 2000, was later removed, and has since been re-designated. Mill Creek and Yellowhawk Creek are designated as steelhead critical habitat. Steelhead are an anadromous salmonid, and adults return from December through April to spawn in the streams where they were hatched. After hatching and spending one or two years rearing in the area, juveniles begin their outmigration to the ocean in April and May, when flow is usually higher than average. Periodic low flow, flood management measures, irrigation diversions, and habitat destruction can negatively impact both adult and juvenile steelhead. It is possible that once passage obstructions are removed from the Mill Creek channel downstream of the Project, some adult steelhead could arrive earlier than they currently do.

Steelhead utilize the Project area for migration and rearing habitat. A survey by the USFWS in 2009 (Gallion and Anglin 2009) estimated there were fewer than 600 salmonids in Mill Creek between the diversion dam and the division dam over the summer. Fish numbers decreased as the summer progressed. Numbers would likely be higher during cooler months. No spawning is known to occur in this section of Mill Creek. There could be limited spawning in Yellowhawk Creek. However, the substrate in Yellowhawk Creek is mostly fine silt due to the highly controlled hydrology of the creek (no high flow to flush out the silt). Silt smothers fish eggs and reduces flow through the gravel. Flow through the eggs is needed to provide dissolved oxygen to the developing embryos.

Adult steelhead migration through the Project could begin as early as December or January, but does not typically start until February.

Bull Trout

USFWS listed Columbia Basin bull trout as threatened on July 10, 1998, due to population declines through much of its historic range and habitat degradation. Critical habitat was designated for bull trout in 2010, and Mill Creek and Yellowhawk Creek were included in the designation. Bull trout are a wide-ranging species that formerly inhabited most of the cold lakes, rivers, and streams throughout the western United States and British Columbia. They eat fish and require an abundant supply of forage fish for vigorous populations. Resident bull trout spend their entire life-cycle in the same (or nearby) streams where they were hatched. They display a high degree of sensitivity at all life stages to environmental disturbance. Bull trout growth, survival, and long-term population persistence depends on the availability of quality habitat.

In the early 2000s, the U.S. Forest Service conducted radio-tracking studies on bull trout in Mill Creek, which showed that adults generally move upstream, higher in the watershed, between mid-May and mid-August. Spawning takes place between mid-August and mid-October.

As previously mentioned, there are five passive integrated transponder (PIT)-tag monitoring sites on Mill Creek. In a 2009 survey by Gallion and Anglin occurring in June, July, and August, two sub-adult bull trout were captured in sampled sections between the diversion dam and the division dam in July. However, the researchers were not able to estimate bull trout abundance from this limited data.

Downstream migration of juvenile bull trout could occur any month. Rearing could also occur year-round, but few bull trout are expected to be within the Project during summer months due to their low tolerance for high temperatures. Bull trout need cold water to survive.

Yellow-Billed Cuckoo

Western yellow-billed cuckoo, in the western portion of North America, were listed as threatened on October 3, 2014, due to severe population declines over several decades. These declines were primarily due to the severe loss, degradation, and fragmentation of the yellow-billed cuckoo’s riparian habitat from agricultural conversion, dam construction, river flow management, and riverbank protection. Overgrazing and invasive exotic plants have also contributed to declines. Critical habitat has been designated, though Washington is not included in the designation.

This bird prefers open woodlands with clearings and a dense shrub layer. They are often found in woodlands near streams, rivers, or lakes, but yellow-billed cuckoos occur most frequently and consistently in cottonwood forests with thick understory (Taylor 2000). In winter, yellow-billed cuckoos can be found in tropical habitats with similar structure, such as scrub forest and mangroves. Individuals may be on breeding grounds between May and August.

There are no known occurrences of yellow-billed cuckoo at the Project. Surveys of the Project have been conducted by a USACE biologist since 2015, but none have been detected.

4.4.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Some of the O&M actions at the Project negatively affect ESA-listed steelhead and bull trout. The population of steelhead and bull trout in Mill Creek is not known so the extent of the effects is unknown. There is little direct take of steelhead or bull trout from USACE actions. Take is defined as, to harm, harass, injure, or kill an individual. Take (harassment) can occur during fish salvage, but fish are usually not killed. USACE follows a Fish Passage Plan (Corps 2007) when actions are taken that directly affect fish, as coordinated with the USFWS and NMFS. The plan includes procedures to minimize impacts on fish. Cumulative effects on this resource would be negative due to the low diversion trigger.

Opening the Bennington Lake intake canal gates for flood management diverts unscreened flow to the lake. This diverted flood flow may allow fish, including steelhead and bull trout, to be carried with the flow into the lake where they would likely be trapped or die. Actual diversion of fish to Bennington Lake has never been observed or documented, so fish numbers diverted to the lake are unknown. The number would likely vary based on several factors, such as the volume of flow diverted, the duration of the diversion, and time of year. Diversions are most likely to occur between December and March, the same timeframe that some steelhead are actively migrating through Mill Creek. Some bull trout could also be affected.

The Project contributes to high water temperatures during spring and summer, which indirectly negatively affects steelhead and bull trout. In addition, the diversion dam fish ladder does not meet current fish passage criteria and may cause some delay to steelhead and bull trout migration as fish struggle to swim through higher than optimal water velocities and taller than optimal steps in the ladder. Some fish can be entirely blocked from passing at some flows.

ESA consultations have been completed (2020). New, non-jeopardy BiOps from the Services were received (NMFS 2020 and USFWS 2020; Appendix C). Some elements of the current USACE O&M actions could kill or injure ESA-listed fish; therefore, the BiOps included incidental take authorizations. Some of the fish exposed to the effects caused by these actions may respond by altering their normal behavioral patterns in a manner that leads to their injury or death, which is known as “harm.” Harm to fish from the diversion of Mill Creek flows into Yellowhawk Creek could occur until better juvenile fish passage through the area is provided. The diversion dam fish ladder will continue to delay or block upstream movement (depending upon flows), causing harm or injury to both adults and juveniles until structural modifications are made to meet NMFS passage criteria. The division dam ladder was replaced in 2020 and the diversion dam ladder is scheduled to be replaced in 2025.

4.4.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Although Alternative 2 includes additional maintenance, repairs, and minor improvements, the effects on ESA-listed species would be the same as or similar to Alternative 1. Like Alternative 1, USACE would follow the Fish Passage Plan (Corps 2007) to minimize impacts on fish. Cumulative effects on this resource would be negative due to the low diversion trigger.

4.4.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have a major, long-term direct benefit on ESA-listed steelhead and bull trout by improving fish passage within Mill Creek by reducing the velocities and heights that fish need to pass within the ladders, resulting in greater benefits to ESA-listed species than Alternative 2. The low-flow channel might also help indirectly by maintaining cooler water temperatures than the existing condition by establishing a deeper channel bottom through the developed sections of the channel. Flood diversions to Bennington Lake would continue to have periodic negative effects on fish by sending some of them to the lake where they would likely die. The number of fish that may be entrained into Bennington Lake is unknown and has not been observed or documented, but would be the same as with the No Action Alternative (Alternative 1). There would be significant, positive cumulative effects on this resource from this alternative from the major fish passage improvements.

ESA consultations have been completed (2020). New, non-jeopardy BiOps from the Services were received (NMFS 2020 and USFWS 2020; Appendix C). Some elements of the current USACE O&M actions could kill or injure ESA-listed fish; therefore, the BiOps included incidental take authorizations. Some of the fish exposed to the effects caused by O&M actions may respond by altering their normal behavioral patterns in a manner that leads to their injury or death, which is known as “harm.” Harm to fish from the diversion of Mill Creek flows into Yellowhawk Creek could occur until better juvenile fish passage through the area is provided. The diversion dam fish ladder will continue to delay or block upstream movement (depending upon flows), causing harm or injury to both adults and juveniles until structural modifications are made to meet NMFS passage criteria. The division dam ladder was replaced in 2020 and the diversion dam ladder is scheduled to be replaced in 2025.

4.4.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

In the long term, Alternative 4 would directly benefit ESA-listed steelhead and bull trout by providing better fish passage through the Project and downstream of the MCFCP resulting in greater benefits to ESA-listed species than Alternative 3. Alternative 4 would have minor, short-term direct impacts during bridge construction, which would include in-water work, but measures would be taken to avoid or minimize impacts. There would be significant, positive cumulative effects on this resource from this alternative from the major fish passage improvements.

4.5 WATER QUALITY

Mill Creek flows year-round and begins in the Blue Mountains in southeast Washington. It flows into Oregon, then back into Washington, and empties into the Walla Walla River.

Mill Creek

Water quality in the upper reaches of Mill Creek is excellent, due largely to access restrictions in the upper watershed designed to protect the city of Walla Walla's municipal water supply. However, there are some water pollution problems further downstream. Although water quality degradation worsens as it travels downstream due to water withdrawals reducing flow, water quality is still fairly high when the creek reaches the Project.

Within the Project, water quality is affected by flow diversion to Bennington Lake and the wide, shallow channel. Significant water quality degradation occurs below the division dam during the summer when flow is very low due, in part, to most of the flow being diverted into Yellowhawk Creek. The low flow concentrates pollutants, making water quality conditions poor. During summer, flow is reduced at the same time as air temperatures increase, causing water temperatures to increase. Evaporation of the warm water further concentrates pollutants.

Mill Creek peak water temperature approaches 77^{o}F and even higher below the division dam where flow is extremely low during summer. Flows are extremely low because almost all of the Mill Creek flow is diverted to Yellowhawk and Garrison Creeks for irrigation and fish habitat, and little remains in Mill Creek. Trout and salmon cannot tolerate water temperatures that are too high. Adult salmon and steelhead will typically stop migrating when water temperatures reach 70 to 72^{o}F. They are more susceptible to diseases and can die directly from water conditions that are too warm. In addition, warm water holds less dissolved oxygen that fish need for respiration. Dissolved oxygen is also needed for other biological processes within the stream.

Portions of Mill Creek, including the improved channel through the Project area, are included on the Ecology list of impaired water bodies under section 303(d) of the CWA because they did not meet State standards for temperature, dissolved oxygen, pH, bacteria, ammonia-n, chlorine, and instream flow, which are described below:

- The acidity of water is measured by pH, which affects water chemistry, which affects biological processes within the stream, as well.
- Certain bacteria, such as fecal coliform, can cause people and animals that use the stream to get sick.
- Ammonia-N is a measure of nitrogen, a nutrient that can increase the growth of plants and algae and affect water quality. This pollutant

affects Mill Creek downstream of the Project and likely results from agricultural inputs.

- Chlorine is used to disinfect municipal wastewater. Chlorine has negative effects on fish and other aquatic organisms. It was determined that the source for ammonia-N and chlorine into Mill Creek was the wastewater treatment plant downstream of the Federal Project area. The plant switched to ultra-violet disinfection, and now chlorine is only used on an as-needed basis. The plant uses discharge for irrigation from May through November. This minimizes the contribution of pollutants to Mill Creek when flow in the creek is low. This pollutant affects Mill Creek downstream from the Project.
- Instream flow is affected by multiple water withdrawals from Mill Creek for irrigation purposes and the municipal water supply for the city of Walla Walla. Below the division dam, Mill Creek flow is significantly reduced because most of the water is diverted into Yellowhawk and Garrison Creeks per the Ecology Memorandum of Understanding.

Plans to control these pollutants were developed for the entire Walla Walla watershed. Starting in about 1998, Ecology began a water quality improvement project (known as a Total Maximum Daily Load, or TMDL) in the Walla Walla watershed, including Mill Creek. By setting limits on pollutant discharges, water quality may improve. High water temperatures and low flow during summer are still a major concern for Mill Creek.

Water quality degradation in Walla Walla Basin streams is worsened by irrigation withdrawals and a low base flow caused by groundwater depletion. Irrigation return-flow is a major factor in increasing levels of dissolved solids, nutrients, and other pollutants. All streams in the Walla Walla Basin are closed to further water appropriation during the irrigation season.

During demolition of the Project office and maintenance building in 2014, USACE discovered a diesel fuel leak from an above-ground storage tank. A below-grade copper fuel supply line was connected from the tank to a diesel generator about 20 feet away. Upon removal, it was discovered that the copper fuel line had cracked and had been leaking diesel fuel into the soil for some time. Soil testing confirmed the presence of diesel fuel in the soil above the Model Toxics Control Act cleanup levels. Ecology issued a letter in February 2014 indicating the site was contaminated as defined under the Act. The USACE Walla Walla District entered the Voluntary Cleanup Program with Ecology in August 2015.

400 cubic yards of diesel-contaminated soil to a depth of 12 feet was removed from the site. When the excavation reached groundwater, an oil sheen was observed and a test was performed on the groundwater. The groundwater confirmed diesel concentrations greater than the Ecology standard. Garrison Creek, Mill Creek, and a well were tested for contamination and the results were negative for traces of diesel fuel.

The current plan is to allow for natural attenuation of diesel, while budgeting for the implementation of a monitoring well in the future. This plan is subject to change.

Bennington Lake

Water quality of Bennington Lake is primarily determined by the quality of inflow from Mill Creek. Although Mill Creek is a stream of fairly high quality, Bennington Lake is typically of poorer quality. While turbidity levels in the creek decrease when flow subsides, the water quality in the lake does not undergo a similar improvement. Water temperatures vary with season, near freezing in winter and above 80°F in summer and fall. The lake is typically very turbid, with a high nutrient concentration throughout summer. The lake only receives flow input during the spring runoff, when sediment and nutrients in the creek can be high. This leads to poor water quality.

Yellowhawk and Garrison Creeks

Yellowhawk Creek is listed on Washington's 303(d) list for temperature, bacteria, and Dichlorodiphenyltrichloroethane (DDT) (and metabolites). Garrison Creek is listed for temperature, dissolved oxygen, bacteria, chlorine, hexachlorobenzene, DDT, Dichlorodiphenyldichloroethane (DDD), and Dichlorodiphenyldichloroethylene (DDE).

4.5.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

The No Action Alternative would maintain the current water quality condition in Bennington Lake and Mill Creek. As currently operated and maintained, the Project would continue to have major, negative, direct, indirect, and cumulative impacts on water quality during summer. Water quality in Bennington Lake would continue to degrade seasonally as summer progresses and temperature rises. The amount of turbidity and nutrients in the lake would vary from year to year based on the inflow from Mill Creek and whether flood flow was diverted that year. On average, at least some turbid flood flow would be diverted to Bennington Lake every 3 years. Some diversions have been as much as 12 years apart. Other years could have more than one diversion. More turbid flow would be diverted to the lake during years with large floods.

Overall water quality in Mill Creek would continue to degrade as flow decreased and temperature increased during summer. Current operation of the Project reduces the amount of flow in the creek and causes water temperature to increase during summer due to the wide, shallow channel with minimal shade.

The slow release of water from Bennington Lake during November and December has little effect on temperature in Russell Creek. Water temperatures remain below the State standard during this time period.

Flood water is returned to Mill Creek after peak flow has passed, within a few weeks of it being diverted to the lake. This generally occurs when water temperatures in the creek are within an acceptable range for trout and salmon. Turbidity is often higher than normal during this time, as well.

The large surface area of the creek within the Project, including the diversion dam forebay, has a major, seasonal, negative effect on water temperature. There is little to minimal shade to moderate temperature. Water temperature increases above the State standard during summer and causes temperature-related impacts on water quality downstream.

Overall, the Project causes major, direct, indirect, and cumulative impacts on water quality during summer when water quality conditions are critical for other resources.

4.5.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would have similar effects on aquatic resources as Alternative 1 with the exception of new O&M actions described in Measure 1b. Some of these activities (e.g., removing mud from Garrison Creek fish screen, enhancing habitat along Yellowhawk Creek, replacing needle-gates at the division dam with a concrete wall and new fish passage weir (completed in 2019), and drawing down the diversion dam forebay to remove debris that could be blocking fish passage) could have temporary, moderate, short-term, negative impacts to water quality during implementation. The main water quality parameter affected would be turbidity. Measures such as installing silt curtains or establishing water settling areas would be taken to contain and minimize turbidity and other water quality impacts.

High water temperature within and downstream of the Project during summer would continue to be an issue due to the wide, shallow channel with minimal shade. The Project would continue to have significant seasonal negative impacts on water quality (water temperature) during summer.

4.5.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements

Alternative 3 would have similar effects on water quality as Alternative 2, with the exception of potentially lower temperatures in the Mill Creek channel during summer. The low-flow channel would concentrate some of the flow, which could keep the water cooler. However, the channel would still be wide and shallow with minimal shade, so it is uncertain to what degree the low-flow channel would result in cooler water temperatures.

There could be temporary increases in turbidity during construction of the diversion dam fish ladder and low-flow channel due to construction equipment operating within the creek. Measures would be taken to minimize turbidity impacts by isolating the work area from the flowing creek.

The Project would still likely have significant seasonal negative effects on water quality (temperature) during summer similar to Alternative 2. However, the long term effects would be less than the effects from Alternative 2.

4.5.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar impacts on water quality as Alternative 3, which would be slightly greater impacts than Alternatives 1, 2. However, there could be additional minor, short-term, negative impacts during construction work at bridges downstream of the MCFCP. It is assumed that the non-Federal organization that would complete this work would be required to obtain a Water Quality Certification from the state. If the conditions of the certification were met, it is assumed that there would not be any significant impacts to water quality for construction work at the bridges.

4.6 WATER SUPPLY

Water supply affects the operation of the Project. There are multiple diversions that obtain water from Mill Creek and its tributaries, mainly for irrigation. Non-flood flows are managed by Ecology (watermaster), not USACE. USACE manages flood flows (starting at 400 cfs). The amount of floodwater directly influences decisions made by USACE on how to manage flow.

Since 1918, the City of Walla Walla has managed the upper Mill Creek watershed (36 square miles) solely for the protection of water quality. Public access to this area is very restricted and the area remains pristine. The city of Walla Walla receives 90 percent of its municipal water supply from the watershed. Mill Creek flow is reduced by about 37 cfs due to these water withdrawals. When Mill Creek flow is very low during summer or when water quality is poor, the city's water supply is supplemented by seven deep wells.

The city's water treatment plant is capable of producing 24 million gallons of water a day. All of the water to be treated also passes through a hydroelectric facility, which produces enough power for 1,500 homes.

The City of Walla Walla maintains a water return line that enters Mill Creek between the diversion dam and the division dam. They periodically discharge water when generating electricity or to empty their storage tank for maintenance.

There are a few small diversions on Blue Creek, a tributary of Mill Creek, which is located about 5.6 miles upstream from the Project boundary. These diversions reduce the Mill Creek flow prior to entering the Project area.

Titus Creek flow is diverted from Mill Creek at river mile 13.1, 1.7 miles upstream from the diversion dam. This creek flows 3 miles and reenters the Mill Creek channel about 0.25 miles downstream from the division dam. There are 18 irrigation pumping stations that withdraw water from Titus Creek.

Jones Ditch is a small irrigation channel that is supplied through a manually-operated gate located on the south bank of Mill Creek between the diversion dam and the division dam. This diversion reduces the amount of water available to lower Mill Creek or Yellowhawk Creek by about 5 cfs. Any unused flow returns to Yellowhawk Creek downstream of the Project.

There are numerous water diversions along Yellowhawk Creek. Much of the water in Yellowhawk Creek is supplied from Mill Creek. There are also several tributaries that add water to the creek (Russell Creek, Reser Creek, Cottonwood Creek, and several other small creeks). Yellowhawk Creek enters the Walla Walla River about 5 miles upstream from where Mill Creek enters the Walla Walla River.

There are many small diversions and water withdrawals along Garrison Creek. Garrison Creek flows into the Walla Walla River 2 miles downstream of Yellowhawk Creek and 3 miles upstream from where Mill Creek enters the river.

There are many diversions and water withdrawals along Mill Creek downstream of the Project boundary. The Burlingame Diversion, located on the Walla Walla River between Yellowhawk Creek and Mill Creek, historically has obtained some of its water from Mill Creek via Yellowhawk Creek. The water right was established in 1892. Most of the diversions on Yellowhawk Creek are junior to this right and can be regulated to ensure sufficient supply to the Gardena Farms Irrigation District at the Burlingame Diversion.

WDFW holds a water right to divert up to 30 cfs from October 15 to June 15 from Mill Creek to Bennington Lake to maintain a lake elevation of 1,205 feet for fish and wildlife propagation, which supports recreation. However, diversions do not begin until the greatest threat of flooding has passed. USACE has adopted a policy of retaining 40 cfs as the desired minimum flow in the stabilized channel through March to accommodate adult steelhead passage. USACE does not always divert the full 30 cfs allowed by the water right to maintain the 40 cfs in the channel if flow is too low or if the lake is filled to elevation 1,205 feet. In these situations, a small maintenance flow is utilized (Corps 2007).

During the summer low-flow period, much of the water in the creek is diverted at the first division works, to Yellowhawk and Garrison Creeks, in accordance with a Memorandum of Agreement with Ecology. Mill Creek flow remains very low for several miles below this structure. Recharge to Mill Creek occurs through groundwater, storm drainage return, and irrigation return flow.

During some summers, Mill Creek base flow reaches as low as 30 cfs. This is not enough water to support Yellowhawk, Garrison, and Mill Creek downstream of the division dam. In recent years, about 5 cfs has been kept in Mill Creek with the remainder distributed to Yellowhawk and Garrison Creeks.

4.6.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Alternative 1 would continue to have a minor, seasonal, direct negative impact on water supply caused by the recreation diversions to Bennington Lake, which occur prior to June 15 if a minimum 40 cfs in Mill Creek flow can be maintained. After June 15, the water that enters the Project is passed downstream. Flow diversions during the irrigation season would continue to be managed by Ecology. Mill Creek below the division dam could receive little to no flow during the summer months. There would be significant negative cumulative effects on water supply during summer when flow is very low from reduced supply, increased irrigation, and increased evaporation due to the wide and shallow channel with minimal shade.

4.6.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would have the same impact on water supply as Alternative 1. Cumulative impacts on water supply would be negative during summer when supply is low and water demand is high.

4.6.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/ Major Fish Passage Improvements

Alternative 3 would have the same impacts on water supply as Alternatives 1 and 2. The fish passage improvement projects would not affect water supply.

4.6.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements /Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Like the other alternatives, Alternative 4 would have minor, seasonal, direct negative effects on water supply.

4.7 FLOOD RISK MANAGEMENT

The city of Walla Walla and adjacent areas are built on an alluvial fan, which is a fan-shaped landform created by deposited sediment where a mountain and foothills enter a valley. Historically, flooding could occur anywhere within the alluvial fan. Without the MCFCP, flooding could occur almost anywhere within the city.

Mill Creek

The Water Control Manual (Corps 2006; Appendix A, currently being updated) contains information on how USACE operates and maintains the Project during floods. USACE Project personnel are in very close communication with Walla Walla County Emergency Management personnel to identify and respond to flooding issues. To prevent flooding to the greatest extent possible, flows above 1,700 cfs are diverted into the Bennington Lake for storage. How much is diverted is dependent on space availability in the lake, as well as natural flows. USACE compares the natural flow to the Flood Control Rule Curve (chart 7-1 in Appendix A, which is currently being updated) to determine diversions into the lake. If there is room in Bennington Lake, flows will not be permitted to exceed 3,500 cfs at Walla Walla which is the potential failure point of the sections of the levee that have weirs in the stabilized channel section of the Project.

As indicated in Table 2-1, the duration of Mill Creek floods is typically short (a few hours to several days). Based on the historical record since 1945, approximately 25 floods had a peak flow greater than 1,400 cfs. The average duration of those floods is just over 24 hours. Of the 25 floods, only 7 of them had a peak flow of more than 2,500 cfs; the average duration of these floods is 40 hours. The diversion rate (cfs of water diverted into Bennington Lake) and total volume of water diverted into the reservoir is different for each flood, and is not accurately known until after the flood is over.

Flow above 1,400 cfs occurs, on average, about every 3 years, with a 33.3 percent chance of occurring in any given year. Flow of 2,500 cfs occur, on average, every 11 years with about a 9 percent chance to occur in any given year. Similarly, flow of at least 3,500 cfs occurs every 20 years, on average, with a 5 percent chance to occur in any given year. The Project was originally designed to provide benefits up to the 1 percent chance flood (7,050 cfs); larger flood events could overwhelm the Project's capacity.

Flow over 3,500 cfs (the capacity of the stabilized Mill Creek channel) has occurred four times since records were kept: (1) May 30, 1906, estimated flow was 5,200 cfs; (2) March 31, 1931, estimated flow was 6,000 cfs; (3) during the February 1996 flood, flow was estimated at 6,350 cfs; and (4) the February 2020 flood, when flow was estimated at 7,450 cfs. The 1996 and 2020 flows were the only occurrence of flow over 3,500 cfs since Project construction. At those times, flows were diverted for 48 hours and 58 hours, respectively.

The probability and magnitude of flood damage increases rapidly as Mill Creek flow increases from 1,400 cfs to 3,500 cfs. Flood damages begin to occur downstream of Gose Street Bridge at flow above about 1,700 cfs when out-of-bank flooding begins and erosion increases substantially. The lands along the stream channel flood first, followed by the flooding of non-residential structures (out buildings, etc.). Bridge footing and abutment erosion, stream bank erosion, and floodplain erosion also occur. The structural stability of several bridges and the stabilized Mill Creek channel is jeopardized at flow above 3,500 cfs, potentially resulting in failure of the stabilized channel and major flood damages (including the loss of life and property). Using the Walla Walla District Annual Damages Prevented data, the possible flood damages at 3,500 cfs are $64,875,713 (Fiscal Year 2017 price level).

Delaying floodwater diversion until Mill Creek flows are higher reserves storage capacity in Bennington Lake during higher flood events. This results in decreased risk of flood damage for the city of Walla Walla, but also increases erosion and flood damages downstream of the MCFCP. The benefits to the city would be much greater than the damage induced downstream of Gose Street Bridge.

Yellowhawk and Garrison Creeks

As mentioned in Chapter 2, the original flood risk management Project design had up to 900 cfs being diverted into Yellowhawk Creek and up to 500 cfs into Garrison (Corps 2006). Due to residential land development close to the creeks, Yellowhawk and Garrison Creeks are no longer managed for flood risk management. Flow is now limited to a maximum of 60 and 10 cfs, respectively.

Downstream Damages

Prior to the DSAC analysis, a study was initiated to determine the cost to protect roads and bridges downstream of the Project with different diversion triggers. The study was not completed, but the USACE completed estimates for the amount of bank protection at different diversion triggers. Table 4-1 shows the cost of protecting roads and bridges at different flows. As indicated in the table, even a flow of 1,400 cfs results in erosion damages.

Table 4-1. Estimation of Damages Prevented

	Cost of Protection for Roads and Bridges at Different Flows (2017 $)				
Damage Center	**1,400 cfs**	**2,000 cfs**	**2,500 cfs**	**3,000 cfs**	**3,500 cfs**
Hussey Road Bridge	$6,886	$11,153	$13,592	$23,338	$41,691
Wallula Road Bridge	$6,886	$11,153	$13,592	$28,393	$46,439
Right bank Hwy 12	$6,886	$11,153	$23,338	$28,393	$46,439
Last Chance Road Bridge	$6,886	$11,153	$13,592	$18,455	$23,338
Swegle Road Bridge	$6,886	$11,153	$18,455	$23,338	$41,691
Railroad Bridge	$6,886	$11,153	$13,592	$18,455	$41,691
Total Cost ($)	**$42,713**	**$68,917**	**$98,661**	**$143,373**	**$244,788**

With a higher diversion trigger, Bennington Lake will have an increased capacity to store flood waters, which will result in increased benefits accruing to the Project. The probability of flows greater than 3,500 cfs occurring during April through November is low, and the increase in benefits is also low.

4.7.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

The Project would continue to provide the current level of flood risk management to the city of Walla Walla and surrounding areas under Alternative 1. The Project would continue to be operated and maintained as it is currently. The Project provides major positive direct, indirect, and cumulative impacts to flood risk management.

Although the current diversion trigger is 1,700 cfs, the regulated flow can be increased as needed (up to 3,500 cfs) to manage extremely large floods. If an event is predicted to be a larger event, USACE could delay diverting to the lake to reserve capacity. Many factors would have to be considered to have a high certainty that a need exists to delay diverting and that damages downstream are acceptable. When this occurs, flood damages downstream of the MCFCP increase. Operating the Project in this manner provides the greatest level of flood risk management to the greatest number of people and properties.

One possible negative consequence of the diversion trigger being at 1,700 cfs is that Bennington Lake could fill more quickly than using a higher diversion trigger. Once the lake is full, all of the Mill Creek flow would be forced to stay in Mill Creek. If flow was higher than the channel capacity, flooding in the city of Walla Walla would occur. During the 1996 flood, the lake almost reached capacity. Flow began to recede below 3,500 cfs before major flooding in Walla Walla occurred.

4.7.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Compared to Alternative 1, Alternative 2 would provide a minor, long-term improvement to flood risk management by conducting additional O&M and repairs on the flood risk management features of the Project. As an example, rehabilitation and extension of the debris barrier in the diversion dam forebay would capture more debris during floods so that it would not enter the channel where it could cause blockages and contribute to flooding.

4.7.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have the same impacts on flood risk management as Alternative 2. The fish passage improvement projects would not affect flood risk management.

4.7.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

This alternative would have similar effects on flood risk management as Alternative 3. There would be major, long-term direct, indirect, and cumulative benefits to flood risk management within the MCFCP, but an increase in flood damages downstream of the MCFCP.

4.8 VEGETATION

The Project has a variety of vegetation types in a relatively small area: terrestrial, riparian, and wetland. To a large extent, these vegetation types determine what wildlife are present within the Project. The dominant physical components influencing vegetation at the Project are water availability, elevation, slope, aspect, soil depth, climate, seed availability, and constructed features. The following paragraphs describe a brief history of activities pertaining to vegetation and identify the kinds of vegetation around and within specific areas of the Project.

History

When the Project lands were purchased in the 1940s, some of the land south of Mill Creek was used for wheat production. Wildlife management activities at the Project were initially conducted by utilizing a cooperative agreement with WDFW. The 1950s habitat planting improvements by WDFW provided food and cover for a variety of birds and mammals. WDFW planted approximately 5,000 trees and shrubs, establishing a meadow, food plot, and other wildlife habitat.

The land adjacent to the Bennington Lake intake canal and the Russell Creek outlet canal, areas surrounding the lake, and along the lake road were also planted by the WDFW and the USACE as habitat management areas for wildlife. Trees planted at that time included Russian olive (*Elaeagus angustifolia*), Chinese elm (*Ulmus parvifolia*), black locust (*Robinia pseudoacacia*), prune (*Prunus americana*), peach (*Prunus persica*), mugo pine (*Pinus mugo*), and juniper (*Juniperus scopulorum*). Shrubs planted included carigana (*Caragana arborescens*), honeysuckle (*Lonicera periclymenum*), and serviceberry (*Amelanchier alnifolia*). Tall wheatgrass (*Agropyron elongatum*) and Sherman big bluegrass (*Sherman secunda*) were also planted. Dodder (*Cuscuta sp.*), thistles (*Circium sp.*), morning glory (*Ipomoea purpurea sp.*), and a variety of herbaceous plants grow naturally in the lake area.

At Bennington Lake, some of the areas originally planted in dryland grasses, and to a lesser extent, trees and shrubs, have been replaced with flood-tolerant species (e.g., cottonwood) (Corps 1993).

USACE began active wildlife-habitat management by establishing 21 tree and shrub habitat areas at the Project between December 1982 and February 1985. These plantings were conducted as compensation for plants destroyed by the 1980-1982 Mill Creek Dam Outlet Canal Rehabilitation Project.

Current Vegetation at Mill Creek Project

A majority of the area surrounding the Project is now largely grain fields, with some grazing lands located on poorer soil sites. There are also rural homes near the Project boundaries. The city of Walla Walla lies west of the Project.

Much of the diversion dam forebay has been allowed to develop naturally. Part of the forebay area has excellent stands of deciduous riparian trees and shrubs. Willow (*Salix sp.),* alder (*Alnus sp.*), and black cottonwood (*Populus trichocarpa*) growth is predominant in the area just upstream. Much of the area is also covered with reed canary grass (*Phalaris arundinacea*), which is an invasive grass species.

A steep natural hillside running adjacent to and south of the forebay from the diversion dam upstream is vegetated with various trees, shrubs, vines, and herbaceous vegetation. Between this hillside and the south channel of Mill Creek the vegetation is a mosaic of patches of brush and trees with large areas dominated by riparian grasses and sedges.

Rooks Park, located in the northwest corner of the Project, contains native cottonwood trees, irrigated lawn, and miscellaneous tree and shrub plantings.

In 2015, vegetation was removed from the levees lining Mill Creek, along the landward shoulder and slope and within 15 feet of the originally designed levee landward toe. The levees were reseeded with native grasses, but noxious weeds became a problem in the first year. Common tree species beyond the 15-foot zone along the levee include black cottonwood and black locust.

4.8.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Vegetation management considered in Alternative 1 would continue as it does currently. Vegetation in habitat management areas would be managed to benefit wildlife. Vegetation growth on the levees would be controlled by mowing, goats, and herbicides. Noxious weeds would be controlled by procedures outlined in the Integrated Pest Management Plan (Corps 2013a). Willow cuttings would continue to be harvested as needed from the diversion dam forebay for vegetation restoration use in other areas. When water is diverted and the lake fills, the water is not held for a long period of time. The trees and other vegetation generally survive being flooded for short durations.

This alternative would have ongoing direct, short- and long-term, and limited cumulative negative effects on vegetation along the north and south levees. Vegetation in habitat management areas of the Project would provide benefit to the overall habitat functions. Overall effects would be less than significant.

4.8.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would have similar effects on aquatic resources as Alternative 1 with the exception of new actions such as prescribed burning. For Alternative 2, vegetation would continue to be managed in habitat management areas to benefit wildlife. Vegetation on the levees would be managed in the same manner as in Alternative 1. In some areas, prescribed burns would be used to manage vegetation and to stimulate new vegetation growth. Burning vegetation would cause minor, short-term, negative effects, but would have long-term, benefits by mimicking natural processes.

Like Alternative 1, Alternative 2 would have direct, short- and long-term, negative effects on vegetation along the north and south levees. Vegetation in habitat management areas of the Project would benefit overall habitat functions. Overall effects would be less than significant.

4.8.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Effects on vegetation from Alternative 3 would be similar to Alternative 2 due to the additional maintenance, repair, and minor improvements, but it would also include removing less than an acre of herbaceous and overstory vegetation for construction of the diversion dam fish ladder. This would cause minor, short-term direct impacts on vegetation during project construction. Little if any vegetation would be removed during construction of the division dam ladder or the low-flow channel. Following construction, any disturbed vegetation would be functionally restored within 3-5 years and would not result in significant effects.

4.8.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Effects on vegetation from Alternative 4 would be similar to Alternative 3, with exception that it could also have minor effects on vegetation at construction sites around the bridges downstream of the MCFCP as a result of construction activities. This would be a minor, short-term, negative direct effect as the amount of vegetation in these areas is limited compared to the amount within the overall area. Assuming that more than one acre of land would be disturbed to replace the bridges, a National Pollutant Discharge Elimination System permit may be required. Typically, a condition of these permits is that any disturbed areas would be replanted with herbaceous vegetation to stabilize the soil following construction, and thus, impacts would be less than significant.

4.9 HISTORIC/CULTURAL RESOURCES

Mill Creek lies within the ceded lands of the CTUIR. The upper Walla Walla Valley was the central homeland of the ethnographic Liksiyu (Cayuse) people and was cross-utilized by the Wallulapam (Walla Walla) and the Imataláma (Umatilla). Native American use of the watershed is evident in numerous archaeological sites including villages, camps, burials, subsistence grounds, and regional trails.

There have been a number of archaeological surveys in and around the Project. The majority of these surveys were conducted by USACE in support of actions covered under Section 106 of the National Historic Preservation Act (NHPA), or by the CTUIR, for activities occurring on the adjacent Walla Walla Community College grounds.

Construction of the Project in the 1930s and 40s extensively disturbed the original meandering and braided Mill Creek streambed, its riparian zone, and a broad swath of farmland necessary to build the Mill Creek channel, diversion canal, Bennington Lake, and return canal. As a result, while numerous sites are present, no prehistoric archaeological sites have been identified within the Project that are eligible for or listed in the National Register of Historic Places (NRHP). The area has been identified as having a low probability for containing cultural resources (Falkner et al. 2011).

Archaeological evidence of historic Euro-American use and settlement is common within the Mill Creek drainage, but is lacking within the extensively disturbed Project area. Historic records indicate that a skirmish occurred between Washington Territorial Governor Stevens and his forces and regional Tribes in 1856 in or near the location of the Project area. Surveys undertaken on private land adjacent to the Project area failed to identify any definitive evidence of the skirmish. Historic maps indicate the “Fort Walla Walla Timber Reserve” was located within a portion of the present Project lands. The 1-square-mile reserve was established in about 1858 to 1875 to support the U.S. Army fort located approximately 4 miles downstream. No evidence of the Reserve has been identified on the landscape.

Numerous farmsteads with agricultural fields and orchards were situated within and adjacent to the Project. Fields of wheat are still cultivated there. Mill Creek has long been (and remains) a water resource for the city of Walla Walla and local farmers. The principal potable water source for the city is a 36-square-mile protected reserve established in 1918 near the headwaters of Mill Creek, approximately 12 miles upstream from the Project area. Historically and presently, water has been piped from the reserve to the city. Two sections of wood stave pipe were recently uncovered beside the levee of the Mill Creek Channel. The pipes were located within a disturbed context; however, they may have been associated with a hydroelectric powerhouse constructed circa 1900 adjacent and north of the Project. The Civilian Conservation Corps (CCC) built Camp Walla Walla near the location of the powerhouse in 1935 to 1939. Two stone monuments remain to mark the entrance of the camp approximately 1 mile from the Project. Construction of the MCFCP was sponsored by the Work Projects Administration and the USACE during the Great Depression. It is likely that CCC workers from the camp were utilized for the initial construction in 1935.

The Project was authorized by Congress in 1938, constructed by 1944, and determined eligible for listing in the NRHP in 2009 (McCroskey 2009). It is considered an eligible historic site based on its association with the Works Projects Administration and CCC, its contribution to the local and regional community development, and its unique representation of early 20th century government public works efforts. Washington State Historic Preservation Officer (SHPO) concurred with the determination of eligibility on June 30, 2009, based upon eligibility criteria “a” (associated with events that have made a significant contribution to the broad patterns of our history) and “c” (embodies distinctive characteristics of a type, period, or method of construction, or that represents a significant and distinguishable entity whose components may lack individual distinction). Components that make up the historic property (and their date of completion) include the diversion dam (1944), Bennington Lake intake canal (1944), earth-filled storage dam (1944), Bennington Lake (1945), a return canal and an outlet channel (1944), and two division dams (1939). The original design, spatial relations, and individual components of the Project remain intact, and though numerous alterations, repairs, and replacement of elements have occurred since construction, those changes have not diminished the integrity or significance of the historic Project.

4.9.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Current O&M activities under the No Action Alternative have been reviewed by USACE Cultural Resource Section and would continue with no direct effects to historic properties. Normal maintenance activities may produce intermittent and occasional low-decibel noises and smells. However, those short duration indirect effects do not significantly affect those characteristics that make the historic property eligible for the NRHP. Minor erosion and corrosion of exposed and integrated elements of the historic built features is likely and expected. The current O&M address these failures and weaknesses that are to be expected over time, and normal recurring maintenance serves to retain and preserves the original historic function, purpose, appearance, and integrity of the historic resource.

USACE will produce an updated Determination of Eligibility and prepare a Programmatic Agreement with the Washington SHPO and Tribes as funding becomes available to address ongoing O&M activities. The intention is to facilitate review and approval of recurring O&M activities that do not need to be reviewed under Section 106 and provide guidance to ensure the continuation of historic preservation standards.

Any undertakings that have the potential to significantly affect the historic integrity of the Project or disturb intact sediment deposits will be required to comply with Section 106 of the NHPA processes in consultation with State, Tribal, and Federal historic preservation agencies, and interested community stakeholders.

4.9.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Current O&M activities under Alternative 2 would continue with effects to historic properties similar to Alternative 1. Likewise, USACE will produce an updated Determination of Eligibility and prepare a Programmatic Agreement with the Washington SHPO and Tribes to facilitate review and approval of recurring O&M activities that do not need to be reviewed under Section 106. The Programmatic Agreement would provide guidance to ensure the continuation of historic preservation standards.

Proposed new actions that may have an effect on the historic resources of the Project would initially be reviewed by USACE Cultural Resources Section. If the undertakings are found to have the potential to cause effects, USACE would consult with the Washington SHPO and Tribes to ensure compliance with Section 106 of the NHPA and associated Federal cultural resource laws. Proposed new actions would be implemented as funding is made available.

4.9.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Effects for Alternative 3 are similar to those in Alternative 2 with exception of construction of new fish ladders at the diversion and division dams (completed in 2020) and modifications to instream weirs. Those proposed projects would be subject to individual Section 106 review, and the effects to historic contributing resources of the

Project would be evaluated at that time. The existing fish ladders were constructed in 1982 and thus are non-historic elements. Modifications to three weirs were undertaken in 2011 with a finding of no adverse effect under Section 106. Therefore, proposed additional modifications likely would not constitute an adverse effect. However, temporary direct and indirect effects to the historic elements would likely be for the duration of construction only due to equipment use and temporary structures.

USACE will produce an updated Determination of Eligibility and prepare a Programmatic Agreement with the Washington SHPO and Tribes to facilitate review and approval of recurring O&M activities that do not need to be reviewed under Section 106.

4.9.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar effects on historic/cultural resources as Alternative 3 with the exception of new actions by local non-Federal land managers/owners including flood risk management actions downstream of the MCFCP (repair or replace bridges, protect/move structures, etc.). Those proposed projects would be subject to individual Section 106 review, and the effects to historic contributing resources of the Project would be evaluated at that time. Temporary direct and indirect effects to the historic elements would likely be for the duration of construction due to equipment use and temporary structures. For USACE actions, USACE will produce an updated Determination of Eligibility and prepare a Programmatic Agreement with the Washington SHPO and Tribes to facilitate review and approval of recurring O&M activities that do not need to be reviewed under Section 106.

4.10 RECREATION

The Project contains 612 acres available to the public for outdoor recreation, without entrance fees, and provides a wide range of all-season recreational pursuits within a few miles of Walla Walla. While portions of the Project provide users with an urban park atmosphere, much of the Project is devoted to wildlife habitat or dispersed recreation pursuits such as hiking, biking, running, dog walking, horseback riding, hunting, fishing, nature study, sightseeing, and boating. Warm temperatures and low precipitation during the summer attract many visitors to the area. The Project received more than 340,000 visits in 2014.

The Project trail system provides more than 20 miles of paved, gravel, and dirt-surface trails. The trails tie all areas of the Project together and allow access from several parking areas around the Project. The paved trail atop the north levee, adjacent to the creek, is used for walking and dog walking, jogging, skating, skate boarding, and biking. Access to the forebay is via non-maintained paths that lead over the north dike. The service access road on top of the north dike provides some recreational use for hiking, biking, bird watching, and nature observance. Other trails with gravel and dirt surfaces around the lake and adjacent to the creek are used for hiking, biking, running, dog walking, hunting access, and horseback riding.

Rooks Park is a popular summertime day-use getaway that offers visitors a wide variety of recreational opportunities. The 18-acre park includes a picnic shelter that can be reserved, a sand volleyball court, a playground, a horseshoe pit, group fire rings, picnic sites with tables, barbecue grills, and accessible restrooms. Large open areas allow for playing games, and small secluded areas provide a quiet place to enjoy the outdoors. The park is open daily from 7:00 a.m. until sunset. The entrance is open year-round to walk-in traffic, but seasonally closed to vehicles from October 15 to April 1. Wintertime recreation opportunities include cross country skiing and snowshoeing.

Bennington Lake is the only lake open to the public within 30 miles of Walla Walla. The Bennington Lake area is open year-round 5:00 a.m. to 10:00 p.m. The lake is normally filled to an elevation of 1,205 near the end of the winter flood season (March or April) using water from Mill Creek. Boating on the lake is limited to paddling, rowing, wind power, or vessels with electric motors. This policy protects the lake from unwanted pollutants associated with gasoline-operated motors and provides maximum space for vessels compatible with the lake's small size. Picnic tables, shelters, and restrooms are available at the lake parking lot. Park benches and shelters along the trails provide resting areas to enjoy views of the lake and the Blue Mountains.


Source: Corps

Hunting is permitted from September 1 to January 31 in designated areas around the Project (Figure 4-1), but is restricted to the use of shotguns and archery equipment. All hunters must follow current state regulations established by WDFW. Temporary signs are added to the trails and trailheads during hunting season to notify recreationists that certain areas are open to hunting. There is growing concern about conflicts between hunting and other Project uses.

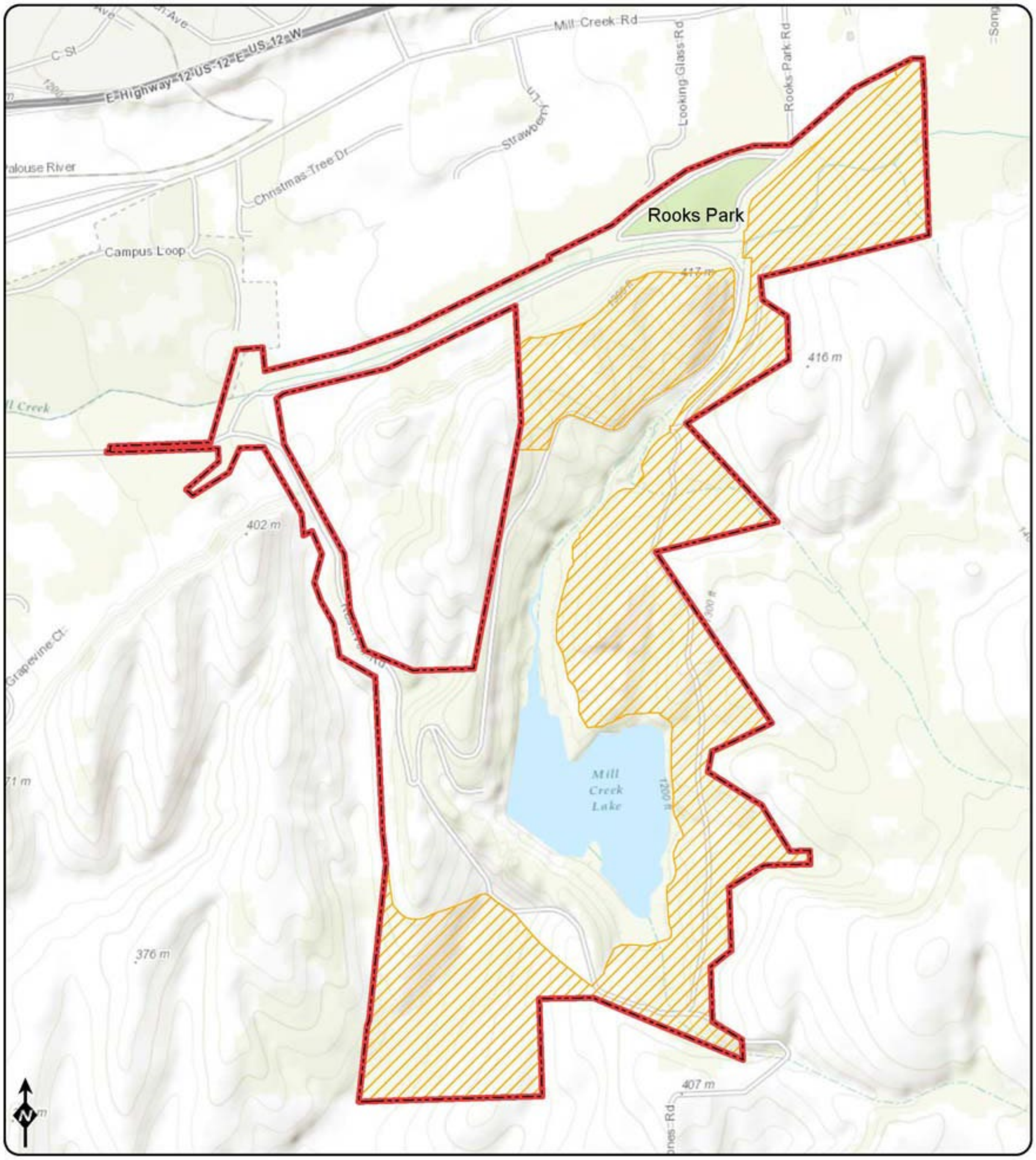

Figure 4-1. Mill Creek Project Hunting Areas

4.10.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Alternative 1 would maintain the existing condition. Recreational activities would continue at the Project similar to the way it does currently, although there may be times when trails are closed to the public due to maintenance. Recreation is an authorized Project purpose and would remain as a priority.

It is likely that conflicts between hunting and other recreational use of the Project would continue. Some of the Project lands (62 acres) were purchased as mitigation for lost hunting opportunities related to construction of the four lower Snake River dams. Barring hunting from the Project would require that additional mitigation be established elsewhere, which is beyond the scope of this SEA.

Alternative 1 would have minor, short-term, negative direct effects on recreation due to continued O&M activities. There would not be any long-term direct or indirect effects or cumulative effects to recreation.

4.10.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Recreational opportunities would improve for Alternative 2 compared to Alternative 1. Recreational feature improvements would include actions such as adding benches and shelters, an outdoor classroom/amphitheater, interpretive displays, and signage; making trail improvements; and updating restrooms. This alternative would add to the beneficial effects on recreation in the Walla Walla area.

Under Alternative 2, there would be minor, short-term direct effects on recreation due to construction activities being performed to enhance recreational features of the Project. Areas may be temporarily closed to the public or detours could be put in place. However, there would not be any long-term negative effects on recreation as a result of implementing Alternative 2. Cumulative effects would be beneficial.

4.10.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have similar impacts on recreation as Alternative 2. However, recreation would be temporarily impacted to a minor degree during construction of the fish passage improvement projects (estimated to take several months to a year, depending on access and similar logistics). The trails near the construction sites would be closed to the public as needed to ensure public safety. No additional impacts on recreation were identified.

Direct effects associated with implementation of Alternative 3 would be minor and short-term as related to on-going operations, maintenance, repair and minor improvement activities, and fish passage improvement projects. There would be no long-term negative effects. Cumulative effects on recreation would be beneficial.

4.10.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar effects on recreation as Alternative 3. There would be no recreational improvements associated with the flood risk management work downstream of the MCFCP.

There would be minor, short-term, negative direct effects to recreation if Alternative 4 is implemented. However, there would be no long-term negative effects. Cumulative effects would be beneficial.

4.11 NOISE

Sources of noise within the Project area come mostly from traffic along Isaacs Avenue, Tausick Way, and Reservoir Road. Airplane (primarily small engine planes) take offs and landings at the nearby (2 miles away) Walla Walla Regional Airport also contribute to noise pollution. Equipment such as tractors, mowers, and vehicles operate within the Project daily for maintenance purposes. There is also periodic noise from construction equipment (e.g., dump trucks, bull dozers, excavators, etc.). Other noise sources include outdoor machinery and equipment and industrial/agricultural type activities occurring at Walla Walla Community College, surrounding businesses, and nearby farm fields.

4.11.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

Noise in Alternative 1 would continue to be generated by the operation of maintenance equipment. Noise from these sources is not likely to carry very far or persist over long periods of time. Therefore, there would be minor, short-term, negative direct effects, but no long-term, indirect, or cumulative effects associated with implementation of the No Action Alternative.

4.11.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Because maintenance, repair, and minor improvements would continue to occur on a regular basis, Alternative 2 would have similar noise impacts as Alternative 1. Therefore, there would be minor, short-term, negative direct effects, but no long-term, indirect, or cumulative effects associated with implementation of Alternative 2.

4.11.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have similar noise impacts as Alternative 2 except Alternative 3 would cause a temporary rise in noise during construction of the fish passage improvement projects. Once construction has ended, noise levels would return to the current level. Therefore, there would be minor, short-term, negative direct effects, but no long-term, indirect, or cumulative effects associated with implementation of Alternative 3.

4.11.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar noise impacts as Alternative 3 except Alternative 4 would have temporary, short-term, moderate noise effects over a wider area due to the additional construction and repairs downstream of the MCFCP. However, there would be no long-term, indirect, or cumulative effects in noise levels if Alternative 4 was implemented.

4.12 CLIMATE CHANGE

This section describes the climate in the Mill Creek area, the current climate-related changes occurring in the region, the effects of future assumed climate change on the Project and surrounding area, and the effects of the Project on climate change.

The Mill Creek watershed has seasonal variations in temperature and geographic variations in precipitation. The Mill Creek area lies in the path of prevailing westerly winds and is largely influenced by air from the Pacific Ocean. Winters are generally damp and foggy with an average daily high of 40 degrees in January. Occasionally, polar outbreaks of cold air pass over the Rocky Mountains, resulting in short periods of extremely low temperatures. Summers are hot and dry. The hot season lasts for two and a half months, with an average daily high of around 88 degrees in July. Average and extreme temperatures for January and July in the Mill Creek watershed are provided in Table 4-2. The average frost-free period extends from late March through early November, and the average growing season is about 220 days.

Table 4-2. January and July Temperatures in the Mill Creek Watershed

Month	Average Minimum	Average Maximum	Average Monthly	Extreme
January	28°F	40°F	34°F	-16°F
July	61°F	88°F	75°F	113°F

Average annual precipitation in the watershed ranges from 17.8 inches at elevation 948 feet, in the lower portion of the watershed, to 41.9 inches at elevation 2,400 feet. It is probable that mean annual precipitation exceeds 50 inches at elevations above 5,000 feet. At Walla Walla, approximately 10 percent of the normal annual precipitation falls as snow; at higher elevations, this percentage increases considerably, becoming approximately 40 percent at the 5,000-foot level. The normal annual precipitation for the watershed upstream from the Project is estimated to range from 35 to 40 inches (Corps 2006).

In the Pacific Northwest, changes in snowpack, stream flow, and forest cover are occurring. Future climate change would likely continue to influence these changes.

Average annual temperature in the region is projected to increase by 3 – 10°F by the end of the century. Winter precipitation in the form of rain, not snow, is projected to increase, while summer precipitation is projected to decrease (EPA 2016). Flooding on Mill Creek is typically the result of winter rainfall on frozen ground coupled with some snowmelt. Climate change is expected to increase rainfall intensity, but may reduce frozen ground. It is unknown how much impact climate change may have on flood events in the basin.

Along with rising air temperatures, there would be a corresponding rise in stream temperature. Average water temperatures could rise and snowpack might diminish, altering streamflow volume and timing. These changes in air and water temperatures and flow are expected to cause changes in steelhead and bull trout distribution, behavior, growth, and survival. According to NMFS (2015), climate change could affect steelhead and bull trout in the following ways:

- Higher water temperatures during adult migration may lead to increased mortality or reduced spawning success.
- If water temperatures accelerate the rate of egg development, it could lead to earlier fry emergence and dispersal, which could be either beneficial or detrimental, depending upon location and prey availability.
- Warmer temperatures would increase metabolism, which may increase or decrease juvenile growth rates and survival, depending upon availability of food.
- Reduced flow in late spring and summer may lead to delayed migration of juvenile steelhead and higher mortality passing dams.
- Winter flooding in transient and rainfall-dominated watersheds may erode redds (where fish lay their eggs), reducing egg survival, and may reduce overwintering habitat for juveniles.
- Reduced summer and fall flow may reduce the quality and quantity of juvenile rearing habitat, strand fish, or make fish more susceptible to predation and disease.
- Lethal water temperatures may occur in the mainstem migration corridor or in tributaries.

Climate change could also affect other resources at the Project in the surrounding area. Reduced precipitation during the summer months could impact vegetation type and quantity, resulting in changes to wildlife habitat. Higher temperatures would increase the evaporation rate from the lake, lowering lake elevation earlier in fall, and increasing water temperature, impacting aquatic plants and wildlife. Some vegetation throughout the Project might exhibit stress in response to higher temperature and less precipitation.

Indications are that average global atmospheric temperatures are trending upward and are correlated to increased atmospheric carbon dioxide levels (IPCC 2001). Internal combustion engines emit carbon dioxide, which is a greenhouse gas that contributes to climate change. International efforts are being directed at reducing carbon release into the atmosphere.

4.12.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

There would be no change to the effect on climate change from the No Action Alternative. Operation of internal combustion engines associated with O&M of the Project would have a negligible impact on climate.

Models and studies have estimated potential impacts to regional temperatures and precipitation patterns from climate change, but great uncertainty and variability exists in these predictions. Climate variability may affect natural flows, but the extent is unclear. In the future, climate change could alter the frequency of flood diversions to Bennington Lake. There might also be less water available after the flood season in which to fill the lake to 1,205 feet for public recreation.

4.12.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 could contribute slightly more greenhouse gas to the atmosphere than Alternative 1 by some additional operation of internal combustion engines associated with additional O&M including burning vegetation, but the amount would be unmeasurable. Burning vegetation as a habitat management tool would create smoke and carbon dioxide that would cause a negligible, indirect effect on climate change. These areas are typically less than 5 acres in size and occur less than annually. Any effect is not anticipated to be significant.

The effects of climate change on the Project with this alternative would be the same as for Alternative 1.

4.12.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would have the same minimal impact on climate change as Alternative 2 related to additional O&M including burning vegetation. Construction activities for the major fish passage improvements would also have a negligible impact on climate.

The fish passage improvements contained in this alternative are intended to ensure reliable fish passage at a wider range of flow, which is even more important in light of climate change.

4.12.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would have similar minimal impact on climate change as Alternative 3 related to the use of more internal combustion equipment during construction of bridge work. This would consist of short-term actions with negligible effects on climate. There would be no significant increase in effects to climate change from this alternative.

4.13 SOCIOECONOMICS

Socioeconomic effects include the impacts from the proposed action on the local people and economy, including attributes such as personal income, education, employment, housing, and recreation.

During 2015, there was an estimated 60,338 people living in Walla Walla County. This is a 2.6 percent increase since 2010, and an increase of 22 percent since 1980. The average per capita income in Walla Walla County was $23,520. There were 24,036 homes in the county, with median home price of $192,400. Around 86 percent of the population graduated from high school, and 27 percent have higher education (www.census.gov accessed 03/10/2017).

The Walla Walla area has been known historically for its agricultural economy, with wheat being the number one crop. A variety of other crops generate a significant part of the annual harvest, including barley, corn, potatoes, asparagus, peas, soft fruit, onions, concord and wine grapes, vegetables, and alfalfa hay and seed. In the past few years, Walla Walla has become a main attraction for wine and arts tourism as the area gets national and world recognition for its quality wine. The 2012 U.S. Department of Agriculture Agricultural Census indicated that the value of farm products sold in Walla Walla County rose from $344 million in 2007 to $437 million in 2012. Other economic sectors include health care, higher education, and government services.

The Project employs 7 full time employees and 1 part-time, seasonal employee. The Project's average annual budget is over $1 million.

First foods are considered by the CTUIR to be water, salmon, deer, cous (an edible root), and huckleberry. The first foods are considered by the CTUIR to constitute the minimum ecological products necessary to sustain their culture. The CTUIR has a mission to protect first foods and a long-term goal of restoring related foods to provide a diverse table setting of native foods for the Tribal community. First foods should be protected and restored for their respectful use now and in the future (Jones et. al. 2008).

Ecological characteristics that support the production of first foods include: hydrology, geomorphology, connectivity, native riparian vegetation, and native aquatic species. The ecological function and health of a river become a holistic measure of water quality and provide for restoration and maintenance of first foods (Jones et. al. 2008).

4.13.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

A portion of the Project budget contributes directly to the area's economy. The No Action Alternative would maintain the current level of economic input to the Walla Walla area.

The Project, along with the stabilized channel downstream, protects the city from periodic flooding. Without this protection, almost anywhere within the city would be prone to flooding. Flood insurance would be required for many of the homes and businesses within the city and adjacent areas. The average annual cost of flood insurance per policy for Walla Walla and surrounding counties is between $350 and $2,350 (https://bsa.nfipstat.fema.gov accessed May 23, 2017).

4.13.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Alternative 2 would improve the socioeconomics of the Walla Walla area slightly above Alternative 1 due to the slightly increased Project budget required for the updated O&M actions. This alternative would have minor, short-term indirect benefits to the area's economy. There would not be a significant difference between the existing condition and this alternative, however.

4.13.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Alternative 3 would improve the socioeconomics of the area more than Alternative 2 by creating jobs to complete all the Project updates and fish passage improvements. There would be major, short-term direct and indirect benefits to the area's economy.

4.13.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Alternative 4 would improve the socioeconomics of the area more than Alternative 3 and would have the greatest positive effect on socioeconomics of the Walla Walla area by creating jobs to complete all the Project updates, fish passage improvements, and downstream bridge and channel improvements. The risk of flooding both within the city of Walla Walla and downstream of the MCFCP would also be lowest from this alternative. This alternative would have major, long-term benefits to the socioeconomics of the Walla Walla area.

4.14 ENVIRONMENTAL JUSTICE

Environmental justice is the fair treatment and meaningful involvement of all people—regardless of race, color, national origin, age, or income—in the development, implementation, and enforcement of environmental laws, regulations, and policies. As outlined in Executive Order 12898, Federal agencies must evaluate environmental justice issues related to any project proposed for implementation. Federal agencies are required to consider and minimize potential impacts to subsistence and low income and minority communities. The goal is to ensure that no person or group of people shoulder a disproportionate share of negative environmental impacts resulting from the execution of the country's domestic and foreign policy programs. This evaluation includes identification of minority and low-income populations, identification of any negative Project impacts that would disproportionately affect these low-income or minority groups, and proposed mitigation to offset the projected negative impacts.

In Walla Walla County, the racial composition is predominantly white (71.9 percent). Hispanics (21.3 percent), African Americans (2.3 percent), Native Americans (1.4 percent), and Pacific Islanders (0.3 percent) also account for a percentage of the area's demographics (2017 U.S. Census Bureau Quick Facts for Walla Walla County).

The median household income was $47,946 in the county and $41,750 in the city. According to the 2015 U.S. Census Bureau Quick Facts for Walla Walla County, 16.5 percent of the county's population lives below the poverty line, and 22.4 percent of the city's population lives below that line.

The Mill Creek watershed is within the ancestral homeland of the Umatilla, Walla Walla and Cayuse Tribes, which are in alliance as the CTUIR. Hunting, fishing, and gathering are expressions of the covenant that these Tribes have with the land and everything that lives on it. This covenant requires the CTUIR to follow the seasonal round of hunting and gathering of their traditional subsistence foods, which are ceremonially presented and honored. This philosophy is further reflected and integrated into the CTUIR's "First Foods" policy, which forms the basis for their *River Vision* guidance document for management and restoration of waterways and associated ancestral lands (Jones et al. 2008). Mill Creek and the Walla Walla Valley were part of the vast territory ceded to the U.S. Government through the "Treaty between the Cayuse, Umatilla and Walla Walla Tribes, in Confederation, and the United States, June 9, 1855." The treaty explicitly provides for the right to fish, hunt, and gather foods and medicines.

First Foods are considered by the CTUIR to constitute the minimum ecological products necessary to sustain their culture. The CTUIR have identified the following First Foods: water, salmon, deer, cous (an edible root), and huckleberry. This generalized list is meant to provide the ritualistic serving order in the longhouse. Each food "term" is meant to be used inclusively and may be represented by "an ecologically related food" (Jones et. al. 2008). Additional First Foods and culturally important plants have been shared recently by the CTUIR (Dickson et al. 2017).

CTUIR's Department of Natural Resources mission statement reads, in part, "to protect, restore, and enhance the First Foods . . . for the perpetual cultural, economic and sovereign benefit of the CTUIR . . . utilizing traditional ecological and cultural knowledge and science to inform: (1) population and habitat management goals and actions; and (2) natural resource policies and regulatory mechanisms" (Jones et al. 2008).

"Ecological characteristics that support the production of First Foods include: hydrology, geomorphology, connectivity, native riparian vegetation, and native aquatic species. The ecological function and health of a river become a holistic measure of water quality and provide for restoration and maintenance of First Foods" (Jones et al. 2008).

Complete assessment and analysis of Mill Creek conditions and potential remedial options is available in the CTUIR's recent *Lower Mill Creek Final Habitat and Passage Assessment* and *Draft Strategic Action Plan (2017)*. "The CTUIR, with local, state and Federal partners, continues to seek restored Mill Creek ecological functions necessary to achieve water quality standards, delist ESA-listed bull trout and steelhead, and restore and sustain the CTUIR's First Foods and our Treaty-secured rights based on them" (CTUIR 2017a).

4.14.1 Alternative 1 – No Action (No Change to Existing Operations and Maintenance)

There are no entrance fees to access the Project. Most of the Project is open to the general public. There are some areas that are not accessible to the public for safety reasons. The No Action Alternative would not adversely or disproportionally affect minorities, low-income populations, or children.

4.14.2 Alternative 2 – Additional Maintenance, Repair, and Minor Improvements

Like Alternative 1, Alternative 2 would have no disproportional effect on minorities, low-income populations, or children.

4.14.3 Alternative 3 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements

Like Alternatives 1 and 2, Alternative 3 would have no disproportional effect on minorities, low-income populations, or children.

4.14.4 Alternative 4 – Additional Maintenance, Repair, and Minor Improvements/Major Fish Passage Improvements/Downstream Flood Risk Management by Non-Federal Organizations

Like Alternatives 1, 2, and 3, Alternative 4 would not adversely or disproportionally affect minorities, low-income populations, or children.

4.15 CUMULATIVE EFFECTS

NEPA and the Council on Environmental Quality (CEQ) regulations require Federal agencies to consider the cumulative impacts of their actions. Cumulative effects are defined as, "the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time" (40 CFR § 1508.7). The primary goal of a cumulative effects analysis is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and reasonably foreseeable future actions.

This section evaluates the cumulative effects of actions that could potentially affect the same environmental resources as those discussed earlier. The scope of this analysis extends beyond the Project to other areas that sustain the resources of concern. A resource may be differentially impacted in both time and space. The implication of those impacts depends on the characteristics of the resource, the magnitude and scale of the project's impacts, and the environmental setting (EPA 1999).

4.15.1 Resources Considered

Although this SEA addresses the effects of alternatives on the range of resources representative of the human and natural environment, not all of those resources need to be included in the cumulative effects analysis. Only those that are relevant to the decision to be made on the proposed action need to be included. USACE used the environmental effects analysis presented in this chapter to identify and focus on cumulative effects that are truly meaningful in terms of local and regional importance. The following resources were identified as being notable for their importance to the area and having potential for cumulative effects:

- Water Supply.
- Flood Risk Management.
- Threatened and Endangered Fish.
- Recreation.

These resources are discussed in terms of the following:

- Cumulative effect boundary (spatial and temporal).
- Past actions and impacts to the resources.
- Present actions and impacts to the resources.
- Reasonably foreseeable future actions that may affect the resources.
- Effects to the resources by the preferred alternative when added to other past, present, and reasonably foreseeable future actions.

4.15.2 Spatial and Temporal Boundaries

Guidance for setting appropriate boundaries for a cumulative effects analysis is available from CEQ (CEQ 1997) and EPA (EPA 1999). Generally, the scope of a cumulative effects analysis should be broader than the scope of analysis used in assessing direct or indirect effects. "Geographic boundaries and time periods used in cumulative impact analysis should be based on all resources of concern and all of the actions that may contribute, along with the project effects, to cumulative impacts" (EPA, 1999). The analysis should delineate appropriate geographic areas, including natural ecological boundaries, whenever possible, and should evaluate the time period of the project's effects.

The resources assessed in this analysis have been affected by various actions within the Mill Creek watershed since the mid-1900s. Actions such as construction and operations of dams and associated levee systems, agricultural development, road building, development of cities, and urbanization have negatively and positively impacted resources and will continue to do so into the foreseeable future.

Discussed below are the past, present, and reasonably foreseeable future actions that were considered for the cumulative effects analysis, the effects of the actions on the resources assessed, and a summary of the cumulative effects of the alternatives. Table 4-3 summarizes the geographic and temporal boundaries used in this cumulative effects analysis.

Table 4-3. Geographic and Temporal Boundaries of Cumulative Effects Analysis

Resource	Geographic Boundary	Temporal Boundary
Water Supply	Mill Creek Watershed	pre-Project to 20 years into the future
Flood Risk Management	Mill Creek Watershed	
Threatened and Endangered Fish	Mill Creek Watershed	
Recreation	In and Around City of Walla Walla Urban Area	

4.15.3 Past Actions

The following sections address the past actions and their effects on water supply, flood risk management, threatened and endangered species, and recreation.

4.15.3.1 Water Supply

The uppermost 36 square miles of the Mill Creek watershed has been the primary source for the city of Walla Walla’s municipal water supply since 1918. Water from Mill Creek is piped 14.5 miles from the city's water treatment plant where it is treated using sedimentation, ozone, and chlorine to meet State and Federal drinking water quality standards before entering the distribution system. The water treatment plant is capable of producing 24 million gallons (about 37 cfs) of clean water each day. Some water is returned to Mill Creek due to maintenance activities, and some water is passed through the system for power generation.

The Mill Creek Watershed supplies 88-90 percent of the city's water need. In addition to this primary source, the City of Walla Walla also has seven deep (800- to 1,400-foot) wells used to supplement the supply when stream levels decline in summer months or when water quality in the creek is poor. In an emergency, these wells would completely supply the city's needs.

In addition to the City of Walla Walla’s diversion, there is also a diversion point upstream from the Project (and upstream from 5-mile Road) that directs stream flow into Titus Creek. Within the Project boundaries, up to 30 cfs is diverted to Bennington Lake for recreation until the lake reaches elevation 1,205 feet, at which point a smaller amount is diverted to the lake until June 15 to maintain that water elevation. Also, within the Project boundary, a small amount of water is diverted to Rooks Park pond. Up to about 5 cfs is diverted into Jones Ditch by private landowners for agricultural purposes. There are other small pump diversions along the creek upstream of the Project as well. Some water is diverted into Yellowhawk and Garrison Creeks. The water in these creeks is eventually used for irrigation. Many of the irrigation water rights on Yellowhawk Creek are junior to some of the water rights on the Walla Walla River. Junior water rights are to be turned off if a senior water right holder's water supply is insufficient to meet the right. These flow withdrawals reduce the amount of water available in Mill Creek downstream of the points of diversion.

Effects of Past Actions on Water Supply

Past actions have had significant negative effects on water supply within the Mill Creek watershed during summer months, as agricultural and municipal water diverts notable portions of the available surface water supply. The supply of water has been diminished to the point there is not enough water available for all needs when flow is at its lowest.

4.15.3.2 Flood Risk Management

Some flood risk management was occurring even before the MCFCP was constructed. There were some areas where flood protection had already been installed along portions of the channel to protect a few blocks or individual buildings within the city. Large floods would have easily bypassed these small sections of flood protection. The MCFCP, constructed in the 1930s and 1940s by the Works Progress Administration and USACE, provided much higher flood risk management.

When the Project was constructed, Yellowhawk Creek was intended to receive a diversion of up to 900 cfs from Mill Creek, and Garrison was intended to receive up to 500 cfs. The USACE did not acquire a floodway easement, and residential development along Yellowhawk and Garrison Creeks led to a significant decrease in the amount of flood flow that could be diverted into these creeks (Table 4-4). Since 1964, Yellowhawk Creek has only been allowed to receive 60 cfs and Garrison Creek has received only 10 cfs. The total flood flow allowed to be diverted into these two creeks decreased from 1,400 cfs to just 70 cfs.

Table 4-4. Changes in Regulated Flow into Yellowhawk and Garrison Creeks at the Mill Creek Project

Year	Regulated Flow	
	Yellowhawk Creek	Garrison Creek
1938	900	500
1941	300	200
1951	275	60
1964	60	10
1988	<60	<10

Source: Corps 2006

Effects of Past Actions on Flood Risk Management

Past actions have significantly reduced flood risk within the city of Walla Walla. Little to no significant flooding has occurred within the city since 1931.

4.15.3.3 Threatened and Endangered Fish

Mill Creek contains ESA-listed steelhead and bull trout. Construction and operation of the MCFCP and the Project created poor habitat and passage conditions for these species.

From 1942 until 1982, there were no fish ladders at the diversion dam or the division dam. At the diversion dam, fish had to navigate through one of the two low-flow outlets if they were to pass upstream. Anecdotal information suggests there may have been a make-shift system of blocks placed in the low-flow outlets in an attempt to aid fish passage. How much the blocks may have improved passage is unknown. The system likely did not function well over the range of flow possible. Upstream passage for steelhead and bull trout was likely limited over this 40-year period. Fish ladders were constructed at the diversion dam and the division dam in 1982.

Other anecdotal accounts are that local fisheries groups placed steelhead eggs in baskets in upper Mill Creek in an attempt to increase steelhead numbers. The eggs may have come from any hatcheries where excess eggs were available. There may have been no genetic relationship to native Mill Creek steelhead.

Some fish are able to pass the ladders at some flows, but passage is not as good as it could be. The Project's fish ladders were not designed or built to today's fish passage criteria. Water velocities and heights fish must jump are higher than is currently allowable. The configuration of the low flow outlet directly adjacent to the ladder creates flow that can cause fish to bypass the ladder entrance. This increases ladder passage times. It also causes fish to struggle against the high flow, which is stressful for the fish.

In 2002, 16 adult steelhead were killed downstream of the diversion dam after becoming stranded in the stilling basin. This was the largest one-time loss of adult steelhead known to have occurred at the Project.

The Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan (NMFS 2009) calls for improvement of fish passage, screening and flow management in Mill Creek, and either alteration of the diversion trigger or screening all flow into Bennington Lake. The plan identifies the diversion dam and the Mill Creek channel as significant passage obstructions. The Walla Walla Subbasin Plan (NPCC 2004) estimates a low percentage of fish passage (20 percent) for steelhead at the diversion dam and classifies the dam as an imminent threat. Imminent threats were defined as structures or areas likely to cause immediate mortality to migrating fish.

In response to these plans, several organizations in the Walla Walla area have worked to improve fish habitat and fish passage conditions in Mill Creek. Fish passage improvements in the Mill Creek channel downstream of the Project began in 2006 with construction of a fish ladder at Gose Street Bridge at the downstream end of the MCFCP. Prior to construction of the ladder, fish had to navigate through very high velocities and several large jumps to pass between the severely eroded natural channel and the constructed channel.

The Mill Creek Fish Passage Assessment (Burns et al. 2009) identified and prioritized problem passage areas in the channel and included conceptual designs for passage improvements. This assessment led to multiple fish passage improvement projects led by the Tri-State Steelheaders in the channel, which were initiated in 2011. This organization works to obtain funding and complete passage improvement projects annually. One of their goals is to allow fish to successfully migrate through the entire MCFCP at a wide range of flows.

Other Tri-State Steelheaders projects include removal of the Kooskooskie Dam and removal of partial fish passage barriers on Yellowhawk Creek. These actions enabled fish to access many miles of habitat that had been inaccessible for decades.

The Walla Walla County Conservation District and the CTUIR have also completed numerous fish passage and habitat improvement projects within the Mill Creek and Walla Walla River watersheds.

In 2012, USACE constructed low-flow passages through three of the 87 weirs in the Project. Plans have been prepared to construct additional low-flow passages in the remaining weirs as funding is obtained.

Effects of Past Actions on Threatened and Endangered Species

The construction of the MCFCP significantly affected the creek, the floodplain, and associated resources. Construction inadvertently created partial fish passage barriers that completely block fish at some flows, straightened the creek, and cut off the creek from its floodplain. The MCFCP continued downstream through the city of Walla Walla, creating approximately 6 miles of altered creek channel with poor fish passage.

Some habitat improvement projects have been conducted, but they have not offset the negative impacts that have occurred over time.

4.15.3.4 Recreation

When the Project lands were originally purchased, the location was private land with no official public access. Some fishing may have occurred on Mill Creek, however numerous other fishing opportunities were available locally.

From 1942, when the project was completed, to 1953, there were no recreational facilities at the Project. In 1954, the lake was stocked with trout by the State of Washington, and recreation at the Project began. The availability of lake recreation at the Project significantly increased visitor use. However, no formal recreational facilities were made available to the public until 1965. The approval of the Master Plan for Mill Creek Reservoir (Corps 1961) gave authorization to build and operate the recreational facilities at Rooks Park, which opened to the public in 1965. Many other improvement projects have been implemented at the Project over the last 30-plus years (Corps 2016).

As recreation facilities were added to the Project, visitation increased. Visitation continues to rise as facilities are improved and the area's population increases. The Project is one of the most popular recreation locations in the area due to its close proximity to the city of Walla Walla. Visitors use the area heavily for sport fishing in Bennington Lake; hiking, biking, horseback riding, and walking on the Project's various trails; and bird watching, picnicking, and sightseeing throughout the Project. The Project had over 300,000 visitors in 2012 (Mill Creek Master Plan EA).

Development of city parks in Walla Walla was initiated in 1905. College Place parks development was initiated when the city was incorporated in 1945. There are currently 15 city parks and a municipal golf course in Walla Walla and two city parks in College Place. Both cities have parks that include fishing ponds. City of Walla Walla parks originally included a public swimming pool and two wading pools. The pool closed for several years until a new pool opened in 2017.

Whitman Mission National Historic Site is a United States National Historic Site located 8 miles west of Walla Walla, at the site of the former Whitman Mission at Waiilatpu. The 98-acre site provides public viewing of the historic location, hiking, picnicking, and interpretive services. The historic site was established in 1936 as Whitman National Monument and was redesignated a National Historic Site on January 1, 1963.

Effects of Past Actions on Recreation

There have been significant improvements to public recreation in the Walla Walla area in the past. Recreational use of the Project has increased over the last twenty years from 150,000 visits in 1994 to over 330,000 in 2014.

4.15.4 Present Actions

The following sections address the present actions and their effects on water supply, flood risk management, threatened and endangered species, and recreation.

4.15.4.1 Water Supply

Several groups are working on shallow aquifer recharge projects to divert spring runoff to areas with permeable soil to allow water to infiltrate into the shallow aquifer. Since the shallow aquifer and nearby streams are connected, increased ground water flow can improve water quality and fish habitat. Putting water in Bennington Lake also contributes to the shallow aquifer, as suggested by antidotal evidence that shallow wells downstream of the lake go dry if water isn't diverted to the lake.

Effects of Present Actions on Water Supply

Presently, actions, such as aquifer recharge, are being taken to maintain the water supply during summer when water is limited and demand is high. Flow diversions for the city of Walla Walla, at Titus Creek and at the diversions above and within the Project, continue to reduce Mill Creek flow. Irrigation diversions from the creek are not significant to flood flow, but are significant during summer low flow.

4.15.4.2 Flood Risk Management

Present actions at the Project include operation and routine maintenance of the flood risk management project. The Project is operated and maintained to reduce the risk of flooding within Walla Walla and downstream of the MCFCP.

The concrete channel is aging and needs continued maintenance to provide reliable flood risk management. In some areas, buildings, roads, and parking lots cover the channel. The condition of these structures is unknown, but they could be in poor condition based on their age. The USACE 2010 Periodic Inspection Report for the Mill Creek channel rated its condition as minimally acceptable. Failure of the channel places the city at risk of significant flood damages.

From recent observations near Last Chance Road, sediment appears to be accumulating in the channel and may lead to increased flood damages to properties adjacent to Mill Creek during flow less than 1,400 cfs (Gerald Gorman, personal communication 2017).

Effects of Present Actions on Flood Risk Management

Present actions continue to significantly reduce the risk of flooding in Walla Walla and downstream. However, there are indications that there have been recent changes downstream of the MCFCP that may increase flood risk in some areas.

4.15.4.3 Threatened and Endangered Fish

Several short sections of the MCFCP channel have recently been modified to improve fish passage conditions during periods of low flow and to provide resting habitat for high flows. These efforts were led by the Tri-State Steelheaders. Additional work to improve fish passage throughout this lower portion of the channel is also likely to occur as funding becomes available.

Steelhead, and to a lesser extent bull trout, benefit from the fish passage modifications to the Project. Resting areas and lower jump heights allow these fish to expend less energy to reach the upper watershed where they spawn and rear.

Several organizations have undertaken habitat improvement projects by restoring native trees and shrubs along streams, reducing pollution in stormwater, and installing fencing and off-stream water sources to control livestock access to the streams. As of 2016, there were over 3,450 acres of riparian restoration projects and 175 miles of streams on agricultural lands through the U.S. Department of Agriculture's Conservation Reserve Enhancement Program in Walla Walla County (Washington State Conservation Commission 2016). Eighty riparian restoration projects along 5 miles of streams in Walla Walla and College Place were implemented. These actions are ongoing and continue to provide benefits to ESA-listed species.

Effects of Present Actions on Threatened and Endangered Species

Presently, there are projects being conducted to improve threatened and endangered species habitat and passage conditions in Mill Creek. These improvements have not offset the negative impacts caused to this resource in the past.

4.15.4.4 Recreation

The USACE Mill Creek Project Master Plan (Corps 2016) guides the comprehensive management and development of all Project recreation and natural and cultural resources, with a focus on promoting stewardship and sustainability of Project resources.

USACE maintains the Project to provide a positive recreational experience to its visitors. Tens of thousands of people each year have free access to the many trails, open space, and other recreational amenities at the Project. The Project has also established a partnership with Pheasants Forever, which is a non-profit organization focused on conserving wildlife habitat.

Walla Walla has many public parks and recreation facilities, which include 15 parks, an 18-hole municipal golf course, an aviary, a new swimming pool, and recreation trails. The parks include picnic areas, playgrounds, and sports fields. There is an extensive recreation trail system and youth and adult recreation programs. These facilities continue to provide recreation to the residents of Walla Walla and surrounding areas.

The next closest non-urban recreation facility to Walla Walla is Lewis and Clark Trail State Park, located on Hwy 12, 28 miles away. The Umatilla National Forest also provides public recreation. The closest point of the forest is about 10 miles from Walla Walla, but there are multiple access points within varying distances.

Effects of Present Actions on Recreation

The Walla Walla area presently provides multiple types of recreational activities to residents and visitors. The Project contributes to the available recreational opportunities in the area.

4.15.5 Reasonably Foreseeable Future Actions

The following sections address the reasonably foreseeable future actions and their effects on water supply, flood risk management, threatened and endangered species, and recreation.

4.15.5.1 Water Supply

Withdrawal of water from Mill Creek for Walla Walla's municipal needs would continue into the foreseeable future. If the city's ability to withdraw water from the creek was diminished (e.g., due to sedimentation from a fire in the watershed), the deep basalt aquifer has sufficient supply to meet the city's demand for 10 years or longer when supplemented by the City's Aquifer Storage and Recovery Program. Long term water supply demands would likely be met by the conversion of agricultural supplies to municipal and industrial use as development and populations expand. The storage and recovery program stores water in the aquifer with treated Mill Creek water that meets Federal and State drinking water quality standards. Other permitted water withdrawals from Mill Creek, Yellowhawk Creek, and Garrison Creek for irrigation would also likely continue in the future.

Structural improvements to support water supply management in some areas of the channel are likely to occur in the future. The extent of the improvements is unknown at this time, but would likely address aging infrastructure, channel construction methodology improvements, and O&M repairs.

Effects of Future Actions on Water Supply

The supply of water within the Mill Creek watershed, especially during summer would continue to be limited, but is predicted to meet municipal needs. Water needs for irrigation and natural resources in Mill Creek would continue to be unmet in full unless new water supply solutions could be developed.

4.15.5.2 Flood Risk Management

Operations and maintenance of the MCFCP for flood risk management would continue in the future. Various channel modifications may occur (e.g., for fish passage improvements), but any changes would maintain the current level of flood risk management.

Due to recent sediment accumulation near Last Chance Road Bridge, it is possible that sediment and debris would be removed to increase channel capacity and reduce the risk of flooding at relatively low flow.

Effects of Future Actions on Flood Risk Management

Future actions would maintain the current level of flood risk management within Walla Walla. Flood risk management downstream of the MCFCP would depend on work by non-Federal organizations and the USACE preferred alternative selected through this EA process.

4.15.5.3 Threatened and Endangered Fish

Planning continues for future modification for improved fish passage, such as replacement of the Project's diversion dam fish ladder and alteration of the channel-spanning weirs to improve fish passage during low flow. Funding for these projects is currently being sought by USACE.

Upstream of the diversion dam, Mill Creek is classified as a priority restoration reach because the Snake River Regional Technical Team envisions that passage through lower Mill Creek will be restored (CTUIR 2017b). Fish passage improvements led by the CTUIR, the Tri-State Steelheaders, WDFW, the Walla Walla County Conservation District, and others would continue as funding allows. The overall shared goal is to create a channel where steelhead and bull trout (and Chinook salmon) can successfully pass at a wide range of flow while maintaining appropriate flood capacity.

Effects of Future Actions on Threatened and Endangered Species

These potential future actions would have a positive effect on threatened and endangered fish by improving migration passage and rearing habitat in Mill Creek. Upstream from the diversion dam, the steelhead habitat is fair to excellent, so removing passage barriers and improving aquatic habitat has high potential to benefit ESA-listed species, as well as other species.

4.15.5.4 Recreation

The City of Walla Walla parks and recreation program would continue and may expand as the area’s population increases. Walla Walla and College Place city parks and golf courses would continue to be used and managed similar to the existing condition for the reasonably foreseeable future. Population growth is likely to occur in the next 20 years and may require additional recreation facilities. The addition of the pool facility in Walla Walla may influence the use of public pools at alternate locations. For example, families currently traveling to Milton-Freewater for pool recreation may instead travel to the new Walla Walla pool location.

Effects of Future Actions on Recreation

Increased use at the city parks could coincide with increased use of facilities and recreation lands at the Project. Increased visitation at the Project would require management to prevent user conflicts where there are physical limitations based on total recreation lands available.

4.15.6 Cumulative Effects Summary

There have been significant cumulative effects on each of the four resources included in this analysis. Effects to these resources would continue in the future. Water supply will continue to be affected by the Project and other local water consumers. The Project would continue to provide flood risk management to Walla Walla and adjacent lands. Fish passage improvements to the Project and downstream in the concrete channel would benefit steelhead and bull trout directly by creating better passage conditions, but also indirectly by allowing more Chinook salmon and the nutrients they carry to reach the upper watershed. Demand for recreation is likely to increase. The Project would likely see increased recreational use.

CHAPTER 5 - APPLICABLE LAWS AND REGULATIONS

Chapter 5 identifies the legal, policy, and regulatory requirements that could affect each of the proposed alternatives. The implications for each of those requirements are discussed with respect to the preferred alternative.

This chapter addresses treaties, Federal statutes, executive orders, and state statutes potentially applicable to the proposed O&M actions at the Project. The text provides a brief summary of the relevant aspects of the law or order. The conclusions on compliance are based on the impact analysis presented in Chapter 4, Affected Environment and Consequences. The USACE would comply with all applicable laws and regulations.

5.1 TREATIES WITH NATIVE AMERICAN TRIBES

Treaties are legally binding contracts between sovereign nations that establish those nations' political and property relations. Treaties between Native American Tribes and the United States confirm each nation's rights and privileges. In most of these treaties, the Tribes ceded title to vast amounts of land to the United States but reserved certain lands (reservations) and rights for themselves and their future generations. Like other treaty obligations of the United States, Indian treaties are "the supreme law of the land," and they are the foundation upon which Federal Indian law and the Federal Indian trust relationship is based.

Treaty negotiations with area Tribes were conducted quickly by Isaac Stevens, Governor of Washington Territory. Treaties with area Tribes (e.g., Treaty of June 9, 1855, Walla Walla, Cayuse, Etc., 12 Stat. 945 [1859]) explicitly reserved unto the Tribes certain rights, including the exclusive right to take fish in streams running through or bordering reservations, the right to take fish at all usual and accustomed places in common with citizens of the territory, and the right of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed lands. These reserved rights include the right to fish within identified geographical areas.

The Treaty Between the Cayuse, Umatilla, and Walla Walla Tribes, in Confederation, and the United States, June 9, 1855, (12 Stat. 945 [1859]) resulted in the ceding of at least 6.4 million acres destined for private, non-Indian land ownership and formation of a 155,000-acre reservation for the CTUIR. The Project lies within the ceded lands.

Implementation of the updated O&M activities for the Project under the Preferred Alternative is not expected to have any (or very minimal) effects on treaty rights or resources. The USACE is not aware of any usual and accustomed fishing areas at the Project, and the lands within the Project are not "open and unclaimed land," as a

Federal flood risk management project has been constructed on them. Additionally, the USACE is proposing fish passage improvements (and other conservation measures) for the Project that should benefit fish and fish habitat.

5.2 FEDERAL STATUTES

5.2.1 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 United States Code [USC] 668-668c) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions (primarily for Native American Tribes). Take under this Act includes both direct taking of individuals and take due to disturbance (further defined in 50 CFR 22.3).

Bald eagles are uncommon visitors to the Project. Although there are no known eagle nests in the area, it is possible bald eagles could use the area to nest. Golden eagles are much less likely to be found in the area and would not likely nest in the vicinity. No take of either bald or golden eagles would occur.

5.2.2 Clean Air Act

The Clean Air Act (CAA) (42 USC 7401 et seq.), amended in 1977 and 1990, was established "to protect and enhance the quality of the nation's air resources so as to promote public health and welfare and the productive capacity of its population." The CAA authorizes the Environmental Protection Agency to establish the National Ambient Air Quality Standards to protect public health and the environment. The CAA establishes emission standards for stationary sources, volatile organic compound emissions, hazardous air pollutants, and vehicles and other mobile sources. The CAA also requires the states to develop implementation plans applicable to particular industrial sources.

Construction activities associated with any new structures and some O&M actions have the potential to increase dust and create other temporary air quality effects. With the implementation of best management practices, such as driving slowly and periodically wetting roadways, activities associated with the Project are not anticipated to adversely affect air quality. Operation of heavy equipment (trucks, tractors, etc.) would have localized, temporary increases of emissions, but would not adversely affect air quality.

Prescribed burning could be used as a vegetation/habitat management method. Smoke from this action could become an issue. A new burn management plan, including impacts from smoke, would be prepared prior to burning. Burning would be conducted only on burn days prescribed by Ecology.

5.2.3 Endangered Species Act

The ESA (16 USC 1531-1544), amended 1988, established a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a) of the ESA requires Federal agencies to consult with the USFWS and NMFS, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats.

USACE began ESA Section 7 consultation on O&M of the Project with the USFWS and NMFS in 2003. In 2007, USFWS issued their initial BiOp, which concluded that the ongoing O&M would not jeopardize the continued existence of bull trout, but included several terms and conditions. Some of the terms and conditions have yet to be met, such as fish passage improvements and increasing the diversion trigger to reduce the frequency of unscreened flood diversions to Bennington Lake that could harm or kill bull trout.

In 2011, NMFS issued their initial BiOp that concluded ongoing O&M of the Project would likely jeopardize the continued existence of mid-Columbia River steelhead and result in the destruction or adverse modification of critical habitat. The NMFS biological opinion included an alternative (called a reasonable and prudent alternative or RPA). The RPA included five elements:

- Develop an interim vegetation variance that promotes the development of riparian vegetation in the forebay and on the levees, as well as development of a plan to redesign the existing levee structures to include planting benches, overbuilt levee prism, or levee setback areas where riparian vegetation can develop.
- Work with the local flood control zone district, local governments, and other stakeholders to implement levee management consistent with the habitat and water quality requirements of steelhead.
- Construct a low-flow channel along the south bank of Mill Creek and modify or replace fish passage structures at the diversion dam and at the division dam to meet NMFS passage criteria by October 2015 or reinitiate consultation with NMFS.
- Salvage fish in the Mill Creek channel downstream of the first division works when flows become too low for fish to pass over the sills and move out of declining habitat conditions.
- Initiate unscreened diversion into Bennington Lake only in response to flood events that are expected to exceed 3,500 cfs in Mill Creek.

USACE did not accept the RPA because the BiOp’s analysis included actions that were not part of the USACE proposed action. Further, some of the RPA elements were outside the USACE existing authorities and could not be legally implemented.

ESA consultations with the USFWS and NMFS were reinitiated in 2018 and have now been completed for the preferred alternative (Alternative 3; Appendix C).

There are several possible determinations on effects to ESA-listed species.

- A “no effect” determination is made for those species or critical habitats temporally or spatially separated from, and not likely to be exposed to, potential stressors of the proposed action.
- A “may affect” determination is made when there are any potential effects to a listed species from a proposed action.
- A “not likely to adversely affect” determination is made for an affected species or critical habitat when a proposed action is unlikely to have a negative response or is not sufficient to reduce an individual’s health.
- A “likely to adversely affect” determination is made for an affected species if it is likely that an individual’s health could be reduced by a proposed action.
- A “formal consultation required” determination is made for critical habitat that could be negatively affected.

USACE determined that the preferred alternative, as proposed, may affect, and is likely to adversely affect, Middle Columbia River steelhead and bull trout, and it may affect Middle Columbia River steelhead and bull trout designated critical habitat; therefore, formal consultation under the ESA is required. The USACE has also determined the action may affect, but is not likely to adversely affect, Western yellow-billed cuckoo. There would be no effect on its critical habitat.

USFWS provided their new BiOp on October 9, 2020. They determined that the proposed action would not jeopardize the continued existence of bull trout or adversely modify their critical habitat. USFWS biological opinion is included in Appendix C.

NMFS provided their new BiOp on December 3, 2020. They also determined that the proposed action would not jeopardize the continued existence of mid-Columbia steelhead or adversely modify their critical habitat. NMFS biological opinion is included in Appendix C.

The combined summary of species and critical habitat determinations is shown in Table 5-1.

Table 5-1. Summary of Determination of Effects on Listed Species/Critical Habitat

Species	Species Determination	Critical Habitat Determination
NMFS		
Middle Columbia River Steelhead	May Affect, Likely to Adversely Affect	Formal Consultation Required
USFWS		
Bull Trout	May Affect, Likely to Adversely Affect	Formal Consultation Required
Western Yellow-Billed Cuckoo	May Affect, Not Likely to Adversely Affect	None Designated in WA

5.2.4 Federal Water Pollution Control Act (Clean Water Act)

The Federal Water Pollution Control Act (33 USC 1251 et seq.) is more commonly referred to as the Clean Water Act (CWA). This Act is the primary legislative vehicle for Federal water pollution control programs and the basic structure for regulating discharges of pollutants into waters of the United States. The CWA was established to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA sets goals to eliminate discharges of pollutants into navigable water, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment. The CWA has been amended numerous times and given a number of titles and codifications.

The Project contributes passively to water quality problems in Mill Creek, mainly with temperature. Water temperature upstream of the Project frequently exceeds the Washington State standard for Mill Creek of 63.5°F, and the wide, shallow stabilized channel can further increase water temperature within the Project footprint.

5.2.5 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1934, as amended (16 USC 661 et seq.), requires consultation with USFWS when any natural water body is impounded, diverted, controlled, or modified. USFWS and state agencies charged with administering wildlife resources are to conduct surveys and investigations to determine the potential damage to wildlife and the mitigation measures that should be taken. USFWS incorporates the concerns and findings of the state agencies and other Federal agencies, including NMFS, into a report that addresses fish and wildlife factors and provides recommendations for mitigating or enhancing impacts to fish and wildlife affected by a Federal project.

As future individual actions are proposed that modify Mill Creek, Yellowhawk Creek, or Garrison Creek, USACE would coordinate with USFWS to determine the applicability of this Act.

Some of the Project land (62 acres) was purchased for use as Fish and Wildlife Coordination Act mitigation land for construction and operation of the lower Snake River dams. The purpose of this land is to offset losses of habitat and hunter opportunity and needs to be retained for that purpose.

5.2.6 Magnuson-Steven Fishery Conservation and Management Act

The consultation requirement of Section 305(b) of the Magnuson-Steven Fishery Conservation and Management Act directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect Essential Fish Habitat (EFH). Adverse effects include direct or indirect physical, chemical, or biological alterations of the waters or substrate, and loss of or injury to benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within or outside EFH, and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures the action agency may take to conserve EFH.

The Pacific Fishery Management Council (PFMC) is one of eight regional fishery management councils established by this Act. The PFMC has designated EFH for ground fish; coastal pelagic species; and Chinook salmon, Coho salmon, and Puget Sound pink salmon. Steelhead are not protected by this Act.

Some Chinook now return to the Walla Walla River watershed and Mill Creek; however, these fish are a reintroduced population and are not covered under this Act (79 FR 75449). The MSA does not cover any species present in Mill Creek; therefore, the MSA is not applicable to the Project.

5.2.7 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 USC §§ 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in this Act to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof.

USACE would comply with this Act by implementing impact avoidance or minimization measures and removing vegetation outside the nesting season, thereby minimizing or eliminating impacts. By avoiding the destruction of nests and removing large trees only outside the nesting season, the proposed action would not result in taking migratory birds, their nests, eggs, or parts thereof.

5.2.8 National Environmental Policy Act

NEPA (42 U.S.C. § 4321) provides a commitment that Federal agencies will consider the environmental effects of their actions. An EA is prepared for an action that is not clearly categorically excluded but does not clearly require an Environmental Impact Statement (EIS) [40 CFR §1501.3 (a) and (b)]. Based on the SEA, the federal agency either prepares an EIS, if one appears warranted, or issues a "Finding of No Significant Impact" (FONSI), which satisfies the NEPA requirement.

An EIS is warranted in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The EIS must provide detailed information regarding the proposed action and alternatives, the environmental impacts of the alternatives, potential mitigation measures, and any adverse environmental impacts that cannot be avoided if the proposal is implemented. Agencies are required to demonstrate that these factors have been considered by decision-makers prior to undertaking actions. In the case of an EIS, the federal agency issues a "Record of Decision" (ROD), which satisfies the NEPA requirement.

In accordance with 40 C.F.R. § 1502.9(d), federal agencies are required to supplement existing NEPA documentation if "(i) The agency makes substantial changes to the proposed action. . . ; or (ii) There are significant new circumstances or information relevant to environmental concerns[.]" See also, 33 C.F.R. § 230.13(b).

A draft O&M SEIS document was sent to multiple agencies, Tribes, and individuals for review in 2018. Subsequently, the scope of alternatives were reduced based on the selection of a 1,700 diversion trigger in the GI Study/EA (Corps 2021). It was determined that the remaining four (of seven) alternatives would not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, development of this SEA is in compliance with NEPA requirements for the proposed action. NEPA compliance will be considered complete with the signing of a Finding of No Significant Impact.

5.2.9 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.) addresses the discovery, identification, treatment, and repatriation of Native American (and Native Hawaiian) human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony. This act also establishes fines and penalties for the sale, use, and transport of Native American cultural items.

If human remains or associated objects are discovered, all work would stop, and the USACE would notify Native American Tribes and comply with the requirements of NAGPRA following USACE guidance.

5.2.10 National Historic Preservation Act

Section 106 of the NHPA (16 USC 470 et seq.) requires that Federal agencies evaluate the effects of Federal undertakings on historic properties and afford the Advisory Council on Historic Preservation opportunities to comment on the proposed undertaking. The first step in the process is to identify cultural resources included in (or eligible for inclusion in) the NRHP that are in or near the area. The second step is to identify the possible effects of proposed actions. The lead agency must examine whether feasible alternatives exist that would avoid such effects. If an effect cannot reasonably be avoided, measures must be taken to minimize or mitigate potential adverse effects.

Cultural resource literature searches have been conducted in support of the SEA. Specific actions to be taken following approval of this SEA will require a Project-specific determination of effects in accordance and compliance with Section 106 of the NHPA.

5.3 EXECUTIVE ORDERS

5.3.1 Executive Order 11988 Floodplain Management

Executive Order 11988 Floodplain Management Guidelines, May 24, 1977, outlines the responsibilities of Federal agencies in the role of floodplain management. Each agency shall evaluate the potential effects of actions on floodplains and should avoid undertaking actions that directly or indirectly induce growth in the floodplain or adversely affect natural floodplain values.

The proposed action will not directly or indirectly induce growth in the floodplain or adversely affect natural floodplain values.

5.3.2 Executive Order 11990 Protection of Wetlands

Executive Order 11990 Protection of Wetlands, encourages Federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands when undertaking Federal activities and programs. It has been the goal of the USACE to avoid or minimize wetland impacts associated with their planned actions.

The proposed action would not result in the destruction, loss, or degradation of wetlands.

5.3.3 Socioeconomics and Environmental Justice

Population and Demographics

Walla Walla County, Washington has an estimated population of 62,584 residents with Walla Walla bring the largest city in the county.

Table 5-2. Education and Income for Walla County, Washington Compared to State and National Averages (U.S. Census Bureau 2021 Data)

Demographic	Walla Walla County, WA	State of Washington	National
Persons under 18	26%	21.7%	22.2%
Persons Over 65	19.1%	16.2%	16.8%
High School Graduates	88.4%	91.9%	88.9%
Four-Year Degree or Higher	38.4%	37.3%	33.7%
Percent in Labor Force	56.8%	63.7%	63.1%
Median Household Income	$63,686	$82,400	$69,021

Environmental Justice

As outlined in Executive Order 12898, federal agencies must evaluate environmental justice issues related to any action proposed for implementation. This evaluation includes identification of minority and low-income populations, identification of any negative impacts that would disproportionately affect these minority groups or low-income, and proposed mitigation to offset the projected negative impacts. The evaluation of environmental justice issues includes identification of minority and low-income populations in the MCFCP.

Section 160 of the Water Resources Development Act (WRDA) of 2020 directs the Secretary to define the term "economically disadvantaged community" for the purpose of the Act and the amendments made by the Act. An economically disadvantaged community is defined as meeting one or more of the following:

a. Low per capital income – The area per capita income of 80% or less of the national average
b. Unemployment rate above national average – The area has an unemployment rate that is, for the most recent 24-month period for which data are available, at least 1% greater than the national average unemployment rate
c. Indian country as defined in 18 U.S.C. 1151 or in the proximity of an Alaska Native Village
d. U.S. Territories, or
e. Communities identified as disadvantaged by the Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST) (https://screeningtool.geoplatform.gov)

According to the CEJST, accessed on July 17, 2023, the area of Walla Walla County associated with the Project area, is considered disadvantaged because it meets at least one burden threshold and the associated socioeconomic threshold. The Project area is a formerly used defense site and low income, 74th above 65th percentile. Formally used defense site means there is the presence of one or more formerly used defense site within the tract. Low income is defined as people in households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher education.

5.3.4 Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, November 6, 2000, directs Federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian Tribes, and to reduce the imposition of unfunded mandates upon Indian Tribes.

USACE formally offered Government-to-Government consultation to the CTUIR, Yakama Nation, and Nez Perce Tribe via letter on February 28, 2017. The USACE met with CTUIR staff to discuss the NEPA document (draft O&M SEIS) on May 4, 2017, and January 29, 2018. This O&M SEA is consistent with the previous NEPA document with exception that three alternatives related to different diversion triggers were removed given a GI Study/EA (Corps 2021) determined that a 1,700 cfs diversion trigger provides the best-balanced operation for flood risk reduction.

5.3.5 Executive Order 13186 Responsibilities of Federal Agencies to Protect Migratory Birds

Executive Order 13186 Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001, directs Federal agencies to ensure that environmental analyses of Federal actions required by NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

The proposed action will not result in take or negatively impact migratory bird species or their habitat.

5.3.6 Executive Order 13751 Safeguarding the Nation from the Impacts of Invasive Species

Executive Order 13751 Safeguarding the Nation from the Impacts of Invasive Species, December 5, 2016, amends Executive Order 13112 and directs Federal agencies to “refrain from authorizing, funding, or implementing actions that are likely to cause or promote the introduction, establishment, or spread of invasive species in the United States unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.”

The preferred alternative includes the ongoing implementation of the District’s Invasive Species Management Plan, which ensures compliance with the requirements of the Executive Order for the prevention and treatment of invasive species.

5.4 STATE STATUTES

On a case-by-case basis, state laws may also be applicable to various components of the proposed action. A state water quality certification is an example of a potential instance where a state permit or authorization may be a requirement for project implementation. On a case by case basis, any requirements will be addressed for site specific actions. Coordination with the Washington SHPO will also occur as necessary.

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CHAPTER 6 - COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

Chapter 6 explains the public and agency coordination that occurred throughout the preparation of this NEPA document.

6.1 NOTICE OF INTENT AND SCOPING

USACE published a Notice of Intent to prepare an O&M SEIS for the Project in the Federal Register on February 17, 2017. The Notice of Intent provided information about the Project and current and proposed future O&M activities that would be addressed in the NEPA document. Upon further review, it was determined that an EA and FONSI would meet NEPA requirements, and the SEIS preparation has been terminated and the NOI is being withdrawn. This SEA has incorporated public input received through the SEIS scoping and public review engagements.

Scoping is the process by which USACE gathered input from the public, Tribes, and government agencies to help determine the scope of the NEPA document's alternatives and analysis. Public scoping is a critical component of the NEPA process and one of the first steps taken in developing an EIS, or SEA in this case. During the scoping process, USACE informs the public about the NEPA document preparation and allows the public and other agencies to provide input and recommendations on what to include in the NEPA document. Public involvement allows USACE to identify and address important issues early in the development of the NEPA document.

A representative from the EPA visited the Project for a tour on April 19, 2017. USACE initiated scoping and notified potentially interested individuals on May 11, 2017 by email. Public notifications were emailed to agencies and individuals who expressed interest on Project actions in the past. A notification about scoping was also published in the Walla Walla Union Bulletin on May 21, 2017. Information about the NEPA document was provided on the Walla Walla District internet website at http://www.nww.Corps.army.mil/Missions/Environmental-Compliance/. The public and agencies were invited to provide scoping comments related to the O&M of the Project until June 12, 2017. A scoping meeting was held in the Walla Walla Regional Airport community conference room on May 24, 2017. Attendees included representatives from USFWS, the CTUIR, and the City of Walla Walla Public Works, as well as other members of the public.

Scoping comments were received from 11 individuals and 5 agencies. Issues identified during scoping have been addressed in this document. Scoping comments are contained in Appendix D, Public Scoping Comments.

A draft SEIS 46-day public comment period was conducted June 8 through July 23, 2018. Comments received were incorporated into this document as appropriate.

6.2 TRIBAL CONSULTATION

Several USACE staff members met with representatives of the CTUIR on May 4, 2017, in Mission, Oregon, to discuss the NEPA process and fish passage issues.

Rivers and aquatic resources are very important to the CTUIR. They recently prepared the Lower Mill Creek Habitat and Passage Assessment and Strategic Action Plan (CTUIR 2017) to assess existing conditions in the Mill Creek watershed and to use the information to propose actions for improving conditions for fish while maintaining or improving flood risk management. Key issues, concerns, and visions identified for Mill Creek include:

- Preserve and maintain upper Mill Creek and its headwater conditions.
- Maintain flood risk management capacity.
- Retain and enhance Mill Creek's natural resources and functions, including habitat, fisheries, water supply, water quality, in-stream flows, and creation of an open channel.
- Retain and enhance public access, channel visibility, and outdoor recreation opportunities, including paths for pedestrians and bicyclists.

6.3 AGENCY COORDINATION

The ESA requires USACE to consult with the Services concerning threatened and endangered species that may exist in the Project area. USACE has completed ESA consultations and the Services issued BiOps in 2020 (NMFS 2020 and USFWS 2020; Appendix C).

USACE has also coordinated with EPA and other agencies regarding NEPA compliance.

6.3.1 Cultural Resources Coordination

Since construction of the Project, USACE has consulted with Tribes and the SHPO many times regarding implementation actions. For purposes of this NEPA document specifically, USACE included the CTUIR and the Washington SHPO in the scoping process (May 15, 2017) and met directly with the CTUIR on January 29, 2018. The entire consultation history informs the actions implemented subsequent to the finalization of this SEA and would be subject to review in accordance with Section 106 of the NHPA and its implementing regulations, 36 CFR Part 800. If USACE identifies an undertaking and determines that it is the type of undertaking with the potential to affect historic properties, then consultation is required. The first step in consultation typically involves identifying an area of potential effect for the undertaking.

USACE identified the appropriate consulting parties, to include SHPOs, Tribes, and the public, and invited their participation in the process. USACE conducted research to determine what effects may occur as a result of the undertaking and consulted with the parties on this determination. Consultation determined that no historic properties are affected, or that the effects are not adverse. USACE may also consult with affected Tribes under NEPA, Executive Order 13175 (Consultation with Tribal Governments), Executive Order 13007 (Indian Sacred Sites), and applicable treaties.

6.4 PUBLIC INVOLVEMENT

Other agencies and the public were invited to review and comment on the draft NEPA document during a 45-day review period following the publication of the notice of availability in the Federal Register. The draft NEPA document was made publicly available at www.nww.usace.army.mil/Missions/Environmental-Compliance/. Reviewers were encouraged to submit comments on the draft NEPA document online at the website indicated above, by email to NEPANWW@usace.army.mil or by mail to CENWW-PPL-C – MCL SEIS, 201 North 3rd Avenue, Walla Walla, WA 99362-1876. All public and agency comments on the draft O&M SEIS document were reviewed, considered and incorporated when appropriate into this successor O&M SEA document. A summary of comments and USACE responses are included in Appendix D of this final SEA. USACE has also prepared a Finding of No Significant Impact.

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CHAPTER 7 - REFERENCES

Chapter 7 provides the applicable literature and reports cited in the analysis.

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