Flight's End
Management Plan

March, 2015

Oregon Department of Fish and Wildlife

LIST OF CONTRIBUTORS

The following individuals, consisting of Oregon Department of Fish and Wildlife biologists and program coordinators, provided valuable input into this plan:

- Mark Nebeker, Sauvie Island Wildlife Area Manager, ODFW
- Don VandeBergh, North Willamette District Wildlife Biologist, ODFW
- Laura Tesler, Willamette Wildlife Wildlife Mitigation Program (WWMP) Coordinator, ODFW
- Bernadette Graham-Hudson, WWMP - Fish & Wildlife Operations and Policy Analyst
- Ann Kreager, WWMP –South Willamette Project Biologist

Flight's End Management Plan Prepared by:
Sue Beilke, WWMP –North Willamette Project Biologist
Oregon Department of Fish and Wildlife
18330 NW Sauvie Island Road
Portland, Oregon 97231

List of Figures

List of Tables

List of Appendices

Executive Summary

In September, 2013, the Flight's End site was purchased by the Oregon Department of Fish and Wildlife (ODFW). This purchase was a unique and very rare opportunity to incorporate one of the last unprotected wildlands on the northern end of Sauvie Island into the adjacent Sauvie Island Wildlife Area (SIWA). The 100 acre acquisition will protect and conserve habitats in the northern Willamette Basin, benefitting a variety of fish and wildlife species as well as provide opportunities for restoration and enhancement. In 2010, the Bonneville Power Administration (BPA) and ODFW signed an agreement to settle BPA wildlife habitat mitigation obligations in the Willamette Basin, guaranteeing more than $117 million for fish and wildlife habitat conservation and restoration, over the fifteen year agreement, protecting a minimum of 16,880 acres of important native habitats.

The purchase of Flight's End is ODFW's second acquisition under the ODFW/BPA's Willamette Wildlife Mitigation Program (WWMP). BPA funded the acquisition and BPA placed a permanent conservation easement on the property and deeded fee title to ODFW. The Conservation Values identified under the conservation easement for the Flight's End site include wetlands, riparian forest and freshwater lake, as well as agricultural croplands that will be restored to native wetlands and wet prairie habitats. Restoration benefitting the Conservation Values will improve habitat quality for many native plants, invertebrate and vertebrate species that are partly or wholly dependent on Willamette Valley riparian, grassland, wetland and aquatic systems. Acquisition of this site adds to the overall acreage managed and protected by the Sauvie Island Wildlife Area, which contains over 11,500 acres of conserved land.

This management plan describes the overall goals and objectives of ODFW's management of Flight's End for the next 10 years (2015-2025), and will guide restoration and management actions as well as public access and use, concurrent with the SIWA Management Plan. The plan documents the site features and history as well as describing current and future restored habitats, including species that will benefit from management actions over the long-term. The concept of adaptive management provides the framework for the plan for the next ten years, recognizing the importance of monitoring and evaluation, and the value of integrating improved site understanding into ongoing restoration and management regimes.

The five (5) primary goals under this plan are:

1. Restore wetlands and wet prairie habitats that are currently agricultural croplands in order to benefit Oregon Conservation Strategy (OCS) priority conservation species of the Willamette Valley Ecoregion as well as other native species dependent upon these habitats;
2. Improve habitat quality in riparian forest, wetlands and freshwater habitats to benefit OCS priority conservation species of the Willamette Valley Ecoregion as well as other native species dependent upon these habitats;

3. Maintain open water (freshwater aquatic) habitat in Crane Lake to benefit OCS priority conservation species of the Willamette Valley Ecoregion as well as other native species dependent upon these habitats;
4. Identify and provide compatible public uses and access to the site; and
5. Conduct monitoring for vegetation and wildlife, as well as restoration effectiveness, as resources allow.

Under this management plan, the existing habitats will be protected and restored where needed, while also converting the current agricultural cropland to functioning native wetlands and wet prairie. The expected increase in native plant and wildlife diversity at Flight's End will also provide visitors with increased wildlife viewing, hunting, angling and other recreational activities.

1 Introduction and Background

The acquisition of Flight's End offers a unique and very rare opportunity to protect and conserve habitats to benefit a variety of fish and wildlife species, as well as incorporate the site into the SIWA for long-term management and protection. The SIWA is one of 15areas managed by ODFW in Oregon. Flight's End was acquired by ODFW in September, 2013, and was the second site purchased by ODFW under the ODFW/BPA WWMP. The purchase of Flight's End by ODFW preserves the property in perpetuity, and the conservation easement on the property held by BPA designates that the site be managed for mitigation credit for the purpose of preserving the site's documented Conservation Values. Located at the north end of Sauvie Island and situated in the west unit of the SIWA, Flight's End contributes an additional 100 acres of habitats to the 11,564 acre SIWA. Bordered by the Multnomah Channel to the west and Crane Slough to the east, the site is located in several priority conservation landscapes including the Columbia River Bottomlands identified in the OCS, (ODFW 2006), and the Willamette-Columbia Confluence and Willamette River Anchor Habitats for ESA listed salmonid species. Current habitats include a large riparian corridor and wetlands which offer habitat for a variety of fish and wildlife species including several OCS Strategy Species. Habitats to be restored include converting agricultural croplands to wetlands and wet prairie which will increase plant diversity and benefit many wildlife species including waterfowl, shorebirds and amphibians.

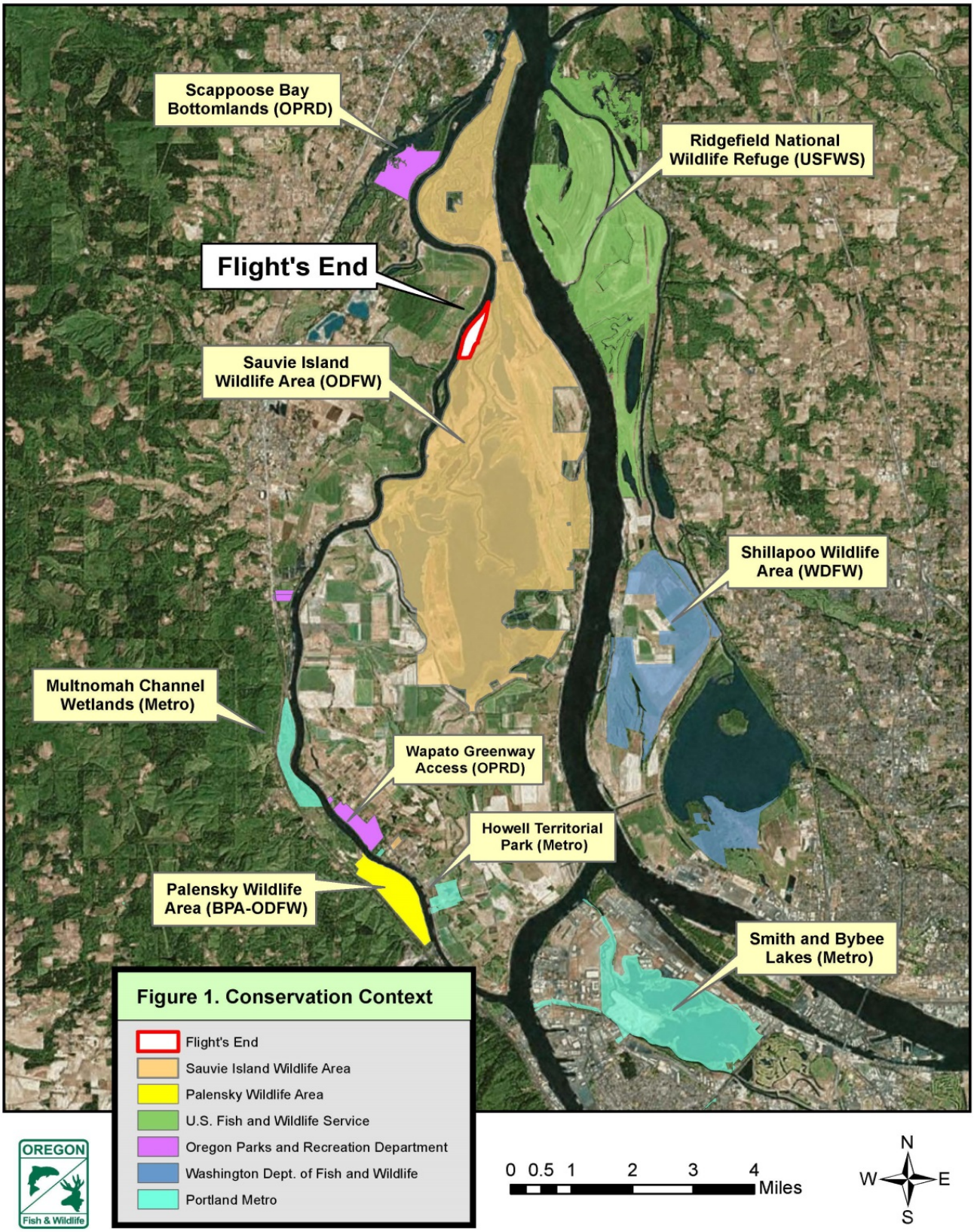
The Flight's End site will contribute to a unique and complex array of wetlands focused management projects and areas including Ridgefield National Wildlife Refuge (USFWS), Shillapoo Wildlife Area (WDFW) in Washington, Scappoose Bay Bottomlands (OPRD), Multnomah Channel wetlands (Metro), Howell Territorial Park (Metro), Palensky Wildlife Area (BPA and ODFW), Wapato Greenway Access (OPRD), and Smith and Bybee Lakes (Metro) in Oregon (Figure 1). Overall, the site will contribute to a landscape of diverse and connected habitats that will benefit fish and wildlife as well as offering opportunities to the public for wildlife viewing, hunting, fishing and other recreational activities.

1.1 Purpose of the Management Plan

The purpose of this Management Plan (Plan) is to provide guidance for site management and restoration for the next ten years (2015-2025). It summarizes existing site conditions, past uses, site history, envisions future habitat conditions, outlines future public access and use opportunities, communicates management and restoration goals and objectives, provides a timeline for undertaking restoration actions, and provides a monitoring strategy. Management and restoration goals along with desired future conditions identified in this plan will serve as the foundation for the development of more specific operational prescriptions and budget needs for individual projects, as well as for grant applications to secure restoration funding. As with any restoration and management plan, the overall goals and objectives for the site will drive actions by ODFW on the ground; however actual timing and/or sequencing may change based on improvements in site-level familiarity over the first several years of implementing the Plan, and also in response to available funding.

With the incorporation of Flight's End into the SIWA, the management of Flight's End will be very similar to the management of the SIWA, with some exceptions, as outlined in the Conservation Easement for the site (see Appendix 1). Many of the goals and objectives described in the SIWA Management Plan for habitat and species protection and restoration as well as public use and overall management are also applicable to Flight' End and where possible they have been referenced in this document, under the applicable goals and objectives. The Management Plan for Flight's End is a stand-alone document and is separate from the approved management plan for the SIWA, which was revised and finalized in 2012.

As of the writing of this plan, ODFW has formed a multi-partner Monitoring Team, including natural resource experts from local, state and federal agencies, that will provide guidance on development of the WWMP's Monitoring Program, including assisting in developing specific long-term monitoring strategies, and development of protocols to be used by sponsors and WWMP staff to conduct monitoring activities as defined by the WWMP. Databases and GIS mapping will be utilized to store and track essential information. The intent of monitoring is to track progress towards meeting WWMP acreage goals; to ensure compliance with terms established in each site's conservation easement and management plan; to evaluate effectiveness at protecting or enhancing habitat conservation values on the property; and to inform adaptive management and direction of the WWMP, including how WWMP implementation fits into broader landscape conservation efforts. A separate monitoring and evaluation (M&E) plan for the site will be developed and added as an addendum to this Plan. Targets and success criteria will be based on those defined by the WWMP's M&E Advisory Group as they are developed. The final monitoring plan has a target completion date of May 15, 2015.


Scappoose Bay Bottomlands (OPRD)
Ridgefield National Wildlife Refuge (USFWS)
Flight's End
Sauvie Island Wildlife Area (ODFW)
Shillapoo Wildlife Area (WDFW)
Multnomah Channel Wetlands (Metro)
Wapato Greenway Access (OPRD)
Howell Territorial Park (Metro)
Palensky Wildlife Area (BPA-ODFW)
Smith and Bybee Lakes (Metro)
Figure 1. Conservation Context
Flight's End
Sauvie Island Wildlife Area
Palensky Wildlife Area
U.S. Fish and Wildlife Service
Oregon Parks and Recreation Department
Washington Dept. of Fish and Wildlife
Portland Metro
OREGON
Fish & Wildlife
0 0.5 1 2 3 4
Miles
N
W
E
S

1.2 Conservation Values

The permanent conservation easement between ODFW (State of Oregon) and BPA (United States of America) lists the Conservation Values associated with the property at the time of purchase. As stated therein (Appendix 1), the property's Conservation Values include, but are not limited to:

- Native riparian forest (48 acres) and wetlands (11 acres) bordered by the Multnomah Channel and Crane Slough;
- Seasonal ponds and backwater areas which provide habitat for waterfowl, wading birds, raptors, amphibians, reptiles, ESA salmonid refugia, and other species;
- Lacustrine lake which provides important wintering habitat for migrating waterfowl, ESA salmonids and other species;
- Restoration of 32 acres of cropland to native wetlands and wet prairie habitats;
- Connectivity between ODFW's SIWA and other federal, state, county and Metro protected sites;
- Location within the Columbia River Bottomlands Conservation Opportunity Area and the Willamette River Anchor Habitats for ESA listed salmonid species; and
- Ability to manage the site for fish and wildlife management similar to ODFW's SIWA.

1.3 ODFW Mission and Authority

ODFW's mission is, "To protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations." ODFW is the only state agency charged exclusively with protecting Oregon's fish and wildlife resources, and the state wildlife policy (ORS 496.012) and food fish management policy (ORS 506.109) govern management of fish and wildlife resources. ODFW's authorities are further defined in Oregon Administrative Rule.

1.4 Willamette Wildlife Mitigation Program

In 2010, the State of Oregon and BPA entered into a fifteen year agreement to permanently settle wildlife mitigation responsibilities for the federal Willamette River Basin Flood Control and Hydroelectric Project in the Willamette sub basin. The Willamette Project includes 13 multi-purpose dams and reservoirs as part of the Federal Columbia River Power System. The Parties to the Willamette River Basin Memorandum of Agreement Regarding Wildlife Protection and Enhancement (Agreement) determined that settlement would be accomplished through the protection of an agreed number of acres that, once protected, would permanently settle the federal mitigation requirement. BPA agreed to provide specific funding amounts for the purchase of lands in fee title or conservation easement, as well as the protection and maintenance of this acreage. The Agreement established goals for mitigating the effects of the construction, inundation and operation of the Willamette River Basin Flood Control and

Hydroelectric Projects. Under the terms of the MOA, Oregon and the BPA agreed to acquire at least an additional 16,880 acres of wildlife mitigation property to protect 26,537 acres (or more) by the end of 2025. To accomplish this mitigation objective the parties established the WWMP, managed by the ODFW.

BPA has agreed to fund acquisition through a set schedule of funding, totaling $117,864,424 from 2011-2025. Program partners will also pursue cost sharing and other efficiencies so that the funds provided under the MOA could result in acquiring more than 16,880 additional acres during the project term. Any non-BPA funding that contributes to implementation of a project funded by BPA under this Agreement is in addition to (and not a substitute for) the funding from BPA by this Agreement. Additional funding of $26,226,440 is provided over the course of the MOA and devoted to development and implementation of an operations and monitoring program within ODFW, which will focus on the long term protection of habitat and habitat function and will develop programs to monitor habitat and species response on properties protected.

The WWMP selects for projects that meet the following goals:

- Protect wildlife habitat with significant cultural value;
- Use cost-sharing measures to ensure the WWMP meets or exceeds its protected acreage goal;
- Draw on partnerships to enhance the likelihood of successful project completion;
- Provide public access to WWMP properties in a manner consistent with each site's Conservation Values; and
- Encourage the use of ecosystem services markets.

1.5 Ecological Significance of Flight's End

Flight's End is located in one of Oregon's outstanding natural treasures, Sauvie Island, which supports a diverse array of fish and wildlife species and habitats that are remnants of what was once common in the northern Willamette Valley. Historically the lower Columbia and Willamette River Basins were ecologically rich in both the habitat types and the species diversity they supported. This was due in part to the pattern of floods and periodic inundation of bottomlands that occurred, which was an important factor in creating and maintaining a complex system of wetland, prairie and riparian habitats interconnected via backwater sloughs and channels. This landscape has been greatly altered in the past 150 years, primarily due to urban and rural development, logging, construction of hydroelectric facilities for hydropower, navigation, flood control and irrigation in the Columbia and Willamette River Basins. For example, hardwood riparian forest habitats have been reduced by an estimated 70-80% (Primozich and Bastasch 2004), and wet prairie habitat has been reduced by an estimated 99% (Christy et al. 2009). All of the habitats in the valley have been impacted to some degree by invasive species, with a resulting loss of species diversity for plants, fish and wildlife.

The remaining Willamette Valley wet prairie and grasslands are threatened by ecosystem degradation due to a number of factors including invasive species (plant and animal) and successional changes to shrub lands and woodland due to fire suppression (ODFW 2006, USFWS 2010). Riparian areas have also been greatly reduced and impacted by land use conversion and increasing development since the 1850s. Invasive species have degraded riparian systems by reducing native species and thus reducing overall biological diversity. Riparian systems serve a multitude of wildlife species, including several listed and at-risk species dependent upon in-stream habitat, seasonal and permanent wetlands, and forests vital to various life history stages of fish, birds, amphibians, reptiles, and invertebrates.

Numerous wildlife species including some endemic to the Willamette basin are dependent upon prairie systems (Christy and Alverson 2011, Floberg et al. 2004, Alverson 2005), and many are experiencing population decline. Habitat loss, conversion, and fragmentation, and impacts from invasive species have been identified as the major limiting factors affecting most of the Endangered Species Act listed and at-risk wildlife species in the Willamette Valley (ODFW 2006, USFWS 2010, Vesely and Rosenberg 2010, Primozich and Bastasch 2004).

Several efforts to identify the highest priority areas for conserving Willamette Valley ecosystems and species have been undertaken in the last decade. Protection and restoration of prairie, oak savanna, oak woodlands, wetlands, and headwater streams have been identified as critical conservation needs by ODFW, Oregon Department of Forestry, the U.S. Fish and Wildlife Service (USFWS), the Oregon Watershed Enhancement Board (OWEB), the Northwest Power and Conservation Council (NPCC), The Nature Conservancy (TNC), Partners in Flight, the Oregon Biodiversity Project, and the Pacific Birds Habitat Joint Venture (PBHJV), in addition to local watershed councils, conservation organizations, and researchers.

The OCS draws upon regional conservation planning efforts and species' population data to identify ecoregion Strategy Habitats, map localized Conservation Opportunity Areas (COAs), and designate Strategy Habitats and Strategy Species for each COA (A complete list of COAs, Strategy Habitats and Species, as well as definitions can be found in the OCS). The Flight's End site is located in the OCS Columbia River Bottomlands (WV-01) COA, and all of the Strategy Habitats identified for the COA are present on the site: aquatic, wetlands, riparian forest, and wet prairie, with the potential to restore additional wetlands and wet prairie acreage. OCS species that have been documented to occur at Flight's End include red-legged frog (*Rana aurora*), white breasted nuthatch (*Sitta carolinensis*), and dusky Canada goose (*Branta Canadensis occidentalis*). The western painted turtle (*Chrysemys picta bellii*), one of the Key Species for the Columbia River Bottomlands COA, has been documented to occur on the SIWA but not at Flight's End. Many additional Strategy Species, while not yet observed at the site, are known to occur within a few miles of the site and may use the site following restoration and enhancement. These include Oregon vesper sparrow (*Pooecetes gramineus affinins*), slender-billed nuthatch (*Sitta carolinensis aculeate*), short-eared owl (*Asio flammeus*), western bluebird (*Sialia Mexicana*), Lewis' woodpecker (*Melanerpes lewis*), California myotis (bat) (*Myotis californicus*), Townsend's big-eared bat (*Corynorhinus townsendii townsendii*), and western gray squirrel (*Sciurus griseus*), and cutthroat trout (*Oncorhynchus clarki*)

A recent mapping effort by TNC aims to focus conservation efforts where they are greatly needed and can have a significant impact. TNC's Willamette Valley Synthesis Project (2010) reviewed major conservation plans for the Willamette Valley including ODFW's Oregon Conservation Strategy (2006), and mapped areas common to multiple plans resulting in refined COAs for the Willamette Basin. The Flight's End site falls within the Columbia River Bottomlands COA in the Willamette Synthesis.

2 Site Description

2.1 Site History

2.1.1 Historic Vegetation

The historical vegetation at Flight's End, circa 1840-1870s, was typical of the Columbia River bottomlands, which included riparian hardwood forests, wet prairie dominated by tufted hairgrass (*Deschampsia cespitosa*) and other native species, stands of willows, and areas of open water and emergent wetlands. Figure 4 depicts the pre-settlement vegetation that may have occurred at Flight's End, based on data from the Oregon Natural Heritage Program (ONHP). Estimated acreage per habitat type includes the following: approximately 62 acres of riparian hardwood forests, nine acres of open water (freshwater aquatic), four acres of emergent wetlands and willow stands (classified as "willow" in the ONHP), and 25 acres of wet prairie. Prairies are fundamentally fire-dependent systems and their vegetative structure and composition was substantially determined for thousands of years by frequent fires set by humans.

Large diameter black cottonwoods, Oregon ash and Pacific willow were historically common in the riparian forests with a diverse understory of shrubs and herbaceous species.
Patches of willow were historically more common on the site but may have been removed to create more open habitat by previous landowners. Wapato and other emergent plant species would have occurred in abundant patches throughout the wetlands. Native grasses, including tufted hairgrass, would have dominated the wet prairie communities. These native habitats supported a rich and biologically diverse array of fish and wildlife species. The open water habitat was located on the south and southeast portions of the site and is mapped as a narrow band, possibly a slough, that connected to what is now called Crane Slough to the east and Multnomah Channel on the west side (not shown on map). These habitats were the result of the natural meandering of the lower Columbia and Willamette River drainages and the low elevation topography typically found in the floodplains of large river systems.

2.1.2 Historic and Cultural Land Use

Because of its location on Sauvie Island, Flight's End has a long history of human use similar to the rest of the island. Historically, the Native Americans who ceded this area are documented under the treaty by the Confederated Bands of the Willamette Valley signed on January 22, 1855. The peoples who inhabited the Lower Columbia and Willamette Rivers at the time of Euro-American settlement are collectively known as the Multnomah. Their descendants are included in the modern Confederated Tribes of the Grand Ronde Community of Oregon. Many other tribes utilized SIWA's favorable climate and abundant natural resources for food procurement during the winter months (Norton 1984).

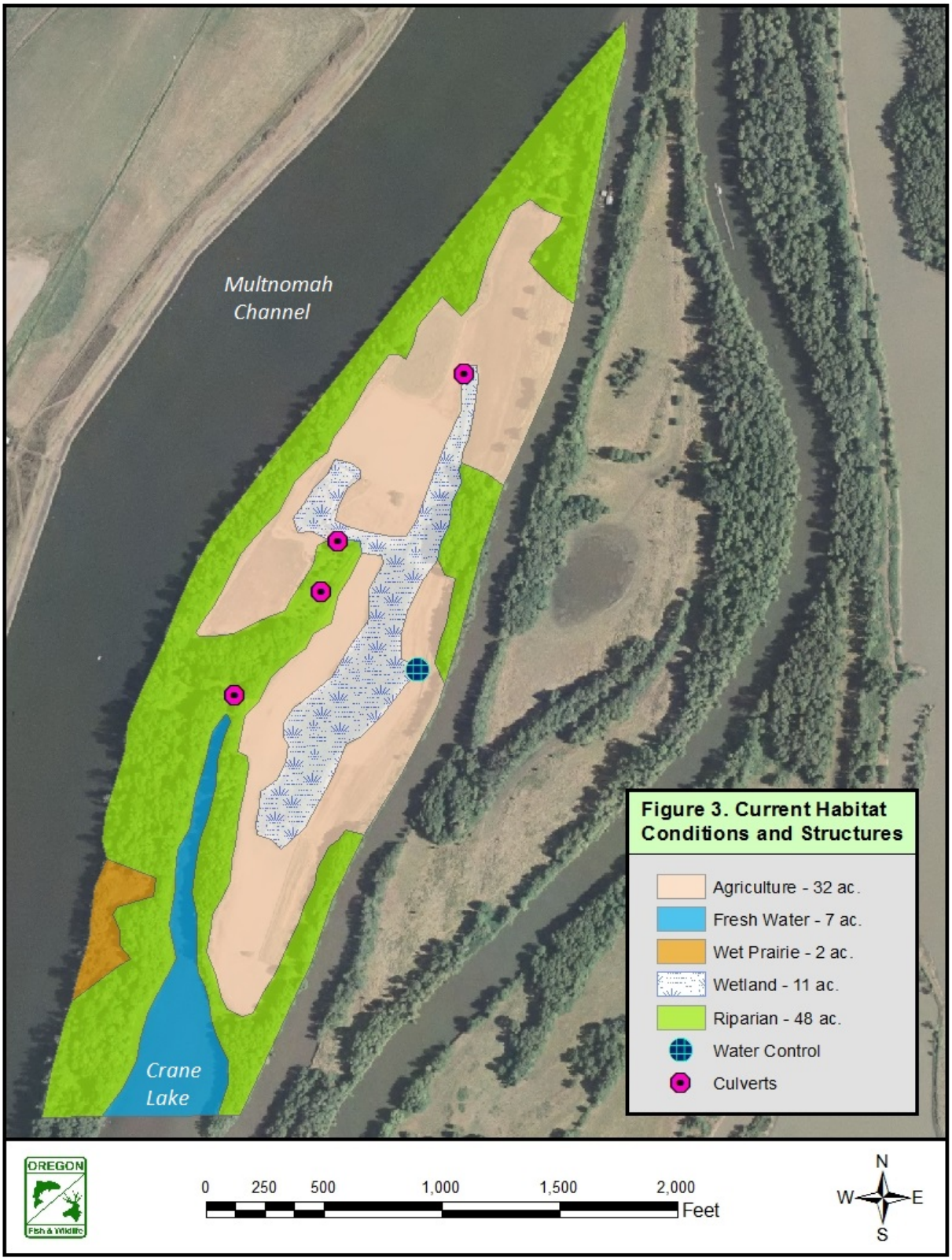
Large expanses of wetlands and riparian habitats, like those found at Flight's End, provided food and shelter, with wapato being the staple food for many of these tribes. Waterbirds, fish and mammals were very abundant on Sauvie Island during the entire year but especially during the months of winter. Campsites, as evidenced by house pits and tool manufacturing sites, are located throughout SIWA and in some of the uplands on the island, confirming significant use of wetlands on Sauvie Island. The Multnomah Band occupied all of Sauvie Island, however, during treaty negotiations, the Multnomah banded with the Oregon City Tribes with whom they had familial and linguistic ties and were moved to the Grand Ronde Reservation.

A number of cultural resource surveys and archeological excavations have been conducted on Sauvie Island. SIWA lands are afforded protection according to federal regulations. All of the sites within wildlife area lands could be considered potentially eligible for the National Register of Historic Places.

Journal entries from the Lewis and Clark expedition in 1804 (Thwaites 1969) also suggest that historically, large populations of waterfowl existed on the island; the noise of the birds even prevented the expedition from staying overnight on the island. The travel route used by early explorers for the fur trade in the Northwest and Pacific Ocean used Sauvie Island as a way stop as did many settlers.

The primary land use changes that occurred on the site from the time of western settlement to the present included logging of some of the riparian forests (based on historical aerial photos and the pre-settlement vegetation data), excavation and contouring to create small, emergent wetlands to attract waterfowl, and farming of approximately 32 acres for millet, buckwheat and corn which began in the early 1940's to enhance waterfowl food availability for duck hunting. As part of the farming activities, in addition to the excavation and contouring, four culverts were placed on site (Figure 3) in order to help manage drainage and inundation levels for waterfowl hunting. In conjunction with these activities, the water control structure was managed to manipulate water levels in order to increase water depth and control during certain times of the year. Farming activities to enhance waterfowl hunting continued on Flight's End until the site was purchased by ODFW in 2013.


Multnomah Channel
Crane Lake
Figure 2. Conservation Easement Boundary
Flight's End
OREGON
Fish & Wildlife
0 250 500 1,000 1,500 2,000
Feet
N
W
E
S


Multnomah Channel
Crane Lake
Figure 3. Current Habitat Conditions and Structures
Agriculture - 32 ac.
Fresh Water - 7 ac.
Wet Prairie - 2 ac.
Wetland - 11 ac.
Riparian - 48 ac.
Water Control
Culverts
OREGON
Fish & Wildlife
0 250 500 1,000 1,500 2,000
Feet
N
W E
S

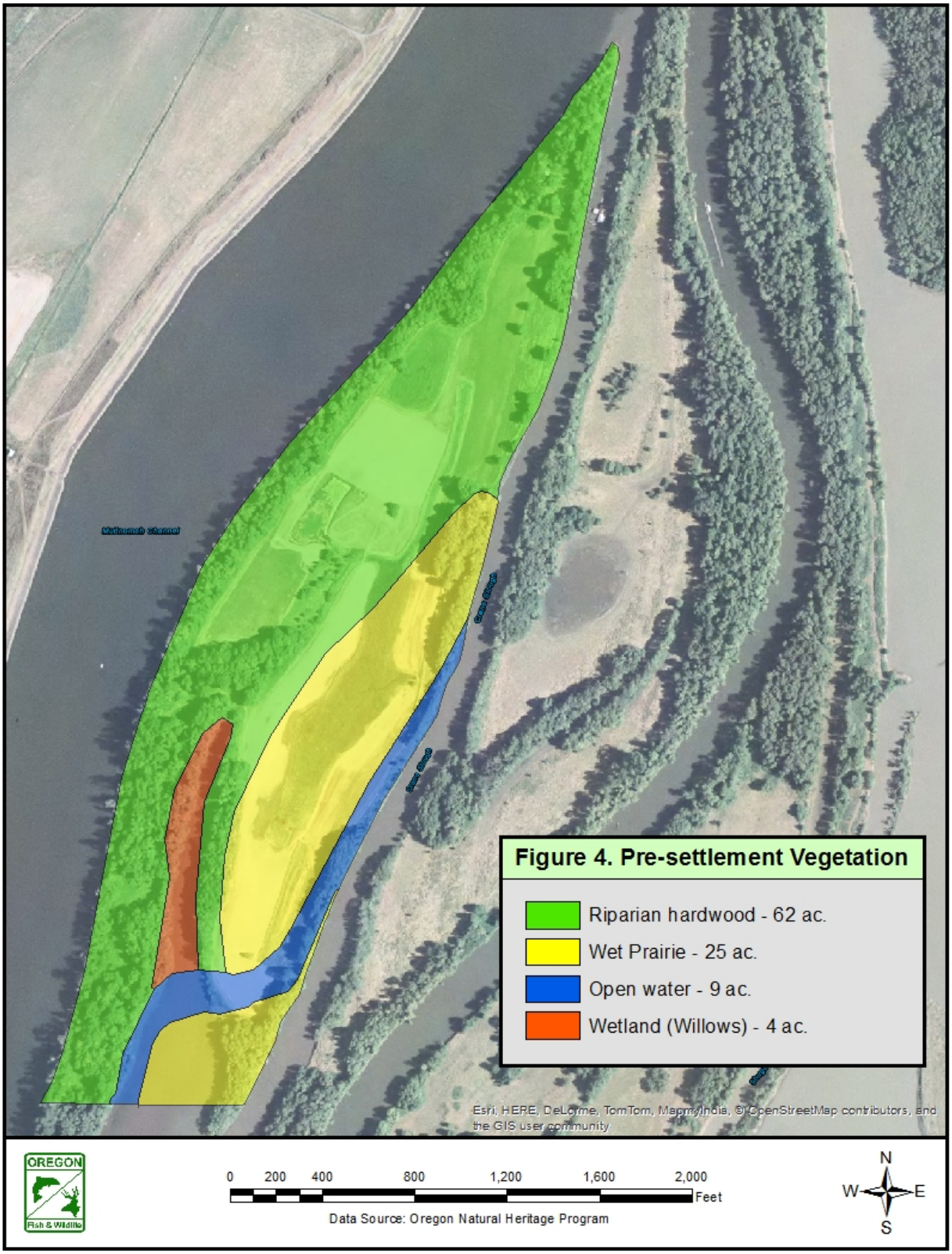
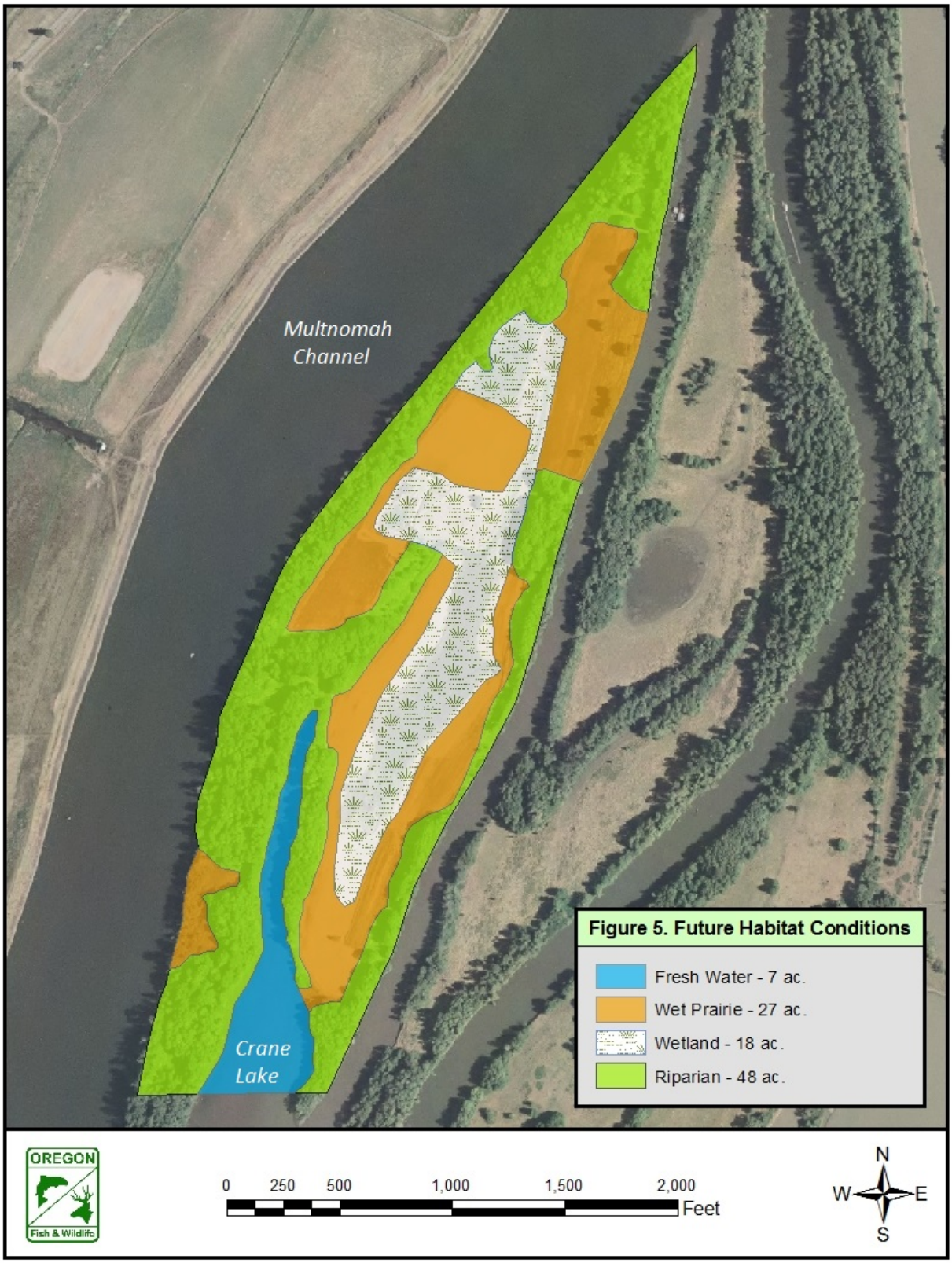


Figure 4. Pre-settlement Vegetation
Riparian hardwood - 62 ac.
Wet Prairie - 25 ac.
Open water - 9 ac.
Wetland (Willows) - 4 ac.
Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
OREGON
Fish & Wildlife
0 200 400 800 1,200 1,600 2,000
Feet
Data Source: Oregon Natural Heritage Program
N
W
E
S


Multnomah Channel
Crane Lake
Figure 5. Future Habitat Conditions
Fresh Water - 7 ac.
Wet Prairie - 27 ac.
Wetland - 18 ac.
Riparian - 48 ac.
OREGON
Fish & Wildlife
0 250 500 1,000 1,500 2,000
Feet
N
W E
S

2.1.3 Cultural Resources/SHPO Consultation

As mentioned above, the location of Flight's End on Sauvie Island and the presence of wetland and riparian habitats along with the known historic presence of the Multnomah people on the Sauvie island makes it highly likely that the site was used by native people. A number of villages along with numerous artifacts have been located on many areas of the island in the past 150 years. The decades of agricultural use of portions of Flight's End have resulted in repeated soil disturbance to the upper few feet of the soil profile, homogenizing it and likely exposing any artifacts or culturally significant items at the surface years ago. Since ODFW acquired the site in 2013, other than the presence of plant species valued by the local native tribes, such as wapato, there have not yet been any discoveries of features that suggest that the site was occupied for long periods of time.

BPA as the authorized agent will contact the State Historic Preservation Office (SHPO) for a review of potential historic or cultural sites present if a project disturbing the soil is planned. Disturbance could include activities that occur as part of moist soil management (e.g., disking) and similar work. In the event that any cultural material is encountered during project activities, state and federal regulations will apply. Generally, a project would be put on hold and a qualified archeologist would be contacted to evaluate the discovery.

2.2 Environmental Setting

2.2.1 Climate

With its location on Sauvie Island, Flight's End is located at the northern end of the Willamette Valley, in a temperate climate in which summers are warm and dry, while winters are mild and wet. Temperatures range from average summer highs in the 80ºs (F) to average winter lows in the 30ºs (F). During the summer months, the daytime temperatures are moderated by cooler evening temperatures. Annual precipitation for Sauvie Island is about 40 inches, with about 70 percent falling between October and February. Less than three percent falls during July and August. Runoff follows a similar pattern, with high winter flows and low summer flows. Snow and freezing temperatures are generally absent in the winter or are present for short durations**.**

2.2.2 Hazardous Waste

There are no known solid, liquid, or contained gas hazardous wastes on the property.

2.2.3 Water Rights

A water control structure has been located on Flight's End for decades to control water levels in the center of the property. This structure was replaced in 2008 by Ducks Unlimited. There has been no record of a storage water right recorded for this site. Ducks Unlimited was under the understanding that the old structure was installed prior to the requirements of storage water

rights along the Multnomah Channel (OAR 590-602 Upper Willamette River Basin Program: WRB 8, f. 4-21-59).

2.3 Existing Conditions

2.3.1 Landscape Setting

The Flight's End Site is located on the northern end of Sauvie Island, between the Multnomah Channel and Crane Slough, at the northern end of the Willamette Valley. The site is approximately 17 miles northwest of Portland, situated among a complex of protected lands encompassing over 18,000 acres that are managed for conservation of native ecosystems and species by a suite of government agencies and non-profit organizations. This includes SIWA, Palensky Wildlife Area (BPA/ODFW), Ridgefield National Wildlife Refuge (RNWR), managed by the USFWS, the Multnomah Channel properties on the west side of Sauvie Island, managed by Metro, Wapato Greenway Access, located on Sauvie Island and a portion of the Scappoose Bay bottomlands, managed by the Oregon Parks and Recreation Department (Figure 1).

2.3.2 Physical Description, Topography, and Boundaries

The Flight's End site is generally flat, with slight slopes and swales in some areas and extensive hardwood forests bordering approximately ninety five percent of the property. The site encompasses native riparian forest, wet prairie, emergent wetlands, and freshwater habitats and is bordered by nearly one mile of Multnomah Channel to the west and by Crane Slough to the east.

The property consists of three tax lots, starting at the north end of the Sauvie Island Road and continuing to a point of land that intersects with Crane Slough. Specifically, the site is located on Columbia County tax lots 101 and 200 in Section 34, Township 4N, Range 1W, and tax lot 600, in Section 33, Township 4N, Range 1W. Flight's End is bounded by the Multnomah Channel to the west and Crane Slough to the east, and all lands to the south, north and east consist of portions of the SIWA.

2.3.3 Land Use

Flight's End is located on the SIWA, which is surrounded by predominantly agricultural and rural residential land uses. SIWA is adjacent to many private enterprises which currently include: kennels, private hunting clubs, nurseries and commercial and hobby farms. Presently the primary land use on Sauvie Island is associated with agriculture dominated by grass seed, wheat and nursery stock. Historically, dairies and row crop agriculture were the most common enterprises**.** Properties to the west of Flight's End across the Multnomah Channel currently include lands that are in agricultural production, gravel operations, tree farms, dairies, and rural residences. In addition, many of the private properties contain wetlands, open water and riparian habitats.

The site is bordered by water on both the east and western boundaries, with the Sauvie Island Road ending near the southern end of the property. The southern perimeter of the site is fully fenced with standard field fence consisting of metal or wooden fence posts. Several waterfowl hunting blinds, which were purchased from previous owners, are located on the site in several areas near the wetland margins.

2.3.4 Habitat Types

Current habitat conditions on the site include 11 acres of wetlands with patches of wapato (*Sagittaria latifolia*) and other native plant species important for waterfowl and other wildlife (Figure 3). Reed canary grass (*Phalaris arundinacea*), an introduced invasive grass, is also present and dominates some portions of the wetlands. A total of 32 acres of agricultural croplands occur on the site, which were managed as cultivated fields of corn and millet through the 2012 growing season but are now fallow. Two acres of wet prairie habitat are present, with tufted hair grass (*Deschampsia cespitosa*) documented on site during surveys in 2012. Bordering the entire property are extensive riparian forests (48 acres) dominated by Oregon ash (*Fraximus latifolia*) of various sizes with scattered black cottonwood (*Populus trichocarpa*), Pacific willow (*Salix lucida*) and Douglas hawthorn (*Crataegus douglasii*). The understory of the riparian forest varies in condition with native shrub species such as Douglas spirea (*Spiraea douglasii*) and common snowberry (*Symphoricarpos albus*) and non-native reed canary grass. The lacustrine lake (seven acres) is located on the south end of the site and varies widely in depth depending on tidal influence and is dominated by wapato and plantain.

In 2014, additional vegetation surveys were conducted on the site in order to gather more detailed information on habitat conditions, and information from these surveys has added to the knowledge of site conditions including the presence of native and non-native plant species, beyond what is mentioned above. Additional information on each habitat type, and native and non-native plant species can be found in Section 3 which describes current habitat conditions in greater detail.

2.3.5 Topography and Soils

Flight's End is located on Sauvie Island which was formed by the Missoula Floods approximately 14,000 year ago. Sauvie Island is 16 miles long, oriented from north to south and 4.5 miles at its widest point east to west. The elevation of the property is approximately 10 feet above mean sea level.

The soils on SIWA are comprised primarily of alluvial deposits from the Lower Columbia and Willamette Rivers. Sauvie-Rafton silt loams are the predominant soil types on Flight's End and SIWA. The soils show medium clay content with characteristically high percolation. These soils are associated with a high water table, are generally very good for agricultural crop production, but have limited water holding capacity. The water table is highly dependent on the river levels adjacent to the SIWA which vary significantly on a daily and seasonal basis.

2.3.6 Hydrology

Flight's End is located along the lower Willamette River, a major tributary of the Columbia River. The Willamette River and its tributaries form the Willamette Valley, a basin that was historically a complex system of forests, wetlands and prairies interconnected via backwater streams and channels (Primozich 2004). These biologically diverse systems were historically inundated with frequent flooding and rainfall, which resulted in soil deposition, changes in vegetation successional stage, and other important dynamics of a healthy biological system.

Over time, the hydrologic regime has changed dramatically due to a number of reasons. Human manipulation of the Willamette River and associated streams and channels began upon Euro-American settlement, with the river being used as a principal arterial for transporting farm and forest goods (Primozich 2004). The U.S. Army Corps of Engineers began removing trees and snags from the river in the 1880s, decreasing stream complexity and reducing habitat for fish and wildlife. In 1908, The Corps began dredging the Willamette, which included blocking side channels, scraping gravel bars, and building wing dikes to change the depth and course of the river. Since 1900, more than 15 large dams and many smaller ones have been built in the basin, used primarily to produce hydroelectricity, to maintain reservoirs for recreation, and to divert water into deeper, narrower channels in order to prevent flooding. All of these activities in the past 150 years have resulted in large-scale habitat loss including decreases in channel complexity, a decrease in wetlands and functionality, almost complete elimination of grasslands and wet prairie habitat, and a significant decline in plant, fish and wildlife species diversity.

To control flooding, approximately three quarters of the perimeter of Sauvie Island includes a levee system that was built in the 1930s. Flight's End is located on the west side of Sauvie Island, where there are no dikes, and hence this portion of the island is prone to more frequent flooding and inundation compared to the diked portions. Depending on winter snowpack and rainfall, as well as dam operations on the Columbia and Willamette Rivers, the hydrology on Flight's End can result in prolonged inundation of most or all of the site during the winter and spring months, which greatly benefits the habitats and associated fish and wildlife.

2.3.7 Facilities, Roads, and Maintenance Access

Most of the Flight's End Site is undeveloped, except for structures associated with the duck hunting club that existed on the site from the early 1940's to 2013. Management access to the site via land is done by vehicle from the north end of Sauvie Island Road on the island up until the locked gate, which then requires walking a 1.5 mile jeep trail onto the site. This gate is locked and the road is used for maintenance access by WWMP/SIWA personnel working on the site. The road is wide enough to allow access for vehicles such as trucks and farm equipment. All-terrain vehicle (ATV) trails are used for equipment movement and access. During frequent high water periods, typically from late November through June of the following year, access by road may not be possible since the road is submerged for weeks or months at a time. Access to Flight's End can also be made via boat, there are numerous launch sites along Multnomah Chanel with the Gilbert River boat ramp on Sauvie Island being the closest.

There are a number of structures on the site as well as several floating structures and a boat dock on the east side of the site along Crane Slough. Structures on land include a metal storage building (484 sq. ft.) and one fence (60 ft. in length) on the southern boundary of the site. There is a water control structure located in the center of the property, which has been on the site for decades (it is unknown when this structure was built). The original water control structure was replaced in 2008 (see Figure 3 for location) by Ducks Unlimited to allow for more accurate water level control and to enhance waterfowl hunting. There are four culverts on the property (Figure 3) that connect the wetlands to two separate impoundments and to provide ATV access. There are four semi-permanent duck blinds and numerous portable blinds which are located on Flight's End.

Structures on Crane Slough adjacent to Flight's End include the following: a 1,600 square foot boat dock constructed with wood decking and pilings; a 320 sq. ft. metal storage building; and a floating wood frame guest house and club house, with a total square footage of 1,600 sq. ft. for both structures. The floating structures will be removed but the boat dock and ramp will remain to allow both management and public access to the site. There is a current lease with the Department of State Lands for the pilings associated with the boat docks.

2.3.8 Zoning

The entire site is zoned as Primary Agriculture Zone (PA-80-Farm Use) by Columbia County. The PA zone is designated for the continuation of the existing commercial agricultural enterprises in that area.

2.3.9 Agricultural Lease

There are no agricultural leases on the site.

2.3.10 BPA Conservation Easement

The Flight's End Site was purchased by ODFW on September 30, 2013, at which time ODFW became the fee-title owner of the property and assumed all legal responsibilities stated in the conservation easement. The conservation easement was deeded by ODFW to BPA in perpetuity, for the purpose of protecting the Conservation Values (Section 1.2) associated with the site (see Figure 2, Conservation Easement Boundary). Permitted and prohibited uses that have relevance for short- and long-term actions recommended under this management plan are summarized below.

Permitted Uses

ODFW shall:

- Preserve and protect the Conservation Values of the Property, including restoring and enhancing the site for fish and wildlife habitat as approved in the management plan or by BPA;

- Change the use of any owned or acquired water rights appurtenant to the property to instream flow purposes in a timely manner in accordance with applicable law, or if not appropriate or feasible shall use the amount of water to which it is entitled as legally allowed, for a beneficial purpose and without waste, and shall not abandon any of the water rights appurtenant to the property due to non-use;
- Develop a Management Plan consistent that will fully protect the Conservation Values in perpetuity and meets BPA's obligations under the Northwest Power Act and Endangered Species Act, including plans for restoring, enhancing, and maintaining the property, expected activities and uses of the property, and allowable public access and use;
- Provide reasonable public access to the site, including hunting of game animals (as described in ORS 498) and fishing to be accessed on foot only, unless any of these public uses are determined to impair one of the site's Conservation Values;

Prohibited Uses

The following uses are strictly prohibited on the property except as described above or as permitted upon approval of this Management Plan:

- Division, partition, subdivision, or *de facto* subdivision;
- All residential, commercial, or industrial uses of the property, including timber harvesting, grazing of livestock, agricultural production, and installation of new utilities;
- Construction of buildings, structures, fences, roads, and parking lots;
- Vegetation alteration not consistent with protection of the Conservation Values or this Management Plan;
- Any mining, extraction, or exploration, of any surface or subsurface material except as held by any third party with valid rights (minimum 60 days' notice to BPA required);
- Dumping;
- Alteration of the natural topography of the site by digging, plowing, diking, or other means;
- Any alteration to watercourses, wetlands, seasonally wet areas, or tampering with existing water control devices;
- Off-road motorized vehicle use;
- Erecting any billboard or sign except "No trespassing", "For sale", or signs identifying ODFW as the owner of the site (limited to 15 square feet in size);
- Granting or permitting liens, easements, or property interests that would be inconsistent with the protection of the Conservation Values.

Table 1. Permitted Uses / Management Action Compliance

Permitted Uses	Management Action Compliance
Preserve and protect the Conservation Values of the Property, including restoring and enhancing the site for fish and wildlife habitat as approved in the management plan or by BPA.	Goals and objectives in Management Plan provide for long-term protection/restoration of habitats, see Section 3. Public use will be managed to protect wildlife and habitats; see section 4, Goals 1-3. Objective 2a developed to monitor and evaluate effects of public use on site. Adaptive management (section 5.2)includes monitoring and evaluating (section 5.3) management actions, important for long-term success and protection of Conservation Values.
Change the use of any owned or acquired water rights appurtenant to the property to instream flow purposes in a timely manner in accordance with applicable law, or if not appropriate or feasible shall use the amount of water to which it is entitled as legally allowed, for a beneficial purpose and without waste, and shall not abandon any of the water rights appurtenant to the property due to non-use.	None contemplated as part of Management Plan. There are no water rights associated with this property.
Develop a Management Plan consistent that will fully protect the Conservation Values in perpetuity and meets BPA's obligations under the Northwest Power Act and Endangered Species Act, including plans for restoring, enhancing, and maintaining the property, expected activities and uses of the property, and allowable public access and use.	Management Plan has been developed with goals and objectives that provide long-term protection/restoration of Conservation Values and meets BPA's obligations under the NPA and ESA; see section 3. Public use will be managed to protect wildlife and habitats; see section 4, Goals 1-3. Objective 2a was developed to monitor and evaluate effects of public use on site.
Provide reasonable public access to the site, including hunting of game animals (as described in ORS 498) and fishing to be accessed on foot only, unless any of these public uses are determined to impair one of the site's Conservation Values.	Public access will be allowed, compatible with habitat and species management goals as described in Section 3. Public use will be managed to protect wildlife and habitats; see section 4, Goals 1-3. Objective 2a was developed to monitor and evaluate effects of public use on site.

Table 2. Prohibited Uses - Easement Restrictions/Management Action Compliance

Summary of Easement Restrictions	Management Action Compliance
No division, partition, subdivision, or *de facto* subdivision.	None contemplated as part of Management Plan.
No residential, commercial, or industrial uses of the Protected Property, including timber harvesting, grazing of livestock, agricultural production, and installation of new utilities.	None contemplated as part of Management Plan.
No new construction of buildings, structures, fences, roads, and parking lots.	None contemplated as part of the Management Plan. Management of site includes maintaining gates and fencing; see Section 4.1, Goal 1, objective (2b).
No vegetation alteration not consistent with protection of the Conservation Values or this Management Plan.	Restoration actions include noxious weed control and moist soil management to restore native plant communities. See Section 3.1, specific goals and objectives for freshwater, wetlands, wet prairie and riparian forest habitats.
No mining, extraction, or exploration, of any surface or subsurface material except as held by any third party with valid rights (minimum 60 days' notice to BPA required).	None contemplated as part of Management Plan.
No dumping.	None contemplated as part of this Management Plan. See section 4.1 Public Use, Goal 2, Obj. 2b, to address vandalism, garbage dumping, etc.
No alteration of the natural topography of the site by digging, plowing, diking, or other means.	Restoration actions include disking of cropland to restore to wet prairie habitat. See section 3.1, Goal 1 , Objective 1a.
No alteration to watercourses, wetlands, seasonally wet areas, or tampering with existing water control devices.	Restoration actions include using water control structure for moist soil management. See section 3.1, specific goals and objectives for wetland and wet prairie habitats.
No off-road motorized vehicle use.	ATVs would be used as part of this Management Plan only to monitor trespass, vandalism, etc. See section 4.1, Goal 2, Objective 2b.
No erecting any billboard or sign except "No trespassing", "For sale", or signs identifying ODFW as the owner of the site (limited to 15 square feet in size).	Boundary markers and closure signs erected as part of Management Plan. See section 4.1 Public Use, Goal 1,Objective 1d.
No granting or permitting liens, easements, or property interests that would be inconsistent with the protection of the Conservation Values.	None contemplated as part of Management Plan.

2.4 Interim Management

2.4.1 Interim Management

Interim management activities that have occurred on the site since acquisition and during development of the management plan include operations and maintenance as well as baseline vegetation and wildlife surveys. SIWA staff periodically check the site to ensure no trespassing, vandalism, etc. is occurring. The gates on the south end of the site are checked to make sure they are secure and are locked. The fencing on the site is also periodically checked to ensure it is in good condition and does not need repairs.

Baseline habitat surveys were conducted in September, 2014, in order to document vegetation on the site including native and non-native species, prior to restoration activities. Surveys included establishment of transects, plots, and photo points in all areas of the site. This data was then mapped using ArcGIS. Information obtained from baseline surveys has been incorporated into the development of the management plan including restoration goals and objectives.

In addition to the vegetation surveys, bird surveys were conducted in order to document species using the area in fall, 2014. In March, 2015, amphibian egg mass surveys were conducted in order to document whether red-legged frogs and other amphibians were using the wetlands on Flight's End for breeding sites. Species detected included red-legged frogs and Pacific chorus frogs.

There has been no vegetation management to date on the site other than to remove several trees that fell across the south access road and were blocking management access.

Until the management plan is adopted, public access on Flight's End is restricted to waterfowl hunting only (future public access is addressed in detail in Section 4). ODFW initiated a waterfowl hunting season on Flight's End in January, 2014, that lasted for one month. For the 2014-2015 season, waterfowl hunting dates were October 11, 2014, through January 25, 2015. All rules and regulations for waterfowl hunting that applied to the other West Side Units also applied to Flight's End.

3 Strategy Habitats and Species: Historic, Existing and Desired Future Conditions, Management Goals and Objectives, and Threats to Conservation Values

The Flight's End site consists of a mosaic of habitats including wetlands, wet prairie, riparian forests, and lacustrine lake, all of which are OCS Strategy Habitats. The cultivated fields will be restored to wetlands and wet prairie habitats, increasing the acreage of this OCS Strategy Habitat. The conservation priorities and management actions for this plan include protecting and maintaining current existing high quality habitats while also restoring those habitats where needed to support native flora and fauna, including OCS Strategy species. Management of Flight's End and associated goals and objectives described below reflect the site's conservation values as well as the regional conservation priorities. In addition, maintaining and restoring habitats at Flight's End will also complement on-going efforts on other areas of the SIWA, which has numerous projects occurring to restore wetlands to benefit fish and wildlife.

Site visits and subsequent baseline surveys by SIWA staff and WWMP project biologists and wildlife technicians at Flight's End from 2012 through 2014 identified both native and non—native plant species on the site including wapato and tufted hairgrass, once historically abundant on the island but now greatly reduced in acreage due to land conversion and changes in hydrology. Wildlife surveys identified a diversity of species including several Oregon Conservation Strategy (OCS) Strategy Species such as the red-legged frog and willow flycatcher (*Empidonax traillii*). Overtime, species lists will be expanded as additional surveys are conducted on the site. With its location on Sauvie Island and inclusion into the SIWA, it is anticipated that many of the wildlife species documented to occur on the wildlife area will also utilize habitats on Flight's End. Currently, the SIWA supports a biologically diverse array of wildlife which includes at least 275 species of birds, 37 species of mammals, 12 species of amphibians, 14 species of reptiles, and numerous species of fish and plants. Important and declining plant species documented on SIWA as well as at Flight's End include wapato, an important species both for wildlife as well as culturally for local native American tribes. Restoration and conservation priorities for Flight's End were determined from surveys and knowledge of the site, but also drew on numerous plans including the BPA's Willamette Subbasin Plan, the Oregon Conservation Strategy and the SIWA Management Plan.

Surveys conducted by ODFW staff as well as information collected on the pre-settlement habitat conditions (Figure 5) for the site identified four Priority Habitats at Flight's End, riparian forest, wet prairie, wetlands and freshwater (Table 3). Figure 3 depicts those habitats and conditions currently found on Flight's End. Current conditions include 48 acres of riparian forest, seven acres of lacustrine lake, two acres of wet prairie, and 11 acres of wetlands. In addition, there are 32 acres of fallow agricultural cropland that will be restored to 25 acres of wet prairie and seven acres of wetlands.

Figure 5 displays the future habitat conditions identified for the site. These habitat types are conservation targets as identified by the OCS (2006) as well as the Conservation Values expressed in BPA's conservation easement for the site. Restoration activities will be based on the sites' topography, river levels, elevations and historic habitat conditions on site.

Moist soil management will play a key role in restoration activities in order to improve habitat diversity, maintain desirable emergent plant growth and encourage wetland plant seed production. Using the existing water control structure, water levels will be regulated by flooding, drawdown and drying, on an annual or longer term interval, coupled with vegetation disturbance via mowing, plowing, disking, and applying herbicides if needed. Benefits include control/removal of invasive plant species and an increase in native plant species diversity and abundance.

The following section 3.1 describes the historical, current and desired future conditions of each of the priority habitats, documented or anticipated to occur wildlife species, as well as the associated goals and objectives. The goals, objectives, and strategies for Flight's End have been designed to protect the site's Conservation Values, native habitats, and unique and important ecological features, while also providing a framework to guide short-term restoration and management actions. Goals are broad statements describing the transition from the site's current condition to its desired future condition. Each goal has one or more objectives; these actions direct implementation of site activities. Each objective is assigned one or more strategies which are used to evaluate whether the objective has been met.

3.0 Priority Habitats, Goals and Objectives

3.1 Priority Habitats

3.1.1 Wetlands – Freshwater (Lacustrine)

Wetlands are identified as a key habitat in the OCS for the Columbia River Bottomlands (WV-01) Conservation Opportunity Area (COA). This COA has been identified as one of the most important habitat complexes in the Pacific Flyway for migrating and wintering waterfowl, and Sauvie Island is renowned as a significant and important wintering site for numerous species including dusky Canada geese, northern pintail (*Anas acuta*), northern shoveler (*Anas clypeata*), and American wigeon (*Anas Americana*). Lacustrine wetlands also support a number of Key Species identified in the OCS for the Columbia River Bottomland COA, including bald eagle (*Haliaeetus leucocephalus*), shorebirds, Coho (*Oncorhynchus kisutch*) and fall Chinook (*Oncorhynchus tshawytscha*) salmon, winter steelhead, and western painted turtle.

Current and historical conditions: The northern portion of Crane Lake (total of 188 acres), a permanently flooded or lacustrine wetland, is located in the southern portion of Flight's End (Figure 3, identified as fresh water habitat). This lacustrine wetland totals approximately seven acres, and is subject to tidal influence from both the nearby Multnomah Channel to the west and Crane Slough to the east. Lake levels are typically shallow, usually less than five feet in depth depending on river levels, tidal influence and other factors. Crane Lake is similar to other lacustrine wetlands on the SIWA including McNary and Aaron Lakes, which have unconsolidated mud bottoms that support emergent and submergent aquatic plants. A diversity of aquatic native plants in this wetland habitat support numerous fish and wildlife species, providing food and cover, as well as breeding habitat for amphibians and other species depending on water levels and other factors.

Baseline habitat surveys identified numerous native plants in the margins of the lake which included wapato, American water plantain (*Alisma subcordatum*), and water smartweed (*Polygonum amphibian*). Native aquatic emergent plants provide food for a variety of wildlife as well being very beneficial for aquatic invertebrates. Native plants also provide cover as well as nesting sites for the red-legged frog, an OCS Strategy Species and documented to occur on site, as well as other pond-breeding amphibians including long-toed salamander (*Ambystoma macrodactylum*), northwestern salamander (*Ambystoma gracile*), and Pacific chorus frog (*Pseudacris regilla*).

Based on pre-settlement vegetation data (Figure 4), Flight's End may historically have had several more acres of freshwater habitat. Crane Lake appears to have extended farther inland on the east side of the site as it joined with Crane Slough, with a total of approximately nine acres of historical freshwater wetlands on the site. The northern portion of what is now Crane Lake, according to the ONHP data, was "willows" and not open water. A comparison of the aerial photos of the site from 1929 through 1991 (Attachment 3) all depict Crane Lake in its present location, but also extending farther north into what may have historically been "willow" habitat.

Fish and Wildlife: The seven acres of freshwater habitat at Flight's End contributes to the overall biological diversity on the site and supports a host of fish and wildlife species. With its location on Sauvie Island, Flight's End provides essential habitat during different times of the year for many species of shorebirds and other waterbirds such as great blue heron (*Ardea herodias*), sandhill cranes (*Grus Canadensis*), white pelicans (*Pelecanus erythrorhynchos*) and rails. Both sandhill cranes and white pelicans were observed at the site while conducting surveys in September, 2014. The freshwater lacustrine habitat is important for several species that typically do not occur in large flocks, such as solitary sandpiper (*Tringa solitaria*) and spotted sandpiper (*Actitis macularia*), and for smaller flocks such as western sandpiper (*Calidris mauri*). At times, thousands of shorebirds can be found on the wildlife area, including wintering dunlin (*Calidris alpine*) flocks numbering up to 12,000 birds. During surveys in the fall, 2014, killdeer (*Charadrius vociferous*), and long-billed dowitcher (*Limnodromus scolopaceus*) were observed during surveys. Along with the Important Bird Area (IBA) designation acknowledging

essential shorebird habitat occurring on the wildlife area, SIWA is referenced in the USFWS's United States Shorebird Conservation Plan.

Freshwater wetlands provide crucial aquatic habitat for amphibians and reptiles, including red-legged frog, and western painted and pond turtles. Red-legged frogs may utilize this habitat for breeding depending on water levels, available aquatic plant species for ovipositing, and other factors. Western painted and pond turtles require open water and freshwater habitats for most of their life requirements, including for overwintering, feeding, resting, and basking.

Western painted turtles have been observed throughout the SIWA but not on Flight's End, but may be documented to occur on site with future monitoring surveys. Western pond turtles have been documented on Sauvie Island near the Multnomah Channel but not on the wildlife area. Aquatic habitats are also used as travel corridors and Crane Lake may provide an important migration corridor for turtles as well as many other species as they move on and off the site.

In addition to benefits for wildlife, Crane Lake also provides important habitat for a number of fish species including ESA listed salmonids. The Multnomah Channel borders the site to the west and has been identified as a priority habitat for restoration of ESA listed salmonid species (Chinook and Coho salmon and steelhead) and Pacific lamprey (*Lampetra tridentata*) under the Willamette Biological Opinion, among the Willamette River Anchor Habitats. Crane Slough borders the east side of the site and is also important habitat for salmon and steelhead. ODFW is currently exploring the opportunity of reintroducing chum salmon (*Oncorhynchus keta*) at this site if feasible. Chum salmon historically were the most abundant anadromous salmonid in the lower Columbia basin, with returns in some years that exceeded a million fish. In recent years the entire Columbia chum salmon return has fluctuated from a few hundred to a few thousand fish. The restoration opportunity for chum salmon may include habitat restoration such as creating spawning channels with gravel added to benefit spawning adults.

Desired future conditions/Management goals and objectives: Desired future conditions for the seven acres of lacustrine wetlands on Flight's End include maintaining the open water habitat in Crane Lake while providing high quality habitat for a variety of fish and wildlife. Restoring and enhancing wetland habitats is one of the recommended conservation actions in the OCS for this COA. Restoration activities include controlling the reed canary grass encroachment.

Both mechanical and chemical methods will be utilized as dictated by river levels and other conditions. Follow-up mowing and herbicide application will be needed as part of the long-term operations and maintenance in part due to the highly invasive nature of reed canary grass and other introduced noxious weeds. Benefits of restoration efforts will include maintaining open water habitat and tidal mud flats. This in turn should increase water quality as well as food availability for species such as shorebirds (least sandpiper, lesser yellowlegs), numerous species of waterfowl, amphibians, reptiles, aquatic invertebrates, and other species.

The following goals and objectives have been developed to protect and restore the seven acres of freshwater habitat at Flight's End:

Wetland/Freshwater (Lacustrine) - Goals, Objectives, and Strategies

Goal W/F 1. Protect, maintain and enhance existing freshwater wetlands to support native plant and wildlife species.

Objective 1a. Maintain open water habitat and reduce noxious weed.

Strategy:

- Reduce presence of reed canary grass and other noxious weeds.
  - Utilize mechanical methods (mowing, scraping).
  - Herbicide application.
  - Long-term O&M includes mowing, herbicide application.

Goal W/F 2. Explore opportunities to reintroduce Chum salmon.

Objective 2a. Reintroduce Chum salmon to Crane Lake.

Strategy:

1) Explore opportunities with ODFW Chum Introduction Program personnel to reintroduce Chum Salmon.
   - Determine costs of reintroduction.
   - Determine feasibility of creating spawning channels with gravel.

Since the Flight's End site has been incorporated into the SIWA, certain goals and objectives from the Sauvie Island Wildlife Area Management Plan (April, 2012) are also applicable to Flight's End for overall management of habitats. For freshwater wetlands, the following goal(s) and objective(s) that apply (see the SIWA Management Plan for more details) include:

> Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.
> Objective 1.4**:** Protect and manage 285 acres of lacustrine permanently flooded wetlands to benefit a wide variety of fish and wildlife species.

Table 3. Priority Habitats and Species for Flight's End

Strategy Habitats	Priority Species (**Bold font** = documented on Flight's End)	Additional OCS Strategy Species Benefitting from Restoration	Current Condition	Comments
PRIORITY HABITATS AND SPECIES FOR THIS MANAGEMENT PLAN				
Wetlands: *Emergent wetlands*	**Bald Eagle**, **Shorebirds**, **Waterfowl**, Western Painted Turtle, Western Pond Turtle, **Red-legged Frog**, Coho and Fall Chinook Salmon, Winter Steelhead Rare Plants: Columbia sedge,	**Dusky Canada Goose**	Fair/Good	Fair: Reed canary grass dominates some portions of wetlands. European carp present in wetlands which degrades water quality Good: Much of wetland habitat in good condition with a diversity of native plant species including wapato, several species of polygonum, sedges, rushes, and beggar's tick. Large Pacific willow trees present in several patches along wetland margins.
Riparian Habitats: *Riparian Forest*	Purple Martin (nest sites), **Red-legged Frog**, Townsend's Big-eared Bat	Western Bluebird **White-breasted Nuthatch**	Fair/ Good	Fair: Riparian forest understory moderately invaded by non-native shrubs including Himalayan blackberry. Lack of well-developed sub-canopy in some areas. Well-developed herbaceous layer in some areas with reed canary grass dominant in some areas. Good: Remnant large-diameter Oregon ash and cottonwood trees dominate riparian forest habitat along Multnomah Channel and Crane Slough. Numerous old snags present with evidence of pileated woodpecker using snags.
Freshwater Aquatic: *Crane Lake*	Western Painted Turtle, Western Pond Turtle, **Waterfowl,** Coho and fall Chinook Salmon, Winter steelhead	**Dusky Canada Goose**	Poor/ Fair	Poor: Water temperature, water quality can be poor due in part to presence of Eurasian carp, and lack of vegetation on many portions of Crane Lake shoreline. Fair: Some native wetland plant diversity offers cover and food for fish and wildlife.
Wet Prairie *Wet Prairie*	Western Painted Turtle, Western Pond Turtle, Western Meadowlark, Rare Plants: Columbia Sedge Dense Sedge-T**ufted Hairgrass**	Oregon Vesper Sparrow Chipping Sparrow	Poor	Poor: Most of wet prairie habitat converted to agricultural croplands dominated by non-native vegetation. The two acres of existing wet prairie contains several native species including tufted hairgrass.

3.1.2 Wetlands – Emergent (Palustrine Seasonally Flooded)

Approximately 11 acres of emergent wetlands, a Key Habitat in the Columbia River Bottomlands COA, occur at Flight's End. With the conversion of seven acres of the existing cropland to emergent wetlands, this acreage is expected to result in a total of 18 acres of emergent wetlands. The OCS recommends restoring and enhancing seasonal wetland habitats in the COA as an important conservation action. This type of wetland is typically dominated by forbs such as American water plantain, wapato and smartweed. Soils in these systems are generally mucky and can have a high mineral content (ODFW 2006). Emergent wetlands support a diverse array of fish and wildlife species including a number of Strategy Species including ESA salmonids, waterfowl, red-legged frog and native turtles.

Existing and historical conditions: The existing emergent wetlands at Flight's End (Figure 3) occur in the center portion of the site and are subject to tidal influence since it is outside the levees on Sauvie Island and near both the Multnomah Channel and Crane Slough. Water depths in the wetlands average between two to four feet depending on river levels and other factors. These wetlands are subject to seasonal inundation and are greatly influenced by the Willamette River and by tidal influences on a daily basis. Baseline habitat surveys conducted in the fall, 2014, documented the current dominant native vegetation in the wetlands, which included wapato, simplestem bur-reed (*Sparganium emersum*), American water plantain, several polygonum spp., and other emergent native plant species. Reed canary grass, an introduced and highly invasive grass, is also present and dominates portions of the wetlands. Approximate acreage dominated by reed canary grass has not been estimated at this time.

Historically, based on data from the ONHP and as mapped in Figure 3, a majority of the existing 11 acres of wetlands appears to have been wet prairie habitat, with the remaining several acres to the north and west made of up forested habitat. It appears that land use changes in the past 150 years, including logging of much of the forest on the site (the 1929 aerial photo displays only small patches of trees remaining on the site) as well as agricultural activities since the 1940's (installation of four culvers, grading of soils, etc. to create deeper ponded habitats for waterfowl), led to the creation of the existing 11 acres of wetlands as depicted in Figure 3.

Fish and Wildlife: Restoring emergent wetlands will provide numerous benefits to fish and wildlife including a number of the Key Species groups for the Columbia River Bottomlands COA, including waterfowl, red-legged frog and western painted and pond turtles. Red-legged frogs and other pond-breeding amphibians may utilize this habitat for egg-laying depending on water levels, available aquatic plant species for ovipositing, and other factors. Native turtles require emergent wetlands for many of their life requirements, including for feeding, reproduction, resting, and basking. During surveys in the fall, 2014, amphibians that were observed on Flight's End included red-legged frog, Pacific chorus frog, and bullfrog (*Rana catesbeiana*), the latter a non-native and highly invasive species. Future amphibian egg mass surveys should help to determine which amphibians are breeding on site in the emergent wetlands. Emergent wetlands also provide important habitat for a number of aquatic invertebrates such dragonflies and damselflies.

Restoration benefits also include offering extensive refugia for ESA salmonids during high flow events and food, cover and breeding sites for amphibians, reptiles and a wide array of songbirds, wading birds and other wildlife species. With its location adjacent to the Multnomah Channel and Crane Slough, restoration of emergent wetlands at Flight's End will provide high quality off channel resting, cover, and feeding areas for both listed and non-listed fish species including Chinook salmon, Coho salmon, steelhead, and Pacific lamprey at certain times of the year. Uncommon bird species that will benefit include Virginia rail (*Rallus limicola*), great egret (*Ardea alba*), dusky Canada goose, and common yellowthroat (*Geothlypis trichas*). Establishment of native vegetation in the emergent wetlands will also benefit aquatic mammals including beavers (*Castor canadensis*), river otter (*Lutra canadensis*), mink (*Mustela vison*) and muskrat (*Ondatra zibethicus)*.

Desired future conditions/Goals and objectives: Desired future conditions for the emergent wetlands include protecting and maintaining the existing 11 acres while creating an additional seven acres of wetlands from the existing croplands. Moist soil management techniques will be used in this habitat type and will include inundation, herbicide application and periodic disking to maintain an early successional state in the existing 11 acres of emergent wetlands. The seven acres of wetlands that were managed as cropland through 2012 will be converted into native wetland plant communities, which may include native species such as wapato, simple stem bur-reed, plantain, polygynum, rushes and sedges and numerous other aquatic plant species. With the high value of emergent wetlands for a variety of species, including several Strategy Species, as well as the costs of removal of the culverts and water control structure, grading of the site, etc., it was determined that maintaining the existing wetlands for the long-term management of the site was more beneficial than other options considered. In addition, the conversion of seven acres of the existing cropland (see discussion below) to emergent wetlands will increase the overall acreage of this Strategy Habitat to 18 acres.

Similar to the existing emergent wetlands, planned restoration activities for the conversion of seven acres of croplands to emergent wetland habitat will also include moist soil management, using inundation, herbicide application and other techniques to control/eliminate reed canary grass. As part of moist soil management for the site, SIWA staff will meet with Ducks Unlimited (DU) in order to complete a comprehensive wetland review that will include culvert repair and/or replacement.

The following goals and objectives have been developed to protect and restore the current 11 acres and future seven restored acres of emergent wetland habitat at Flight's End:

Wetland/Emergent (Palustrine seasonally flooded) - Goals, Objectives, and Strategies

Goal W/E 1. Protect, maintain and enhance existing wetlands to support native plant and wildlife species.

Objective 1a. Increase native plant diversity and cover.

Strategy:

- Reduce presence of reed canary grass to <30% cover in the wetlands.
  - Moist soil management.
  - Utilize mechanical methods (mowing, scraping).
  - Maintain water control structure.
  - Herbicide application.
  - Long-term O&M includes mowing, herbicide application.

Objective 1b. Increase habitat complexity to support native turtles and other wildlife.

Strategy:

- Determine number of suitable basking logs in wetlands.
  - Add basking logs of various sizes around the perimeter of wetlands in order to increase basking habitat for turtles and increase overall habitat complexity.
  - Monitor wetlands to determine if turtles are using basking logs.

Goal W/E 2. Increase overall emergent wetland acreage from 11 to 18 acres.

Objective 2a. Convert seven acres of cropland to seven acres of restored emergent wetlands.

Strategy:

- Increase native plant diversity and cover.
  - Moist soil management.
  - Utilize mechanical methods (mowing, scraping)
  - Maintain water control structure.
  - Herbicide application.
  - Long-term O&M includes mowing, herbicide application.

For emergent wetlands, the following goal(s) and objective(s) from the SIWA Management Plan that apply include:

> Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.
> Objective 1.6: Enhance and manage 62 acres of palustrine semi-permanently flooded and 52 acres of palustrine seasonally flooded wetland habitats to benefit a wide variety of fish and wildlife species.

3.1.3 Wetlands - Wet Prairie / Croplands

Wet prairie is one of the Key Habitats identified in the OCS for the Columbia River Bottomlands (WV-01) Conservation Opportunity Area (COA). In the Willamette Valley, wet prairie habitat is typically comprised of herbaceous vegetation dominated by bunchgrasses, such as tufted hairgrass. Wet prairies support a diverse array of plants and wildlife including many that are declining due to the extensive loss of this now rare habitat. Plant diversity was historically high in wet prairie habitats in the valley but due to the extensive loss of this habitat type, estimated to be 98 percent (Noss et al. 1995, Floberg et al. 2004, Hoekstra et al. 2005), many species have been lost and the remaining wet prairie is less diverse and supports fewer wildlife species than what would have occurred historically. Restoring or enhancing seasonal wetland habitats (wet prairie) is one of the Recommended Conservation Actions in the OCS.

Current and historical conditions: Currently, a total of two acres of wet prairie habitat occurs in the southwest portion of Flight's End (Figure 3). The two acres of wet prairie habitat consists of primarily non-native grass and forb species but does include patches of tufted hairgrass in several areas, documented during surveys in 2012. Figure 4 depicts the pre-settlement vegetation at Flight's End, with an estimated 25 acres of wet prairie habitat. This habitat type was located in the east and southeastern portions of the site, which currently consists of wetlands, croplands, and riparian forest.

The exact acreage that will be restored to wet prairie, currently estimated to be 27 acres, may change due in great part to the fluctuating water levels on the site as well as the response that will occur once habitat restoration (mowing, scraping, herbicide application) begins. Wet prairie habitat is typically dominated by herbaceous species, dominated by bunchgrasses, including tufted hairgrass.

The 32 acres of fallow cropland at Flight's End, which is distributed north of Crane lake and continues through much of the center portion of the site and into the northern portion of the site, covers approximately slightly less than one third of the total acreage for the site. The cropland was farmed from the late 1930's until 2012, primarily for millet, corn, buckwheat, and barley, providing foraging habitat for wildlife (primarily waterfowl). To create the cropland in the 1930's, the 32 acres were contoured and culverts were placed in four locations in order to create drier conditions favorable to agricultural crops. The historical photo from 1963 depicts the contouring that occurred on the site.

Vegetation surveys conducted in September, 2014, identified both native and non-native species occurring in the fallow cropland. Native plant species included western marsh cudweed (*Gnaphalium palustre*) and waterpepper (*Polygonum hydropiperoides*). Non-native species found during surveys included leafy beggarticks (*Bidens frondosa*), pennyroyal (*Mental pulegium*), reed canary grass, millet and barnyard grass.

Wildlife: Restoring wet prairie habitat at Flight's End will provide numerous benefits to wildlife including a number of birds such as western meadowlark (*Sturnella neglecta*), northern harrier (*Circus cyaneus*), and savannah sparrow (*Passerculus sandwichensis*). With the restoration of native bunchgrasses, bunchgrass structure will be present and can provide both cover and nest sites for grassland birds. Restoration of forb species will support pollinators such as native bees by flowering during the entire growing season. Birds observed in the existing wet prairie and croplands during 2014 surveys included red-tailed hawk, American kestrel (*Falco sparverius*), and savannah and song sparrow (*Melospiza melodia*). Wet prairie habitats also offer cover and foraging habitat to a number of reptiles and amphibians, including garter snakes, Pacific chorus and red-legged frogs, all of which were observed during surveys in 2014.

Desired future conditions/Goals and objectives: With restoration of the existing cropland, the wet prairie habitat will consist of 27 acres of restored native plant communities, which may include dense sedge-tufted hairgrass, an at-risk-plant community, as well as Columbia sedge (*Carex aperta*), a rare wet prairie species now found only on a handful of site in the Willamette Valley including at the Palensky Wildlife Area, managed by ODFW, and the Smith and Bybee Lakes Natural Area, managed by Metro.

Management efforts to control/remove non-native plant species such as reed canary grass will include a combination of methods including mechanical (mowing, scraping) and herbicide application. Planting with native seed mix, including grasses and forbs, may also occur in the fall and winter months. Follow-up mowing and herbicide application will also be needed as part of the long-term operations and maintenance, in part due to the highly invasive nature of reed canary grass and other introduced noxious weeds. Restoration of the wet prairie habitat will also be influenced in part by the hydrologic flows that occur on the site and that will vary from year to year depending on rainfall , seasonal inundation and tidal influences on a daily basis.

Restoring wet prairie habitat will provide numerous benefits to wildlife by increasing native plant diversity and thereby increasing available food, cover and nesting habitats. Wildlife species expected to benefit at Flight's End include savannah sparrow, purple martin (*Progne subis*), red-legged frog, garter snakes and numerous small and large mammals. Other species that may benefit include numerous insects such as the western tiger swallowtail (*Papilio rutulus*) and Lorquin's admiral (*Limenitis lorquini*) butterflies, dragonflies, and pollinators including native bees. Waterfowl are identified as key species for the Columbia River Bottomlands COA, and dusky Canada geese have been observed on the site, as well as numerous other geese and ducks. Over time, as plant diversity increases in the wet prairie habitat, the diversity of wildlife species is also expected to increase and will be documented through surveys and long-term monitoring.

The following goals and objectives have been developed in order to restore the two acres of existing wet prairie and 25 acres of fallow cropland to 27 acres of high quality wet prairie habitat at Flight's End:

Wet Prairie Goals, Objectives, and Strategies

Goal WP1. Restore native wet prairie plant communities.

Objective 1a. Actively manage wet prairie restoration areas for a period of at least 5 years after seeding.

Strategy: • Management methods will include mowing, disking, or other techniques as deemed appropriate.

Strategy: • Seeding establishment is assessed for 2 years and supplemented as necessary.

Strategy: • A moderate level of native plant diversity is achieved.

Strategy: • Invasive species do not exceed 20% cover.

Goal WP 2. Restore habitat features for a diverse array of wildlife species including but not limited to grassland birds, waterfowl, shorebirds, amphibians, and pollinators.

Objective 2a. Restore key breeding habitat structure and plant composition for wildlife across site.

Strategy: • Native bunchgrasses and forbs are dominant in restored wet prairies.

Strategy: • Woody vegetation present provides singing perches. Average height of woody vegetation is ≤ 2m (approx. 6.5 ft.).

Strategy: • Evaluate and avoid disturbance of restoration action on ground nesting birds.
- Survey areas undergoing site preparation for use by grassland bird species.
- All sparsely vegetated areas are surveyed to detect and avoid nesting birds.
- Detected nests are monitored through to fledging to help determine site use and nest success to assess effects of disturbance and guide adaptive management of implementation techniques.

Goals and objectives from the SIWA Management Plan (2012) that are also applicable to Flight's End for the wet prairie habitat:

Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.
Objective 1.6: Enhance and manage 62 acres of palustrine semi-permanently flooded and 52 acres of palustrine seasonally flooded wetland habitats to benefit a wide variety of fish and wildlife species.

3.1.4 Riparian Habitats – Riparian Forest

Riparian forest is identified as a Strategy Habitat in the OCS and as a Key Habitat in the Columbia River Bottomlands COA. The riparian forests in the Willamette Valley that historically bordered rivers and wetlands were quite extensive and diverse, supporting a large array of wildlife and acting as migration corridors across the landscape. Overall, total riparian forest acreage in the valley has been reduced by approximately 70-80% compared to historical conditions (Primozich and Bastasch 2004). Much of the loss of riparian forests has been to the conversion of this habitat type to farmland for a variety of crops including grasses, as well as use for cattle and sheep grazing.

Existing and historical conditions: The riparian forest on the Flight's End site covers approximately 48 acres and is distributed along most of the perimeter of the site (Figure 3), along the entire border with the Multnomah Channel on the west edge and for about two thirds of the eastern border along Crane Slough. The riparian forest at Flight's End is dominated primarily by deciduous species, typical of forests on the valley floor. Large diameter cottonwood and Oregon ash are prevalent throughout the site, in particular along the riparian borders of Multnomah Channel and Crane Slough, with Douglas hawthorn and non-native English hawthorn (*Crataegus laevigata*) also present in some areas. Pacific willow occurs in several areas as single trees or in small patches consisting of several trees near the wetland edges. Willows were historically more common on the site but it is thought to have been removed in some areas by the previous landowners in order to maintain more "open" habitat along the wetland edges for waterfowl hunting. According to ONHP data, there may have been approximately four acres of "willow" on the site historically (Figure 3) in the south-central portion of the site.

The riparian understory layer includes both native and non-native plant species. The shrub layer in the forests contains common snowberry, Douglas spirea, red-osier dogwood (*Cornus sericea*), and red elderberry (*Rubus armeniacus*), but also contains patches of non-native Himalayan blackberry (*Rubus armeniacus*). The herbaceous layer includes sword fern (*Polystichum munitum*) fringecup (*Tellima grandiflora*), and slough sedge (*Carex obnupta*). Reed canary grass dominates portions of the herbaceous layer, reducing overall diversity in some portions of the understory of the forest.

The 1929 aerial photograph (Attachment 3) shows a narrow band of riparian forest along the western border of the site, and scattered trees along the eastern edge, with a patch of trees, possibly Pacific willow, in the center at the wetland edge, with total acreage of riparian forest estimated at approximately 10-15 acres. Later aerial photographs (1948, 1960, 1991), also demonstrate that the riparian forest has increased in size and distribution along the margins as well as part of the interior of the site over time. By comparing the 1929 photo to present conditions, it is estimated that the riparian forest habitat on Flight's End is currently 40-50% greater in size than the earliest known conditions in 1929, but approximately 30% less than what may historically have been present on the site.

Fish and Wildlife: Maintaining and restoring riparian forests will provide numerous benefits to fish and wildlife including a number of the Key Species for the Columbia River Bottomlands COA, including bald eagle, peregrine falcon (*Falco peregrinus*) and ESA salmonids including Coho and fall chinook salmon, and winter steelhead. Maintaining the existing large diameter trees along the Multnomah Channel and Crane Slough provides shade along these water bodies benefitting fish, while existing snags provide perching sites for bald eagles and other birds. Bald eagles and osprey (*Pandion haliaetus*) are commonly observed using snags on the west side of Flight' End. Large diameter trees will provide future downed logs along the banks of the site which benefit fish and other species including turtles, which use the logs for basking. Downed logs and brush piles also provide denning, cover and foraging sites for both large and small mammals, including voles, rabbits, coyote and deer.

The riparian forest habitat at Flight's End supports a diverse array of bird species, including a number of passerines and raptors. Over one hundred passerines and other bird species have been observed on SIWA (Appendix 5), with many of these utilizing the riparian forest habitat at Flight's End. Riparian forests provide excellent nesting habitat for species such as mourning dove (*Zenaida macroura*), willow flycatcher (*Empidonax traillii*), black-headed grosbeak (*Pheucticus melanocephalus*), western wood pewee (*Contopus sordidulus*), black-capped chickadee (*Poecile atricapilla*), rufous hummingbird (*Selasphorus rufus*) and Bullock's oriole (*Icterus bullockii*). Riparian habitat supports the greatest number of neotropcial migratory landbirds (NTMB) in Oregon, and is considered to be one of four priority habitats where statewide conservation and management efforts are needed, since is appears to have more species with declining than increasing populations trends (Andelmen and Stock 1994). Species with significant declining trends (Andelmen and Stock 1994) that will benefit by riparian habitat protection and restoration at Flight's End include rufous hummingbird (*Selasphorus rufus*), orange-crowned warbler (*Vermivora celata*), and Wilson's warbler (*Wilsonia pusilla*). SIWA's designation as an Important Bird Area (IBA) by the National Audubon Society demonstrates its value as significant bird habitat. Restoration efforts that benefit riparian forests and associated bird species will also contribute to enhanced public awareness and wildlife viewing, since birders find the diversity of songbirds and the occurrence of rare birds on SIWA a unique viewing opportunity.

A number of raptors were observed during wildlife surveys at Flight's End and included bald eagle, osprey, and barn owl (*Tyto alba*). Other species that may also utilize the riparian forest include red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and great horned owl (*Bubo virginianus*). The SIWA is heavily used by raptors during the winter when large populations of waterfowl are present and serve as a readily available prey base. Winter counts of bald eagles on Sauvie Island have been as high as 62 individual birds.

Riparian forests provide crucial habitat for amphibians and reptiles, including red-legged frog, western pond turtles, and Long-toed salamanders. Amphibians require riparian forests for much of their life requirements including feeding, overwintering, and cover, with downed logs and brush piles offering forging, hiding and overwintering habitat. Reptiles, including turtles

and snakes, utilize riparian forest habitat for cover both during the active season and for overwintering, as well as for migration corridors.

Desired future conditions; goals and objectives: Maintaining and restoring riparian habitat and ecological function and ensuring sufficient habitat complexity for wildlife is one of the three OCS Recommended Conservation Actions for the Columbia River Bottomlands COA. The desired future condition for the riparian forest at Flight's End is to maintain the existing 48 acres of high quality forest with a restored largely native understory which supports both common and uncommon wildlife species. Planned restoration activities include maintaining the mix of cottonwood and Oregon ash stands in the riparian forest while also enhancing areas where non-native species such as reed canary grass, dominate portions of the understory vegetation. Management efforts to control/remove invasive species will include a combination of methods including mowing and herbicide treatment. Planting of native species will occur where needed in order to increase habitat diversity, structure and complexity in the riparian forest. Follow-up mowing and herbicide application will be needed as part of the long-term operations and maintenance in part due to the highly invasive nature of reed canary grass and other introduced noxious weeds.

In addition to vegetation management, retaining and creating snags and adding coarse woody debris to the forest floor where possible are also important objectives for the riparian forest habitat. Snags provide crucial habitat for a number of species such as cavity nesting songbirds and owls, as well as providing food (insects) for a variety of wildlife. Baseline surveys documented a number of tall, large diameter snags along the west side of the site adjacent to the Multnomah Channel, and pileated woodpeckers (*Dryocopus pileatus*) were observed on several occasions on one large snag. Amphibians, including the red-legged frog, have been observed on the site and utilize coarse woody debris in the riparian forest for cover and overwintering sites.

Maintaining and enhancing the riparian forest will increase the overall biodiversity of this important habitat, yielding numerous benefits for many wildlife species. An increase in plant diversity will increase food, cover and nesting sites for numerous bird species including migratory songbirds (black-headed grosbeak, western wood peewee), raptors (owls, red-tailed hawk), amphibians (red-legged frog), as well as many species of small mammals (hoary (*Lasiurus cinereus*) and little brown (*Myotis lucifugus*)bats, short-tailed weasel (*Mustela erminea*), and large mammals including black-tailed deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), and beaver.

The following goals and objectives have been developed in order to protect, maintain and enhance the 48 acres of riparian forest habitat at Flight's End:

Riparian Forest Goals, Objectives, and Strategies

Goal RF1. Enhance riparian forest vegetation structure and composition.

Objective 1a. Promote and maintain native vegetation in both forest over story and understory layers.

Strategy:
- Remove invasive woody species from riparian forest to <10% cover.
- Utilize hand and mechanical removal methods.
- Herbicide application.

Strategy:
- Remove reed canary grass from forest understory to <20%.
- Mechanical removal (mowing).
- Herbicide application.

Strategy:
- Native shrubs and forbs are planted into areas where invasive species control has occurred to increase species diversity and cover.

Goal RF2. Enhance woody features for wildlife.

Objective 2a. Maintain and restore structure for cavity-nesting birds.

Strategy:
- Existing snags are protected unless they prevent maintenance access or pose a safety concern.

Strategy:
- Snags are created as opportunities exist. Minimum snag height is 10-30 feet and minimum diameter at breast height is 12 inches (15-20 inches optimal).

Objective 2b. Retain downed woody debris as cover and breeding habitat for amphibians, birds, and small mammals.

Strategy:
- Existing large downed woody debris is left in place, unless it prevents critical maintenance access.

Strategy:
- Coarse woody debris is added where appropriate, using materials generated from woody vegetation removal activities. Mature, large-diameter trees are preferred, but smaller material may also be used. Large logs or piles of smaller logs are created.

For riparian forest habitat, the following goal(s) and objective(s) from the SIWA Management Plan that may apply include:

> Goal 2: To protect, enhance and manage upland habitats to benefit a wide variety of wildlife species.
> Objective 2.3: Maintain 2,857 acres of riparian/bottomland hardwood forest and improve the quality of these habitats.

3.2 Threats to Conservation Values

3.2.1 Threats

Overall threats to the conservation values at Flight's End include deleterious effects from changes in the hydrologic regime compared to historic flows, and the introduction of invasive plant and animal species such as reed canary grass, carp, nutria and bullfrog, which can overtime drastically reduce native plant and wildlife diversity as well as reduce the functional values of a given habitat. The current hydrologic regime in the Columbia and Willamette Rivers, due to the hydro system, has been greatly altered since the early 1900s and has resulted in overall less frequent flooding, reduced flows, decreases in channel complexity, decreases in wetland functionality, almost complete elimination of grasslands and wet prairie habitat, and a significant decline in plant, fish and wildlife species diversity. Historically these habitats were maintained through periodic flushing flows and high water events, which included soil deposition and other important aspects. Management efforts to address these threats have been outlined in the goals and objectives for this Plan, and include moist soil management as one of the main strategies to maintain and restore native habitats and functionality. Moist soil management, to the extent possible depending on river flows, etc., will allow for manipulation of water levels to control invasive species and restore native plant communities.

The two main threats to the wetland/freshwater habitat at Flight's End include changes in the hydrologic regime (see above) and changes in hydrology due to climate change. With forecasted lower snow pack, less spring runoff, etc., freshwater wetlands would be reduced in overall volume and depth, with a resulting loss of this habitat type. A second threat would be the encroachment of invasive plant species such as reed canary grass due to the change in hydrology (less open water) over time. A large infestation of reed canary grass could result in a reduction in native plant diversity, a loss of the quality of forage for herbivorous invertebrates and larger wildlife species, and a loss of breeding site characteristics for a number of species.

The main threats to the emergent wetland habitat at Flight's End include the change in hydrology compared to historic hydrologic regimes (see above) and presence of reed canary grass in some portions of the wetlands, which if not controlled, forms a dense monoculture and eliminates native wetland plant diversity. With a loss of native plant diversity, fish and wildlife are negatively impacted due to the loss of the quality of forage for waterfowl as well as herbivorous invertebrates and other wildlife species, as well as reduced quality breeding habitat for some species (amphibians).

There are several main threats to the wet prairie habitat at Flight's End. The first is continued agricultural use, having replaced the native vegetation over much of the wet prairie habitat on the site. Continued agricultural site management may result in further losses of native plant species that remain, including tufted hairgrass, and a further loss of native species diversity.

A second main threat to wet prairie is the loss of regular burning. Prairies are fundamentally fire-dependent systems and their vegetative structure and composition was substantially determined for thousands of years by frequent fires set by humans. The third main threat to wet prairie is climate change, which will likely result in less precipitation during spring, summer and fall, while a small increase is possible in winter months, and the region may experience more frequent flooding due to increased storm events (Doppelt et al. 2009). For native wet prairie habitat, this may mean higher winter and spring water levels, increases in spring flooding events, and a noticeably warmer and prolonged summer drought period.

Without restoration activities, the conversion of 32 acres of agricultural croplands to native wetland and wet prairie habitats would not occur, leading to a continual encroachment of non-native grasses and forbs, Himalayan blackberry, as well as woody vegetation depending on site conditions. As a result, fish and wildlife species would be negatively impacted, reducing available food, cover and nesting habitats.

The OCS identifies a number of threats to the riparian forest habitat including colonization by invasive plants, a decrease in floodplain function, and a loss of habitat connectivity and complexity (ODFW 2006). Without habitat restoration at Flights End, the understory of the riparian forest would continue to be threatened by invasive plant species including blackberry and reed canary grass, with a loss of native shrub and herbaceous species. As a result, wildlife species diversity would be negatively impacted, reducing species diversity as well as reducing available nesting sites, cover and foraging habitats.

Unauthorized and unmanaged entry onto Flight's End by the public can also pose a threat to the conservation values of the site by disturbing wildlife during sensitive times, impacting habitats, removing vegetation, poaching fish and wildlife, littering and other unauthorized activities. This draft management plan contains measures to address these threats through monitoring and other activities that provide oversight of Flight's End. On-going monitoring of public access will allow for determination of whether access is occurring as planned, and if changes need to be made (e.g., close portions of the property), in order to eliminate the threat posed and protect the Conservation Values as identified in the C.E.

Climate change is an important issue that could have severe negative impacts to habitats and fish and wildlife populations in the future. Changes in habitats in Oregon that could result from climate change include increased coastal and river flooding, snow pack declines and lower summer river flows. These changes would affect water resources, altering the timing and regional patterns of precipitation, flood and drought frequencies, increases in water temperature and other landscape scale impacts on Flight's End as well as the entire SIWA. In response to these changes plant and animal species composition and distribution may be altered. Efforts to evaluate and understand the regional impacts of climate change on habitats are an essential component to managing and monitoring habitats (ODFW, 2006). Therefore SIWA management activities at Flight's End such as habitat enhancement, water management and infrastructure modification, will be revised according to the latest scientifically based information, in order to address these changes.

4 Public Access and Use: Existing and Desired Future Conditions, Management Goals and Objectives

The addition of the Flight's End property to the SIWA is a key step in expanding ODFW's capacity to protect native Willamette Valley habitats for the enjoyment of people and the benefit of all common and uncommon wildlife and plants. Public access and use of Flight's End is welcomed and encouraged. Public use will be managed to protect fish and wildlife and their habitats, protect Flight's End infrastructure, and maintain the security and peaceful environment of the wildlife area.

4.1 Desired Future Conditions and Goals, Objectives, and Strategies

The future vision of public use at the site is a mix of passive recreation opportunities that are similar to the uses on the SIWA. This includes managing the site for passive recreation such as bird watching, walking, and nature enthusiasts on a seasonal basis, while also allowing regulated hunters and anglers during authorized seasons. Dogs will be permitted on-leash and no motorized vehicle use will be permitted, except for management purposes (e.g., ATV use), in order to protect the habitats and wildlife at Flight's End. All uses will be managed in a manner that will preserve and protect the site's habitat and wildlife values and that is consistent with the habitat goals and objectives identified in this plan as well as those applicable from the SIWA Management Plan.

The Flight's End site will be accessible via foot from the north end of the Sauvie Island Road or by boat access from the Gilbert River boat ramp. There will not be any parking, trail, or way finding facilities. Foot travel within the site will be allowed during daylight hours except for seasonal closure dates, which will be posted at the site entrance as they are for other units of the wildlife area. No formal trails will be built on the site, but the ATV trails developed by the previous landowners can be used for walking through the site.

Public Access and Use Goals, Objectives, and Strategies	
Goal PAU1. Provide public access compatible with habitat and species management goals for Flight's End.	
Objective 1a.	**Provide access to Flight's End for wildlife viewing, hunting, and angling consistent with habitat and species management goals.**
Strategy:	• Hunting for game birds, waterfowl and big game is allowed during the designated hunting seasons, however additional restrictions may be needed to achieve habitat and species conservation goals. • Identify site specific conflicts between users and habitat/species conservation goals. • Establish seasonal or site-specific closures/restrictions to minimize conflicts when necessary.
Strategy:	• Viewing blinds (also used as hunting blinds) will be available on the site for wildlife viewing.

Public Access and Use Goals, Objectives, and Strategies

Strategy:
- Considerations of public access will be balanced with the habitat needs of listed and sensitive wildlife species for which habitat is being managed or restored.

Objective 1b. Parking to access the site is provided at the gated entry and at the Gilbert River boat launch.

Strategy:
- Maintain mowed areas by gated road entrance for parking.

Strategy:
- Maintain parking areas at Gilbert River boat ramp.

Objective 1c. Provide walking and viewing trail (use existing ATV trails) from the parking area into the site.

Strategy:
- Maintain historic ATV trail for walking on the site.

Strategy:
- No additional trails would be sited in order to balance site use with the habitat needs of listed and sensitive wildlife species for which habitat is being managed or restored.

Objective 1d. Provide information to help inform the public of use restriction and management goals for Flight's End.

Strategy:
- Signage similar to what is provided on the SIWA will be placed at various points on the site to educate users about the site's Conservation Values, provide mapping to keep visitors oriented and on trails, and clearly describe allowable site uses.

Goal PAU2. Evaluate effects of public use on site wildlife and Conservation Values.

Objective 2a. Monitor and document effects of public use on site.

Strategy:
- Evaluate hunting pressure over the period of this management plan to better understand site use for hunting, effects on hunted species and Conservation Values, and to inform the next revision to this plan. Make adjustments to regulations if needed for this unit of the SIWA.
- Evaluate effects of non-hunter visitor use on OCS species, other wildlife and Conservation Values, and to inform the next revision of this plan. Make adjustments to visitor use (seasonal, hours, etc.) if needed.

Objective 2b. Monitor trespass and/or vandalism.

Strategy:
- Address unauthorized/illicit use as needed.
  - Gates are installed similar to those currently found on other management units of the SIWA.
  - Maintain fencing to mark property boundaries and prevent livestock intrusion.

Goal PAU3. Support outreach and education opportunities.

Objective 3a. Facilitate educational opportunities as they arise.

Strategy:
- Include Flight's End in SIWA volunteer program.
- Provide site access to school groups, individual students, adult learning classes, etc. as feasible.

Public Access and Use Goals, Objectives, and Strategies

Objective 3b. Provide outreach opportunities for the site.

Strategy: • Offer field tours for agency staff and conservation partners as part of restoration activities.

Goals and objectives from the SIWA Management Plan (2012) that are also applicable to Flight's End for overall management of public access for the site, may include the following:

> Goal 2: To protect, enhance and manage upland habitats to benefit a wide variety of wildlife species.
> Objective 2.5: Maintain and enhance SIWA facilities, structures, and equipment used to conduct habitat management, public use projects and other administrative functions.
>
> Goal 3: To maintain waterfowl hunting programs and to provide a variety of other fish and wildlife-oriented recreational and educational opportunities to the public that are compatible with Goals 1 and 2.
> Objective 3.1: Provide approximately 165,000 hunting, trapping and angling use days annually.
> Objective 3.3: Provide 100,000 wildlife viewing oriented education and interpretation use days annually, compatible with Objective 3.1 and habitat management objectives.
>
> Goal 4: To control other public uses to minimize impacts on fish and wildlife, their habitats, and fish and wildlife related recreation and to maintain the security of the wildlife area and reduce disturbance to neighboring private lands.
> Objective 4.1: Manage non-wildlife oriented public use to minimize disturbance to wildlife species on SIWA.

In addition to allowed uses stated above, some uses of this property by the public are expressly prohibited, including:

- Camping and open fires;
- Off-leash dogs (except during authorized hunting seasons);
- Discharge of firearms (except during authorized hunting seasons);
- Discharge of rifles and handguns;
- Possession or use of any shot other than federally-approved non-toxic shot at any time;
- Trap shooting;
- Motorized vehicle use beyond parking areas;
- Horseback riding;
- Litter or garbage dumping;
- Removal of any plants, soil, etc.
- Dumping of any substance or release of any animal.

5 Management Plan Implementation

5.1 Prioritization of Restoration and Enhancement Actions with Suggested Timeframes

As outlined in this plan, the restoration and enhancement work recommended for Flight's End includes seasonal, short-term treatments to activities that include long-term multi-year efforts. The prioritization recommended here accounts for the following: the degree of threat to existing plants, wildlife, and habitats, especially listed species; baseline information needed; potential to achieve moderate to high quality habitat conditions; feasibility of projects within the 10-year timeframe of this management plan; availability of funding, and anticipated sequencing of actions.

Considering these factors, the following objectives are the highest priority:

- Completion of baseline assessments **(2015-2016):**
- Assess hydrologic conditions in the cropland/wet prairie acreage
- Complete vegetation surveys in all habitat types
- Conduct surveys for birds, amphibians and reptiles
- Assess culverts and water control structure conditions
- Stabilizing the site boundaries (includes fencing) and access areas

- Initiating invasive species treatments **(2015-2017):**
    - Wet prairie – Objective 1a. Restore to native prairie species.
        - Treatment of croplands including mowing, disking, herbicide treatment, etc. for restoring acreage to wet prairie habitat. Seed if necessary.
    - Emergent wetland – Objective 1a. Utilize various methods to control reed canary grass including, moist soil management, mowing, herbicide application.

Medium priority objectives consist of:

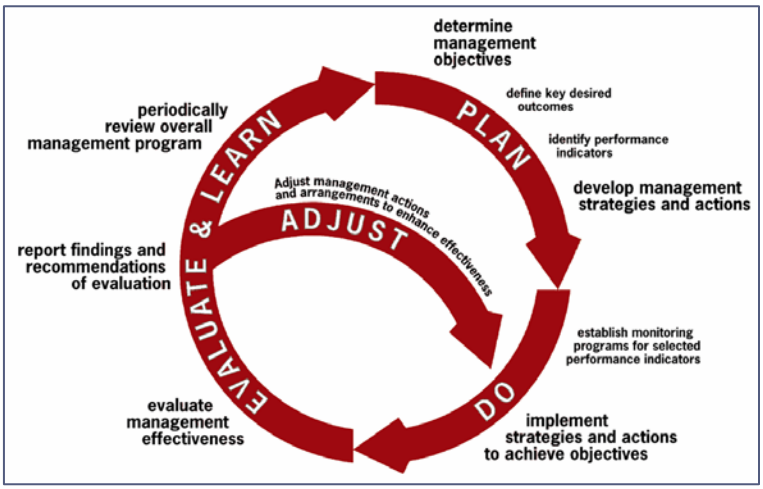
- Controlling woody and herbaceous invasive species **(2015-2025);**
    - Riparian forest – Objective 1a. Remove invasive woody species; utilize herbicide application, mechanical methods
    - All four habitat types – Reed canary grass control/removal utilizing mowing, disking, moist soil management, herbicide application
- Wet prairie – Objective 2a. Plant/seed native bunchgrasses and forbs depending on results of moist soil management (**2016-2018**);
- Riparian forest – Objective 1a. Plant native shrubs and herbaceous species in riparian forest understory **(2015-2018);**

5.2 Adaptive Management

All restoration and enhancement work undertaken by ODFW when implementing this management plan will occur under an adaptive management framework. Adaptive management is based on the principles of monitoring priority site features, conditions, and management action effectiveness, benchmarking their progress and status against the stated goals and objectives for the site, and adjusting next steps accordingly.

The adaptive management cycle of planning, implementing, evaluating, and as needed modifying management actions continually improves practitioners' understanding of treatment effectiveness, encourages innovation in methods, and results in timely adjustments to planned a ctions rather than reaching the end of a project before altering the techniques or approach. Adaptive management helps address uncertainties in ecosystem management, allows for addressing unique conditions found at a specific site, provides opportunities to assess progress, and aids in achieving stated goals.

Adaptive management framework.



Fulton 2012

The monitoring efforts outlined in this chapter are designed to track the status of the site's Conservation Values and progress toward achieving the desired future conditions for the site. As questions or issues arise and decision points are reached, ODFW/SIWA staff including WWMP field biologists will conduct site visits to further assess and discuss ecological values, threats, management options, scheduling, and follow-up actions. In addition, ODFW will also invite local experts as needed or as requested in order to incorporate additional knowledge and resources that have the potential to benefit site restoration, stewardship, wildlife conservation and advancements and concerns.

ODFW is currently developing a Monitoring Program for the Willamette Wildlife Project sites, as of the writing of this management plan. As development of ODFW's monitoring program is underway, adjustments may be made to the monitoring descriptions provided here to ensure agreement with the adopted ODFW program.

5.3 Monitoring

5.3.1 Effectiveness Monitoring

Effectiveness monitoring for Flight's End will focus on baseline documentation described in Chapter 4, status of the site's Conservation Values, and restoration effectiveness. Effectiveness monitoring is designed to provide important biological and ecological information about the site, while minimizing duplication of other monitoring efforts. ODFW will share the monitoring data collected at Flight's End with other conservation-oriented groups and the public, with the exception being sensitive species and culturally significant data, which will be limited to appropriate government agencies (i.e., USFWS, ODA, ORBIC, etc.) and WWMP partners.

Any monitoring will employ scientific principles and professionally accepted techniques. Much of the monitoring is designed to be collected at a rapid assessment level of detail and will be qualitative in nature, however some data (e.g. wildlife monitoring) may be quantitative in nature. All monitoring data generated will be stored electronically as photos or in databases created and maintained by ODFW.

Four monitoring efforts will occur under this plan:

1. **Photo points.** Ten photo points established for the Conservation Easement Baseline Documentation Report will be added to at least 10 additional photo points sited to track restoration and enhancement actions. All 20 (or more) will be monitored yearly to document site condition and protection of the site's Conservation Values over the course of this plan. Protocols will follow those established for the baseline report.

2. **Baseline Assessments of rare plant populations.** If rare plants such as Columbia sedge and dense sedge-tufted hairgrass are detected during monitoring, baseline data will be collected which will include population size, extent, and reproductive status, as well as documenting specific threats to each patch. All locations will be mapped with a GPS unit, and flagged in the field to alert field staff of the location of the patches. Representative photos will be taken of each patch of plants. Monitoring information will be used inform management prescriptions for enhancing habitat conditions in areas where these species are present, to ensure that restoration actions do not negatively impact the plants.

3. **Wildlife surveys.** Surveys for wildlife will include monitoring groups of species during the breeding season, including neotropical migratory songbirds and pond-breeding amphibians, with baseline surveys conducted in 2015-2016. Specific wildlife species surveys may also

include monitoring for a number of OCS Strategy Species including western meadowlark, Oregon vesper sparrow, purple martin, western painted and pond turtles, and red-legged frog. Surveys for these species should be conducted pre and post-monitoring in order to help determine not only species presence/absence but also response to changes in habitats due to restoration. This effort will utilize accepted protocols and methods for each species, and initial efforts should be designed for detection. If a species is detected, subsequent surveys will be conducted as resources allow to determine population size and if possible, reproductive success. All nests located will be recorded using GPS. Protocols to be used will include several implemented at the Palensky Wildlife Area, including the Partners In Flight Point Count Survey Method for Neotropical Migratory Landbirds, the Visual Survey Method for determining Presence/Absence for Turtles, and the Pond Breeding Amphibian Egg Mass Survey Method. In addition to the above mentioned surveys, additional surveys may also be conducted for small and large mammals, but these have yet to be determined.

4. **Restoration and enhancement actions.** Monitoring of all enhancement and restoration activities will occur in order to document changes in plant communities and where possible, response of wildlife species to those changes. As mentioned above, this will include photo point monitoring as well as collecting data along transects established during the 2014 vegetation surveys in all habitat types. Monitoring will be conducted by ODFW biologists and technicians undertaking restoration work. Habitat extent mapping will be used to track the site's trajectory toward achieving desired future conditions. Specific monitoring goals and protocols will be utilized for different types of projects. In the riparian forest for example, monitoring should capture changes in the species composition of the shrub and herbaceous layers following eradication of the reed canary grass and other invasives. In the cropland areas restored to wet prairie, tracking the development of appropriate hydrology, native vegetation establishment, and use of the site by various wildlife species are all monitoring targets. In the wetland habitat, monitoring efforts will include documenting changes in the plant communities, specifically targeting the removal of reed canary grass and the establishment of native plant species. Results of these activities will be documented in the quarterly and annual reports.

5.3.2 Compliance Monitoring

Compliance monitoring for Flight's End will be conducted on a 5 year basis to determine if the terms established in the conservation easement and management plan are being followed and if enforcement action is necessary. Compliance monitoring is a requirement of BPA and intends to identify consistent implementation of conservation easement and management plan restrictions and actions.

5.4 Planning Process and Public Participation

The development of this management plan involved ODFW biologists and field staff, and program managers met initially to discuss management plan content and ODFW goals and needs for the project. ODFW conducting several site visits with staff and field biologists in order to further refine habitat goals and objectives. ODFW conducted an initial public meeting at the Sauvie Island Grange Hall in December, 2012, to gather comments on the proposed management of the site. Attendees included Sauvie Island residents as well as representatives from DU, NRCS, and West Multnomah Soil and Water Conservation District. In early March, 2015, prior to the public meeting, a press release was sent out regarding the meeting, the planning process and inviting the public to comment on the draft management plan. On March 18, 2015, ODFW hosted a second public meeting at the Sauvie Island Grange Hall in order to gather comments on the Flight's End Draft Management Plan. Those attending included Sauvie Island residents as well as other members of the public from the Portland metro area. Comments and question received at the meeting were recorded and documented, with comments reviewed and incorporated into the draft management plan where appropriate.

Field surveys were completed by ODFW/SIWA staff and WWMP field biologists from 2012 through 2014. The core team of ODFW/SIWA staff and WWMP field biologists met frequently to discuss site goals, objectives and recommended restoration actions. The core team reviewed the draft management plan, and a revised draft will then be reviewed by additional ODFW staff, will be out for review in January, 2015. After the draft management plan is reviewed and comments incorporated, the draft plan will then sent out for review by outside groups and agencies including USFWS, NOAA, Oregon Department of Agriculture's rare plant species program, Confederated Tribes of the Grande Ronde, Confederated Tribes of the Warm Springs, Confederated Tribes of the Siletz, West Multnomah Soil and Water Conservation District (WMSWCD), Metro, Sauvie Island Habitat Partnership, and other agencies and groups. Comments from these groups will be reviewed and incorporated as appropriate.

5.5 Regulatory Requirements

ODFW will comply with all applicable laws, regulations, and other requirements that apply to properties acquired through the WWMP. Federal, State, and local jurisdictional regulations that may require consultation or permitting as a result of management activities at the Flight's End site include:

- National Historic Preservation Act (Section 106)
- State Historic Preservation (ORS 358.635)
- Clean Water Act (Section 404) (U.S. Army Corps of Engineers)
- Removal-Fill Law (ORS 196.765-990) (Oregon Department of State Lands)
- Endangered Species Act (Section 7) (U.S. Fish and Wildlife Service)
- National Environmental Policy Act (NEPA)

5.6 Operations and Management

Funds have been provided by BPA to enhance, operate, maintain, and protect the property to preserve or enhance the conservation values described in Section 1.2. These funds will be expended towards the following kinds of activities:

- Regular maintenance of boundaries and signs;
- Monitor surrounding land uses that could adversely affect the conservation values;
- Maintain current photos, maps, and tax information;
- Create and maintain management plans;
- Maintain gates, fences, and locks;
- Facilitate and manage public access;
- Prevent and remove encroachment of non-native species;
- Habitat mapping and evaluation;
- Outreach to neighbors, stakeholders, and local governments;
- Equipment specific to stewardship needs;
- Invasive species management at a maintenance level.

Restoration activities associated with the property will be funded with sources other than the O&M funds provided under the stewardship agreement.

5.7 Management Plan Development and Reporting

This management plan is a working document that will be actively used by ODFW biologists and field staff to direct on-the-ground restoration and management actions, according to the stated goals, objectives, and strategies. The strategies are written as actions with assigned timelines, and will be used to design a sequence of work over the coming years. In this regard, the management plan will be actively implemented and frequently updated, by design.

The information contained in this plan meets ODFW's needs and interests, as well as BPA requirements described in the Conservation Easement. A review of this plan by ODFW and BPA will be conducted at the 5-year point to determine if an updated set of goals and actions are warranted, and if understanding of the site changes significantly. Otherwise, in 2025 ODFW and BPA will determine whether a revision to this plan is needed, or that the site can transition from a restoration and enhancement mode to an operations and maintenance mode.

All management activities conducted at Flight's End, including restoration activities, will be documented on a quarterly and yearly basis and included in both quarterly and an annual report and submitted to BPA for the life of the Agreement. Stewardship reports will be completed on an annual basis and will include updates on habitat conditions, surrounding land use, development or changes in the management plan, observed or reported trespass, relationships with surrounding landowners, and the potential or observed effect of each of these changes to the property. Any herbicide use will be listed following standards of BPA's Habitat Improvement Programmatic (HIP) Herbicide and State of Oregon reporting guidelines.

5.8 WWMP Staff Contact Information

Sauvie Island Wildlife Area Manager, Mark Nebeker
Primary management responsibility of Wildlife Area; oversees restoration work and ongoing maintenance on WWMP sites located on the SIWA.

Sauvie Island Wildlife Area Office
18330 NW Sauvie Island Road, Portland 97231
503-621-3488; *mark.a.nebeker@state.or.us*

North Willamette Watershed District Wildlife Biologist, Don VandeBergh
Oversees WWMP district personnel; responsible for meeting WWMP program goals and implementation of management plans with WWMP staff assistance; oversees restoration work and ongoing maintenance on WWMP properties.

North Willamette Watershed District Office
18330 NW Sauvie Island Road, Portland, OR 97231
503-621-3488; *don.j.vandebergh@state.or.us*

Willamette Wildlife Mitigation Project Biologist, Sue Beilke
Assist wildlife area staff with management plan development for WWMP properties on SIWA; project manager for ODFW owned WWMP projects in the North Willamette Watershed District; coordinates with other project sponsors, and develops restoration and monitoring activities per WWMP monitoring plan.

North Willamette Watershed District Office
18330 NW Sauvie Island Road, Portland, OR 97231
503-621-3488; *sue.g.beilke@state.or.us*

Willamette Wildlife Mitigation Habitat Technician, Seasonal
Assist WWMP project biologist with restoration, monitoring, and maintenance activities on mitigation properties associated with the WWMP program and wildlife area. May also assist other mitigation property managers with restoration and operations and maintenance.

North Willamette Watershed District Office
18330 NW Sauvie Island Road, Portland, OR 97231
503-621-3488

Willamette Wildlife Mitigation Program Coordinator, Laura Tesler
Coordinates program activities as outlined in the Settlement; conducts project solicitation process, manages accounts, budgets and reports, coordinates with partners, and assures effective mitigation measures are successfully implemented as per the agreement.

ODFW Headquarters
4034 Fairview Industrial Drive SE
Salem, OR 97302
503-947-6086; *Laura.Tesler@state.or.us*

Fish and Wildlife Operations and Policy Analyst, Bernadette Graham-Hudson
Serves as the designated policy lead and technical expert responsible for preparation and interpreting for policy makers the technical and scientific analyses upon which the Department and State of Oregon base their fish passage and mitigation policies and programs within the Willamette Basin, and ensuring those analyses are sound.

ODFW
17330 SE Evelyn Street
Clackamas, OR 97015
971-673-1134*; Bernadette.N.Graham-hudson@state.or.us*

6 References Cited

Adams, J., C. Pearl, and R. Bury. 2004. Wetland Management for Amphibians in the Willamette Valley. USGS Forest and Rangeland Ecosystem Science Center, Corvallis, OR.

Altman, B. 1997. Distribution, abundance, and habitat associations of declining and state sensitive birds breeding in Willamette Valley grasslands. Unpublished report prepared for Oregon Department of Fish and Wildlife. Portland, OR.

Altman, B. 1999. Status and conservation of state sensitive grassland bird species in the Willamette Valley. Unpublished report prepared for the Oregon Department of Fish and Wildlife, Portland, OR.

Altman, B. 2000. Conservation Strategy for Landbirds in Lowlands and Valleys of Western Oregon and Washington. Oregon-Washington Partners in Flight, http://www.orwapif.org/consplan.html.

Altman, B. 2003. Western meadowlark account. In Marshall, D.B., M. Hunter and Contreras, A. (eds.). Birds of Oregon: a general reference. Oregon State University Press. Corvallis, OR.

Altman, B. 2011. Historical and Current Distribution and Populations of Bird Species in Prairie-Oak Habitats in the Pacific Northwest. Northwest Science 85(2): 194-222.

Altman, B. and J. Stephens. 2012. Land Managers Guide to Bird Habitat and Populations in Oak Ecosystems of the Pacific Northwest. American Bird Conservancy and Klamath Bird Observatory. 82 pp.

Alverson, E. 1991. New localities for *Aster curtus* in western Oregon. Madrono 38:202-203.

Alverson, E. 2005. Preserving Prairies and Savannas in a Sea of Forest. Plant Talk 40: 23-27.

Andelmen, S. and A. Stock. 1994. Preliminary assessment of management, research, and monitoring priorities for the conservation of Neotropical migratory birds that breed in Washington State (one report) and Oregon (one report). Oregon/Washington chapter Partners in Flight working document.

Brenner, G. 2005. Species Fact Sheet, American Grass Bug (*Acetropis americana* Knight). Pacific Analytics, LLC, Albany, OR. http://www.fs.fed.us/r6/sfpnw/issssp/documents/planning-docs/20050906-fact-sheet-acetropis-americana.doc, accessed October 2013.

Bury, B., H. Welsh Jr., D. Germano, D. Ashton, eds. 2012. Western Pond Turtle: Biology, Sampling Techniques, Inventory and Monitoring, Conservation, and Management. Northwest Fauna Number 7. Society for Northwestern Vertebrate Biology, Olympia, WA.

Christy, J., and E. Alverson. 2011. Historical vegetation of the Willamette Valley, Oregon, circa 1850. Northwest Science 85(2):93–107, BioOne http://www.bioone.org/doi/full/10.3955/046.085.0202.

Christy, J., E. Alverson, M. Dougherty, S. Kolar, C. Alton, S. Hawes, L. Ashkenas, and P. Minear. 2009. GLO historical vegetation of the Willamette Valley, Oregon, 1851-1910. ArcMap shape file, Version 2009_07. Oregon Natural Heritage Information Center, Oregon State University, Corvallis, OR.

Eltzroth, E.K. 2003. Western Bluebird (*Sialia mexicana*). Pp 474-477. *In*, D. B. Marshall, M.G. Hunter, and A.L. Contreras. 2003. Birds of Oregon: A General Reference. Oregon State University Press, Corvallis, OR.

Floberg, J., M. Goering, G. Wilhere, C. MacDonald, C. Chappell, C. Rumsey, Z. Ferdana, A. Holt, P. Skidmore, T. Horsman, E. Alverson, C. Tanner, M. Bryer, P. Iachetti, A. Harcombe, B. McDonald, T. Cook, M. Summers, and D. Rolph. 2004. Willamette Valley-Puget Trough-Georgia Basin Ecoregional Assessment. Volume one: Report. Prepared by The Nature Conservancy with support from The Nature Conservancy of Canada, Washington Department of Fish and Wildlife, Washington Department of Natural Resources (Natural Heritage and Nearshore Habitat programs), Oregon State Natural Heritage Information Center and the British Columbia Conservation Data Centre. 150 pp.

Fulton, B. 2012., 2013. Adaptive management cycle figure, Management Strategy Evaluation, in *Commonwealth Scientific and Industrial Research Organisation (CSIRO) Marine and Atmospheric Research* . Accessed February 28, 2013, http://www.cmar.csiro.au/research/mse/images/adaptive_cycle.gif

Gisler, S.D. 2004. Developing biogeographically based population introduction protocols for at-risk Willamette Valley plant species. Report to U.S. Fish and Wildlife Service, Portland, OR. Native plant Conservation Program, Oregon Department of Agriculture, Salem, OR. 230 pp.

Granholm, S. 1988. Chipping Sparrow (*Spizella passerina*). *In*, Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

Grubb, Jr., T. C. and V. V. Pravosudov. 2008. White-breasted Nuthatch (*Sitta carolinensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu.proxy.library.oregonstate.edu/bna/species/054

Hagar, J. C. 2003. White-breasted nuthatch (*Sitta carolinensis*). *In*, D. B. Marshall, M.G. Hunter, and A.L. Contreras. Birds of Oregon: A General Reference. Oregon State University Press, Corvallis, OR.

Hammerson, G. 2008. *Rana aurora*. In: IUCN 2011. IUCN Red List of Threatened Species. Version 2011.1, www.iucnredlist.org, accessed October 14, 2011.

Hoekstra, J., T. Boucher, T. Ricketts, and C. Roberts. 2005. Confronting a biome crisis: global disparities of habitat loss and protection. Ecology Letters 8:23-29.

Horvath, E.G. 2003. Purple Martin account. In Marshall, D.B., M. Hunter and Contreras, A. (eds.). Birds of Oregon: a general reference. Oregon State University Press. Corvallis, OR.

Jackson, J.A. 1979. Tree surfaces as foraging substrates for insectivorous birds. Pages 69-93 *in* J. G. Dickson, R. N. Conner, R. R. Fleet, J. A. Jackson, and J. C. Kroll, editors. The role of insectivorous birds in forest ecosystems. Academic Press, Inc., New York, NY.

Kaye, T.N., and A. Brandt. 2005. Seeding and transplanting rare Willamette Valley prairie plants for population restoration. Final Report. Institute for Applied Ecology, Corvallis, OR.

Kaye, T.N., J. Cramer, and A. Brandt. 2003. Seeding and transplanting rare Willamette Valley plants for population restoration: third year report. Institute for Applied Ecology, Corvallis, OR.

Kaye, T.N. and K. Kuykendall. 2001. Germination and propagation techniques for restoring rare Pacific Northwest prairie plants. *In:* Reichard, S.H., P.W. Dunwiddie, J. G. Gamon, A. R. Kruckeberg, D. L. Salstrom, eds. Conservation of Washington's Native Plants and Ecosystems. Washington Native Plant Society, Seattle, WA.

Lannoo, M., ed. 2005. Northern red-legged frog species account in Amphibian Declines: The Conservation Status of United States Species, University of California Press, Berkeley, CA. http://amphibiaweb.org/cgi/amphib_query?where-genus=Rana&where-species=aurora, accessed Oct. 14.

Marshall, D., M. Hunter, and A. Contreras, eds. 2003. Birds of Oregon. Oregon State University Press, Corvallis, OR.

Middleton, A.L., 1998. Chipping Sparrow (*Spizella passerina*). *In*, A. Poole and F. Gill (eds.), The birds of North America, No. 334. Academy of Natural Sciences, Philadelphia, and the American Ornithological Union, Washington, D.C.

Myers, A. and D.A. Kreager. 2010. Declining and State Sensitive Bird Species Breeding in Willamette Valley Grasslands: 2008-09 Status Update. Prepared for The Oregon Zoo Foundation and the U.S. Fish and Wildlife Service. Oregon Department of Fish and Wildlife, Corvallis, OR.

Norton, H., E.S. Hunn, C.S. Martinson, and P.B. Keely. 1984. Vegetable food products of the foraging economies of the Pacific Northwest. *Ecology of Food and Nutrition*. Vol. 14, pp 219-228.

Noss, R., E. LaRoe III, and J. Scott. 1995. Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation. U.S. Geological Service, Biological Resources Division. http://el.erdc.usace.army.mil/emrrp/emris/EMRIS_PDF/ec.pdf

Oregon Biodiversity Project. 1998. Oregon's Living Landscape, Strategies and Opportunities to Conserve Biodiversity. Defenders of Wildlife, Lake Oswego OR.

Oregon Department of Fish and Wildlife. 2012. Sauvie Island Wildlife Area Management Plan. Oregon Department of Fish and Wildlife, Salem, OR.

Oregon Department of Fish and Wildlife. No date. Landowner's guide to creating grassland habitat for the Western meadowlark and Oregon's other grassland birds. Oregon Department of Fish and Wildlife. http://www.dfw.state.or.us/conservationstrategy/grassland_birds.asp

Oregon Department of Fish and Wildlife. 2006. Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, OR.

Oregon Wildlife Institute. No date. Species account: Chipping sparrow. Oregon Wildlife Institute. Corvallis, OR. http://oregonwildlife.org/Publish/docs/chipsparrow_web2.pdf

Oregon Wildlife Institute. No date. Species account: Oregon vesper sparrow. Oregon Wildlife Institute. Corvallis, OR. http://oregonwildlife.org/Publish/docs/vesper_web2.pdf

Ortega, Y. K., K. S. McKelvey, and D. L. Six. 2006. Invasion of an exotic forb impacts reproductive success and site fidelity of a migratory songbird. Oecologia 149:340-351.

Pacific Flyway Council. 2008. Pacific Flyway management plan for the dusky Canada goose. Dusky Canada Goose Subcomm., Pacific Flyway Study Comm. [c/o USFWS], Portland, OR. Unpubl. rept. 38 pp.+ appendices.

Primozich, D. and R. Bastasch. 2004. Draft Willamette Subbasin Plan. The Northwest Power and Conservation Council. Prepared by Willamette Restoration Initiative.

Reynolds, J. D. and R. W. Knapton. 1984. Nest-site selection and breeding biology of the Chipping Sparrow. Wilson Bull. 96:488-493.

Scheuering, R.W. 2003. Chipping sparrow (*Spizella passerina*). Pp 538-540. *In*, D. B. Marshall, M.G. Hunter, and A.L. Contreras. 2003. Birds of Oregon: A General Reference. Oregon State University Press, Corvallis, OR.

Thwaites, R. 1969. *Original Journals of the Lewis and Clark Expedition 1804-1806*. Vols. 3 and 4. Antiquarian Press Ltd. New York. First published 1904-1905, Dodd, Mead and Co.

U.S. Fish and Wildlife Service. 2010. Recovery Plan for Prairie Species of Western Oregon and Southwestern Washington. USFWS Oregon Fish and Wildlife Office, Portland, Oregon. http://www.fws.gov/oregonfwo/Species/PrairieSpecies/default.asp

Verts, BJ and Carraway, LN. 1998. Land mammals of Oregon. Oregon State University Press. Corvallis, OR.

Vesely, D. and D. Rosenberg. 2010. Wildlife Conservation in the Willamette Valley's Remnant Prairie and Oak Habitats: A Research Synthesis. Oregon Wildlife Institute, Corvallis, OR. 130 pp.

Wold, E., J. Jancaitis, T. Taylor, and D. Steeck. 2011. Restoration of agricultural fields to diverse wet prairie plant communities in the Willamette Valley, Oregon, Northwest Science 85(2):269-287.

APPENDIX 1

BPA CONSERVATION EASEMENT

COLUMBIA COUNTY, OREGON 2013-008057
DEED-D
Cnt=1 Pgs=24 HUSERB 09/30/2013 11:50:11 AM
$120.00 $11.00 $15.00 $5.00 $10.00 =$161.00

00176075201300080570240240

I, Elizabeth E. Huser, County Clerk for Columbia County, Oregon certify that the instrument identified herein was recorded in the Clerk records.

Elizabeth E. Huser - County Clerk

AFTER RECORDING, RETURN TO:
Bonneville Power Administration
Real Property Services, TERR
Re: WILWF-WL-11
P.O. Box 3621
Portland, OR 97208-3621

TICOR TITLE

738130089 17

DEED OF CONSERVATION EASEMENT

THIS DEED OF CONSERVATION EASEMENT is executed this 25th day of September, 2013, by the State of Oregon Fish and Wildlife Commission, on behalf of the Oregon Department of Fish and Wildlife, ("**Grantor**"), in favor of the United States of America ("**Grantee**"), acting by and through the Department of Energy, Bonneville Power Administration ("**BPA**"), headquartered in Portland, Oregon, at P.O. Box 3621, Portland, OR 97208-3621. The Grantor and Grantee may be referred to individually as "**Party**" and collectively as "**Parties**."

I. RECITALS

A. Grantor's legislative mandate is to preserve, protect, and perpetuate wildlife and wildlife habitat for the citizens of Oregon. ORS § 496.012. Grantor implements this mandate through the Oregon Conservation Strategy and the Habitat Mitigation Policy.

B. BPA is a power-marketing agency having legal obligations under the Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. §§ 839-839h ("**Northwest Power Act**") to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, affected by the development and operation of Federal hydroelectric projects of the Columbia River and its tributaries, in a manner consistent with the purposes of the Northwest Power Act, the Fish and Wildlife Program adopted by the Pacific Northwest Electric Power and Conservation Planning Council under subsection 4(h) of the Northwest Power Act (16 U.S.C. § 839b(h)), and other environmental laws. BPA has the authority pursuant to the Northwest Power Act, 16 U.S.C. §§ 839b(h) and 839f(a), the Federal Columbia River Transmission System Act, 16 U.S.C. § 838i(b), or the Bonneville Project Act, 16 U.S.C. §§ 832a(c) through (f), to acquire real estate or to assist in the acquisition and transfer of real property interests.

C. BPA also has obligations under the Endangered Species Act ("**ESA**"), 16 U.S.C. §§ 1531-1544, including but not limited to specific obligations identified in the National Marine Fisheries Services' 2008 Willamette Project Biological Opinion ("**NMFS' Willamette Biological Opinion**") to continue implementing the Willamette Basin Mitigation Program and to complete additional habitat protection

and restoration projects (collectively referred to as "**ESA obligations**"), implemented under the "Willamette BiOp Habitat Restoration Program."

D. Grantor and BPA entered into a programmatic Memorandum of Agreement, dated October 22, 2010 ("**MOA**"), in which BPA agreed to fund the acquisition of real property interests through the State of Oregon to permanently protect and enhance important fish and wildlife habitat in the Willamette Basin, where it either currently exists or at one time existed, in exchange for supporting BPA's partial fulfillment of Northwest Power Act and ESA obligations, and in exchange for rights of enforcement, entry, and inspection to the United States and its assigns.

E. BPA, in accordance with the mutual commitments of the **MOA**, a copy of which is available from the BPA Manager, Real Property Services, P.O. Box 3621, Portland, OR 97208-3621, provided funding to the Grantor to acquire fee title ownership of certain real property, known as the Flights End property in Columbia County, Oregon ("**Protected Property**"). The Protected Property has important features that help BPA meet its statutory obligations to the public under the Northwest Power Act and other environmental laws.

II. AGREEMENT

A. Conveyance and Consideration. The Grantor, for and in consideration of the funding in the amount of SEVEN HUNDRED EIGHTY THOUSAND ($780,000.00) U.S. dollars, in hand paid, which BPA provided for the fee title ownership acquisition of the Protected Property, and for other good and valuable consideration, hereby voluntarily conveys and warrants to the United States of America and its assigns a perpetual easement, free of encumbrances except as specifically set forth in Exhibit F, for conservation purposes ("**Conservation Easement**"), together with access in, over, under, upon and across the Protected Property, legally described in Exhibit A (legal description), and shown in Exhibit B (map) and Exhibit C (aerial photo). This Conservation Easement is created and implemented under applicable state and federal law, and creating an interest in property intended to be a conservation easement under ORS 271.715 – 271.795. The Parties intend this Conservation Easement to be a perpetual and irrevocable easement in gross, and further intend that its terms and conditions, set forth below, create equitable servitudes and covenants running with the land, binding the Grantor and the Grantor's successors and assigns for the benefit of the United States.

B. Purpose. The purpose ("**Purpose**") of this Conservation Easement is to protect and conserve, and as appropriate, to allow for the restoration or enhancement of the **Conservation Values** (Section C, below) of the Protected Property. As such, the Purpose of this Conservation Easement includes the prevention of any use of the Protected Property that will materially harm or materially interfere with any of the Conservation Values of the Protected Property. The Grantor intends that this Conservation Easement will confine the use of the Protected Property to activities that

comply with the Conservation Easement, including the approved Management Plan. BPA shall have the right, but not the obligation, to enforce any and all terms of this Conservation Easement. Any use of or activities on the Protected Property by the Grantor shall be consistent with the Purpose of this Conservation Easement. In the event that there is a conflict between the Grantor's uses or activities and the Purpose of Conservation Easement, the Purpose of the Conservation Easement shall be construed broadly and shall prevail over any conflicting uses or activities of the Grantor.

C. **Conservation Values.** The Protected Property, in its present state, comprises approximately 100 acres located in the Columbia River Bottomlands Conservation Opportunity Area The Parties agree that the Protected Property includes important species, habitat, and other important ecosystem attributes. The Conservation Values of the Protected Property that currently exist specifically include the following, recognizing that such Conservation Values may periodically fluctuate or trend toward long-term change, due to natural events such as wildfire, floods, inter-decadal climate events, and long-term climate change, as well as human-initiated enhancement or restoration actions:

1. The property is currently a mosaic of habitats found historically throughout the Willamette Valley including wetlands and riparian forests which provide habitat for a host of fish and wildlife species. Wildlife species documented to occur at the site include migrating waterfowl (dusky Canada goose, pintail, green-winged teal), neotropical migratory songbirds (common yellowthroat, Western peewee, Willow flycatcher) raptors (bald eagle,osprey), amphibians (Northern red-legged frog) and many other species. Multnomah Channel borders the site to the west and is considered to be a priority habitat for restoration for ESA listed salmonid species (Chinook and Coho salmon and steelhead) and Pacific lamprey under the Willamette Biological Opinion, as identified for the Willamette River Anchor Habitats.
2. The Flight's End property includes a number of important habitat types including wetlands, grasslands, riparian forests and lacustrine lake. Approximately 11 acres of wetlands occur which includes patches of wapato and other native species important for waterfowl and other wildlife. A total of 26 acres of grasslands occur on the site which will be restored to wet prairie habitat. Bordering the entire property are extensive riparian forests (48 acres) dominated by large, mature Oregon ash with scattered black cottonwood, Pacific willow and black hawthorne. The understory of the riparian forest includes native shrub species such as Douglas spiraea and snowberry, which provide cover, food and breeding habitat for birds and other wildlife. The lacustrine lake (7 acres) is located on the south end of the site and varies widely in depth depending on tidal influence with wapato and plantain being the dominant plant species.
3. Acquisition of Flight's End under the Willamette Wildlife Mitigation Program will allow for the opportunity to increase habitat protection for the site as well as for restoration of the various habitats which would not occur otherwise. Habitat restoration goals for the site include maintaining existing high quality habitats

such as riparian forest canopy while also restoring degraded habitats such as the cropland to historic wetland plant communities. For example, the current cropland (31 ac) will be restored and converted to 24 acres of grassland/wet prairie habitat and 7 acres of wetlands, the latter two of which are considered key habitats under the Oregon Conservation Strategy (OCS). Restored plant communities are expected to include wapato, plantain, bur-reed and other native species that increase diversity while also providing important cover and food for a host of wildlife species including waterfowl, rails, shorebirds and amphibians and reptiles.

4. Flight's End is strategically located along the lower Willamette River which will increase the size of the adjacent Sauvie Island Wildlife Area (SIWA) and nearby conservation lands (Ridgefield Wildlife Refuge). As part of the SIWA, the site will contribute to a unique and complex array of wetlands focused management projects and areas including Ridgefield National Wildlife Refuge (USFWS), Shillapoo Wildlife Area (WDFW) in Washington, Deer Island (Columbia Land Trust), Multnomah Channel wetlands (Metro), Palensky Wildlife Area (BPA and ODFW), and Wapato Greenway Access (Oregon State Parks). Restoration efforts will incorporate the expertise of a number of local agencies and NGO's including ODFW, West Multnomah Soil and Water Conservation District (MS&WCD) and U.S. Fish and Wildlife Service.

D. Water Rights. To the extent the Grantor has or acquires water rights appurtenant to the Protected Property, the Grantor shall change the use of appurtenant water rights to instream flow purposes in a timely manner in accordance with applicable law. Should that change not be appropriate or feasible, the Grantor shall use the amount of water to which it is legally entitled in the place and manner to which it is legally entitled, for a beneficial purpose without waste, for the Purpose of this Conservation Easement. The Grantor shall not abandon any of the water rights appurtenant to the Protected Property by virtue of non-use. The Grantor shall not transfer, change the point of diversion, change the purpose of use, or otherwise significantly change any Protected Property water right without receiving prior written approval from BPA. BPA has the right to exercise the water rights in the event of threat of abandonment.

E. Baseline Documentation. The Grantor and BPA agree that the characteristics and conditions of the Protected Property at the time of this grant are documented in a **Baseline Documentation Report**, signed and acknowledged by the Parties; the acknowledgment is Exhibit D.

F. Reserved Uses. The Grantor reserves, for itself and its successors and assigns, the right to use the Protected Property in any and all ways which are consistent with the Purpose of this Conservation Easement and which are not otherwise prohibited by this Conservation Easement, including but not limited to: the right to record title, the right to convey, transfer, and otherwise alienate title to these reserved rights; the right of quiet enjoyment of the rights reserved in Protected Property; and the right to prevent trespass and control access.

such as riparian forest canopy while also restoring degraded habitats such as the cropland to historic wetland plant communities. For example, the current cropland (31 ac) will be restored and converted to 24 acres of grassland/wet prairie habitat and 7 acres of wetlands, the latter two of which are considered key habitats under the Oregon Conservation Strategy (OCS). Restored plant communities are expected to include wapato, plantain, bur-reed and other native species that increase diversity while also providing important cover and food for a host of wildlife species including waterfowl, rails, shorebirds and amphibians and reptiles.

4. Flight's End is strategically located along the lower Willamette River which will increase the size of the adjacent Sauvie Island Wildlife Area (SIWA) and nearby conservation lands (Ridgefield Wildlife Refuge). As part of the SIWA, the site will contribute to a unique and complex array of wetlands focused management projects and areas including Ridgefield National Wildlife Refuge (USFWS), Shillapoo Wildlife Area (WDFW) in Washington, Deer Island (Columbia Land Trust), Multnomah Channel wetlands (Metro), Palensky Wildlife Area (BPA and ODFW), and Wapato Greenway Access (Oregon State Parks). Restoration efforts will incorporate the expertise of a number of local agencies and NGO's including ODFW, West Multnomah Soil and Water Conservation District (MS&WCD) and U.S. Fish and Wildlife Service.

D. Water Rights. To the extent the Grantor has or acquires water rights appurtenant to the Protected Property, the Grantor shall change the use of appurtenant water rights to instream flow purposes in a timely manner in accordance with applicable law. Should that change not be appropriate or feasible, the Grantor shall use the amount of water to which it is legally entitled in the place and manner to which it is legally entitled, for a beneficial purpose without waste, for the Purpose of this Conservation Easement. The Grantor shall not abandon any of the water rights appurtenant to the Protected Property by virtue of non-use. The Grantor shall not transfer, change the point of diversion, change the purpose of use, or otherwise significantly change any Protected Property water right without receiving prior written approval from BPA. BPA has the right to exercise the water rights in the event of threat of abandonment.

E. Baseline Documentation. The Grantor and BPA agree that the characteristics and conditions of the Protected Property at the time of this grant are documented in a **Baseline Documentation Report**, signed and acknowledged by the Parties; the acknowledgment is Exhibit D.

F. Reserved Uses. The Grantor reserves, for itself and its successors and assigns, the right to use the Protected Property in any and all ways which are consistent with the Purpose of this Conservation Easement and which are not otherwise prohibited by this Conservation Easement, including but not limited to: the right to record title, the right to convey, transfer, and otherwise alienate title to these reserved rights; the right of quiet enjoyment of the rights reserved in Protected Property; and the right to prevent trespass and control access.

G. Management Plan. Within 18 months of recording of this Conservation Easement, the Grantor shall develop a **Management Plan** for the Protected Property to describe the uses and activities that the Grantor expects to undertake or allow to be undertaken on the Protected Property, including any restoration, enhancement, operation and maintenance, or any other activities or uses. The Grantor shall include in the Management Plan any limitations or prescriptions for these uses and activities necessary to ensure the Purpose of this Conservation Easement. The Grantor shall also identify in the Management Plan the allowable use and access by the public of the Protected Property when public access is appropriate. The Grantor shall develop the Management Plan in consultation with BPA, and relevant interested local, state, tribal, and federal resource agencies. BPA shall review that Plan and any proposed amendments for conformance with the MOA, this Conservation Easement, and applicable laws. BPA must approve the Management Plan or any amendments prior to its implementation. Prior to review of the Management Plan by BPA, the Grantor shall not undertake any ground-disturbing activities on the Protected Property without prior notice to and written approval by BPA. The Grantor shall make the final approved Management Plan, and any approved amendments, available to the public.

H. Public Access. The Grantor shall provide reasonable public access to the Protected Property unless the Grantor and BPA determine such access may materially impair one or more of the Conservation Values of the Protected Property. The Grantor will include detailed plans for public access in the Management Plan.

1. *Access for Hunting and Fishing.* Grantor may allow limited public access for purposes of hunting game animals, as defined in ORS Chapter 498, and fishing. Access for these purposes is limited to foot traffic and boat.; except as may be required by the Americans with Disabilities Act, 42 U.S.C. § 12101 *et seq.*, or other similar state or federal law; during defined times of the year as described in the Management Plan.

2. *Dog Training will not occur on this Protected Property.*

I. Annual Report. The Grantor shall annually submit a report to BPA that describes, at a minimum any: changes in real property interests (including water rights) in the Protected Property; uses or activities undertaken, in progress, or planned; violations or threatened violations of the Conservation Easement; and enforcement action taken. The Grantor shall provide the initial annual report in the fifteenth month after the closing date of the acquisition of the Protected Property, and then annually on that initial report date anniversary thereafter, unless otherwise agreed by BPA.

J. Rights Conveyed to Grantee

1. **General Rights.** The Grantor has conveyed this Conservation Easement to the United States. BPA is the acquiring federal agency having jurisdiction and control over this Conservation Easement. Subject to valid existing rights of record and those rights specifically reserved to the Grantor, all development rights

associated with the Protected Property are vested in Grantee. In addition to any other rights granted to the Grantee pursuant to this Conservation Easement, Grantee has the right to:

a. Access and inspect the Protected Property at all reasonable times upon reasonable notice (which may be by phone or electronic mail) to assure compliance with this Conservation Easement;
b. To access the Protected Property upon reasonable notice (which may be by phone or electronic mail) to survey the fish and wildlife habitat and evaluate the status of the Conservation Values;
c. Prevent any activity on the Protected Property inconsistent with this Conservation Easement, and to require the restoration of areas or features of the Protected Property that are damaged by any inconsistent activity; and
d. Should the Grantor fail to do so, to retain and maintain the right to use any and all of the water rights associated with the Protected Property, and to protect those rights from threat of abandonment or forfeiture under relevant law; Grantee may, after providing 90 days advance written notice to the Grantor enter upon the Protected Property and take actions reasonably necessary to maintain the validity of the water rights.

2. **Transmission Facilities.** The Grantor conveys the following rights to the United States of America and its assigns: to construct, locate, operate, maintain, repair, reconstruct, upgrade, keep clear, access and patrol future transmission facilities including ancillary transmission communications facilities within the Conservation Easement at no additional cost for securing the transmission easement for these purposes. Should such a perpetual transmission easement be needed, the Parties shall negotiate the final terms and conditions of the transmission easement in a form substantially similar to Exhibit E, Form Transmission Easement. Such transmission easement shall not be presumptively precluded by the terms of this Conservation Easement. The Parties shall seek to negotiate terms and conditions of the transmission easement that reflect the Purpose of this Conservation Easement, and may include mitigation measures in accordance with the MOA or as otherwise identified as part of an environmental analysis for the transmission easement under the National Environmental Policy Act, ESA, or any other applicable laws. Transmission easements shall be for the sole purpose of transmission of electrical power and ancillary communications.

K. Prohibited Uses. The Grantor shall manage the Protected Property to protect its fish and wildlife habitat on behalf of BPA, preventing any and all uses of the Protected Property that are inconsistent with the Purpose of this Conservation Easement. The Grantor may also manage the Protected Property to restore or enhance fish and wildlife habitat, provided the restoration or enhancement activities are approved by BPA, either in an approved Management Plan or by prior written approval. Prohibited uses of the Protected Property include those specifically listed below. The Parties intend that any activity that may materially harm or materially interfere with

one or more of the Conservation Values is prohibited, and therefore the list identified below is not exhaustive.

1. *Residential, Commerical or Industrial Uses*. Any residential, commerical, or industrial uses of the Protected Property is prohibited, including timber harvesting, grazing of livestock, and agricultural production.

2. *Construction of Buildings, Facilities, Fences, or Other Structures*. Construction of new buildings, facilities, fences other than wildlife-friendly boundary fences (meaning wildlife-friendly fencing techniques that allow free passage of daily wildlife movement and seasonal migration; or increase visibility to prevent entanglement and mortality), or other structures is prohibited. Repair, maintenance, or replacement of existing buildings, facilities, fences, or other structures identified in the Baseline Documentation Report are permitted at the same location and within the existing footprint of such structures.

3. *Utilities*. Except as provided for in Section J.2, the installation or relocation of new public or private utilities, including electric, telephone, or other communications services is prohibited. Existing utilities on, over, or under the Protected Property may be maintained, repaired, removed or replaced at their current location as that location is documented in the Baseline Documentation Report.

4. *Signs*. Except for "no trespassing" signs, "for sale" signs, signs identifying the owner of the Protected Property, and signs that may be erected by the Grantee identifying the Purpose of the Protected Property, all other signs, advertisements, and billboards of any nature are prohibited. The permitted signs may not exceed 15 square feet in size.

5. *Waste*. Dumping, collecting, recycling, accumulating, or storing of trash, refuse, waste, sewage, bio-solids, or other debris is prohibited.

6. *Mining*. Subject to valid existing rights, if any, held by third parties at the granting of this Conservation Easement, the exploration, development, mining or extraction of soil, sand, loam, gravel, mineral, oil, gas, or other substance from the surface or subsface of the Protected Property is prohibited. Grantor shall notify the Grantee of any planned exploration, development, mining or extraction of any substances by third parties with valid existing rights as soon as possible, and at least 60 days before commencement of the action.

7. *Topography*. Altering the existing topography of the Protected Property by digging, plowing, diking, or otherwise disturbing the surface or subsurface is prohibited except to carry out habitat restoration projects as approved in the Management Plan.

8. *Watercourses/Wetlands*. Draining, dredging, channeling, filling, leveling,

pumping, diking, impounding or any other alteration of any watercourses, ponds, seeps, bogs, springs, wetlands, or any seasonally wet area is prohibited, as is altering or tampering with existing water control structures or devices except as necessary to carry out moist-soil management as approved in the Management Plan.

9. *Vegetation.* The cutting, trimming, shaping, killing, or removal of any vegetation from the Protected Property, except for public safety concerns, control of invasive, non-native, or noxious weeds is prohibited.

10. *Exotic Species.* The introduction, cultivation, or use of exotic plant or animal species on the Protected Property is prohibited except as necessary to carry out activities approved by the Grantee, or if those activities are approved uses in the Management PlanExotic plants include non-native invasive plant species.

11. *Roads and Impervious Surfaces*. Existing roads identified in the Baseline Documentation Report and/or title report may be maintained and repaired in their current condition and within their existing footprint as identified in the report. Maintenance and repair of existing roads shall not be construed to permit the paving of any existing road not already paved or otherwise covered in an impervious material as of the date of this Conservation Easement.

12. *Vehicle Use*. The use of motorized vehicles is prohibited, except as necessary to carry out activities approved by the Grantee, or for limited, de-minimus, non-commercial recreational uses such as hunting or bird watching, if those activities are approved uses in the Management Plan.

13. *Subdivision*. The legal or "de facto" division, subdivision or partioning of the Protected Property is prohibited.

14. *Grant of Rights.* The granting of any property interest or rights in the Protected Property, including easements, permits, licenses, liens and leases, without the prior written consent of the Grantee is prohibited.

L. Permitted Uses. Grantor reserves, for itself and its successors and assigns, the right to use the Protected Property in any and all ways which fulfill the Purpose of this Conservation Easement (Section II.B) and which are not otherwise prohibited or limited by the Conservation Easement. Uses or activities otherwise prohibited under Section K above may be allowed but only if: (1) the use or activity does not materially harm or materially intefere with the Purpose of this Conservation Easement; and (2) the use or activity and any necessary limits or prescriptions are approved by BPA in advance, either in an approved Management Plan, or by written approval or written consent of BPA through a land use agreement.

M. Enforcement

1. *Notice of Violation, Corrective Action.* If Grantee determines that the Grantor or its representatives, contractors, successors, or assigns violates or threatens to violate this Conservation Easement, and if such determination or dispute is not resolved by negotiation as set forth in Section N, Grantee will give written notice to the Grantor and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Protected Property resulting from any use or activity inconsistent with the Purpose, sufficient to restore the portion of the Protected Property so injured to its prior condition in accordance with a plan approved by Grantee.

2. *Grantor's Failure to Respond.* The Grantee may bring an action as provided in Section M.3 if the Grantor fails to cure the violation within 30 calendar days after receipt of a notice of violation, or under circumstances where the violation cannot reasonably be cured within such 30-day period, fails to begin curing the violation within the 30-day period and fails to continue diligently to cure such violation until finally cured.

3. *Grantee's Action.* Grantee may pursue an action in a court having jurisdiction to enforce the terms of this Conservation Easement: (1) to enjoin the violation, ex parte as necessary, by temporary or permanent injunction; (2) to require the restoration of the Protected Property to the condition that existed prior to any such injury; and (3) to recover any damages to which it may be entitled for violation of the terms of this Conservation Easement. The remedies described in this paragraph shall be cumulative and shall be in addition to all remedies now or hereafter existing.

4. *Grantor's Action.* In the event that the Grantor seeks a determination as to the legal meaning or effect of this Conservation Easement, or as to any alleged violation hereof by Grantee, and if such determination or dispute is not resolved by negotiation set forth in Section N below, then the Grantor shall be entitled to bring judicial action in a court of competent jurisdiction.

5. *Emergency Enforcement.* Nothwithstanding the provisions of M.1 and M.2, if Grantee determines on the basis of substantial evidence that circumstances require immediate action to prevent or mitigate significant damage to one or more of the Conservation Values, Grantee may undertake reasonable actions to remove, eliminate or mitigate damages to the Protected Property. Grantee shall provide prior notice to the Grantor of such actions to the extent reasonably practicable and may seek Grantor participation in such actions, but may proceed with such actions without permission from the Grantor or without waiting for the Grantor to take any action.

N. Dispute Resolution. The Parties shall attempt in good faith to resolve any dispute arising out of or relating to this Conservation Easement by negotiation between executives or officials who have authority to settle the controversy.

O. Acts of God/Force Majeure. Nothing contained in this Conservation Easement entitles the Grantee to bring any action against the Grantor for any injury to or change in the Protected Property resulting from causes beyond the Grantor's control, including, without limitation, naturally caused fire, flood, storm, and earth movement, or from any prudent action taken by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to the Protected Property resulting from such causes. Such excuse from performance will be allowed only if such catastrophic event or other event beyond the Grantor's control has caused a substantial degradation of the Conservation Values. The Parties shall make all reasonable efforts to resume performance promptly once the force majeure is eliminated.

P. Waiver. The failure of any Party to require strict performance of any term of this Conservation Easement or a Party's waiver of performance shall not be a waiver of any future performance or of a Party's right to require strict performance in the future.

Q. Conveyance and Assignment. The Grantor may not convey the Protected Property nor assign or transfer its rights or delegate its responsibilities under this Conservation Easement without receiving prior written approval from BPA, which shall not be unreasonably withheld.

R. Termination or Amendment

1. **Termination Standard.** This Conservation Easement may be voluntarily terminated by agreement of the Parties only if:

   a) a subsequent, unexpected change in the conditions of the Protected Property or the surrounding area makes impossible the continued use of the Protected Property for the Purpose of this Conservation Easement (except that changed environmental conditions related to climate change, or other natural events, for example, wildfire, river channel migration, erosion or avulsion, shall not be grounds for termination); or

   b) BPA agrees to exchange this Protected Property for another property proposed by the Grantor; factors that BPA will consider in determining whether to agree to an exchange include whether the new property is at the time of the proposed exchange determined by BPA to supply equal or better Conservation Values to meet BPA's mitigation needs as compared with the Protected Property; whether the property will be permanently protected pursuant to a covenant or other real property interest issued to BPA on terms substantially similar to this Conservation Easement; and the costs to BPA of undertaking the acquisition of the new property, if any.

2. **Termination Process.** If the Parties agree to voluntarily terminate this Conservation Easement and have met the above termination standard, the Parties shall terminate this Conservation Easement by executing and recording an instrument appropriate for the purpose. In the event of termination through an exchange for another property, the Parties must agree on the new property and its conservation easement before this Conservation Easement will be terminated.

3. **Proceeds after any Termination.** If this Conservation Easement is terminated in whole or in part, either voluntarily by the Parties, or by involuntary extinguishment by a court of competent jurisdiction and the termination results in proceeds, BPA is entitled to either (1) a share of such proceeds in proportion to the amount BPA contributed to the fee title acquisition, which is 100% or (2) at BPA's election, to review and approve use of the proceeds by the Grantor to acquire new fish and wildlife habitat for BPA mitigation.

4. **Amendment**. This Conservation Easement may only be amended by agreement of the Parties, and any such amendment shall be properly documented, executed, and recorded. Amendments based on changed conditions may be made only when the Purpose of the Conservation Easement is impossible to achieve, and when the effect of the amendment is to benefit, or least cause no material harm to or material interference with the Conservation Values (for example, amending the Conservation Easement to place further restrictions on the use of or activities on the Protected Property). The Parties may not use amendments to impliedly terminate the Conservation Easement or remove any portion of the Protected Property from its terms, except to the extent consistent with the Purpose of the Conservaton Easement.

S. **Control.** The Grantor has ownership and control of the Protected Property and is responsible for all incidents of ownership. Such incidents of ownership include, but are not limited to, maintenance and repair of existing structures, hazardous waste response, cultural or historic resource mitigation or preservation, endangered species protection, noxious weed and invasive species response, tort liability, compliance with applicable laws, and payment of applicable taxes and assessments.

Notwithstanding anything to the contrary in this Conservation Easement, the Parties acknowledge and agree that ODFW's authority and obligation to make any payment, grant any warranty, or incur any expense required to be made or undertaken by ODFW for the duration of this Conservation Easement is contingent on ODFW receiving funding as provided in the MOA, Section II. (Commitments for Wildlife Mitigation) G. (BPA Funding of Wildlife Mitigation Projects). If ODFW is unable to discharge its obligations under the Conservation Easement due to lack of funding, appropriations, limitations, allotments, or other expenditure authority, BPA, after notice to ODFW, may, but is not required to, discharge the obligation and if BPA does so, ODFW shall reimburse BPA for BPA's actual costs incurred in discharging the obligation if ODFW receives funding, appropriations, grant funds, expenditure limitations, allotments, or other expenditure authority sufficient to allow ODFW, in

the exercise of its reasonable administrative discretion, to provide such reimbursement. Nothing in this Agreement is to be construed as permitting any violation of Article XI, section 7 of the Oregon Constitution or any other law regulating liabilities or monetary obligations of the State of Oregon.

T. **Hazardous Substances.** To the best of the Grantor's knowledge, there are no hazardous substances present in, on, or under the Protected Property, including without limitation, in the soil, air, or groundwater, and there is no pending or threatened investigation or remedial action by any governmental agency regarding the release of hazardous substances or the violation of any environmental law on the Protected Property, and that there are no underground storage tanks located on the Protected Property. If, at any time, there occurs, or has occurred a release in, on, or about the Protected Property of any hazardous substances, the Grantor agrees to take all steps necessary to assure its containment and remediation without cost to Grantee, including any cleanup that may be required, unless the release was caused by Grantee, in which case Grantee will be responsible for remediation in accordance with applicable law. Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in Grantee to exercise physical or managerial control over the day-to-day operations of the Protected Property, or any of the Grantor's activities on the Protected Property, or otherwise become an operator with respect to the Protected Property within the meaning of the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended ("**CERCLA**"). To the extent permitted by Article XI, Section 7 of the Oregon Constitution, and subject to the limits of the Oregon Tort Claims Act, ORS 30.260 through 30.300, Grantor specifically agrees to release and hold harmless Grantee from and against all liabilities for violations or alleged violations of, or other failure to comply with, any federal state or local environmental law or regulation relating to hazardous substances, including, without limitation, CERCLA, by the Grantor in any way affecting, involving, or relating to the Protected Property, except to the extent such violations or alleged violations are caused by the acts or omissions of Grantee.

U. **Notice.** Any notice permitted or required by this Conservation Easement, unless otherwise specified, must be in writing, delivered personally to the persons listed below, or will be deemed given on the date deposited in the United States mail, certified and postage prepaid, return receipt requested and addressed as follows, or at such other address as any Party may from time to time specify to the other Party in writing. Notices may be delivered by facsimile or other electronic means, provided that they are also delivered personally or by certified mail. The addresses listed below can be modified at any time through written notification to the other Party.

Notices to the Grantor should be sent to:

Manager
Realty Section
Oregon Department of Fish and Wildlife
4034 Fairview Industrial Drive SE
Salem, OR 97302

Notices to BPA should be sent to:

Director, Fish & Wildlife Program Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208-3621

and to BPA's Real Property Services:

Manager, Real Property Services
RE: WILWF-WL-11
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208-3621

V. **Effective Date**. This Conservation Easement vests when signed by the Grantor, and accepted by the Grantee.

W. **Schedule of Exhibits.** All exhibits referenced in this Conservation Easement are attached and incorporated by reference.

Exhibit A—Legal Description Including Water Rights
Exhibit B—Map
Exhibit C—Aerial Photo
Exhibit D—Acknowledgment and Approval of the Baseline Documentation Report
Exhibit E—Form Transmission Easement
Exhibit F—Title Encumbrances

X. GRANT, COVENANTS AND WARRANTIES, SIGNATURE AND ACKNOWLEDGMENTS

To have and to hold the Conservation Easement herein granted unto the United States of America and its assigns.

The Grantor warrants and covenants to and with the United States that the Grantor is lawfully seized and possessed of the Protected Property in fee simple, with a good and lawful right to grant the same, including a good and lawful right to grant this Conservation Easement; that the Protected Property is free and clear of all encumbrances and restrictions except the encumbrances and restrictions specifically set forth in Exhibit F, attached and incorporated by reference; that the United States and its assigns shall have the use of and enjoy all the benefits derived from and arising out of this Conservation Easement; and that the Grantor shall at the request of the United States execute or obtain any reasonable further assurances of the title to the Property; and that the Grantor will forever warrant the title to the Property and defend the United States against all persons who claim a lawful interest in the Property, except for persons who claim interests under the exceptions described in Exhibit F.

IN WITNESS WHEREOF, the undersigned Grantor has executed this instrument this 25th day of September, 2013.

Grantor, State of Oregon Fish and Wildlife Commission on behalf of the Oregon Department of Fish and Wildlife

NAME Debbie Colbert
TITLE Deputy Director for Administration, ODFW

Grantee, United States of America

Shelley Fenton
Supervisory Realty Specialist
Real Property Field Services
Bonneville Power Administration

9/23/13
Date

ACKNOWLEDGMENT

STATE OF OREGON)
) ss.
County of LINCOLN)

On this 25TH day of SEPTEMBER, 2013, before me personally appeared DEBBIE COLBERT, known to me or proved to me on the basis of satisfactory evidence to be the person who executed the within instrument as the DEPUTY DIRECTOR FOR ADMINISTRATION, OREGON DEPARTMENT OF FISH AND WILDLIFE acknowledged to me that S he executed the same freely and voluntarily in such capacity; and on oath stated that S he was authorized to execute said instrument in such official or representative capacity.

Signature

SUSAN K GRABOWSKI
Print Name

OFFICIAL SEAL
SUSAN K GRABOWSKI
NOTARY PUBLIC - OREGON
COMMISSION NO. 469734
MY COMMISSION EXPIRES JULY 30, 2016

Notary Public in and for the
State of OREGON

(SEAL)

Residing at 25234 ARCANE AVENUE
VENETA, OR 97487

My commission expires 07-30-2016

ACKNOWLEDGMENT

STATE OF Oregon)
) ss.
County of Multnomah)

On this 23 day of September, 2013, before me personally appeared Shelley N. Fenton, known to me or proved to me on the basis of satisfactory evidence to be the person who executed the within instrument as the Supervisory Realty Specialist, Real Property Field Services acknowledged to me that she executed the same freely and voluntarily in such capacity; and on oath stated that she was authorized to execute said instrument in such official or representative capacity.

OFFICIAL SEAL
HEIDI MARIE HASEROT
NOTARY PUBLIC - OREGON
COMMISSION NO. 447094
MY COMMISSION EXPIRES MARCH 02, 2014

Heidi M. Haserot
Signature

Heidi M. Haserot
Print Name

Notary Public in and for the
State of Oregon

(SEAL) Residing at Lake Oswego

My commission expires March 02, 2014

Exhibit A—Legal Description

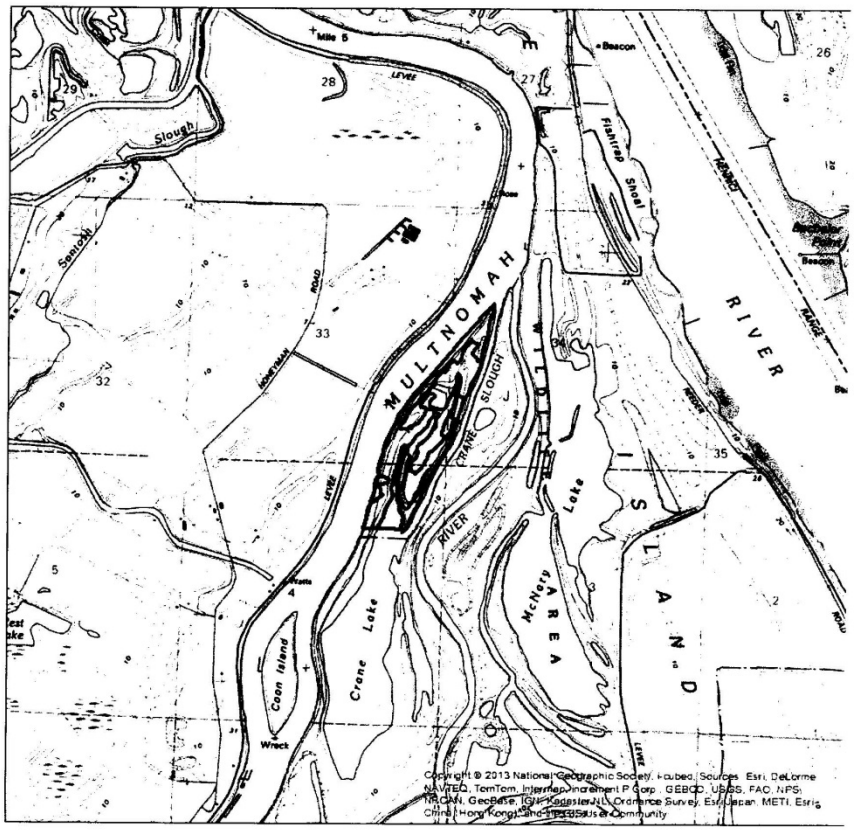
Parcel 1: Government lot 9, in Section 33, Township 4 North, Range 1 West of the Willamette Meridian, Columbia County, Oregon.

Parcel 2: Beginning at a point in the center of Crain Slough, being approximately 85 feet West of the Southwest corner of Section 34, Township 4 North, Range 1 West, Willamette Meridian, Columbia County, Oregon; thence West approximately 1235 feet on the South line of Section 33, Township 4 North, Range 1 West, to the meander line of the Willamette Slough; thence Southerly up the East bank of the Willamette Slough to the Southwest corner of Government Lot 10, in Section 4, Township 3 North, Range 1 West; thence East approximately 940 feet following the South line of said Lot 10, to the center of Crain Slough; thence Northerly down the center of said Crain Slough to the point of beginning.

Parcel 3: Beginning at a point in the center of Crain Slough, being approximately 85 feet West of the Southwest corner of Section 34, Township 4 North, Range 1 West of the Willamette Meridian, Columbia County, Oregon; thence running Northeasterly down the center line of said Crain Slough to a point in the meander line of said Willamette Slough; thence Southerly up the East bank of the Willamette Slough approximately 1600 feet to the meander corner between Sections 33 and 34; thence South on the line dividing Sections 33 and 34 to the place of beginning; being part of Lots 2,3,4 all in Section 34, Township 4 North, Range 1 West, Willamette Meridian, Columbia County, Oregon.

Exhibit B—Map

USGS 7.5 minute Quadrangle
Flight's End Conservation Easement



OREGON Fish & Wildlife

0 0.25 0.5 1 Miles

Basemap: USA Topographic USGS 7.5 minute Quadrangle

Exhibit C—Aerial Photo

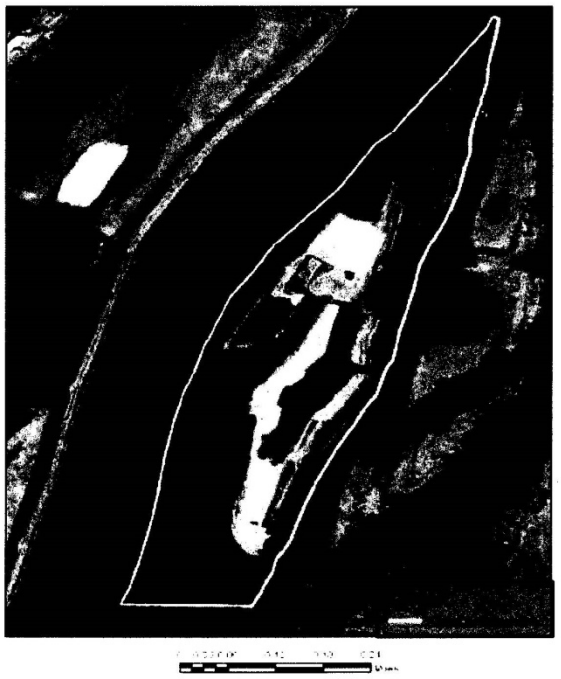


Exhibit D—Acknowledgment and Approval of the Baseline Documentation Report

ACCEPTANCE AND ACKNOWLEDGEMENT

OF

BASELINE DOCUMENTATION

The undersigned hereby acknowledges and agrees that the Baseline Documentation for the Flights End Conservation Easement in Columbia County, Oregon, prepared by Oregon Department of Fish and Wildlife and dated June 2013, is an accurate representation of the biological, physical and historical conditions of the subject property as of the date of grant of the Easement. All of the undersigned parties have received copies of the Baseline Documentation.

State of Oregon Fish and Wildlife Commission, on behalf of the Oregon Department of Fish and Wildlife

By: [NAME] Debbie Colbert
Its: [TITLE] Deputy Director for Administration ODFW

9/25/13
Date

Bonneville Power Administration:

Shelley Fenton
Supervisory Realty Specialist
Real Property Field Services
Bonneville Power Administration

9/23/13
Date

Exhibit E—Form Transmission Easement

AFTER RECORDING, RETURN TO **Bonneville Power Administration** **TERS-3** **P.O. BOX 3621** **PORTLAND, OR 97208-3621**

Legal description: A portion of the of Section , Township , Range , .M., County, , as described in Exhibit(s) . (Affects Tax Account No. .)

BPA Tract No(s):

U.S. DEPARTMENT OF ENERGY-BONNEVILLE POWER ADMINISTRATION

EXCLUSIVE EASEMENT
Transmission Line and Danger Trees

THIS AGREEMENT, made between the State of Oregon, the Grantor, and the UNITED STATES OF AMERICA, Department of Energy, Bonneville Power Administration (Grantee), pursuant to the Bonneville Project Act, of August 20, 1937, as amended, 16 U.S.C. §§ 832 et seq.; the Federal Columbia River Transmission System Act of October 18, 1974, as amended, 16 U.S.C. §§ 838 et seq; the Department of Energy Organization Act, of August 4, 1977, as amended, 42 U.S.C. § 7152; and the Pacific Northwest Electric Power Planning and Conservation Act, of December 5, 1980, as amended 16 U.S.C. §§ 839 et seq,

WITNESSETH:

That the parties hereto covenant and agree as follows:

The Grantor, for and in consideration of the sum of the funding Grantee provided to the Grantor to acquire fee title and the provisions contained in this agreement, hereby grants and conveys to the United States of America a perpetual easement and right-of-way for electric power transmission purposes in, upon, over and under the following described land (Easement Area), to-wit:

As described in Exhibit(s) , attached hereto and by this reference made a part hereof.

The grant shall include the right to enter and to locate, construct, operate, maintain, repair, reconstruct, upgrade, remove and patrol one or more lines of poles or structures and appurtenances thereto, supporting conductors of one or more electric circuits of any voltage (collectively "Transmission Facilities") and any communication

lines or equipment and appurtenances thereto (collectively "Communication Facilities"), together with the present and future right to clear the Easement Area and to keep it clear of all trees, shrubs, brush and other vegetation (collectively "Vegetation"), structures, above and below ground improvements or infrastructures, and fire and electrical hazards. All Vegetation, structures, and fire and electrical hazards presently within the Easement Area shall become the property of the United States on the date of acceptance hereof and may be disposed of by the United States in any manner it deems suitable.

The Grantor also hereby grants and conveys to the United States the present and future right to top, limb, or fell, and to remove, sell, burn, or otherwise dispose of "Danger Trees" located on Grantor's land adjacent to said Easement Area. A Danger Tree is any growing or dead tree, or snag, whether stable or unstable, which the United States at any time determines (1) could within a five-year period fall, bend or swing (a) within 25 feet of the Transmission Facilities or Communication Facilities or (b) within electrical arcing distance of said Facilities; or (2) could interfere with the construction, operation and maintenance of said lines and equipment.

The Grantor covenants to and with the United States and its assigns that the title to (1) Vegetation cut or hereinafter growing within said Easement Area and (2) to all Danger Trees identified, now or in the future, or cut from Grantor's land adjacent to said Easement Area is and shall be vested in the United States and its assigns; and that the consideration paid for conveying said easement and rights herein described is accepted as full compensation for all damages incidental to the exercise of any said rights. At the United States' election title to Danger Trees may revert to the Grantor.

The Grantor also agrees that prior to undertaking any activity (including, but not limited to, building a structure, placing any manmade item, planting, digging, earth-moving, burning, piling or storing materials) within the Easement Area, the Grantor agrees to contact the Grantee to seek a determination from Grantee as to whether the proposed activity is safe and compatible with Grantee's use, and does not interfere with Grantee's current or future needs. The Grantor will not proceed with any proposed activity within the Easement Area without written consent from Grantee.

In addition to the consideration paid hereunder, the United States shall repair or make compensation only for damage caused by the United States that is not incidental to the exercise of any of the above said rights and which results from and during construction, reconstruction, removal, or maintenance activities associated with the purposes of this agreement on and adjacent to the Easement Area. Payment for such damage shall be made on the basis of a damage estimate approved by the United States.

The rights granted herein are subject to easements of record and mineral rights of third parties.

The Grantor agrees to satisfy of record such encumbrances, including taxes and assessments, as may be required by the United States and to obtain such curative documents as may be requested by the United States.

The United States shall pay all costs incidental to the preparation and recordation of this instrument and for the procurement of any title report and title insurance that it may require.

The Grantor covenants to and with the United States that the Grantor is lawfully seized and possessed of the land aforesaid, with a good and lawful right and power to sell and convey the same; that the land is free and clear of encumbrances, except as herein provided; and that the Grantor will forever warrant and defend the title to the rights granted herein and the quiet possession thereof against the lawful claims and demands of all persons whomsoever.

The provisions hereof shall inure to the benefit of and be binding upon the heirs, executors, administrators, successors, and assigns of the Grantor and upon the assigns of the United States.

Grantor

_____
Name

Accepted By The United States of America

_____
Name
Manager, Real Property Field Services
Bonneville Power Administration

_____
Date

Exhibit F—Title Encumbrances

The rights of the public and governmental bodies for fishing, navigation and commerce in and to any portion of the Land herein described, lying below the high water line of the Willamette Slough and Crain Slough

Any adverse claim based upon the assertion that:
(a) Said Land or any part thereof is now or at any time has been below the highest of the high watermarks of Willamette Slough and Crain Slough in the event the boundary of said Willamette Slough and Crain Slough has been artificially raised or is now or at any time has been below the high watermark, if said Willamette Slough and Crain Slough is in the natural state.
(b) Some portion of said Land has been created by artificial means or has accreted to such portion so created.
(c) Some portion of said Land has been brought within the boundaries thereof by an avulsive movement of Willamette Slough and Crain Slough, or has been formed by accretion to any such portion

APPENDIX 2

PROPERTY LEGAL DESCRIPTION

SUBJECT LEGAL DESCRIPTION

ACCOUNT NUMBER: 4912

MAP TAXLOT: 3N1W04-00-00101

Beginning at a point in the center of Crain Slough being approximately 85 feet West of the Southwest corner of Section 34, Township 4 North, Range 1 West, Willamette Meridian, Columbia County, Oregon; thence West approximately 1235 feet on South line of Section 33, Township 4 North, Range 1 West, to the meander line of the Willamette Slough; thence Southerly up the East bank of the Willamette Slough to the Southwest corner of Lot 10, in Section 4, Township 3 North, Range 1 West; thence East approximately 940 feet following the South line of said Lot 10, to the center of Crain Slough; thence Northerly down the center of said Crain Slough to the point of beginning.

ACCOUNT NUMBER: 4944

MAP TAXLOT: 4N1W33-00-00600

Lot 9, in Section 33, Township 4 North, Range 1 West of the Willamette Meridian, Columbia County, Oregon.

ACCOUNT NUMBER: 4946

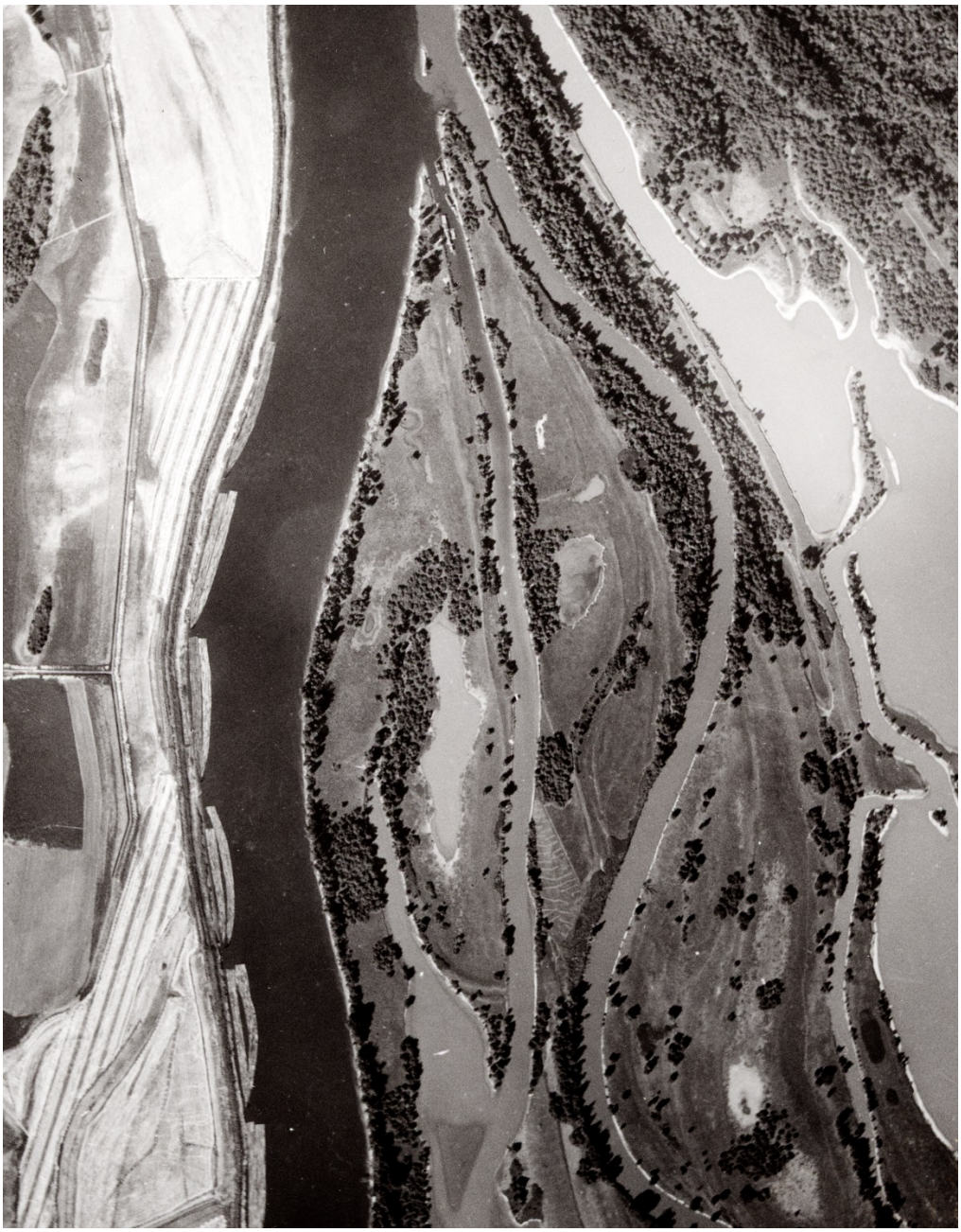
MAP TAXLOT: 4N1W34-00-00200

Beginning at a point in the center of Crain Slough being approximately 85 feet West of the Southwest corner of Section 34, Township 4 North, Range 1 West of the Willamette Meridian, Columbia County, Oregon; thence running Northeasterly down the center line of said Crain Slough to a point in the meander line of said Willamette Slough; thence Southerly up the East bank of the Willamette Slough approximately 1600 feet to meander corner between Sections 33 and 34; thence South on line dividing Sections 33 and 34 to the place of beginning; being part of Lots 2, 3, 4 all in Section 34, Township 4 North, Range 1 West, Willamette Meridian, Columbia County, Oregon.

APPENDIX 3

HISTORICAL AERIAL PHOTOS

Flight's End - 1929



Imagery: US Army Corps of Engineers

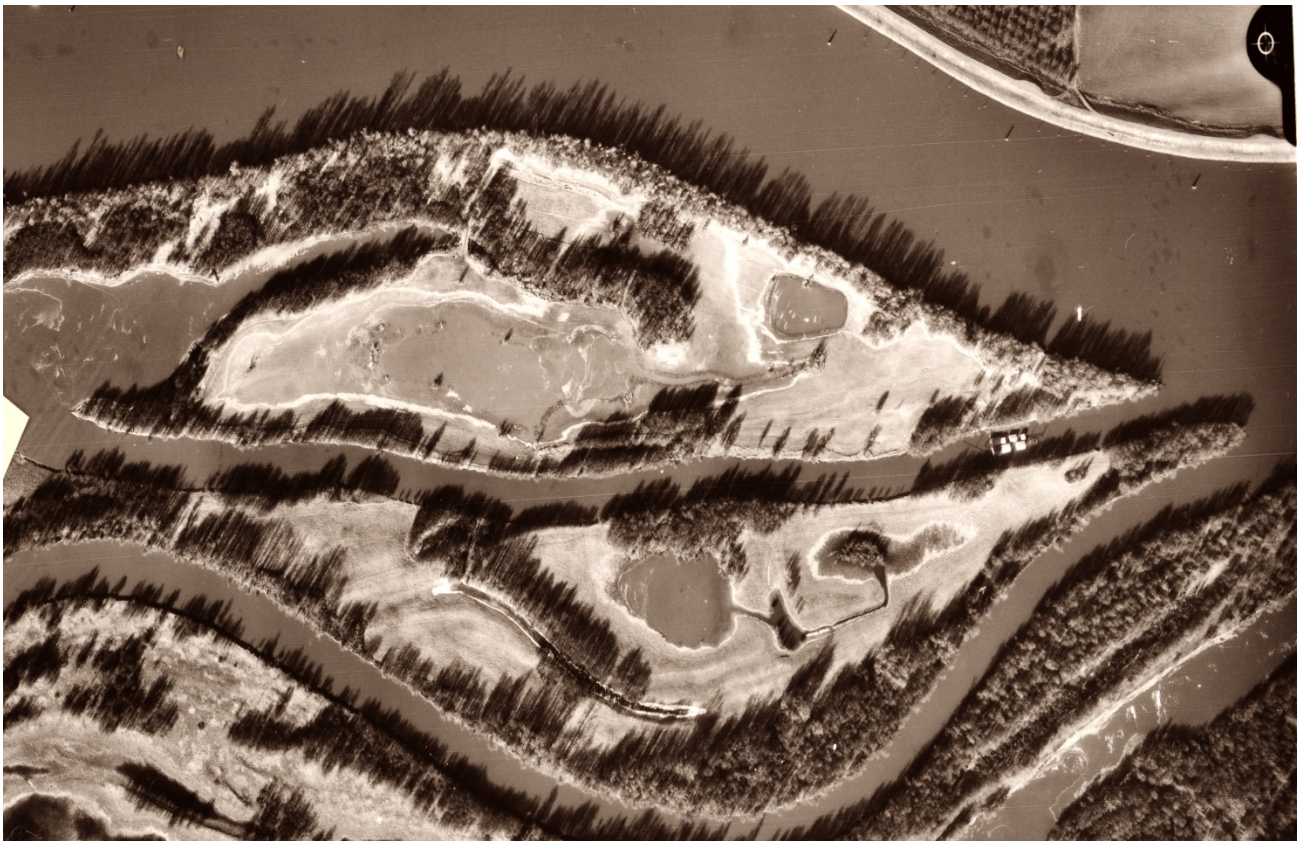
Flight's End - 1948

Imagery: US Army Corps of Engineers

Flight's End - 1963

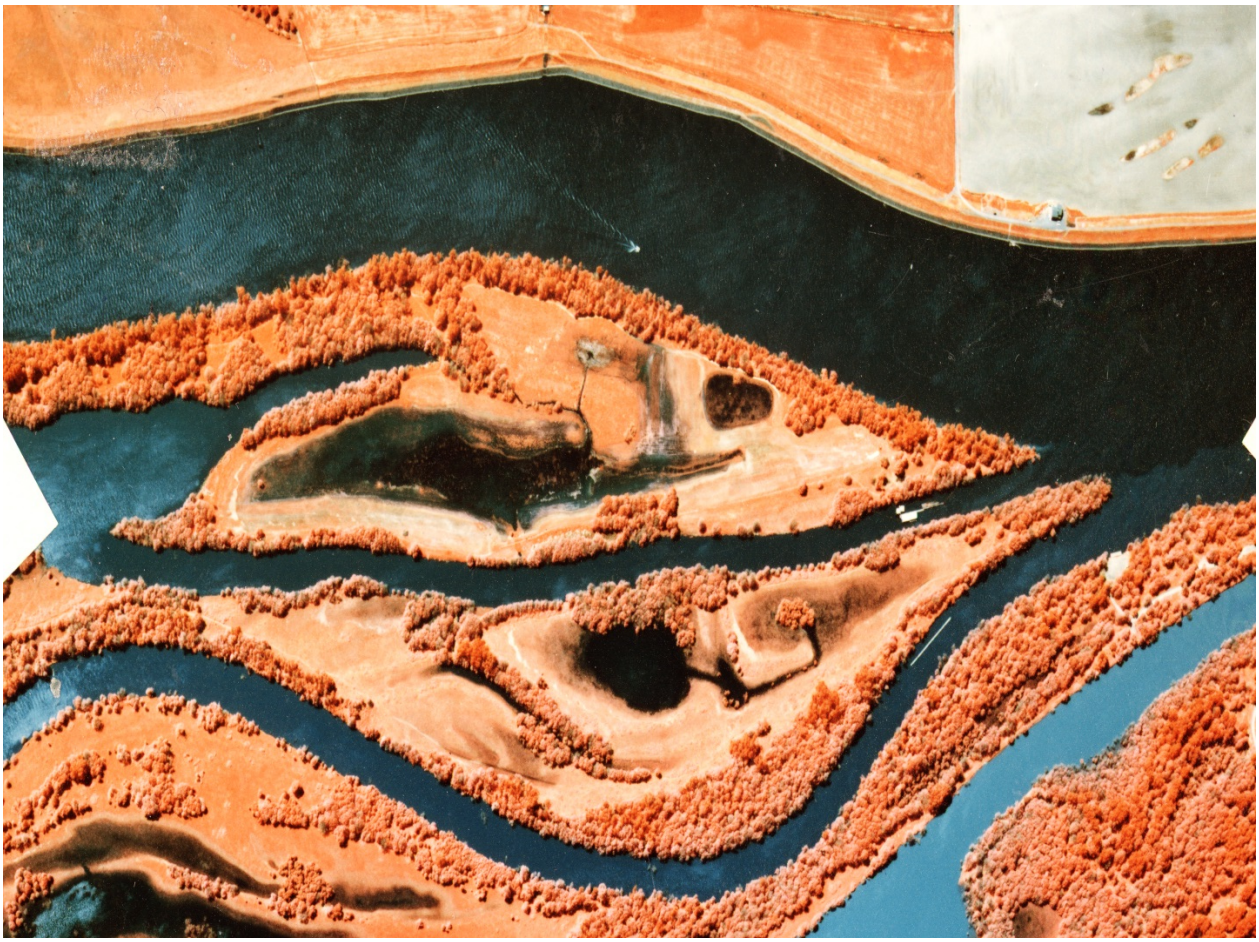
Imagery: US Army Corps of Engineers

Flight's End – 1980



Imagery: US Army Corps of Engineers

Flight's End – 1991



Imagery: US Army Corps of Engineers

APPENDIX 4

PLANT SPECIES INVENTORY
SAUVIE ISLAND WILDLIFE AREA

Plant Species Known

to Occur on the Sauvie Island Wildlife Area

ACERACEAE
Big leaf maple *(Acer macrophyllum)*

ALISMATACEAE
American water plantain *(Alisma subcordatum)*
Narrowleaf / Lanceleaf water plantain *(Alisma lanceolatum1)*
Northern waterplantain *(Alisma triviale)*
Wapato, Arrowhead *(Sagitaria latifolia)*

ANACARDIACEAE
Poison oak *(Toxicodendron diversiloba)*

APIACEAE
Wild carrot *(Daucus carota)*
Cow parsnip *(Heracleum lanatum)*
Water parsley *(Oenanthe sarmentosa)*

APOCYNACEAE
Common dogbane *(Apocynum cannibinum)*

AQUIFOLIACEAE
Holly *(Llex aquifolium)*

ARALIACEAE
Ivy *(Hedera helix)*

ASTERACEAE
Big devils's beggarticks *(Bidens cernua)*
False dandelion *(Hypochaeris radicata)*
Leafy beggarticks *(Bidens frondosa)*
Lowland cudweed *(Gnaphalium palustre)*
Nodding beggarticks *(Bidens cernua)*
Oxe-eye daisy *(Leucanthemum vulgare)*
Pearly everlasting *(Anaphalis margaritaceae)*
Purple cudweed *(Gnaphalium purpureum)*
Canada thistle *(Cirsium arvonso)*
Bullthistle *(Cirslum vulgare)*
Prickly lettuce *(Lactuca serriola)*
Common dandelion *(Taraxacum officinale)*
Smooth hawksbeard *(Crepis capillaris)*
Tarweed *(Madia sativa)*
Tansy ragwort *(Senecio jacobaea)*

BERBERIDACEAE
Oregon-grape *(Berberis aquifolium)*

BETULACEAE
Beaked hazelnut *(Corylus cornuta)*
Common filbert *(Corylus avellena)*
Red alder *(Alnus rubra)*

BRASSICACEAE
Wintercress *(Barbarea orthoceras)*
Wild radish *(Raphanus sativus)*

CARYOPHYLLACEAE
Chickweed *(Cerastium glomeratum)*
Chickweed *(Stellaria media)*
Coontail *(Ceratophyllum demersum)*

CAPRIFOLIACEAE
Common snowberry *(Symphoricarpos albus)*
Red elderberry *(Sambucus racemosa)*

CORNACEAE
Red-osier dogwood (*Cornus sericea*)

CYPERACEAE
Dense sedge *(Carex densa)*
Green-sheath sedge *(Carex feta)*
Slough sedge *(Carex obnupta)*
Ross' sedge *(Carex rossii)*
Pointed broom sedge *(Carex scoparia)*
One-sided sedge *(Carex unilateralis)*
Red-rooted flatsedge *(Cyperus erythrorhizos)*
Common spike-rush *(Eleocharis obtuse)*

DIPSACACEAE
Teasel *(Dipsacus fullonum)*

ERICACEAE
Pacific madrone *(Arbutus menziesii)*

EQUISETACEAE
Field horsetail *(Equisetum arvense)*

FABACEAE
White clover *(Trifolium repens)*
Red clover *(Trifolium pretense)*
Hairy vetch *(Vicia hirsuta)*
Birds-foot trefoil *(Lotus cornculatus)*

FAGACEAE
Oregon white oak *(Quercus garryana)*

GROSSULARIACEAE
Gooseberry *(Ribes divaricatum)*

HALORAGIDACEAE
Variable leaf milfoil *(Myriophyllum aquaticum)*
Eurasian water milfoil *(Myriophyllum spicatum)*
Whorled water milfoil *(Myriophyllum verticulatum)*

IRIDACEAE
Flag Iris (*Iris pseudocorus*)

JUNCAGINACEAE
Sharp fruited rush (J*uncus acuminatus*)
Bolander's rush (*Juncus bolanderi*)
Toad rush (*Juncus bufonius*)
Soft rush (*Juncus effusus*)
Daggerleaf rush (*Juncus ensifolius*)
Grass-leaf rush (*Juncus marginatus*)
Nevada rush (*Juncus nevadensis*)
Pointed rush (*Juncus oxymeris*)
Spreading rush (*Juncus patens*)
Slender rush (*Juncus tenuis*)

LAMIACEAE
Pennyroyal (M*entha pulegium*)
Self-heal *(Prunella vulgaris)*

LEMNACEAE
Common duckweed *(Lemna minor)*

LILIACEAE
Common camas (C*amassia quamash*)

LYTHRACEAE
Purple loosestrife *(Lythrum salicaria)*

OLEACEAE
Oregon ash *(Fraxinus latifolia)*

ONAGRACEAE
Hairy willow-herb (*Epilobium cilatum*)
False loose-strife (*Ludwigia palustris*)
Autumn willow-herb (*Epilobium brachycarpum*)
Fireweed *(Epilobium anguatifolium)*

PAPAVERACEAE
California poppy (*Eschscholzia californica*)

POACEAE
European sliver hairgrass *(Aira caryophylla)*
Sweet vernal grass *(Anthoxanthum odoratum)*
Western mannagrass *(Glyceria occidentalis)*
Velvet grass *(Holcus lanatus)*
Meadow barley *(Hordeum brachyantherum)*
Knot grass *(Paspalum distichum)*
Reed canarygrass *(Phalaris arundinacea)*
Barnyard grass *(Echinochloa crus-galli)*
Tufted hairgrass *(Deschampsia cespitosa)*
Tall fescue *(Festuca arundinacea)*

POLEMONIACEAE
Needle-leaf navarretia *(Nararretia intertexa)*

POLYGONACEAE
Water smartweed (P*olygonum amphibium*)
Oval-leaf knotweed (P*olygonum arenastrum*)
Knotweed (P*olygonum coccineum*)
Black bindweed (P*olygonum convolvulus)*
Japanese knotweed (P*olygonum cuspidatum)*
Douglas' knotweed (P*olygonum douglasii)*
Marshpepper smartweed (P*olygonum hydropiperoides)*
Curlytop knotweed (P*olygonum lapathifolium)*
Heartweed (P*olygonum persicaria)*
Sheep sorrel *(Rumex acetosella)*

POLYPODIACEAE
Lady fern *(Athyrium felix-femina*
Licorice fern *(Polypodium glycirriza)*
Sword fern *(Polystichum munitum)*

POTAMOGETONACEAE
Curly pondweed *(Potamageton crispus)*

Ribon-leaf pondweed *(Potamageton epihydrus)*
Sage pondweed *(Potamageton pectinatus)*

RANUNCULACEAE
Western buttercup *(Ranunculus occidentalis)*

RHAMNACEAE
Cascara *(Rhamnus purshiana)*

ROSACEAE
AngloAmerican hawthorn *(Crataegus monogyna x susdorfii)*
Bird cherry *(Prunus avium)*
English hawthorn *(Crataegus laevigata)*
Evergreen blackberry *(Rubus laciniatus)*
European mountain ash *(Sorbus aucuparia)*
Himalayan blackberry *(Rubus armeniacus)*
Multiflora rose *(Rosa multiflora)*
Nootka rose *(Rosa nutkana)*
Oregon avens (*Geum macrophyllum*)
Osoberry *(Oemleria cerasiformis)*
Suksdorf's hawthorn *(Crataegus suksdorfii)*
Spirea, hard hack *(Spiraea douglasii)*
Serviceberry *(Amelanchier alnifolia)*
Thimbleberry *(Rubus parviflorus)*
Western crabapple *(Malus fusca)*
Wild strawberry *(Fragaria vesca)*

RUBIACEAE
Catchweed bedstraw (*Galium aparine*)

SALICACEAE
Columbia rivier willow *(Salix fluviatilis)*
Cottonwood *(Populus trichocarpa)*
Scouler's willow *(Salix scouleriana)*
Northwest willow *(Salix sessifolia)*
Sitka willow *(Salix sitchensis)*
Pacific willow *(Salix lucida)*

SAXIFRAGACEAE
Fringecup *(Tellima grandiflora)*

SOLANACEAE
Climbing nightshade *(Solanum dulcamara)*

SPARGANIACEAE
Simplestem bur-reed *(Sparganium emersum)*

TAXACEAE
Western red-cedar *(Thuja plicata)*

TYPHACEAE
Narrow-leaf cattail *(Typha angustifolia)*
Cattail (*Typha latifolia)*

URTICACEAE
Stinging nettle *(Urtica dioica)*

APPENDIX 5

WILDLIFE SPECIES KNOWN TO OCCUR ON SAUVIE ISLAND WILDLIFE AREA

Wildlife Species Known to Occur

on Sauvie Island Wildlife Area.

Birds

Symbols

S -	March – May	C - Common
S -	June – August	R – Rare
F -	September – November	U – Uncommon
W -	December - February	A - Accidental
# -	Threatened or Endangered Species	O - Occasional
*	Breeds locally	

	SEASON			
Loons and Grebes	**S**	**S**	**F**	**W**
Red-throated Loon	R		R	O
Pacific Loon	R		R	O
Common Loon	R		R	O
Pied-billed Grebe*	C	C	C	C
Horned Grebe	O		O	R
Red-necked Grebe				A
Eared Grebe	O		O	O
Western Grebe	O	O	O	O
Clark's Grebe	O	O	O	O

Pelicans and Cormorants	**S**	**S**	**F**	**W**
American White Pelican	R	R	R	R
Brown Pelican	A	A	A	
Double-crested Cormorant	C	O	C	C

Bitterns, Herons and Ibis	**S**	**S**	**F**	**W**
American Bittern	C	U	U	O
Black-crowned Night Heron	R	R	R	R
Green Heron*	U	U	U	R
Cattle Egret			R	R
Snowy Egret			R	
Great Egret	U	U	U	U
Great Blue Heron*	C	C	C	C
White-faced Ibis				A

Waterfowl	**S**	**S**	**F**	**W**
Tundra Swan	U	R	U	C
Trumpeter Swan	R	R	R	R
Greater White-fronted Goose	U	R	U	O

Snow Goose	O		O	U
Ross's Goose				R
Emperor Goose			R	R
Canada Goose	C	U	C	C
Cackling Goose	C		C	C
Brant	O	O	O	
Wood Duck*	C	C	U	U
Mallard*	C	C	C	C
American Black Duck				A
Gadwall*	U	O	U	U
Green-winged Teal	C	U	C	C
American Wigeon	C	U	C	C
Eurasian Wigeon	O		O	O
Northern Pintail*	C	U	C	C
Baikal Teal				A
Northern Shoveler*	C	O	C	C
Blue-winged Teal*	R	R	R	R
Cinnamon Teal*	U	C	U	O
Canvasback	O		O	O
Redhead				O
Ring-necked Duck	C		U	C
Greater Scaup	O		O	O
Lesser Scaup	C	R	U	C
Black Scoter				A
White-winged Scoter			A	A
Surf Scoter				A
Harlequin Duck	R	R		
Long-tailed Duck				A
Barrow's Goldeneye				R
Common Goldeneye				U
Common Merganser	U		O	U
Red-breasted Merganser	R	R		R
Hooded Merganser*	U	O	O	O
Ruddy Duck	U	O	U	U
Bufflehead	U		U	U

Raptors	**S**	**S**	**F**	**W**
Turkey Vulture*	U	U	O	R
Osprey*	U	U	U	R
White-tailed Kite	R		R	
Northern Harrier*	C	U	C	C
Golden Eagle	R	R		R
Bald Eagle*	U	O	C	U
Sharp-shinned Hawk	U	U	U	U
Cooper's Hawk*	O	O	O	O
Northern Goshawk	R			R
Red-shouldered Hawk				A
Red-tailed Hawk*	C	C	C	C
Swainson's Hawk	A		A	
Rough-legged Hawk	O		O	U

Ferruginous Hawk	A			A
American Kestrel*	C	C	C	C
Merlin	O	O	O	O
Prairie Falcon	R	R	R	R
Peregrine Falcon		O	O	O
Gyrfalcon				A

Gallinaceous Birds	**S**	**S**	**F**	**W**
Ring-necked Pheasant*	U	O	U	U
Ruffed Grouse	O	O	O	O
Bobwhite	O	O	O	O
California Quail*	R	R	R	R
Chukar	O	O	O	O

Rails, Coots and Cranes	**S**	**S**	**F**	**W**
Virginia Rail*	U	U	O	O
Sora*	U	U	R	R
Common Moorhen	A			
American Coot*	C	C	C	C
Sandhill Crane	C	R	C	O

Shorebirds	**S**	**S**	**F**	**W**
Black-bellied Plover			R	R
Pacific Golden Plover			A	
Semipalmated Plover		O	O	O
Killdeer*	C	C	C	C
American Avocet		A	A	
Black-necked Stilt	A			
Greater Yellowlegs	O	O	U	O
Lesser Yellowlegs	U	O	U	
Solitary Sandpiper	R	R	R	
Spotted Sandpiper	O	O	O	
Whimbrel		O		
Long-billed Curlew		A		
Marbled Godwit		A	A	
Sanderling		A	A	
Semipalmated Sandpiper			A	
Western Sandpiper	U	U	U	
Least Sandpiper	U	U	U	O
Baird’s Sandpiper	R		R	
Pectoral Sandpiper			O	
Willet	O		O	
Sharp-tailed Sandpiper				A
Dunlin	U		U	U
Stilt Sandpiper				A
Buff-breasted Sandpiper				A
Ruff				A
Short-billed Dowitcher				U
Long-billed Dowitcher	U	U	U	O
Wilson’s Snipe*	U	O	U	C

Wilson's Phalarope	O	R	O	
Red-necked Phalarope	A	A	A	
Red Phalarope	R		R	

Gulls and Terns	**S**	**S**	**F**	**W**
Parasitic Jaeger			A	
Franklin's Gull	A	A	A	A
Bonaparte's Gull	O	R	O	R
Ring-billed Gull	C	U	U	C
Mew Gull	U	O	O	C
California Gull	C	O	U	C
Herring Gull	U		O	U
Glaucous Gull	R			O
Thayer's Gull	O		O	U
Western Gull	O	O	U	U
Glaucous-winged Gull	C	O	U	C
Slaty-backed Gull				A
Sabine's Gull			A	A
Black-legged Kittiwake			A	
Caspian Gull	O	O	O	
Forster's Tern			A	
Common Tern	A		A	
Arctic Tern	A		A	
Black Tern	A			

Doves and Cuckoos	**S**	**S**	**F**	**W**
Band-tailed Pigeon	O	O	O	O
Eurasian-collared Dove*	O	O	O	O
Rock Dove*	C	C	C	C
Mourning Dove*	U	C	U	O
Yellow-billed Cuckoo			A	

Owls	**S**	**S**	**F**	**W**
Barn Owl*	O	O	O	O
Short-eared Owl	O		O	O
Long-eared Owl	R	R	R	R
Great Horned Owl*	U	U	U	U
Snowy Owl			R	R
Western Screech-Owl*	U	U	U	O
Northern Pygmy-Owl	O	O	O	O
Northern Saw-whet Owl	A	A	A	A
Northern Hawk-Owl				A
Burrowing Owl	A	A	A	
Barred Owl			A	

Nighthawks and Swifts	**S**	**S**	**F**	**W**
Common Nighthawk			O	O
Vaux's Swift*	U	U	O	

Hummingbirds	**S**	**S**	**F**	**W**
Anna's Hummingbird	C	C	C	C
Rufous Hummingbird*	C	C	U	

Kingfishers	**S**	**S**	**F**	**W**
Belted Kingfisher*	U	C	U	U

Woodpeckers	**S**	**S**	**F**	**W**
Acorn Woodpecker	A	A	A	A
Lewis's Woodpecker	O		R	R
Northern Flicker*	C	C	C	C
Red-breasted Sapsucker*	O	O	O	O
Downy Woodpecker*	C	C	C	C
Hairy Woodpecker	O	O	O	O
Pileated Woodpecker*	O	O	O	O

Flycatchers	**S**	**S**	**F**	**W**
Olive-sided Flycatcher		O	O	
Western Wood-Peewee*	R	C	O	
Willow Flycatcher*	U	U		
Least Flycatcher	R	R		
Hammond's Flycatcher	O	O	R	
Dusty Flycatcher	A			
Pacific-slope Flycatcher*	U	C	R	
Black Phoebe		A		
Say's Phoebe	R			
Ash-throated Flycatcher				A
Western Kingbird	R	R		
Tropical Kingbird		A		
Eastern Kingbird	R			

Shrikes	**S**	**S**	**F**	**W**
Loggerhead Shrike	R			
Northern Shrike	O		O	O

Vireos	**S**	**S**	**F**	**W**
Hutton's Vireo	R	R	R	R
Cassin's Vireo	U	O		
Red-eyed Vireo	R	R		
Warbling Vireo*	O	U	O	

Jays and Crows	**S**	**S**	**F**	**W**
Blue Jay			A	
Steller's Jay	C	U	U	C
Gray Jay	R			R
Western Scrub Jay*	C	C	C	C
Black-billed Magpie	A		A	
American Crow*	C	C	C	C
Common Raven	A	A	A	A

Larks and Swallows	**S**	**S**	**F**	**W**
Horned Lark	U		U	U
Tree Swallow*	C	C	R	R
Violet-green Swallow*	U	C	O	R
Purple Martin*	O	U	O	
Bank Swallow	R	R		
Cliff Swallow*	U	U	R	
No. Rough-winged Swallow*	O	U	O	
Barn Swallow*	U	C	C	R

Chickadees and Bushtits	**S**	**S**	**F**	**W**
Black-capped Chickadee*	C	C	C	C
Mountain Chickadee				A
Chestnut-backed Chickadee*	R	R	R	R
Bushtit*	C	C	C	C

Nuthatches and Creepers	**S**	**S**	**F**	**W**
Brown Creeper*	O	O	O	O
White-breasted Nuthatch*	C	C	C	C
Red-breasted Nuthatch*	O	O	O	O

Wrens	**S**	**S**	**F**	**W**
House Wren*	U	C	O	R
Winter Wren	R	R	R	R
Bewick's Wren*	C	C	C	C
Marsh Wren*	C	C	U	U

Kinglets	**S**	**S**	**F**	**W**
Golden-crowned Kinglet	U	O	U	O
Ruby-crowned Kinglet	U	O	U	O

Thrushes	**S**	**S**	**F**	**W**
Western Bluebird	R		R	R
Veery	A			
Swainson's Thrush*	U	U		
Hermit Thrush	R		O	R
Varied Thrush	U		U	C
American Robin*	C	C	C	C
Townsend's Solitaire	A		A	A

Mockingbirds and Starlings	**S**	**S**	**F**	**W**
North Mockingbird	A			
Cedar Waxwing	U	U	U	U
European Starling*	C	C	C	C
American Pipit	U	U	U	U

Warblers	**S**	**S**	**F**	**W**
Orange-crowned Warbler*	C	U	O	O
Nashville Warbler	O	O		
Northern Parula			A	

Yellow-rumped Warbler*	C	O	U	U
Black-throated Gray Warbler*	U	R	U	
Townsend's Warbler	O		O	O
Blackpoll Warbler			A	
Palm Warbler	A			
Yellow Warbler*	U	U	O	
MacGillivray's Warbler	U	U	R	
Wilson's Warbler	U	O	O	
Common Yellowthroat*	C	C	O	O
Yellow-breasted Chat	R	R		

Tanagers	**S**	**S**	**F**	**W**
Western Tanager	U	U	O	

Sparrows	**S**	**S**	**F**	**W**
Spotted Towhee*	C	C	C	C
American Tree Sparrow	A			
Chipping Sparrow	O	O	O	R
Clay-colored Sparrow				A
Brewer's Sparrow				A
Lark Sparrow	A		A	
Fox Sparrow	O		O	U
Savannah Sparrow*	C	C	U	U
Lincoln's sparrow	O	O	O	O
Song Sparrow*	C	C	C	C
Vesper Sparrow	R	R	R	
Swamp Sparrow			R	R
White-throated Sparrow				R
Harris's Sparrow				R
White-crowned Sparrow	U	U	U	U
Golden-crowned Sparrow	C		C	C
Dark-eyed Junco	C	R	C	C
Lapland Longspur				A
Snow Bunting				A
Black-headed Grosbeak*		U		
Lazuli Bunting		U		

Blackbirds	**S**	**S**	**F**	**W**
Western Meadowlark*	U	O	U	O
Yellow-headed Blackbird*	O	O		
Red-winged Blackbird*	C	C	O	C
Tricolored Blackbird		A		
Rusty Blackbird	A			A
Brewer's Blackbird*	C	C	C	C
Brown-headed Cowbird*	C	C	U	O
Bullock's Oriole*	U	U	O	

Finches and Grosbeaks	**S**	**S**	**F**	**W**
Purple Finch*	U	U	U	U
House Finch*	C	C	U	C

Red Crossbill	O	R	R	R
Pine Siskin*	O	O	O	O
American Goldfinch*	C	C	U	U
Lesser Goldfinch	A	A	A	A
Common Redpoll	A			A
Evening Grosbeak	O			
Weaver Finches	**S**	**S**	**F**	**W**
House Sparrow*	U	U	U	U

Mammals

(***** denotes non-native species)

Virginia Opossum*****	*Didelphis virginiana*	Douglas' Squirrel	*Tamiasciurus douglasii*
Vagrant Shrew	*Sorex vagrans*	Camas Pocket Gopher	*Thomomys bulbivorus*
Pacific Shrew	*Sorex pacificus*	American Beaver	*Castor canadensis*
Pacific Water Shrew	*Sorex bendirii*	Deer Mouse	*Peromyscus maniculatus*
Trowbridge's Shrew	*Sorex trowbridgii*	Dusky-Footed Woodrat	*Neotoma fuscipes*
Shrew Mole	*Neurotrichus gibbsii*	Bushy-Tailed Woodrat	*Neotoma cinerea*
Townsend's Mole	*Scapanus townsendii*	Gray-Tailed Vole	*Microtus canicaudus*
Little Brown Myotis	*Myotis lucifugus*	Townsend's Vole	*Microtus townsendii*
Yuma Myotis	*Myotis yumanensis*	Creeping Vole	*Microtus oregoni*
Long Eared Myotis	*Myotis evotis*	Muskrat	*Ondatra zibethicus*
Fringed Myotis	*Myotis thysanodes*		
Long Legged Myotis	*Myotis volans*	Porcupine	*Erethizon dorsatum*
California Myotis	*Myotis californicus*	Nutria*****	*Myocastor coypus*
Silver Haired Bat	*Lasionycteris noctivagans*	Coyote	*Canis latrans*
Big Brown Bat	*Eptesicus fuscus*	Red Fox	*Vulpes vulpes*
Hoary Bat	*Lasiurus cinereus*	Gray Fox	*Urocyon cinereoargenteus*
Townsend's Big-Eared Bat	*Plecotus townsendii*	Raccoon	*Procyon lotor*
Pallid Bat	*Antrozous pallidus*	Long-tailed Weasel	*Mustela frenata*
Brush Rabbit	*Sylvilagus bachmani*	Mink	*Mustela vison*
Black-tailed Jack Rabbit	*Lepus californicus*	Short-tailed Weasel	*Mustella erminea*
Townsend's Chipmunk	*Tamias townsendii*	Western Spotted Skunk	*Spilogale gracilis*
California Ground	*Spermophilus*	Striped Skunk	*Memphitis*

Squirrel	*beecheyi*		*memphitis*
Eastern Fox Squirrel***** Eastern Gray Squirrel	*Sciurus niger* *Sciurus carolinensis*	River Otter	*Lutra canadensis*
Western Gray Squirrel	*Sciurus griseus*	Elk	*Cervus elaphus*
Pacific Jumping Mouse	*Zapus trinotatus*	Black-tailed Deer	*Odocoileus hemionus*

Amphibians and Reptiles

Northwestern Salamander	*Ambystoma gracile*	Western Pond Turtle	*Actinemys marmorata*
Long-toed Salamander	*Ambystoma macrodactylum*	Northern Alligator Lizard	*Elgaria coerulea*
Ensatina	*Ensatina eschscholtzi*	Southern Alligator Lizard	*Elgaria multicarinata*
Dunn's Salamander	*Plethodon dunni*	Western Fence Lizard	*Sceloporus occidentalis*
Western Red-backed Salamander	*Plethodon vehiculum*	Western Skink	*Eumeces skiltonianus*
Roughskin Newt	*Taricha granulosa*	Rubber Boa	*Charina bottae*
Western Toad	*Bufo boreas*	Racer	*Coluber constrictor*
Pacific Chorus Frog	*Pseudacris regilla*	Sharptail Snake	*Contia tenuis*
Red-legged Frog	*Rana aurora*	Ringneck Snake	*Diadophis punctatus*
Foothill Yellow-Legged Frog	*Rana boylei*	Gopher Snake	*Pituophis melanoleucus*
Bullfrog*	*Rana catesbeiana*	W. Terrestrial Garter Snake	*Thamnophis elegans*
Spotted Frog	*Rana pretiosa*	Northwestern Garter Snake	*Thamnophis ordinoides*
Western Painted Turtle	*Chrysemys picta bellii*	Common Garter Snake	*Thamnophis sirtalis*

Fish

Pacific Lamprey	*Lampetra tridentata*	Dace	*Rhinichthys* spp.
Coho Salmon	*Oncorhynchus kisutch*	Bridgelip Sucker	*Catostomus columbianus*
Chinook Salmon	*Oncorhynchus tshawytscha*	Longnose Sucker	*Catostomus catostomus*
Sockeye Salmon	*Onchorhynchus nerka*	Largescale Sucker	*Catostomus macrosheilus*
Chum Salmon	*Onchorhynchus keta*	Oriental Weatherfish*	*Misgurnus anguillicandatus*
Steelhead	*Onchorhynchus mykiss*	American Shad*	*Alosa sapidissima*
Cutthroat trout	*Onchorhynchus clarki*	Mosquitofish*	*Gambusia affinis*
Black Crappie*	*Pomoxis nigro-annularis*	Redside Shiner	*Richardsonius balteatus*
White Crappie*	*Pomoxis annularis*	Sculpin	*Cottus* spp.
Bluegill*	*Lepomis macrochirus*	Northern Pikeminnow	*Ptychocheilus oregonensis*
Largemouth Bass*	*Micropterus salmoides*	Common Carp*	*Cyprinus carpio*
Warmouth Bass*	*Lepomis gulosus*	Yellow Bullhead*	*Ictalurus natalis*
Pumpkinseed*	*Lepomis gibbosus*	Brown Bullhead*	*Ictalurus nebulosus*