ICE HARBOR MASTER PLAN

US Army Corps
of Engineers ®
Walla Walla District

Draft – July 2021

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Table 1-1. Table of Acronyms

ADA	Americans with Disabilities Act
BPA	Bonneville Power Administration
BRZ	boat restricted zone
CFR	Code of Federal Regulation
cfs	cubic feet per second
Colville	Confederated Tribes of the Colville Reservation
Corps	U.S. Army Corps of Engineers
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
District	Walla Walla District
DM	Design Memorandum
EM	Engineer Manual
ENS	Environmental Stewardship
EO	Executive Order
EP	Engineer Pamphlet
EPA	Environmental Protection Agency
ER	Engineer Regulation
ESA	Environmentally Sensitive Area
FCRPS	Federal Columbia River Power System
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Conservation Act
GIS	geographic information system
HEP	Habitat Evaluation Procedure
HMU	Habitat Management Unit
IPMP	Integrated Pest Management Plan
JFF	Juvenile Fish Facility
LSRFWCP	Lower Snake River Fish and Wildlife Compensation Plan
MRM	Multiple Resource Management

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MRM-FIRA	Multiple Resource Management-Future and Inactive Recreation Areas
MRM-LDR	Multiple Resource Management-Low Density Recreation
MRM-VM	Multiple Resource Management-Vegetative Management
MRM-WM	Multiple Resource Management-Wildlife Management
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
O&M	Operation and Maintenance
OMP	Operational Management Plan
PIF	Partners-in-Flight
PL	Public Law
Project	Ice Harbor Lock and Dam Operating Project
PSMP	Programmatic Sediment Management Plan
RM	river mile
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Officer
TCP	Traditional Cultural Property
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WRDA	Water Resources Development Act
WSDOT	Washington State Department of Transportation
Yakama	The Confederated Tribes and Bands of the Yakama Nation

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PREFACE

The Ice Harbor Master Plan was first approved in 1963. There has been one formal revision, in 1977, then four appendixes were added to the 1977 Master Plan in 1982. Most of the changes in this updated Master Plan reflect new resource objectives, a new land classification system that updates 1977 classifications to existing conditions, and documentation of land classification changes between 1977 and present day. This plan also includes changes in land classification that were made in conjunction with a multidisciplinary team and input from the public.

The format for this plan is outlined in Engineer Pamphlet 1130-2-550 (Corps 1996), revised January 2013, which sets forth policy and procedure to be followed in preparation and revision of project master plans.

The Master Plan is intended to serve as a guide for the orderly and coordinated development, management, and stewardship of all recreational, natural, and cultural resources of Ice Harbor Lock and Dam (Project). This plan is an overarching framework for the more detailed Operational Management Plan (OMP), which is developed after the Master Plan is completed and then updated annually.

The 2021 Master Plan presents an inventory of land resources and how they are classified, existing park facilities, an analysis of resource use, anticipated influences on Project operation and management, and an evaluation of future needs. It presents data on changes from 1977 to present conditions, anticipated recreational use, sensitive resources requiring protection, and mitigation requirements under the Lower Snake River Fish and Wildlife Compensation Plan (Corps 1975).

1. Introduction

This document is the Ice Harbor Lock and Dam Master Plan (Master Plan) for management of the lands and associated recreational, natural, and cultural resources of Ice Harbor Lock and Dam operating project (also referred to as the Project throughout the rest of the document). Master Plans are required for civil works projects and other fee-owned lands for which the U.S. Army Corps of Engineers (Corps) Walla Walla District (District) has administrative responsibility for management. Chapter 1 identifies the authorized purposes and provides a description of the Project, and provides information about the scope, goals, and planning processes of this Master Plan. A Finding of No Significant Impact (FONSI) documents the findings of the Environmental Assessment (EA), which was conducted as an integral part of developing the 2021 Master Plan; the FONSI can be found in Appendix A and the EA in Appendix B.

1.1. PROJECT AUTHORIZATION

The first formal proposal by Congress for the improvement of the Snake River for navigation and other purposes was made in 1902. This was followed by other actions, notably in 1910 and 1935, eventually leading to the River and Harbor Act of 1945 (Public Law [PL] 79-14), which authorized construction of a series of dams on the reach of Snake River downstream from Lewiston, Idaho, substantially in accordance with the plan submitted in House Document Numbered 704, Seventy-Fifth Congress. House Document 531, Eighty-First Congress, Second Session, dated March 20, 1950, proposed a four-dam plan with Ice Harbor as the first unit of the four dams. Construction funds for Ice Harbor Lock and Dam were first appropriated for fiscal year 1956; further appropriations were received annually as construction proceeded. Construction of Ice Harbor Lock and Dam was initiated in January 1956. The main dam structure and installation of the first three power-generating units was completed in December 1961; the remaining three units were operational in January 1976. It was dedicated by Vice President Lyndon B. Johnson on May 9, 1962. A legislative history for the Project is provided in Appendix C, Legislative History of Ice Harbor Lock and Dam.

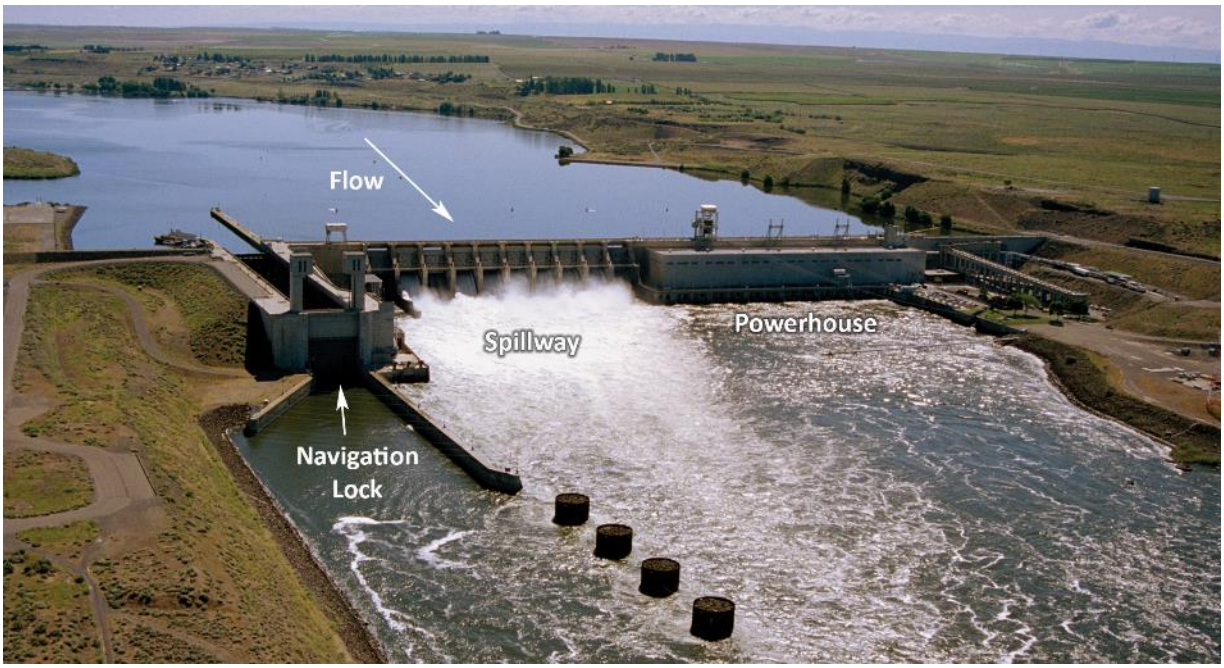

Figure 1-1. Ice Harbor Lock and Dam Aerial View

1.2. AUTHORIZED PURPOSES

The purposes of Ice Harbor Lock and Dam, as originally authorized by Congress (River and Harbor Act of 1945 [P.L. 79-14]), include navigation, irrigation and hydroelectric power (if warranted), with fish and wildlife conservation, and recreation added later as additional purposes. The Master Plan does not address the authorized purposes of navigation, hydroelectric power, or incidental irrigation.

1.2.1. Recreation

Section 4 of the Flood Control Act of 1944, as amended in 1946 and 1954 and by Section 207 of the 1962 Flood Control Act (PL 87-874), is the basic authority for the initial recreation development on Lake Sacajawea.

The Corps is the largest provider of water-based outdoor recreation in the nation. With more than 400 lakes and river projects in 43 states, the Corps plays a major role in meeting the nation's outdoor recreation needs. Popular recreation activities around Lake Sacajawea include fishing, swimming, picnicking, boating, hunting, and camping. There are several day-use areas, campsites, parks, habitat management units (HMUs), boat ramps, and a marina.

1.2.2. Fish and Wildlife

The Fish and Wildlife Coordination Act (FWCA) of 1958 (PL 85-624) provides authority to incorporate project features or structures for conservation of fish and wildlife. Under the guidance of this law, the various proposals and concepts set forth in this Master Plan have been, and will continue to be, coordinated with the fish and wildlife agencies.

The Lower Snake River Fish and Wildlife Compensation Plan (LSRFWCP) was authorized by the Water Resources Development Act (WRDA) of 1976, Section 102, PL 94-587 (October 1976). It was amended by WRDA 1986, Section 856, PL 99-662 (November 1986), to increase project cost. It was also amended by WRDA 2007, Section 3165, PL 110-114, to add woody riparian vegetation restoration to the plan.

The Corps developed the LSRFWCP to comply with the FWCA and to provide mitigation for fish and wildlife losses caused by the construction of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Locks and Dams on the Snake River in Washington and Idaho.

As originally authorized, the plan was divided into two parts: fisheries compensation and wildlife compensation. Fisheries compensation centered on fish propagation facilities and providing anglers access along tributary streams. The wildlife compensation involved on-project lands habitat development, off-project habitat acquisition, and the purchase and release of game farm birds (pheasants). More detailed information relating to Project lands associated with the LSRFWCP can be found in Chapter 4, Land Classification; Chapter 5, Resource Plan; and Chapter 6, Special Topics.

The fish and wildlife mission is therefore managed under two different authorities – environmental stewardship (ENS) as authorized under the Project's general operation and management (O&M) budget, and mitigation as authorized under the FWCA and associated LSRFWCP. This presents unique opportunities, like the ability to manage fish and wildlife habitat on lands classified under a few different land classifications. It also presents unique challenges, especially funding challenges, due to the funding structure of ENS in the District.

Yearly funding of the ENS mission is a combination of appropriated funding by Congress plus matching funds from Bonneville Power Association (BPA) based on a pre-determined calculation; the District must receive both funding sources to execute the funds. In budgeting outyears, sometimes the District only receives the appropriated portion of the funding (without the BPA matching funds), which affects how much work can be done (e.g., habitat planting, invasive species control measures, boundary surveys).

Mitigation development under the LSRFWCP has been funded by construction general funds, appropriated by Congress (WRDAs 1976, 1986, 2007). Those funds were scheduled

to end in 2019, after which the District is responsible to continue O&M of these mitigation lands into the future.

1.3. PURPOSE AND SCOPE OF THE MASTER PLAN

The Ice Harbor Master Plan is a strategic land use document that guides the comprehensive management and development of all Project recreational, natural, and cultural resources throughout the life of the Project. This Master Plan guides and articulates Corps responsibilities pursuant to Federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources at the Project. It is dynamic and flexible, based on changing conditions, and intended to be effective for about 20 years. The Master Plan focuses on overarching management goals and objectives.

Details of design, management, administration, and implementation are addressed in another document, the Ice Harbor Operational Management Plan (OMP). The OMP is a 5-year management plan that details information required to implement the concepts described in the Master Plan. Neither the OMP nor the Master Plan addresses regional water quality, water management, or the operation and maintenance of Project operations facilities such as Ice Harbor Lock and Dam or hydropower production at the dam. Actions identified in the OMP should be reviewed annually to identify upcoming actions needing review under the National Environmental Policy Act (NEPA) and other applicable environmental laws and regulations.

The Master Plan was developed with consideration of regional and local needs, resource capabilities and suitability, and expressed public interests consistent with authorized Project purposes and regulations. The Ice Harbor Master Plan was written in 1977 (Corps 1977). A revision is warranted due to the age of the 1977 Master Plan, changes in Corps policy and guidance regarding master plans, land purchases, management changes, and changes in visitor use.

Because the previous Ice Harbor Master Plan is 44 years old, it would be very difficult to document all the changes that have occurred. We have attempted to capture some of the most important and impactful changes, such as the addition of mitigation lands and the increasing challenges of invasive species. The Master Plan is a future-facing document, so it is important to capture the history of the Project while anticipating what will continue to impact the Project in coming years.

An Environmental Assessment (EA) was conducted as an integral part of developing the 2021 Master Plan and can be found in Appendix B.

1.4. PROJECT DESCRIPTION

Ice Harbor Lock and Dam is located 9.7 miles above the mouth of the Snake River, which enters the Columbia River at river mile (RM) 324, in the southeastern corner of Washington State (Figure 1-2). The dam and the reservoir lie in southeast Washington, in Franklin and Walla Walla Counties. The reservoir or lake created by the dam, Lake Sacajawea, extends upstream on the Snake River almost 32 miles to Lower Monumental Lock and Dam.

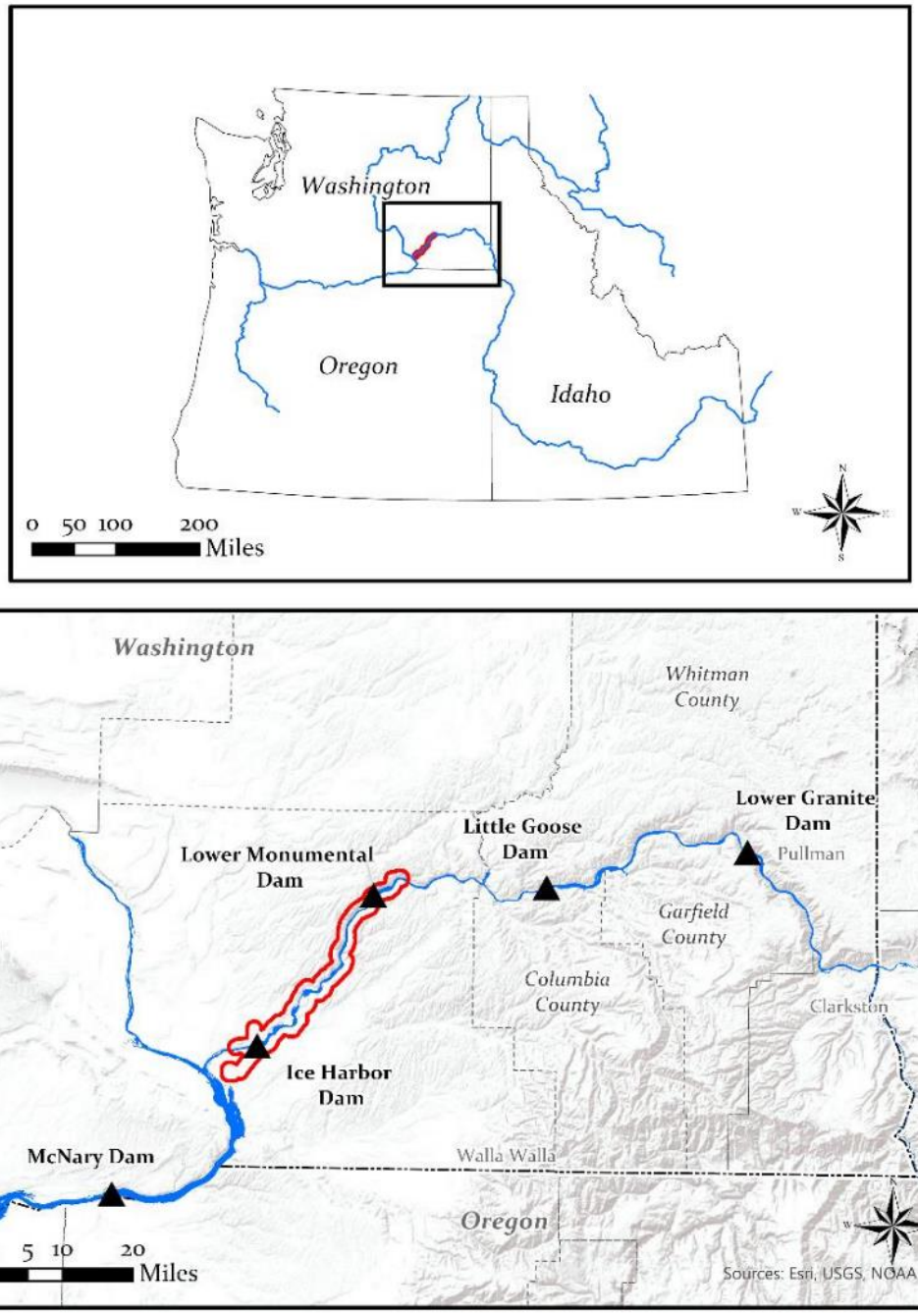

Figure 1-2. Location of Ice Harbor Project

1.5.CONCEPTUAL FRAMEWORK

The process of developing the Ice Harbor Master Plan involved a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. With a generalized conceptual framework, the process focused on four primary components:

- Regional and ecosystem needs.
- Project resource capabilities and suitability.
- Expressed public interests that are compatible with the Project's authorized purposes.
- Environmentally sustainable elements.

The Corps solicited comments during a 45-day scoping period through a website created for the Master Plan update, through U.S. mail, and via a specialized email address. Recommendations received during scoping helped Corps planners identify opportunities for improved management of Project lands. Those recommendations were considered, along with previous visitor feedback and public use, during formulation and evaluation of the Master Plan. Scoping meetings were not held due to public health restrictions for the COVID-19 pandemic in 2020.

Information gathered during the scoping period was combined with the detailed Project inventory to form a list of opportunities, constraints, and other influencing factors for future natural resource and recreation development and management at Ice Harbor Project.

From this inventory and input, updated land classifications were applied, and land classification maps were created (Appendix D, Land Classification Maps). These maps are used for locating appropriate development and management actions that will be detailed in the Ice Harbor OMP.

1.6.REFERENCES AND DESIGN MEMORANDUMS

Document references can be found in Chapter 9, Bibliography, and a list of all design memoranda pertinent to the Project is furnished in Appendix E, Ice Harbor Project List of Design Memoranda.

2. Project Setting and Factors Influencing Management and Development

2.1. DESCRIPTION OF RESERVOIR, NAVIGATION POOL, AND SHORELINES

Chapter 2 is an overview of the key factors that influence and constrain present and future use, management, and development of land and water resources at Ice Harbor Project. These factors fall into three general and interrelated categories: natural resources, historical and social resources, and administration and policy. An analysis of these factors, as well as regional needs and public input, results in a framework to minimize adverse impacts to the environment and resolve competing and conflicting uses. Information presented in this chapter is used to develop Project-wide resource objectives, designate land classifications, and identify other needs.

2.2. HYDROLOGY

The Snake River originates near Jackson, Wyoming, and winds its way 1,078 miles to the confluence with the Columbia River near Pasco, Washington. It is the principal tributary of the Columbia River. The major tributaries to the lower Snake River are the Salmon, Clearwater, Palouse, and Tucannon Rivers (Figure 2-1). The Clearwater River, the largest tributary to the lower Snake River segment, historically contributes about 39 percent of the combined flow in the lower Snake River reach (Corps 1995). Flows from the Clearwater, along with releases from upriver Dworshak Dam, make up close to 50 percent of the lower Snake River flows during periods of low flow. Flows in the lower Snake River are highest in the spring (average annual peak of 165,000 cubic feet per second (cfs) and lowest in late summer (averaging 25,000 cfs).

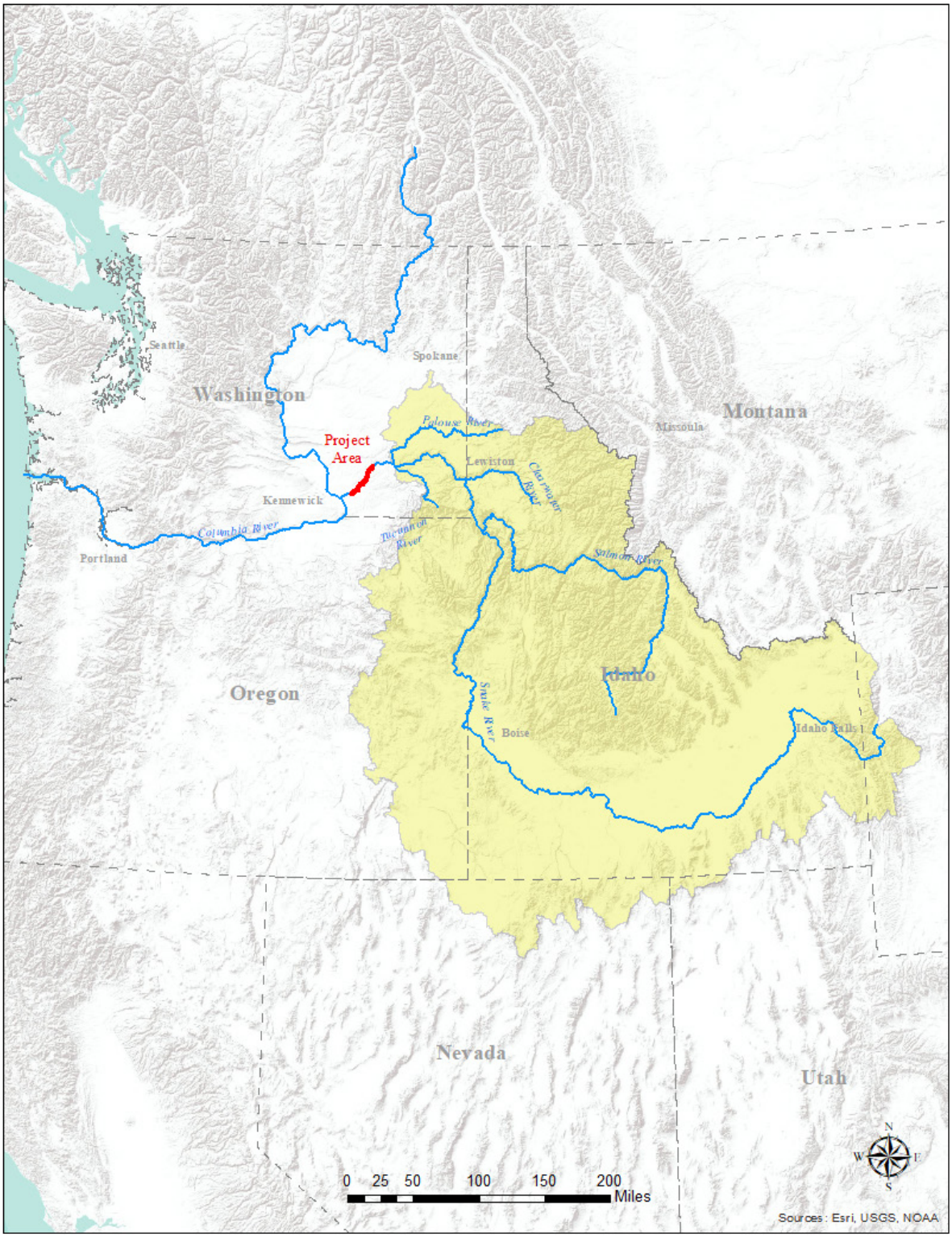

Figure 2-1. Watersheds of the Snake, Palouse, and Tucannon Rivers Drain into the Snake River Upstream of Lake Sacajawea

2.3. CLIMATE

The climate in this general area is characterized by relatively low precipitation, wide temperature variations, low humidity, high evaporation, and abundant sunshine. Rainfall averages 8.54 inches per year, in which 2.34 inches or 27 percent, usually falls in May through September, mostly as light, intermittent rains and cold drizzles. Thunderstorms occur on about 15 days each year and occur most in June, but severe storms with heavy precipitation are rare.

In winter, the average temperature is 33.1^0 F and the average daily minimum temperature is 26.2^0 F. In summer, the average temperature is 69.7^0 F and the average daily maximum temperature is 86.1^0 F. About 100 days per year are below freezing, and on average only a few days are below 0^0 F, though some years there are periods of 2 or 3 weeks of sub-zero temperatures.

Average relative humidity in midafternoon is about 56 percent. Humidity is higher at night, and the average at dawn is about 76 percent. The sun shines 79 percent of the time in the summer and 24 percent in winter. The prevailing wind is from the south. Average windspeed is highest at 6.2 miles per hour, in March.

2.4.TOPOGRAPHY, GEOLOGY, AND SOILS

2.4.1. Topography

Cliffs and rounded basalt bluffs predominate along the 32-mile length of Lake Sacajawea. These high, rugged features are created by the downcutting action of the Snake River through the layers of basalts and other lava derived materials that underlie the Columbia Plateau. Thus, the reservoir lies at the bottom of the gorge entrenched within the grain fields and dryland pasture of the plateau uplands. Because of the angularity of much of the shoreline terrain, the main line railroads follow closely along the length of both shores. As the shoreline progresses downstream, the gorge loses some of the abruptness that characterizes the upper reaches of the reservoir. Though the topography does flatten somewhat near Ice Harbor Dam, it never fully opens onto the rolling loess-covered "Palouse Hills" topography. Numerous steep angular side canyons or coulees intersect the gorge, and some of the alluvial deposits or deltas associated with them extend into and along the gorge above the level of the reservoir. The stark quality of this steep, often rugged terrain is visually softened with an interspersing of dryland grass between the cliffs and talus slopes of black basalt. The sub-irrigated areas (areas with a naturally high water table, providing additional water for plant growth) within the gorge support small patches of riparian vegetation.

Of all the factors that affect and influence development potential, the topography is the most limiting. The steep, rugged terrain comprises much of Lake Sacajawea's shoreline, limiting development of major public recreation facilities, industry, and habitat preservation and enhancement.

2.4.2. Geology

The lower Snake River, including Lake Sacajawea, lies within the Snake River Canyon, located in the south-central part of the Columbia River plateau, a moderately high area between the Cascade Mountains to the west and the Rockies to the east. The cliffs of the canyon are exposed Miocene basalt that was deposited approximately 17 to 14 million years ago and less often between 14 and 6 million years ago through most of Eastern Washington, Eastern Oregon, and Idaho. The basalt originated as lava flows that erupted from long fissures through which the lava poured. Magma in the fissures solidified to form dikes. A large, slightly depressed lava plateau formed as a result. Some of the best views of formations occur along the cliffs of the lower Snake River at both Lower Monumental Dam and the railroad cut at Ice Harbor Dam. At Lower Monumental Dam three formations are visible: The Frenchman Springs Member of the Wanapum Basalt, Grande Ronde basalt, and Lower Monumental Member. The Lower Monumental member is the youngest flow of the Columbia River Basalt Group and extends as far east as Asotin Washington. At Ice Harbor Dam, Ice Harbor dikes are visible. The dikes and tuff cone are part of an 80-kilometer-long linear vent system for the Ice Harbor flows. The formation has large columns, a vesicular top, and thick breccia at the bottom. The breccia exhibit ropy texture in places and is described as a "rubble zone" with chilled blocks of basalt mixed with sediment.

The Ice Age, or Pleistocene Period began approximately 2.6 million years ago and ended about 14,000 years ago. During this period, wind-blown loess accumulated throughout the Columbia plateau, giving the Palouse region its rolling topography. However, this period also marked by large flood events known as the Missoula and Bonneville floods that shaped much of the landscape into coulees, scablands, and deep canyons. The Snake River Canyon formed because of the erosional force of these floods, creating basalt cliffs and occasional alluvial benches, interrupted by side canyons that are still visible today. The Snake River lies just about 470 feet below the plateau at the Ice Harbor Dam site. Four areas within the Ice Harbor Dam pool best show features from the Pleistocene Period:

- Levey Road (RM 12): Situated on a terrace between Juniper Dunes and the Snake River. Along this terrace shows the transition between the late Pleistocene sediments and the basalt formation along the Snake River. Wind piled up sand dunes at Juniper Dunes, located approximately 10 miles northeast of Levey Road. The soils are thick on windblown silt (referred to as loess) and some sand, gravel, and basalt.

- Scott Gravel Bar (RM 35): As much as 19 feet of gravel (largest boulder 3 feet in diameter) are exposed in railroad cuts in the giant ripple marks of Scotts Bar. In places there are several feet of slackwater sediments overlying the gravels, which perhaps a dozen Touchet Beds exposed. This stratigraphic relation suggests that the last dozen Missoula floods were going up the Snake River at this location; if true, the last Missoula floods did not descend the Cheney Palouse tract but reached the Pasco Basin only by other routes. The flood gravels and Touchet Beds are capped by 3 feet of loess. The ripple marks have a wavelength of approximately 490 feet; their amplitude of 19 to 26 feet has been accumulated by gullying of the troughs.

- Burr Canyon (RM 35): Sediment deposited by the Missoula floods in the eddy that existed at the mouth of Burr Canyon. Exposures of Touchet Beds, the slackwater sand and silt deposited by the Missoula floods.

- Anchor Canyon (RM 20): Also referred to locally as "The Bathtub" is a deepwater canyon in the Snake River that was created by the Pleistocene floods.

2.4.3. Soils

The use of the soils of the Ice Harbor Project vicinity is limited by their texture, depth, and the effect of climatic conditions on them. These soils may be grouped under three general headings according to physiographic areas: soils of the uplands, soils of escarpments and steep canyons, and soils of bottomlands and low terraces.

The soils of the uplands, which like above the reservoir and outside of the project boundary, are formed from loess and are mostly deep, well drained, and medium textured. Also included in this group of soils that contain enough volcanic ash to be highly susceptible to wind erosion. These soils often develop blowouts. Climatic conditions limit the use of these soils mainly to a winter wheat-summer fallow cropping system.

Soils found in escarpments and steep canyons are formed in a mixture of loess and fragments of basalt that overlay basalt bedrock. The surface is broken by numerous shallow, rocky outcrops. These soils are too rocky for cultivation and are used for pasture. Included in this group are the old terraces in the Snake River Canyon that have developed from alluvium over glacial outwash. The soils are well drained and have fair to good water-supplying capacity which makes them suitable for wheat in a winter wheat-summer fallow rotation.

Soils found in bottomlands and low terraces are formed from riverwash sediment that has washed from the uplands or from landslides. Some of the areas classified as riverwash and alluvial land are below the high-water line and are subject to flooding in the spring. They are also subject to shore erosion. Soils that occupy the broad, gently sloping terraces are

excessively drained and coarse textured. They are derived from reworked wind-deposited sand. These soils are somewhat excessively drained and are too droughty for dryland farming. When irrigated and fertilized they produce alfalfa and pasture.

Many of the Snake River Plateau soils are light and highly erodible with low rainfall limiting the ability of vegetative cover to reestablish, once removed. Wind erosion is prevalent, especially during the spring and fall, when high winds and dry soil conditions create dust storms (Figure 2-2). The severity of these dust storms is exacerbated by dryland agricultural practices that expose the soil during spring cultivation and fall harvesting. Soil erosion must be considered in the development of any management plan. The overgrazing of native forage plants on the shallow soils of the steeper (30 to 60 percent) slopes could greatly accelerate wind and water erosion, as could construction and other agriculture activities that could remove soil-holding cover.

Figure 2-2. Dust Storm

Erosion can influence the reservoir activity in a variety of ways. Eroded sediment carried downstream can silt portions of the reservoir, reducing power production efficiency. Boating, swimming, and other water-related activities become less attractive if erosion occurs. Erosion from areas burned by wildland fires and soils plowed for agriculture are two of the main factors that contribute sediment to the rivers. The use of no-till farming practices reduces the sediment input from agriculture. Landslides in burned areas contribute large amounts of sediment. Landslides of various types also occur along the reservoir shoreline. These landslides are generally within the surface layer sediments, especially those that are somewhat poorly drained because of an admixture of finer grained sediment.

2.5. REGIONAL ACCESSIBILITY

Ice Harbor Dam is located approximately 8 miles northeast of the town of Burbank and 12 miles east of Pasco. U.S. Highway 12, a major east-west route lies west of the Project by roughly 7 miles. It intersects with State Route 124 which runs northeast to Monument Drive to the Snake River. Visitors from areas near Spokane and Pullman, Washington, and Moscow, Idaho, use U.S. Highway 395 to U.S. Highway 12, to State Route 124 to get near the Project. There are a limited number of state and county roads offering local access along the Project; most access routes are on rural roads, winding and indirect routes, and some gravel roads.

Closest commercial air transportation service within the vicinity of Ice Harbor Project includes the Tri-Cities Airport and Walla Walla Regional Airport. Private planes also use the Tri-Cities Airport and occasionally use the landing strip near Lower Monumental Dam. Closest railroad train depot is in Pasco, Washington.

2.6. RESOURCE ANALYSIS (LEVEL ONE INVENTORY DATA)

There have been many vegetation and wildlife surveys done throughout project lands over the past 50 years. This inventory data is captured in published and unpublished work as detailed in this chapter. Details on the survey data are summarized in applicable subchapters below.

In associated with the dams, the Corps manages a network of HMUs that are distributed along most of the shoreline of the Snake and Columbia Rivers. Traditionally these HMUs have been managed for recreation including hunting and fishing. In the past two decades Corps biologists recognized that the HMUs also support a vast array of wildlife and vegetation, and so began to question the future management of the HMUs and the biodiversity they support. There was a need for natural resource baseline data for making species and habitat management decisions on Corps lands. The Corps began to develop strategies to inventory and investigate natural resources and management for multiple species. These directives are organized into three basic levels of effort: land use classifications and rapid assessment of diversity (Level 1), multi-species detailed inventories (Level 2), adaptive management investigations (Level 3) (Corps 1996).

To meet mitigation goals under the FWCA and then the LSRFWCP, HMUs were established to replace, repair, and enhance fish and wildlife habitat that was lost due to the construction of the dam and reservoir. These HMUs help create wildlife corridors and vegetation connectivity along the river's edge and surrounding lands. The Corps actively manages the HMUs to control invasive species and enhance the local native habitats. Invasive species are a big problem in riparian areas. False indigo, for example, is infesting the shoreline in many areas, as are reed canary grass, purple loosestrife, and phragmites in

areas of deposition and shallow water. Invasive species treatment is prioritized annually through on-the ground surveys conducted by Corps wildlife biologists.

Mammalian Studies

In 2005, the Corps and the Museum of Wildlife and Fish Biology at the University of California, Davis entered into a cooperative agreement to initiate Level 1 vertebrate inventories of small mammal diversity and abundance relative to Russian olive in the Walla Walla District, eastern Washington (Guilfoyle 2006). Efforts have evolved into a general Level 2 biodiversity inventory of terrestrial vertebrates within the District, including reptiles and amphibians (herpetofauna). The scope of this effort was to inventory amphibians and reptiles at Walla Walla District HMUs along the lower Snake River in southeastern Washington. Within this scope, the main goals were to examine species richness at each HMU, discuss habitat use, and as a result of the research, fill in the gaps in distribution for several species along the lower Snake River canyon and the Columbia/Snake River confluence.

During small mammal surveys in 2008 to 2009 (Engilis et al. 2010), deer mouse was the most common small mammal species encountered at each HMU and generally outnumbered all other captures combined. Other common species of mammals encountered include deer mouse, montaine vole, Great Basin pocket mouse, Western harvest mouse, bushy-tailed woodrat, house mouse, Northern pocket gopher, vagrant shrew, long-tailed vole, cottontail rabbit.

Reptile and Amphibian Studies

In 2008 and 2009, three HMUs within Lake Sacajawea pool were surveyed for reptiles and amphibians (Alminas et al. 2010). They are Big Flat, Lost Island, and Hollebeke. Species identified during those surveys included the following: Woodhouse's toad, American bullfrog, Western yellow-bellied racer, gopher snake, wandering garter snake, and Northern Pacific rattlesnake.

There are six potential Washington state special status herpetofaunal species within Ice Harbor Project Area. They are the Columbia spotted frog (State Candidate for listing), Northern leopard frog (State Endangered, Federal Species of Concern), Western toad (State Candidate for Listing, Federal Species of Concern), sagebrush lizard (State Candidate for Listing, Federal Species of Concern), striped whipsnake (State Candidate for listing). None of these species were identified within the Ice Harbor HMUs during the 2008 inventory period.

Most common reptiles encountered include the Northern Pacific rattlesnake, Western yellow-bellied racer, Great Basin gopher snake, common garter snake (see Table 2-1).

Table 2-1. Amphibian and Reptile Species

AMPHIBIANS	REPTILES
tiger salamander	painted turtle
long-toed salamander	Western fence lizard
Western toad	sagebrush lizard
great basin spadefoot	common side-blotched lizard
Woodhouse's toad	pigmy short-horned lizard
Pacific treefrog	Western skink
Columbia spotted frog	rubber boa
Northern leopard frog	ring necked snake
American bullfrog	racer
	striped whipsnake
	common garter snake
	gopher snake
	Western terrestrial garter snake
	night snake
	Western rattlesnake

Most common amphibians encountered include Western toad, Pacific treefrog, the non-native and invasive American bullfrog, and long-toed salamander.

Avian Studies

Fisher et al. (2010) conducted avian surveys on Corps HMUs from 2004 to 2008. More than 41,000 individual birds and 150 unique species were detected. Thirty-seven of those species detected were neotropical migrants, 56 were nearctic migrants, and 57 were permanent residents. Springtime avian surveys yielded the highest species richness during the study. Surveys during winter results in lowest species richness of any season. This study recorded 23 species that had not been documented by previous studies (Asherin and Claar 1976, Rucklage and Ratti 1998, 2000) however, most of these new species were waterfowl and waterbirds that are only present in the region during the winter, the season in which researchers did not previously study. Nine HMUs were surveyed within the Sacajawea Pool including Charbonneau, Levey, Big Flat, Fishhook, Lost Island, Hollebeke, Snake River Junction, Walker, and Couch Landing. In summary, this study found that during the summer these areas provide habitat for multiple riparian-dependent nesters as well as several Partners-In-Flight (PIF) priority species. During the spring and fall these areas provided vital stopover habitat for numerous migrants on their long and energetically expensive journeys. Hollebeke appears to be a hotspot for migrants during the spring and fall, yet

supports relatively low densities of PIF priority species during the breeding season. This study also noted that winter provides important habitat for waterfowl.

This study also noted that irrigated sites had greater bird abundance and species richness than non-irrigated sites. Non-irrigated sites had slightly greater abundances of resident birds and non-riparian dependent PIF priority species. Irrigated HMUs tend to have more floral structure and diversity which can augment nesting, foraging, and brood-rearing opportunities, thus making these areas more attractive to more individual birds and bird species. Riparian forested and shrub-scrub habitats had higher species density and richness, riparian-dependent bird density and richness in the summer.

Russian olive is an invasive species that dominates some of the HMUs. Numerous bird species have been documented using Russian olive for food or cover including warblers, owls, flycatchers, and hummingbirds. This study indicated that Russian olive in the riparian plant community did not influence the density, richness, or composition of bird communities in either the summer or winter.

Various avian species are getting established outside of their native range and seeing population success within the reservoir systems of the lower Snake River. Examples include American white pelican, Caspian tern, cormorant, and rock dove. This opportunistic behavior has led to new and developing wildlife management goals for habitat enhancement (Figure 2-3).

Figure 2-3. Caspian Tern

Fish Studies

Seventeen native and eighteen introduced resident fish species are found in the lower Snake River (see Table 2-2). Information on the relative abundance of resident fish in the

lower Snake River reservoirs suggests that fish community structure is generally similar among reservoirs (Corps 2002).

Table 2-2. Fish Species

NATIVE RESIDENT	NON-NATIVE RESIDENT	ANADROMOUS
White sturgeon	Brown trout	Snake River spring/summer Chinook salmon
Rainbow trout	Common carp	Snake River fall Chinook salmon
Kokanee	Yellow bullhead	Snake River sockeye salmon
Mountain whitefish	Brown bullhead	Snake River steelhead
Bull trout	Channel catfish	American shad
Chiselmouth	Black bullhead	Pacific lamprey
Peamouth	Tadpole madtom	
Nrothern pikeminnow	Flathead catfish	
Longnose dance	Mosquitofish	
Speckled dance	Pumpkinseed	
Redside shiner	Warmouth	
Bridgelip sucker	Bluegill	
Largescale sucker	Smallmouth bass	
Sandroller	Largemouth bass	
Prickly sculpin	White crappie	
Mottled sculpin	Black crappie	
Piute sculpin	Yellow perch	
	walleye	

Figure 2-4. Pacific Lamprey

2.6.1. Fish and Wildlife Resources

2.6.2. Vegetative Resources

The Project contains land that supports diverse vegetation that is both actively and passively managed. This land provides habitat for a wide variety of wildlife. The Corps owns and maintains a narrow strip of land along the Snake River that serves as a corridor for wildlife. Existing vegetation, along with mitigation plantings of trees, shrubs, and grasses provide cover and food for foraging fish and animals. There are numerous lowland tributary riparian and wetland acres, allowing for the formation of palustrine forests. The river corridor is typically characterized by three types of vegetation classes: riparian (lies adjacent to streams and rivers), wetlands (occur where groundwater saturates the surface layer of soil during a portion of the growing season), and upland (grassland/shrubland aeras).

Vegetation has been described in various reports (Engilis et al. 2010; Fischer et al. 2010). The Corps has planted throughout the Project area, especially in mitigation HMUs, to create and enhance wildlife habitat.

Englis et al. (2010) and Fischer et al. (2010) described habitats encountered during the mammal inventory as primarily thin strips of riparian grasslands, sparse shrub-steppe, and rock outcrops in shrub and grassland. Riparian corridors were generally composed of various native trees including poplar, alder, dogwood, cottonwood, willows, and roses as well as non-native species such as black locust, Russian olive, willows, and Himalayan blackberry.

The upland vegetation in the Project area is typical of steppe communities in the Columbia Basin Province, which are dominated by rabbit brush, cheatgrass, and remnant bunchgrasses such as Idaho fescue, bluebunch wheatgrass, and Sandberg's bluegrass, while shrub-steppe communities are co-dominated by sagebrushes, such as big sagebrush, gray rabbitbrush, serviceberry, currant, antelope bitterbrush, and non-native cheatgrass (Corps, 2002).

Common forbs include arrowleaf balsamroot, yarrow, various buckwheats, blanket flower, various parsleys, and lupines.

In 2014, the Remote Sensing Application Center and the Corps updated the cover type map of the lower Snake River corridor (Bellante et al. 2014). Based on that work, the following landcovers are found within the Ice Harbor Project area:

Table 2-3. Landcover Types in Ice Harbor Project Area, Categorized by Remote Sensing

LANDCOVER TYPE	ACRES
Agriculture	2,412
Developed	19,407
Grass/forb	6,726
Mesic Shrub	109
Palustrine Emergent	46
Palustine forest	292
Rip rap	103
Rock	100
Shrub-steppe high	417
Shrub-steppe low	3,530
Unconsolidated shore	8
Upland forest	111
Water	40,810

In 2017, Freestone Environmental Services conducted vegetation remote sensing of Ice Harbor and Lower Monumental Projects. The results of that study identified 138 species: 49 introduced species, 65 native, 6 weeds on the Washington State Noxious Weed Class B list, and 13 weeds listed on the noxious weed Class C list. Five species were listed as unknown but were listed to genus level (i.e. Phleum, Pinus, Rumex, Scirpus, and Typha).

The most abundant herbaceous species in order of dominance are found in Table 2-4.

Table 2-4. Herbaceous Shrubs in Order of Abundance

SPECIES	CATEGORY
cheatgrass	introduced
bulbus bluegrass	introduced
cereal rye	Class C noxious weed in WA
smooth brome	introduced
common reed	Class C noxious weed in WA
big bluegrass	native
thickspike wheatgrass	native
yellow starthistle	Class B noxious weed in WA
bluebunch wheatgrass	native
fiddleneck	native

The most abundant shrub species in order of dominance are detailed in Table 2-5.

Table 2-5. Shrub Species in Order of Abundance

SPECIES	CATEGORY
Himalayan blackberry	Class C noxious weed in WA
gray rabbitbrush	native
false indigo	Class B noxious weed in WA
willows	native and introduced species present
green rabbitbrush	native
autumn olive	introduced
black hawthorn	native
bitterbrush	native
Wood's rose	native

The most abundant tree species in order of dominance are listed in Table 2-6.

Table 2-6. Tree Species in Order of Abundance

SPECIES	CATEGORY
Russian olive	Class C noxious weed in WA
cottonwood	native
white alder	native
quaking aspen	native
Siberian elm	introduced
Lombardy poplar	introduced
juniper	introduced*
black locust	introduced
silver maple	introduced
purpleleaf plum	introduced

*Rocky Mountain juniper is a native species, which was not distinguished from introduced species of juniper in the study.

Russian olive is considered an invasive species that that produces large quantities of olives, which are unpalatable to the local fauna, and dominate a majority of the irrigated sites and riparian areas at several HMUs. Many agencies and conservation organizations have concluded that Russian olive represents a threat to native flora and fauna, and guidelines for control are distributed and implemented commonly.

There are, however, counter arguments that certain migratory bird species such as finches have been found feeding on the insects that inhabit the tree and its fruit. Finches have even

been observed over wintering in the Russian olive stands, making them a highly beneficial resource. Whether or not the birds have been overwintering due to an abundance of resources or the loss of resources along their migration route is still unknown. The current management plan is to methodically replace the Russian olive with native, fruit producing trees and through scientific methods determine their overall ecological function in the current ecosystem.

2.6.3. Threatened and Endangered Species

Species listed as threatened or endangered under the Federal Endangered Species Act that may occur in the Project area are Snake River spring/summer and fall Chinook salmon, Snake River sockeye salmon, Snake River Basin steelhead, bull trout, and western yellow-billed cuckoo. The lower Snake River and its tributaries within the Project area contain designated critical habitat for all Endangered Species act-listed fishes. Each is described in the following paragraphs.

Snake River Spring/Summer Chinook Salmon

Snake River spring/summer Chinook salmon were listed as threatened in 1992 and include all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, Salmon, and mainstem Snake Rivers.

Chinook salmon are anadromous, which means that adults spawn in freshwater streams where juveniles hatch, but then they migrate out to the ocean to grow up to 3 years before returning to their natal stream (where they were born) to spawn as adults. Adult and juvenile spring/summer Chinook salmon generally only migrate through the Project area.

Currently, there are five subbasins in the Snake River (lower Snake River, Tucannon River, Grande Ronde River, Imnaha River, and Salmon River), including 33 watersheds with natural spawning populations (NMFS 2013). A number of limiting factors, including degraded freshwater spawning and rearing habitat, the hydropower system, and harvest, affect these populations.

Snake River Fall Chinook Salmon

Snake River fall Chinook salmon were listed as threatened in April 1992, and reaffirmed April 14, 2014. Historically, the lower and middle Snake River populations formed the two major population groups. However, the construction of Hells Canyon Dam extirpated (made extinct) the middle Snake River population. Spawning populations presently occur in the mainstem Snake River below Hells Canyon Dam, Lower Granite Dam, and in the lower reaches of the Clearwater, Grand Ronde, Tucannon, Salmon, and Imnaha Rivers.

Like other salmon species, fall Chinook are anadromous, but the adults typically spawn later in the fall and at lower elevations in streams and rivers compared to spring/summer Chinook. Juveniles outmigrate slightly later in the summer and are typically younger and smaller than spring/summer Chinook.

There are two types of rearing life history characteristics that have been documented in fall Chinook salmon: ocean type and reservoir type. Ocean type refers to juveniles that outmigrate on a typical schedule to the ocean in the summer. Reservoir type refers to juveniles that begin their outmigration later in the summer, then rear in the lower Snake and Columbia Rivers, where they grow larger and slightly older over winter before completing their migration to the ocean the following spring.

Fall Chinook salmon migrate through the Project area, but reservoir type fall Chinook smolts likely rear in the lower Snake River within the Project area, and a small population of adults typically spawn in the Snake River below the lower Snake River dams.

Snake River Sockeye Salmon

Snake River sockeye salmon were listed as endangered on November 20, 1991. Historically, Redfish Lake in Idaho contained an abundant spawning population of Snake River sockeye. This population was extirpated but has since been restored to a minimum level. Five other historic lakes in the Stanley Basin and Sawtooth Valley once produced sockeye as well, but the Redfish Lake population is the last remaining (NMFS 2013).

Like other salmon, sockeye salmon are anadromous, but they differ in that spawning and rearing occur in headwater lakes rather than instream. This species is at extremely high risk of extinction due to a lack of abundance, productivity, spatial structure, and genetic diversity. Hatchery propagation efforts have done well providing substantial numbers of fish for supplementation, but survival rates must increase across all life stages to reestablish a sustainable population.

Sockeye generally only migrate through the Project area, but adults have been known to delay below the Project in the summer when high water temperature impedes migration. Sockeye may also seek thermal refuge in the Clearwater River upstream of its confluence with the Snake River.

Snake River Steelhead

Snake River steelhead were listed as threatened on August 18, 1997, and protective regulations were issued under Section 4(d) of the Endangered Species Act on July 10, 2000. Their threatened status was reaffirmed on January 5, 2006, and again on April 14, 2014. This distinct population segment includes populations below natural and manmade

impassable barriers in streams in the Snake River basin of southeast Washington, northeast Oregon, and Idaho.

Snake River steelhead are a summer run fish that can enter the Columbia River Basin throughout the year as adults, but typically migrate through the lower Snake River September through November. The adults overwinter in the mainstem Snake and Columbia Rivers, during which time they sexually mature, then complete their upriver migration early the following spring to spawn March and April. Juveniles outmigrate April through May, but unlike Chinook salmon, which outmigrate, typically at 1 year of age or less, juvenile steelhead typically do not outmigrate before age 2 or 3. Adult and juvenile steelhead migrate and rear within the Project area.

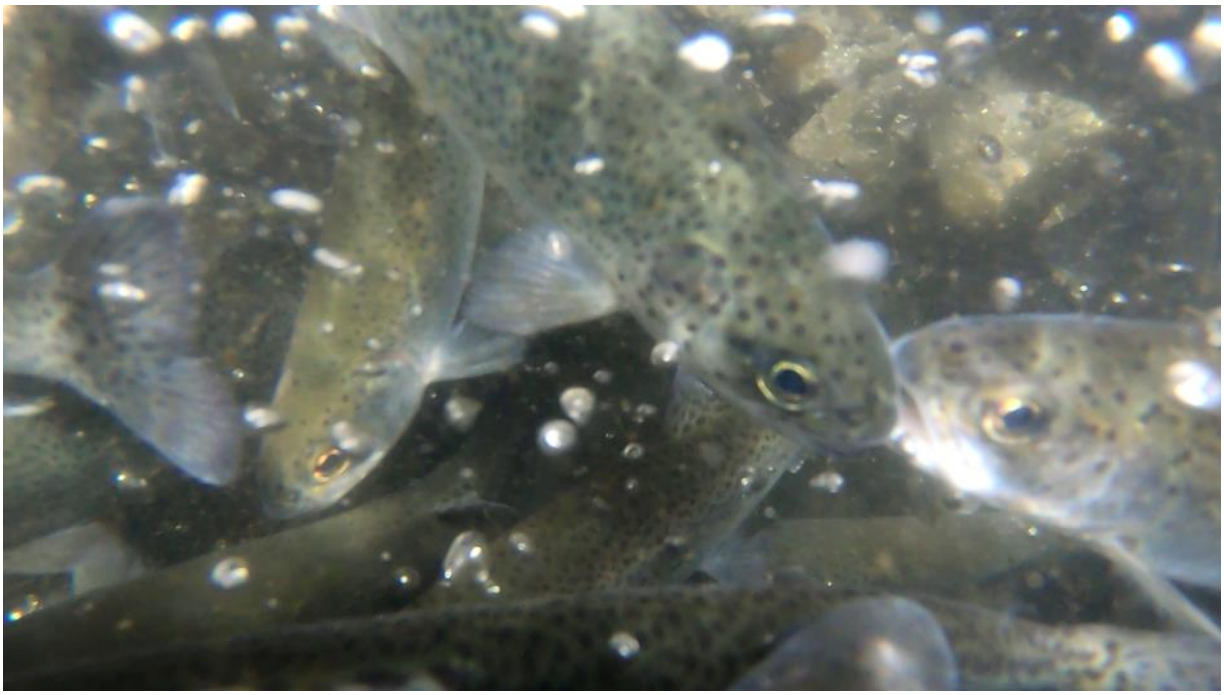

Figure 2-5. Steelhead Smolt

Steelhead have generally been referred to as "A-run" and "B-run," based on two different ocean rearing strategies. A-run fish generally spend only 1 year in the ocean before returning, and they are smaller than B-run fish, which spend 2 to 3 years in the ocean before returning to freshwater. While A-run fish are also found throughout most of the Snake and Columbia River Basins, research has shown that B-run fish are strictly from the Clearwater and Salmon River Basins (NMFS 2017).

Another life history characteristic separating steelhead from other anadromous salmon is iteroparity, or the ability to spawn more than once. While all other salmon species return to freshwater, spawn, and then die, steelhead may return to the ocean again, or remain in the freshwater rivers to spawn again.

Steelhead typically migrate through the Project area, but they may also overwinter in Lake Sacajawea prior to completing their spawning migration.

Bull Trout

The U.S. Fish and Wildlife Service (USFWS) issued a final rule listing the Columbia River Basin population of bull trout as a threatened species on June 10, 1998. Bull trout are currently listed throughout their range in the western United States as a threatened species. Historically, bull trout were found in about sixty percent of the Columbia River Basin. They now occur in less than half of their historic range. Populations remain in portions of Oregon, Washington, Idaho, Montana, and Nevada (USFWS 2010).

Migratory bull trout spawn in headwater streams along with resident bull trout. Their juveniles rear from 1 to 4 years before migrating downstream to mainstem river habitats as sub-adults. Migratory adult bull trout spawn in September through October, then migrate downstream to overwintering areas from October through December after spawning, and then begin their return migration to the headwaters during May and June.

Migratory sub-adults may overwinter in creek and river mainstems for several years before returning to the headwaters once sexually mature. Resident and migratory forms may be found together, and either form may give rise to offspring exhibiting either resident or migratory behavior. Both sub-adult and adult bull trout likely use the lower Snake River during the fall, winter, and spring for rearing and overwintering, although the proportion of local populations that may do this is unknown.

Western Yellow-Billed Cuckoo

The western distinct population segment (west of the continental divide) of the yellow-billed cuckoo was listed as threatened under the Endangered Species Act on October 3, 2014. Critical habitat has been proposed; however, Washington is not included in the critical habitat designation. These birds prefer open woodlands with clearings with 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 willow understory (Taylor 2000). They typically require an understory of 75 percent cover over a minimum of 10 acres. In winter, yellow-billed cuckoos migrate to tropical habitats with similar structure, such as scrub forest and mangroves. Individuals may be on breeding grounds between May and August.

In the Pacific Northwest, the species was formerly common in willow bottoms along the Willamette and Columbia Rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington. The species was rare east of the Cascade Mountains. It may now be extirpated from Washington (USFWS 2008).

Ice Harbor Project lands lack the required plant cover density to support yellow-billed cuckoos. No yellow-billed cuckoos have been documented in the Project area, and given the lack of required habitat, none are expected to be in the area.

2.6.4. Invasive Species

In accordance with Executive Order (EO) 13112, an invasive species is defined as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Invasive species may be accidentally transported or deliberately introduced because they are thought to be helpful in some way. Nuisance, noxious, pest, and invasive species exist across the project, including avian, fish, and vegetative species. Often these are non-native species that have a special competitive advantage in this area, and little natural pressure from predators and/or other species that keep the species in check. Management of invasive species can be extremely expensive and complicated. Therefore, the Corps uses an integrated pest management approach for all pest control. Vegetation in the Project area includes a wide array of invasive, noxious, nuisance, and pest species. These species can impact Project operations, reduce habitat value, and impact recreation.

There are aquatic invasive fish species and nonnative sport fish that impact the ecological system and species abundance and success; however, the management of these are outside of Corps authority and jurisdiction. The Corps cooperates with the State of Washington to address these when feasible and funded.

The Corps does manage various animals, both native and non-native, nuisance species in compliance and coordination with the State of Washington and the National Oceanic and Atmospheric Administration, USFWS, and the United States Department of Agriculture. These animals are typically causing a nuisance and disrupting other native species such as salmon populations, operations of the project, or establishment of native habitats.

Terrestrial plants including reed canary grass, false indigo, purple loosestrife, and phragmites are becoming more and more of a management issue for the Project and are requiring more focused efforts, both in upland and riparian areas. False indigo, for example, is infesting the shoreline in many areas, outcompeting native willow species in many cases, and even blocking access to the river. Reed canary grass has taken over areas of siltation and portions of irrigated HMUs, out-competing other native riparian vegetation. Phragmites can occur in areas of deposition or shallow water. The Corps manages invasive species, within budgetary constraints, in accordance with the District's Integrated Pest Management Program (Corps 2019b) for Project operations, natural resource management, habitat management in HMUs, and recreation management.

Figure 2-6. Phragmites at Hollebeke HMU

Using the Freestone Data, 51 introduced herbaceous species were identified in the Ice Harbor and Lower Monumental Pools. Of those species, five were on the Noxious B list for Washington and ten were on the Noxious C list for Washington (Table 2-7). The list is ranked in order of dominance.

Table 2-7. Introduced and Invasive Herbaceous Species Identified in Ice Harbor Pool through Remote Sensing

INTRODUCED	NOXIOUS B LIST	NOXIOUS C LIST
Cheatgrass	Yellow Starthistle	Cereal Rye
Bulbous Bluegrass	Poison Hemlock	Common Reed
Smooth Brome	White Byrony	Common Teasel
Common Mullen	Rush Skeltonweed	Reed Canary Grass
Intermediate Wheatgrass	Russian Knapweed	Medusa-Head Rye
Hairy vetch		St. John's Wort
Alfalfa		Field Bindweed
Tumblemustard		Whitetop
Bur Chervil		Canada Thistle
Yellow salsify		Bull thistle
Wheat		
Orchardgrass		
Prickly Lettuce		
Clasping Pepperweed		
Italian/Annual Ryegrass		
Catnip		
Rat's Tail Fescue		
Kentucky Bluegrass		
Hare Barley		
Redtop		
Storksbill		
Russian Orache		
Ripgut Brome		
Fireweed		
Yellow Sweetclover		
Jagged Chickweed		
Russian Thistle		
White Sweetclover		
Wisteria		
Climbing Nightshade		

Using the Freestone Data, nine introduced shrub species were identified in the Ice Harbor and Lower Monumental Pools. Of those species, two were on the Noxious B list for Washington and three were on the Noxious C list for Washington (Table 2-8). The list is ranked in order of dominance.

Table 2-8. Introduced and Invasive Shrub Species Identified in Ice Harbor Pool through Remote Sensing

INTRODUCED	NOXIOUS B LIST	NOXIOUS C LIST
Autumn Olive	False Indigo	Himalayan Blackberry
Wormwood	White Bryony	Russian Olive
Japanese Rose		Tree-of-Heaven
Siberian Peashrub		

Using the Freestone Data, 10 introduced tree species were identified in the Ice Harbor and Lower Monumental Pools. Of those species none were on the Noxious B list for Washington and two were on the Noxious C list for Washington (Table 2-9). The list is ranked in order of dominance.

Table 2-9. Introduced and Invasive Tree Species Identified in Ice Harbor Pool through Remote Sensing

INTRODUCED	NOX B	NOX C
Siberian elm		Russian Olive
Lombardy poplar		Tree-of-Heaven
Juniper*		
Purpleleaf plum		
White mulberry		
Oak		
Cultivated apple		
White willow		
Weeping willow		
Black walnut		

*This could have also included Eastern red cedar.

2.6.5. Wetlands

Wetland habitats are important ecological features providing a multitude of benefits to the human environment and a unique variety of fish, wildlife, and plant species that are adapted to survive at least part of their life cycle in aquatic environments. Wetlands are areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (40 CFR 232.2 Clean Water Act-Definitions). Wetlands are usually a transitional area between upland habitats and aquatic habitats. Because wetlands, including riparian habits, are dependent on the duration of seasonal inundation, these habitats are sensitive to changes in Project operations influenced by river flows and precipitation patterns.

Emergent wetlands are restricted by the steep shorelines, seasonal drawdowns, and shorter-term reservoir fluctuations that also influence other habitat types.

Based on the USFW National Wetland Inventory maps, approximately 24 of the 39 acres of wetlands around Lake Sacajawea are identified as freshwater emergent wetlands. Emergent wetlands occur along the shoreline primarily in embayments, the mouths of small streams, and in the confluences of larger tributary streams and rivers. Common plants present in emergent wetlands include cattails, horsetail, bulrush, and sedges. Invasive species such as common reed, reed canary grass, pondweed, parrotweed, duckweed, invasive elodea, knotweed, milfoil, flowering rush, yellow flag iris, purple loosestrife, salt cedar, and Japanese knotweed can become a dominant species in some areas.

Freshwater shrub wetlands, which are wetlands dominated by woody vegetation less than 20 feet tall, comprise the other 15 percent of wetlands around Lake Sacajawea. Common plants in freshwater shrub wetlands include willows, red osier dogwood, common snowberry, black hawthorn, wild rose, red alder, and black cottonwood. Invasive western false indigo can become a dominant in areas typically comprised of willow.

2.7.CULTURAL RESOURCES AND CONTEXT

Native people have lived along the Snake River and Columbia Basin in the Ice Harbor Lock and Dam area for thousands of years. Their ongoing presence is indicated through oral history provided by descendants of the Native American inhabitants, allotment and homestead records, ethnographic research, museum collections, and numerous archaeological site investigations. The archaeological sites found on Project lands and throughout the region represent a full range of lifeways, including plant, animal, and stone tool procurement, food processing and storage, rock imagery, ceremonial aspects, and habitation sites ranging from small camps to large villages. Traditional habitation along the lower Snake River has been divided into five phases: Windust (10,000–8000 B.C.), Cascade

(8000–4500 B.C.), Tucannon (4500–2500 B.C.), Harder (2500 B.C.–A.D. 1750), and the Numipu (postdates A.D. 1750). These sites not only represent traditional activities of the past, they continue as meaningful sacred places for tribal members today.

The Ice Harbor area is part of the homeland of multiple Tribes, including the Confederated Tribes and Bands of the Yakama Nation (Yakama), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Confederated Tribes of the Colville Reservation (Colville), the Nez Perce Tribe, and the Wanapum band. The river forms an important travel corridor, and trails lead through and across Corps land to the prairies and high country where resources were found at different times of the year. Tribal members lived along the rivers into the twentieth century, and in some cases the Corps acquired land from tribal owners at the time of dam construction. In and surrounding Project lands, there are landscape features that have tribal stories associated with them, or in some cases, names that have been carried over into the modern lexicon. Numerous traditional cultural properties have been identified by the tribes throughout the Ice Harbor area.

In 1855, three treaties were signed in Walla Walla, Washington between the U.S. and Tribal Nations. The boundaries for the three treaties converge upstream of the Ice Harbor area. The 1855 treaty with the CTUIR includes land along the south side of Snake River, from the Tri-Cities area to the Tucannon River. The Nez Perce Treaty includes lands along the east side of the Palouse River, north of the Snake River, and east of the Tucannon River on the south side of the Snake River. The treaty with the Yakama includes lands on the north side of the Snake River, and west of the Palouse River. During the reservation period, some Palus people claimed and remained on allotment/homestead claims along the Snake River, while others moved to reservations, including the Yakama, Nez Perce, Colville, Umatilla, and others.

Although safe travel into the region was often tenuous because of Native conflict and troublesome Snake River rapids, the area continued to draw settlers. The discovery of gold in the region in the 1850s resulted in exponential population growth. Steamboats provided the primary means of transportation for incoming miners, traders, and settlers during the early settlement of the Snake River region. The consistent influx led to the initiative of developing the river to tame its rapids and provide year-round navigation capability. Merchants and entrepreneurs entering the area firmly believed that the river could spur regional growth. Ferries provided important transportation links, particularly for the active military presence during the mid-nineteenth century when skirmishes with the Native population were still occurring. Before long, railroads such as the Northern Pacific and the Oregon Steam Navigation Company developed a presence in the region and soon began to dominate the freighting trade.

Twentieth-century Snake River developments began in the early 1920s with the authorization of the Bear Trap Dam, a dam of two rock-filled crib wings extending from either shore at Five-Mile Rapids. The development of barges capable of carrying massive loads assisted in the resurgence of river transportation as a viable option for regional freighting. Further strengthening this industry was the creation of significant legislation for improving America's navigable rivers.

The Corps had expanded its water-related mission to include flood control as early as the mid-nineteenth century and soon dominated federal water programs. The authorization of the Corps' Lower Snake River Project in 1945 resulted in the opening of a new office in Walla Walla, Washington that assumed primary responsibility for the development of the lower Snake River. The purpose of the Ice Harbor project, as originally authorized, was to improve navigation, irrigation, and power production on the Snake River. It was the government's desire for increased power capability during World War II, however, that ultimately spurred the construction of the facility. Construction began in 1955 by Montag Halvorson Austin and Associates. Above the dam, buildings, structures, and existing infrastructure (e.g., rail lines) were either vacated or moved outside reservoir boundaries. The Corps purchased approximately 9,600 acres of private land, including agricultural properties and their appurtenant structures. Numerous historic period archaeological sites and above-ground features are present, including those related to agriculture, transportation, industry, and homesteads.

The dam began impounding water in November 1961. A subsequent rise of 40 feet to full pool level at 440 feet above mean sea level was achieved in April 1962. The lake, Sacajawea, was named after the only woman in the Lewis and Clark expedition. Vice President Lyndon B. Johnson dedicated Ice Harbor Lock and Dam in a ceremony held on May 9, 1962. The dam was named after the bay above the Snake's confluence with the Columbia that was historically used as a safe refuge by early river men.

Figure 2-7. U.S. Vice President Lyndon B. Johnson Presses the Button that Sets in Motion the 90,000-kilowatt Generators of the Ice Harbor Powerhouse at the Dedication on May 9, 1962

The period of historic significance for the Ice Harbor Lock and Dam begins in 1955, the year construction initiated, and extends to 1962, the year the facility was completely operational. The dam was determined eligible for listing in the National Register of Historic Places in 2013 for its association with the settlement and economic development of the Snake River Region, and with the dam construction era in the Pacific Northwest.

2.8. RECREATIONAL FACILITIES AND ACTIVITIES

The Project provides a variety of water-related and land-based recreation opportunities. Some areas in the Project are heavily used (Charbonneau and Fishhook Parks are generally fully booked), while other recreation areas in the Project have much lower visitation. We expect the demand for recreation activities in the future will increase. If usage of the Project increases dramatically without corresponding facility expansion, it could change the current user experience and negatively impact Project resources.

Table 2-10. Ice Harbor Project Facilities

• 16 recreation areas	• 3 trails
• 68 picnic sites	• 9 trail miles
• 130 camping sites	• 2 fishing docks and piers
• 5 playgrounds	• 9 boat ramps
• 5 swimming areas	• 69 marina slips

2.8.1. Project Access

Vehicular access to Ice Harbor Lock and Dam, and Lake Sacajawea is limited beyond the lower end of the lake. There are no roads that are contiguous along the reservoir. The reservoir can only be crossed at Ice Harbor Dam, and on State Highway US-12 seven miles southwest of the Project. Beyond Fishhook park, 10 miles from the Project, there is limited access. Most roads accessing Lake Sacajawea provide access to only a small portion of the lake with designated recreation areas available.

2.8.2. Recreation Use

Recreation activities and sites around Lake Sacajawea are varied. Recreation activities are heavily weighted toward water-based visitation, such as swimming, boating, and fishing. However, picnickers, campers, and sightseers also enjoy the recreation facilities along Ice Harbor Project. While the data in Table 2-11 indicates 0% of Ice Harbor visitation is due to hunters, this is likely incorrect due to the various means by which hunters access Corps lands, which makes determining accurate visitation numbers for HMUs very difficult.

Table 2-11. Distribution of Recreation Use by Activity for Snake River Basin Reservoirs and River Reaches

Reservoir	Fishing	Boating	Swimming	*(Water-Based Visitation)**	Camping	Picnicking	Hunting	Sight-seeing	Other
Clearwater River and Dworshak Dam and Reservoir	36%	6%	5%	*47%*	13%	5%	1%	17%	17%
Lower Granite Dam and Lake	13%	7%	13%	*33%*	1%	9%	0%	11%	45%
Little Goose Dam and Lake Bryan	14%	17%	15%	*46%*	4%	15%	1%	13%	20%
Lower Monumental Dam and Lake Herbert G. West	19%	14%	7%	*40%*	15%	10%	1%	8%	26%
Ice Harbor Dam and Lake Sacajawea	**27%**	**13%**	**11%**	***51%***	**2%**	**14%**	**0%**	**13%**	**21%**

*Water based visitation is the combination of fishing, boating, and swimming.

Water-Based Recreation

Boating on Lake Sacajawea a primary activity for many visitors. Much of the boating is related to fishing; however, waterskiing, tubing, wake boarding, jet skiing, sailing, kayaking, and canoeing are also important boating activities. Virtually the entire length of the reservoir is designated as part of the Northwest Discovery Water Trail, a 367-mile

recreational boating route on the region's defining waterways; see Chapter 6 for more information on this water trail.

Additionally, boating provides an efficient means of transportation and allows hunters to gain access to more remote HMUs.

During the hot summer months, swimming is a popular activity. There are swim beaches available at Charbonneau, Fishhook, Levey, and Windust Parks.

Camping

Developed camping sites nearby include those within Charbonneau Park, Fishhook Park, and Hood park – all within 20 miles of the Project. Respectively, there are 52 family sites, 41 family sites, and 67 family sites. Primitive, walk-up tent sites are also available at Fishhook Park. All sites are along the banks of Lake Sacajawea with amenities such as electricity and water hookup. Individual sites are typically available on a 6-month rolling basis, and group sites operate on a 12-month rolling basis. Peak season lasts from end of May until beginning of September. Demand for camping sites has consistently filled all sites months prior to use; sometimes all sites are filled 6 months in advance.

Hunting

Hunting is small percentage of the visitation at Lake Sacajawea. Actual numbers are likely quite a bit higher given the lack of accessibility and difficulty accounting for hunters accessing the area from upland routes. Vehicle and trail counters on many HMUs are lacking, and many hunters access Corps lands after departing from boat ramps managed by other agencies. Therefore, it is very difficult to determine accurate visitation to most Project HMUs.

White-tailed and mule deer are the primary big game species. Upland game bird hunters target turkey, pheasant, chukar, California quail, and mourning dove. Waterfowl hunting is fairly common and takes place in December and January. More than 3,700 acres of Project lands are open to public hunting. Excluding operations lands, recreation lands, and lands near populated areas, most Corps lands are available to hunters.

Picnicking

Day-use group picnic shelters are available with electric hookup at parks such as Charbonneau and Fishhook. Picnic tables are dispersed throughout various parks and available on a first-come, first-serve basis.

Trails

The Project provides more than 9 miles of land-based recreation trails. Trail surfaces include pavement, gravel, and dirt. The gravel or dirt trail system allows for hiking,

mountain biking, and equestrian use. A primary trail is the Columbia Plateau Trail State Park, which runs directly north of the Project. This trail is not on Corps land but is parallel to the entire Ice Harbor Project; for more information on this trail, see Chapter 6.

2.8.3. Zones of Influence

The concentration and distribution of the population surrounding the Project are major influences on land classification and recreation development. This is illustrated with zones of influence. Figure 2-8 identifies the Ice Harbor Project zones of influence.

The downstream end Lake Sacajawea formed by Ice Harbor Lock and Dam is on the edge of the second-largest metropolitan area in eastern Washington. The nearest large communities are Tri-Cities (Pasco, Kennewick, Richland) and is approximately 13 miles, 15 miles, and 25 miles from Ice Harbor Lock and Dam, respectively. Large metropolitan cities such as Portland, Yakima, Spokane, and Seattle also draw in visitors, all being within a 250-mile radius of the Project.

Primary

The primary area of influence encompasses the area within 25 miles of the Project. This area is within 30 minutes traveling time from the Project, and includes the Tri-Cities communities of Pasco, Richland, and Kennewick – a combined metropolitan population of around 300,000. According to data collected in Fishhook and Charbonneau Parks in 2017 and 2018, approximately 60 percent of all visitors come from the Tri-Cities area.

Secondary

The secondary zone of influence for the Project is the area within a 50-mile radius of the Project that is not included as part of the primary zone of influence. This area is within 1-hour traveling time from the Project. It does not include an additional metropolitan area, but towns of note are Walla Walla, Pendleton, Hermiston, and Grandview – with populations of approximately 33,000, 17,000, 18,000, and 11,000 respectively.

Tertiary

The tertiary zone of influence is outside of the 50-mile radius, up to 200 miles from the Project. Some visitors will travel up to 3 hours to the Project. They are from the tertiary zone. This area includes Pullman, Moscow, Yakima, and Ellensburg – with populations of approximately 35,000, 26,000, 94,000, and 21,000. Approximately 15 percent of visitors to Charbonneau and Fishhook parks in 2017 and 2018 were from the areas surrounding Yakima and Spokane.

Expanding upon this 200-mile radius, larger metropolitan cities such as Portland, Spokane/Spokane Valley, and Seattle (approximately 230 miles, 150 miles, and 230 miles

away, respectively) have populations of 655,000, 330,000, and 755,000. The expansion of the tertiary zone was indicated by large number of visitors to the regions that come the project for consistent warm weather in the summer, large bodies of water that provides for multiple water-based activities. Between 10 and 15 percent of visitors to Charbonneau and Fishhook Parks in 2017 and 2018 traveled from the Puget Sound metropolitan area.

In addition to the tertiary zone, there are many visitors that come from much farther. The Tri-City Water Follies will bring 100,000 visitors in a single weekend. Visitors traveling farther, including those from Florida, Kentucky, New York, and California, tend to stay at Charbonneau Park (roughly 8 percent of visitation) rather than Fishhook Park (3 to 5 percent of visitation), though both parks documented visitors from far reaches of the U.S.

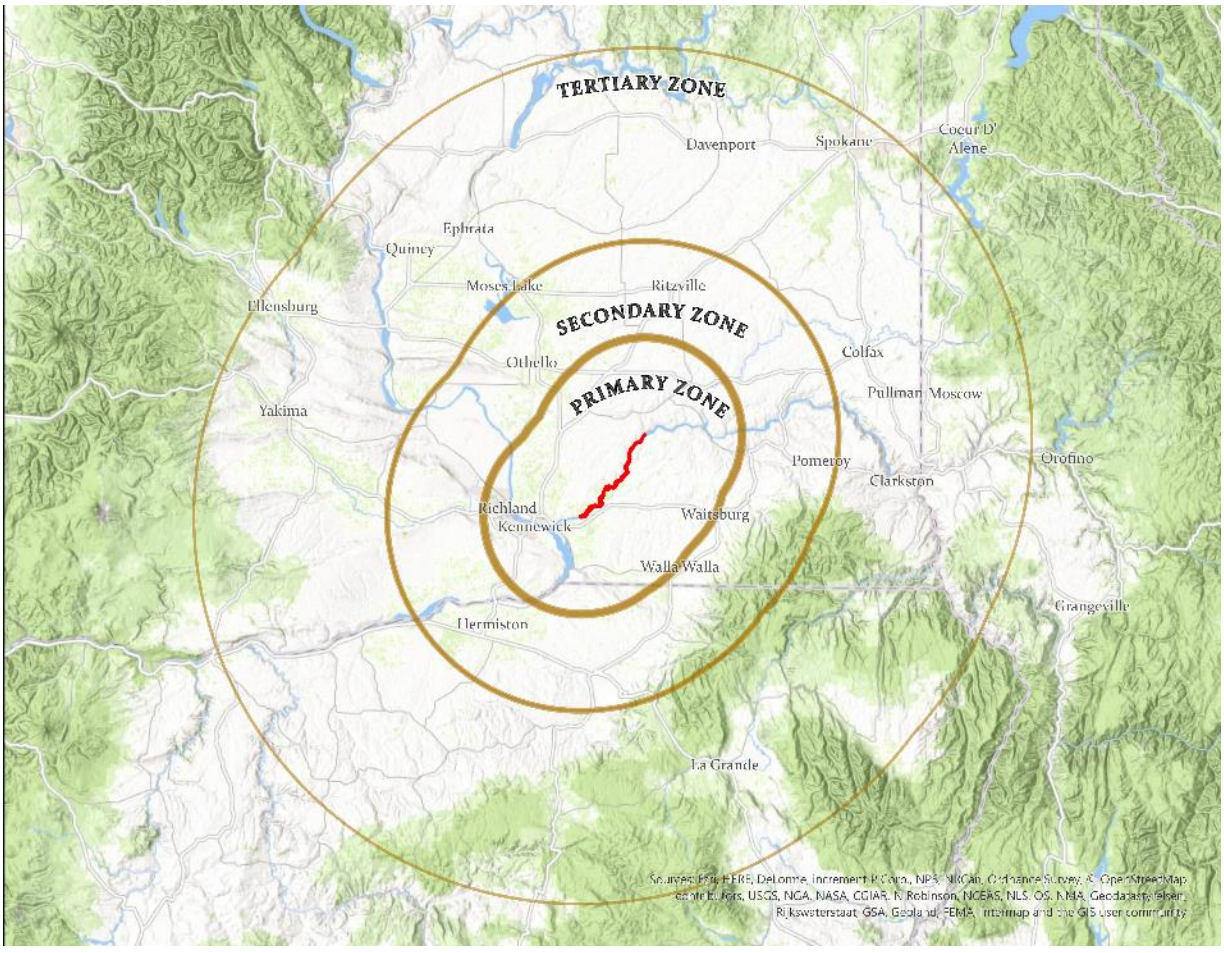

Figure 2-8. Zones of Influence for Ice Harbor Project Visitation

2.8.4. Project Visitation Profile

Seasonal visitation is strongest from June through August, with peak visitation in July for Ice Harbor Lock and Dam. Visitation steeply declines in September, and winter visitation is low November to March.

Charbonneau and Fishhook Parks represent 40 percent of Ice Harbor visitation. The large South Shore Recreation Area attracts 25 percent of the documented visitors, and the other recreation areas account for 18 percent of visitation. The remaining 17 percent of visitors are counted in HMUs. However, as discussed in other sections, the Corps has had difficulty with determining accurate visitation numbers in HMUs and even in parks, due to various methods of entry, unreliable counting equipment, and changing visitation computation methodology. Visitation is used as a reflection of trends that, when combined with observations by Park Rangers and other Corps staff, can help influence operation and management decisions.

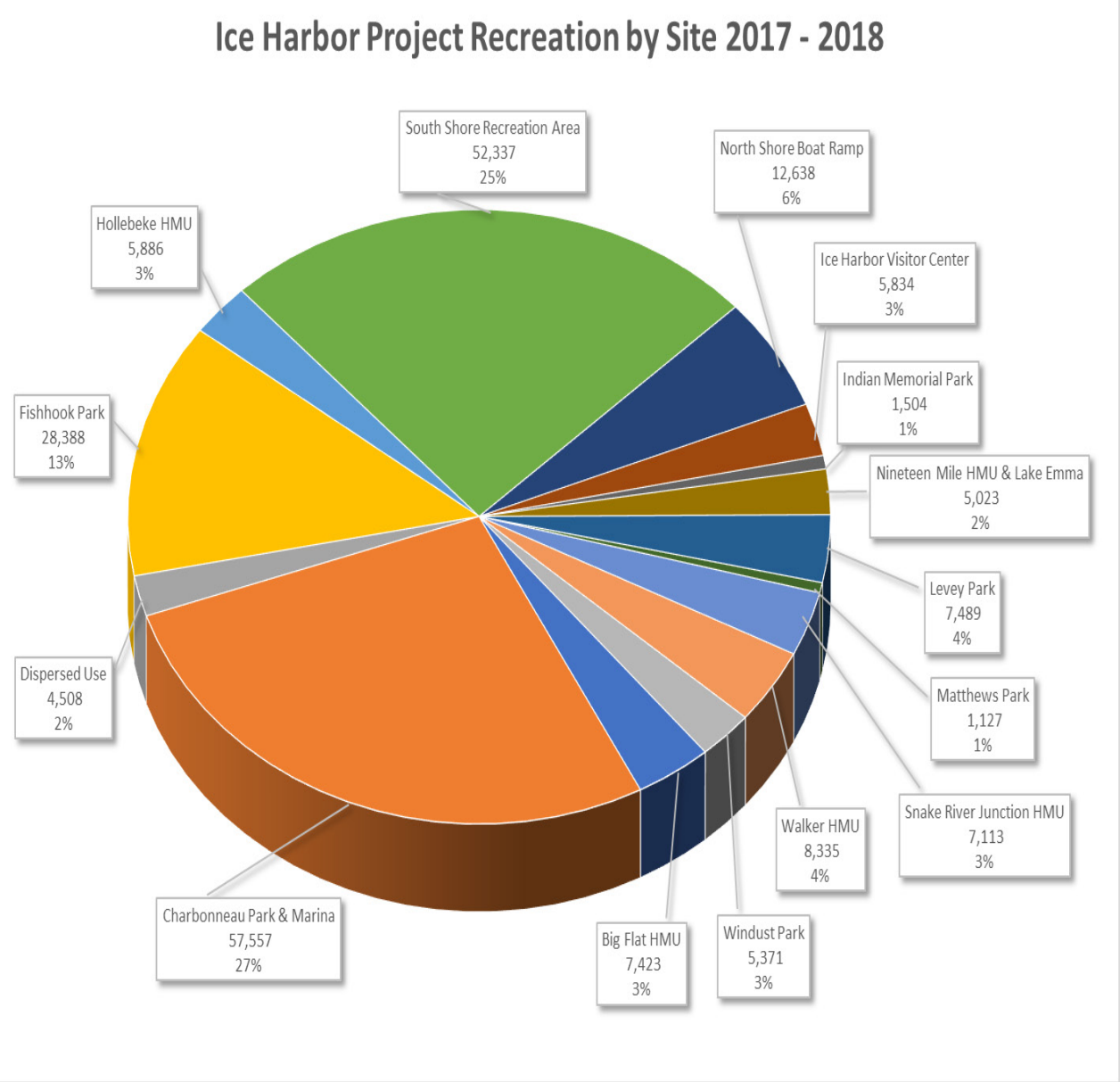

Figure 2-9. Ice Harbor Project Recreation Use by Site 2017 - 2018

Recreation Sites

An analysis was done to determine if there are any specific features of specific recreation sites that might attract visitors more than other sites. Examination of the correlating matrix indicates that swim beach availability has the greatest effect on visitation. This is followed by availability of camping sites, then availability of picnic tables. Following these is a group that could be generalized as park quality: grass, trees, shelters, boat docks, and playgrounds. These are all features that tend to be available in parks (especially those classified as High Density Recreation), but not in HMUs. It also looks like visitors are ambivalent about how close the park is, the presence of boat ramps, and whether the road or parking lots are paved or gravel.

2.8.5. Recreation Analysis

Washington State Comprehensive Outdoor Recreation Plan

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) for Washington, Oregon, and Idaho were reviewed to establish the assumption that demand for recreation exist that will produce the projected benefits. Each state SCORP identifies increasing population and increasing demand for outdoor recreation, while addressing the changing demographics of an aging population. The relevant Washington SCORP reports are summarized below (Washington State Recreation and Conservation Office 2018).

- Washington State population is projected to grow by 2 million people (26%) by 2040, mostly from people moving into the state.
- More than 90% of Washingtonians recreate outside today.
- Top 10 outdoor recreation activities in Washington include walking in a park or trail setting (84%), visiting rivers or streams (66%), visiting a beach or tide pools (60%), attending an outdoor concert or event (58%), gathering or collecting things in a nature setting (54%), day-hiking (53%), sightseeing at a scenic or wilderness area (51%), wildlife or nature viewing (50%), swimming/wading at a freshwater beach (50%), and driving or motorcycling for pleasure (46%).
- 20% of residents reported using federal facilities for outdoor recreation.
- 74% of residents are satisfied or highly satisfied on average with all outdoor recreation categories.

Social Welfare Effects of Recreation

Social welfare effects are evaluated by estimating the economic value (i.e., consumer surplus) resulting from average annual recreational visitation at near-river sites across the

basin (water- and land-based use at reservoirs and river reaches). Social welfare effects are evaluated by estimating the change in economic value resulting from estimated changes in water-based visitation at reservoirs.

Social welfare effects are estimated using a unit day value (UDV) approach (Corps 2019a; Water Resources Council 1983), a standard Corps approach to evaluate recreation consumer surplus benefits. The UDV method relies on expert and informed opinion to assign relative values to recreational visits based on the quality of recreational opportunities supported by individual recreation areas. The social welfare analysis is done in two steps. First, recreational visits are converted to recreational visitor days to account for the fact that overnight trips are longer than 1 day. Second, UDVs are applied to the estimated recreational visitor days. Table 2-12 provides UDVs for area reservoirs in comparison to Ice Harbor Project.

Table 2-12. Unit Day Values for Snake and Columbia River Basin Reservoirs and River Reaches

Reservoir/River Reach	Unit Day Value (2019$)
Kootenai River between the US-Canada border and Libby Dam and Lake Koocanusa	$9.87
Flathead River above Flathead Lake and Hungry Horse Dam and Reservoir	$9.87
Clark Fork River, Flathead River below Flathead Lake, and Flathead Lake	$9.87
Pend Oreille River and Lake Pend Oreille	$8.97
Grand Coulee Dam and Lake Roosevelt	$9.05
Chief Joseph Dam and Lake Rufus Woods	$7.95
Wanapum Dam and Lake	$8.61
Priest Rapids Dam and Lake	ND
The Hanford Reach below Priest Rapids Dam	ND
Clearwater River and Dworshak Dam and Reservoir	$9.87
Lower Granite Dam and Lake	$9.10
Little Goose Dam and Lake Bryan	$9.17
Lower Monumental Dam and Lake Herbert G. West	$9.85
Ice Harbor Dam and Lake Sacajawea	**$8.66**
McNary Dam and Lake Wallula	$8.61
John Day Dam and Lake Umatilla	$8.50
The Dalles Dam and Lake Celilo	$8.93
Bonneville Dam and Lake	$9.14
Below Bonneville Dam	$9.14

Recreation Benefits from Ice Harbor Lock and Dam and Lake Sacajawea

Recreation benefits are measured in different ways to reflect the benefit gained to people recreating, to the people that support recreation, and job and income to the region.

Social welfare effects are an estimate of the value a person receives above the price they pay for that activity. Expenditures are the estimated amount of money that people spend recreating. Regional benefit effects are an estimate of the change in jobs, the labor cost for those jobs, and the resulting value to the region from income and sales from jobs resulting supporting recreation.

Ice Harbor Project visitation in FY 2019 was 259,072 visitors. This generates a social welfare benefit of $3.5 million per year – this figure includes wages and salaries, payroll benefits, profits, rents, and indirect business taxes as value added from spending on visitor trips to Ice Harbor Project. Expenditures from those visitors is $8.4 million. The regional effects from recreation are estimated to be 75 jobs, labor income of $2.3 million, and total sales increase of $5.9 million.

2.8.6. Recreational Carrying Capacity

Tri-Rivers NRM Park Rangers have experienced a steady growth in visitation Project-wide. Most reserved camp sites at Charbonneau and Fishhook Parks are filled online months prior to the camping season, leaving very few available sites during the season. Within the last 5 years, Rangers have also observed a large increase in the number of stand-up paddleboards and other inflatable and easily transported watercraft, reflecting expanded water recreation opportunities. The cities of Richland, Pasco, and Kennewick have also seen increases in visitation. The City of Kennewick Parks and Recreation Department reports a 10 to 20 percent increase in visitation at their parks, and the City of Richland estimates the increase is closer to 20 percent.

However, Corps data shows slightly decreasing Project visitation since 2014, with a peak in 2016. The methods and algorithms used to compute visitation changed in 2014. Additionally, the Project changed visitor counting equipment, which has not been as reliable as the old counters. The combination of new visitation computation methodology and sporadic equipment failure could explain the difference in visitation data declines versus observed visitation increases over the last several years.

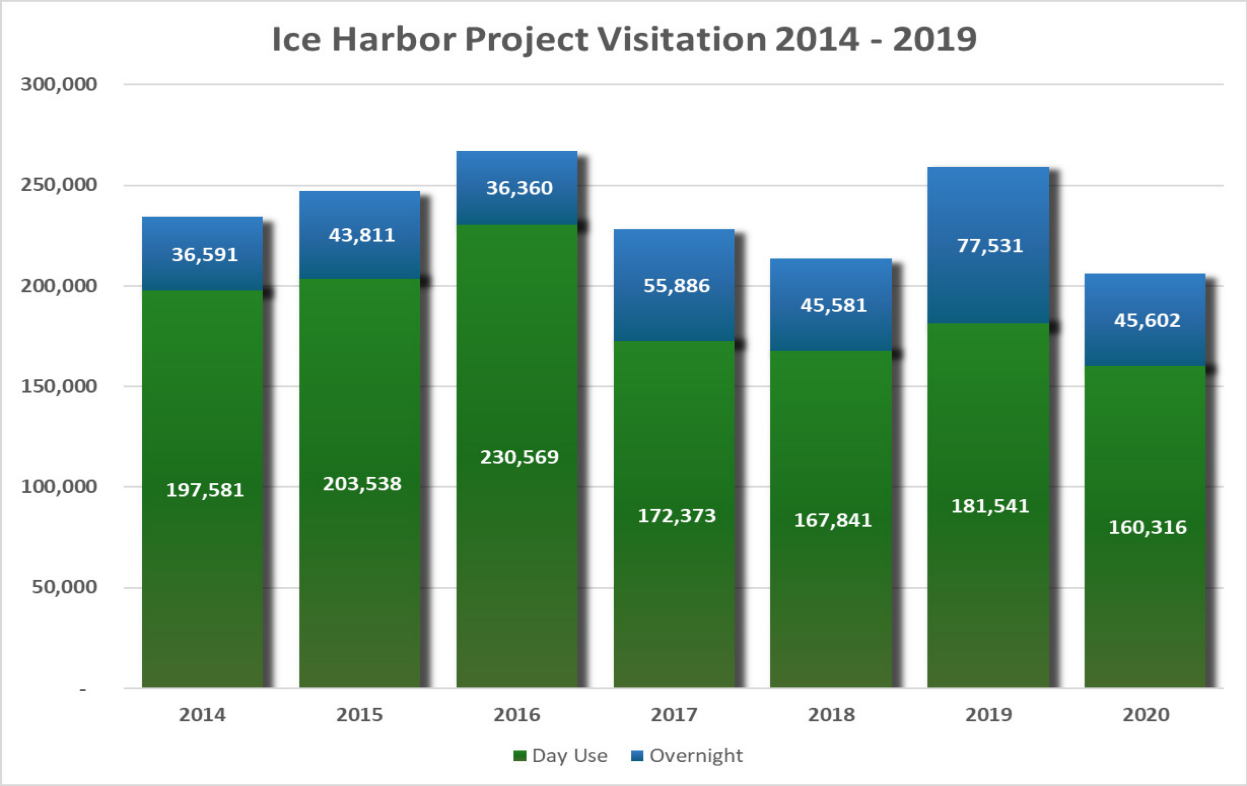

Figure 2-10. Ice Harbor Day Use and Overnight Visitation 2014 - 2019

Future Recreation Demand

The existing visitation was viewed to be unreliable for estimating future visitation since it does not correlate with observations. An alternative method was developed based on population increases with the assumption that general visitation rates will remain constant. The estimated future visitation is calculated using historical Washington State population statistics from 1969 to 2019. The population data was based on two categories: statewide data and Eastern Washington data. The statewide population growth rate is slightly higher than the Eastern Washington growth rate, primarily because the population and job growth is higher in Western Washington. The base for future visitation was generated using two base numbers. One uses 2013 as the base year along with the higher population growth rate of Washington statewide data to provide the upper bounds of the estimate. The other uses the existing 2019 visitation data as the base year along with the lower population growth rate of eastern Washington to provide the low range estimate.

This assumes the current rate of recreation participation in the general population will continue, and that carrying capacity at all sites can provide the same level of recreation experience. Within these assumptions are other assumptions. Some of these are the cost of recreation will remain constant relative to other cost, quality will remain constant, recreation opportunity will be relatively constant. Any major societal changes could have

dramatic effects that could skew the estimated population higher or lower. As the population estimate is extended beyond the current year the estimation range will grow.

The overall conclusion is that recreation demand will increase as population increases. Rural areas of eastern Washington are growing at increasing rates and it would be expected that recreation demand will increase as population increases. Continued investment in recreation will be necessary to maintain the quality and meet the increasing demand. Future recreation activities and increased usage without facility expansion will change the current user experience and could negatively impact the resources.

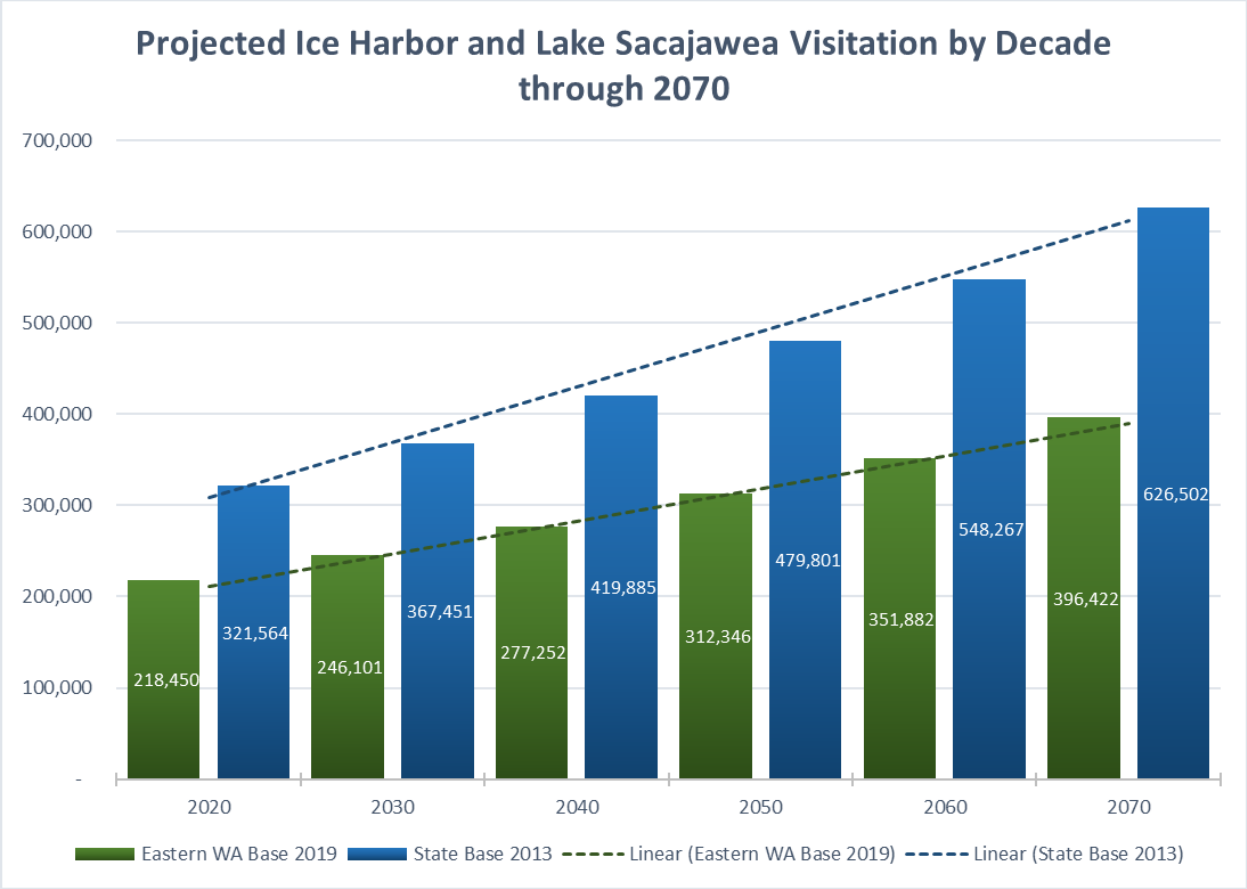

Figure 2-11. Projected Ice Harbor and Lake Sacajawea Visitation by Decade through 2070

2.9.REAL ESTATE AND ACQUISITION POLICY

2.9.1. Land Acquisition History

Under Public Law 79-14, Congress authorized the government to originally purchase acres in 1945 for the primary purposes of navigation and irrigation, with authority for power development where determined appropriate. Since that time, subsequent legislation has authorized other project purposes, including recreation, and fish and wildlife management.

Over the life of the project, the Corps analyzes lands for its needs in relation to the project, and approximately 1,724 acres of land that had been designated as no longer needed for the project has been disposed.

The U.S. Government currently owns 7,446 fee acres within the project boundary and has easements and reservation rights on 1,484 acres. The majority of the project lands are centered along the shorelines of the Snake River, with some large parcels of land that stretch inland. The Corps has management rights and responsibilities on these U.S. Government owned lands

2.9.2. Leases, Easements, Licenses, and Permits (Outgrants)

The purpose of an outgrant is to allow other agencies or individuals use of project lands. These outgrants are issued by easement, permit, license, or lease. They are issued if the land is available, and if the proposed use is consistent with operational needs and resource management objectives. Other outgrants may be issued and existing ones terminated or amended, as circumstances warrant. There are currently 62 outgrants on Project lands. When some properties were originally purchased for construction of the Ice Harbor Lock and Dam project, the deeds of acquisition may have contained reserved rights for the individual selling the property. These reservations are usually still valid in perpetuity.

The Real Estate Division of the Corps, Walla Walla District maintains all current information on outgrants and reservations.

2.10. PERTINENT PUBLIC LAWS, REGULATIONS, AND POLICIES

Rules and regulations governing the public use of water resources development projects administered by the Corps are contained in 36 CFR § 327. Other authorities specifically related to the management of recreation and public access are found in PLs; EOs; and the Corps Engineer Regulations, Engineer Manuals, and Engineer Pamphlets. They include, but are not necessarily limited to, those listed in Appendix C. A list of applicable Federal statutes is included in Appendix B.

The treaties between the United States and the Nez Perce Tribe, the CTUIR, and Yakama document agreements reached between the Federal Government and the Tribes. These treaties, as well as statutes, regulations, and national policy statements originating from the executive branch of the Federal Government provide direction to Federal agencies on how to formulate relations with Native American Tribes and people. Treaties with the Nez Perce (Treaty of June 11, 1855, Treaty with the Nez Perces, 12 Stat. 957 (1859); Treaty of June 9, 1863, Treaty with the Nez Perces, 14 Stats. 647 (1867)), the CTUIR (Treaty of June 9, 1855 with the Walla Walla, Cayuse, etc, 12 Stat. 945 (1859)), and the Yakama (Treaty of June 9,

1855, Treaty with the Yakama, 12 Stat. 951) both established reservations and 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. It is important to be clear that "the rights of sovereign Indian tribes pre-existed their treaties; they were not granted them by treaties or by the United States government. Rather, the treaties gave their rights legal recognition." (Hunn et al. 2015:58). These reserved rights were retained by the Tribes and are exercised by their members today.

2.11. ENVIRONMENTAL CONSIDERATIONS

The Master Plan is intended to deal in concepts, not in details of design or administration. Detailed management and administration functions are addressed in the OMP, which implements the concepts of the Master Plan into operational actions. Implementation of individual actions from the OMP may require separate environmental compliance evaluations. The EA conducted as part of the development of the 2021 Master Plan is included in Appendix B, which will likewise focus on potential impacts associated with changes to Project land use classifications.

3. Resource Objectives

Resource use goals provide the overall framework that guides the use of resources administered by the Corps at a project site. The goals and objectives in the Ice Harbor Master Plan are specific to Ice Harbor Project and its individual areas and specify attainable options for resource development and management. These goals have been developed through study and analysis of regional and local needs, public input, resource capabilities, and resource potential, and they are formulated to guide and direct the overall resource management program.

3.1. RESOURCE GOALS

The resource goals are included within four categories, as indicated below:

Project Operations

- Continue to provide benefits to the public safely, effectively, and efficiently, consistent with the authorized Project purposes.

Natural and Cultural Resources Management

- Allow public access and use of Corps-managed land, as appropriate.
- Protect and preserve archeological and historical sites.
- Protect and enhance fish and wildlife habitat.
- Promote biological diversity and ecological system function.
- Control noxious weeds and other undesirable weed species.

Recreation and Interpretation

- Provide high quality, safe recreational facilities year-round to a wide segment of the public, including individuals with disabilities.
- Minimize conflicts between user groups and Corps operational requirements.

Coordination

- Maintain communication and coordination with appropriate Indian Tribes; Federal, State, and local agencies; and citizen groups and organizations for management of the manmade and natural resources at the Project.

3.2. RESOURCE OBJECTIVES

Resource Objectives are clearly written statements that respond to identified issues and specify measurable and attainable activities for resource development and/or management of the lands and waters under jurisdiction of the Walla Walla District at Ice Harbor Project. The objectives stated in this Master Plan support the goals of the Master Plan and the following Environmental Operating Principles:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all Corps activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

The objectives are consistent with authorized Project purposes, Federal laws and directives, and they take into consideration regional needs, resource capabilities, the Washington SCORP, cultural and natural resources significant to regional Tribes, and public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan.

To address specific management needs, the Resource Objectives discussed in this chapter are divided into three categories—General, Recreation, and Environmental Stewardship.

3.3. GENERAL RESOURCE OBJECTIVES

3.3.1. Safety and Security

Objective: Provide use areas and facilities that are safe and provide the public with safe and healthful recreational opportunities.

Discussion: Developed areas designated for recreation use will be evaluated regularly for safety. Any conditions that have been determined unsafe will be evaluated, and feasible

corrective actions will be implemented in accordance with Engineer Manual 385-1-1, Safety and Health Requirements.

3.3.2. Aesthetic Resources

Objective: Plan all management actions with consideration given to landscape quality and aesthetics.

Discussion: Corps regulations and guidance requires that the Corps considers and provides an aesthetically pleasing environment for the public. Visitors are attracted to the vistas, rolling topography, and water bodies that create high visual quality at the Project. In order to create a quality recreation experience, it is important that planned improvements be designed and maintained so that visual resources associated with the Project will be protected, preserved, and maintained to the maximum extent possible.

3.3.3. Facility Management

Objective: Ensure all current and future facilities are maintained and meet applicable design standards.

Discussion: All new or remodeled facilities will meet current standards. Upgrade and replacement of existing facilities will comply with Corps policy.

3.3.4. Real Estate Management

Objective: Prevent trespass and negative impacts associated with encroachments on Government property while allowing State, County, municipal, and private entities opportunities to provide public recreation services.

Discussion: Periodic boundary inspections will be conducted, and encroachments and trespasses resolved at the lowest level possible. Unmarked monument boundaries and fence monument boundaries will be surveyed where feasible. Real estate proposals and requests will be compatible with Project purposes and minimize impacts to environmental and cultural resources. Outgrants require compliance with certain terms and conditions, including but not limited to: Corps policies, federal and state laws, health and safety codes, and environmental protections.

3.4.RECREATION RESOURCE OBJECTIVES

3.4.1. Land and Water Universal Access

Objective: Provide use areas and facilities that are accessible for all Project visitors.

Discussion: Developed areas designated for recreation use will be evaluated regularly for accessibility. When developing new or rehabilitating existing recreation facilities/opportunities, effort should be made to comply with reasonable Americans with Disabilities Act (PL 101-336) accommodations. In addition, special emphasis should be placed on programs that increase participation in outdoor activities for people with physical, developmental, and sensory disabilities.

3.4.2. Interpretive Services and Outreach Program

Objective: Interpretive service will focus on agency, District, and Project missions, benefits, and opportunities. Interpretive services at the Project will be used to enhance public education and safety through promoting public awareness, understanding, and appreciation of the Project and its resources.

Discussion: The Ice Harbor Interpretive Services and Outreach Program includes the management of public affairs, community relations, marketing, publications, tourism, and special events. The Project will provide community outreach by participating in fairs and public events; providing interpretive displays and programs, day-use areas, community organizations, and the Chamber of Commerce; and releasing information to the press. Interpretive displays and programs should highlight several of the following subjects:

- The Corps.
- Land use classifications.
- History.
- Natural history.
- Project authorized purposes and public benefits.
- Impacts of the Project (historical, cultural, ecological).
- Historical and traditional uses of the area by regional Tribes.
- Recreation opportunities.
- Wildlife and fish associated with Project lands and waters, and opportunities to use these resources passively and actively.
- Water safety.
- Ongoing management activities.
- Challenges and possible solutions.

Opportunities exist to partner with local Tribes and other groups in the development of these displays and programs.

3.4.3. Recreation Optimization and Sustainability

Objective: Use leveraged resources when possible to maintain and improve recreation facilities that reduce operations and maintenance costs while meeting public demand.

Discussion: Project staff will promote community involvement through stakeholder meetings. Challenge cost share and cooperative agreements will be used to leverage additional resources, and a robust volunteer program will be developed and maintained to accomplish additional work.

3.4.4. Quality Outdoor Recreation in Rural Settings (Intensive Use)

Objective: Operate and maintain day-use facilities, as well as develop new facilities that meet public demand, to provide opportunities for multiple user groups in a rural setting.

Discussion: Day-use activities that occur in the rural areas of Ice Harbor Project account for about half of the 260,000 visitors each year. Day-use activities include picnicking, fishing, hunting, hiking, birdwatching, nature study, cycling, jogging, dog walking, boating, swimming, and large group events. In order to meet current and future need, Project staff will need to maintain and improve existing facilities, as well as manage the special events (which requires a special use permit) in a manner consistent with Engineering Regulations and Corps Headquarters guidance.

3.4.5. Quality Outdoor Recreation in Rural Settings (Low Density Use)

Objective: Operate and maintain multipurpose facilities, as well as develop new facilities, that meet public demand and provide opportunities for multiple user groups in a rural setting.

Discussion: Continue efforts to provide dispersed recreation allowing visitors to participate in activities such as boating, primitive camping, fishing, hunting, horseback riding, hiking, nature study, bird watching, and wildlife photography. Managing user expectations and developing creative solutions in low density recreation areas will remain important as visitor use continues to increase. To enhance the quality of recreation opportunities, Project staff will continue to enforce 14-day camping limits (within a 30-day period) to prevent habitation per 36 CFR § 327. The Columbia Plateau Trail State Park runs adjacent to the entire Ice Harbor Project on the north shore; the rules and regulations are different for Washington State Parks (WSP) lands and Corps lands (e.g., all dogs must be leashed on WSP lands, firearms are prohibited on WSP lands). Users are encouraged to be

informed when accessing these lands. Additionally, the Northwest Discovery Water Trail runs through the entire Project through Lake Sacajawea. Camp sites are distributed along the length of the Project for the Northwest Discovery Water Trail.

3.5. ENVIRONMENTAL STEWARDSHIP RESOURCE OBJECTIVES

3.5.1. Riparian and Wetland Protection

Objective: Protect and limit impacts to wetlands and riparian corridors on the Project in conjunction with Project missions, water quality, and fish and wildlife benefits.

Discussion: Wetlands and riparian habitat are of high ecological importance within the watershed. The Corps ENS mission and the LSRFWCP have always focused a lot of effort on habitat development and maintenance of riparian species and habitat types. This can be seen in areas on Lake Sacajawea such as Big Flat, Lost Island, and Hollebeke HMUs. Additionally, riparian and wetland areas are often the subject of targeted nuisance species control under the District's Integrated Pest Management Plan (IPMP), to maintain and enhance these habitats. No unnecessary removal or alteration of the systems will be promoted.

3.5.2. Fish and Wildlife Habitat Management

Objective: Conserve, protect, restore, and enhance habitat and habitat components important to the survival and proliferation of threatened, endangered, special status, regionally important, and LSRFWCP habitat and species on Project lands.

Discussion: Over the life of the Project, improvements have been made to enhance fish and wildlife habitat. Maintenance of existing and future habitats is critical to sustain a healthy ecosystem now and in the future. This includes extensive effort for invasive and nuisance species management along with other habitat enhancement the Corps has performed, to improve and increase wildlife sustainability for all forms of recreation. Emphasis will be placed on integration and use of native plant species whenever possible.

3.5.3. Cultural Resources Management

Objective: Inventory, record, and evaluate cultural resources per legal requirements of NHPA. Preserve resources as per the Archaeological Resources Protection Act of 1979 (PL 96-95), Native American Graves Protection and Repatriation Act (PL 101-601), and applicable Treaty responsibilities. Seek to avoid harm to cultural resources using all tools available, including education, discussion, Title 36 citation, and federal and local law enforcement, as appropriate (36 CFR § 327.14).

Discussion: Planning and development will include considerations to protect and preserve culturally sensitive sites. Archaeological collections and records will be preserved for future generations and managed for study by qualified researchers. Cultural resource review will be coordinated with District specialists, who will follow laws and guidelines for cultural review according to Federal law and consult with SHPO and Tribal Historic Preservation Offices/Tribes as required. Convey importance of cultural resources and proactive planning to Project staff through planning documents and the Historic Properties Management Plan (Hicks 2000) and update those documents as appropriate.

3.5.4. Integrated Pest Management

Objective: Minimize negative impacts to native flora and fauna and damage to Government facilities by reducing and/or eradicating invasive and nuisance species on Project lands.

Discussion: Reducing and restricting the spread of invasive and nuisance species will be achieved by monitoring, assessment, and an integrated pest management approach to treatment according to the District's IPMP. This includes the use of chemical, mechanical, and biological control methods, as well as reseeding and planting with native plant species.

3.5.5. Fire Management

Objective: Minimize the negative effects of wildfires, including impacts to Federal property and the recreating public.

Discussion: Minimize the threat of wildland fire by enforcing the fire ban, reducing fuel load through mowing, and establishing native grasslands to offset the change in fire cycle due to invasive plant species. Fishhook HMU is an example of this change; the cheatgrass infestation has reduced the natural fire cycle from an 8 to 15-year cycle to a 3 to 8-year cycle. Native plant communities, which are less conducive to burning, are diminished by more frequent fires. Efforts will be made to restore lands damaged by wildland fire back to native grasslands. Project personnel will be working on a prescribed burning plan that can be used as a tool to enhance wildlife habitat using methods such as prescribed burning and mowing.

Figure 3-1. Fire in Fishhook HMU in 2015

4. Land Allocation, Land Classification, and Project Easement Lands

This chapter identifies and describes the land allocation categories and the land classifications at the Project under this 2021 Master Plan, including the number of acres and the primary and secondary uses for each classification. It also contains a summary of changes to land classifications since the 1977 Ice Harbor Master Plan.

4.1. LAND ALLOCATION

Land allocation refers to categorizing lands according to the congressionally authorized purposes for which Project lands were acquired. Chapter 3 of EP 1130-2-550 defines these categories as Operations, Recreation, Fish and Wildlife, and Mitigation, as described below:

- Project Operations – These are lands acquired for the congressionally authorized purpose of constructing and operating the Federal Project for the purposes of hydropower, navigation, and incidental irrigation.
- Recreation – These are lands acquired specifically for the purpose of recreation.
- Fish and Wildlife – These are lands acquired specifically for the purpose of managing or protecting fish and wildlife.
- Mitigation – These are lands acquired or designated specifically for the congressionally authorized purpose of offsetting losses associated with development of the Project.

Lands associated with Ice Harbor Lock and Dam were originally purchased under the Project Operations allocation. In subsequent years, property was also purchased and allocated under Mitigation and Fish/Wildlife.

4.2. LAND CLASSIFICATION

All lands acquired for the Project are further classified to provide for development and resource management consistent with authorized purposes and other Federal laws. Land classification designates the primary use for which Project lands are managed. The classification process considers public input, regional and Project specific resource requirements, and suitability. Land classifications established in EP 1130-2-550 include the following six categories:

- Project Operations.
- High Density Recreation.

- Mitigation.
- Environmentally Sensitive Areas.
- Multiple Resource Managed Lands.
- Water Surface.

Chapter 4.2.1 provides a brief overview of the land classification changes that have occurred from 1977 to 2020 under the old land classification nomenclature. Chapter 4.2.2 shows how the Project land is classified under the 2021 Master Plan using the new land classification nomenclature. It also discusses the management and use of the lands assigned to each land classification, in connection with the appropriate resource objectives identified in Chapter 3.

4.2.1. Land Classification Changes from 1977 to 2021

Ice Harbor Project lands have undergone several changes since the original Master Plan was developed in 1963. The Master Plan was revised and updated in 1977, then four appendixes were added to the Master Plan in 1982. Table 4-1 identifies the total acres for each classification that has changed between 1977 and 2020, under the old land classification nomenclature. Figure 4-1 is a visual representation of the information provided in Table 4-1. The large-scale changes in land ownership and use over 44 years throughout the Project, along with the nomenclature changes, should have been documented in a Master Plan revision or supplement before now. However, funding for Master Plan updates is difficult to obtain, especially under the District's unique joint funding arrangement that requires BPA matching funds for appropriated dollars.

Table 4-1. Land Classification Changes from 1977 to 2020

CLASSIFICATION	ORIGINAL	PRESENT
Operations: Project Structures	741.8	695.0
Operations: Public Port Terminals	63.2	37.2
Operations: Industrial Use and Access	30.7	0
Recreation: Intensive Use	372.5	341.6
Recreation: Intensive Use – Future	421.4	272.7
Recreation: Low-Density Use	312.4	74.8
Wildlife Management: Intensive	1813.6	1208.0
Wildlife Management: Moderate	314.5	1384.8
Natural Area	116.8	96.3
Not Classified	892.1	398.2
Total	5079.0	4508.7

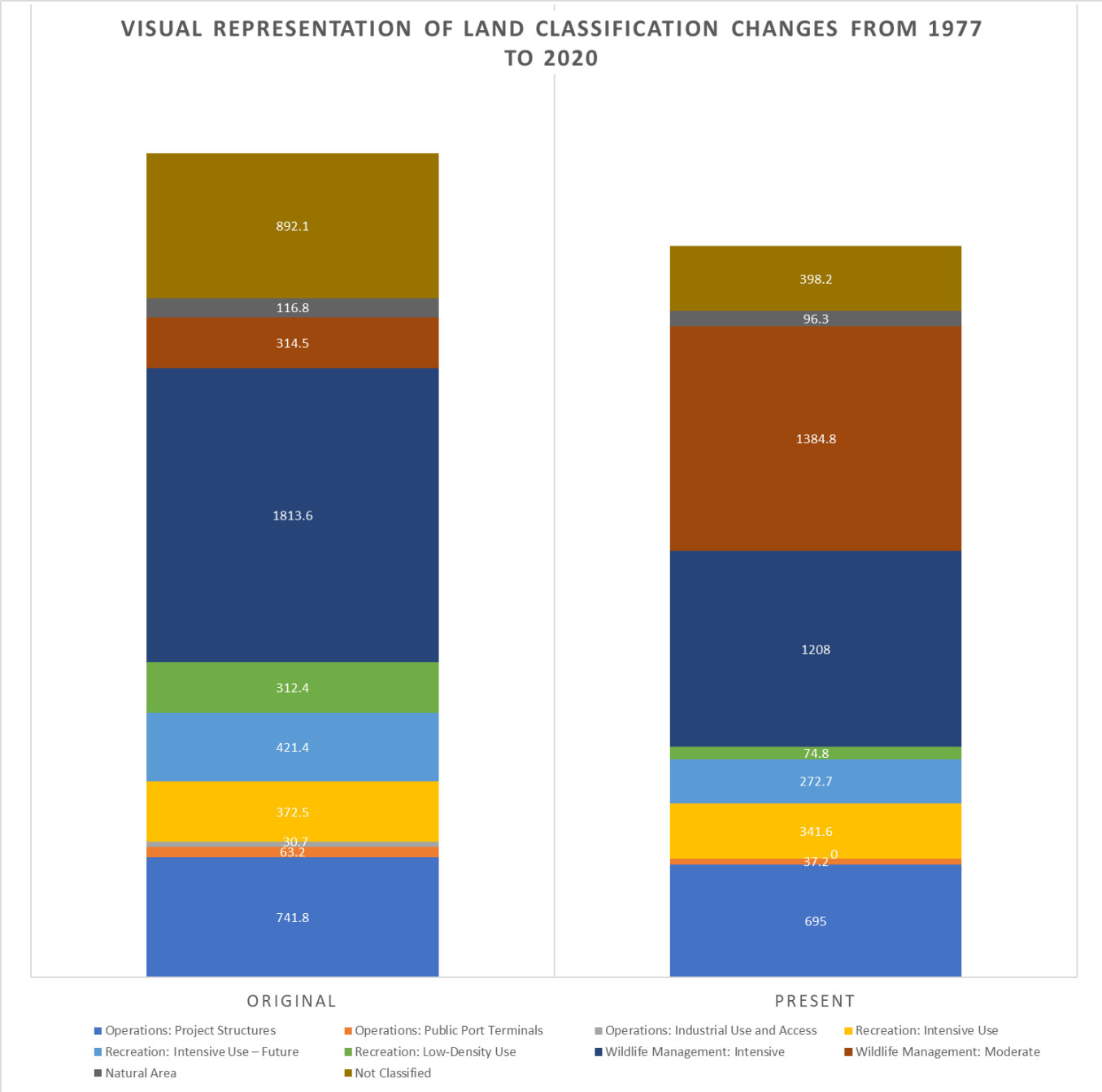

Figure 4-1. Visual Representation of Land Classification Changes 1977 to 2020

There were some large land disposals to the Oregon-Washington Railroad and Navigation Company (now part of the Union Pacific Railroad) for railroad rights-of-way, and smaller disposals to the Port of Kahlotus and other entities between 1977 and 1983, resulting in a net decrease in total Project acres. Land was also acquired during this time, mostly to meet mitigation requirements under the LSRFWCP. These changes were never included in a master plan update or supplement.

In May 1982, appendixes A through D to the 1977 Master Plan (Corps 1982) were approved and distributed. These appendixes updated the project resources management plan, added a fish and wildlife plan to begin to address the requirements of the LSRFWCP, and detailed a fire protection and safety plan for project lands. The updated Project Resources Management Plan describes changes to plans for recreational development after several years of operations.

There are no supplements to the 1977 Master Plan. Some land acquisitions, disposals, and reclassifications through the years of operation were never documented in an approved Master Plan or supplement. The 2021 Master Plan is an opportunity to document these changes and to ensure that the public record accurately reflects the management of lands in the Project.

4.2.2. Proposed Land Classifications for the 2021 Master Plan

An interdisciplinary team evaluated the Project operations, resource capabilities, as well as public input to determine the land classifications for Ice Harbor Project. In order to revise the Master Plan, the team needed to translate the old land classifications to the currently authorized land classifications under EP 1130-2-550 (Corps 1996). Table 4-2 below is a rough translation between the two different classification nomenclatures.

Table 4-2: Old Land Classification Nomenclature and New Land Classification Nomenclature

Old Land Classifications	**New Land Classifications**
Project Structures Port Terminal Industrial Use and Access	Project Operations
Operations: Recreation Intensive Use	High Density Recreation
Operations: Recreation Low Density Use Operations: Recreation Intensive Use Future Operations: Wildlife Management - Intensive Operations: Wildlife Management - Moderate	Multiple Resource Management Low Density Recreation Future and Inactive Recreation Area Wildlife Management
Operations: Natural Area	Environmentally Sensitive Area
-----	Mitigation
Not Classified	-----

Using the information in Table 4-2 and current management strategies for each land management unit, the team classified lands for the 2021 Master Plan using the currently authorized land classification nomenclature.

This chapter identifies how lands are classified under the 2021 Master Plan under the new land classification nomenclature and provides an explanation for each of the land

classifications, including the applicable primary and secondary uses. Table 4-3 identifies each of the land classifications and the number of acres at the Project. Appendix D contains the maps for these classifications.

Table 4-3. Proposed Land Classifications for the 2021 Master Plan

LAND CLASSIFICATION	ACRES
Project Operations	272.3
High Density Recreation	315.9
Mitigation	2884.1
Environmentally Sensitive Areas	242.0
MRM–Low Density Recreation	152.1
MRM–Wildlife Management	615.5
MRM–Future or Inactive Recreation Area	26.6
TOTAL ACRES	**4508.4**

4.2.3. Project Operations

Lands required for the operation and maintenance of the dam and reservoir, associated structures, administrative offices, maintenance compounds, and other areas are classified as Project Operations. Where compatible with the operational requirements, this land may be used for wildlife habitat management and low-density recreational uses. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements. Some Project Operations lands are closed to public access for safety or security reasons, while other areas may be subject to closure for operational requirements or other purposes. Table 4-4 contains a listing of primary and secondary uses on lands classified under Project Operations.

Table 4-4. Project Operations, 272.3 Acres

Primary Use	**Secondary Uses***
Manage land required for the operation and maintenance of the dam and reservoir.	Wildlife Management -Ecological restoration projects -Other similar activities Low Density Recreation -Hunting/Fishing -Hiking -Picnicking -Sightseeing and nature observation -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.4. High Density Recreation

Lands developed for intensive recreational activities by the visiting public are included in the High-Density Recreation land classification. Low density recreation and wildlife management activities that are compatible with intensive recreation use are acceptable. No agricultural uses are permitted on these lands except on an interim basis for the maintenance of scenic or open space values. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with recreation use. Hunting is not allowed on land classified as High Density Recreation, although fishing is an appropriate non-conflict recreational activity. Table 4-5 contains a listing of primary and secondary uses on lands classified under High Density Recreation.

Table 4-5. High Density Recreation, 315.9 Acres

Primary Uses	**Secondary Uses***
Manage land for developed recreation sites. -Picnicking -Swimming -Fishing -Sightseeing and nature observation -Nature/Interpretive trails -Hiking -Bicycling -Horseback riding -Playgrounds/Games/Sports/Other -Boat ramps	Wildlife Management -Ecological restoration projects Low Density Recreation -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.5. Mitigation

Only land identified, purchased, and/or allocated under the Mitigation land allocation can be included under the Mitigation land classification. It is specifically designated to offset losses associated with the development of a project. At the Project, Mitigation lands are associated with wildlife habitat purchased and developed under the LSRFWCP. Development of recreation facilities in Mitigation areas may be limited or prohibited to ensure that the lands are not adversely impacted. Lands identified for mitigation should not be available for consideration of real estate outgrants. Table 4-6 contains a listing of primary and secondary uses on lands classified under Mitigation.

Table 4-6. Mitigation, 2,884.1 Acres

Primary Use	**Secondary Uses***
Manage habitat under the LSRFWCP.	Wildlife Management -Ecological restoration projects -Other similar activities Low Density Recreation -Non-motorized trails -Hunting/Fishing -Hiking -Picnicking -Sightseeing and nature observation -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.6. Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are areas identified with scientific, ecological, cultural, or aesthetic features, or that are otherwise protected by laws; this classification is not limited to just land. Manmade intrusions (power lines, non-Project roads, and water and sewer pipelines) are not permitted on lands classified as ESAs. If development for public or private use occurs by exception, project proponents will be required to offset impacts through onsite or offsite mitigation efforts for the duration of that use. Activities designed to promote and improve special features identified in the area are allowed, along with education and interpretation. Development of recreation facilities in ESAs may be limited or prohibited to ensure that the lands are not adversely impacted. Table 4-7 contains a listing of primary and secondary uses on lands classified under ESA.

Table 4-7. Environmentally Sensitive Areas, 242.0 Acres

Primary Use	**Secondary Uses***
Manage land to protect unique and sensitive resources. -Scientific -Cultural -Ecological -Aesthetic	Wildlife Management -Ecological restoration projects -Other similar activities Low Density Recreation -Nature observation -Education/Interpretation

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.7. Multiple Resource Management Lands

The Multiple Resource Management (MRM) Lands classification allows for designation of a predominant use with the understanding that other compatible uses may also occur in the classification. Total acreage under MRM Lands classification for the Project is approximately 793.8 acres and is divided into subclassifications of Low-Density Recreation, Wildlife Management, and Future or Inactive Recreation Areas.

MRM–Low Density Recreation

Land in the MRM–Low Density Recreation (LDR) subclassification provides opportunities for dispersed and/or low-impact recreation. Emphasis is on minimal development of infrastructure that might support sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and picnicking. Consumptive uses of wildlife (i.e., hunting, fishing) are allowed when compatible with the wildlife objectives for a given area and with Federal, State, and Tribal fish and wildlife laws and regulations.

Facilities may include boat ramps, boat docks, trails, parking areas, vault toilets, picnic tables, and fire rings. Manmade intrusions (power lines, non-Project roads, and water and sewer pipelines) may be permitted under conditions that minimize adverse effects on the natural environment. Project proponents of these intrusions should expect to be required to offset impacts through onsite or offsite mitigation efforts for the duration of the use. Vegetation management that does not greatly alter the natural character of the environment is permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management. Table 4-8 below contains a listing of primary and secondary uses on lands classified under MRM–LDR.

Table 4-8. MRM - Low Density Recreation, 152.1 Acres

Primary Uses	Secondary Uses*
Manage land for low density, low impact recreation opportunities. -Hunting/Fishing -Hiking -Bicycling -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Boat ramps -Non-motorized trails -Other recreation activities of a primitive nature	Wildlife Management -Ecological restoration projects -Other similar activities

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

MRM–Wildlife Management

Land in the MRM–Wildlife Management (WM) subclassification is designated for stewardship of fish and wildlife resources in conjunction with other land uses. Habitat maintenance and/or improvements are for a designated species, group of species, and/or a diversity of species. These areas may be administered by other public agencies under a lease, license, permit, or formal agreement. Licenses, permits, and easements are normally not allowed for manmade intrusions such as pumping plants, pipelines, cables, transmission lines, or for non-Corps maintenance or access roads. Exceptions to this policy are allowable where necessary to serve a demonstrated public need in those instances where no reasonable alternative is available, or other reasons deemed important by the Corps. When exceptions to this policy are allowed, Project proponents should expect to be required to offset impacts through onsite or offsite mitigation efforts for the duration of the use.

MRM-WM land is available for sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and primitive camping. Consumptive uses of wildlife (hunting, fishing, and trapping) are allowed when compatible with the wildlife objectives for a given area, as well as with Federal, State, and Tribal fish and wildlife laws and regulations. Table 4-9 contains a listing of primary and secondary uses on lands classified under MRM–WM.

Table 4-9. MRM - Wildlife Management, 615.5 Acres

Primary Uses	**Secondary Uses***
Manage land for stewardship of fish and wildlife resources. -General forest health -Habitat enhancement projects -Ecological restoration projects -Protection of specific habitat areas / components (i.e., denning sites, calving sites, nests and wallows, etc.) -Other similar activities	Low Density Recreation -Hunting/Fishing -Hiking -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Boat ramps -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

MRM–Future or Inactive Recreation Areas

The Future or Inactive Recreation Areas (FIRA) subclassification consists of lands for which recreation areas are planned for the future or lands that contain existing recreation areas that have been temporarily closed. Table 4-10 contains a listing of primary and secondary uses on lands classified under MRM–FIRA.

Table 4-10. MRM - Future or Inactive Recreation Areas, 26.6 Acres

Primary Uses	**Secondary Uses***
Manage land that will not limit the ability to develop or maintain an area as a recreation area.	Wildlife Management -General forest health -Ecological restoration projects -Other similar activities Low Density Recreation -Hunting/Fishing -Hiking -Bicycling -Horseback riding -Campgrounds <15 sites -Primitive camping (designated sites) -Picnicking -Swimming -Sightseeing and nature observation -Motorized access trails and roads -Non-motorized trails -Other recreation activities of a primitive nature

*Project lands have information signs for visitors if there are any deviations from primary or secondary uses of the lands.

4.2.8. Water Surface

The Project manages 8,254.3 acres of surface water. The water surface acreage at the Project is divided into the following zones to support public safety and security:

- Restricted – Water areas restricted for Project operations, safety, and security purposes.
- Designated No-Wake – To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and/or public safety.
- Fish and Wildlife Sanctuary – Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.
- Open Recreation – Those waters available for year-round or seasonal water-based recreational use.

4.3. PROJECT EASEMENT LANDS

The Corps holds an easement interest, but not the fee title to this land, and has the right to enter the property in connection with the operation of the project. In most cases, the Corps has the right to occasionally flood these properties. Planned use and management is in strict accordance with the terms and conditions of the easement estate acquired for the project. The Corps of Engineers has acquired easements on approximately 1,484 acres of land adjacent to the Ice Harbor Project.

4.3.1. Operations Easement

Operations easements were purchased by the Corps for the purpose of project operations. 4 acres were acquired for activities to include roads and pipeline rights-of-way, and Ice Harbor has 0.46 acres remaining after the disposition of a temporary road easement.

4.3.2. Flowage Easement

These are easements purchased by the Corps of Engineers or reserved as part of Corps of Engineers disposal of fee lands, giving the right to flood private land during flood risk management operations. There are approximately 1,484 acres of flowage easement land located near the project. These easements are most commonly found near the river shores.

4.4. LAND CLASSIFICATION SUMMARY

Table 4-11 summarizes the land classification changes from the 2020 acreage to the acreage for the 2021 Master Plan, converting the 2020 classifications to the new land classification nomenclature in EP 1130-2-550. The slight difference in acreage between the 2 years can be attributed to rounding. Appendix D, Land Classification Maps, provides the new land classification maps for the 2021 Master Plan.

Table 4-11. Land Classification Changes from 2020 to 2021

LAND CLASSIFICATION NOMENCLATURE	2020 ACRES	2021 ACRES
Project Operations	732.2	272.3
High Density Recreation	341.6	315.9
Mitigation	---	2884.1
Environmentally Sensitive Areas	96.3	242.0
MRM-Low Density Recreation	74.8	152.1
MRM-Wildlife Management	2592.7	615.5
MRM-Future or Inactive Recreation Area	272.7	26.6
Not Classified	398.4	---
Total	**4508.7**	**4508.4**

5. Resource Plan

Building on Chapter 4, which provided more general land classification descriptions and acreage for each of the classifications at Ice Harbor Project, Chapter 5 provides information on how the management areas (e.g., parks, HMUs) within each of the land classifications will be managed. The management areas identified are presented in broad terms. A more descriptive plan for managing these lands will be refined in the Ice Harbor OMP. Management tasks described in the OMP must support the resource objectives, land classifications, and resource plan set forth in this Master Plan. Numbers of acres listed under land classification categories were summarized using the Corps geographic information system (GIS) database and may be off by several tenths of an acre at each site.

5.1. PROJECT OPERATIONS

Project Operations lands are managed to support the operation and maintenance of the dam and reservoir, associated structures, administrative offices, maintenance compounds, and other areas that are classified as Project Operations. There are a total of 272.3 acres designated under the Project Operations land classification. This is a reduction in acreage from 732.2 to 272.3 acres in the 2021 Master Plan. Management of the Project after construction of Ice Harbor Lock and Dam requires fewer lands in this category, so lands were moved to more appropriate classifications based on the resource needs of the areas. The management areas in this land classification are shown in Table 5-1.

Table 5-1. Project Operations Lands

MANAGEMENT AREA	TOTAL ACRES
Ice Harbor Lock and Dam Operations Area	238.4
Matthews Operations	24.7
Windust Port	9.2
TOTAL	**272.3**

Ice Harbor Lock and Dam Operations Area. This area is the operations and maintenance area around Ice Harbor Lock and Dam. It has multipurpose facilities and assets including the powerhouse, navigation lock, fish ladder, and juvenile fish bypass system and facility. Construction started in January 1956. The dam was completed in 1962 with three power generating units. Three more power generating units were installed and operational in 1976. The first three original generators produced 90,000-kilowatt per unit and the last three generators installed were 111,000-kilowatt per unit for the total powerhouse

capacity of 603 megawatts. During fiscal year 2011, 2.49 billion kilowatt hours of electricity were produced. 2018 was when they started the first turbine replacement on one of the original three units. The first new turbine generates 106,000 kilowatts while using less water. The other two units will produce 103,000 kilowatt per unit using less water once implemented. By the end of 2023 the original three generators will have been replaced with more efficient and fish friendly turbines.

The Tri-Rivers Natural Resources Management Office is also located within this area, at 2339 Monument Drive in Burbank, Washington. It serves as the administrative office for the Tri-Rivers Natural Resources Management (NRM) Section. The NRM Section is responsible for the operation and maintenance of all Ice Harbor Project lands (i.e., recreation, mitigation, MRM lands) as well as McNary Project lands and the lower half of Lower Monumental Project lands.

Figure 5-1. Ice Harbor Lock and Dam Operations Area

Matthews Operations. This area south of the airport is the divide between Lower Monumental and Ice Harbor Project boundaries. Due to the sensitive areas contained within Lower Monumental South, public access should be limited, and hunting cannot be allowed. This land has little value for wildlife habitat.

Windust Port. This area is outgranted by lease to the Port of Kahlotus for operation and development of public port and industrial facilities. The Main uses are for grain elevators, office space and barge moorage.. It is located on the north shore, west of Windust Park. Access by vehicle along Pasco-Kahlotus Road and right onto Devils Canyon Road.

5.2. HIGH DENSITY RECREATION

There are 315.9 acres managed under the High Density Recreation land classification (Table 5-2). Ice Harbor Marina at Charbonneau Park is outgranted to Ice Harbor Marina, LLC. The Corps does not provide any maintenance within any of these leased locations, but there are times when the Corps provides support to the managing agency by reviewing requests for modifications to ensure they meet applicable laws and regulation for proposed activities. The goal is to work with Corps partners to ensure recreation areas are being managed in accordance with resource objectives identified in Chapter 3, Resource Objectives.

The acreage for the High Density Recreation land classification was reduced from 341.6 to 315.9 in the 2021 Master Plan. Master Plans for other lower Snake River projects planned for much greater recreational use, but even the original 1963 Ice Harbor Master Plan only planned 383 acres for initial recreation development. Development of Lyons Ferry Park and Central Ferry Park in Lower Monumental and Little Goose Projects on the north shore of the Snake River effectively drew visitors away from Ice Harbor parks like Levey and Windust. The management areas in this land classification are shown in Table 5-2.

Table 5-2. High Density Recreation Areas and Area Managing Agencies

MANAGEMENT AREA	TOTAL ACRES	MANAGEMENT AGENCY
Charbonneau Park and Ice Harbor Marina	201.6	Corps
Fishhook Park	40.4	Corps
Ice Harbor North Shore Boat Ramp	8.2	Corps
Levey Park	45.2	Corps
Windust Park	20.4	Corps
TOTAL	**315.9**	

Charbonneau Park. Charbonneau Park is just upstream from Ice Harbor Dam on the south bank. Access by vehicle along Hwy 124 turning onto Sun Harbor Drive. Charbonneau Park has a day use area, marina, and a campground.

The day use area features several small shade shelters, two reservable group shelters, a playground, two designated swimming areas, a waterborne restroom with a shower on both sides, a volleyball court, and a boat ramp with a leased marina.

The Class-A campground features 54 electrical campsites with fire pits, of which 15 are full hookup sites (water, electrical, and sewer). In the middle of the campground there is a

waterborne restroom with showers. There is a dump station available and all sites are reservable on recreation.gov. The campground is open from Memorial Day to Labor Day.

Figure 5-2. Charbonneau Park

Ice Harbor Marina is outgranted to Ice Harbor Marina, LLC. The marina provides a fueling station, dump station, moorage for boats, boat rentals, and a small stand that offers up miscellaneous amenities for boating and camping.

Fishhook Park. Fishhook Park is further upstream from Ice Harbor Dam on the south bank. Access by vehicle along State Highway 124 turning on to Fishhook Park Road. Fishhook Park has a day use area and a campground.

The day use area features several small shade shelters and one reservable group shelter, a swimming beach, a boat ramp, and two waterborne restrooms.

This Class-A campground offers up 41 reservable sites with water, electricity, and fire pits. In addition, there are 11 tent sites with fire pits and of those sites, two are considered group sites with their own shade shelter. A waterborne restroom is close by. There is a dump station and all sites are reservable on recreation.gov. Fishhook is the first Class-A campground in the Project to switch to volunteers operating and performing the routine grounds maintenance duties. The campground is open from Memorial Day to Labor Day yearly.

Figure 5-3. Fishhook Park

Ice Harbor North Shore Boat Ramp. Ice Harbor North Shore Boat Ramp located just behind Ice Harbor Dam, accessible from Pasco-Kahlotus Road turning onto Ice Harbor Road. This area provides two boat ramps, a kiosk, a vault toilet, and a large paved parking lot. Shoreline fishing is popular, and hiking is available on the state-owned Columbia Plateau Trail located on the northeast side of the parking lot. The state provides a kiosk with a self-pay vault. No camping is allowed.

Levey Park. Levey Park is upstream from Ice Harbor Dam on the north bank, accessible by vehicle along Pasco-Kahlotus Road turning on to Levey Road. This day use park is only open on weekends (Friday through Sunday). The park provides a playground, several shade shelters with picnic tables and grills, a swim beach, a volleyball court, a boat ramp, and portable restrooms. This park is operated and maintained by volunteers.

Figure 5-4. Levey Park Boat Ramp

Windust Park. Windust Park is just downstream from Lower Monumental Dam on the north bank, accessible by vehicle along Devils Canyon Road. This park has a day use area and a campground.

The day use area features grills and picnic tables under the canopy of trees, two shade shelters, a playground, a swim beach with a boat dock, waterborne restroom, and a boat ramp.

The campground provides 10 RV/trailer campsites around the boat parking lot with firepits, while the corral and east camping area offers 12 tent camping sites with fire rings. No electricity or water is available at these sites but there is a dump station. These sites are not reservable. Volunteers help operate and maintain this park.

Figure 5-5. Windust Park Swim Beach

5.3.MITIGATION

There are 2,884.1 acres of land designated for Mitigation within the Project area, with Big Flat, Hollebeke, Lost Island, and Fishhook HMUs making up the largest parcels. This is an increase in acreage from 0 to 2,884.1 in the 2021 Master Plan; Mitigation was not an approved land use for the 1977 Master Plan, and we are updating the land classification system with this Master Plan. Additionally, the LSRFWCP was put into place just before the 1977 Master Plan. The 1982 Fish and Wildlife Management Plan Appendix described how the Project was progressing toward meeting the goals for the LSRFWCP. The management areas in this land classification are shown in Table 5-3.

These lands were designated as Mitigation as part of the LSRFWCP, authorized in 1976 to mitigate for lost hunting and fishing opportunities as a result of the construction of the four lower Snake River dams. Wildlife management strategies were agreed upon with the Corps, USFWS, and the Washington Department of Fish and Wildlife (WDFW).

The Corps completes mitigation through the establishment of HMUs. Acquisition, establishment, and development of the HMUs has occurred since the early 1970s, with the bulk of the work being done in the 1980s and early 1990s.

The 1979 LSRFWCP supplement recommended 54 management units (i.e., HMUs) for classification as wildlife lands with associated management across the lower Snake River projects. There were three levels of development: intensive, moderate, or none. Ten units were originally recommended for intensive development, 25 units for moderate development, and 19 units for no/limited development. Of those, in the Ice Harbor Project, three were classified as intensive, six as moderate, and five as none/limited development.

The supplement described intensively developed sites as those that incorporated the habitat components of "trees and shrubs, meadows, pastures, fence associations, fields, annual food plots, water guzzler complexes, and nest structures." This development includes irrigation. These sites selected for intensive management were chosen for mitigation because they were large; had potential for farming both grasses and legumes; boasted a network of trees and shrubs; and had sufficient land immediately adjacent to a water source to pasture Canada geese. HMUs with moderate development included dryland development (planting annual crops, fertilization, and mowing), wildlife water guzzlers (guzzlers), nest platforms or boxes, and fencing. The HMUs categorized as no/limited development have remained largely undeveloped, with some sites adding guzzlers and reseeding with native species over time.

The LSRFWCP mitigation strategy was originally based on "substantial comprehensive development of project and non-project lands" and the "maintenance of habitat and production of game animals which will sustain the hunting pressure, appreciative use which would have occurred if the Project had not been constructed, and the maintenance of nongame animals at pre-project levels" (Corps 1975).

This strategy was implemented without specific and measurable objectives, so, in 1989, a letter of agreement between the Corps, USFWS, and Washington Department of Wildlife (WDW, which is now WDFW) modified the strategy to develop habitat-based compensation objectives. These objectives were established using an agreed-upon Habitat Evaluation Procedures (HEP) analysis for identifying pre-Project conditions, and for then measuring progress toward the habitat objectives. The HEP analysis used several "indicator" species'

biological requirements and cover types as indicators of the habitat quality to obtain habitat units, which were then compared to the objectives to measure success.

Table 5-3. Mitigation Lands in Ice Harbor Pool

MANAGEMENT AREA	ACRES	MANAGEMENT CLASSIFICATION
Big Flat HMU	896.8	Intensive Development
Hollebeke HMU	267.7	Intensive Development
Lost Island HMU	192.6	Intensive Development
TOTAL INTENSIVE DEVELOPMENT	**1,357.2**	
Charbonneau HMU	125.5	Moderate Development
Couch Landing HMU	257.8	Moderate Development
Fishhook HMU	276.6	Moderate Development
Nineteen Mile HMU	10.9	Moderate Development
Quarter Circle HMU	138.5	Moderate Development
Walker HMU	162.7	Moderate Development
TOTAL MODERATE DEVELOPMENT	**972.0 ACRES**	
Burr Canyon HMU	198.5	Limited Development
Lake Charlene HMU	110.5	Limited Development
Levey HMU	26.1	Limited Development
Snake River Junction HMU	61.3	Limited Development
Windust HMU	158.6	Limited Development
TOTAL NO DEVELOPMENT	**554.9 ACRES**	
TOTAL ALL MITIGATION ACRES	***2884.1***	

*"Limited development" is referred to as "no development" in various LSRFWCP documents. The term "limited development" more clearly describes habitat enhancement activities that occur in these sites, such as installation of wildlife guzzlers, reseeding with native species, and/or dryland vegetation enhancement if necessary.

5.3.1. Mitigation – Intensive Development

Big Flat HMU. Big Flat HMU comprises almost 900 acres, with about 260 acres under irrigation. Big Flat is on a large terrace on the north shore of the Snake River at RM 16, accessible via county road with a "Big Flat HMU" sign off the Pasco-Kahlotus Road. Topography is relatively flat with slight rolling hills. The soils are mostly silty loams and basalt outcroppings. Vegetation consists of sagebrush, cheatgrass and bunchgrasses, trees,

shrubs, and agricultural food plots. Irrigation of the agricultural food plots is accomplished by a series of big guns.

Big Flat is used for fishing, hiking, hunting, horseback riding, bird watching, and wildlife viewing. There is a vault toilet in the parking lot of the HMU. Game hunting is allowed with shotgun and archery only, following WDFW game regulations. Pheasant are planted by the WDFW and quail and deer are present on this HMU as well as a variety of other wildlife species. Dalton Lake (present in this HMU) has a small boat ramp and is stocked with rainbow trout but is not accessible from the Snake River. The management goals for this HMU are to reduce Russian olive to between 50 and 60 percent, control other invasive species, and gradually replace agricultural food plots with native plants that will provide the same ecosystem service.

Figure 5-6. Big Flat HMU

Figure 5-7. Dalton Lake in Big Flat HMU

Hollebeke HMU. Hollebeke HMU is more than 250 acres, with about 110 acres under irrigation. Hollebeke is located on the south shore at RM 25, accessible via Rice road or Eureka Road to Van Hollebeke Road from State Highway 124. Topography is relatively flat, and the soils are mostly silty loams. Vegetation consists of sagebrush, cheatgrass and bunchgrasses, trees, shrubs, and agricultural food plots. Irrigation of the agricultural food plots is accomplished by a series of big guns.

Hollebeke is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Game hunting is allowed with shotgun and archery only following WDFW game regulations. Pheasant are planted by the WDFW and quail and deer are present on this HMU along with a variety of other wildlife species. The management goals are to reduce Russian olive to between 50 and 60 percent of tree cover, control other invasive species, and replace agricultural food plots with native plants that will provide the same ecosystem service.

Figure 5-8. Hollebeke HMU

Lost Island HMU. Lost Island HMU covers nearly 200 acres with about 62 acres under irrigation. Lost Island is on the north shore at RM 23, accessible via Votaw Road from McClenny Road off the Pasco-Kahlotus Road. Topography is relatively flat. The soils consist of silty loams and basalt outcrops. Vegetation includes sagebrush, cheatgrass and bunchgrasses, trees, shrubs, and agricultural food plots irrigated with a series of big guns.

This HMU is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Game hunting is allowed with shotgun and archery only following WDFW game regulations. Pheasant are planted by the WDFW and quail and deer are present on this HMU as well as a variety of other wildlife species. The management goals are to reduce Russian olive, to

between 50 and 60 percent, control other invasive species, and replace agricultural food plots with native plants that will provide the same ecosystem service.

Figure 5-9. Lost Island HMU

5.3.2. Mitigation – Moderate Development

Charbonneau HMU. Charbonneau is an approximately 125-acre HMU located upstream from Charbonneau Park on the south shore at RM 14, accessible via Charbonneau Park Road off State Highway 124. Topography is gently rolling with slight elevation change bounded by steep cliffs on the riverside. The soils are aeolian (wind delivered) sediments, sands, and sandy loams. Vegetation is big sagebrush, bitterbrush, rabbitbrush, cheatgrass, needle-and-thread grass, and forbs.

Charbonneau HMU is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Upstream upland game hunting is allowed with shotgun and archery only following WDFW game regulations. The downstream section is closed to hunting to provide a safety-zone for Charbonneau Park. This portion of the Snake River is closed to waterfowl hunting. Restroom facilities and a boat launch ramp are available at Charbonneau Park.

Figure 5-10. Charbonneau HMU

Couch Landing HMU. Couch Landing HMU comprises approximately 257 acres and only accessible via Burr Canyon Road from the Pasco-Kahlotus Road. It is located on the north shore at RM 35, upstream and across from Walker HMU. Topography is generally flat and soils consist mostly of dredge spoils. Vegetation includes rabbitbrush, cheatgrass, and forbs. Couch Landing HMU is used for fishing, hiking, hunting, bird watching, and wildlife viewing. This HMU is open to upland game and waterfowl hunting.

Figure 5-11. Couch Landing HMU

Fishhook HMU. Fishhook HMU is approximately 275 acres, and located downstream and south of Fishhook Park at RM 17. The HMU is accessible via Fishhook Park off State Highway 124. Topography is gently sloping, with soils of aeolian sands and sandy loams. Vegetation is big sagebrush, rabbitbrush, cheatgrass, needle-and-thread grass, and forbs.

Fishhook is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Upland game hunting and waterfowl hunting are allowed with shotgun and archery only following WDFW game regulations. There are two ponds within this HMU; the upstream pond is stocked with rainbow trout. There are restroom facilities at Fishhook Park.

Nineteen Mile HMU. This HMU is approximately 11 acres on the north shore at RM 19, upstream from Big Flat HMU and across the Snake River from Fishhook Park. Access to the HMU is off the Pasco-Kahlotus Road, then Murphy Road to Page Road. The soils are deep talus slopes with a small dredge spoil island off the riverside of the railroad. Vegetation includes rabbitbrush, cheatgrass, needle-and-thread grass, and forbs. Nineteen Mile is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Game hunting is permitted for upland and waterfowl following WDFW regulations.

Quarter Circle HMU. Quarter Circle HMU is approximately 138 acres, located on the south shore at RM 15 across from Big Flat HMU, accessible via private road off State Highway 124. Topography is steep talus slops and basalt outcroppings. The soils are aeolian sand and sandy loams with some finer loess (wind delivered) sediments on the plateau. Vegetation is big sagebrush, rabbitbrush, cheatgrass, needle-and-thread grass, and forbs. Quarter Circle is mainly used by hunters. Upland game and waterfowl hunting are allowed with shotgun and archery only following WDFW game regulations.

Figure 5-12. Mule Deer on Quarter Circle HMU

Walker HMU. Walker HMU is approximately 162 acres and located on the south shore of the Snake River upstream from Sheffler at RM 32, accessible by Eureka to Walker Road from State Highway 124. Topography is flat along the river and bends into steep slopes. Soils consist of cobbles and gravel spoils. Vegetation consists of willow, big sagebrush, and rabbit brush, with cheatgrass, bluebunch wheatgrass, and forbs. The pond is vegetated with bulrush, cattails, giant reed, and reed canary grass. There is Russian olive onsite. Walker HMU is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Hunting is open to upland game and waterfowl.

Figure 5-13. Walker HMU

5.3.3. Mitigation – Limited Development

Burr Canyon HMU. Used for fishing, hiking, hunting, bird watching, and wildlife viewing. Visitors can access the portion of the HMU across the railroad tracks from the shoreline via Magallon Road of the Lower Monumental Dam Road; however, parking is limited. The portions of the HMU along the shoreline are best accessed via boat; the railroad property should not be crossed.

Lake Charlene HMU. Lake Charlene HMU comprises approximately 110 acres and is located on the north shore at RM 13, upstream from the North Shore Boat Ramp at Ice Harbor Dam. Access is available via Rodger's Reef Road from the Pasco-Kahlotus Road. Topography is one-third Lake Charlene, with the rest consisting of steep basalt outcroppings. The soils consist of aeolian, sands, and sandy loams on top of basalts. Vegetation is big sagebrush, rabbitbrush, cheatgrass, needle-and-thread grass, and forbs. Lake Charlene is used for swimming, fishing, hunting, bird watching, and wildlife viewing.

Upland game hunting is allowed with shotgun and archery only following WDFW game regulations. Waterfowl hunting is closed on this portion of the Snake River.

Levey HMU. Levey HMU comprises roughly 25 acres of land on the north shore upstream and north of Levey Park at RM 15, accessible via Levey Park Road off the Pasco-Kahlotus Road. Topography is generally flat with aeolian, sands, and sandy loam soils. Vegetation is big sagebrush, rabbitbrush, cheatgrass, needle-and-thread grass, and forbs. Levey is used for swimming, fishing, hunting, bird watching, and wildlife viewing. Upland game hunting is allowed with shotgun and archery only following WDFW game regulations. Waterfowl hunting is closed on this portion of the Snake River. Restroom and boat launch ramps are available at Levey Park. Levey Park is open during the season on Friday through Sunday.

Snake River Junction HMU. Snake River Junction HMU is approximately 61 acres on the north shore at RM 29, upstream from Lost Island HMU and across from Hollebeke HMU. Access to this HMU is via Snake River Road. Topography is generally flat; soils consist of dredge spoils from the Snake River. Vegetation is rabbitbrush, cheatgrass, and forbs, and there is a planted grove of black locust. Snake River Junction is used for fishing, hiking, hunting, bird watching, and wildlife viewing. Upland game hunting is allowed following WDFW regulations. There is a State-operated parking facility with vault toilets available at the parking lot above the HMU (WSP Discovery pass required). River access is available at a primitive boat launch at this HMU.

Windust HMU. Windust HMU is on the north shore, accessible via the Pasco-Kahlotus Road to Burr Canyon Road, and can be used for fishing, hiking, hunting, bird watching, and wildlife viewing. This area was previously classified as operations land and was reclassified as Mitigation in this Master Plan. Topography is generally flat. Vegetation consists of rabbitbrush, cheatgrass, and forbs. This HMU is open to upland game hunting and waterfowl hunting.

5.4. ENVIRONMENTALLY SENSITIVE AREAS

ESAs are managed to protect the scientific, ecological, cultural, or aesthetic features, of the lands. Typically, limited or no development for public use is allowed. Manmade intrusions (power lines, non-Project roads, and water and sewer pipelines) are not permitted on lands classified as ESAs. Activities designed to promote and improve special features identified in the area are allowed, along with education and interpretation. There are a total of 240.2 acres designated under the ESA land classification. There were no lands classified as ESA in the 2020 classifications; ESA was not an approved land classification under the old nomenclature. The management areas in this land classification are shown in Table 5-4.

Table 5-4. Environmentally Sensitive Areas

MANAGEMENT AREA	TOTAL ACRES
Anchor Canyon South ESA	73.9
Big Flat ESA	11.1
Burr Canyon ESA	55.5
Charbonneau HMU ESA	3.9
Charbonneau Park ESA	5.7
Hollebeke North ESA	15.3
Hollebeke West ESA	15.0
Lost Island ESA	7.2
Matthews ESA	22.9
Snake River Junction ESA	2.2
Walker ESA	12.1
Windust ESA	17.3
TOTAL	**242.0**

Big Flat, Charbonneau HMU and Park, Hollebeke North and West, Lost Island, Matthews, Snake River Junction, and Walker ESAs were designated due to the presence of resources of importance to individual or multiple Tribes, features that are eligible for listing on the National Register of Historic Places, and management concerns. These locations contain sensitive, non-renewable resources that have been recognized as significant at a state and federal level. Several of these ESAs contain or are near places whose historical names are often descriptive and indicate their importance, such as **Papcaq** and **Twinacas** in Charbonneau, and **Wušii Wapaš** and **Tatipaš** [Sahaptin NE] in Big Flat HMU. For more information on these areas and their place names, an excellent reference is Ĉáw Pawá Láakni, They are Not Forgotten, Sahaptian Place Names Atlas of the Cayuse, Umatilla, and Walla Walla (Hunn et al. 2015).

Anchor Canyon South ESA. The area within Anchor Canyon South ESA has long been recognized as important culturally and aesthetically; this area was classified as a Natural Area in the 1977 Master Plan, which is a similar classification to ESA. In this region, the breadth of the lake narrows considerably, and the walls of the shoreline rise dramatically. The steep cliffs provide a unique aesthetic feature within Ice Harbor Project. The area on both sides of this narrow stretch of the Snake River was historically used as a winter site for camping and called **Čipaš** [Sahaptin NE] (Hunn et al. 2015). The presence of resources of

importance to multiple Tribes and the aesthetic resources of this area led to the designation of this ESA.

Burr Canyon and Windust ESAs. The Burr Canyon and Windust ESAs were designated due to their proximity and association with significant archaeological districts and cultural importance to multiple Tribes. These locations contain sensitive, non-renewable resources that have been recognized as significant at a state and federal level.

Most, if not all, of the Corps-managed shoreline and adjacent land lies within expansive ancestral areas significant to numerous Tribes. The landforms and natural features retain sacred importance to tribal members as the setting of past, present, and future use and traditional practices. ESA classification will promote appropriate Corps management and planning for the protection of significant cultural resources.

5.5. MULTIPLE RESOURCE MANAGEMENT

This MRM Lands classification allows for designation of a predominant use with the understanding that other compatible uses may also occur in the classification, to include Low Density Recreation, Wildlife Management, and Future or Inactive Recreation Areas. Total MRM lands for the Project are approximately 793.8 acres. This is a decrease in acreage from 2,940.2 previously. The management areas in this land classification are shown in Table 5-5, organized by subclassification.

Table 5-5. MRM Lands by Land Use Subclassification

MANAGEMENT AREA	TOTAL ACRES
MRM – LOW DENSITY RECREATION	
Ice Harbor North Shore Boat Ramp	4.9
Ice Harbor South Shore Recreation Area	58.8
Indian Memorial Park	15.6
Matthews Park	40.6
Shoreline Road Fishing Access	32.1
TOTAL	**152.1**
MRM – Wildlife Management	
Anchor Canyon North Shore HMU	31.6
Anchor Canyon South Shore HMU	56.0
Fishhook HMU	15.8
Goose Island	17.6
Martindale HMU	140.1
Matthews HMU	40.9
RM 38.5 HMU	19.4
South Shore HMU	294.1
TOTAL	**615.5**
MRM – Future or Inactive Recreation Area	
Fishhook Park (Future)	18.9
Windust Park (Future)	7.7
TOTAL	**26.6**

5.5.1. MRM – Low Density Recreation

MRM-LDR are lands with minimal development or infrastructure that support passive public recreation use (e.g., primitive camping, fishing, hunting, trails, wildlife viewing, etc.). There are 5 sites under this classification encompassing approximately 152.1 acres.

Ice Harbor North Shore Boat Ramp. Ice Harbor North Shore Boat Ramp is located just behind Ice Harbor Dam on the north shore, and accessible from Pasco-Kahlotus Road turning onto Ice Harbor Road. This area provides two boat ramps, a kiosk, a vault toilet, and

a large paved parking lot. Shoreline fishing is popular, and hiking is available on WSP's Columbia Plateau Trail State Park; the trailhead is located on the northeast side of the parking lot. The state provides a kiosk with a self-pay vault. No camping is allowed.

Figure 5-14. Ice Harbor North Shore Boat Ramp

Ice Harbor South Shore Recreation Area. Ice Harbor South Shore Recreation Area is located below Ice Harbor Dam and accessible off Monument Drive. The primary recreation activities are fishing and primitive camping. The area provides a vault toilet.

Indian Memorial Park. When surveying the area before the dam was built, a large rock with petroglyphs was found along the river's edge. Building Ice Harbor Dam would raise the water level more than one hundred feet, inundating a lot of Native American history, including burial grounds. This memorial was created to commemorate the flooded burial and other culturally significant sites.

Indian Memorial Park is a popular stop to view the petroglyphs and a nice place to view upstream. Access to Indian Memorial Park is from State Highway 124 to Monument Drive, then right on Shoreline Road.

Figure 5-15. Rock with Petroglyphs at Indian Memorial Park

Matthews Park. Matthews Park is located on the south shore just below Lower Monumental Dam, accessible from Lower Monumental Road to Matthews Road. This area provides a boat ramp, a kiosk, a vault toilet, and a paved parking lot. Primary activities are boating, fishing, and camping. This area is popular with pikeminnow anglers.

Shoreline Road Fishing Access. Just upstream from Ice Harbor Dam and Indian Memorial Park, heading east on Shoreline Road, there is a peninsula where one can drive right up to the shoreline to go fishing or put a kayak in. This area has a portable restroom.

Further upstream east on Shoreline Road there is another popular place where visitors like to fish from the shoreline. This area provides a kiosk and a vault toilet. Several small outcroppings were built along the shoreline, so people had a safe place to sit or stand off the road.

Figure 5-16. Shoreline Road Fishing Access

5.5.2. MRM – Wildlife Management

MRM-WM lands are designated for stewardship of fish and wildlife resources in conjunction with other land uses. Habitat maintenance and/or improvements are for a designated species, or group of species.

There are 8 sites under this classification encompassing approximately 615.5 acres. The Corps uses these lands to meet the ENS mission and provide fish and wildlife habitat, and in some cases, they can be credited to the mitigation requirements of the LSRFWCP.

Anchor Canyon North Shore HMU. This HMU is approximately 31 acres and bisected by the Columbia Plateau Trail State Park, with some acreage in a very steep bank along the shoreline, and the rest in shrub steppe on an upland bench on the other side of the trail. There is limited habitat development due to the difficulty of access and the harsh environment at this location.

Anchor Canyon South Shore HMU. Anchor Canyon South Shore HMU comprises 56 very steep acres surrounding almost 74 acres classified as ESA. The portions of this HMU that are accessible have limited habitat development with native shrubs and sparse grass among the rocks. There is a small grove of trees on the shoreline of the south entrance to this canyon that boaters will anchor near and use for rest. The southern part of this HMU is accessible on land via State Highway 124 to Fishhook Park Road.

Fishhook HMU. The 15.8 acres of Fishhook HMU that are classified as MRM-WM are managed identically to the rest of the HMU classified as Mitigation; for a thorough

description, please see Chapter 5.3. The acreage along the river would be considered riparian habitat with a mix of Russian olive and willows; the upland portion is shrub steppe.

Goose Island. This approximately 17-acre island below Ice Harbor Dam and adjacent to Ice Harbor South Shore Recreation Area is heavily used by wildlife, especially waterfowl and shorebirds. Some portions of this island are vegetated with wild rose, willow, false indigo, and net-leaf hackberry. However, most of this island is somewhat denuded due to seasonal inundation, which makes establishment of vegetation difficult. There is a volcano chute nearby that is used by eagles and barn owls for nesting.

Martindale HMU. Martindale HMU is about 140 acres, north of Ice Harbor Dam with limited habitat development. Ice Harbor Road runs alongside the HMU. It features shrub steppe with sagebrush, rabbitbrush, and cheatgrass in the upland part of the HMU. The portion of the HMU along the shoreline downstream of the dam has some riparian vegetation including golden currant, willows, cottonwood, wild rose, Himalayan blackberry, and some locust. Upland bird hunting is allowed according to WDFW regulations, and fishing is popular along the shoreline.

Matthews HMU. At almost 41 acres, Matthews HMU is a small, remote HMU with limited habitat development, accessible from Lower Monumental Road to Matthews Road. Vegetation is shrub steppe. It can be used for fishing, hiking, hunting, bird watching, and wildlife viewing. Game hunting is allowed with shotgun and archery in accordance with WDFW regulations. There is a vault toilet at Matthews Park for visitors.

RM 38.5 HMU. This is a small (roughly 19-acre), very steep HMU west of Matthews with no development. There is no public access by land, but there is a small sliver of Corps land along the shoreline accessible by boat. This could be a possibility for riparian habitat development in the future.

South Shore HMU. The land within South Shore HMU was previously planned to be developed as an off-road vehicle area, but due to the proximity of Juniper Dunes Wilderness and changing environmental restrictions, the Corps decided to manage this area for wildlife habitat. The Corps has installed artificial burrows for burrowing owls in this area in a pilot project to increase biodiversity. South Shore HMU is accessible via Shoreline Road, and restroom facilities are available in the nearby Ice Harbor South Shore Recreation Area and Indian Memorial Park.

5.5.3. MRM – Future or Inactive Recreation Areas

Fishhook Park (Future). This area is adjacent to Fishhook Park on the north, and it encompasses approximately 18.9 acres. This area has been identified as compatible for

future recreational development. Until there is an opportunity to further develop this area, this land will be managed under the MRM–FIRA classification.

Windust Park (Future). This area is adjacent to Windust Park on the north, encompassing approximately 7.7 acres. Should public demand and available funding make an expansion of Windust Park a possibility, this is the best area for that use.

5.6. WATER SURFACE ZONING

Water surface zoning at Ice Harbor Project is used to support public safety and security. The water surface on Lake Sacajawea includes the following zones: Restricted, Designated No-Wake, and Open Recreation. Open Recreation allows for recreation activities such as wading, swimming, paddling, sailing, motorboating, and fishing. There are 8,094.7 acres of water surface designated for Open Recreation. Water Surface acreage was not quantified in the 1977 Master Plan.

At Ice Harbor Lock and Dam, there are boat restricted zones (BRZ) both below and above the dam to allow for Project operations, safety, and security. The waters are restricted to all vessels, except government vessels. The BRZ is described as "all waters within a distance of about 800 yards upstream of the dam lying south of the navigation lock and bound by the line commencing at the upstream end of the guidewall, and running a direction of 91°10′ true for a distance of 575 yards; thence 162°45′ to the south shore, a distance of about 385 yards. The downstream limits commencing at the downstream end of the guidewall; thence to the south shore, at right angles and parallel to the axis of the dam. Signs designate the restricted areas," (33 CFR § 207.718). There are also boat restricted zones at Charbonneau Park, Fishhook Park, Levey Park, and Windust Park, all in the swim areas. There are 131.5 acres of Restricted waters.

Zones near boat ramps are Designated No-Wake to protect recreational water access from disturbance and for public safety. The largest designated no-wake zone is at Charbonneau Park, with smaller areas at the North Shore Boat Ramp, Fishhook Park, Levey Park, Matthews Park, and Windust Park. There are 28.2 acres of waters in Lake Sacajawea Designated No-Wake.

6. Special Topics, Issues, and/or Considerations

This chapter discusses the special topics, issues, and considerations identified as important to the future management of Ice Harbor Project. Special topics, issues, and considerations are defined in this context as any problems, concerns, and/or needs that could affect or are affecting the stewardship and management potential of the lands and waters under the jurisdiction of the Walla Walla District, Ice Harbor Project.

6.1. COLUMBIA PLATEAU TRAIL STATE PARK

Columbia Plateau Trail State Park is a 130-mile trail that uses the abandoned Burlington Northern Railroad right-of-way between Ice Harbor Lock and Dam and Fish Lake near Spokane, Washington. The crushed-rock trail surface is available to hikers, mountain bikers, and equestrians, but closed to motorized vehicles. It runs parallel to the north shore of Lake Sacajawea and Project lands throughout that reach. Trailheads with vehicle parking and vault toilets are available near Ice Harbor Dam, Levey Park, Big Flat HMU, and Snake River Junction HMU, and one is planned at Farrington Railhead near Windust Park (Figure 6-1).

The Corps disposed of some of the lands necessary for the Columbia Plateau Trail State Park near Ice Harbor Lock and Dam and has partnered with Washington State Parks throughout the process of creating, operating, maintaining, and improving this trail.

Many users of the trail also use Corps lands, and vice versa. This reciprocal use has caused some difficulties, because WSP has different rules for users than the Corps. Firearms are prohibited on the trail, and WSP requires all pets to be leashed. The Corps allows firearms for hunting at HMUs like Big Flat and Snake River Junction, and pets are not required to be kept on a leash in HMUs. Users are advised to be aware of these differences and prepare accordingly.

A wildfire in Burr Canyon near Windust Park in September 2020 burned approximately six miles of the trail, including four trestles. This resulted in closure of the trail until repairs could be made.

Due to the remoteness of most of the trail, users are encouraged to be prepared for emergencies, carry extra water, and to keep someone informed of your whereabouts.

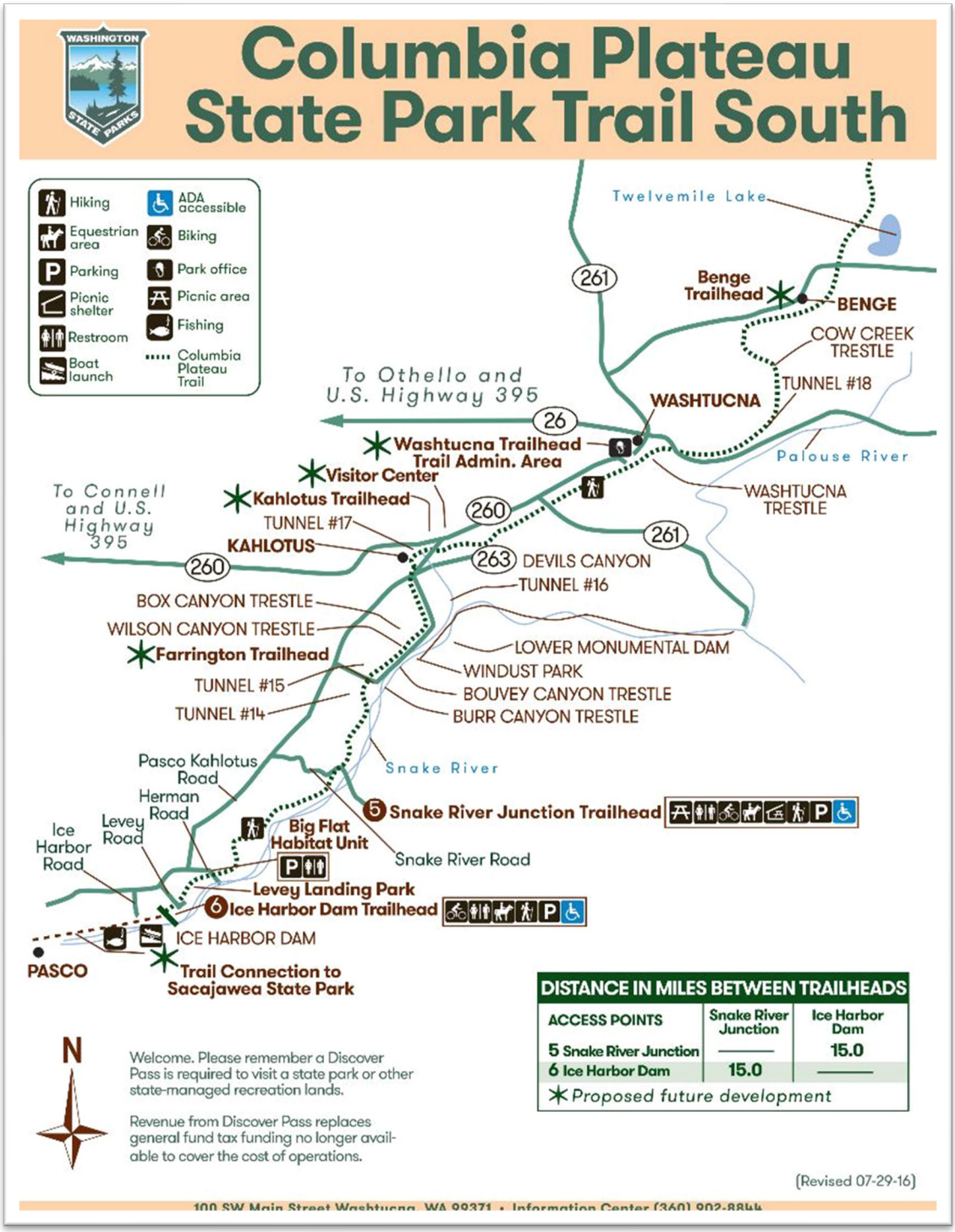

Figure 6-1. Columbia Plateau Trail State Park Map, South End (source, WSP)

6.2. NORTHWEST DISCOVERY WATER TRAIL

The Northwest Discovery Water Trail is a 367-mile recreational boating route that begins at Canoe Camp on the Clearwater River in Idaho. It follows the Snake River to the Columbia

River, and ends at Bonneville Dam in the Columbia River Gorge. The Trail connects you to nearly 150 sites along the way where you can launch your vessel, picnic, or camp along the river. There are camping opportunities roughly every 10 miles, and access and restroom facilities roughly every 5 miles, with some exceptions in certain stretches of the water trail that are remote and inaccessible.

There are several primitive campsites available to those traveling the Northwest Discovery Water Trail in Lake Sacajawea. Sites are generally on the north shore and include Charbonneau Park, Levey Park, Big Flat HMU, Fishhook Park, Nineteen Mile HMU/Lake Emma, Walker HMU, Windust Park, and Matthews Park.

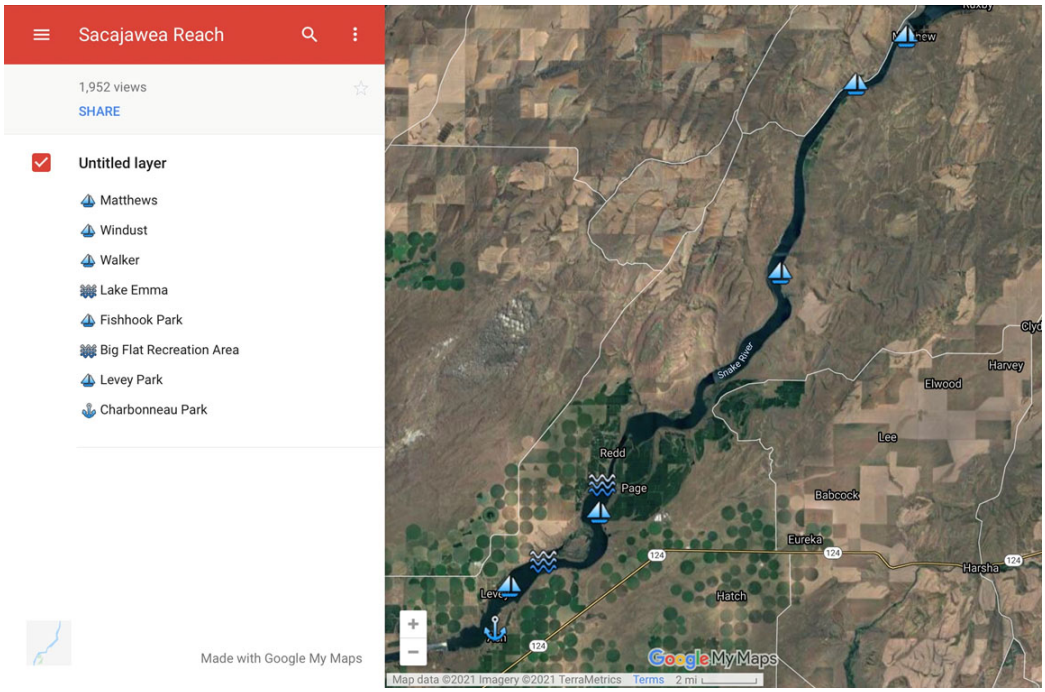

Figure 6-2. Map of Sacajawea Reach from Northwest Discovery Water Trail Website

Travelers on the Northwest Discovery Water Trail can see firsthand the geological impact of the Missoula Ice Age Floods, follow the path of the Lewis and Clark expedition, and experience the rivers and landscape that have been sacred for countless generations of Native Americans. The Corps is an official partner of the Northwest Discovery Water Trail. For more information on the Northwest Discovery Water Trail, visit www.ndwt.org.

6.3. LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN

The LSRFWCP has been discussed previously in several areas in this Master Plan. It was a negotiated mitigation settlement developed and implemented to provide compensation for hunting and fishing opportunity losses resulting from the construction and operation of the four lower Snake River dams (Ice Harbor, Lower Monumental, Little Goose, and Lower

Granite), which impounded approximately 140 miles on the lower Snake River in Washington and Idaho. The LSRFWCP, published in June 1975, was authorized by the Water Resources Development Act of 1976, amended in WRDA 1986 to increase the project cost limit, and again in WRDA 2007 to add woody riparian restoration (Table 6-1). This plan, and its implementation strategies were developed by the Corps, in consultation with USFWS, to assure compliance with the Fish and Wildlife Coordination Act.

Table 6-1. Lower Snake River Fish and Wildlife Compensation Plan Authorizations

AUTHORIZATION	DATE
Original authorization by the Water Resources Development Act (WRDA) of 1976, Section 102, PL 94-587	October 22, 1976
amended by WRDA 1986, Section 856, PL 99-662	November 17, 1986
amended by WRDA 2007, Section 3165, PL 110-114	November 8, 2007

The plan as originally authorized was divided into two parts: fisheries compensation and wildlife compensation. Fisheries compensation centered on fish propagation facilities and providing fisherman access along tributary streams. The wildlife compensation involved on-Project lands habitat development, off-Project habitat acquisition, and the purchase and release of game farm birds (pheasants). Table 6-2 lists the primary accomplishments of the LSRFWCP from its inception in 1976 to the present.

The off-Project land acquisition was combined with the fisherman access to form the three components of the off-Project land acquisition program, described as X, Y, and Z lands in published documents. The original intent of the program was to acquire 8,400 acres of upland game habitat and hunting lands (X lands), 15,000 acres of chukar habitat and hunting lands (Y lands), and 750 acres of fisherman access (Z lands). The acquisition of X, Y, and Z lands were completed in 1994, which included fishing and hunting access points. The game farm alternative was completed in 2007 after operating for several decades.

Hatchery construction and transfer to USFWS for long term operation and maintenance were completed in 2000, and the fishery satellite and acclimation facilities were completed in 2010. The on-Project lands habitat development has been ongoing, with ten of the twelve habitat indicator species habitats completed in 2012. The remaining habitats and species were scheduled to be completed in 2019. After 2019, construction general funds will no longer be appropriated, but the District will continue to use the O&M program to maintain and achieve LSRFWCP habitat goals and objectives. The long-term O&M program will be managed under the Operations Division.

Table 6-2. Summary of LSRFWCP Fisheries and Terrestrial Wildlife Accomplishments

ACCOMPLISHMENTS	DATE
Acquisition of XYZ Lands (Off-Project)	1994
Fishing Access	1994
Hunting Access	1994
Hatchery Construction/Transfer	2000
Habitat Development and Evaluation for 10 of 12 indicator species	2002
Game Farm Alternative	2007
Fish Acclimation Facility Construction/Transfer	2010
Habitat Evaluation Procedure/Gap Analysis	2013
Remaining 2 indicator species- riparian habitat developed	2019

A total of 54 management units were classified as wildlife lands along the impounded area of the Snake River. Ten HMUs were identified to be intensively developed (irrigation systems and plantings), 25 HMUs were to be moderately developed (dryland development with water guzzlers and fencing), and the remaining 19 units were to remain undeveloped or with limited development. Some of the wildlife units that were slated to remain undeveloped have had wildlife water guzzlers installed over the years. There are 14 sites of the 54 that are reserved for mitigation (Table 6-3) on Project lands.

Habitat restoration in the early stages of the LSRFWCP included planting non-native species—such as Russian olive—that grew aggressively, quickly creating food and cover for birds and wildlife. Plantings have since evolved into a more sustainable, native species-focused approach.

Recent plantings have focused on palustrine forest and palustrine scrub-shrub habitat re-establishment, which are cover types that were not historically abundant in the Project area. Orchards in lowlands became common in the early 20th century, up until the Project was constructed. Construction of the Project virtually eliminated these orchards and the limited amount of natural palustrine forest that remained.

HMUs that are affiliated with the Project include lands shown in Table 6-3. These lands were developed and/or purchased to provide hunting and fishing opportunities and are classified as mitigation lands under this Master Plan in order to protect their status.

Table 6-3. Mitigation Areas under the LSRFWCP within Ice Harbor Project and Their Corresponding Development Levels

MANAGEMENT AREA	ACRES	MANAGEMENT CLASSIFICATION
Big Flat HMU	896.8	Intensive Development
Hollebeke HMU	267.7	Intensive Development
Lost Island HMU	192.6	Intensive Development
Charbonneau HMU	125.5	Moderate Development
Couch Landing HMU	257.8	Moderate Development
Fishhook HMU	276.6	Moderate Development
Nineteen Mile HMU	10.9	Moderate Development
Quarter Circle HMU	138.5	Moderate Development
Walker HMU	162.7	Moderate Development
Burr Canyon HMU	198.5	Limited Development
Lake Charlene HMU	110.5	Limited Development
Levey HMU	26.1	Limited Development
Snake River Junction HMU	61.3	Limited Development
Windust HMU	158.6	Limited Development

6.4.INVASIVE SPECIES

The issue of invasive species, while not a new issue, has been a specific area of focus for the Corps in the last 10 years. Compliance with Corps regulations and the Endangered Species Act led to the development of a District-wide IPMP, which was put into full effect in 2012. Approved pesticides, buffers from water, best management practices, and standardized pest management reporting were all presented in the comprehensive plan in 2012.

The Corps has also been working with the National Marine Fisheries Service (NMFS) and USFWS to complete Endangered Species Act consultations on the Aquatic Pest Management Program (the aquatic portion of the IPMP) since 2009, and consultations were completed in 2019. The Corps is working toward reintegration of treating aquatic invasive plant species into routine operations and maintenance. Because treatments have not occurred since 2009, the Corps faces some challenges and large infestations, and anticipates the need for some focused efforts to bring the invasive species back under control. Specific aquatic invasive species concerns in Lake Sacajawea include phragmites, purple loosestrife, and reed canary grass.

Additionally, the Corps has been engaged on a national level to help prevent the spread of invasive species with watercraft inspection stations (cost-share programs) and through education on zebra and quagga mussels. The Corps performs annual sampling and visual monitoring for adult zebra and quagga mussel at the dam. Monitoring occurs at various locations within the juvenile fish facility system at points determined to be of high risk of introduction. This informational data is shared within the region and with the 100th Meridian Initiative Columbia River Basin Team (an aquatic invasive species prevention organization) to inform future monitoring and sampling.

6.5. ENCROACHMENTS

Vegetation and livestock grazing encroachments are common violations on Corps-managed lands. This is primarily due to the rural and remote location of Project lands and the fact that property surrounding these lands are managed for agriculture and/or livestock.

The Corps Natural Resources Management mission is to manage and conserve natural resources, consistent with ecosystem management principles, while providing quality public outdoor recreation experiences to serve the needs of present and future generations. Encroachments on Corps-managed Federal lands directly conflict with that mission. The Corps is, therefore, committed to resolving encroachments by the most expedient and effective means available. It is the intent of the District to recapture use of encroached upon public lands for Federal project operating purposes and general use and enjoyment of the public.

The general policy is to require removal of encroachments, restore the premises, and collect appropriate administrative costs and fair market value for the term of unauthorized use. Policies and procedures are described in the references specified in Northwestern Division Walla Walla District Office Memorandum 1130-1-9, Encroachment Action Handbook (Corps 2018), which is subject to periodic policy updates. Exceptions to this general policy are set forth in ER 405-1-12, Real Estate Handbook, Chapter 8 (Corps 1999).

The purpose of the Encroachment Action Handbook is to prescribe policies and procedures for surveillance and safeguarding of Corps-managed lands and easements to prevent potential encroachments and to prescribe the actions necessary to remove or resolve existing encroachments. This handbook establishes a program to protect all resources on operating project lands.

6.6. ICE HARBOR VISITOR CENTER

The Ice Harbor Visitor Center is an important interpretive resource for the Corps to educate the public on Corps missions and accomplishments, and to foster environmental

stewardship. The proximity to the Tri-Cities area gives it special importance within the Walla Walla District footprint.

Unfortunately, due to lack of funding, the displays and the facilities at the Visitor Center have become run-down over the years. Staff from the Tri-Rivers Natural Resources Management Office have been slowly working on updates and upgrades as funding has become available. The carpet has been replaced, broken displays removed, walls painted, and cabinets with replicas of sturgeon and native salmonids installed.

However, due to declining overall recreation budgets, it will be extremely difficult to finish the updates and upgrades needed to realize the interpretive potential of this Visitor Center without exploring other sources of funding. Staff in the Walla Walla District Office and the Tri-Rivers Natural Resources Management Office are exploring grant opportunities and the possibilities of using other funding business lines, like navigation, since the Visitor Center serves to educate the public on all Corps missions.

Figure 6-3. Display of White Sturgeon at Ice Harbor Visitor Center

7. Agency and Public Coordination

This chapter provides information on the public involvement and extensive coordination within the Corps and other affected agencies and organizations, which is a critical requirement in the development or revision of a project Master Plan.

7.1.SCOPING

A public scoping process for the Ice Harbor Master Plan revision was initiated in April 2020. Approximately 90 letters and emails were sent to stakeholders (community groups, elected officials, government agencies, interested parties) inviting them to comment on the Master Plan update.

The Corps conducted scoping for the Master Plan update from May 1 to June 15, 2020. To publicize the scoping process, ads were placed in five local newspapers, news releases were published and sent to local news outlets and radio stations, and notices were posted to the Walla Walla District and Ice Harbor Facebook pages. Due to public health restrictions during the COVID-19 pandemic, the Corps did not hold any public scoping meetings.

The scoping process was an opportunity to get input from the public and agencies about the vision for the Master Plan update and the issues that the Master Plan should address, where possible. During the scoping period, the Corps received about 11 suggestions and comments related to management issues and recreation at the Project. Most comments focused on the following:

- Recreational opportunities.
- Treaty rights and preservation of cultural resources important to Tribes.
- Environmental concerns regarding Ice Harbor Project.

Comments were considered during preparation of the draft Master Plan.

7.2.TRIBAL COORDINATION

On April 24, 2020, the Corps sent a letter offering government-to-government consultation and an invitation to public meetings to the Colville, the CTUIR, the Confederated Tribes and Bands of the Yakama Nation, the Wanapum Band, and the Nez Perce Tribe. The Colville and the CTUIR provided written comments.

The Colville provided comments on the text of the 1977 Master Plan and amendments. There were quite a few comments, and not all can be mentioned here, but they included to update the text regarding communication with Tribes, to add reference to TCPs, that

replanting activities should use native plant species, and Tribal development, placement, and review of interpretative signage.

The comments provided by the CTUIR on the 1977 Master Plan included suggestions to update the outdated text regarding Tribal interests and Treaty rights, to better protect cultural resources through the use of appropriate land classifications, to protect and enhance native plants and animals, and to address wide-ranging environmental impacts from the presence of Ice Harbor Dam and the surrounding Corps-managed lands.

Prior to release of the draft Master Plan to the public, the Corps sent an email to the Colville, the CTUIR, the Confederated Tribes and Bands of the Yakama Nation, the Wanapum Band, and the Nez Perce Tribe requesting comments on the proposed ESAs and the written descriptions for the ESAs. The Corps sought to avoid releasing information to the public that individual or multiple Tribes felt should be protected. However, the Colville agreed with the proposed ESAs, and the CTUIR proposed additional language describing the proposed ESAs as well as additional ESAs and enlarged boundaries for some ESAs.

The Corps sent letters on July 1, 2021 to the Colville, CTUIR, Yakama, the Wanapum Band, and the Nez Perce Tribe requesting review and comment on the Draft Ice Harbor Master Plan, Draft Finding of No Significant Impact (FONSI), and EA.

7.3.AGENCY INVOLVEMENT AND COORDINATION

All development will be coordinated with appropriate Federal, State, and local agencies throughout the planning process. Because Ice Harbor Dam affects interstate runs of anadromous salmonids (Pacific salmon and steelhead trout), valued both as commercial and sport fish, many Federal and state fish and wildlife agencies have taken part in the assessment and recommendation of compensatory measures for losses of fish resources resulting from the Project. These agencies are NMFS, USFWS, and WDFW.

7.4.THE U.S. ARMY CORPS OF ENGINEERS WEBSITE

The Corps developed a webpage (https://www.nww.usace.army.mil/locations/district-locks-and-dams/ice-harbor-lock-and-dam/ice-harbor-master-plan/) to provide information, updates, and collect comments for the Master Plan update. The draft Master Plan, draft FONSI and EA, and other draft Master Plan appendixes, with associated documents were placed on this webpage for the public to view.

7.5.THE DRAFT 2021 MASTER PLAN AND ENVIRONMENTAL ASSESSMENT

Comments received from review of the Draft Master Plan, Draft FONSI, and EA will be summarized with comment responses and included in the final FONSI (Appendix A of the

final 2021 Master Plan). The Master Plan, FONSI, and EA will then be finalized and submitted for approval.

8. Summary of Recommendations

This chapter provides the recommended land classifications for the updated Ice Harbor Master Plan at a detailed level (by each management area) and includes a list of recommendations for recreation, natural resources, and public outreach.

8.1. GENERAL

This updated Ice Harbor Master Plan presents an inventory of land resources and how they are classified, existing park facilities, analysis of resource use, anticipated influences of Project operation and management.

This Master Plan is a living document establishing the basic direction for management and development of the Project in agreement with the capabilities of the resource and public needs. The plan is flexible and allows for supplementation if changes are needed before the next Master Plan update. The Master Plan will be periodically reviewed to facilitate the evaluation and use of new information as it becomes available.

The Ice Harbor Master Plan will guide the use, development, and management of the Project in a manner that optimizes public benefits within resource potentials and the authorized function of the Project while remaining consistent with Corps policies, regulations, and environmental operating principles.

8.2. RECOMMENDATIONS

8.2.1. Proposed Land Classification Changes

The proposed land classifications for the 2021 Master Plan are summarized in the table below. Figure 8-1 provides a visual representation of the land classification changes between 2020 and 2021.

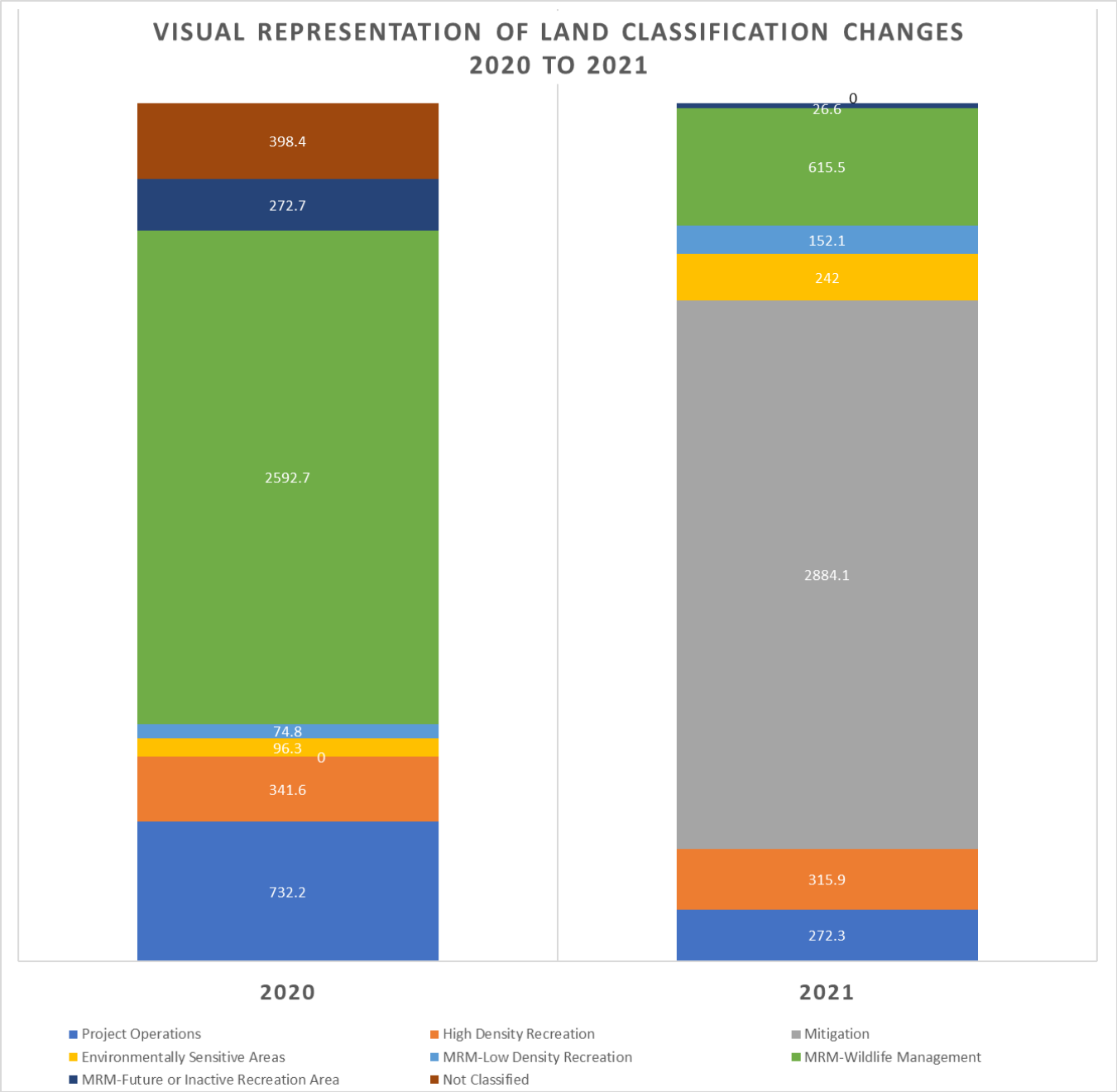

Figure 8-1. Visual Representation of Land Classification Changes 2020 to 2021

8.2.2. Recreation Recommendations

The following recreation recommendations have been identified:

- Conduct regular surveys, counts, and other methods to collect data and monitor trends to determine user capacity and environmental sustainability.

- Address sediment deposition in boat basins as needed according to the Programmatic Sediment Management Plan and as funding becomes available, to maintain access to public lands.
- Continue to explore and integrate energy saving options such as solar and LED lighting.
- Improve visitor information through updating interpretive panels and kiosks, and updating website information using innovative technology (e.g., virtual tours).
- As funding becomes available, add small shelters where needed according to public demand in parks like Shoreline Road Fishing Access, South Shore Recreation Area, North Shore Boat Ramp, and Windust Park.

8.2.3. Natural Resource Recommendations

The following natural resource recommendations have been identified:

- Invasive plant species can significantly degrade aquatic and wildlife habitat, increase soil erosion, and outcompete native species that fish and wildlife depend upon and that are culturally significant to Tribes. Species should be controlled using methods provided in the IPMP.
- Continue to enhance riparian and upland biodiversity through vegetation enhancement projects that focus on planting native trees, shrubs, and groundcovers.
- Persist in addressing encroachments in accordance with the guidance in the District Encroachment Action Handbook. It is Corps policy to use the minimum level of recourse necessary to gain voluntary compliance and achieve resolution of encroachments, and to employ the most efficient and cost-effective means of resolving encroachments.
- Pursue funding for boundary surveys while navigating the complex issues surrounding joint funding (appropriated funds from Congress with BPA approval of matched funding). Well documented boundaries are essential to the effort to address encroachments on federal land.
- Continue collaboration with WDFW on habitat protection and improvement of LSRFWCP mitigation lands and ENS lands.
- Keep providing public access to federal lands for hunting, fishing, hiking, bird watching, and other nature-related activities.

8.2.4. Education, Information, and Public Safety Recommendations

The following education, information, and public safety recommendations have been identified:

- Use social media and other means of communication so users can access information that is pertinent to the Project (e.g., trail closures, hunting season, current conditions, special events). Keep up to date on emerging communication methods.
- Seek opportunities to partner with regional Tribes, local youth organizations, volunteers, and other organizations to provide educational and interpretive signs, activities, and programming.
- Add educational and interpretive information to kiosks in parks and HMUs, such as adding lists of bird species specific to the area from ERDC surveys, or other wildlife/plant species of interest.
- Pursue public outreach opportunities such as county fairs, outdoor shows, and other events to educate the public on recreation and hunting and fishing opportunities available on Corps lands.
- Visitor safety and facility security are of the highest priority in Corps parks. Common issues stem from unsupervised juveniles and an increasing transient population. Alcohol, drug usage, and mental health issues are often catalysts for crime being perpetrated in Corps parks. Project staff will continue to provide visitor assistance patrols and work with local law enforcement partners. Additional security measures that may be taken include increased contracting with local law enforcement for additional patrols, installing gates on parks to control access during periods of darkness, placing security cameras in high incident areas, or other appropriate methods.
- Continue to use social media and kiosks to post relevant visitor safety information ("Know Before You Go"), such as warnings to avoid rattlesnakes, to bring plenty of water, sunscreen, and bug protection, and to let people know your whereabouts. Boaters should also be sure to have a float plan and to let someone know when to expect them back in case of trouble. Many of the parks and HMUs in this Project are isolated with poor cell phone coverage so it is very important that visitors are prepared.

8.3. FUTURE DEMANDS

Recommendations in this Master Plan reflect current inventory data, recreation trends, and forecasts. As technology and public demand change and new recreational opportunities arise, Corps staff will investigate the feasibility of new activities and evaluate proposed

changes and additions to this Master Plan for potential conflicts, opportunities, and environmental impacts.

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