DRAFT Sunnyside-Snake River Wildlife Area Management Plan

Washington Department of FISH and WILDLIFE

PUBLIC REVIEW DRAFT

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Photo by Justin Haug, WDFW

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Cover photo: Sumac and goldenrod on Sunnyside-Snake River Wildlife Area
Photo by Justin Haug

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Sunnyside-Snake River Wildlife Area Advisory Committee Roster
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Snow geese
Photo by Alan L. Bauer

Great horned owl
Photo by Justin Haug, WDFW

Sunnyside-Snake River Wildlife Area Management Plan

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Photo by Justin Haug, WDFW

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Acronyms

ADA	Americans with Disabilities Act
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	Bureau of Reclamation
BPA	Bonneville Power Administration
CRP	Conservation Reserve Program
DAHP	Washington State Department of Archaeology & Historic Preservation
DNR	Washington State Department of Natural Resources
EIA	Ecological Integrity Assessment
EIM	Ecological Integrity Monitoring
ESA	Endangered Species Act
IPM	Integrated Pest Management
NPS	National Park Service
NRCS	National Resources Conservation Service
PHS	Priority Habitats and Species
RCW	Revised Code of Washington
RCO	Washington State Recreation and Conservation Office
SEPA	State Environmental Policy Act
SGCN	Species of Greatest Conservation Need
SRFB	Salmon Recovery Funding Board
SSSRMU	Sunnyside-Snake River Management Unit
SWAP	State Wildlife Action Plan
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WAAC	Wildlife Area Advisory Committee
WDFW	Washington State Department of Fish and Wildlife
WHCWG	Washington Wildlife Habitat Connectivity Working Group
WLA	Wildlife Area
WWRP	Washington Wildlife and Recreation Program

Wildlife area management planning overview

Introduction and agency mission

Welcome to your fish and wildlife lands!

The Washington Department of Fish and Wildlife (WDFW) provides active management for more than 1 million acres of publicly owned land, most of which falls within 33 wildlife areas across the state (https://wdfw.wa.gov/places-to-go/wildlife-areas). These diverse lands contain nearly all species and habitats present in Washington. With the loss of natural habitat posing the single greatest threat to native fish and wildlife, these wildlife areas play a critical conservation role. The wildlife area management plan addresses all aspects of resource management, highlights areas for public access, education, and stewardship, and aligns with statewide conservation goals.

In addition to protecting lands and water for habitat and people, WDFW manages land to preserve Washington's natural and cultural heritage, provide access for hunting, fishing, and wildlife-related recreation, and to foster outdoor experiences and exploration throughout the state. We do this to support the species and habitats of Washington and ensure they prosper for our collective enjoyment well into the future.

An interdisciplinary team of WDFW staff members, including fish, habitat, and wildlife biologists, as well as enforcement, real estate, and management, developed the Sunnyside-Snake River Wildlife Area Management Plan along with significant public involvement. This included input from the local stakeholder-based Sunnyside-Snake River wildlife area advisory committee, tribes, public agencies, and interested residents.

Wildlife area management planning framework

Management of wildlife areas is guided by WDFW's mission and strategic plan, as well as by state and federal laws. Each new plan is guided by the Wildlife Area Management Planning Framework (framework), which summarizes the agency's mission, laws, policies and approaches to management of fish and wildlife, as well as public use and recreation. The framework summarizes priorities and guidance developed in each of the agency's programs – Fish, Wildlife, Habitat, and Enforcement. Readers are encouraged to review the framework in advance, or as a companion document to this wildlife area plan. The framework (https://wdfw.wa.gov/publications/01810) provides context for the organization and content of wildlife area plans across the state. The framework is a living document, and is updated periodically to reflect new agency initiatives, guidance, and directives.

Purpose and organization of the plan

The purpose of this management plan is to guide all management activities, including conservation and recreation, occurring on the Sunnyside-Snake River Wildlife Area for the next 10 years. Management goals, objectives, and performance measures are defined in the plan and provide a clear road map of projects and management actions to support statewide conservation and

recreation goals. Actions in the plan are dependent on available budget. Budget reductions made during the life of this plan may delay implementation of some of the actions.

The plan is designed to be a resource for internal and external audiences, and is organized into four parts: 1) overview of the wildlife area and associated units and success stories; 2) goals and objectives, and performance measures for the planning area; 3) environment information, wildlife species, and habitat management; and 4) appendices which support different areas of the plan.

Public outreach and stakeholder involvement process

The agency is committed to a transparent and inclusive public outreach process for all wildlife area management plans. Under the umbrella of the statewide goals (Table 1), a customized outreach strategy was developed for this area, tailored to local and regional stakeholders, as well as local and out-of-the-area visitors and user groups. For this plan, the public process included three elements: 1) tribal, public, and advisory committee meetings; 2) development and distribution of fact sheets, meeting announcements, and news releases; and 3) solicitation of public comments through meetings, phone calls, email, social media, and the WDFW website. Comments on the Final Draft Plan were solicited through the State Environmental Policy Act (SEPA) process. The Public Response Summary for this is included in Appendix F.

Fishing at I-82 Ponds
Photo by Alan L. Bauer

Statewide WDFW lands vision

The statewide vision sets the agency expectations for the future state of all Washington Department of Fish and Wildlife Lands.

A Washington where fish and wildlife thrive in healthy habitats, and where people experience and enjoy our state's natural gifts for generations to come.

By actively managing lands, restoring habitats, and preserving wild places, we serve as stewards and guardians for Washington's natural places by protecting lands and water for wildlife and people.

Statewide planning goals

A complete list of goals, objectives, and performance measures specific to this wildlife area is on page 89.

Table 1: Statewide planning goals

Goal 1	**Restore and protect the integrity of priority ecological systems and sites**. This goal originates from the 2017-2019 WDFW Strategic Plan, Goal #1: "Conserve and protect native fish and wildlife". Ecological integrity monitoring on priority systems and sites will be developed as part of implementation of the management plan for each individual wildlife area plan.
Goal 2	**Sustain individual species through habitat and population management actions, where consistent with site purpose and funding**. This goal also relates to 2017-19 WDFW Strategic Plan, Goal #1. Each individual wildlife area plan will provide a summary of species associated with the wildlife area and will focus on target species for habitat management actions.
Goal 3	**Provide fishing, hunting, and wildlife-related recreational opportunities where consistent with Goals 1 and 2.** This goal is consistent with the WDFW Strategic Plan, Goal #2: "Provide sustainable fishing, hunting, and other wildlife-related recreational and commercial experiences". Each plan will provide a summary of recreation activities associated with the wildlife area, aiming to balance recreational activities with species and habitat protection.
Goal 4	**Engage stakeholders in consistent, timely, and transparent communication regarding wildlife area management activities.** This goal relates to Strategic Plan Goal #3: "Promote a healthy economy, protect community character, maintain an overall high quality of life, and deliver high-quality customer service". As described under the public outreach section of this document, public input and involvement are key components in the development of the management plan through the advisory committee efforts and public meetings. After the plan is adopted, the management plan updates will be reviewed by the wildlife area advisory committee on a biannual basis.
Goal 5	**Maintain productive and positive working relationships with local community neighbors, lessee partners, and permittees**. As part of day-to-day business, wildlife area staff strives to maintain positive working relationships with grazing and agricultural lessees and the local community.
Goal 6	**Hire, train, equip, and license, as necessary, wildlife area staff to meet the operation and management needs of wildlife areas.** This goal is consistent with Goal #4 of the Strategic Plan: "Build an effective and efficient organization by supporting the workforce, improving business processes, and investing in technology". Specific activities on wildlife areas include attending training and hiring qualified staff.
Goal 7	**Maintain safe, highly functional, and cost-effective administration and operational facilities and equipment.** This goal is consistent with WDFW Strategic Plan Goal #4. Maintenance of facilities and equipment is a key activity on wildlife areas. Annual reporting is required by WDFW and agencies that provide operations and maintenance funding, such as U.S. Fish and Wildlife Service, Pittman-Robertson.

Welcome to the Sunnyside-Snake River Wildlife Area

Thornton Unit
Photo by Justin Haug, WDFW

Introduction

The Sunnyside-Snake River Wildlife Area is managed in 15 units in southcentral Washington on 21,200 acres in Yakima, Benton, and Franklin counties. The wildlife area units span roughly 100 miles from west to east, starting at the Sunnyside units (south of Union Gap along I-82), through the Benton City Unit along the Yakima River, and ending at the Snake River units (north of Pasco on SR 395).

Acquisitions or land management agreements began in 1944 and continued through 2017 to protect and enhance habitat and provide public recreation. The Snake River Units in Franklin County were purchased to provide partial mitigation for the construction of four dams on the Lower Snake River. The most recent acquisitions were three small parcels totaling 79 acres along the Yakima River, which were deeded to WDFW in 2017. 12,598 acres are owned by WDFW; 4,693 acres are either under agreement, leased, or are Bureau of Reclamation property managed by WDFW; and 3,909 acres are in easement, almost all of which is in one hunting easement.

Some of the Sunnyside units along the Yakima River upstream of the Mabton bridge (SR 241 crossing), border the Yakama Indian Reservation. The Confederated Bands and Tribes of the Yakama Nation partners with WDFW and other state and federal agencies and non-governmental organizations on activities that affect fish and wildlife and habitat. The 1855 Treaty with the Yakama says "The exclusive right of taking fish in all the streams, where running through or bordering said reservation, is further secured to said confederated tribes and bands of Indians, as also the right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land". Tribal members also harvest culturally important plants, such as wapato, camas, cattails, and taxus (dogbane). Treaty tribes have been recognized as managers of their treaty-reserved resources, and have interest in the management decisions in the Sunnyside-Snake River wildlife area (US. v Washington 1974). WDFW honors and respects tribal treaty reserved rights, and will take into consideration traditional hunting and gathering sites in any actions in this plan that may affect them. Communicating and coordinating with tribes is an objective of this plan.

Thompson Seeps pond
Photo by Alan L. Bauer

Wildlife area lands have been affected by past agricultural practices, fire, road construction, and general development. Some of these factors, such as fire, continue to impact some wildlife areas. Irrigation water provides both managed wetland habitats and a water source for limited agricultural operations on some units. These wetlands provide important habitat and riparian areas for a variety of resident and migratory wildlife. Non-irrigated land on the units provide habitat more characteristic of the semi-arid Columbia Basin and supports native bunch grasses and shrubsteppe vegetation. Overall, the wildlife area units support more native habitats than the surrounding landscapes that are characterized as mostly irrigated croplands.

The Sunnyside-Snake River units provide important native and managed (wetland) habitats in the Columbia Basin for both resident and migratory wildlife. Some units are managed under prior agreements with the Bonneville Power Administration (BPA) and US Army Corps of Engineers for upland wildlife, waterfowl, big game, and a variety of non-game species that are consistent with WDFW goals. The units that are owned by the Bureau of Reclamation (BOR) are managed under a separate agreement that is also consistent with WDFW goals. In this arid environment, these wetland and riparian areas provide habitat, and browse and cover for wildlife.

Close to one-half of the acreage is shrubsteppe. Open water, cultivated cropland, and riparian are the other main land covers. The area is popular for fishing, hunting, and bird watching.

Wildlife Area Description

Sunnyside-Snake River Wildlife Area Overview

Size	21,199 acres
Acquisition, Agreement Dates	1944 - 2017
Acquisition Funding and Agreement	National Park Service: *Land and Water Conservation Fund* US Fish and Wildlife Service: *Pittman-Robertson Wildlife Restoration Program (PR)* US Army Corps of Engineers: *Snake River Mitigation Account* US Congress Programs: *Transfer of Land* WA Recreation and Conservation Office: *WA Wildlife and Recreation Program; Boating Facilities Program; State Bond Account* Private Grantor: *Private Donations* WA Dept. of Fish and Wildlife: *Wildlife Fund; State Migratory Waterfowl Fund* Utility Districts*: Mitigation Funds*
Elevation Range	448 - 2,446 feet
Recreational Opportunities	Hunting, fishing, wildlife viewing, birding, walking, horseback riding
Units	West side: I-82 Ponds, Glover, Sunnyside, Vance-Ferry Road, Byron, Whitstran, Thornton, Benton City, and Rattlesnake Slope. East side: Hope Valley (*includes Clark Pond and Nipper)*, Mesa Lake, Esquatzel Coulee, Windmill, Bailie, and Thompson Seeps.
Counties	Yakima, Benton, and Franklin

Just under 60 percent of the wildlife area is owned by WDFW, with the remainder managed by WDFW under a variety of agreements. Ownership does not play a large role in how lands are managed, unless there are restrictions or conditions within the agreements.

During the planning process for this management plan, a couple of unit names were changed and three small contiguous units were combined as one. The number of wildlife area properties organized by units went from 17 to 15. The Nipper, Clark Pond, and Hope Valley units were combined under the name of Hope Valley.

Previous Name	**New Name**
Headquarters (Sunnyside) Unit	Sunnyside Unit
WB-10 Wasteway	Thompson Seeps Unit
Nipper	Hope Valley
Clark Pond	Hope Valley
Hope Valley	Hope Valley

Figures 1 and 2 show the west and east locations of the wildlife area units.

Wildlife area vision

The overall vision for the Sunnyside-Snake River Wildlife Area is to restore, enhance, and maintain a variety of native and managed habitats to support a diversity of wildlife, which support fishing, quality waterfowl hunting and other hunting, as well as birding, hiking, and a variety of educational and nature-based activities.

The focus for recreational and educational activities will be on those units that support high visitor use or have the potential to support more activities through partnerships. These five priority units are: Sunnyside, Rattlesnake Slope, Mesa Lake, Windmill Ranch, and the Esquatzel Coulee.

Blue-winged teal
Photo by Phillip Buser

Figure 1. Sunnyside-Snake River Wildlife Area Vicinity - West

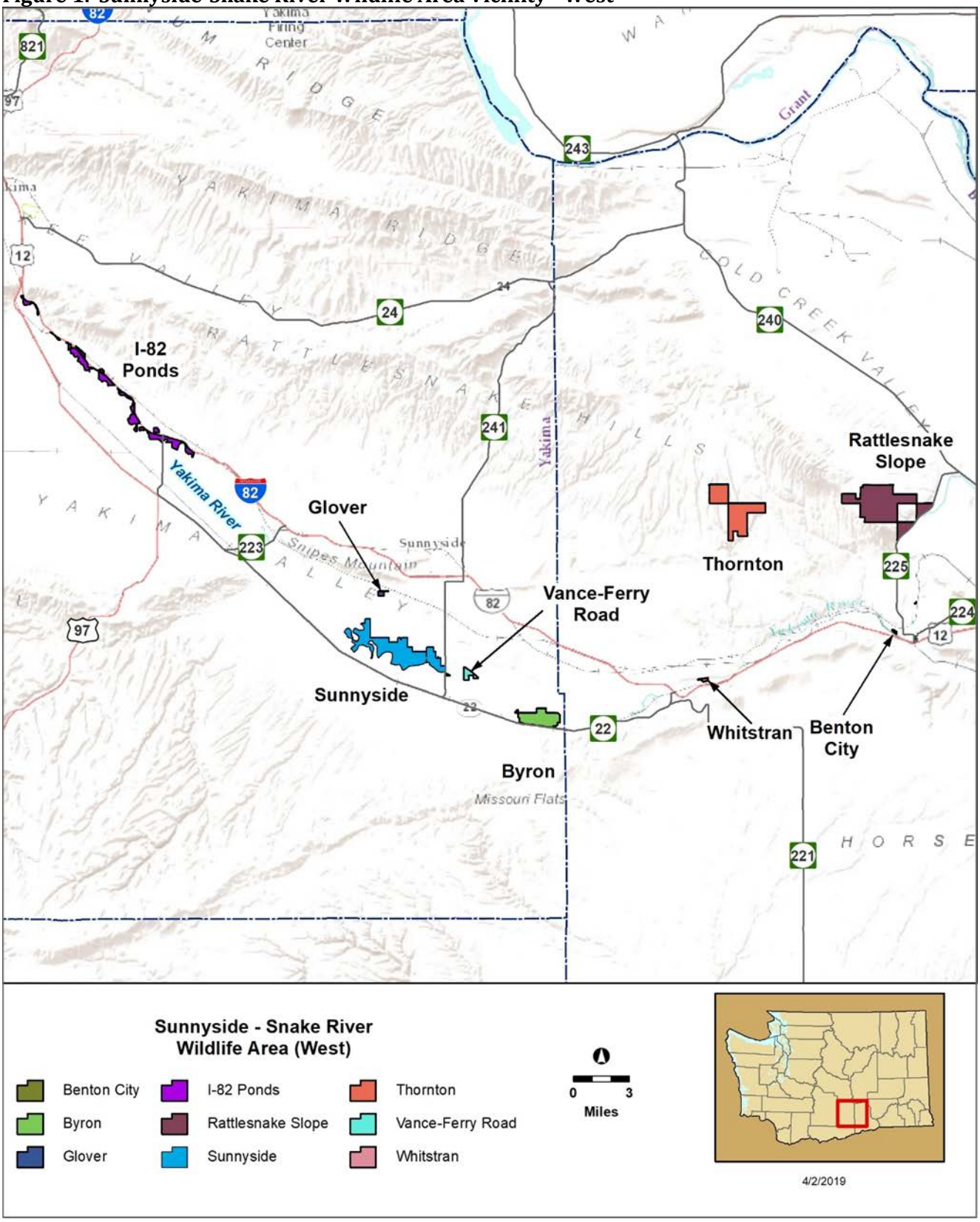
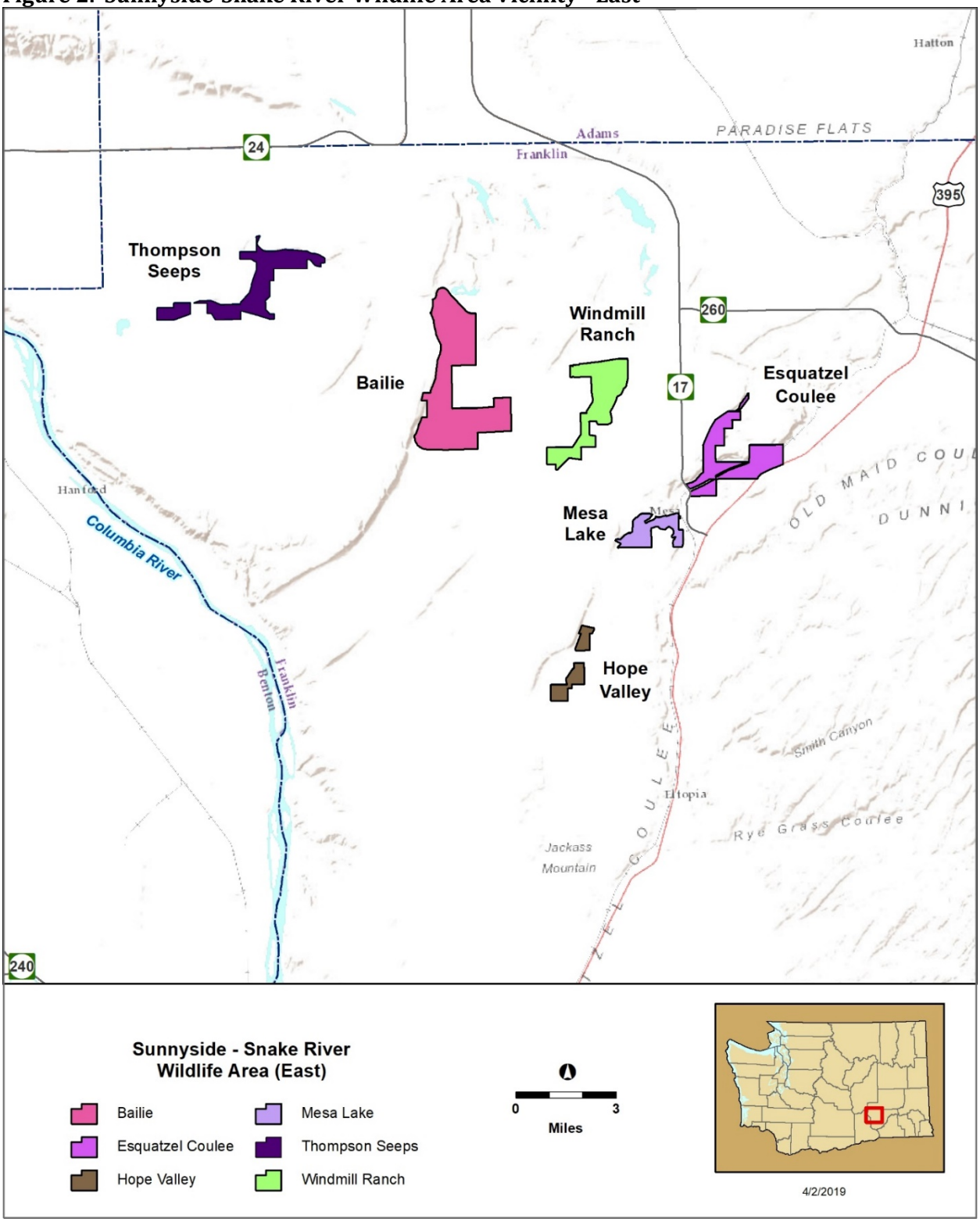


Figure 2. Sunnyside-Snake River Wildlife Area Vicinity - East



Success Stories

Enhancing wetlands to improve habitat on the wildlife area

The Sunnyside-Snake River Wildlife Area contains about 4,000 acres of freshwater wetland habitats. These wetland habitats are primarily supported by direct surface flow of irrigation water, but seeps and springs support wetlands that are not directly connected to the irrigation canals and waterways.

Since 2011, approximately 400 acres of wetland habitat have been restored and enhanced at the Mesa Lake, Windmill Ranch, Bailie, and Sunnyside units. The enhancement and restoration work included the replacement of water control structures, pumps, culverts, and piping. All work also included beaver management. Beavers play an important role in the ecosystem, and their dam-building activities provide habitat for a diversity of species, but they can also cause problems. Beavers instinctively build dams where they hear the water channeled through a culvert. This can lead to flooding and road and other damage. To reduce the damage caused by beavers, sturdy wire mesh was used to keep them out so they can't dam up the pipe. These "beaver deceivers" allow the water to keep flowing without beavers clogging everything up.

Worth Lake, Windmill Ranch Unit
Photo by Alan L. Bauer

Restoration and enhancement projects targeted shallower wetlands where management actions promote open water and emergent wetland vegetation. This vegetation provides nesting and escape cover for water birds and waterfowl. These wetlands also provide year round habitat for a wide variety of wetland-dependent plant and animal species, such as muskrats, mallards, Canada geese, and river otters. Additionally, wetland restoration and enhancement has provided more opportunities for hiking and bird watching and quality waterfowl hunting. Wetlands throughout the Sunnyside-Snake River Wildlife Area provide waterfowl and upland bird hunting opportunities for the public. Hunters come from throughout the state to these areas for quality hunting on public land. To maintain these wetlands and to continue to provide for public recreation, all wetlands continue to be actively managed through seasonal mowing, seeding, and weed treatments.

Engaging youth and volunteers on the wildlife area

The Sunnyside-Snake River Wildlife Area has a long tradition of providing outdoor learning experiences for local youth and school groups. The teachers value the opportunity for the students to gain life skills outside of the classroom, and the students learn about the environment and gains skills from real life examples. This collaboration is also good for wildlife. In 2010, students from Mabton Junior High School built bluebird nest boxes and helped place them throughout the Snipes Reserve of the Sunnyside Unit. For four years, students from Artz Fox Elementary School have helped plant 200 shrubs at the Sunnyside Unit each year. Species of shrubs planted include big sagebrush, woods rose, hawthorn, and wild current.

School group learning wetland ecology
Photo by Phillip Buser

Another avenue of youth engagement on the wildlife area has been through the Boy Scouts of America, specifically their Eagle Scout Merit Award program. Since the year 2000, six scouts have conducted projects on the wildlife area, and three just in 2017-2018. One scout organized a work party to build five large bat boxes that were placed on the Windmill Ranch Unit. Another scout organized a work party to build three osprey nest platforms, which have been placed at the Windmill Ranch and Mesa Lake units. The third scout organized a crew to replace safety zone signs that burned up during a recent fire on the Rattlesnake Slope Unit. The scouts also replaced signs on two and a half miles of fence line. The wildlife and the visitors appreciate and benefit from the efforts of the scouts!

Eagle Scout project
Photo by Phillip Buser

You do not have to be a student, or a scout, or a member of an organization to be a volunteer. There are many opportunities for individuals to volunteer on the wildlife area (see page 85 for some on-going opportunities). Individual volunteers have donated their time and talents to clean up parking lots, repair fences, paint over graffiti, and help fix roads. Volunteers have even helped build ADA-accessible hunting and viewing blinds.

Clinics teach youth about hunting

Youth can learn to be safe and successful hunters at the Sunnyside-Snake River Wildlife Area. In 2014, a fire swept across the Sunnyside Unit. Along with burning nearly 250 acres of wildlife habitat, the fire also destroyed one of the shop buildings. The shop was rebuilt and now offers an indoor space for hosting youth hunting clinics, mentored hunts, and hunter education classes.

Youth hunt clinic at Sunnyside
Photo by Phillip Buser

Since 2015, there have been six combined pheasant clinics and hunts (two each year) at the Sunnyside Unit. These events have had an average of 20 participants and 30 volunteers per clinic. WDFW also held a dove clinic and hunt in 2017 with 15 participants and 11 volunteers.

There have been two hunter education classes, and more will be held based on interest and availability. Students learn about wildlife conservation, how to handle firearms safely, and the rules and regulations of hunting and outdoor recreation.

Diversity of hunting opportunities

Upland bird hunting in native habitats and waterfowl hunting in managed wetlands are just two of the hunting opportunities found on the Sunnyside-Snake River Wildlife Area. This wildlife area is comprised of 15 units that stretch across three counties and span almost 100 miles. There are a variety of habitat types, including wetlands, upland grasslands, shrubsteppe, and riparian corridors that provide suitable habitats for a variety of wildlife species, including deer, elk, upland game birds, waterfowl, and small game.

Waterfowl
Photo by Phillip Buser

Big game hunting opportunities include elk, which are routinely found on four different units in Benton and Franklin Counties, and mule deer that occur on nearly every unit of the wildlife area. Wild turkeys are found in the units along the Yakima River Corridor. Waterfowl hunting opportunities include ducks (except sea ducks) and geese (Canada, snow, and white-fronted) that can number in the thousands during the fall and winter. The wildlife area provides significant habitat for wintering waterfowl. Hunting opportunities for mourning doves, coots, and snipe occur at many of the units. Upland hunting opportunities include California quail, ring-necked pheasant, coyotes, crows, and cottontail rabbits. Hunting for ring-necked pheasants is popular for both pen-raised birds released at the Hope Valley and Sunnyside units, and wild birds at the Bailie, Esquatzel Coulee, Mesa Lake, Thompson Seeps, and Windmill Ranch units. The Richland Rod and Gun Club has hosted pheasant clinics at Esquatzel Coulee in the past.

Sunnyside-Snake River Wildlife Area Unit Descriptions

I -82 Ponds

Size	804 acres
Acquisition Date	1963 - 2017
Acquisition Funding	US Army Corps of Engineers: *Snake River Mitigation Account* National Park Service: *Land and Water Conservation Fund* WA Recreation and Conservation Office: *Boating Facilities Program; State Bond Account* WA Dept. of Fish and Wildlife: *Wildlife Fund; State Migratory Waterfowl Fund* Utility Districts*: Mitigation Funds*
Purpose of Funding	Fishing, waterfowl habitat, small game habitat
Elevation Range	646 - 989 feet
Recreational Opportunities	Fishing, waterfowl and upland bird hunting, bird watching
County	Yakima
Site Access	Accessed from Donald Road (exit 44 from I-82) and Buena Loop (exit 50 from I-82)

Fishing at I-82 Ponds
Photo by Alan L. Bauer

Overview

The I-82 Ponds Unit consists of 804 acres of acres of wetland/riparian and upland habitats located along the Yakima River in Yakima County, in the lower Yakima River watershed. The entire unit is made up of 17 separate land parcels stretching from Union Gap to Zillah. The I-82 Unit is displayed in three sections: Union Gap, Wapato, and Zillah (Maps 3, 4, and 5). The land is owned by WDFW except for less than ten acres in easement. Two small inholdings, the McDonald and Kroll properties, were added to the unit in 2017. These properties support the goal of the Draft Wapato Reach Action Plan (2017) to acquire land for conservation and to restore riparian and floodplain functions. Surrounding lands are primarily agriculture.

Overall, the ponds and riverine wetlands comprise about 25 percent of this unit. The healthy riparian habitat, all of which transitions into upland shrubsteppe habitat, is dominated by cottonwood, various species of willow, Wood's rose, Nootka rose, blue elderberry, as well as introduced cultivars like mulberry trees. The backwater sloughs and dense riparian growth and offer excellent nesting and food resources for waterfowl and upland birds as well as neotropical migrants and birds of prey. The majority of the open water wetland habitat is associated with the seven ponds that range in size from 13 to 28 acres. Several of the ponds were formed when gravel borrow pits were created during the construction of the interstate and later filled with groundwater.

A primary focus of this unit is to provide facilities and public access to the Yakima River and ponds. There are ten river access sites, and seven ponds. The recreation section on includes a summary of fishing and boating access for details on what is available at each site.

The ponds are popular fishing areas and offer a variety of fishing opportunities that include both bank fishing and small boat fishing. The ponds support populations of sunfish, black crappie, yellow perch and largemouth bass and periodically other fish species such as channel catfish are stocked. Annually, legal sized rainbow trout are also stocked in most of the ponds.

Maintenance and restoration of some of the ponds is being addressed through a larger stakeholder process associated with the Yakima River Basin Integrated Water Resource Management Plan. Specifically, Pond 4, is separated by a failing levee to the downstream Pond 5. The location of ponds 4 and 5 adjacent to the Yakima River lies in the Wapato Reach, a critical section of the Yakima River that is a critical migration zone for salmon and steelhead, and provides spawning and rearing habitat for fall and summer Chinook. An analysis was conducted by Ducks Unlimited on the feasibility of making Pond 5 open to the river and protecting Pond 4 and a grant has been submitted to do this work.

This unit also sustains important cultural values to the Yakama Nation and the adjacent Yakima River is within the borders of the Yakama Indian Reservation. Salmon fishing in this reach is a valuable cultural resource to the Yakama Nation. Public salmon fishing is rarely open along this stretch of river, but other fish species can be pursued. A Yakama Nation fishing license is required, and angles must follow the rules and regulations of the Yakama Nation. To hunt the Yakima River, hunter need a Yakama Nation hunting permit as well as a WDFW hunting license.

The I-82 Unit offers waterfowl as well as deer, Eurasian collared dove, mourning dove, quail, pheasant, and small game. Again, waterfowl hunters in or on the river must be licensed by and

follow the rules and regulations of the Yakama Nation. There are multiple parking areas and restrooms on the unit.

Primary management objectives on the I-82 Ponds Unit

- Coordinate with Yakima Basin Integrated Plan (YBIP) work on Wapato Reach, which includes the I-82 ponds, as well as other areas of the Yakima River system (1.E).
- Maintain and restore floodplain functions throughout the Yakima River Valley (1.I).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).
- Ensure long-term legal access to WDFW lands by 2024 (5.B).

Figure 3: I-82 Ponds Unit (Union Gap)

Figure 4: I-82 Ponds Unit (Wapato)

Figure 5: I-82 Ponds Unit (Zillah)

Glover Unit

Size	51 acres
Acquisition Date	1992
Acquisition Funding	WA Recreation and Conservation Office: *WA Wildlife and Recreation Program*
Purpose of Funding	Small game and upland birds
Elevation Range	669 – 697 feet
Recreational Opportunities	Upland bird and waterfowl hunting
County	Yakima
Site Access	From Highway I-82, exit 67 to Wendell-Phillips Road

Overview

The Glover unit is composed of 51 WDFW deeded acres surrounded by private agricultural land, located southwest of Sunnyside in Yakima County. The property was acquired for upland bird and small game habitat. About ten acres was historically used in an agricultural lease. The unit is a mosaic of hardwood trees, shrubs, and grasslands with a slough running east-west through the center. The mixture of trees and edge habitat with the added water component make it a surprisingly diverse patch of land within a farmland monoculture of corn and dairies. Mule deer, dabbling ducks, songbirds, birds of prey, doves, quail, and various species of butterflies can all be found in this small unit.

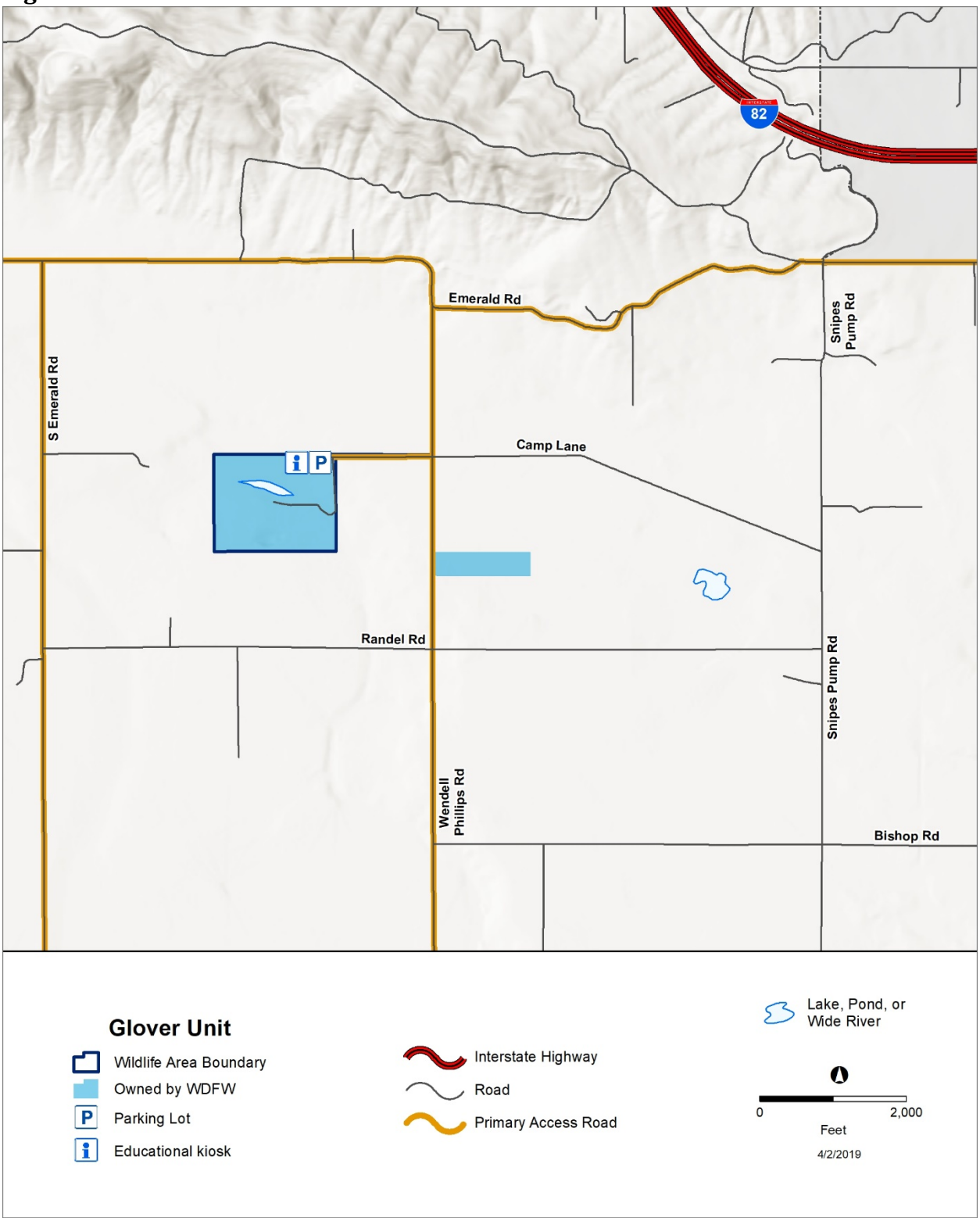
Recreational opportunities are some upland bird and waterfowl hunting, birding, and nature observation. There is a gravel parking area and information kiosk. Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit.

Tree snags at Glover Unit
Photo by Alan L. Bauer

Primary management objectives on the Glover Unit

- Manage and improve upland bird habitat and nesting cover (4.B).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).

Figure 6: Glover Unit



Sunnyside Unit

Size	2,741 acres
Acquisition Date	1944 - 2017
Acquisition Funding	National Park Service: *Land and Water Conservation Fund* US Fish and Wildlife Service: *Pittman-Robertson Wildlife Restoration Program (PR)* US Army Corps of Engineers: *Snake River Mitigation Account* US Congress Programs: *Transfer of Land* WA Recreation and Conservation Office: *WA Wildlife and Recreation Program; Boating Facilities Program; State Bond Account* WA Dept. of Fish and Wildlife*: Wildlife Fund*; *State Migratory Waterfowl Fund* Private Grantor: *Donation*
Purpose of Funding	Waterfowl and small game habitat, riparian and floodplain habitat conservation
Elevation Range	632 - 681 feet
Recreational Opportunities	Waterfowl and upland bird hunting, small game and deer hunting, and bird watching
County	Yakima
Site Access	From Highway I-82, exit 67 – six parking areas

Giffin Lake, Sunnyside Unit
Photo by Alan Bauer

Overview

This unit was formerly called the Headquarters – Sunnyside Unit, but was recently changed to the Sunnyside Unit. It covers 2,741 of mostly deeded acres, one mile north of Mabton and five miles south of Sunnyside. This unit is a collection of small agricultural fields, interspersed with diverse habitats. About 90 percent of the unit is in the floodplain of the Yakima River, with 13 miles of riverfront. Evidence of old river oxbows can be found throughout the unit. Vegetation ranges from wetland species to upland perennial grasses and forbs to mature riparian woodlands. Non-native Russian olive trees have been invading for several years. In 2017, a small inholding, the Grow property, was purchased and became part of the unit. This property was named in the Yakima River Basin Integrated Water Resource Management Plan (Sandisen et al 2012), and also supports the goal of the Wapato Reach Assessment Report (Yakama Nation 2012) to acquire land riparian and floodplain habitat conservation.

In 2014, two fires, two weeks apart, burned into the unit. The fires burned large swaths of bunchgrasses and greasewood, and burned down the Unit's maintenance shop building. Funds were provided for replacing the office and shop and for the restoration of 250 acres of habitat. Restoration included weed treatments, seeding of native grasses, and shrub plantings. In 2015, a new office and shop facility were built, and habitat restoration projects continue.

The flora of the Sunnyside Unit varies widely, ranging from dense riparian thickets bordering the wetlands and Yakima River, to upland expanses of bunchgrasses and greasewood, to isolated stands of aspen, cottonwoods, and willows. Invasive, exotic plant species are common throughout the unit with new loads of seed being delivered almost annually with spring flooding from the river. Weed control is a continual effort on the unit as well as encouraging growth of native and wildlife-friendly plant species. In recent years, some of the historical agricultural leases on the unit have been taken out of production and planted with native grasses and shrubs.

Irrigation water supplies virtually all of the water to wetland habitats at this unit. The water level at the wetlands are managed through water control structures to provide wildlife habitat and forage, bird watching, and waterfowl hunting. Irrigation water is diverted to fill nearly all of the wetlands at the unit, with natural springs and sub-irrigation from the nearby Yakima River supplementing the remainder. The Sunnyside Unit is at the downstream end of three sizable irrigation ditches just before they spill back into the Yakima River. The wildlife area is allowed to withdraw as much water as necessary to maintain wetland and lake levels. In addition to wildlife habitat, the wetlands serve an additional purpose in filtering contaminants such as fertilizers and pesticides from the open-air irrigation water supply before it returns to the river. The abundant cattails in the wetlands are well-known water cleaners, efficiently up-taking heavy metals and other contaminants.

The Sunnyside Unit experiences the highest amount of recreation use of any unit of the wildlife area. Waterfowl and upland game bird hunting are popular activities on the unit, and pheasant hunting is particularly popular. Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future unit management.

WDFW has released pheasant on the site for many years and it's become a family tradition for locals and non-locals alike to come to the unit and pheasant hunt every fall. Birding is another popular activity as many thousands of shorebirds and waterfowl stopover in the wetlands during

spring migration. American white pelicans, sandhill cranes, great egrets, white-faced ibis, black-necked stilts and American avocets are all regularly seen in the spring months.

The Snipes Game Reserve is an area established by Chapter 220-411 WAC in the center of the unit. Game reserves are areas where hunting and trapping for all wild animals and wild birds is prohibited, and no guns or dogs are allowed. Within the game reserve is Horseshoe Lake, an old river oxbow, an important resting place for wintering waterfowl. While some games reserves allow passive recreation, Snipes is closed to all public entry.

Six ponds and lakes that vary in size from 15 to 100 surface acres are spread throughout the unit. The 100-acre Giffen Lake, the largest one, was once popular with anglers but is no longer stocked with fish. Giffin remains a popular destination for birders, hikers, and waterfowl hunters. The gate for the driveway to Giffen Lake is closed in the summer and open in the fall for hunting.

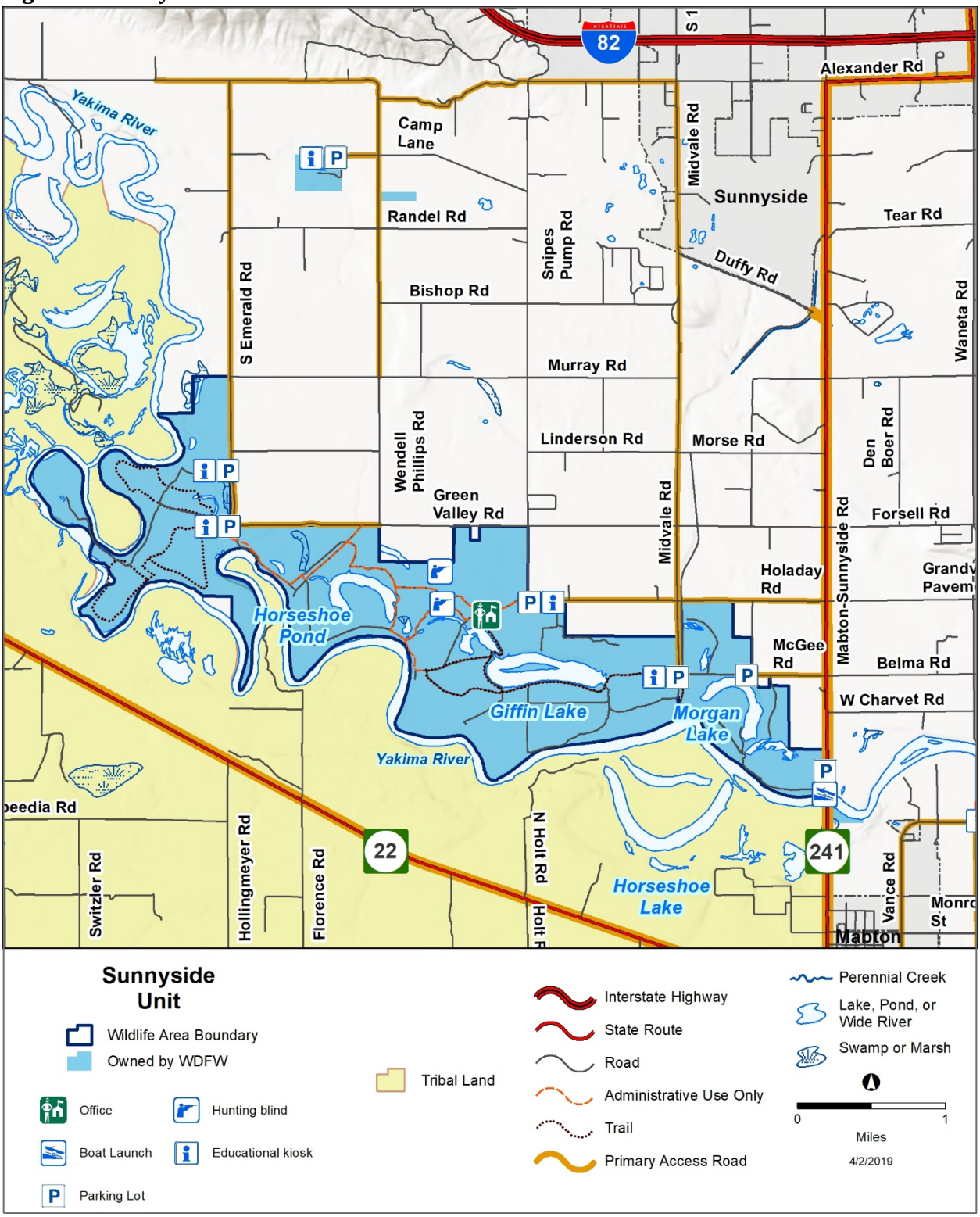
On this unit, it is unlawful to possess shot (either in shotshells or as loose shot for muzzleloading) other than nontoxic shot for any purpose (WAC 220-414-040). The Yakama Indian Reservation borders the south side of the Yakima River the entire length of the Sunnyside Unit. Yakama Nation fishing or hunting licenses are required to fish or duck hunt on the river, and sportsmen must follow the Yakama Nation regulations. Pat checking with enforcement about WDFW license.

Primary management objectives on the Sunnyside Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Increase wetland function and value through vegetative restoration (1.C).
- Develop a protocol for management of nuisance beavers on the wildlife area by 2020 (1.G).
- Maintain and restore floodplain functions throughout the Yakima River Valley (1.I).
- Develop a prescribed burn plan for wetlands by 2020 (1.K).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021 (3.A).
- Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage (3.B).
- Improve waterfowl hunting and recreational bird watching by restructuring and maintaining berms that form rice paddies by 2020 (3.F).
- Improve waterfowl hunting by working by increasing food resources and water supply in the Johnson Wetland by 2020 (3.G).
- Evaluate the function of the refuges and reserves for hunting and recreation opportunities by 2021 (3.H).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).
- Manage and improve upland bird habitat and nesting cover (4.B).
- Maintain Disabled Hunter Access Program, including the Thornton ADA Special Permit for Elk hunting (limited entry special draw) (5.C).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).

- Continue to work with BPA on operations and maintenance budget, securing adequate, sustainable funding, and reporting, and ensuring mitigation obligations are met (8.A).
- Remove derelict structures (10.A).
- Maintain and upgrade water control structures as necessary (10.B).

Figure 7: Sunnyside Unit



Vance-Ferry Road Unit

Size	176 acres
Acquisition Date	1944 and 1993
Acquisition Funding	US Fish and Wildlife Service: *Pittman-Robertson Wildlife Restoration Program (PR)* US Army Corps of Engineers: *Snake River Mitigation Account* WA Dept. of Fish and Wildlife: *Wildlife Fund*
Purpose of Funding	Upland bird and small game habitat
Elevation Range	645 – 675 feet
Recreational Opportunities	Upland bird hunting and limited fishing
County	Yakima
Site Access	From Highway 22 to Ferry Road

Overview

The Vance-Ferry Road unit is made of two parcels totaling 176 acres, located one mile northeast of Mabton. It was purchased in 1944 for small game habitat. There is about three quarters of a mile of Yakima River frontage along the south shore of the river, but with a steep cut-bank, offers little in the way of fishing access.

About 82 acres of the unit are leased agricultural fields in small grain and alfalfa hay rotation. Cattle were removed from this site and a buffer was established along the river that exists as a mix of annual and perennial grasses and broadleaf weeds. A small island of cottonwoods and shrubs separates the Vance acquisition from the old Ferry Road habitat plot. A single row of mature elm trees lies along the boundary. Two shrub plots were planted on the Vance unit to break up the agricultural fields and provide more woody cover for wildlife.

This unit offers opportunities to hunt deer, waterfowl, Eurasian collared dove, mourning dove, quail, and small game. About two-thirds of the unit is within the Yakima River Waterfowl Closure area. In this special migratory bird closure it is unlawful to hunt migratory waterfowl, coot, and snipe within a quarter of a mile of the Yakima River. The unit has components of resident and anadromous fish in the Yakima River. Rainbow trout are resident while spring

Primary management objectives on the Vance-Ferry Road Unit

- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).
- Explore best option for Vance-Ferry Unit (10.D).

Figure 8: Vance-Ferry Road

Byron Unit

Size	1,031 acres
Acquisition Date	1947 - 1994
Acquisition Funding	WA Dept. of Fish and Wildlife: *Wildlife Fund*
Purpose of Funding	Waterfowl habitat
Elevation Range	656-723 feet
Recreational Opportunities	Waterfowl and upland bird hunting, deer hunting, warm water fishing (limited), and birding
County	Yakima
Site Access	From SR-22 East from Mabton and Bus Road off of SR-22

Byron Unit
Photo by Alan L. Bauer

Overview

The Byron unit encompasses 1,031 acres, and is located five miles east of Mabton and five miles south of Grandview in Yakima County. This unit is within the Yakima River Corridor and includes shrubsteppe habitat plus a wetland system that runs the entire length of the property.

The unit was established to provide waterfowl wintering and production habitat. The topography consists of rolling hills and potholes, and is very rocky with a large number of protruding quaternary flood basalt boulders and slabs. A large irrigation water ditch runs east to west through the unit, terminating at the Yakima River just past the east end of the unit. The ditch meanders through several large pothole ponds for approximately 2.5 miles, creating wetland habitat totaling over 400 surface acres. The wetlands often hold a variety of dabbling ducks during the winter months, giving way to nesting resident Canada geese and migrating shorebirds and ducks in the spring.

The unit is also bisected by a large concrete pipe, the Mabton Siphon. The eastern side of the pipe is the Byron Game Reserve is an area established by Chapter 220-411 WAC. Game reserves are areas where hunting and trapping for all wild animals and wild birds is prohibited, and no guns or dogs are allowed. However, the game reserve on this unit is open year-round to the public for walking, birding, photography and other low-impact recreation. The reserve extends approximately one mile east of the pipe. It contains numerous pothole ponds, a 10-foot wide meandering irrigation ditch flowing west to east, and intact shrubsteppe flora with expanses of large, healthy big sagebrush and native forbs. A parking area to access the reserve is being developed at Byron Road at the eastern end of the unit.

The area west of the pipe is open to public access and hunting only during the general hunting season (go to https://wdfw.wa.gov/hunting/regulations/summary-of-seasons for a summary of hunting seasons). Under an agreement with the City of Grandview, it is closed to all use the rest of the year to provide refuge for nesting waterfowl and protect public health.

Part of the water supply for the Byron ponds comes from treated wastewater discharged from the adjacent City of Grandview Waste Water Treatment Plant (WWTP). Historically, non-hunting season shutdown of the Byron Unit was partially due to concerns about public exposure to treated wastewater (although deemed safe, there were still inherent risks). The WWTP has revamped their treatment processes and now have a purer standard of treated water exiting their system. The Sunnyside-Snake River Wildlife Area management team is working with the City of Grandview to increase the amount of purified wastewater entering the Byron ponds throughout the year, maintaining uniform pond levels, and to possibly open up the west section of the unit for public access year-round once again.

Mosquitoes are very prevalent throughout the Byron area during the warmer months. The first detection of West Nile Virus in the area occurred at the Byron ponds in 2008. The Benton County Mosquito Control District conducts mosquito collection and testing around the Byron ponds. Ground spraying is routinely carried out and when a positive test for West Nile Virus occurs, as has happened every year since 2008 (except 2011), aerial spraying is initiated. Maintaining a higher water level in the ponds year-round, with the additional input from the City of Grandview WWTP, will enable the ponds to be stocked with fish and facilitate natural mosquito larvae control.

The unit is home to Columbia basin shrubsteppe obligate plant species including a healthy population of mature big sagebrush (*Artemisia tridentata*). Due to habitat degradation from historical cattle grazing in the area, cheat grass, Russian knapweed, and other invasive species have a solid hold in the area. Canada geese thrive on wetlands in due to abundant forage on newly sprouted cheat grass shoots in the spring. The sandy, rocky, alkaline soils make native plant restoration challenging on this unit. Alkaline tolerant species such as saltgrass *(Distichlis spp.)* have successfully been used to recolonize disturbed areas at the Byron Unit.

The Byron unit supports a variety of upland and shrubsteppe wildlife species including abundant California quail and mourning doves, northern and loggerhead shrikes, sagebrush sparrows, mule deer, yellow-bellied marmots, and numerous herptiles. Byron is particularly well-known for its dense population of western rattlesnakes, which, according to anecdotal evidence, are of a unique greenish coloration. Rattlesnakes have been all but extirpated locally due to intensive agriculture and housing development. Byron provides a protective refugium for this unique population of rattlesnakes.

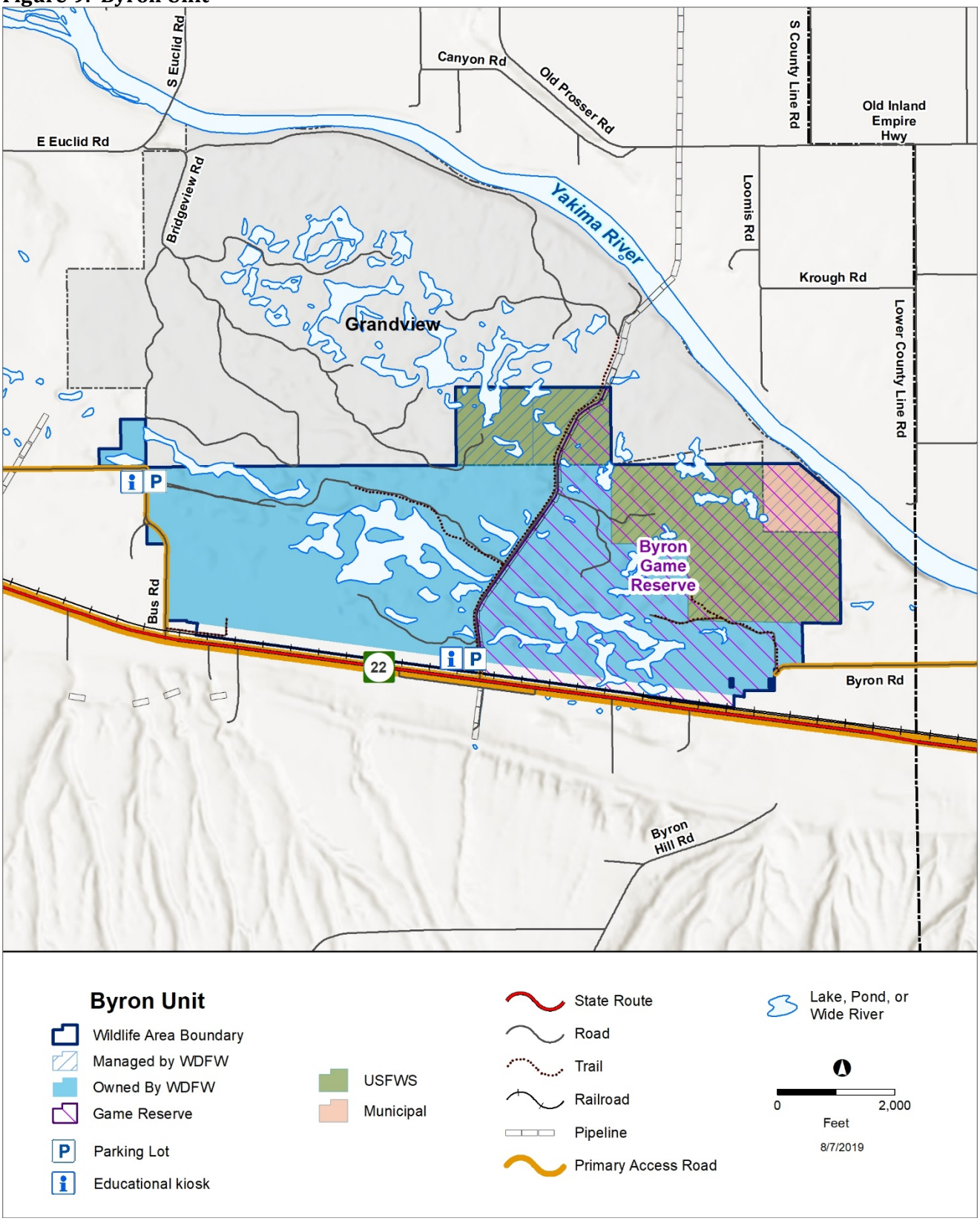
In addition to hunting, birding is a popular activity at Byron. During the winter months, many bird species utilize the wetlands and islands of trees in the unit for cover and food sources. Red-winged blackbirds gather in large flocks in the cattails around the ponds and wintering flocks of American robins can be found throughout the unit feeding on Russian olive fruits. Waterfowl including mallards, northern pintails, green-winged teal, common goldeneye, snow geese, Canada geese, and tundra swans can all be founds on the ponds during the colder months. Lesser scaup arrive in large flocks during spring migration along with blue-wing teal, shorebirds and occasional sandhill cranes. Mallards, green-wing teal and Canada geese stay in the area to breed in the springtime. Many birds of prey are found in the Byron unit as well, including northern harriers, red-tailed hawks, sharp-shinned hawks, Cooper's hawks, American kestrels, and the occasional prairie falcon.

On this unit, it is unlawful to possess shot (either in shotshells or as loose shot for muzzleloading) other than nontoxic shot for any purpose (WAC 220-414-040).

Primary management objectives on the Byron Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Increase wetland function and value through vegetative restoration (1.C).
- Coordinate with the City of Grandview to ensure consistent water supply to Byron ponds for wildlife and recreation (1.F).
- Develop a prescribed burn plan for wetlands by 2020 (1.K).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Evaluate the function of the refuges and reserves for hunting and recreation opportunities by 2021 (3.H).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).
- Open the west side of the Byron unit year-round (5.D).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).
- Continue to work with BPA on operations and maintenance budget, securing adequate, sustainable funding, and reporting, and ensuring mitigation obligations are met (8.B).

Figure 9: Byron Unit



Whitstran Unit

Size	31 acres
Acquisition Date	1993
Acquisition Funding	US Army Corps of Engineers: *Snake River Mitigation Account* Private Grantor: *Private Donations*
Purpose of Funding	Water access
Elevation Range	573 – 629 feet
Recreational Opportunities	Warm water fishing, and limited waterfowl and upland bird hunting, deer and elk hunting
County	Benton
Site Access	From I-82, exit 80 to Bunn Road

Fishing the Yakima River at the Whitstran Unit
Photo by Alan L. Bauer

Overview

The Whitstran unit is made of two parcels comprising 31 acres, located two miles east of Prosser along the Yakima River, in the lower Yakima watershed. The northern parcel is an irrigation canal. It is primarily shrub-steppe and riparian habitat.

Whitstran is home to a healthy population of well-established big sagebrush (*Artemisia tridentata*), a plant that is in decline regionally due to fires and development. The unit also hosts a healthy riparian zone of cottonwood, willow species, Wood's rose and other riparian obligates. The unit offers birders, quail hunters, ducks hunters, and anglers a unique place to recreate in a small, but relatively intact shrub-steppe ecosystem within close reach of Interstate 82 and the town of Prosser. Fishing for fall Chinook salmon and waterfowl hunting are the primary activities here.

The only access to the Whitstran Unit is via an irrigation canal access road. The access road is narrow, and due to the large volume of salmon anglers in the fall, a second parking lot was recently added to reduce road parking.

Primary management objectives on the Whitstran Unit

- Maintain and restore floodplain functions throughout the Yakima River Valley (1.I).
- Ensure long-term legal access to WDFW lands by 2024 (5.B).

Figure 10: Whitstran Unit

Thornton Unit

Size	2,080 acres
Acquisition Date	1994
Acquisition Funding	WA Dept. of Fish and Wildlife: *Wildlife Fund*
Purpose of Funding	Small game habitat
Elevation Range	1,471 – 2,446 feet
Recreational Opportunities	Upland bird and deer and elk hunting, birding, horseback riding and hiking
County	Benton
Site Access	From I-82, exit 90 to Rothrock Road

Overview

The Thornton unit comprises 2,080 acres along the southern slopes of Rattlesnake Mountain, about eight miles northeast of Prosser in Benton County. It provides habitat for mule deer, upland birds, transitory elk (the Rattlesnake Hills herd), sage grouse, and other shrubsteppe obligate species.

The unit supports ridges of excellent shrubsteppe, intermixed with former wheat fields. Restoration of these fields was completed in 1999, and they now support sage sparrows, sage thrashers, and Gray (Hungarian) partridge and quail. Greater sage grouse and other shrubsteppe-obligate species benefit from shrubsteppe habitat. Snipes Creek, an intermittent spring fed stream flowing until mid-summer, bisects the unit. Snipes spring in the center of this unit provides water nearly year round and supports important riparian habitat and cover

Thornton Unit
Photo by Justin Haug, WDFW

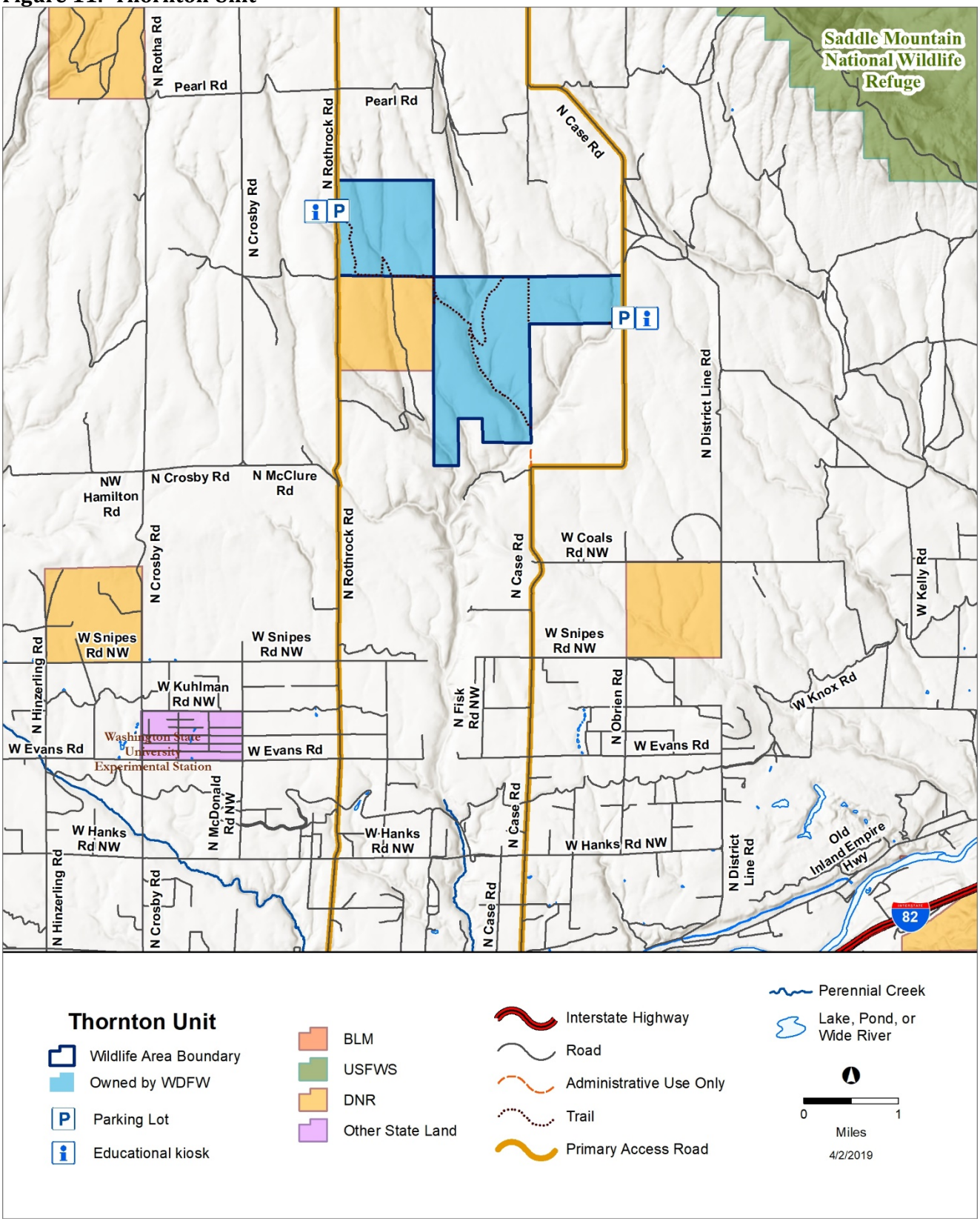
for wildlife. Other smaller seeps exist in the canyons creating a diversity of habitat and wildflower blooms.

With limited huntable public land on Rattlesnake Mountain, the Thornton Unit provides one of the best places to hunt the Rattlesnake Mountain herd. More elk are harvested here than any other unit of the Sunnyside Wildlife Area. The unit is also a popular hunting area for mule deer, partridge, and quail. Lucky hunters might also find chukar, but populations have declined in recent years. Abundant wildflowers and quality shrubsteppe attract hikers and naturalists in the spring. The unit is a reliable place to see the uncommon and local sagebrush sparrow singing from sagebrush tips from March through May. While small and not particularly flashy, this species requires large patches of undisturbed sagebrush and its presence indicates the quality of the habitat here. Limited disabled hunter drive-in access is available on this site by permit only. Otherwise the unit is walk-in only. It has two parking lots, one along Rothrock Road on the west side and one along Case Road on the east side.

Primary management objectives on the Thornton Unit

- Maintain Disabled Hunter Access Program, including the Thornton ADA Special Permit for Elk hunting (limited entry special draw) (5.C).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).
- Continue to work with BPA on operations and maintenance budget, securing adequate, sustainable funding, and reporting, and ensuring mitigation obligations are met (8.B).

Figure 11: Thornton Unit



Rattlesnake Slope Unit

Size	3,661 acres
Acquisition Date	1973
Acquisition Funding	US Congress Programs: *Transfer of Land*
Purpose of Funding	Small game habitat
Elevation Range	448 – 2,069 feet
Recreational Opportunities	Chukar, deer and elk hunting, hiking, horseback riding, target shooting in designated range, mountain biking
County	Benton
Site Access	From Highway 225, north of Benton City

Balsamroot on Rattlesnake Slope
Photo by Alan L. Bauer

Overview

The Rattlesnake Slope unit comprises 3,661 acres or ridge and canyon landscape, located just five miles north of Benton City. High points along the eastern ridge of Rattlesnake Mountain at 2000' provide for commanding views of the lower Yakima River valley, vineyards, and a bird's eye perspective of prominent landmarks including Red, Candy, and Badger Mountains in linear formation, prompting questions about the area's geologic past. While Rattlesnake Ridge is the prominent feature along the south boundary of the property, gently sloping grassland terrain flows down to the east and north, leveling out to 400' elevation toward Horn Rapids.

The east side of the property, near to Hwy 225, is highly disturbed and dominated by invasive cheat grass and knapweed. The interior portion of the site remains quality bunchgrass with abundant and diverse wildflowers that are noticeably visible in the early spring. However, a large fire in 2018 burned 90 percent of the unit, and restoration and natural regrowth have yet to occur on the site.

Access to the site is from the parking lot on the west side of Hwy 225 about 7.5 miles north of the I-82 Benton City Exit roundabout, or 4 mi south of Hwy 240. Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit.

No motorized transport is authorized on the unit. The area is popular for recreation including horseback riding, hiking, and mountain biking. There are several unmaintained and unofficial trails that user have made throughout the property. These trails cause damage to the habitat, and users are discouraged from making additional trails. Hunting is also popular, with chukar, deer, and elk are the most likely species to be hunted.

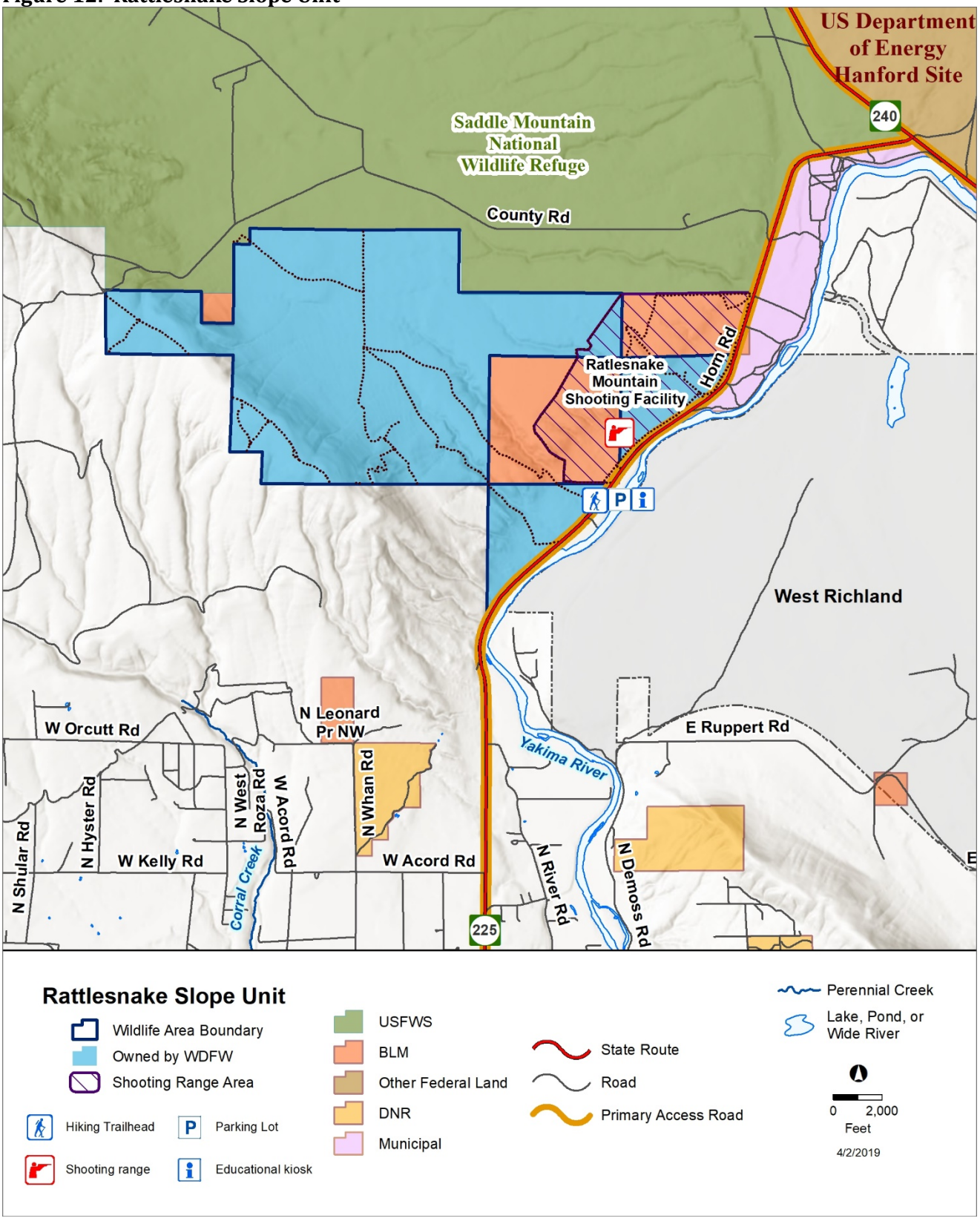
A shooting range was established on land leased to Benton County and run by the Tri Cities Shooting Association. The shooting range is staffed and well-maintained as a multiple use range open to the public with a small fee and set hours. There is no target shooting on the rest of the unit.

A notable adjacent property is the Arid Lands Ecology Reserve (ALE). It is managed for the US Department of Energy by the Pacific Northwest National Laboratory. No general public access is currently allowed on the ALE, and use is limited to approved research and education. The nearby Saddle Mountain National Wildlife Reserve is part of the Hanford Reach National Monument with some use restrictions. For more details on the monument, go to: https://www.fws.gov/refuge/Hanford_Reach/.

Primary management objectives on the Rattlesnake Slope Unit

- Address habitat loss from recent fires on Rattlesnake Slope by 2020 (1.J).
- Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021 (3.A).
- Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage (3.B).
- Asses and designate non-motorized trails at Rattlesnake Slope Unit by 2022 (3.E).
- Make wildlife area boundary adjustments on Rattlesnake Slope by 2020 and others as necessary (7.B).
- Continue to work with BPA on operations and maintenance budget, securing adequate, sustainable funding, and reporting, and ensuring mitigation obligations are met (8.B).

Figure 12: Rattlesnake Slope Unit



Benton City Unit

Size	25 acres
Acquisition Date	1968 - 1994
Acquisition Funding	National Park Service: *Land and Water Conservation Fund* US Army Corps of Engineers: *Snake River Mitigation Account* WA Recreation and Conservation Office: *State Bond Account*
Purpose of Funding	Yakima River access
Elevation Range	452 – 486 feet
Recreational Opportunities	Fishing, birding, and walking
County	Benton
Site Access	From Highway 225 to 14th Street

Benton City Unit
Photo by Alan L. Bauer

Overview

This unit consists of two parcels along the Yakima River near Benton City. They provide fishing and water access. One parcel contains about 16 acres of Yakima riverfront property directly west of the Benton City limits. A second nine acre parcel, named River Park, is in town off of 1st Street. The properties are owned by WDFW and managed by Benton City under a long-term agreement.

The city manages a developed boat ramp and picnic area at River Park, and hiking trails on the west parcel. Fishermen can shoreline fish for salmon, bass, carp, suckerfish, and walleye, or launch boats for fisheries in the Yakima River. While waterfowl hunting is not allowed in city limits, hunters can launch craft from the ramp at River Park and hunt non-incorporated waters up and down stream.

The trails on the west parcel provide for short walks and bird watching opportunities with neo-tropical migrants passing through or breeding during the spring and summer in the wooded riparian areas.

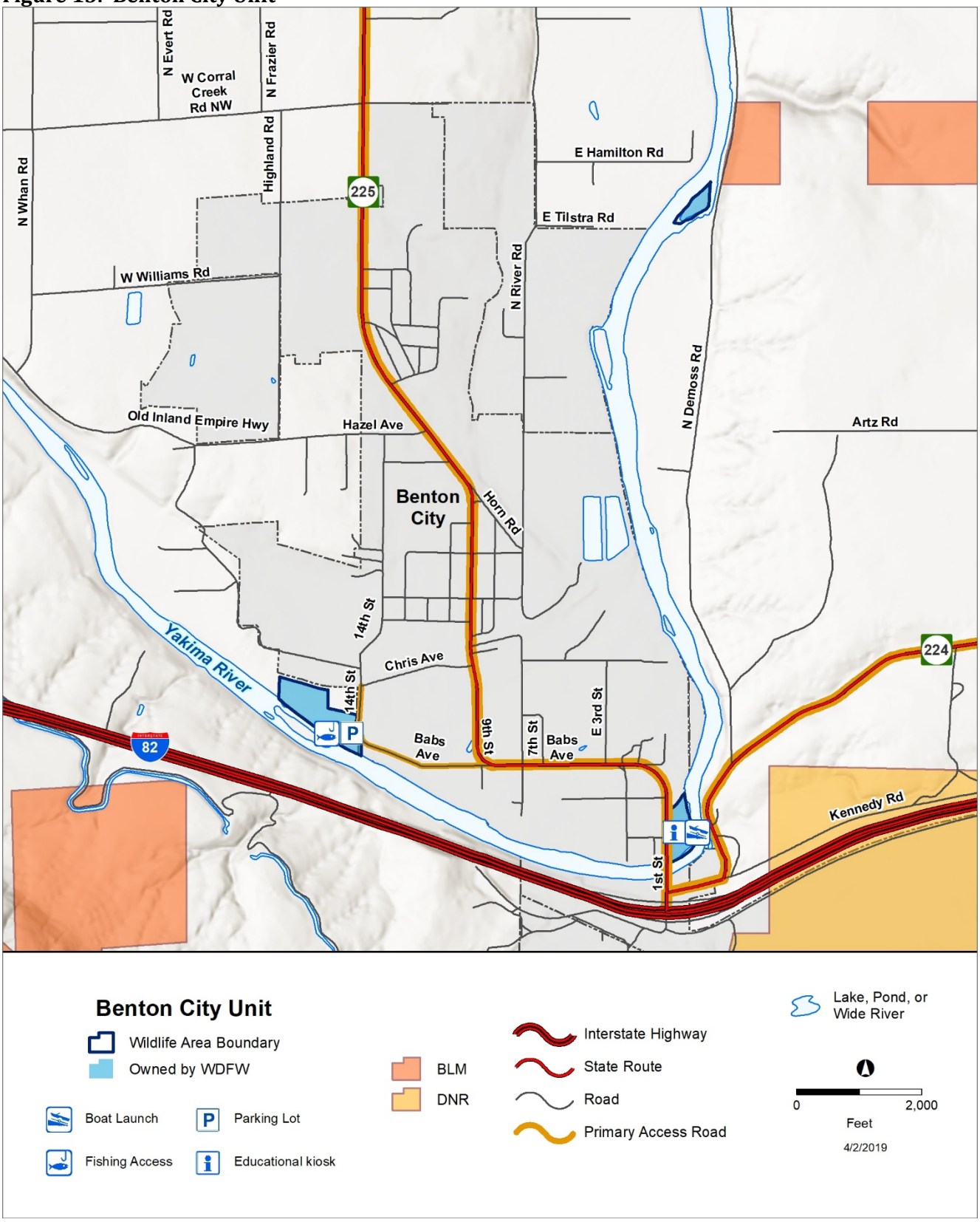
Primary management objectives on the Benton City Unit

Since the Benton City Unit is managed by the city, the only specific objective that WDFW has, along with the Whitstran, I-82 Ponds, and Sunnyside Unit is to:

- Maintain and restore floodplain functions throughout the Yakima River Valley (1.I).
- Maintain agreement with Benton City to manage the unit for recreation (7.E).

Benton City Unit trail
Photo by Alan L. Bauer

Figure 13: Benton City Unit



Hope Valley Unit

Size	549 acres (deeded, leased, and managed)
Acquisition Date	1965 - 1995
Acquisition Funding	WA Recreation and Conservation Office: *WA Wildlife and Recreation Program*
Purpose of Funding	Small game habitat and water access
Elevation Range	743 – 824 feet
Recreational Opportunities	Waterfowl, pheasant, and upland bird hunting, fishing, and bird watching
County	Franklin
Site Access	For southern entrance: From Hwy 395, take Eltopia West Road and head west 4.5 miles to Hooper Road. Turn right and head north for 2.5 miles to the parking lot. For Clark Pond: From I-82, take the Glade Road exit. Head north on Glade for 17 miles. Turn right and go east on Ironwood 3 miles.

Clark Pond, Hope Valley Unit
Photo by Alan L. Bauer

Overview

Three small units, Hope Valley, Clark Pond, and Nipper have been combined to be called the Hope Valley Unit. About 213 acres are owned by WDFW, primarily in the south parcel, 60 acres are leased from the DNR, and 274 acres are BOR land managed by WDFW. The part of the unit that contains Clark Pond consists of acreage leased from DNR and owned by BOR. The unit is located between the Glade North Rd and I-395, between Mesa and Eltopia in Franklin County.

The Hope Valley Unit combines quality shrubsteppe uplands with riparian and wetland water features for a diversity of wildlife habitat and opportunities packed into a small unit. Irrigation water flows from the north into Clark Pond and south through a chain of wetland pools leading into the Eltopia Branch Canal that bisects the southern parcel. Waterfowl hunting, pheasant hunting at the release site, and some fishing comprise most of the current recreation on the unit.

Clark Pond off Ironwood Road contains various warm water fish species for year round fishing; however water quality is poor in the summer months. A primitive boat launch at the parking area provides access for hunters and fishers with small craft. During winter months, puddle ducks and a few divers can cover Clark Pond or be completely absent, providing erratic hunting opportunities. Hunters and bird watchers can scope the entire pond from the roadside and parking area to quickly assess waterfowl numbers. The cattail-fringed wetlands to the south usually hold small numbers of puddle duck as does the irrigation canal on the south parcel. The south parking lot is also part of the Eastside Pheasant Enhancement Program's Release sites. Staff release farm-raised roosters for the youth pheasant hunt and into the general season.

Most of the soil in this unit is sandy and alkaline, and generally undesirable for farming, though there are about 30 acres in an agriculture lease. Dryland grasses and shrubs have been planted to stabilize the site and to provide habitat for wildlife. The once-common and now imperiled Monarch butterfly benefits from the presence of milkweed on the unit, a main food source for the Monarch caterpillar. Beavers have caused some concern in the irrigation ditches, and in the past have been trapped and relocated. As part of this management plan, a protocol for management of nuisance beavers will be developed.

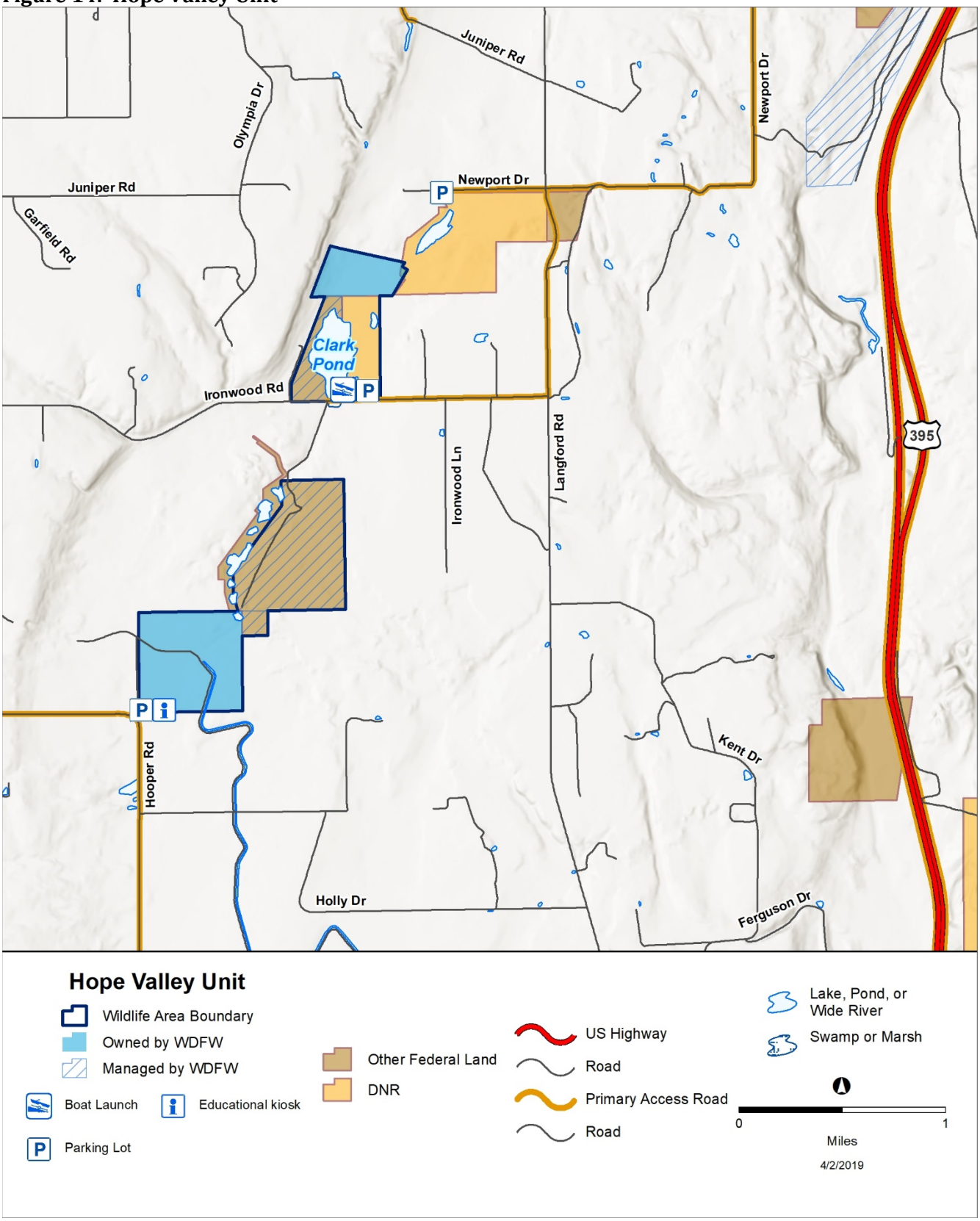
The southern part of the unit (the original Hope Valley) is the other commonly used area. The Eltopia Branch Canal, a main irrigation canal bisects this part of the unit. The parcel west of the canal is dryland, with no irrigation allotment. Three shallow draws receive some sub-irrigation water from the canal, which supports emergent vegetation and Russian olive trees. The parcel on the north and east of the canal is a mix of shrubsteppe habitat and cropland. There is some good upland habitat for wildlife and non-game species. Like many units, controlling weeds is an on-going effort here. Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit.

Access to the unit is via a north parking lot along Ironwood Road and a south lot at the bend in Hooper Road. Access between Clark Pond parking area and the south parcels is possible along the 2-track west of the small irrigation ditch heading south, thanks to a public access easement. The land on both sides of this track is private and users must stay on the track and respect private property. No off-road driving is permitted on the unit. Currently, the irrigation canal prevents access to and from the south parking lot to the rest of the unit. A grant was submitted to build a footbridge over the canal in order to increase accessibility to the sight.

Primary management objectives on the Hope Valley Unit

- Increase wetland function and value through vegetative restoration (1.C).
- Develop a protocol for management of nuisance beavers on the wildlife area by 2020 (1.G).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Install footbridge across irrigation canal at Hope Valley Unit by 2022 (3.D).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).
- Manage and improve upland bird habitat and nesting cover (4.B).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).

Figure 14: Hope Valley Unit



Mesa Lake Unit

Size	695 acres
Acquisition Date	1965-2011
Acquisition Funding	National Park Service*: Land and Water Conservation Fund* *US Fish and Wildlife Service: Pittman-Robertson Wildlife Restoration Program (PR)* *WA Recreation and Conservation Office: State Bond Account* *WA Dept. of Fish and Wildlife: Wildlife Fund; State Migratory Waterfowl Fund*
Purpose of Funding	Waterfowl habitat
Elevation Range	647 – 867 feet
Recreational Opportunities	Waterfowl and upland bird hunting, fishing, birdwatching
County	Franklin
Site Access	From Highway 395 to Langford Road

Overview

Mesa Lake Unit
Photo by Alan L. Bauer

The Mesa Lake Unit contains the 50-acre namesake lake, part of a much larger irrigation system and network of connected "lakes", canals, and wetlands found through central and north Franklin County. It is located in Franklin County and directly adjacent to (and partially in) the city limits of Mesa. While mostly owned by WDFW, the Mesa Lake Unit contains 93 acres of Bureau of Reclamation (BOR) land. Though WDFW started managing some of the BOR lands in 1965, the majority of the unit was purchased by WDFW in 2010 from a private hunting club. It consists of shrubsteppe, upland grasslands, wetlands, and a lake. About 30 acres are in an agriculture lease.

There are approximately 15-20 acres of managed wetlands on the plateau above and to the north of the lake. These wetlands range in size from 2-7 acres and are managed to provide shallow open water and emergent wetland vegetation. Water levels are regulated through flashboard risers to raise and lower water levels and promote vegetation growth and cover. Periodically wetlands are

drained and mowed or sprayed, or both, to control both beneficial and noxious wetland vegetation. These efforts provide valuable vegetation cover and food sources for primarily waterfowl, but other wetland dependent bird species also benefit.

In addition to several managed wetlands and upland habitats, the unit provides for a diversity of wildlife and recreation. Uplands consists of shrubsteppe, grasslands, and a 30 acres agriculture lease. The unit is a great site for waterfowl, quail and dove hunting, provides a warm water fishery, and wildlife viewing year round.

Historically, the lake was treated and stocked with trout, but has not been stocked for many years. It is now managed primarily as a warmwater fishery, relying on naturally reproducing species such as largemouth bass bluegill, and yellow perch. Additionally, species such as walleye and lake whitefish are found in the lake as they move in via the irrigation canals. The ponds don't hold many fish as they are drained and filled seasonally for waterfowl management. The lake also attracts geese, dabblers, and some divers in the winter and the smaller wetlands are managed for waterfowl with several blinds established on site. The west side of the lake has a parking lot and boat launch for fishers and hunters.

In late winter during migration, several thousand geese of mixed species may roost in the area. The managed shallow wetlands attract migrant shorebirds during spring and fall, and support breeding stilts, waterfowl, and a variety of songbird during the summer. Over 110 species of bird have been recorded on the unit in the past couple years, with many more likely still to be found.

Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit. All users must sign in at the kiosk at one of two parking lots. One lot is located at the southwest end of the lake where there is also a boat ramp, and the other parking lot is just the south of the managed wetlands.

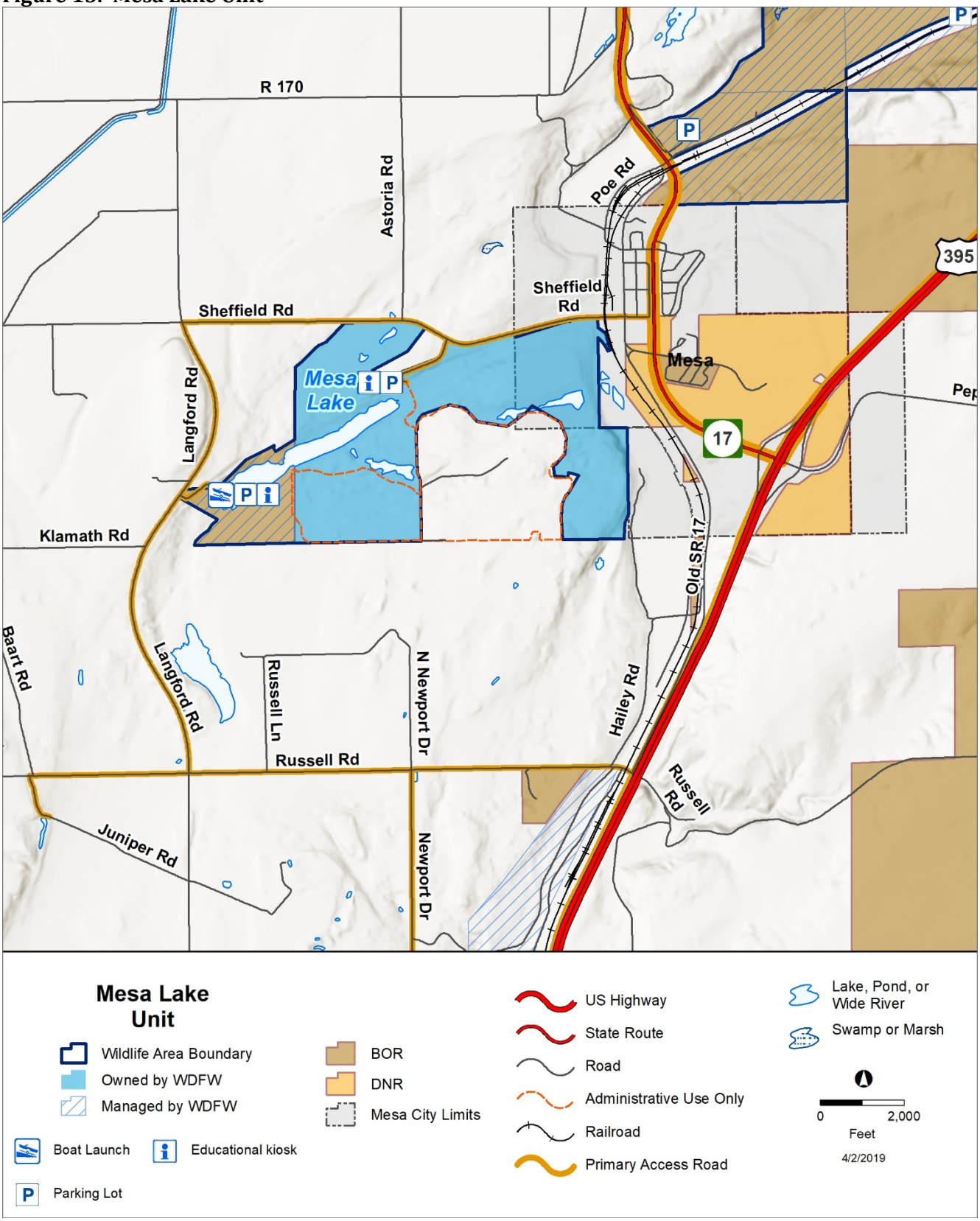
An issue not unique to Mesa, beavers are found throughout west Franklin County's irrigated landscape, and on many of the other WDFW Units such as Bailie and Windmill. They have proved challenging at times regarding water management as they frequently dam up pipes and water control structures. As a result, a nuisance beaver management protocol is being developed that will help guide beaver management activities in the future.

Primary management objectives on the Mesa Lake Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Develop a protocol for management of nuisance beavers on the wildlife area by 2020 (1.G).
- Develop a prescribed burn plan for wetlands by 2020 (1.K).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021(3.A).
- Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage (3.B).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).

- Manage and improve upland bird habitat and nesting cover (4.B).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).
- Remove derelict structures (10.A).
- Maintain and upgrade water control structures as necessary (10.B).

Figure 15: Mesa Lake Unit



Esquatzel Coulee Unit

Size	1,847 acres
Transaction Date	1969 - 1984
Acquisition Funding	*No deeded land*
Purpose of Funding	Waterfowl and small game habitat
Elevation Range	681 – 984 feet
Recreational Opportunities	Waterfowl and upland bird hunting, deer hunting, fishing, bird watching
County	Franklin
Site Access	From Highway 395, to Highway 17

Overview

Esquatzel Coulee Unit
Photo by Alan L. Bauer

The Esquatzel Coulee Unit is 1,785 acres of upland canyons, grassland, and wetland, including a narrow lake, located less than ½ mile north of the town of Mesa. This unit is owned by the Bureau of Reclamation (BOR) and managed by WDFW in cooperation with BOR and the South Columbia Basin Irrigation District. It is roughly shaped like the letter "V" that has tipped to the right with its open end tilted to the northeast. Approximately 1,200 acres lie in the bottom of the Esquatzel Coulee along a northeast axis bisected by the Burlington Northern Railroad and the remaining contiguous acreage is situated on a northerly axis that is the terminus of a long and narrow linear valley through mostly arid rangelands. The lake is a flooded canyon bottom composed of irrigation and seepage water year round and attracts waterfowl.

Columnar basalt and basalt outcrops occur through the unit, especially on the south (north facing) wall of the coulee. This rugged south wall also supports native bunch grasses and shrubsteppe habitats. Pockets of shrubsteppe occur through the remainder of the unit giving way to mostly grass dominated rangelands. Pheasants Forever, through a permit with the BOR, maintains approximately 20-40 acres of irrigated habitat and crops in small plots for wildlife.

The portion along the railroad easement supports approximately three miles of the Esquatzel Wasteway is operated by the South Columbia Basin Irrigation District through an agreement with BOR. The wasteway occurs in topographically low areas and may follow a historic stream channel, but it frequently follows channels that have been engineered for water conveyance. In some adjacent areas, wetland habitats have formed. The waters and flow of the wasteway are irrigation driven and not dependent on precipitation or natural flow.

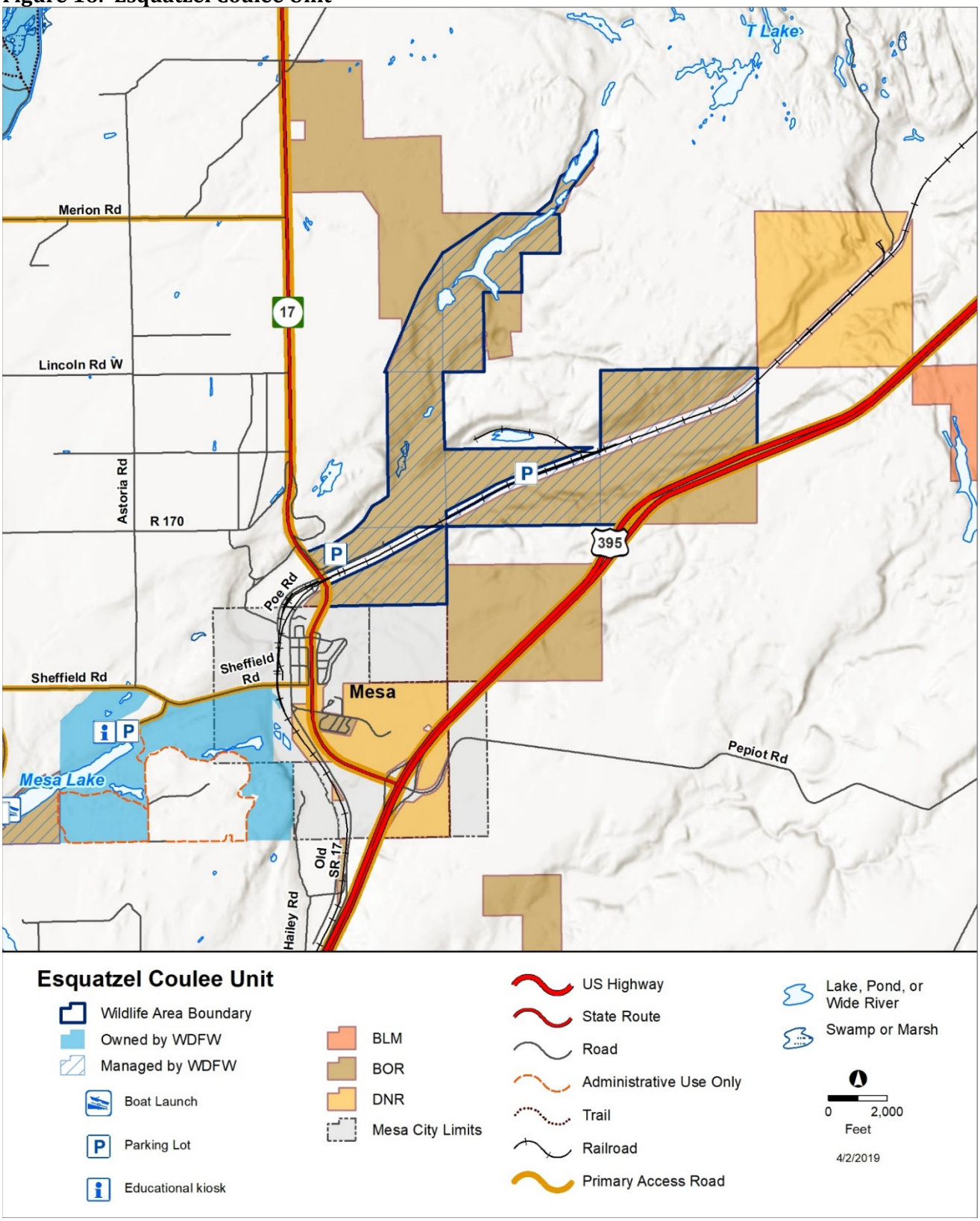
Northern harrier
Photo by Alan L. Bauer

The unit is managed for public fishing and hunting. There is potential for birdwatching and hiking here as well. There is a public parking area located at the southwest end, where only walk-in access is permitted. Wildlife that utilize the unit including mule deer, a variety of waterfowl and birds, including Ferruginous hawk, a (state threatened species), and Washington ground squirrels (state candidate species) may also occur here, but there have not been any recent observations.

Primary management objectives on the Esquatzel Coulee Unit

- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021 (3.A).
- Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage (3.B).
- Manage and improve upland bird habitat and nesting cover (2.B).
- Ensure long-term legal access to WDFW lands by 2024 (5.B).

Figure 16: Esquatzel Coulee Unit



Windmill Ranch Unit

Size	2,139 acres
Acquisition Date	1960 - 2001
Acquisition Funding	US Army Corps of Engineers: *Snake River Mitigation Account*
Purpose of Funding	Small game habitat and lake access
Elevation Range	773 – 924 feet
Recreational Opportunities	Upland bird and waterfowl hunting, deer and elk hunting, fishing and ice fishing, bird watching
County	Franklin
Site Access	From Highway 17 to Colonial Road

Windmill Ranch Unit
Photo by Alan L. Bauer

Overview

The Windmill Ranch Unit is about half deeded land, and the other half a combination of land leased from Department of Natural Resources and owned by the U.S. Bureau of Reclamation (BOR). The unit consists of four separate parcels totaling over 2,000 acres located about three miles northwest of Mesa in Franklin County. This former irrigated ranch provides a variety of diverse habitats at the southern end of the channeled scablands. A large lake runs across the northern boundary. Sandhill cranes are a common site in the fields in the spring, and heavy concentrations of waterfowl are common in the hunting season.

Approximately 432 acres are in an agriculture lease and row crops are grown for the benefit of wintering waterfowl and migrating sandhill cranes. The rest of the unit is a mosaic of several habitat types, including shrubsteppe, grasslands, wetlands and riparian. A history of grazing and fire has removed much of the shrub component from the

shrubsteppe areas, but replanting efforts are contributing to successful restoration in some areas.

The Columbia Basin Irrigation Project, which is the source of all water on this site, has created a variety of wetland habitats. Wetlands on this unit are primarily formed by irrigation seepage and waste water, return flows, and are scattered throughout the unit. Some are intensively managed for moist soil conditions, waterfowl production, and winter food while others are left to function naturally.

Noxious wetland vegetation, including purple loosestrife and Russian olive, are prevalent in many wetlands, and some upland areas are plagued with Canada thistle and knapweed. Cattails are dense in many wetlands and beavers are common. The north part of the unit has some of the best milkweed plants for monarch butterfly.

The 50-acre Powerline Lake is located on this unit. Visitors must park and walk in about 1.5 miles to access to the lake. This is a deep (>60 feet) lake that is spring fed and maintains a fairly stable water level but occasionally discharges excess water into wetland habitat to the west. There is minimal irrigated agriculture to the southeast of the lake, with grassland and shrubsteppe as the majority of the surrounding habitat.

Sign access at Powerline Lake, Windmill Ranch
Photo by Alan L. Bauer

Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit.

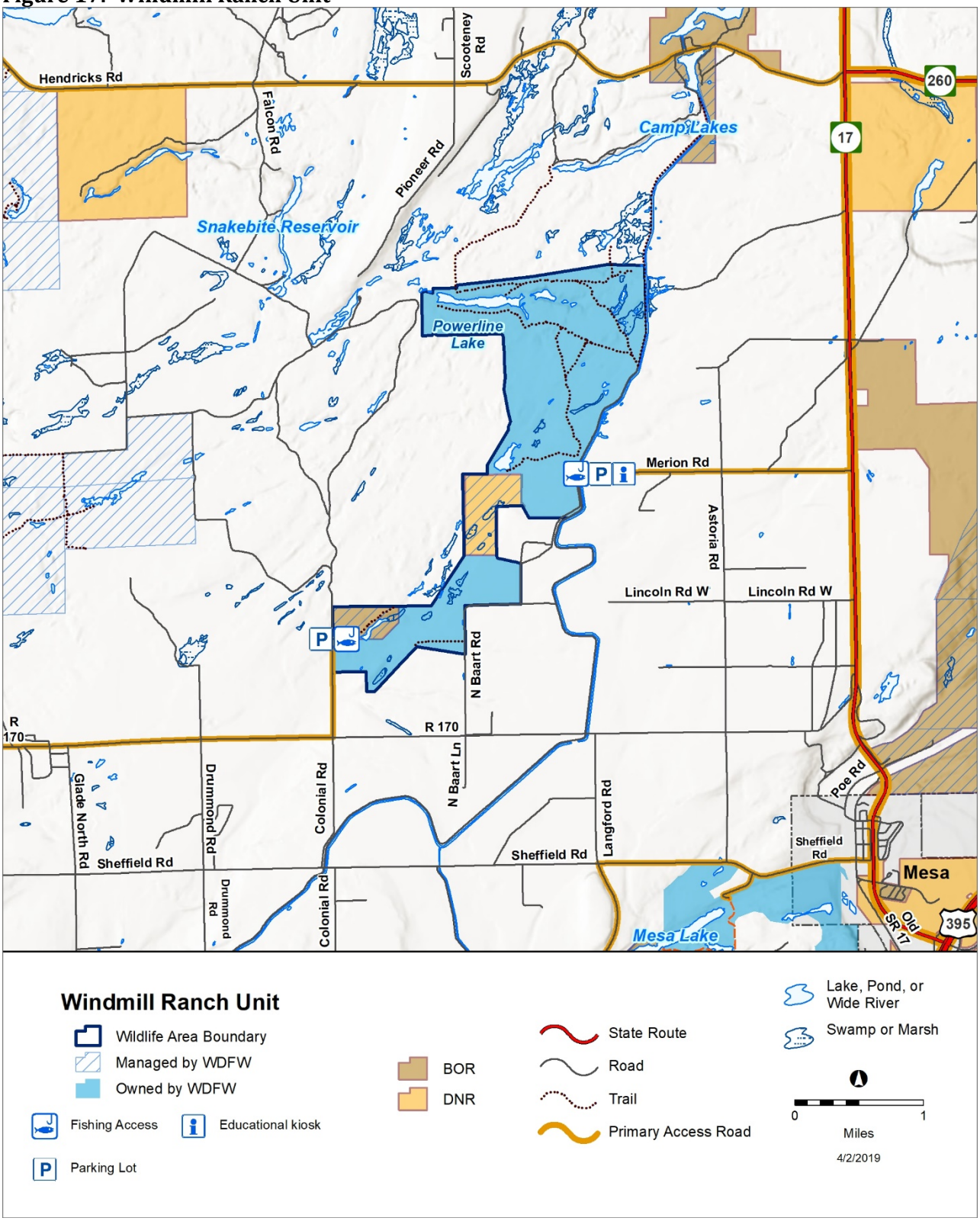
The lots are strictly limited to eight vehicles to control overuse during popular hunting and fishing seasons. Registration at this site ensures a quality experience for users and provides usage and harvest data for future management of the unit. This unit provides opportunities for bird watching, upland bird and waterfowl hunting, and deer and elk hunting. Fishing for warmwater species includes bass, bluegill and crappie, and occasionally triploid (sterile and non-reproductive) trout are stocked. Waterfowl hunting is common throughout the unit at suitable open water wetlands and, if the winter is cold enough, ice fishing Powerline Lake.

Primary management objectives on the Windmill Ranch Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Increase wetland function and value through vegetative restoration (1.C).
- Develop a protocol for management of nuisance beavers on the wildlife area by 2020 (1.G).
- Develop a prescribed burn plan for wetlands by 2020 (1.K).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).

- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021(3.A).
- Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage (4.B).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).
- Improve fishing opportunities by managing aquatic weeds in stocked lakes (4.D).
- Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities (7.C).
- Maintain and upgrade water control structures as necessary (10.B).

Figure 17: Windmill Ranch Unit



Bailie Unit

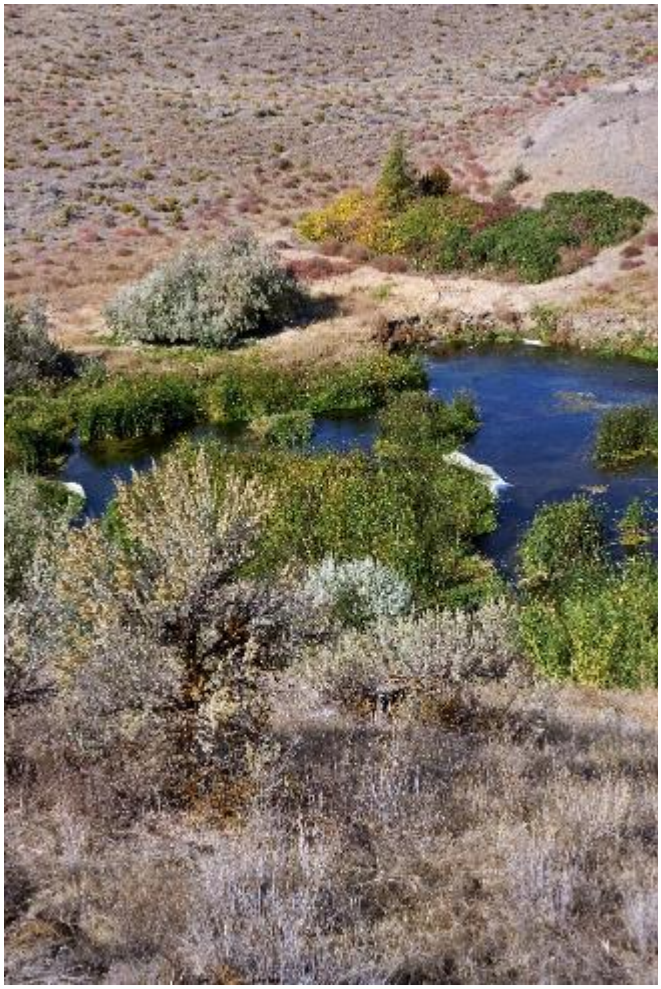
Size	3,897 acres (*hunting easement*)
Transaction Date	1986
Acquisition Funding	*No deeded land*
Purpose of Funding	Small game habitat, hunting easement
Elevation Range	632 – 968 feet
Recreational Opportunities	Waterfowl and upland bird hunting, deer and elk hunting,
County	Franklin
Site Access	From Highway 17 to Sagehill Road

Overview

The Bailie Unit is 3,897 acres of the slightly larger (4,200 acre) Bailie Memorial Youth Ranch (Ranch). The Ranch provides a structured setting for pre-adoption youths 8-14 years old. The Ranch is privately owned and managed by a foundation. In 1986, WDFW purchased a perpetual hunting easement to provide limited public access.

As a result of the Columbia Basin Project, wetlands on this unit, just like those on the Windmill and Mesa, are part of a much larger irrigation system and network of connected "lakes", canals, and wetlands. Uplands are a mix of grasslands and degraded shrubsteppe. Approximately 300-400 acres are managed by the Ranch as irrigated croplands.

Over the last decade, the Ranch has used the unit for cattle grazing that has impacted native habitats. WDFW works closely with the Ranch board of trustees to maintain and restore grasslands and shrubsteppe and provides direct



Bailie Unit
Photo by Alan L. Bauer

Bailie Youth Ranch Sign
Photo by Alan Bauer

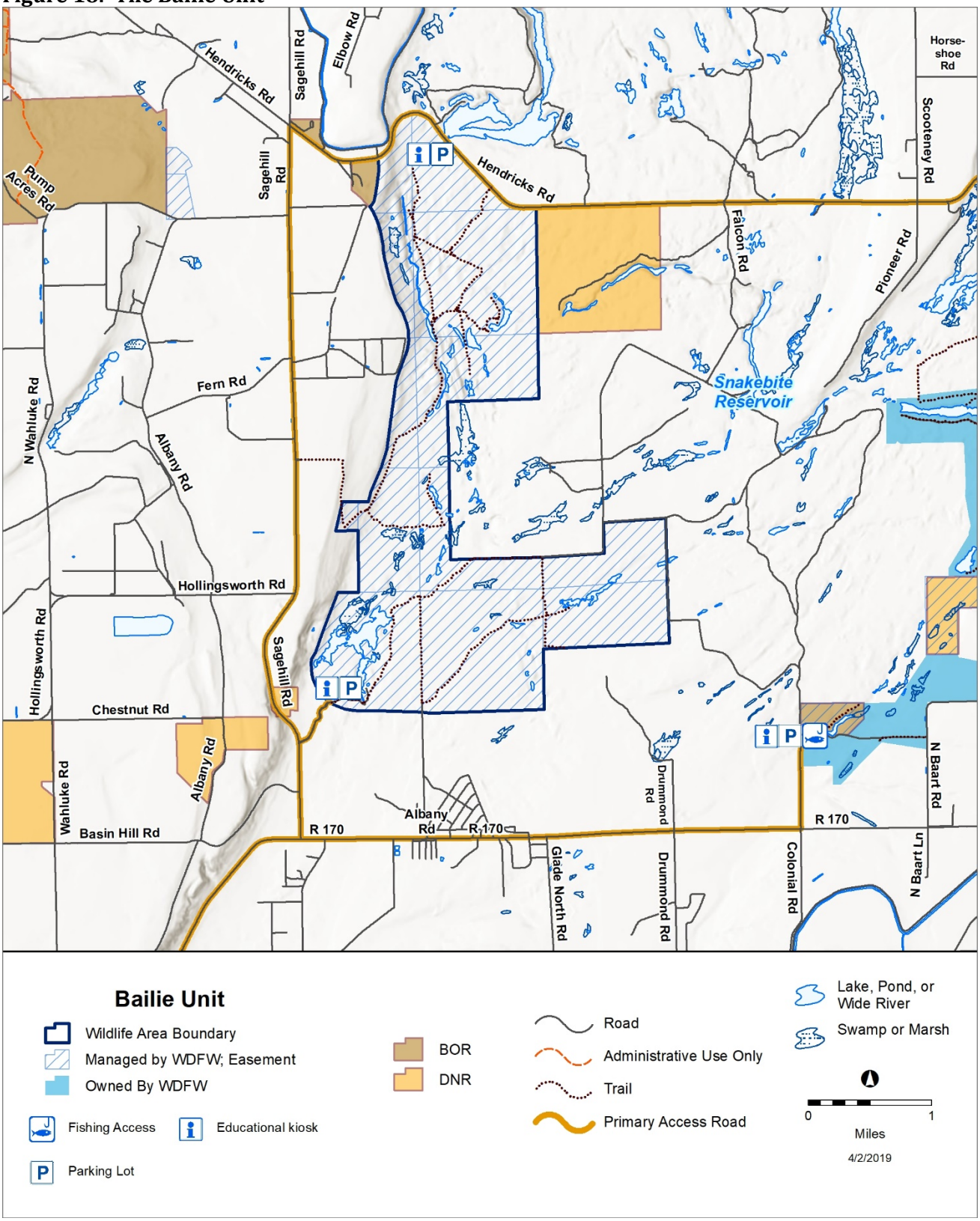
management of wetlands through water level management and wetland vegetation mowing and spraying.

At this unit, hunting is the only activity allowed under the hunting easement, and you must register to hunt. Hunting is allowed only on Saturdays, Sundays, Wednesdays, and legal holidays. Other recreational activities such as fishing may be available by contacting the Bailie Youth Ranch.

Primary management objectives on the Bailie Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Increase wetland function and value through vegetative restoration (1.C).
- Develop a protocol for management of nuisance beavers on the wildlife area by 2020 (1.G).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022 (2.C).
- Manage and improve upland bird habitat and nesting cover (4.B).

Figure 18: The Bailie Unit



Thompson Seeps Unit

Size	1,459 acres
Transaction Date	1969 - 1984
Acquisition Funding	*No deeded land*
Purpose of Funding	Small game and waterfowl habitat
Elevation Range	749 – 1,000 feet
Recreational Opportunities	Pheasant and quail hunting, bird watching
County	Franklin
Site Access	From SR 17 to Mt. Vista Road

Thompson Seeps Unit
Photo by Alan L. Bauer

Overview

The Thompson Seeps Unit, previously known as WB-10 Wasteway Unit, is a 1,459-acre unit, located about eight miles northwest of Basin City in Franklin County. The Unit is narrow, about five to six miles long and about a half mile, wide located at the bottom of a natural coulee. It is owned by the U.S. Bureau of Reclamation (BOR) and is managed for public fishing and hunting access by WDFW.

The large coulee carries irrigation return water to the Columbia River through a series of engineered canals and naturally occurring topographic low areas. The south side is flanked by high quality shrubsteppe while the north is adjacent to irrigated crop lands. In the past, more irrigation return water flowed through the unit, providing a variety of shallow and deeper water habitats for fish and waterfowl, but upgrades to irrigation pumps and improved water diversions have decreased the amount of water in this unit.

This unit is the focus of a wetland restoration project with Ducks Unlimited as well as the site of proposed project to improve native habitat connectivity through the restoration of riparian and shrub habitat for mule deer.

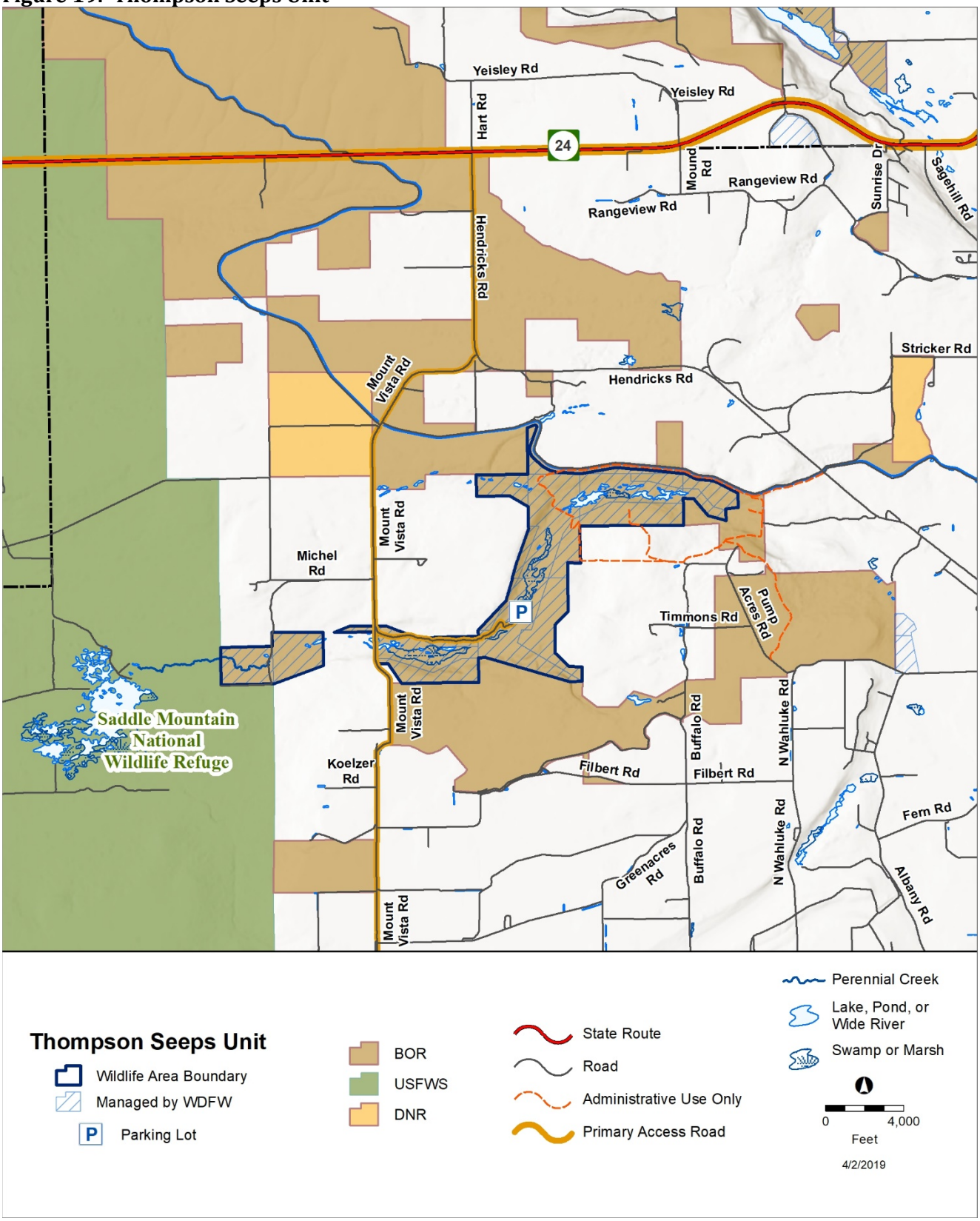
WDFW management at this unit consists mostly of weed control and some road maintenance where beavers cause flooding.

Public recreation includes pheasant and quail hunting, as well as bird watching.

Primary management objectives on the Thompson Seeps Unit

- Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area (1.B).
- Develop a prescribed burn plan for wetlands by 2020 (1.K).
- Develop wetland habitat in Thompson Seeps Unit by 2022 (1.L).
- Develop regularly scheduled waterfowl surveys for use in assessing management actions (2.B).
- Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024 (4.A).

Figure 19: Thompson Seeps Unit



Land Ownership and Management, Funding and Agreements

Acquisition history, funding, and purpose

WDFW and The Sunnyside-Snake River Wildlife Area staff work closely with many organizations such as conservation groups, local governments, irrigation districts, and user groups, to identify priorities for purchase, management, and restoration of lands. Many of the units of the wildlife area are near other public and private conservation lands and holdings and coordination about planning and restoration and recovery projects provides efficient and effective habitat and species management over a larger landscape.

The fundamental reason for acquiring lands within the Sunnyside-Snake River Wildlife Area was to protect and enhance native habitats and to provide public recreation. Some of the lands also serve to help meet mitigation goals for the Bonneville Power Administration (BPA) and U.S. Army Corps of Engineers (Corps) construction projects. Although the mitigation details differ between these two entities, they both address habitat losses for upland wildlife, waterfowl, big game and a variety of non-game species.

In the fall of 2001, and as a result of mitigation for the construction of four dams on the Snake River, the Lower Snake River Fish & Wildlife Compensation Program was designed to compensate for habitat and wildlife losses that were incurred due to the construction of those dams. The Corps was the project proponent for Snake River dam construction and funded mitigation efforts to replace habitat losses. Part of that program included the acquisition of 24,000 acres within southeast Washington. Some of those lands, specifically those in Franklin, Benton and Yakima counties, were combined with existing wildlife areas.

The 17 units of the wildlife area are managed by WDFW under a variety of instruments, including deeds, agreements, leases, and easements.

Table 2: Wildlife area land instruments

Acres	Instrument
12,598	Deeded acres (owned by WDFW)
4,198	Owned by BOR and managed by WDFW under an agreement
320	Owned by USFWS and managed by WDFW under agreement
175	Leased (primarily from DNR)
3,909	Easements – primarily one large hunting easement and some fishing easements
21,120	TOTAL

Agreements

Deeded land

Almost 60 percent of the wildlife area is owned by WDFW. The primary funders for the deeded land include: WA Recreation and Conservation Office (*State Bond Account*); WA Dept. of Fish and Wildlife (*Wildlife Fund*); National Park Service (*Land and Water Conservation Fund*); US Army Corps of Engineers (*Snake River Mitigation Account*); and US Fish and Wildlife Service (*Pittman-Robertson Wildlife Restoration Program*).

Agreements

Under agreement with the Bureau of Reclamation, WDFW manages about 4,198 acres in multiple units, primarily on the eastern side of the wildlife area. Additionally, 320 acres of the Byron Unit are managed under an agreement with the US Fish and Wildlife Service for habitat protection.

Easements

Easements are a right, held by an entity other than the underlying fee title land owner, to cross or otherwise use a portion of the land for a specified purpose. WDFW holds easements for public recreational access, conservation, and property management throughout the state. On the Bailie Ranch, WDFW holds a 3,897 acre hunting easement. A number of other small easement are held for river and property access.

Leases

WDFW leases land from other entities and manages it under the wildlife area. About 180 acres are leased from the Department of Natural Resources on the Hope Valley and Windmill Ranch units, and 35 acres are leased from the Northern Pacific Railroad on the Byron Unit. Leasing land allows WDFW to fulfil management objectives of protecting waterfowl and small game habitat and providing access.

Canola fields at Windmill Ranch Unit
Photo by WDFW

Agricultural leases

Agriculture is an integral part of the management practices on the wildlife area and provides multiple benefits for wildlife, habitat, and the local economy. It is an effective way to enhance forage and cover for wildlife, and provide weed and erosion control.

Wildlife area and regional staff negotiate leases, develop farm plans in collaboration with lessees, and oversee farming activities on leased sites. Leases are negotiated and designed to meet needs of the agency, wildlife, the farmer, and the community. Specific wildlife goals may be included, such as increased food and cover for upland birds, increased diversity on the landscape, and forage for

deer. Practices to maintain pollinator habitat on WDFW owned and managed agricultural and grazing lands should be implemented where practicable. Funds generated from these leases supplement local budgets for the management activities on the wildlife area. As of 2019, 1,918.2 acres are in agriculture.

Table 3: Agricultural leases on Sunnyside-Snake River Wildlife Area

Unit	Agriculture acres	Expiration
Hope Valley	29.8	2024
Thornton	1,240.5	2019
Windmill Ranch	432.0	2022
Byron/Ferry Rd	101.2	2022
Sunnyside	339	2023
TOTAL	**2,142.5**	

Grazing permits

Grazing is allowed under certain conditions on the wildlife areas, subject to specific grazing management plans, and in accordance with the Fish and Wildlife Commission policy C-6003, Domestic Livestock Grazing on Department Lands: (https://wdfw.wa.gov/about/commission/policies/domestic-livestock-grazing-department-lands). Controlled grazing and activity on this wildlife area is limited to existing agricultural fields. There are currently no grazing permits on the wildlife area.

Temporary use permits

WDFW allows commercial and group activities on wildlife areas with a permit from the regional office. Non-commercial group activities of 30 participants or more must have a permit. For commercial operators such as rafting companies or hunting and fishing guides, a fee-based permit is required to operate on the wildlife area. The wildlife area issues a couple of permits per year.

Water use

WDFW holds seasonal water rights that are used to flood habitat for waterfowl, shorebirds, and other wildlife found in the wetlands. WDFW's agriculture leases are irrigated with water supplied by the irrigation district. This provides winter forage for waterfowl, upland birds, turkeys, and deer. Not all agriculture is irrigated; some agriculture close to the river is grown by using the moist soil method.

Ownership and use of adjacent lands

The Sunnyside-Snake River Wildlife Area units are scattered throughout Yakima, Benton, and Franklin counties, where much of the adjacent property is in private agricultural ownership. This juxtaposition within the converted landscape matrix increases the importance of these units as islands of habitats, stepping stones of connectivity, and refugia, breeding sites, or stopover areas for many wildlife species. Hops, grapes, orchards, corn, potatoes, onions, alfalfa, and wheat are the

primary agriculture near the wildlife area units. The Sunnyside and I-82 units share the Yakima River as a common boundary with the Yakama Indian Nation. The Byron Unit is bordered on the north by the City of Grandview's water treatment facility. The Thornton Unit shares a common two-mile boundary with DNR on the west side of the property. About one-third of the DNR section is enrolled in the CRP program; the remainder is high quality shrub-steppe, which is grazed periodically under a private lease. The Rattlesnake Slope unit borders the Arid Lands Ecology Reserve (ALE), which is owned by the Department of Energy as part of the Hanford Reach National Monument and is managed by the US Fish and Wildlife Service. The Saddle Mountain National Wildlife Refuge is also part of the national monument.

Rattlesnake Slope contains in-holdings owned by the Bureau of Land Management (BLM) and shares a common boundary on the north with ALE. The Rattlesnake Slope Unit is separated from the Thornton Unit by two separate, private ownerships. The Windmill Ranch was purchased as two separate parcels but a small parcel that is owned by DNR connects them. A small parcel in the SW corner, owned by the Bureau of Reclamation (BOR) makes up part of this management unit.

Crop from Sunnyside Unit
Photo by Alan L. Bauer

The Bailie Memorial Youth Foundation shares one mile of common boundary with DNR, which is held under a private lease for grazing.

The Hope Valley Unit (formerly Nipper Unit) borders DNR property on the east and BOR property on the south (Clark Pond). All other lands within the wildlife area complex are bordered by private lands, which are generally managed for some type of agriculture.

Interagency agreements

WDFW cooperates across jurisdictions as this is crucial for sharing resources to get things done across boundaries and at a landscape scale, and to coordinate activities. WDFW manages the Esquatzal Coulee and Thompson Seeps units which are owned by BOR for wildlife habitat and public recreation. WDFW manages these like other units. Benton City conversely manages the Benton City Unit, owned by WDFW, for recreation, and takes care of maintenance and operations.

Management setting

Administration

Day-to-day management of the Sunnyside-Snake River Wildlife Area is the responsibility of staff based out of the offices and shop located in Sunnyside and Pasco. Personnel consists of one full-time Wildlife Area Manager, two Assistant Wildlife Area Managers, two-three Natural Resource Technicians, one full-time Access Manager, and one career seasonal Natural Resource Worker.

Other activities, such as wildlife surveys and development of species, habitat, wetlands and floodplain recovery are often undertaken by other agency staff and experts in coordination with wildlife area staff.

Operating funds

Operating funds to manage the Sunnyside-Snake River Wildlife Area comes from two main sources: locally generated revenue from agriculture leases, and mitigation funds from Bonneville Power Administration. WDFW issues Agriculture Permits to local farmers and receives payments for the right to farm cropland on the wildlife area. This revenue is used to support staff salaries and habitat projects on the wildlife area. In 1996, as part of a mitigation agreement for habitat losses due to dam construction on the Columbia River, the Bonneville Power Administration (BPA) agreed to fund reasonable operation and maintenance activities on the wildlife area

Facilities and maintenance

Activities on WDFW lands include maintaining fences, roads, trails, signs, campgrounds, facilities, and performing weed control. The goal is to ensure wildlife area facilities and infrastructure remain in good working order over time. There are 12 structures located on the units that include two barns, two shops, six storage sheds, and two historic buildings (former residence and a wooden building), and other miscellaneous farm/ranch structures.

Crop harvest
Photo by Phillip Buser

Fences are used to delineate property boundaries where applicable. Some interior fences still remain from previous landowners. These fences are being removed as time and staff capacity allow.

Road management

All of the roads within the wildlife area are administrative roads, and are closed to public motorized access for the protection of wildlife and habitat. Each unit of the wildlife area is relatively small and the need to use motorized vehicles to access the interior portions of the unit is not necessary. Parking lots and access points are mostly located on the periphery of each unit. There is some ADA access for hunting allowed for public access on the Sunnyside and Thornton by arrangement.

Local land use designation

The 15 units of the Sunnyside-Snake River Wildlife Area are located in three counties of Yakima, Benton, and Franklin. Zoning of the units is not consistent across all three counties, but all reflect the local landscape that each unit is located in. For example, even though the Whitstran Unit located along the Yakima River, it is Zone RL (Rural lands)-5, which allows for residential develop on up to 5 acres. Likewise, the Benton City unit is also along the Yakima River, but is within the city limits. Land use must be consistent with each county's Comprehensive Plan, Natural Resource Ordinance, Critical Areas Ordinance, and Shoreline Management Plan. Table 4 describes the relationship of these land use regulations to the wildlife area land.

Table 4. Land use designations by wildlife area unit

Wildlife area unit	Comprehensive Plan land use designation and zoning*	Shoreline Management Plan designation
Yakima Co.		
Byron	Remote/Extremely limited	Conservancy
Vance-Ferry	Agriculture	Rural
Sunnyside	Remote/Extremely limited	Conservancy/Rural
Glover	Agriculture	-----
I-82 Ponds	Remote/Extremely limited	Conservancy
Benton Co.		
Rattlesnake Slope	Park District	-----
Thornton	Agriculture	-----
Benton City	Industrial	Conservancy
Whitstran	RL-5	Conservancy
Franklin Co.		
Hope Valley (*Clark Pond and Nipper*)	Agriculture	Rural Conservancy
Mesa	Agriculture	Rural Conservancy
Esquatzel	Agriculture	-----
Windmill	Agriculture	-----
Bailie	Agriculture	Rural Conservancy
Thompson Seeps (*WB-10*)	Agriculture	-----

Yakima County
Lakes:https://www.codepublishing.com/WA/YakimaCounty/html/YakimaCounty16D/YakimaCounty16DAppxB.html
Rivers: https://www.codepublishing.com/WA/YakimaCounty/html/YakimaCounty16D/YakimaCounty16DAppxC.html
Zoning:
http://yakimacounty.maps.arcgis.com/apps/webappviewer/index.html?id=1bf3a144659f4a72a140973904f17612
Benton County
Shoreline: http://benton.municipalcms.com/files/documents/document174120123051013.pdf
Zoning: https://bentonco.maps.arcgis.com/apps/MapSeries/index.html?appid=85029c8fdb784e1eb0bf08479d0cd595
Franklin County
Shoreline: https://www.co.franklin.wa.us/planning/smmp.html
Zoning:
http://franklinassessor.maps.arcgis.com/home/webmap/viewer.html?webmap=49e9b20342de4107b437dca9ef3a574f

Cultural Resources

State and federal law requires the protection of cultural, geological, and other non-renewable resources. Such resources may not be removed unless determined to be beneficial to wildlife, habitat, or scientific or educational purposes. WDFW coordinates with appropriate agencies and tribes for the protection of such resources if any activity affects cultural, archaeological, or historic resources. This includes the removal of various rock formations, Native American artifacts, plants, seeds, and other items. Wildlife area staff have received training in the importance of protecting the cultural resources on the wildlife area. Any action on the wildlife area that disturbs the ground requires a cultural resources survey. See Appendix E for a brief cultural history of the area.

Enforcement

Enforcement on the wildlife areas is provided by WDFW enforcement officers who have general authority peace officer status for the State of Washington. The Mission for WDFW enforcement officers is, "To protect our natural resources and the public we serve." WDFW's enforcement officers perform a wide range of duties to protect natural resources, the communities and economies that rely on them, and those who recreate outdoors. WDFW Officers approach enforcement in four ways: enforcement, education, partnerships and community involvement.

Their highest priority is enforcement of all fish, wildlife, and habitat laws under Title 77 RCW. Officers often deal with issues related to poaching, threatened and endangered species protection, habitat protection, and destruction of habitat. A core duty for WDFW Officers is protecting public safety in the outdoors, and they participate in a variety of enforcement activities related to this, including enforcing boating, off-road vehicle and snowmobile laws, and eradicating illegal drug growing and manufacturing. Officers work closely with emergency management agencies and play an important role in emergency management statewide.

Public conduct issues on this wildlife area include vandalism, littering and garbage dumping, especially on the western units, typically at water access sites and parking areas (I-82 Ponds, Sunnyside). Efforts by a volunteer citizens group, Eyes in the Woods, using surveillance cameras and signage have reduced but not eliminated illegal activities. WDFW is searching for innovative answers to curtail this issue, as litter pick takes an inordinate amount of staff time.

Signs posted on the wildlife areas are very specific to what activities are and are not acceptable. As in all wildlife areas, more enforcement presence is needed to handle all of the issues that occur. As part of this plan, WDFW will take actions to improve safety and security, and explore options of increasing citizen involvement in reporting illegal activities. The wildlife area staff will continue to encourage hunters and all other users to report suspicious or illegal behavior, and things that the managers should know about. Report illegal or dangerous activity to WDFW Enforcement at 1-877-933-9847, or 911 if you observe poaching in progress.

Research and studies

Consistent with WDFW's mission to preserve, protect, and perpetuate fish, wildlife, and habitat, WDFW supports independent studies to achieve wildlife area objectives.

Table 5: Summary of research activities conducted on Sunnyside-Snake River Wildlife Area

Researcher	Date	Description
Jennifer Andreas - WSU extension Puyallup	Ongoing	Bio-control insects on noxious weeds, Sunnyside and Byron Units
WDFW	Summers	Waterfowl banding for Pacific Flyway and WDFW research
Michael Casazza – USGS Western Ecological Research Center	2017	Tracking blue wing and cinnamon teal with satellite transmitters
Chris Sergeant	1997	Clark Pond Fishery Analysis
Marc Divens Larry Phillips	2000	1998 Warmwater Fisheries Survey of Powerline Lake (Franklin County)
Marc Divens, Heather Woller, Randall Osborne	2003	Warmwater Fisheries Surveys of the I-82 Ponds (Yakima County) 2000 & 2001
Marcus J. Divens	2013	2012 Warmwater Fisheries Survey Of Mesa Lake (Franklin County), Washington
WDFW	2016-17	Statewide Monarch and Milkweed Surveys
WDFW	2016	Statewide Ferruginous Hawk Surveys

Recreation and stewardship

Recreation overview

Trout fishing at Powerline Lake
Photo by Phillip Buser

WDFW wildlife areas provide fishing, hunting, and wildlife-related recreation opportunities, consistent with the agency's mission, the statewide wildlife area planning goals, and with the funding sources for each property. Public use is influenced by the character of the landscape, ability to access the area, fish and wildlife species present, as well as seasonal considerations and regional engagement from the local community. WDFW may place limitations on some activities in order to protect resources, preserve quality of experiences and infrastructure, and address the safety of personnel and the public. The agency seeks to promote public enjoyment of fish and wildlife while managing and perpetuating them for future generations.

Washington State's population is growing, putting more pressure on wildlife areas across the state, including the Sunnyside-Snake River Wildlife Area. With more people comes a greater diversity of recreation interests, which can lead to conflicts between users. User conflicts can be detrimental to

natural resources and can result in fewer quality recreational experiences. WDFW is developing a Statewide Recreation Plan to address these issues, which may lead to new rules, policies, and guidance to guide area management and to inform the public about where and how to recreate on WDFW lands. The strategy is expected to be completed in 2021.

Duck hunters at the Sunnyside Unit
Photo by Alan L. Bauer

Recreation on the Sunnyside-Snake River Wildlife Area is predominately waterfowl hunting, along with upland bird, small game, deer and elk hunting, and fishing. There is a growing interest in bird watching, and visitors also enjoy walking, wildflower viewing, and horseback riding. No ATVs are allowed and some ADA hunter access is available at Sunnyside and Thornton units.

Wildlife area staff are responsible for managing public use. This includes providing accurate and up-to-date signage and information on the agency website, indicating what recreation activities are permissible, and if any local restrictions apply. All state wildlife areas are governed by the agency's Public Conduct Rules https://wdfw.wa.gov/about/wdfw-lands/public-conduct), and may also have local requirements tailored to the area and its natural features, habitats and species. Additionally, many units of the wildlife are require free on-site registration. Visitors must register on site when arriving, and report their activity before leaving. Registration provides usage and harvest data for future management of the unit. At the time of this plan, the units where registration is required are: Glover, Sunnyside, Hope Valley, Windmill, Mesa Lake, and Rattlesnake Slope. An objective of this plan to have registration at all the units.

Staff work with volunteers to make improvements to recreation areas, and collects public input to help prioritize funding needs (e.g. kiosks, parking areas, viewing platforms, etc.). The following table shows the major recreational opportunities and facilities by wildlife area unit. Main recreation opportunities

Pheasant release
Photo by Jason Fidorra, WDFW

Hunting: The primary hunting opportunities on the wildlife area are waterfowl, upland birds (pheasant, quail, and dove), and turkey in the spring. There is also limited small game deer and elk hunting opportunity. Pheasants Forever also helps us administer some youth hunts. Always refer to WDFW's website for the current Hunting Pamphlet for seasons and rules. To protect other wildlife species including waterfowl and raptors, non-toxic

shot is required for all upland bird, dove and band-tailed pigeon on all pheasant release sites statewide. This restriction applies to both shotshells and to loose shot for muzzleloading.

Target Shooting: Target shooting is allowed on the wildlife area at the managed shooting range on the Rattlesnake Slope Unit. The land is leased to Benton County, who contracts with the Tri Cities Shooting Association to manage it as a multiple use, fenced range. There is a small fee and limited hours. There is no target shooting on the rest of the unit.

Fishing: Fishing is popular on a few of the units, especially the I-82 ponds where anglers can catch bass and perch and other warmwater fish. Powerline Lake on the Windmill Unit is popular where largemouth bass, rainbow trout, black crappie, channel catfish, and yellow perch can be caught. On Mesa Lake bass, bluegill and yellow perch can be caught.

Bird watching: The abundance of waterfowl, shorebirds, and migratory birds makes bird watching very good on most of the wildlife area. This is a result of the mixed wetland, riparian, upland and shrubsteppe habitats across the wildlife area. Many of the wetland areas maintain open water throughout the year. Migratory shorebirds and wading birds utilize the wetlands during the spring and summer. Waterfowl can be found across the wildlife area year-round. Many migratory songbirds can be observed using the riparian corridors during the spring, summer and fall seasons. Shrubsteppe obligate species are often observed in the uplands throughout the year. Each unit has something for the avid and novice bird watcher on any given outing.

Camping: Camping on the wildlife area is very limited and primitive in nature. Camping is allowed at only at Sunnyside, Thornton, Rattlesnake Slope, Thompson Seeps, and Esquatzel Coulee units. It is primitive camping, restricted to the parking lots, with no facilities.

Birdwatchers on Thornton Unit
Photo by Jason Fidorra, WDFW

Table 6. Recreational use on Sunnyside-Snake River Wildlife Area

Wildlife area unit	Primary hunting and fishing opportunities	Other recreational activities	Water access sites	Restrictions / conditions	Parking and other facilities
Bailie	Waterfowl & Upland bird Deer and elk (restricted) Fishing – private lease only			Registration required onsite. Privately owned ranch –WDFW has hunting easement. Open for hunting on Sat., Sun., Wed., and legal holidays. Limited fishing may be available by contacting the Bailie Youth Ranch. Limited creek crossing access. No overnight camping.	Two parking areas, each limited to 5 spots Kiosk
Benton City	Fishing	Birding Walking	2 water access sites	Managed by City of Benton City.	Parking lot, picnic tables
Byron - Main	Waterfowl & Upland bird Deer Warm water fishing (limited)	Birding Walking		Registration required onsite. Only open during the general hunting season. No target shooting.	Two gravel parking areas Kiosk
Byron - Reserve	No Hunting	Birding Walking		No hunting allowed. No traps, or dogs. No target shooting. Open to walk-in visitors.	Unimproved parking area. Kiosk, interpretive sign
Esquatzel Coulee	Waterfowl & Upland bird Deer Fishing	Walking Birding Horseback riding	Primitive	No target shooting.	Gravel parking area
Glover	Upland bird	No other use		Surrounded by private land. No target shooting.	Gravel parking area Kiosk
Hope Valley *(Clark Pond + Nipper)*	Pheasant release site Waterfowl Upland birds Deer Fishing	Birding Wildlife viewing	Water access site and boat launch	Registration required onsite. Non-toxic shot only. Pheasant release site.	Two gravel parking areas Kiosks
I-82 Ponds	Waterfowl & Upland bird, turkey Fishing – Yakima River and borrow pits	Limited other uses	Water access (10)	Focus is on water access. Yakima River fishing requires a permit from the Yakama Nation.	10 parking areas associated with access sites, and some with facilities Kiosks
Mesa Lake	Waterfowl & Upland birds Fishing	Wildlife viewing Bird watching	Water access Boat launch	Registration required onsite.	Gravel parking area Kiosk
Rattlesnake Slope	Chukar, partridge Deer and elk	Horseback riding Hiking, Wildflowers Mountain biking		Walk in traffic only. No camping. Target shooting only on range managed by third party.	Gravel parking area Kiosk

Wildlife area unit	Primary hunting and fishing opportunities	Other recreational activities	Water access sites	Restrictions / conditions	Parking and other facilities
		Target shooting on range only			
Sunnyside	Pheasant release site Waterfowl & Upland bird, dove Small game, turkey Deer	Walking Birding Horseback riding		Registration required onsite. Snipes Reserve is closed to all public entry. Non-toxic shot only. No target shooting. Yakima River fishing requires a permit from the Yakama Nation.	Multiple parking areas (6) Kiosks
Thornton	Upland bird, chukar, partridge Deer and elk	Birding Wildflowers Horseback riding Hiking		No fires. Master Hunters (special permits). No target shooting.	#1: Gravel parking area #2: Gravel drive-through parking area for horse trailers. Limited disabled hunter drive-in access is available by permit only.
Vance-Ferry Road	Upland bird Fishing (limited access)	None	I mile of access along Yakima River	This site falls within a waterfowl hunting closure area. No waterfowl hunting is allowed within 1/4 mile of the Yakima River.	1 parking lot Kiosk
Thompson Seeps *(WB-10 Wasteway)*	Upland bird & Waterfowl Deer Fishing	Birding Hiking		The road/pond system is impacted by beaver and vehicle access may be impossible. Be prepared to walk in from Mt. Vista Road.	No specific parking area
Whitstran	Waterfowl & Upland bird (limited) Deer & elk Warm-water fish (limited) Fall Chinook	Wildlife viewing	Water access on Yakima River	Access to this unit is only from Bunn Road.	2 Gravel parking areas, one is seasonal only Kiosk
Windmill Ranch	Upland bird and waterfowl (restricted) Deer & elk Fishing & Ice fishing	Birding Wildlife viewing		Registration required onsite. 8 car limit during hunting seasons only. No overnight camping or open fires. See kiosk for further information/ restrictions. Foot traffic only.	#1: Gravel parking area #2: Gravel parking area. Wildlife viewing blind Kiosk

Water access: WDFW manages more than 500 water access sites throughout the state for recreation associated primarily with boating and fishing. These sites occur within wildlife areas as boating or fishing facilities and beyond wildlife area boundaries as separately managed areas. This section provides information on water access sites that occur within the planning area.

Dock fishing at I-82 Ponds
Photo by Alan L. Bauer

The wildlife areas offer many opportunities to access the rivers, lakes, and ponds for fishing, boating, and water play. There is one fishing and boat launch access on the Columbia River, and multiple access points along the Yakima River, ponds off of the river, and ponds and lakes.

Powerline Lake, a popular walk-in fishing spot on the Windmill Ranch Unit, is not on the table below as it has no facilities. Information on fishing locations and regulations can be found at https://wdfw.wa.gov/fishing.

Boat launch at I-82 Ponds
Photo by Alan L. Bauer

Table 7: Water access areas

Sunnyside-Snake River Wildlife Area					Fishing and Boating Opportunities			Access Facilities		
County	Waterbody	Access	Unit	Public fishing easement	Fishing *	Hand launch	Trailered boat launch	Boat Ramp Surface	Toilet	ADA Parking
Benton	Yakima River	Benton City	Benton		•		•	Concrete	•	
		Duportail			•		•	Unimprove		
		Hyde Road			•		•	Gravel	•	
		Snively Road			•		•	Gravel	•	
Franklin	Clark Pond	Clark Pond	Hope Valley		•		•	Concrete		
	Columbia River	Ringold			•		•	Unimprove	• ADA	•
	Mesa Lake	Mesa Lake	Mesa		•		•	Gravel		
Yakima	Buena Pond	Buena Pond	I-82		•	•			•	
	Ponds 1 & 2	Ponds 1 & 2	I-82		•				•	
	Pond 3	Pond 3	I-82		•				•	
	Ponds 4 & 5	Ponds 4 & 5	I-82		•	•			•	
	Yakima River	Granger			•		•	Gravel		
		Fitzsimmons	I-82		•	•				
		Mabton Bridge	Sunnyside		•		•	Concrete		
		Mellis Road	I-82	•	•	•			•	
		Zillah Bridge	I-82		•		•	Concrete	•	

* Fishing opportunities *on department land.* Refer to current WDFW sport fishing rules, as fishing seasons change and may not occur at all sites.

Stewardship and volunteerism

The Sunnyside-Snake River Wildlife Area has benefited from long-term participation of a number of groups and individuals who volunteer on a variety of projects to support the agency's conservation and recreation objectives. An important objective of this plan is to strengthen and continue to expand these partnerships and uncover more opportunities for interested parties to engage with the wildlife area.

WDFW staff are interested in exploring new opportunities and partnerships at the wildlife area that help highlight the educational and nature-based opportunities that the area could provide.

Developing nature interpretive signs and information, co-hosting nature hikes or wildflower walks, and bird watching and habitat enhancements are some of the ideas to explore in the next 10 years.

Pheasants Forever Volunteers
Photo by Noel Ferguson, WDFW

Table 8 shows some of the main on-going volunteer opportunities on the wildlife area. Contact wildlife area manager to propose ideas or to get involved with any on-going efforts.

Table 8: On-going volunteer opportunities Sunnyside-Snake River Wildlife Area

Group	Types of activities
Washington Waterfowler's Assoc.	Building/maintaining duck blinds - late summer
Pheasants Forever	Tree and shrub planting in spring, assist with fall pheasant
Mule Deer Foundation	Potential collaboration on habitat projects - summer
National Wild Turkey Federation	Potential collaboration on habitat projects - summer
Richland Rod and Gun Club	Wood duck nest box cleaning - early spring
Various	Hunting blind clean up - early fall
Back Country Horsemen	Litter pick up, fence repair, other various projects
Runners of the Sage	Various as needed

Conservation

Conservation of the natural resources is the core of the mission of WDFW, and a driver for many actions on the wildlife area. Active management of the water resources helps provide habitat for waterfowl and other wildlife. Restoration activities such as replanting after fires, weed control, restoring impacted areas to native habitat, maintaining a healthy riparian area and upland bird

habitat, helps to achieve more suitable habitats for wildlife. A key objective of this 10 year plan is to develop a long-term wetland management plan for habitat restoration and conservation.

Norther harrier
Photo by Alan L. Bauer

Riparian areas and wetlands in an arid environment provide good habitat for birds and browse and cover for elk and mule deer. The wildlife area consists of variable sized parcels spread out over the landscape, so it is important to think on a landscape level, connect with other landowners, and work with partners on priorities. As part of the planning process, staff will identify priority areas for habitat restoration, and waters to improve and enhance for fishing.

The wildlife area supports three areas that provide refuge to wildlife, where no hunting, and sometimes no access, is allowed: 1) The Snipes Reserve on the Sunnyside Unit; 2) the Byron Reserve on the Byron Unit; and 3) the Mabton Refuge on the Yakima River. One of the objectives of this management plan is to evaluate the function and benefits of the refuges and reserves to wildlife and recreationalists in order to promote their ecological value.

Sandhill cranes, Windmill Ranch Unit
Photo by Alan L. Bauer

Wildlife area goals, objectives, and monitoring

Goals, objectives and performance measures

This plan sets management priorities for the Sunnyside-Snake River Wildlife Area for the next 10 years. The goals, objectives, and performance measures in this plan were developed by an interdisciplinary team of regional and headquarters staff, with input from the Wildlife Area Advisory Committee, tribes, the public, and other agency staff. They are consistent with WDFW's Mission and Strategic Plan. The plan goals, objectives, and performance measures will be reviewed and updated every two years. The objectives listed in this plan may or may not be fully funded. In many cases, successful outcomes will be dependent on availability of funding.

Table 9 lists the goals, objectives, and performance measures of the plan. The "Tasks" column lists some of the steps that need to be taken or things to consider to achieve the planned objectives. While writing the goals and objectives, staff considered how projected changes in climate could impact the resources of the wildlife area and took note of opportunities that may help to mitigate or prepare for those impacts. These considerations are listed in the "Tasks" column were appropriate to the activity.

Sunset at i-82 Ponds
Photo by Alan L. Bauer

Monitoring and adaptive management

Wildlife area objectives will be measured annually based on the associated performance measures and through staff annual evaluations. On a biennial basis, wildlife area managers will review and work with staff leads to develop two-year updates with the advisory committee and district teams. Such reporting will allow the manager, staff, and regional office to modify tasks and timelines as necessary to meet plan objectives. Plan implementation may be affected by available funding.

Table 9: Sunnyside-Snake River Wildlife Area goals, objectives, and performance measures

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
Statewide Goal: Maintain or improve the ecological integrity of priority sites and systems.					
1. Maintain or improve the ecological integrity of priority systems and sites.	A. Establish an ecological integrity baseline and associated goals for ecological systems of concern and priority systems and sites by 2024.	All	1. Funding identified (Y/N) 2. Baseline established (Y/N) 3. Ecological Integrity goals established (Y/N)	Ecological integrity Monitoring Team	- Work with WLA manager to design monitoring plan to achieve Objective A over 10-year planning term. - Conduct data collection to determine baseline within 10-year planning term. - Provide ecological integrity baseline report to WLA manager prior to start of subsequent 10-year planning term. - Work with WLA manager to establish ecological integrity goals.
	B. Implement the 10-year plan for wetland management and restoration, which is focused on enhancements and also includes development of new wetlands on the wildlife area.	Sunnyside Byron Windmill Ranch Bailie Mesa Lake Thompson Seeps	1. Number of acres managed annually 2. Number of acres restored annually	WLA Manager *Habitat Biologist*	- Prioritize areas for restoration. - Work with partners to identify common goals. - Identify funding sources. - Work with conservation districts to help leverage opportunities with land owners. - Tie in with state plans, conservation initiative, and other partners. -Ensure not in conflict with upland bird habitat.
	C. Increase wetland function and value through vegetative restoration.	Sunnyside Byron Windmill Ranch Bailie	Vegetative restoration completed at:	WLA Manager	- Reduce emergent vegetation to provide 50 percent cover / 50 percent open water of wetlands.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
		Hope Valley	1. Morgan Lake – Sunnyside Unit (Y/N) 2. Bridgeman Pond – Sunnyside Unit (Y/N) 3. All of the ponds at Byron Unit (Y/N) 4. Circle #3 Wetlands – Windmill Ranch Unit (Y/N) 5. V.I.P. Wetland – Bailie Unit (Y/N) 6. Bailie Lake – Bailie Unit (Y/N) 7. Clark Pond – Hope Valley Unit (Y/N)		- Utilize moist-soil management techniques to increase natural food sources and improve overall wetland value. - Incorporate planted crops whenever practical to provide additional food and cover resources. - Manipulate water levels, as much as possible, to provide optimum recreational opportunities.
	D. Implement weed management plan annually.	All	1. Number of acres inspected 2. Number of acres treated 3. Annual weed control report produced (Y/N)	WLA Manager	- Annually develop work plan using principles of Integrated Pest Management. - Complete annual reporting requirements. - Respond to weed control needs after fires or other largescale disturbances. - Coordinate with the Yakama Nation and County on purple loosestrife control. - Coordinate w/ WSU Extension on Bio-Control efforts.
	E. Coordinate with Yakima Basin Integrated Plan (YBIP) work on Wapato Reach, which includes the I-82 ponds, as well as other	I-82 Ponds	1. Number of projects on completed	WLA Manager Habitat Biologist	- Coordinate with YBIP on any projects on the Yakima River.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	areas of the Yakima River system.				- Coordinate with the Yakama Nation.
	F. Coordinate with the City of Grandview to ensure consistent water supply to Byron ponds for wildlife and recreation.	Byron	1. Flow to Byron Ponds improved (Y/N) 2. Increased use by waterfowl and migratory birds (Y/N) 3. Appropriate level of health restrictions applied (Y/N)	WLA Manager	- Work with City of Grandview wastewater treatment on water flow to Byron Ponds. - Coordinate with Mosquito Control District. - Coordinate with Dept. of Health on access restrictions.
	G. Develop a protocol for management of nuisance beavers on the wildlife area by 2020.	Mesa Lake Hope Valley Windmill Ranch Sunnyside Bailie	1. Beaver Management Protocol Developed (Y/N)	Habitat Biologist Wildlife Biologist WLA Manager Enforcement	- Work with the irrigation district on plan. - Work with the Yakama Nation. - Work with others in the agency involved with this issue.
	H. Identify upland areas with high potential for habitat improvement and develop action items by 2021.	All	1. Number of sites identified 2. Number of action items implemented	WLA Manager Habitat Bio	- Identify sites. - Develop action items to protect habitat.
	I. Maintain and restore floodplain functions throughout the Yakima River Valley.	Benton City Whitstran I-82 Ponds Sunnyside	1. Number of floodplain restoration projects developed and implemented	Habitat Biologist WLA Manager Fish Biologist	- Coordinate with local partners on floodplain priorities (YBIP). -Coordinate with Yakama Nation.
	J. Address habitat loss from recent fires on Rattlesnake Slope by 2020.	Rattlesnake Slope	1. Habitat evaluated (Y/N) 2. Develop strategy for habitat restoration (Y/N) 3. Habitat restoration implemented (Y/N)	WLA Manger Habitat Biologist	-Work with Habitat Program to develop restoration strategy. - Secure funding for implementing restoration.
	K. Develop a prescribed burn plan for wetlands by 2020.	Sunnyside Byron Windmill Ranch Mesa Lake	1. Plan developed (Y/N) 2. Plan implemented (Y/N)	WLA Manager Burn Team Leader	- Work with fire districts and burn team to develop a burn plan.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
		Thompson Seeps	3. Acres burned annually		
	L. Develop wetland habitat in Thompson Seeps Unit by 2022.	Thompson Seeps	1. Overgrowth vegetation cleared (Y/N) 2. Low-head berms developed (Y/N) 3. Water control structures installed (Y/N)	WLA Manager	- Work with Ducks Unlimited. - Work with BOR. - Work with Irrigation Districts.
Statewide Goal: Achieve species diversity at levels consistent with healthy ecosystems.					
2. Achieve species diversity at levels consistent with healthy ecosystems.	A. Conduct survey for Species of Greatest Conservation Need in coordination with the Diversity Division by 2022.	All	1. Species surveys completed every 5 years (Y/N)	Diversity Wildlife Biologist	- Coordinate district priorities with Olympia Diversity staff annually. - Contribute to Observations database.
	B. Develop regularly scheduled waterfowl surveys for use in assessing management actions.	I-82 Ponds Byron Sunnyside Windmill Ranch Bailie Mesa Lake Hope Valley Thompson Seeps	1. Waterfowl survey developed (Y/N) 2. Surveys conducted on a regular basis (Y/N) 3. Number of times surveys used to determine success of management actions.	Wildlife Biologist WLA Manager	- Determine appropriate information to collect. - Develop and conduct surveys. - Use information to evaluate management actions.
	C. Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat by 2022.	Hope Valley Mesa Lake Windmill Ranch Bailie Esquatzel Coulee Sunnyside Byron	1. Number of units assessed for pollinator habitat 2. Number of areas enhanced for pollinator habitat	Wildlife Biologist WLA Manager	- Conduct assessment of pollinator habitat. - Determine which areas to plant shrubs, forbs, and native wildflowers. - Collect data on the location of milkweed within the WLA. - Allow milkweed to grow in areas where it will not be disturbed during the time period it supports Monarchs.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
Statewide Goal: Support and maintain appropriate recreation opportunities.					
3. Enhance recreational experience through site development.	A. Focus recreation enhancement and management actions on five popular units to improve recreational experience by 2021.	Sunnyside Rattlesnake Slope Mesa Lake Windmill Ranch Esquatzel Coulee	1. Recreation enhancement projects identified by 2021 (Y/N) 2. Number of funding opportunities applied for and received. 3. Number of projects implemented.		- Identify potential projects and viewing opportunities. - Develop projects in coordination with regional staff and CAMP. - Apply for RCO grant funding and/or capital funding. - Recreation strategy may inform actions. - Partner with others for Wildflower walks and birding tours.
	B. Continue to improve recreational experience, user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage.	All, with a focus on the five priority units: Sunnyside Rattlesnake Slope Mesa Lake Windmill Ranch Esquatzel Coulee	1. Number of kiosks installed or improved 2. Number of signs installed 3. Website content updated annually	WLA Manager Public Affairs Enforcement	- Coordinate with other WLAs engaged in similar pursuit. - Keep website current. - Construct/erect kiosks and informational signs for all access points, trailheads and parking areas as staff time and funding allows. - Where applicable consider interpretive signage that describes species, habitat types, unique features, restoration projects. - Install signs as staff time and funding allows. - Informed by Lands Showcase work, develop positive information messages (not all focused on the Nos).

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
					- Work with local DOT for adding directional signs on appropriate highways and byways.
	C. Address seasonal closures that affect both the wildlife area and water access sites annually.	All	1. Number of agreements reviewed 2. Number of clarifying changes made 3. Information on closure posted (Y/N)	WLA Manager Water Access Manager	- Review agreement with landowners on easement and determine appropriate closure period (set closure dates). - Get closure dates added to the website.
	D. Install footbridge across irrigation canal at Hope Valley Unit by 2022.	Hope Valley	1. Funding secured (Y/N) 2. Project designed (Y/N) 3. Construct complete (Y/N)	WLA Manager	- Identify and apply for grant, secure funding. - Coordinate with Irrigation District. - Design and construct bridge.
	E. Asses and designate non-motorized trails at Rattlesnake Slope Unit by 2022.	Rattlesnake Slope	1. Official trail system mapped (Y/N) 2. Maps and kiosk info developed (Y/N) 3. Maintenance plan developed with local support (Y/N)	WLA Manager	- Work with local users to develop official trails. - Create maps and post on kiosks and online. - Work with users to develop maintenance plan.
	F. Improve waterfowl hunting and recreational bird watching by restructuring and maintaining berms that form rice paddies by 2020.	Sunnyside	1. Berms restructured (Y/N) 2. Maintenance systems developed (Y/N)	WLA Manager Regional Staff	- Restructure berms that create rice paddies. - Work with other regional staff on system to maintain berms. - Ensure movement of water between each cell.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	G. Improve waterfowl hunting by working by increasing food resources and water supply in the Johnson Wetland by 2020.	Sunnyside	1. Food resources increase in Johnson Wetland (Y/N) 2. Adequate water supplies maintained during hunting season (Y/N)	WLA Manager	- Work with Agriculture Permit Holder on plan to increase food resources. - Work with the Irrigation District on plan for adequate water supplies.
	H. Evaluate the function of the refuges and reserves for hunting and recreation opportunities by 2021.	Sunnyside Byron Vance Ferry	1. Evaluation developed (Y/N) 2. Evaluation conducted (Y/N) 3. Functions and values identified (Y/N)	WLA Manager Habitat Biologist Game Division	- Coordinate with Game Division and regional staff on management. -Work with managers of Toppenish Wildlife Refuge (USFWS) on regional management.
4. Improve fishing and hunting opportunities	A. Assess potential to improve lakes and stock with fish (trout and/or warm water) by 2024.	Priority units: Windmill Ranch Sunnyside Mesa Lake Also: Hope Valley I-82 Ponds Byron Thompson Seeps	1. Assessment completed (Y/N)	Fish Biologist	- Conduct a survey to identify possible fisheries. - Use creel anglers and report catch.
	B. Manage and improve upland bird habitat and nesting cover.	Priority units: Sunnyside Mesa Lake Esquatzel Coulee Also: Byron Glover Bailie Hope Valley	1. Restoration projects developed projects (Y/N) 2. Harvest data through self-registration cards (Y/N) 3. Number of habitat improvements made	WLA Manager	- Work with stakeholders to improve upland habitat. - Minimize impact of other management activities during nesting season.
	C. Identify opportunities to improve/increase waterfowl hunting by 2022.	All with waterfowl hunting	1. Opportunity assessment completed (Y/N) 2. Funding identified for opportunities (Y/N)	WLA Manager District Biologist	- Identify areas for placement of blinds - Identify field hunting improvement opportunities

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
			3. Number of opportunities implemented		-Survey area users to determine what improvements are desired.
	D. Improve fishing opportunities by managing aquatic weeds in stocked lakes.	I-82 Windmill Ranch	1. Number of weed control measures implemented	WLA Manager Fish Biologist Statewide WLA Weed Manager	- Collaborate with Fish Program on weed control efforts. - Work with the Fish Program's fish stocking program (Ponds 1-6 and Powerline Lake). - With Fish Program, evaluate other lakes/ponds/wetlands for potential stocking efforts.
	E. Expand Register to Use program to all wildlife area units by 2021.	All	1. Number of sites enrolled in Register to Use	WLA Manager	- Install materials. - Publicize change on website and through other means such as at meetings or WAAC.
5. Improve access and other recreation opportunities	A. Improve infrastructure at water access sites to provide modern amenities by 2024.	All units with water access sites	1. Number of parking improvements 2. Number of restroom improvements 3. Number of fishing enhancements 4. Grants awarded or projects funded	WLA Manager Water Access Manager	- Prioritize list for improvements. - Submit capital project requests or RCO grants.
	B. Ensure long-term legal access to WDFW lands by 2024.	Whitstran Esquatzel Coulee I-82 Ponds	1. Number of formal access agreements in place	Real Estate WLA Manager Water Access Manager	- Work with landowners and neighbors on agreements.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	C. Maintain Disabled Hunter Access Program, including the Thornton ADA Special Permit for Elk hunting (limited entry special draw).	Sunnyside Thornton	1. Disabled Hunter Access for upland bird implemented each year (Y/N) 2. Disabled waterfowl hunter blinds maintained annually Y/N)	WLA Manager	- Keep information up to date. - Coordinate with ADA Coordinator. - Maintain locations to keep them ADA accessible.
	D. Open the west side of the Byron unit year-round	Byron	1. Westside of Byron open year-round (Y/N)	WLA Manager	- Work with the City of Grandview and the departments of Health and Ecology
Offer multiple and varied opportunities for stakeholder participation and engagement.					
6. Offer multiple and varied opportunities for stakeholder participation and engagement.	A. Coordinate and maintain a Wildlife Area Advisory Committee.	All	1. Number of meeting(s) per year 2. List of topics of concerns addressed 3. Number of actions resulting from topics discussed	WLA Manager	- Setup meeting time and place based on group members' availability. - Draft agenda with attention to group interest and time constraints. - Hold meeting and collect group comments and recommendations for consideration relative to future management actions (proposed or ongoing). - Include meeting notes in wildlife area management plan updates and website.
	B. Communicate with community groups about current wildlife area management activities.	All	1. Number of group/constituents contacted	WLA Manager	- Provide WLA information to local organizations, through email, telephone calls, community group meeting attendance and presentations, and written notices and newsletters.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	C. Engage with local schools and offer educational or service opportunities for youth on the wildlife area.	All	1. Number of school projects completed on the wildlife area	WLA Manager	-Coordinate with local schools - Coordinate with local organizations such as scouts -Identify projects or education opportunities.
	D. Continue to recruit new hunters and offer hunter education opportunities.	All	1. Number or recruitment actions 2. Number of hunter education opportunities offered	Hunter Education WLA Manager	- Develop or distribute hunter recruitment information. - Recruit at appropriate events. - Offer hunter education.
	E. Work with local community tourism associations to communicate opportunities and benefits on the wildlife area.	All	1. Number of stories or events promoted on the wildlife area annually	WLA Manager Lands Messaging Team	- Work with internal Lands Messaging Team to develop messages, stories, and promotions on the wildlife area. - Develop 1-2 stories each biennium or as opportunities arise.
Maintain productive and positive working relationships with local jurisdictions, community neighbors, lessees, and permittees.					
7. Maintain productive and positive working relationships with local jurisdictions, community, tribes, neighbors, lessees, and permittees.	A. Assess project areas for culturally important plants before implementation.	All	1. Project area surveyed (Y/N) 2. Culturally important plants protected or enhanced (Y/N)	WLA Manager	- Be aware of potentially culturally important plants. - Coordinate with the Yakama Nation.
	B. Make wildlife area boundary adjustments on Rattlesnake Slope by 2020 and others as necessary.	Rattlesnake Slope	1. Rattlesnake Slope adjustment made (Y/N)	WLA Manager	- Work with Lands Agent to identify correct boundary

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	C. Ongoing, as agricultural leases come up for renewal or for new ones developed, evaluate agricultural leases per agency policy for multiple benefits, especially to improve waterfowl forage for hunting opportunities.	Sunnyside Byron Vance-Ferry Thornton Windmill Mesa Lake Hope Valley Glover	1. Leases reviewed by District Team (Y/N) 2. Modification made to lease if needed to provide additional wildlife benefit (Y/N) 3. Monitoring for improvements conducted (Y/N)	WLA manager District Team	- Review WDFW agriculture policies. - Work with District Team to review and modify leases. - Monitor effect of new lease modifications.
	D. Maintain strong communication and coordination with local jurisdictions on implementation of the plan.	All	1. Appropriate local jurisdictions consulted on land use actions (Y/N)	WLA Manager	- Consult with appropriate jurisdictions on actions that need their input.
	E. Maintain agreement with Benton City to manage the unit for recreation	Benton City	1. Conditions of agreement with Benton City fulfilled (Y/N)	WLA Manager	- Communicate with Benton City about unit management
Properly train, equip, and license WLA staff to meet operational and management needs of the WLA.					
8. Identity reliable sources of funding.	A. Identify reliable funding pool for restoration and operations and maintenance funding annually.	All	1. Sources identified (Y/N) 2. Annual allocation distributed to proposals (Y/N)	WLA Manager Lands Division Manager	- Explore grant opportunities. - Apply for grants, if available. - Explore endowments, revolving funds/pool agreements), etc.
	B. Continue to work with BPA on operations and maintenance budget, securing adequate, sustainable funding, and reporting, and ensuring mitigation obligations are met.	Sunnyside Thornton Rattlesnake Slope Byron	1. Sufficient operations and maintenance funding secured (Y/N) 2. Annual contract submitted for approval (Y/N) 3. Annual report completed (Y/N)	WLA	- Determine adequate operations and maintenance budget. - Work with BPA on securing adequate funding. - Fulfill mitigation obligations.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
	C. Continue staff engagement after planning process through annual planning meetings.	All	1. Planning meetings held annually (Y/N)	WLA Manager Planning Team	- Coordinate with staff involved in planning and with actions in the plan.
Maintain productive and positive working relationships with tribes.					
9. Maintain productive and positive working relationships with tribes.	A. Work with the Yakama treaty tribe to ensure the plan's management objectives of fish and wildlife are achieved while providing opportunities for the exercise of Treaty reserved rights.	All	1. Yakama Nation invited to discuss wildlife area plan management objectives and mutual concerns for wildlife resources (Y/N)	WLA Manager Lands Operations Manager Wildlife Program Manager Region 3 Director	- Coordinate with tribes on management actions that may be of interest to them. Extend annual invitation to Yakama Nation to discuss wildlife area management issues, wildlife resources, and other common interests. - For management actions that could affect tribal interests, consider and evaluate impacts.
	B. Protect tribal treaty rights and carefully evaluate and consider impacts to traditional hunting and gathering sites. Discuss mutual concerns for wildlife resources with the Tribes.		1. For management actions that could affect them, tribal treaty rights are considered and evaluated (Y/N) 2. For management actions that could affect them, tribe is consulted (Y/N)	WLA Manager Lands Operations Manager Wildlife Program Manager Region 3 Director	- For management actions that could affect tribal interests, consider and evaluate impacts.
Maintain safe, highly functional, and cost effective administration facilities and equipment.					
10. Maintain safe, highly functional, and cost effective administration facilities and equipment.	A. Remove derelict structures.	Sunnyside Mesa Lake	1. Number of derelict structures removed	WLA Manager Archeologist	- Consult with WDFW archeologist before removal for proper procedures.
	B. Maintain and upgrade water control structures as necessary.	Sunnyside Windmill Ranch	1. Number of structures inspected	WLA Manager	- Coordinate with Ducks Unlimited when possible.

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
		Mesa Lake	2. Replacement/upgrade at Giffen Lake (Sunnyside) (Y/N) 3. Replacement/upgrade at Bos Lake (Sunnyside) (Y/N) 4. Replacement/upgrade at Pie-Wedge Wetland (Mesa Lake) (Y/N) 5. Replacement/upgrade at Windmill Lake (Windmill Ranch) (Y/N) 6. Replacement/upgrade at Northeast Wetland (Windmill Ranch) (Y/N)		- Seek grants and additional funding from other sources
	C. Annually inspect 20 percent of fencing and all gates; repair and replace as needed and as funding allows.	All	1. Amount of miles of fencing inspected or repaired (Y/N) 2. Number of gates inspected and repaired 3. Number of miles of new fence or replaced.	WLA Manager	- Inspect 20 percent of fence annually. - Prioritize replacement of old fence. - Complete repairs as needed. - Submit Capital Funding requests for replacement of old fence.
	D. Explore best option for Vance-Ferry Unit.	Vance Ferry	1. Options for potential disposition of Vance-Ferry Unit explored (Y/N) 2.Decision reached on Vance Ferry Unit management (Y/N)	Real Estate Lands Division Manager Wildlife Regional Manager Lands Operations Manager WLA Manager	- Review legal documents related to the property. - Assess if it is meeting obligations. - Determine final disposition.
	E. Continue working with BOR on agreements pertaining to BOR lands.	All BOR lands	1. Participation continued in BOR/WDFW quarterly coordination meetings (Y/N)	Real Estate Lands Division Manager	- Wildlife area manager, lands operation manager and wildlife regional program

Goal	Objective	Unit	Performance measure	WDFW lead and support	Tasks
			2. MOU revised (Y/N)	Wildlife Regional Manager Lands Operations Manager WLA Manager	manager, Lands Division Manager meet with BOR staff to negotiate MOU.
	F. Continue to work on strategy and funding to replace aging wildlife area equipment.	All	1. Priority replacement list created (Y/N) 2. Replacement plan developed (Y/N) 3. Funding identified (Y/N)	WLA Manager	- Work with Lands Division to identify need. - Secure funding through Lands Division or BPA.
	G. Update wildlife area facility information in centralized database quarterly.	All	1. Central facilities database updated annually (Y/N)	WLA Manager	- Use agency facility inventory tool to update facilities information.
	H. Review and update information on the wildlife area web pages annually.	All	1. Wildlife area web pages reviewed and updated annually (Y/N)	WLA Manager	- Keep information available to the public on the web pages current.
	I. Create a database on all the irrigation information, including diversions, wells, pumps, and maps of use areas, as well as instructions on operation by 2021.	All	1.Database developed (Y/N)	WLA Manager	- Work with WDFW water rights staff, and Dept. of Ecology

Physical characteristics

Geology and soils

The geology of the wildlife area is quite varied. The mountainous areas in the western part of Yakima County consist of many different types of rock, including basalt and andesite. The principal rock in the central and eastern parts is Yakima Basalt, which is the younger flow of Columbia River Basalt. This basalt originated from large fissures or rifts where the fluid lava swelled to the surface and spread in all directions. Soils such as those in the Ritzville, Starbuck, Shano, and Bickleton series formed in areas where loess is underlain by basalt. Soils such as those in the Bakeoven, Lickskillet, Kiona, McDaniel, and Rock Creek series formed in colluvium and residuum derived from basalt. Overlying the Yakima Basalt in many areas that flank foothills and ridges are the light-colored tuffaceous sandstone, siltstone, and conglomerate of the Ellensburg Formation. This old stream-deposited sediment was derived from volcanic material ejected during the early development of the Cascade Range. This formation occurs extensively in the Wenas Valley, in the lower reaches of the Naches Valley, in areas west of Yakima, and along the southern part of Rattlesnake Ridge. The formation is more than 1,800 feet thick in places (Lenfesty and Reedy, 1985).

The upper and lower parts of Yakima Valley have been filled with material that was deposited by normal stream activity and glacial outwash. These areas include low terraces and floodplains. Extensive areas in the lower part of Yakima Valley are mantled by loess underlain by lake sediment that was deposited during glacial flooding in the late Pleistocene. This sediment occurs at elevations of as much as 1,000 feet in the survey area (Lenfesty and Reedy, 1985).

Yakima County units

I-82 Unit

Soils in the I-82 Unit consist mainly of the Weirman sandy loam series with some Zillah and Yakima series. These consist of excessively drained sandy loam soils on the low terraces and floodplains. It forms in mixed alluvium with slopes 0-5 percent. The native vegetation is mainly grasses, forbs and shrubs. This unit is subject to frequent periods of flooding in the spring. There are small patches of Yakima and Logy silt loam series that are more suitable for grasses and forbs and was used in the recent past for crop production.

Sunnyside Unit

Soils in this unit consist of the silt loam series with most in the Zillah, Umapine and Esquatzel series. This very deep, artificially drained soil is on floodplains and formed in recent alluvium. The native vegetation is mainly water-tolerant trees, sedges, and forbs. Included are areas of soils that have been artificially drained and areas of salt and alkali affected soils. Salt grasses and greasewood shrubs dominate these areas. These soils are prone to wetness and flooding.

Sunnyside Unit
Photo by Justin Haug, WDFW

Byron Unit

Soils in this unit consist mainly of the Starbuck series. This shallow, well-drained soil is on the uplands and formed in loess. Soil depth is about 16 inches with basalt underlying it to a depth of 12-20 inches. The native vegetation is mainly grasses, forbs and shrubs. Native grass is mainly bluebunch wheatgrass and Sandberg bluegrass. The main shrub component is big sage and predominately rabbitbrush. Rock outcrops occurs in areas as exposed bedrock.

Vance-Ferry Road Unit

This unit lies adjacent to the Yakima River with silt loam and loamy fines soils predominating. The series are made up of Fiander silt loam, Kittitas silt loam, Umapine silt loam drained (2-5 percent slope) and Quincy loamy fine sand (0-10 percent slope). These are generally well drained soils on floodplains formed on terraces and on alluvium. The Quincy loamy fine sand was formed in eolian sand. Also included are very deep, artificially drained, salt and alkali-affected soil on the floodplains and low terraces and formed in alluvium. Native vegetation is mainly salt and alkali tolerant grasses, forbs and shrubs. Soil blowing can be a major problem and should have a constant cover crop of vegetation.

Benton County units

Whitstran / Benton City units

These units are located along the Yakima River. The Benton City Unit consists of the Finely fine sandy loam (2-5 percent slope) association while the Whitstran Unit has the Burbank loamy fine sand (0-2 percent slope) series as well as the Scootney stony silt loam (0-30 percent slope) and Scootney silt loam, gravelly subsoil (0-2 percent slope) series. These soils formed on alluvial terraces and on bottomlands along intermittent streams and the Yakima River. They developed under bunch grasses in stony and gravelly alluvium and in silty, windblown deposits.

Thornton Unit

The area includes six south facing parallel ridges separated by one permanent stream (Snipes Creek) and several intermittent waterways. Soils range from bare rock to over three feet deep allowing for the establishment of sagebrush stands and grasslands. Steep canyons bottom out at just under 1,500 feet in the southernmost part of the area while ridge top elevations extend to 2,400 feet on the north side of the unit. The unit consists of silt loam soils in the Kiona stony silt loam series, Lickskillet very stony silt loam series, Starbuck silt loam 2-15 percent slope series, Ritzville silt loam 15-30 percent slope series and the Moxee silt loam 15-30 percent series. These soils are generally well drained on uplands and formed in loess and colluvium with some derived from basalt. In the Starbuck series soil depth is about 16 inches with basalt underlying it to a depth of 12-20 inches. Rock outcrops occur in areas as exposed bedrock. In the Moxee silt loam 15-30 percent slope series the soil is well drained on uplands and is shallow over a hardpan and formed in loess. Lime and silica cemented hardpan is at a depth of about 18 inches and ranges from 10–20 inches. The hardpan is commonly underlain by basalt.

Native vegetation consists of grasses, forbs and shrubs. These include Bluebunch wheatgrass, Sandberg bluegrass and Thurber needlegrass. As production of grasses decrease the proportion of sagebrush and rabbitbrush increases. Dustiness can be a problem and the sites should be disturbed as little as possible.

Rattlesnake Slope Unit

Soils series in this area are Ritzville silt loam (0-5 percent slope), Willis silt loam, shallow (0-15 percent slope), Kiona very stony silt loam (0-30pecent slope), Kiona very stony silt loam (30-65pecent slope), and Willis silt loam (0-5 percent slope). These soils occur on the uplands and developed under bunch grasses in silty windblown deposits mixed with small amounts of volcanic ash. The Willis series are underlain by a lime-silica hardpan overlying basalt bedrock. The Willis silt loam, shallow series are most often found on broad ridge tops.

Franklin County units

Soil reports were not available for Franklin County however, soil maps were. Using other county descriptions the following series were available.

Hope Valley Unit

Soil type is the Quincy-Hezel-Burbank association and Warden-Sagemoor-Kennewick association. These are dry sandy soils on terraces and dunes that have formed under sparse dune vegetation or shrub-steppe vegetation in wind deposited sand or silt and loam over glaciolacustrine deposits from cataclysmic glacial outburst floods; most have low water holding capacity. Native vegetation is mainly grasses and shrubs.

Soil type for the most part is the Warden-Sagemoor-Kennewick association. Soil description is dry, silty and loamy soils that formed in glaciolacustrine deposits from cataclysmic outbursts floods in the lower part and loess in the upper part. Warden soils are on terraces and are very deep and well drained. They formed in lacustine deposits that have a mantle of loess. The surface layer is silt loam and the subsoil is are silt loam and very fine sandy loam. Sagemoor soils are on terraces and are very deep and well drained. They formed in lacustrine deposits that have a mantle of loess. The surface layer and subsoil are silt loam. Kennewick soils are on terraces and are very deep and well drained. They formed in lacustine deposits and are silt loam throughout. Native vegetation is mainly grasses and shrubs.

Windmill Ranch /Bailie Units

Soil type is the Starbuck-Schawana-Prosser association. Soils of the Channeled Scablands are shallow, stony soils formed in loess over cata scoured basalt and occur in complex landscape patterns with moderately deep soil. Sandy, or cobbly flood sediment formations are small areas of very deep loessial affected alluvial soils. The Starbuck soils are on benches, hillsides and ridgetops. These are shallow and well drained and formed in loess and in material derived from basalt. Surface layer is very fine sandy loam with subsoil a silt loam. Schawana soils are shallow, somewhat excessively drained and on benches and hillsides. They formed in eolian deposits and material derived from basalt. The surface is cobbly loamy fine sand and underlying material is a gravelly very fine sandy loam. Prosser soils are on benches and hillsides and are moderately deep and well drained. They formed in loess and are very fine sandy loam. Native vegetation is mainly grasses and shrubs.

Hydrology and watersheds

I-82/Sunnyside/Byron/Glover/Thornton/Rattlesnake Slope/Vance-Ferry Road/Whitstran/Benton City units

All these units except Glover, Thornton and Rattlesnake Slope lie along the Yakima River stretching from Union Gap to Benton City. Thornton lies along the south slope of the Rattlesnake Hills and Rattlesnake Slope lies along the east slope of Rattlesnake Hills. Both eventually drain into the Yakima River, upstream and downstream of Benton City, respectively. All lie within Watershed Resource Inventory Area 37, the Lower Yakima River Watershed.

Thornton is bisected by the upper Snipes Creek and its small tributaries and lies adjacent to Sharp Road. Springs feed Snipes Creek part of the year with intermittent flows late in the summer with no fish known to reside in this section. Rattlesnake Slope Unit is bisected by three major canyons, none of which carry any water other than seasonal snowmelt or periodic, violent rainstorms.

The I-82 Unit has a relatively stable shoreline (Yakima River) due to the low bank and mature, woody riparian vegetation. The Sunnyside Unit for the most part is bordered by a very high vertical bank and is unstable. The exceptions are outward bends in the river, which continue to create deposition sites on the inside of the bends. Willows are the first woody species to become established on these bars. Annual runoff events scour the banks heavily against the outside bends of the river. It's not uncommon for the river to cut 20 feet off these banks in a single year, adding many tons of sediment to the river. The vertical nature and height of these shoreline areas makes it virtually impossible to stabilize them.

Yakima River waterways, I-82 Ponds Unit

The Sunnyside Unit lies mostly within the Yakima River floodway and much of it was underwater during severe flood events. The unit is laced with old river oxbows, isolated from the river as it has meandered across the valley over the years. These oxbows are still influenced by groundwater and some are artificially filled with irrigation wastewater to create more wetland habitat. Three major irrigation drains enter the Sunnyside Unit on their way to the Yakima River. At least two of these drains existed as natural streams before they were channelized and rerouted during the development of the irrigation project. Now, irrigation drain water and natural runoff are commingled in these drains. An artificial and natural series of wetlands on the Sunnyside Unit is used to improve the quality of this water before it re-enters the river.

The Vance-Ferry Road Unit contains about three-quarters of a mile of river frontage and the shoreline condition is similar to that of the Sunnyside Unit. A shoreline buffer was established soon after the property was purchased. The Byron Unit has only two tenths of a mile of direct river frontage (similar to Vance-Ferry) and receives water from irrigation tailwater, drainage, or filtered wastewater from the City of Grandview.

There is at least one small spring that enters the unit along the south boundary. Regardless of the origin, water from all these sources fills natural swales throughout the area, creating open water habitat, mixed with emergent vegetation. The water from the City of Grandview remains contained in a number of small basins, while the irrigation runoff leaves the property and eventually re-enters the Yakima River about a mile beyond the eastern boundary.

Both the Whitstran and Benton City units have Yakima River frontage. Both have relatively stable shorelines, minimal cutting, and support fair to excellent woody riparian cover.

Windmill Ranch/Bailie /Hope Valley Units

These properties lie within the Columbia basin watershed with the bulk of water coming from irrigation wastewater that forms artificial lakes and wetlands creating fish habitat and recreational hunting and fishing opportunities. All of these units existed entirely of shrubsteppe habitat before the

Columbia Basin Irrigation Project came on line in the early 1950s. Now, over 60 years of irrigation seepage out of canals and underground fractures in underlying basalt, the areas have taken on a completely different complexion. All of the units have at least some low lying depressions and swales that have collected water and become open water ponds and/or areas with hydric soils that support wetland vegetation. These units lie within Watershed Resource Inventory Area 36, the Esquatzel Drain.

The Bailie Unit has a substantial irrigation wastewater creek that flows year around along its entire length (over five miles). The channeled scabland nature of the property has produced several basins that are full of water on a year around basis. Some of the ponds are filled by underground flow and some are filled by direct surface flow. The Windmill Ranch has similar ponds and wetland habitat but most of it is created by seepage from the Potholes Canal, underground flow, or a side benefit of direct irrigation flow used to irrigate crops. The Windmill Ranch has three major water bodies that provide fishing and hunting recreation. The largest, Powerline Lake, is 35 acres in size, over a mile long and 70 feet deep.

Part of the Hope Valley Unit lies in a valley, which remains saturated by irrigation runoff most of the year. The gradient in this part of the valley is level and the presence of water has created highly alkaline soils.

Weeds and emergent vegetation, typical of this hydrology, are present on all but the west half, which is at a slightly higher elevation. As the water leaves the north end of the unit, it collects in Clark Pond, an old borrow pit. The water is then consolidated into a ditch as it continues to the south end of the unit. The south end is mostly an upland site but has three swales that contain wetland habitat and a small amount of open water, a result of seepage from the adjacent irrigation canal.

Climate

The wildlife area is mainly located in the Central Basin district climatic area. The following summary comes from the Western Regional Climate Center: Climate of Washington – Central Basin.

“The Central Basin includes the Ellensburg valley, the central plains area in the Columbia basin south from the Waterville Plateau near Chelan to the Oregon border and east to near the Palouse River. The elevation increases from approximately 400 feet at the confluence of the Snake and Columbia Rivers to 1,300 feet near the Waterville Plateau and 1,800 feet along the eastern edge of the area. This is the lowest and driest section in eastern Washington. Annual precipitation ranges from seven inches in the drier localities along the

southern slopes of the Saddle Mountains, Frenchman Hills and east of Rattlesnake Mountains, to 15 inches in the vicinity of the Blue Mountains. Summer precipitation is usually associated with thunderstorms. During July and August, it is not unusual for four to six weeks to pass without measurable rainfall.

The winter season snowfall is from 10 to 35 inches. Snow can be expected after the first of December and to remain on the ground for periods varying from a few days to two months between mid-December and the last of February. Other than in the Ellensburg valley, snow depths seldom exceed eight to 15 inches. The Central Basin is subject to "chinook" winds which produce a rapid rise in temperature. A few damaging hailstorms are reported in the agricultural areas each summer.

The average January maximum temperature is near 30 degrees Fahrenheit in the colder localities in the Columbia Basin and 40 degrees Fahrenheit in the lower Yakima valley, and minimum temperatures are between 15 to 25 degrees Fahrenheit. Minimum temperatures between 0 to minus 10 degrees Fahrenheit are recorded almost every winter and temperatures from minus 15 degrees Fahrenheit to minus 30 degrees Fahrenheit have been recorded.

In July the average maximum temperature is in the lower 90s, and the minimum temperature is in the upper 50s. The recorded high temperature for the state, 118 degrees Fahrenheit, was recorded on July 24, 1928, at Wahluke, located along the southern slope of the Saddle Mountains and again on August 5, 1961, at Ice harbor Dam on the Snake River. Maximum temperatures reach 100 to 105 degrees Fahrenheit on a few afternoons each summer. The last freezing temperature in the spring occurs during the latter half of April in the Yakima valley and the latter half of May in the colder localities of the Columbia Basin. The first freezing temperature in the fall is usually recorded between mid-September and mid-October (https://wrcc.dri.edu/Climate/narrative_wa.php).

Yakima River Corridor Units

The I-82 Ponds, Sunnyside, Byron, Vance Ferry Road, Whitstran, and Benton City Units all lie along the Yakima River Corridor. Elevations range from 448 to 2,446 feet (at Thornton), and there is little variation in climate. As recorded at Sunnyside, the area receives an average annual precipitation in rainfall of seven and a half inches. Most precipitation occurs between October and May. Snow falls mainly in December and January, with an average annual snowfall of 10 inches, though it can vary from year to year. The average temperature is about 53 degrees Fahrenheit. Temperatures can go over the 90s in July and August, and down to the 20s in December and January (U.S Climate Data).

Units North of Pasco

The Hope Valley, Bailie, Mesa Lake, Ezquatzel Coulee, Thompson Seeps, and Windmill Ranch units north of Pasco also exhibit little change in elevation, from about 632 to 1,000 feet. As recorded at Connell, the area receives an average annual precipitation in rainfall of eight and seven tenths inches, with no snowfall. Most precipitation occurs between October and May. The average temperature is about 51 and a half degrees Fahrenheit. Temperatures can go over the high 80s in July and August, and down to the 20s in December, January, and February (U.S Climate Data).

Ecological values

Ecological systems and ecological integrity

WDFW's strategic objectives include protecting and restoring the ecological integrity of critical habitats consistent with DNR's Natural Heritage Program's Ecological Integrity Monitoring (EIM). The statewide goal is to restore and protect the integrity of priority ecological systems and sites. Ecological Integrity Assessments (EIA) and EIM are used to direct and measure achievements towards that goal.

Ecological integrity is defined as the ability of a system to support and maintain a community of organisms that has species composition, diversity, and functional organization comparable to those of natural habitats. EIM is a tool to evaluate ecological integrity, and changes over time, within priority systems and sites on the wildlife areas. Similar to species classifications grouped according to level of threat and potential inability to support sustained populations, habitats are grouped by type, including those that are priorities for preservation and conservation. The complete classification system document, including descriptions of all ecological systems, can be found on this web page: https://www.dnr.wa.gov/NHPecologicalsys and summarized in the framework.

The planning process for Sunnyside-Snake River Wildlife Area identified seven National Ecological Systems of Concern to manage for ecological integrity. Table 10 summarizes these systems for the wildlife area, as described in DNR's Natural Heritage Program website. Listed are the systems considered "Critically Imperiled", and "Imperiled".

Appendix A contains the list of Species of Greatest Conservation Need (SGCN) believed to be present on the wildlife areas and their relationships with ecological systems of concern. Actions associated with ecological integrity are included in the goals and objectives section (page 89), and include determining a baseline for ecological integrity for each of these systems and devising a monitoring plan to evaluate progress over time.

Table 10. Ecological systems of concern on the Sunnyside-Snake River Wildlife Area (2015 Rocchio)

Ecological system of concern	Wildlife areas	Estimate acres	Description
Columbia Basin Foothill Riparian Woodland and Shrubland *Critically imperiled*	I-82 Ponds, Sunnyside, Thompson Seeps, Windmill Ranch, Byron, Bailie, Mesa Lake, Esquatzel Coulee, Vance-Ferry Road, Benton City, Whitstran, Hope Valley, Rattlesnake Slope, Glover	1945	Low-elevation riparian system found along the mainstem of the Columbia River and associated major tributaries on the periphery of the mountains surrounding the Columbia River Basin at and below lower tree line. Found in low-elevation canyons and draws, on floodplains, or in steep-sided canyons, in narrow V-shaped valleys with rocky substrates.
Inter-Mountain Basins Semi-Desert Shrub Steppe *Critically imperiled*	Bailie, Esquatzel Coulee, Windmill Ranch, Sunnyside, Byron, Mesa Lake, I-82 Ponds, Benton City, Whitstran, Hope Valley, Thompson Seeps, Rattlesnake Slope, Vance-Ferry Road	110	This semi-arid shrubsteppe is typically an open shrub to moderately dense woody layer and a strong graminoid layer (>25 percent cover but rarely closed). The woody layer is often a mixture of shrubs and dwarf-shrubs, although it may be dominated by a single shrub species. Characteristic species include Grayia spinose or Krascheninnikovia lanata with Ericameria nauseosa. Artemisia tridentata may be present but typically does not dominate although it will increase with disturbance.
Columbia Basin Foothill and Canyon Dry Grassland *Critically imperiled - imperiled*	Rattlesnake Slope, Thompson Seeps, Bailie, Esquatzel Coulee, Windmill Ranch, I-82 Ponds, Mesa Lake, Byron, Sunnyside, Thornton, Hope Valley, Vance-Ferry Road, Benton City, Whitstran	945	Foothill herbaceous vegetation found on steep open slopes, in the canyons and valleys of the Columbia Basin, particularly along the Snake River canyon, the lower foothill slopes of the Blue Mountains, and along the main stem of the Columbia River. Settings are primarily long, steep slopes of 328 feet to well over 1,300 feet, and slope failure is a common process.
Inter-Mountain Basins Big Sagebrush Steppe *Imperiled*	Rattlesnake Slope, Bailie, Esquatzel Coulee, Thornton, Thompson Seeps, Windmill Ranch, Byron, Mesa Lake, Sunnyside, Hope Valley, I-82 Ponds, Whitstran, Benton City, Vance-Ferry Road	10,215	This system is grassland with shrubs. Shrubs are dominated by Artemisia spp., and/or Purshia tridentata in an open to moderately dense shrub layer and with at least 25 percent total perennial herbaceous cover. The natural fire regime of this ecological system maintains a patchy distribution of shrubs, so the general aspect is that of grassland. P.tridentata is present almost always in association with tree cover, not out in the open.

Ecological system of concern	Wildlife areas	Estimate acres	Description
Columbia Plateau Steppe and Grassland *Imperiled*	Bailie, Thompson Seeps, Windmill Ranch, Sunnyside, Esquatzel Coulee, Thornton, Mesa Lake, Hope Valley, I-82 Ponds, Byron, Glover, Vance-Ferry Road, Whitstran, Benton City, Rattlesnake Slope	3,624	Extensive grasslands, not grass-dominated patches within sagebrush shrubsteppe ecological system, dominated by perennial bunch grasses and forbs, sometimes with a sparse shrub layer. Often forms a landscape mosaic with the Columbia Plateau Shrubland ecological system. Very little exposed bare ground due to mosses and lichens carpeting the area between plants, comprising a biological soil crust that is a very important characteristic in this ecological system.
North American Arid West Emergent Marsh *Imperiled*	Sunnyside, Bailie, Byron, Thompson Seeps, Windmill Ranch, Mesa Lake, I-82 Ponds, Hope Valley, Esquatzel Coulee, Vance-Ferry Road, Whitstran, Thornton	948	Forests and tall shrublands that are linear in character, occurring on low-elevation, alluvial floodplains. Confined by valleys and inlets or lower terraces of rivers and streams.

Additionally, there are about eight acres of Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland (*imperiled*), about five acres of Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland (*borderline status*), over one acre of Inter-Mountain Basins Greasewood Flat (*critically imperiled*), and over 100 acres of Columbia Plateau Scabland and Shrubland (*secure*). The remainder, about 3,300 acres, is not ranked and is a combination of cultivated cropland, open water, introduced vegetation, and developed areas.

Habitat connectivity

Fish and wildlife survival depends in part on the ability to move through the environment to find food and reproduce. The degree to which land protection and condition supports these necessary movements is called habitat connectivity. WDFW is a member of the Washington Wildlife Habitat Connectivity Working Group (WHCWG) (http://waconnected.org/). This group represents a science-based collaboration of

Byron Unit
Photo by Alan L. Bauer

land and resource management agencies, non-governmental organizations, universities and Washington Treaty Tribes.

Key wildlife habitat connectivity linkage networks at the statewide level were identified by the WHCWG in 2010 which looked at 16 focal species. A second examination of wildlife habitat connectivity linkages within the Columbia Plateau occurred two years later and looked at 11 species, WHCWG (2013). The Columbia Plateau is the largest ecoregion in Washington, occupying nearly one-third of the state. The Sunnyside-Snake River Wildlife Area is in this ecoregion. See the Columbia Plateau Ecoregion Analysis for more information.

These two connectivity efforts have some species in common. The Columbia Plateau Connectivity Analysis however, was performed at a finer scale since it was focusing on a subset of Washington State, not the entire state. (The default is to the Columbia Plateau Analysis when there is species overlap between the two studies.) The linkage networks, comprised of suitable habitats and the linkages connecting them, were derived from two modeling approaches: focal species and landscape integrity. The focal species approach identified important habitat areas for the species. The landscape integrity approach was used to help define the best linkages between habitat areas for each wildlife focal species found on or near the Sunnyside-Snake River Wildlife Area.

Focal species were carefully selected to represent the connectivity needs of a broader assemblage of wildlife (WHCWG 2012). The best linkages provided the least resistance to movement between habitat areas for that animal in that area. This means that some of the linkages may not be comprised of ideal habitat, but provide opportunities for movement through a human-modified landscape. The landscape integrity approach identified core habitat areas that were relatively free from human modification and the least human-modified linkages between them (WHCWG 2012).

Habitat connectivity information will be used to inform management decisions on the wildlife area. Habitat restoration and management projects will seek to maintain or improve linkages between habitat blocks on the Sunnyside-Snake River Wildlife Area for tiger salamander, badger, mule deer (statewide and Columbia Basin), black-tailed jack rabbit, white-tailed jack rabbit, western rattlesnake, Townsend's ground squirrel, Washington ground squirrel, least chipmunk, beaver, and elk (statewide). Habitat concentration areas and linkages for these species can be found online (see link above). The connectivity findings are a useful tool to assess important locations for the movement or migration of animals so they can reach the wildlife areas and move between wildlife area units.

Species management

WDFW's mission is to preserve, protect, and perpetuate fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. The agency carries out this mission according to state and federal laws (including the Endangered Species Act or ESA) and funding requirements (from property acquisition and/or funds used for ongoing operations and maintenance), which direct many management activities on WDFW's wildlife areas. Other guidance comes from statewide plans for species and/or habitats, and other scientific approaches recommended by internal and external parties (e.g. The Washington State National Heritage Program's Ecological Integrity Assessments). Management actions may also be influenced by collaborative work undertaken with other conservation organizations, including tribal

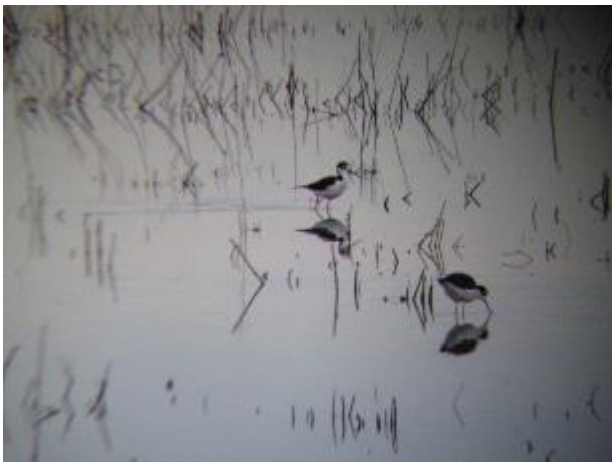
governments, land trusts and other land management organizations, academic research programs, and even the specific interests of volunteers if they fit within WDFW's mission, budget and wildlife area goals.

Species management overview

Consistent with WDFW's mission, the agency manages species on wildlife areas for two primary purposes: 1) conservation and protection to manage sustainable populations; and 2) provision of recreational and commercial opportunities.

American avocet, Sunnyside Unit
Photo by Noel Ferguson, WDFW

The Wildlife Area Management Planning Framework describes how species are classified – including species listed at the state or federal level as threatened or endangered, as well as other designations such as Species of Greatest Conservation Need (SGCN). SGCN species are summarized in the State Wildlife Action Plan (https://wdfw.wa.gov/species-habitats/at-risk/swap) and defined as species already listed as threatened, endangered or sensitive, as well as additional species thought to need conservation attention. The framework also incorporates goals from WDFW's Game Management Plan, which includes protecting, sustaining, and managing hunted wildlife, providing stable, regulated recreational hunting to all citizens, protecting and enhancing wildlife habitat, and minimizing adverse impacts to residents, other wildlife, and the environment. The wildlife area plan integrates these plans and priorities, and, in the goal and objectives section (page 89), defines specific actions to achieve them. The Sunnyside-Snake River Wildlife Area supports a broad variety of game and nongame species (known as diversity species). Waterfowl, upland birds, and mule deer are the primary game species, along with elk which are present in small numbers. Several species of conservation concern also likely utilize the wildlife area due to its importance as supporting various natural and created wetlands in an otherwise arid environment, as well as providing a refuge of shrubsteppe habitat (sagebrush and bunchgrass) in an increasingly developed agricultural landscape.



Black-necked stilt, Sunnyside Unit
Photo by Noel Ferguson, WDFW

Species can have more than one status associated with it, such as Federal Threatened and State Concern. Of the species who could be expected to appear on the wildlife area, there 45 SGCN species, 15 State Candidate species, two State Threatened, one State Endangered, two Federal Threatened, and two Federal Species of Concern.

Table 11. State and federal conservation status, WDFW Priority Habitats and Species (PHS) and SGCN criteria and priority areas that may occur on the Sunnyside-Snake River Wildlife Area

Common Name	Scientific Name	Federal Status State Status SGCN, PHS - 2019	General Location and Potential Wildlife Area Unit
MAMMALS			
Merriam's shrew	*Sorex merriami*	SGCN, PHS	Possible in shrubsteppe habitats, unconfirmed
Bat roosting concentrations	*Eptesicus fuscus,* Myotis spp., *Antorzous pallidus*	PHS	
Hoary bat	*Lasiurus cinereus*	SGCN	Possible on some units, unconfirmed
Silver-haired bat	*Lasionycteris noctivagans*	SGCN	Possible on some units, unconfirmed
Townsend's big-eared bat	*Corynorhinus townsendii*	SC,SGCN, PHS	Possible on some units, unconfirmed
Spotted bat	*Euderma maculatum*	SGCN	Possible on some units, unconfirmed
Black-tailed jackrabbit	*Lepus californicus*	SC,SGCN, PHS	Shrubsteppe habitats throughout
White-tailed jackrabbit	*Lepus townsendii*	SC,SGCN, PHS	Likely on Rattlesnake and Thornton
Townsend's ground squirrel (S of Yakima River)	*Urocitellus townsendii*	SC,SGCN, PHS	Present. Benton/Yakima County upland units
Washington ground squirrel	*Urocitellus washingtoni*	SC,SGCN, PHS	Possible on Franklin County Units, unconfirmed
American badger	*Taxidea taxus*	SGCN	Present in upland habitat
Rocky Mountain elk	*Cervus canadensis*	PHS	Present in low numbers throughout; winter concentrations on Thornton and Rattlesnake Slope units
Rocky Mountain mule deer	*Odocoileus hemionus*	PHS	All
BIRDS			
American white pelican	*Pelecanus erythrorhynchos*	ST,SGCN, PHS	Foraging/staging areas on open water
Tundra swan	*Cygnus columbianus*	PHS	In winter on open water
Snow goose	*Anser caerulescens*	PHS	Spring congregations on open water
Black-crowned night-heron	*Nycticorax*	PHS	
Great blue heron	*Ardea herodias*	PHS	All River and wetland sites
Western grebe	*Aechmophorus occidentalis*	SC,SGCN, PHS	Foraging/staging areas on open water
Black-necked stilt	*Himantopus mexicanus*	PHS	Breeding at wetland sites
Sandhill crane (lesser)	*Antigone canadensis*	SE, PHS	Present as foraging/staging areas during migration for Lesser subspecies
Cavity-nesting ducks: Wood duck, Barrow's goldeneye, common goldeneye, bufflehead, hooded merganser	*Aix sponsa, Bucephala islandica, Bucephala clangula, Bucephala albeola, Lophodytes cucullatus*	PHS	All Wood duck and Hooded Merganser nest boxes/cavities

Common Name	Scientific Name	Federal Status State Status SGCN, PHS - 2019	General Location and Potential Wildlife Area Unit
Waterfowl concentrations	*(Anatidae - excluding Canada geese in urban areas)*	PHS	All
Cinnamon teal	*Anas cyanoptera*	SGCN	All Breeding at wetland sites
American avocet	*Recurvirostra americana*	PHS	Breeding at wetland sites
Wilson's phalarope	*Phalaropus tricolor*	PHS	Present at Wetland sites, possible breeder
Bald eagle	*Haliaeetus leucocephalus*	SGCN, PHS	All Present in riparian areas
Golden eagle	*Aquila chrysaetos*	SC,SGCN, PHS	Possible foraging in winter
Ferruginous hawk	*Buteo regalis*	ST,SGCN, PHS	Recent nest sites in Franklin County, possible any upland habitat
Peregrine falcon	*Falco peregrinus*	FSC, PHS	All
Flammulated owl	*Otus flammeolus*	SC,SGCN, PHS	All
Short eared owl	*Asio flammeus*	SGCN	All Present in upland sites
Western screech owl	*Megascops kennicottii*	SGCN	All
Burrowing owl	*Athene cunicularia*	SC,SGCN, PHS	Present in upland habitats
Prairie falcon	*Falco mexicanus*	SGCN, PHS	Breeding sites on WLA
Loggerhead shrike	*Lanius ludovicianus*	SC,SGCN, PHS	Present in upland habitats
Chukar	*Alectoris chukar*	PHS	All
Greater sage grouse	*Centrocercus urophasianus*	FC,ST,SGCN, PHS	Historical/Recent unconfirmed sightings
Ring-necked pheasant	*Phasianus colchicus*	PHS	All
Sage thrasher	*Oreoscoptes montanus*	SC,SGCN, PHS	All Breeding Thornton Unit, large areas of sagebrush.
Sagebrush sparrow		SC,SGCN, PHS	Breeding on Thornton Unit, large areas of sagebrush.
AMPHIBIANS			
Tiger Salamander	*Ambystoma tigrinum*	SGCN	Likely in Franklin County units, unconfirmed
Woodhouse's toad	*Anaxyrus woodhousii*	SGCN	Breeding on Bailie Unit, possible any wetland unit
Columbia spotted frog	*Rana luteiventris*	SC,SGCN, PHS	All
Western toad	*Bufo boreas*	SC,SGCN, PHS	All
REPTILES			
Desert nightsnake	*Hypsiglena torquata*	SGCN	Possible in shrubsteppe, unconfirmed
Sagebrush lizard	*Sceloporus graciosus*	SC,SGCN, PHS	All
Pygmy horned lizard	*Phrynosoma douglasii*	SGCN	Possible in shrubsteppe, unconfirmed
INVERTEBRATES			

Common Name	Scientific Name	Federal Status State Status SGCN, PHS - 2019	General Location and Potential Wildlife Area Unit
Dragonfly: Columbia clubtail	*Gomphurus lynnae*	SC,SGCN, PHS	WA occurrence along Yakima River in Benton Co., not searched for on WLA
Dragonfly: White-belted ringtail	*Erpetogomphus compositus*	SGCN	WA occurrence along Yakima River in Benton Co., not searched for on WLA
Monarch butterfly	*Danaus plexippus*	Fed Review	Present throughout where milkweed present
Snail: Shortface Lanx	*Fisherola nuttalli*	SC,SGCN, PHS	Hanford Reach water access sites
Snail: Ashy (Columbia) Pebblesnail	*Fluminicola fuscus*	SC,SGCN	Hanford Reach water access sites
Western ridged mussel		SGCN	Yakima River species
Columbia River tiger beetle	*Cicindela columbica*	SC,SGCN, PHS	
Morrison bumble bee	*Bombus morrisoni*	SGCN	All
Western bumble bee	*Bombus occidentalis*	SGCN	All
Suckley cuckoo bumble bee	*Bombus suckleyi*	SGCN	All
FISH			
Bull trout (Middle Columbia River DPS)	*Salvelinus confluentus*	FT,SC, SGCN	Yakima River units
Steelhead (Middle Columbia River DPS)	*Oncorhynchus mykiss*	FT,SGCN	Yakima River units
Pacific lamprey	*Entosphenus tridentatus*	FSC, SGCN	Yakima River units
Mountain Sucker	*Catostomus platyrhynchus*	SC,SGCN	Yakima River units

Abbreviations:
State endangered (SE), State threatened (ST), State Candidate for listing (SC), State Sensitive (SS), Species of Greatest Conservation Need (SGCN), Priority Habitats and Species (PHS)
Federal endangered (FE), Federal threatened (FT), Federal candidate (FC), Federal species of concern (FSC)
PHS Criteria: 1: State listed candidate species; 2: Vulnerable aggregations; 3: Species of recreational, commercial, or tribal importance.

Game species overview and management

The main big game species on the wildlife area are Rocky Mountain mule deer, which can be found on most units and attract hunters to the wildlife area. Rocky Mountain elk are also present in small and less predictable numbers on units in Benton and Franklin counties. Most hunters likely come to the wildlife area for small game, including excellent waterfowl and upland bird hunting (pheasant, quail, and dove). Some of the units of the wildlife area are too small to support sustainable game populations independently, and most species are dependent upon surrounding land, which is primarily private agricultural land. Management of game species are conducted at a scale greater than any single wildlife area. WDFW's 2015-2021 Game Management Plan (http://wdfw.wa.gov/publications/01676/) details management objectives and goals for Washington's game species. The overall goals support sustaining populations and providing recreational opportunities.

The wildlife area units often provide islands of cover for game species and opportunity for hunters in a private agricultural dominated landscape.

Most wildlife area units are open to hunting, but with specific restrictions at some units. Within the wildlife area, management actions can help maintain broader population and harvest objectives for game species. These actions include invasive weed control, moist soils management, agricultural leases for forage and cover, habitat plots and restoration, pheasant releases for hunting, surveys, and research.

Hunting seasons (dates and harvest restrictions) are species specific within the state and across regions, with seasons and regulations evaluated and updated each year. Species populations receiving higher hunting pressure are monitored more intensely than those with lower participation rates, therefore season changes may occur more frequently. The specific regulations pertaining to individual species and hunting seasons are found on WDFW's website (http://wdfw.wa.gov/hunting/regulations/). Additional information on harvest history and population status are located in WDFW Game Harvest Reports (https://wdfw.wa.gov/hunting/management/game-harvest) and the Hunting Prospects published annually for District 4 and District 8: (https://wdfw.wa.gov/hunting/prospects/).

The Sunnyside-Snake River Wildlife Area Units fall into the following Game Management Units (GMUs):

372 - Rattlesnake Hills (units in Benton and Yakima County, aside from those listed for 373)
373 - Horse Heaven Hills (Vance-Ferry and Byron Units)
379 - Ringold (all units in Franklin County, aside from the Esquatzel Coulee Unit)
381 - Kahlotus (Esquatzel Coulee Unit)

Game species

Mule Deer (*Odocoileus hemionus*)
Mule deer, associated with dry open expanses of eastern Washington, are year-round residents on many units of the Sunnyside-Snake River Wildlife Area. While white-tailed deer (*Odocoileus virinnnnianus*) are occasionally present and make up an insignificant portion of deer (less than one percent) in the area. While white-tailed deer seasons are present to allow legal harvest during mule deer season, it is not a species hunters should expect to encounter in this area.

While WDFW does not conduct population surveys specific to the wildlife areas, surveys of the Columbia Plateau Mule Deer management zone indicate stable populations in key wintering areas. The Mule Deer Management Plan sets objectives and conservation priorities for the overall zone: https://wdfw.wa.gov/publications/01755/. Objectives for the Columbia Plateau are stable populations with a post-hunt sex ratio of 15 to 19 bucks per doe. Due to the open country and low buck escapement in the Columbia Plateau, a three-point-minimum antler restriction on harvest is in place for mule deer general seasons in the area.

Intact sagebrush and shrubsteppe habitat provides important forage and cover for mule deer. Management practices that promote healthy sagebrush stands will help provide winter forage and cover. Several shrub plantings and cover plots installed on the wildlife area can help increase overwinter survival and escapement of deer. Restoration of shrub components after a fire is also critical as sagebrush can take decades to reestablish after a burn, or may never outcompete non-native vegetation without assistance post-fire.

Fencing can be a hazard for deer across the landscape. Significant amounts of derelict and unnecessary fencing have already been removed from the wildlife area. Managers should continue to identify fencing for removal, and ensure any new fencing projects incorporate wildlife friendly designs to reduce risk to wild ungulates.

Agriculture leases on the wildlife area are being reviewed to maximize benefits for wildlife while maintaining sustainable funding for land management actions. Crop type, harvest methods, and forage left onsite can be altered to benefit deer and other wildlife and create great forage and cover in close proximity as well as enhanced hunting opportunities.

Elk *(Cervus Canadensis)*
Rocky Mountain elk in eastern Washington stem from reintroductions by sportsman's groups in the 1910s with elk transported from Yellowstone National Park. Elk are only occasionally found on units of the Sunnyside-Snake River Wildlife Area, and their source population is in most instances likely the Rattlesnake Unit of the Hanford Reach National Monument managed by the USFWS. Elk were very rare in the mid-Columbia basin area until recently. Beginning with an initial report of a handful of elk on Rattlesnake Mountain in the 1970s, the population has grown within the refuge of the monument boundaries to its current size of over 1,100 individuals, despite a population objective of 350 elk. Elk now regularly leave the protected area may be found on wildlife area units including Thornton and Rattlesnake Slope. The lower elevations of the Rattlesnake slope unit can host many hundred elk during winter months. Small numbers of elk also cross the Columbia River and make their way onto the wildlife area in the Ringold GMU. Harvest still requires extreme luck and only a handful of elk are harvested during the general season in the Ringold or Rattlesnake Hills GMU. Most harvest during general seasons on the wildlife area likely occurs on the Thornton Unit.

Due to conflicts with crop producers and the over-population of the Hanford Monument, there is no management actions specifically intended to increase elk populations on any unit of the Sunnyside-Snake River Wildlife Area.

Waterfowl

The location of the Sunnyside-Snake River Wildlife Area amidst the Yakima and Columbia rivers, along with multiple irrigation projects and canals, provides an abundance of opportunity across an otherwise arid environment for breeding, staging, and wintering waterfowl and the hunters that pursue them.

Mallards and Canada geese at Windmill Ranch Unit
Photo by Alan L. Bauer

The main breeding species on the wildlife area include mallard, gadwall, wood duck, and teal. Small numbers of redhead, ring-necked ducks, common and hooded mergansers, wigeon, Canada goose, and other species may nest here as well. During fall and winter, the full variety of western inland waterfowl can be found. Most open water is in shallow wetlands hosting puddle ducks, but some deeper lakes such as Powerline Lake on the Windmill Unit host diving ducks.

With the purchase of an amphibious maintenance craft in 2015, wetland management actions such as mowing, spraying, and excavating became more feasible. Recent efforts have targeted invasive native and non-native aquatic species, with the intent to open choked up wetlands and improve waterfowl use and hunter access on wetlands lacking water control. At other sites, we use moist soil management to control weeds, and foster germination of seedbanks of forage plants like smartweed. We have also been experimenting with forage crops in recent years to provide more food for waterfowl and other species. The department has planted and left unharvested sunflowers, buckwheat, and other forage crop species to attract and feed wildlife in or around wetlands in small patches. Nest boxes for wood ducks and other cavity nesters have been installed, but maintenance is likely needed.

Regular monitoring of wetlands through the season is the best way to quickly respond to avian disease outbreaks. Carcass collection is a key to control of avian cholera and botulism, both of which have been reported from the Tri-Cities area but have not occurred on the wildlife area.

More information on waterfowl hunting can be found at: (https://wdfw.wa.gov/hunting/regulations/migratory-waterfowl-upland-game).

Upland Game Birds

Upland game birds are common on many units of the wildlife area. California quail, ring-necked pheasant, and mourning dove are the primary upland quarry available for hunters. Some hunters may encounter gray partridge or chukar in a few locations, such as Thornton and Rattlesnake Slope. Habitat plots, food plots, and agriculture lease management are all strategies that we employ on various units of the Sunnyside-Snake River Wildlife Area to promote upland bird populations.

The Sunnyside Unit and the Hope Valley Unit are both pheasant release sites. Planted birds are released prior to the youth and general pheasant seasons and sporadically throughout the season as a way to increase hunter participation. The birds released are all roosters and the purpose is solely for harvest. More

information on upland game birds and hunting can be found at: https://wdfw.wa.gov/hunting/regulations/migratory-waterfowl-upland-game.

Diversity species overview and management (Non game)

The Sunnyside-Snake River Wildlife Area protects critical habitat in a region heavily converted to agriculture. Both riparian areas and shrubsteppe are considered critical habitats in the counties the wildlife area resides. Having an arid climate, the abundance of water on the wildlife area adds to the diversity of species the wildlife area helps support.

Very few surveys have been conducted on the Sunnyside-Snake River Wildlife Area, and species occurrence data is lacking for many species groups. Incidental observations have generally not been recorded in state databases, so even presence data is unknown for many species. A priority over the next few years should be to train and equip wildlife area staff and volunteers with the tools to log incidental observations through District Wildlife Biologists for submittal to state databases. Additionally, species specific surveys should be conducted to identify species groups such as reptiles, amphibians, odonates (dragonflies and damselflies), small mammals, and birds that are hypothetically using the wildlife area but have not been documented to date.

Diversity Species

Sandhill crane (*Antigone canadensis*)

At the time of writing (2019), sandhill crane is the only state endangered species known to utilize the wildlife area. The species is listed as endangered primarily because of the critically low breeding population of Greater Sandhill cranes (*A. c. tabida)* that nest in Klickitat County. However, there are also greater sandhill cranes breeding in Canada mixed in with migrating lesser sandhill cranes (*Antigone canadensis*) in the Columbia Basin, which hosts important stopover sites for cranes in eastern Washington, including the Sunnyside-Snake River Wildlife Area. Agricultural fields on the Windmill Unit can host over 1500 sandhill cranes during early spring during stopover on their northward migration.

While agricultural fields are currently not limiting in the area during migration, the wildlife area can begin to manage agriculture leases for crops that are in attractive conditions to cranes during March.

Sandhill cranes at Windmill Ranch Unit
Photo by Alan L. Bauer

Ferruginous hawk (*Buteo regalis)*

Ferruginous Hawks are a threatened species in decline in Washington. They naturally nest amidst vast open areas in arid shrubsteppe habitat primarily on cliffs, rim rock ledges, lone trees, and in intact habitat. They have been successful ground nesters on bluffs or steep slopes. Some pairs have taken to artificial structures placed in open areas. The Esquatzel Coulee Unit of the wildlife area has had nesting ferruginous hawks in the past, while hawks have also nested in close proximity to the Thornton, Rattlesnake Slope, and Mesa Lake

Units. Any site with suitable prey, especially ground squirrels, could be attractive to ferruginous hawks for foraging sites.

Control of ravens (nest predators and nest site competitors) may help ferruginous hawk populations, but reestablishment of prey species is likely the key factor in protection of the Washington population. The birds are also considered to be sensitive to disturbance.

Sites on the wildlife area where suitable habitat and prey exist, but cliff or nest substrate are lacking, would be ideal sites for installing nest platforms. Currently, a mitigation project is being planned which will install one or two platforms and raised pole on the Thornton and Rattlesnake Slope Units. Continued monitoring of historic nest sites is also needed, and protection of occupied sites from March-July from disturbance would be needed.

Monarch butterfly (*Danaus plexippus)*
The Monarch is a species whose decline has led to a petition for listing by the USFWS. Currently under federal review, the species' decline may be linked to habitat loss, systemic pesticides (such as neonicotinoids), and habitat destruction on wintering grounds. The species is an obligate breeder on milkweed plants. In 2016-2017, WDFW conducted monarch and milkweed training of wildlife area staff and biologists and surveys for the insect and its host plant. Monarchs and milkweed were located on many units of the Sunnyside-Snake River Wildlife Area, and often in dense patches. Larva were found on most units in Franklin County that were surveyed. The training and attention has resulted in interest by local staff who are now protecting milkweed patches when encountered.

Generally, milkweed is allowed to grow in areas where it will not be disturbed during the time period it supports Monarchs (late May – early September). In areas where milkweed disturbance cannot be reduced or eliminated, milkweed should be controlled outside of the period it supports Monarchs.

Pesticides and seeds used on the wildlife area by staff, contractors, or leaseholders should be reviewed to avoid those containing neonicotinoids, which unnecessarily cause nectar of the planted species to be toxic to insects. Native bee species are also presumed to be in decline because of these pesticides.


Monarch butterfly on rabbit brush, Bailie Unit
Photo by Alan L. Bauer

Ground squirrels
Ground squirrels of the genus *Urocitellus* in the area include the Washington ground squirrel in Franklin County, and Townsend's ground squirrel in Benton and Yakima counties. The Washington ground squirrel is a protected species in Washington and illegal to hunt, while Townsend's ground squirrel is not protected, though shooting and poisoning should not be encouraged. Both squirrels provide potentially important prey sources for ferruginous hawks and badgers.

Washington ground squirrels are not currently known on any units of the wildlife area in Franklin County; however a site was reported in the early 2000's as being active on the Esquatzel Coulee Unit. No formal survey effort has been conducted on the wildlife area. The species can be hard to detect as they are active mostly from March through June and otherwise estivate to avoid the hot dry summer and cold winter. Often more easily heard than seen, the very high-pitched thin whistle call is inaudible to many. Habitat includes shrubsteppe sites, usually with some sagebrush component.


Townsend's ground squirrel, Byron Unit
Photo by Alan L. Bauer

Townsend's ground squirrels have been reported on units in Yakima County, including I-82 Ponds, Sunnyside, and Byron units. The species is fairly common in the area and likely occurs in more locations but incidental reports and surveys have not been completed. Often persecuted for damaging irrigation ditches, managers should work with Irrigation Districts on the wildlife area to seek for alternatives to lethal removal such and improvements to canal structures.

WDFW and USFWS have worked to translocate ground squirrels in Adams County to reestablish populations in suitable protected habitat. If their methods work, some sites in Franklin County may be assessed as suitable release locations in the wildlife area.

Bats

Four bat Species of Greatest Conservation Need (SGCN) are likely present in the vicinity of the wildlife area, but there isn't good data to support this. These include Townsend's big eared bat which is a State Candidate Species for listing, spotted bat, hoary bat and silver-haired bat. The only bat data in Wildlife Survey Data Management database from the wildlife area is a bat study done in 2007 by USFS staff that captured hoary and *myotis sp*. on the Sunnyside Unit.

Reptiles and amphibians

Two amphibian and five reptile Species of Greatest Conservation Need may occur on the Sunnyside-Snake River Wildlife Area. However, surveys of reptiles and amphibians on the have not occurred, and few species have been reported. Tiger salamander (*Ambystoma tigrinum)* likely breeds in fishless wetlands on the units in Franklin County, and Woodhouse's toad *(Anaxyrus woodhousii)* have been found on the Bailie Unit but no reports exist elsewhere.

Pygmy horned lizard *(Phrynosoma douglasii),* sagebrush lizard (Sceloporus graciosus), and side-blotched lizard (*Uta stansburiana)* are also likely to exist on suitable upland sites but no records exist. Desert nightsnake *(Hypsiglena torquata)* is likely to be found if appropriate searches were conducted and incidental sightings reported.

Water birds

In addition to waterfowl, the wetlands of the Sunnyside-Snake River Wildlife Area provide habitat for well over 100 species of birds. SGCN species include the State Threatened American white pelican, which uses the wildlife area for forage and roosting. Several sites provide PHS listed breeding sites for American avocets (*Recurvirostra Americana*), black-necked stilts (*Himantopus mexicanus*), and possibly Wilson's phalaropes (*Phalaropus tricolor*) if water levels are adequately maintained. Tundra swans (*Cygnus columbianus*), snow geese (*Anser caerulescens*), and Western grebes (*Aechmophorus occidentalis*) are SGCN that sporadically use the larger wetlands, sometimes in large numbers. During March of 2018, thousands of snow geese roosted on the lake in the Windmill Unit. Nesting sites of great blue herons (*Ardea Herodias*) and black-crowned night herons (*Nycticorax nycticorax*) may exist in riparian areas, but have not been recorded. With the added ability to manage wetlands with amphibious equipment, more monitoring and documentation of species occurrences are needed to measure management results across a suite of species and seasons.

White pelican, Sunnyside Unit
Photo by Alan L. Bauer

Promoting public use of the wildlife areas during non-hunting seasons for birdwatchers and photographers provides for the added benefit of possibly capturing species data through citizen science portals such as iNaturalist (https://www.inaturalist.org/) and eBird (https://ebird.org/home).

Shrubsteppe songbirds

Away from the wetland sites, sagebrush and bunchgrass provide native shrubsteppe habitat for many species of conservation concern. Sagebrush obligate species such as sagebrush sparrow (*Artemisiospiza nevadensis*) and sage thrasher (*Oreoscoptes montanus*) can be found reliably breeding on and around the Thornton Unit, famous locally to birdwatchers. Loggerhead shrikes (*Lanius ludovicianus*) breed in similar habitat and have been reported on many WLA units. Burrowing owls nest where burrowing mammals including badger and coyote create nesting sites for them, and have been reported from Rattlesnake Slope, Thompson Seeps (WB10-Wasteway), and Esquatzel Coulee units.

Sagebrush sparrow
Photo by Jim Cummins

Protection and restoration of shrubsteppe habitat, especially from fire in arid areas such as Thornton, Rattlesnake Slope, and many Franklin County units is a priority. Control of non-native vegetation, fire breaks, and post-fire restoration can all help reduce the frequency and impact of fire on the shrubsteppe landscape. See the Climate Change section for more information on shrubsteppe species.

Invertebrates

Several presumed rare, understudied, and underappreciated, species that may occur on the wildlife area may either be protected, or negatively impacted by actions on the Sunnyside-Snake River Wildlife Area. The following species are poorly known in Washington Two of Washington's SGCN dragonflies are known from only a couple of reports from the state which have been made along the Yakima River. The Columbia clubtail (*Gomphurus lynnae*) and white-belted ringtail (*Erpetogomphus compositus*) have not been studied well in Washington, and surveys along units adjacent to the Yakima River may be interesting. The Western ridged mussel (*Gonidea angulate*) is a SGCN bivalve also present only in the Yakima River. WDFW water access sites along the Columbia River Hanford Reach may impact or provide survey opportunities for two SGCN mollusks: shortfaced lanx (*Fisherola nuttalli*) and ashy pebblesnail (*Fluminicola fuscus*).

Lupine with bee, Thornton Unit
Photo by Alan L. Bauer

Fish species overview and management

Fish species overview

Of the 15 units comprising the Sunnyside-Snake River Wildlife Area, 11 provide opportunities for recreational angling, either fishing the lakes located within the units or providing access to the Yakima River. There are 20 ponds located within the wildlife areas that support fish populations of sufficient size to provide angling opportunity. Fish communities within these lakes are all mixed populations of warm water (non-native) species except for six ponds that in addition to the warm water species, are planted annually with rainbow trout from area WDFW hatcheries. The planted lakes include ponds 1, 2, 3, 4, 6 in the I-82 unit and Powerline Lake, located within the Windmill Ranch Unit. The majority of the fish species within these waters are non-native and have been introduced by managers or anglers or have been migrated into these waters via surface water connections including the Columbia Basin irrigation system and Yakima River. Largemouth bass, yellow perch, bluegill, and black crappie are the predominant species in the majority of these ponds. Angler effort varies by location and is seasonal.

The six wildlife area units providing shoreline access to the public along the Yakima River are the I-82 Ponds, Sunnyside, Byron, Vance-Ferry Road, Whitstran, and Benton City. Anadromous species present in the Yakima River include spring, summer, and fall runs of chinook, sockeye, coho, steelhead, and pacific lamprey. ESA-listed fish species present in the Yakima River bordering the wildlife areas include Middle Columbia River steelhead and bull trout. There are seasonal sport fisheries for spring Chinook, fall Chinook, and coho salmon in the Yakima River when returns are in excess of conservation needs or the proportion of hatchery returns are elevated. To reduce impacts of incidental take (catch & release) of both juvenile and adult anadromous species in the Yakima River, angling for gamefish is opened on a seasonal basis.

Fish species

A total of 33 distinct species can be found within the Sunnyside Snake River Wildlife Management Unit (SSSRMU): 20 native and 13 non-native species. The dominant species observed in the inland lakes are largemouth bass, yellow perch, black crappie, bluegill, and common carp. Table 12 lists all known species, origin, current status, and the management unit where they have been documented. The Yakima River supports at least 48 species of anadromous, resident native, and non-native fish but, many of these are not present in the lower river bordering the management units.

Table 12. Fish species on the Sunnyside Snake River Wildlife management areas

Common Name	Scientific Name	Origin	Federal/State Status/SGCN	Wildlife Area Unit*
Black Crappie	*Pomoxis nigromaculatus*	Nonnative		*I82,ML,PL,WB, YRU,*
Bluegill	*Lepomis macrochirus*	Nonnative		*I82,ML,WB,YRU*
Brown Bullhead	*Ictalurus nebulosis*	Nonnative		*I82,PL*
Bull Trout	*Salvelinus confluentus*	Native	FT, SC, SGCN	*YRU*
Bridgelip Sucker	*Catostomus columbianus*	Native		*ML,YRU*
Channel Catfish	*Ictalurus punctatus*	Nonnative		*I82,YRU*
Chinook Salmon spring/summer/ fall	*Oncorhynchus tshawytscha*	Native		*YRU*
Chiselmouth	*Acrocheilus alutaceus*	Native		*I82,YRU*

Common Name	Scientific Name	Origin	Federal/State Status/SGCN	Wildlife Area Unit*
Coho Salmon	*Oncorhynchus kisutch*	Native		*YRU*
Common Carp	*Cyprinus carpio*	Nonnative		*ML,YRU*
Goldfish	*Carassius auratus*	Nonnative		*ML*
Lake Whitefish	*Coregonus clupeaformis*	Nonnative		*ML*
Largemouth Bass	*Micropterus salmoides*	Nonnative		*All**
Largescale Sucker	*Catostomus macrocheilus*	Native		*ML,I82,YRU*
Pacific Lamprey	*Entosphenus tridentatus*	Native	FSC, SGCN	*YRU*
Longnose Dace	*Rhinichthys cataractae*	Native		*YRU*
Longnose Sucker	*Catostomus catostomus*	Native		*ML*
Mountain Sucker	*Catostomus platyrhynchus*	Native	SC, SGCN	*YRU*
Mountain Whitefish	*Prosopium williamsoni*	Native		*YRU*
Northern Pikeminnow	*Ptychocheilus oregonensis*	Native		*YRU*
Peamouth	*Mylocheilus caurinus*	Native		*YRU*
Pumpkinseed	*Lepomis gibbosus*	Nonnative		*I82,ML,WB,YRU*
Rainbow Trout	*Oncorhynchus mykiss*	Native		*I82,PL,YRU*
Redside Shiner	*Richardsonius balteatus*	Native		*YRU*
Sculpin	*Cottus* (various species)	Native		*ML,YRU*
Smallmouth Bass	*Micropterus dolomieu*	Nonnative		*YRU*
Sockeye Salmon	*Oncorhynchus nerka*	Native		*YRU*
Speckled Dace	*Rhinichthys osculus*	Native		*YRU*
Steelhead DPS	*Oncorhynchus mykiss*	Native		*YRU*
3-spine Stickleback	*Gasterosteus aculeatus*	Native		*YRU*
Walleye	*Sander vitreus*	Nonnative		*ML,YRU*
Yellow Bullhead	*Ictalurus nebulosis*	Nonnative		*YRU*
Yellow Perch	*Perca flavescens*	Nonnative		*ML,PL, WB, WL,YRU*

*

BoP Bounds Pond
BrP Bridgeman PondP5
BP Byron Ponds
CP Clark Pond
GL Giffin Lake
HP Haystack Ponds
HL Horseshoe Lake
I-82 Pond 5
I-82 Ponds (1-6)
JW Johnson Wetland
ML Mesa Lake
MGL Morgan Lake
PL Powerline Lake
WB WB Wasteway Ponds
WML Windmill Lake
WL Worth Lake
YRU Yakima River units

There are eight focal species/stocks (Table 13) in the Yakima River evaluated by the Yakima Subbasin Fish and Wildlife Planning Board.

Table 13: Fish focal species in the Yakima River Basin

Focal Species Criteria	Bull trout	Steelhead/ Rainbow trout	Spring Chinook	Summer Chinook	Fall Chinook	Sockeye	Coho	Lamprey
ESA Status	Threatened	Threatened	None	None	None	None*	None	None
Has Ecological Significance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Has Cultural Significance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Anadromous and/or Resident	R	A & R	A	A	A	A	A	A
* Sockeye were extirpated from the Yakima Subbasin ca 1920								

Yakima Basin bull trout populations were listed as threatened under the ESA, effective July 10, 1998. Nine distinct bull trout stocks have been identified in the Yakima Basin by WDFW. Of these nine stocks, six are classified as "Critical," one as "Depressed," one as "Healthy," and one as "Unknown".

Spring Chinook populations have been dramatically reduced from pre-1850s abundance levels. Introductions of spring chinook from the Cle Elum Supplementation and Research Facility (CERSF) have increased the abundance of spawning fish in the Upper Yakima spring chinook population.

Fall Chinook populations have also been dramatically reduced from pre-1850s abundance levels. There are two genetically distinct stocks recognized in the Yakima Basin. The mainstem stock is found throughout the lower Yakima River (roughly the lower 100 miles), and a stock is endemic to the Marion Drain, a man-made drainage ditch for the Wapato Irrigation Project. Environmental conditions have changed since the early 1930s, which has resulted in decreased production of fall Chinook and a shift in juvenile out-migration shifting to earlier in the year.

Steelhead and rainbow trout are widely but thinly distributed across the Yakima Basin and have been dramatically reduced from pre-1850s abundance levels. Yakima Basin steelhead were listed as threatened under the ESA, effective May 24, 1999. Production of steelhead within the Yakima Basin is heavily weighted towards Satus and Toppenish Creeks, which have healthy populations. Anadromy in rainbow trout populations, and the overall size of the population in the Upper Yakima River, is presently much decreased from historic levels.

The historical total run size of Yakima River sockeye salmon has been estimated at either 100,000 or 200,000. Sockeye were extirpated following the completion of impassible storage dams below all natural rearing lakes in the late teens and early 1920s. Because sockeye salmon were extirpated from the Yakima Subbasin so long ago, little is known about genetic or life history variation that may have occurred in individual stocks or populations.

Pacific lamprey, once an important food source for Native Americans in the subbasin, is a Washington State species of concern and is under consideration for ESA listing by USFWS. They are currently found in the mainstem Yakima and Naches Rivers, but fewer than 15 have been observed in the Yakima system since 1992.

Fish management

Inland lakes

Fish populations in the lakes located have been relatively stable long term with normal cyclic and seasonal variations in numbers. This stability in populations requires limited oversight and management. Many of the lakes have surface water connections to the Columbia Basin irrigation system or are subject to inundation from the Yakima River during flooding which allows immigration and emigration of fish species. This connectivity reduces management options for management of or supplementation of these lakes. The WDFW Warmwater Program has regional teams that conduct population assessments of WDFW controlled lakes. These surveys have been conducted on the I-82 Ponds, Mesa Lake, Thompson Seeps, Worth Lake, and Powerline Lake. These management briefs are located on the WDFW website at: (https://wdfw.wa.gov/publications/). Only a limited number of the lakes located within the SSSRMU are suitable for rainbow trout due to depth, water temperature, and connectivity. The majority of the lakes in south central Washington cannot support rainbow trout through the summer months due to lethal water temperatures. Powerline Lake is the only exception in the SSSRMU. Rainbow trout have been shown to "carry over" for multiple years producing fish in excess of four pounds. WDFW District biologists allocate rainbow trout plants to each of the six lakes annually based on availability from the hatchery and recommendations from WDFW fish and wildlife staff.

Yakima River

Sockeye, summer Chinook, and coho were extirpated from the Yakima Basin but have been reintroduced. Bull trout is a focal species but historical abundance estimates are unavailable. In March 25, 1995 (64 FR 14517) the National Marine Fisheries Service listed summer steelhead in the Mid-Columbia ESU, which includes the Yakima Subbasin, as threatened under the ESA. Endemic coho stocks were extirpated by 1980 although naturalized production resulting from hatchery releases have been documented since 1989. Endemic summer chinook were last observed in the early 1970s and were considered extirpated.

Sockeye were historically abundant, but were extirpated following the completion of impassible storage dams below all natural rearing lakes in the late teens and early 1920s. Pacific Lamprey are a U.S. Fish and Wildlife Service category two candidate species, and in the Yakima Basin, have become very rare. Historically, 500,000-900,000 adult salmon and steelhead returned to the Yakima Subbasin annually. This total was comprised of spring, summer, and fall Chinook, coho, sockeye, and steelhead. Summer Chinook, sockeye, and native coho were extinct in the subbasin until recent reintroduction efforts. The number of returning adults is greatly reduced from historic levels. Over the last ten years, returns of spring Chinook have varied from a low of 645 to highs of 25,000. Fall Chinook returns average 2,000 to 4,000, while coho runs have been in the 1,000 to 2,000 range.

Habitat management

This section provides a description of habitat management activities that occur on the Sunnyside-Snake River Wildlife Area, wetland management, weed management, fire management and history, and habitat restoration.

Wetland management overview

The majority of wetland habitats, from vegetated and shallow moist soil impoundments to deeper open water habitats that occur on the Sunnyside-Snake River Wildlife Area, are the result of the U.S. Bureau of Reclamation's Columbia Basin Irrigation Project. A very small number of wetlands are seasonally influenced by subsurface Yakima River flows and the Byron Unit is part of the effluent management from the Grandview Wastewater Treatment Plant. Wetland management occurs both as a part of normal day-to-day operations on the units as well as through developing larger collaborative wetland projects with partners.

Water management of shallow wetlands to promote wetland vegetation is important for native and migratory birds as well as for providing recreational opportunities for waterfowl hunters and bird watchers. Periodically (typically about every two to three years), shallow wetlands will need some type of management to reduce vegetation cover while still providing habitat for wildlife and opportunities for recreation. Since most of these wetlands have some form of water control structures that control incoming and outgoing water, wetlands can essentially be dried out to allow equipment to safely enter the wetland basin for mowing and spraying. In some instances, fire is used as an initial treatment to remove years of decedent vegetation growth prior to spraying. With careful planning, these wetlands can provide suitable year round habitat and seasonal recreational opportunities.

WDFW is collaborating with partners Ducks Unlimited, Yakima County, and Yakama Nation, to partially remove or alter a levee near ponds 4 and 5 on the I-82 Ponds Unit, located on the Wapato Reach of the Yakima River. This action will reconnect floodplain and side-channel habitat, which will improve existing wetland habitat and create additional wetlands. Ponds 4 and 5 originated from gravel pits excavated by the Washington State Department of Transportation during the construction of the I-82 Highway through Yakima River floodplains. The lower section of the levee built around the ponds is failing. Removing the failing section or reconfiguring the levee presents opportunity to improve habitat conditions, maintain recreation, and protect other infrastructure. Pond 5 is about 18 acres and the meadow south of the pond is about 17 acres.

Design alternatives under discussion and investigation revolve around breaching or lowering the levee, enhancing a portion of Pond 5, adding swales and depressions to the meadow for additional wetland habitat, and potentially enhancing the upland portions of the meadow. Earthwork actions would be included to restore as much floodplain function as possible given the altered state of the river system and the presence of the highway. No changes are planned for Pond 4 (Draft Wapato Reach Action Plan, 2017).

The Yakima River Basin Integrated Water Resource Management Plan (Integrated Plan), prepared by the Bureau of Reclamation and the Washington State Department of Ecology identified the Wapato Reach as a priority area for ecological restoration and management (Reclamation and Ecology 2011). Integrated Plan.

Future phases include enhancing habitat in the perennial side channel downstream of Pond 5; install riparian plantings, remove left bank rip-rap and levee to reconnect the side channel.

Fire history and management

Fire history

Periodic fires, both human-caused and natural (lightening) have and continue to affect all habitat types in the Sunnyside-Snake River Wildlife Area. Data from 2000 to present indicate that 55 percent of the fires were human caused and only 22 percent were from lightening (Table 14).

Table 14. Fires greater than 50 acres from 2000 - 2018

Fire Name	WLA Unit	Year	Cause	Acres Burned/Type
Duck Club Fire	Sunnyside	2014	Human	250
April Fire	Sunnyside	2014	Human	200
	Mesa Lake	2015	Human	63
	I-82	2000	Lightening	100
	Sunnyside	2000	Controlled burn	unknown
	Thornton	2000	Human	900 / shrubsteppe
	Thornton	2003	Lightening	1200 / shrubsteppe
	Rattlesnake Slope	2018	Target Shooting	185
	Rattlesnake Slope	2018	Electrical	5080

Prescribed fires are used as one of many land management tools to control vegetation and promote plant growth. On the Sunnyside-Snake Wildlife Area prescribe fire is primarily used to remove excessive vegetation litter buildup in wetlands. This opens up vegetation areas and can provide efficient delivery and effectiveness of herbicides that may be used post fire to control resprouting vegetation and or to provide more open water habitats. Annually, one or two wetlands typically get burned at the Sunnyside Unit, depending on environmental conditions and personnel availability. Local fire districts assist with conducting prescribed burns and all prescribed fires comply with local and state regulations. Additional prescribed burns are being planned for the Thompson Seeps, Windmill Ranch, and Mesa Lake units.

Fire management

Wildland fires ignited on or in the vicinity of the Sunnyside-Snake River Wildlife Area are responded to by county fire districts and DNR. Several units of the wildlife area that are nearer to urban centers (Benton City, Prosser) and are part of fire protection districts/associations, but more rural units have no formal fire protection coverage. USFS fire crews also provide protection primarily in areas of federal ownership and DNR has fires crews throughout the area that may also provide fire resources. In addition, wildlife area staff maintain fire suppression qualifications and make equipment accessible for controlling wildfire when it is needed. Wildlife area staff coordinate with Fire Districts, DNR and USFS as resource advisors and landowner representatives to minimize habitat loss, protect resources and meet fire suppression needs.

Weed management

Managing weeds is a significant part of the staff's workload to establish and maintain diverse native plant communities that support fish and wildlife populations. Weed management must also meet legal obligations and reduce the likelihood of spread of noxious weeds to adjacent private lands. Invasive plants and noxious weeds can infest high quality native plant communities and convert them to low quality monocultures that reduce wildlife value. The weed management plan (see Appendix B) identifies species, and management practices to control weeds. Weeds of primary concern on the wildlife area include: purple loosestrife, poison hemlock, kochia, thistles, knapweeds, puncturevine, rush skeletonweed and phragmites. WDFW will continue coordinating with county and the Yakama Nation on purple loosestrife control. As part of noxious weed mandate, when conducting planned projects, preference is given to replacing pollen and nectar rich noxious weeds with native pollinator-friendly forage plants when appropriate to meet management goals.

Climate change approach

Purpose

The purpose of this section is to evaluate how projected changes in climate will affect the resources of the Sunnyside-Snake River Wildlife Area and to highlight opportunities to mitigate or prepare for those effects. This section also summarizes work by the wildlife area planning team to review the management objectives (see Goals and Objectives section) take into consideration factors to ensure that objectives are robust to future changes.

This work is consistent with the directives of a 2017 WDFW policy titled "Addressing the Risks of Climate Change", which states that WDFW will "manage its operations and assets so as to better understand, mitigate, and adapt to impacts of climate change".

Projected climate change impacts

Increasing greenhouse gases will lead to warmer temperatures throughout this century for the Pacific Northwest. The most direct impacts of climate change to this area will be in the form of warmer winters three to six degrees within 15 years) and dryer summers (Climate Impacts Group 2013). For summer months, a majority of models projected decreases in precipitation, with the average declining 16 percent by the 2080s. A majority of models projected increases in winter precipitation, with an average value reaching over nine percent by the 2080 (Mote and Salathé 2009). Other key impacts are highlighted below.

Forests in the northwest also will likely be affected by climate-driven changes in disturbance regimes, such as wildfire (Littell et al. 2010), insect outbreaks (e.g., mountain pine beetle; Logan et al. 2003), disease (e.g., Swiss needle cast; Black et al. 2010), and drought (van Mantgem et al. 2009; Knutson and Pyke 2008). The areas burned by fire in the Columbia River Basin is projected to triple by 2040s relative to median for 1916-2006 (Littell et al. 2010, 2012). Wildfire suppression costs have increased as fire seasons have grown longer and the frequency, size, and severity of wildfires has increased due to changing climatic conditions, drought, hazardous fuel buildups, insect and disease infestations, nonnative invasive species, and other factors. Funding has not kept pace with the cost of fighting fire. Over the last 10 years, adjusting for inflation, the USFS has spent an average of almost $1.13 billion on suppression operations annually.

Vegetation models of sagebrush-steppe systems in eastern Washington and Oregon simulate large declines in current distributions of shrublands under future climate conditions (Neilson et al. 2005; Rogers et al. 2011), with shrubs largely replaced by woodland and forest vegetation. The response to climate change of grassland and shrubland systems throughout the northwest will be influenced by invasive species that are currently present in these systems or may be able to expand into these systems as climate changes (Dennehy et al. 2011).

Impacts to wildlife area resources and potential adaptation

The wetlands in the Sunnyside-Snake River Wildlife Area are dependent on irrigation water, and for this reason may be more resilient than other "natural" wetlands in the region, given the shifts in precipitation and hydrologic regimes expected with climate change. It also means that the ecological significance of these wetlands could potentially become more important over time, if wetlands dependent on natural seeps and springs become less productive. This concept could be further developed and potentially used to secure funding or other enhancements. Agricultural practices are already changing to become more water efficient,

which results in less irrigation water for the wetlands in the wildlife area. Climate change may force additional efficiencies and may impact the water availability for habitat needs. Similarly, crop suitability may change with increasing drought, heat, and wildfires.

Monitoring changes in species and habitat composition, as well as changes in how species are using habitat (including the timing of key ecological events, such as bud burst, first and last frosts, and migration) are critical tools for understanding how and when climate is impacting resources on the wildlife areas. There is a potential role for a citizen science effort on this and other wildlife areas to help monitor ecological indicators.

The climate nexus identified for several of the objectives points to an overall context of changing future conditions – away from historic natural variability. Prioritization of where to restore or develop new wetlands, or improve upland habitat, should be done from an understanding of how future conditions may change. For example, the UW Climate Impacts Group recently conducted a study on climate change impacts on Columbia Basin wetlands, and studies such as these should be consulted as new initiatives are developed.

Species of concern with high vulnerability to climate change

Eight Species of Greatest Conservation Need (SGCN) potentially on the Sunnyside-Snake River Wildlife Area that have been ranked by the climate vulnerability assessment to have a moderate-high vulnerability to climate change, and with high confidence in the data. This include: black-tailed jackrabbit, white-tailed jackrabbit, Townsend's ground squirrel, Washington ground squirrel, Townsend's big-eared bat, golden eagle, flammulated owl, and greater sage grouse. None of these species are on the WDFW "preliminary climate watch list". Only SGCN were considered in this assessment and it does not include climate sensitivities for other species that may be associated with the wildlife area. See Appendix A for terrestrial SCGN and relationship to ecological systems of concern.

Table 15: Species of greatest conservation need with high to moderate vulnerability and high confidence

Species of greatest conservation need	Population size/trend	Conservation concern
Black-tailed jackrabbit	Low/declining	Once abundant and broadly distributed in eastern Washington, the species is now rare and sparsely distributed due to habitat loss from fragmentation and possibly disease.
White-tailed jackrabbit	Low/declining	Once abundant and broadly distributed across the bunchgrass communities of eastern Washington, the species is now rare and sparsely distributed due to the loss, degradation, and fragmentation of habitat and possibly disease and competition with black-tailed jackrabbits
Townsend's ground squirrel	Unknown/ unknown	Population status unclear. Significant declines have occurred in many areas, yet this species is common at a number of human-modified locations.
Washington ground squirrel	Low/declining	Associated with shrubsteppe and steppe in eastern Washington and is threatened by a number of factors, especially habitat loss, degradation, and fragmentation.

Species of greatest conservation need	Population size/trend	Conservation concern
Townsend's big-eared bat	Low/stable	Occurs in small to moderately-sized aggregations at sites throughout the state, where it may be vulnerable to human disturbance during the breeding and wintering periods.
Golden eagle	Low/unknown	Species is of concern due to declines in the distribution and abundance of its primary prey species, jackrabbits and ground squirrels; across its range additional mortality factors include continued exposure to lead in the environment and collisions at wind energy facilities.
Flammulated owl	Low/unknown	Probably impacted by habitat loss (and degradation) and fire suppression in dry forest landscapes.
Greater sage grouse	Low/stable	Requires large landscapes of sagebrush steppe, much of which has been degraded, fragmented, or lost. The primary threat is the combined impact of habitat loss, fragmentation, and degradation.

Shrubsteppe habitat and species associations

Over 10,000 acres of the Sunnyside-Snake River Wildlife Area are in a shrubsteppe system called "Inter-mountain Basins Big Sagebrush Steppe", which is classified as imperiled (see Table 10 - Ecological Systems). Eight species, which are also species of greatest conservation need, are closely associated with this system. These species are American badger, burrowing owl, ferruginous hawk, greater sage grouse, sage thrasher, sagebrush sparrow, Woodhouse's toad, and the sagebrush lizard. WDFW and EcoAdapts's 2016 fact sheet "How Will Climate Change Affect Shrub-Steppe Ecological Systems and Species in Washington?" is summarized in Table 16 for species that may occur on the Sunnyside-Snake River Wildlife Area.

Burrowing owls
Photo by Doug Kuehn

Shrubsteppe systems are sensitive to changes in precipitation and soil moisture, temperature, drought, and altered wildfire regimes. Changes in precipitation can lead to shifts in species composition or vegetation structure. More frequent fire could result in conversion to annual grasslands, which would be adversely impact many species. Shrubsteppe habitats and species will likely be adversely affected under projected future climate conditions. The level of certainty is high that the summers will get drier and hotter in the Columbia Plateau. Fall, wing, and spring will be wetter and also hotter. Inter-mountain Basins Big Sagebrush Steppe is projected to decline by the end of the century. About four percent is projected to remain stable, and 70 percent to become climatically unsuitable.

Table 16. Species associated with shrubsteppe and with a sensitivity to climate change

SGCN species closely associated with shrubsteppe	Vulnerability rank	Threats	Actions needed
Greater sage grouse	High sensitivity / moderate confidence	Requires large landscapes of sagebrush steppe, much of which has been degraded, fragmented, or lost. The primary threat is the combined impact of habitat loss, fragmentation, and degradation.	Protect and restore key habitat. Replant sagebrush. Augment populations.
Burrowing owl	Low sensitivity – moderate confidence	Increased temperatures and changes in precipitation may lead to range contractions	Protect and restore key habitat. Conduct surveys to assess status and trends.
Ferruginous hawk	Low sensitivity – moderate confidence	Warmer temperatures may benefit if grasslands expand, however droughts may lead to decline in prey	Protect and restore shrubsteppe habitat. Protect nests from disturbances.
American badger	High sensitivity / moderate confidence	Reductions in shrubsteppe grasslands and riparian areas could lead to altered prey availability	Conduct research and modeling of habitat using findings of habitat associations from badger surveys. Restore populations of prey species.
Sage thrasher	Moderate – high sensitivity / moderate confidence	Reductions in sagebrush habitat will impact forage, nesting and reproduction	Protect sagebrush habitat. Control cheatgrass.
Sagebrush sparrow	Moderate – high sensitivity / low confidence	Reductions in sagebrush habitat will impact forage, nesting and reproduction	Protect core areas of habitat; identify degraded habitat for restoration and establish connectivity between core areas. Control cheatgrass.
Woodhouse's toad	Moderate – high sensitivity / moderate confidence	Reductions in shrubsteppe grasslands and riparian areas could cause adverse impact	Research, surveys and monitoring to understand species distribution and status. Protect native shrubsteppe habitat from conversion and degradation due to agriculture.
Sagebrush lizard	Moderate – high sensitivity / low confidence	Reductions in sagebrush habitat will impact forage, nesting and reproduction	Monitor populations to make sure their habitat remains suitable and the populations persist. Protect sand dune habitat.

Making the goals and objectives of the wildlife area plan climate resilient

The information listed in Table 17 is a list of the Sunnyside-Snake River Wildlife Area goals and objectives potentially affected by climate change, or those with a "climate nexus". Actions and considerations are listed to ensure climate impacts are addressed in implementation of the wildlife area management plan. Opportunities are summarized below for the list of objectives on page 89.

Table 17: Plan objectives with climate nexus

Objective	Climate Nexus
GOAL: Maintain or improve the ecological integrity of priority sites.	
Establish an ecological integrity baseline and associated goals for ecological systems of concern/priority systems by 2024.	• Include climate change future conditions in planning and monitoring. Develop indicators such as water and air temperature. • Measure what is most sensitive to climate change. Use climate tools to evaluate goals and objectives. • Evaluate for attainability in light of climate change and maximize outcomes.
Implement the 10-year plan for wetland management and restoration. Increase wetland function and value through vegetative restoration.	• Use climate change trends as a criteria for prioritizing where to restore or create new wetlands. • Monitor ground water and analyze for trends. • Consider how other ecologically important wetlands in region may be affected by climate change – importance of these managed wetlands may increase with a longer term perspective.
Implement weed management plan annually.	• Consider monitoring for invasive species expected to increase under climate change. • Plan for possibility of new weeds.
Develop protocol on how to manage nuisance beavers on the wildlife area.	• Regionally, beavers may be an important resilience strategy on some landscapes. Evaluate effort to relocate beavers in the larger context.
Maintain and restore floodplain functions.	• Consider impacts of future flow regimes and extreme weather events in prioritizing locations and in project design.
GOAL: Achieve species diversity at levels consistent with healthy ecosystems.	
Conduct survey for Species of Greatest Conservation Need in coordination with the Diversity Division.	• May need to adjust surveys to accommodate species range shifts and/or phenological shifts. Adjust survey timing to match species instead of static window each year.
Address habitat loss from recent fires on Rattlesnake Slope.	• Consider climate change in restoration strategy.
Identify opportunities to enhance monarch butterfly, bumble bee, and other pollinator habitat.	• If promoting new plantings, prioritize locations based on suitable current and future climatic conditions.
Develop wetland habitat in Thompson Seeps Unit.	• Habitat goals should be designed around future conditions due to climate impacts.

Objective	Climate Nexus
GOAL: Support and maintain appropriate recreation opportunities	
Improve recreational experience user expectations, and support of the wildlife area by providing information on the web, at kiosks, in maps, and directional signage.	• As new signage and interpretive material is developed, keep in mind opportunities to include climate change, which can increase the knowledge of the ecological importance of these wetlands.
Assess potential to improve lakes and stock with fish (trout and/or warm water)	• Habitat suitability for certain species may change.
Manage and improve upland bird habitat and nesting cover.	• Consider fire impacts/potential in habitat projects.
Identify opportunities to improve/increase waterfowl hunting opportunities.	• Criteria should include consideration of any future climatic changes, water temperatures, groundwater or surface hydrology.
GOAL: Identity O&M funding sources.	
Investigate and identify resources for additional O&M funding.	• Consider value of these wetlands in the context of climate change, as a selling point for grants. • Use species vulnerability assessment results to help demonstrate the value of wildlife area to species – help them to adapt to climate change (consistent water availability, etc)

References

Climate Impacts Group. 2013. Washington State of Knowledge Report – Climate Change Impacts and Adaptation to Washington State: Technical Summaries for Decision Makers, Climate Impacts Group. Seattle, WA

Governor's Office of Indian Affairs. Treaty with the Yakama, 1855. https://goia.wa.gov/tribal-government/treaty-yakama-1855

Lenfesty, C.D. and T.E. Reedy. 1985. Soil Survey of Yakima County Area, Washington. United States Department of Agriculture, Soil Conservation Service. Washington D.C.

ICF International, in association with R2 Consultants. 2012. Wapato Reach Assessment Report. April 26. (ICF 00703.11.) Seattle, WA. Prepared for Yakama Nation, Toppenish, WA. Washington Department of Fish and Wildlife. 2015. Washington's State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildlife, Olympia, Washington.

Mote and Salathé. 2009. Future Climate in the Pacific Northwest. Chapter 1 in: The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate. Seattle, WA

Sandisen, Derek and Christiansen, Wendy, et al. 2012. Yakima River Basin Integrated Water Resource Management Plan Final Programmatic Environmental Impact Statement

Schroeder, Michael A., A.J. Shirk, A. Well, L.A. Robb. 2015. GNLCC Final Report. Habitat Occupancy and Movement by Greater Sage-Grouse in Washington State.

Wapato Action Plan Steering Committee, Yakima River Basin Water Resource Management Plan Workgroup. 2017. Draft Wapato Reach Action Plan.

U.S. Fish and Wildlife Service. 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*). Portland, Oregon. xii + 179 pages.

Washington Department of Fish and Wildlife. 2015. Washington's State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildlife, Olympia, Washington.

Washington Department of Fish and Wildlife and EcoAdapt. 2016. How Will Climate Change Affect Shrub-Steppe Ecological Systems and Species in Washington? http://ecoadapt.org/data/documents/EcoAdapt_WDFW_SHRUB-STEPPE_Final.pdf

Western Regional Climate Center. Climate of Washington. https://wrcc.dri.edu/Climate/narrative_wa.php

Yakama Nation. 2012. Wapato Reach Assessment Report. Prepared by ICF International.

Appendices

A. Species and habitat information
B. Weed management plan
C. Fire response information
D. Wetlands restoration summary/plan
E. Cultural resources summary
F. Public response summary

Appendix A. Species and habitat information

Terrestrial SGCN Relationship with Ecological Systems of Concern

SGCN Relationship with Ecological Systems of Concern	Columbia Basin Foothill and Canyon Dry	Columbia Basin Foothill Riparian Woodland and	N Rocky Mtn Lower Montane Riparian Woodland	Columbia Plateau Steppe and Grassland	Inter-Mountain Basins Big Sagebrush Steppe	Inter-Mountain Basins Greasewood Flat	Inter-Mountain Basins Semi-Desert Shrub Steppe	North American Arid West Emergent Marsh
Black-tailed jackrabbit	□	□	□	✓	✓	✓	□	□
White-tailed jackrabbit	✓	□	□	✓	✓	□	□	□
Merriam's shrew	✓	□	□	✓	✓	□	□	□
Hoary bat	✓	✓	✓	✓	✓	✓	□	✓
Townsend's big-eared bat	✓	✓	✓	✓	✓	□	✓	✓
Spotted bat	□	✓	□	✓	✓	✓	□	✓
American badger	✓		□	✓	✓	✓	□	□
Townsend's ground squirrel	□		□	✓	✓	□	□	□
WA ground squirrel	✓		□	✓	✓	□	✓	□
American white pelican	□		□	□	□	□	□	✓
Western grebe	□		□	□	□	□	□	□
Greater sage grouse				✓	✓	✓	✓	
Ferruginous hawk	✓	✓	□	✓	✓	□	✓	□
Golden eagle	✓	✓	✓	✓	✓	✓	✓	□
Bald eagle	✓	✓	✓				□	✓
Peregrine falcon	✓	□	✓		✓	✓	□	✓
Cinnamon teal	□	□	□	✓	✓		✓	✓
Sage thrasher				✓	✓			
Sagebrush sparrow				✓	✓			
Burrowing owl	✓		□	✓	✓	✓	✓	
Flammulated owl			✓				□	□
Western screech owl			□	□	□		□	□
Mountain quail	✓		✓	✓	✓		□	□
Loggerhead shrike	✓	✓	□	✓	✓	✓	✓	□
Tiger salamander	✓		✓	✓	✓			✓
Woodhouse's toad				✓	✓			✓
Desert nightsnake	✓			✓	✓			
Sagebrush lizard					✓			
Pygmy horned lizard				✓	✓			
Columbia spotted frog	✓	✓	✓	✓			□	✓
Western toad	✓	✓	✓		□		□	□
Columbia clubtail dragonfly		✓						
White-belted rintail dragonfly								
Columbia River Tiger Beetle								
Western Bumble Bee								
Morrison's Bumble Bee	✓	✓	✓	✓	✓		✓	
Suckley Cuckoo Bumble Bee								
Shortface Lanx								

Priority habitats in Yakima, Benton, and Franklin counties

Source: WDFW Priority Habitats and Species, 2017

Yakima	Benton	Franklin
Aspen Stands	Aspen Stands	Aspen Stands
Biodiversity Areas & Corridors	Biodiversity Areas & Corridors	Biodiversity Areas & Corridors
Inland Dunes	Inland Dunes	Inland Dunes
Old-Growth/Mature Forest		
Eastside Steppe		Eastside Steppe
Oregon White Oak Woodlands		
Riparian	Riparian	Riparian
Shrubsteppe	Shrubsteppe	Shrubsteppe
Freshwater Wetlands & Fresh Deepwater	Freshwater Wetlands & Fresh Deepwater	Freshwater Wetlands & Fresh Deepwater
Instream	Instream	Instream
Caves	Caves	Caves
Cliffs	Cliffs	Cliffs
Snags and Logs	Snags and Logs	Snags and Logs
Talus	Talus	Talus

Appendix B. Weed management plan

Weed control goals at Sunnyside-Snake River Wildlife Area

The goals of weed control on Department lands at the Sunnyside-Snake River Wildlife Area (SS-SR WLA), which is composed of Bailie, Benton City, Byron, Esquatzel Coulee, Glover, Sunnyside, Hope Valley, I-82 Ponds, Mesa Lake, Rattlesnake Slope, Thornton, Vance-Ferry Road, Thompson Seeps, Whitstran, and Windmill Ranch units, are to maintain or improve the habitat for fish and wildlife, meet legal obligations, and protect adjacent private lands.

WDFW focuses land management activities on the desired plant species and communities, rather than on simply eliminating weeds. Control for listed species is mandated by state law (RCW 17.10 and 17.26) and enforced by the County Noxious Weed Board. WDFW strives to meet its legal obligation to control for noxious weeds listed according to state law (Class A, B-Designate, and county listed weeds). Importantly, the SS-SR WLA will continue to be a good neighbor and partner regarding weed control issues on agency and adjacent lands. The agency believes the best way to gain long-term control is to work cooperatively on a regional scale. As funding and mutual management objectives allow, WDFW will find solutions to collective weed control problems.

WDFW uses integrated pest management (IPM), which is defined in RCW 17.15.010 as "a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives."

At the Sunnyside-Snake River Wildlife Area, WDFW's weed management objectives are:

Staff will formulate a plan for the upcoming season. Prior to the beginning of each field season, wildlife area staff will review the previous year's weed control efforts. They will address any new issues and identify focal areas.

Wildlife area staff will routinely identify areas of upland habitat for restoration improvements and increased nesting and brood rearing cover. These areas will be evaluated for weed control efforts necessary for successful restoration efforts.

Survey up to 500 acres annually on Rattlesnake Slope to determine post-fire weed control requirements in order to maintain and enhance forage for elk utilizing the area. Reseed any areas burned by wildfire in the first winter following the fire. Use native seed mixes (local ecotypes when possible) that include grasses, forbs and shrubs. Use techniques proven to enhance and speed recovery from fires before competitive weeds invade.

Reseed non-irrigated fields at the Sunnyside Unit to more native grass, forb and shrub species, as additional funding allows, helping recover native habitats for native wildlife.

Plant scattered blocks of sagebrush on Rattlesnake Slope grasslands to provide nursery areas for natural reproduction of shrub cover.

Check Windmill Ranch, Sunnyside, and Mesa Lake roads and treat annually for maintenance needs. Besides general weeds, species such as kochia and Canada thistle area problematic pose a risk of spreading to new

areas if not treated and controlled. It is estimated that up to X acres require annual maintenance at each of these sites.

Check wetland and riparian areas annually, especially in areas managed for waterfowl, for purple loosestrife, reed phragmites and Russian olive. Remove 40 acres of Russian olive at the Sunnyside Unit each year until 2023 to restore additional wetlands. Control Canada thistle, poison hemlock and Russian knapweed in river oxbows and swales, and plant to native species.

Staff will take all necessary precautions to avoid incidental treatment of plant species important for pollinators. Weed control efforts will be evaluated against the benefit of wildflowers and forbs on a site by site basis.

Staff will report weed control efforts annually to the Agency's Statewide Noxious Weed Coordinator.

Weed species of concern on the wildlife area include but are not limited to:
Bristly foxtail (*Hordeum jubatum*), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), cocklebur (*Xanthium spinosum*), diffuse knapweed (*Centaurea diffusa*), hairy whitetop (*Cardaria pubescens*), houndstongue (*Cynoglossum officinale*), jointed goatgrass (*Aegilops cylindrical*), kochia (*Bassia scoparia*), poison hemlock (*Conium maculatum*), puncturevine (*Tribulus terrestris*), purple loosestrife (*Lythrum salicaria*), reed phragmites (*Phalaris australis)*, rush skeletonweed (*Chondrilla juncea*), Russian knapweed (*Rhaponticum repens*), Russian olive (*Elaegnus angustifolia*), Russian thistle (*Salsola spp*.), spotted knapweed (*Centaurea stoebe*), white bryony (*Bryonia alba*) and yellow starthistle (*Centaurea solstitialis*).

Weeds occurring on the wildlife area and associated units are listed in Table 1. The table also describes the weed's classification, an estimate of the acreage affected by the weed, how many acres were treated, the relative density of infestation, the general trend the weed infestation has been exhibiting, the control objective and/or strategy for the weed and finally, which wildlife units have the weed present.

Detailed descriptions and natural history information for each of the above state-listed weed species listed above can be found at the Washington State Noxious Weed Control Board web site:http://www.nwcb.wa.gov/search.asp. Information on other species contained in the list can be found at the University of California's IPM Online web site: http://www.ipm.ucdavis.edu/PMG/weeds_intro.html.

Weed management information for individual weed species can be found at the PNW Weed Management Handbook link at: http://pnwhandbooks.org/weed/control-problem-weeds and on WDFW's weed management website at: TBD.

Resources
Detailed descriptions and natural history information for each of the above state-listed weed species listed above can be found at the Washington State Noxious Weed Control Board web site at http://www.nwcb.wa.gov/search.asp.

Information on other species contained in the list can be found at the University of California's IPM Online web site at http://www.ipm.ucdavis.edu/PMG/weeds_intro.html.

Weed management information for individual weed species can be found at the PNW Weed Management Handbook link at http://pnwhandbooks.org/weed/control-problem-weeds

Table 1. Sunnyside-Snake River Wildlife Area weed table including the weed class and unit location on the wildlife area.

Weed Species	Benton	Franklin	Walla Walla	Yakima	2016 Estimated Affected Acres	2016 Treated Acres	Annual Trend	Control Objective/ Strategy	Wildlife Area Unit Weed Distribution
Bristly foxtail		NA			60	8	No Change	Control	Windmill Ranch (2013)
Broadleaf weeds		NA			134	125	Decreasing	Control	Bailie Youth Ranch, Hope Valley, Mesa Lake, Windmill Ranch
Canada thistle		C			41	36	Decreasing	Control	Hope Valley (biocontrol 2013), Mesa Lake, Windmill Ranch
Cheatgrass		NA			24	24	Decreasing	Control	Mesa Lake, Windmill Ranch
Cocklebur		C			7	7	Decreasing	Control	Mesa Lake, Windmill Ranch
Diffuse knapweed		B			3	0.5	Decreasing	Control	Windmill Ranch (2013), Mesa Lake (biocontrol 2013)
General Weeds	NA	NA		NA	874	210	No Change	Control	Sunnyside, I-82, Mesa Lake, Rattlesnake Slope, Windmill Ranch
Hairy whitetop			C		60	20	No Change	Control	Sunnyside
Houndstongue			B		30	1	No Change	Control	Windmill Ranch (2013)
Jointed goatgrass		C			<0.1	<0.1	Unknown	Eradicate	Mesa Lake (2013)
Kochia		B		B	392.5	94	Decreasing	Control	Hope Valley, Mesa Lake, Windmill Ranch, Sunnyside
Poison hemlock		B			18	16	Decreasing	Control	Windmill Ranch
Puncturevine		B			1	1	Decreasing	Control	Bailie (2013)
Purple loosestrife				B		10	Unknown - Decreasing	Control	Mesa Lake, Windmill, Hope Valley, Bailie (biocontrol 2013), Sunnyside and Byron (biocontrol 2015)

Weed Species	Benton	Franklin	Walla Walla	Yakima	2016 Estimated Affected Acres	2016 Treated Acres	Annual Trend	Control Objective/ Strategy	Wildlife Area Unit Weed Distribution
Reed phragmites		C			30	10	Increasing	Control	Mesa Lake, Windmill Ranch
Rush skeletonweed		B			4	4	Decreasing	Control	Hope Valley (2014)
Russian knapweed				B	80	10	Decreasing	Control	Byron
Russian olive				C	50	8	No Change	Control	Sunnyside
Russian thistle		NA			12	10	Decreasing	Control	Hope Valley, Windmill Ranch
Spotted knapweed		B			1	1	Decreasing	Controls	Windmill Ranch (2013)
White bryony		B			0.5	<0.1	Increasing	Eradicate	Windmill Ranch (2013)
Yellow starthistle		B			3	3	Decreasing	Control	Bailie, Windmill Ranch (2014)

Appendix C. Fire response information

Agency	Units Covered	Phone Number
Yakima County FD 5	I-82 Ponds, Glover, Sunnyside, Vance-Ferry Road, Byron	(509) 829-5111
Prosser FD 3 /West Benton Fire Rescue	Thornton, Whitstran	(509) 786-3873
Benton City / Benton County FD 2	Benton City, Rattlesnake Slope	(509)588-3212
Basin City / Franklin County FD 4	Bailie, Thompson Seeps	
Connell / Franklin County FD 1	Hope Valley, Mesa Lake, Windmill Ranch, Esquatzel Coulee	(509) 234-5451
Franklin County - FD 3	Hope Valley	(509) 547-0961

Department of Fish and Wildlife contacts - contact in order listed

Contact	Phone Number
Pat Kaelber, Wildlife Area Manager	(509) 545-2028
Ross Huffman, Region 3 Lands Operations Manager	(509) 457-9313
Scott McCorquodale, Regional Wildlife Program Manager	(509) 575-2740

Fire district

The Sunnyside-Snake River Wildlife area is covered by six Fire Districts: Yakima County FD 5, Prosser FD 3, Benton City, Franklin County FD 4 (Basin City), FD 1 (Connell), and FD 3 (See Maps 20 and 21). There is some overlap on the Rattlesnake Slope Unit (Benton City FD) and Thornton Unit (Prosser FD 3) between the Department of Natural Resources (DNR) and the fire districts. The wildlife area is with the DNR Southeast Region (509) 547-0961.

Figure 20: Sunnyside-Snake River (West) Fire District Boundaries

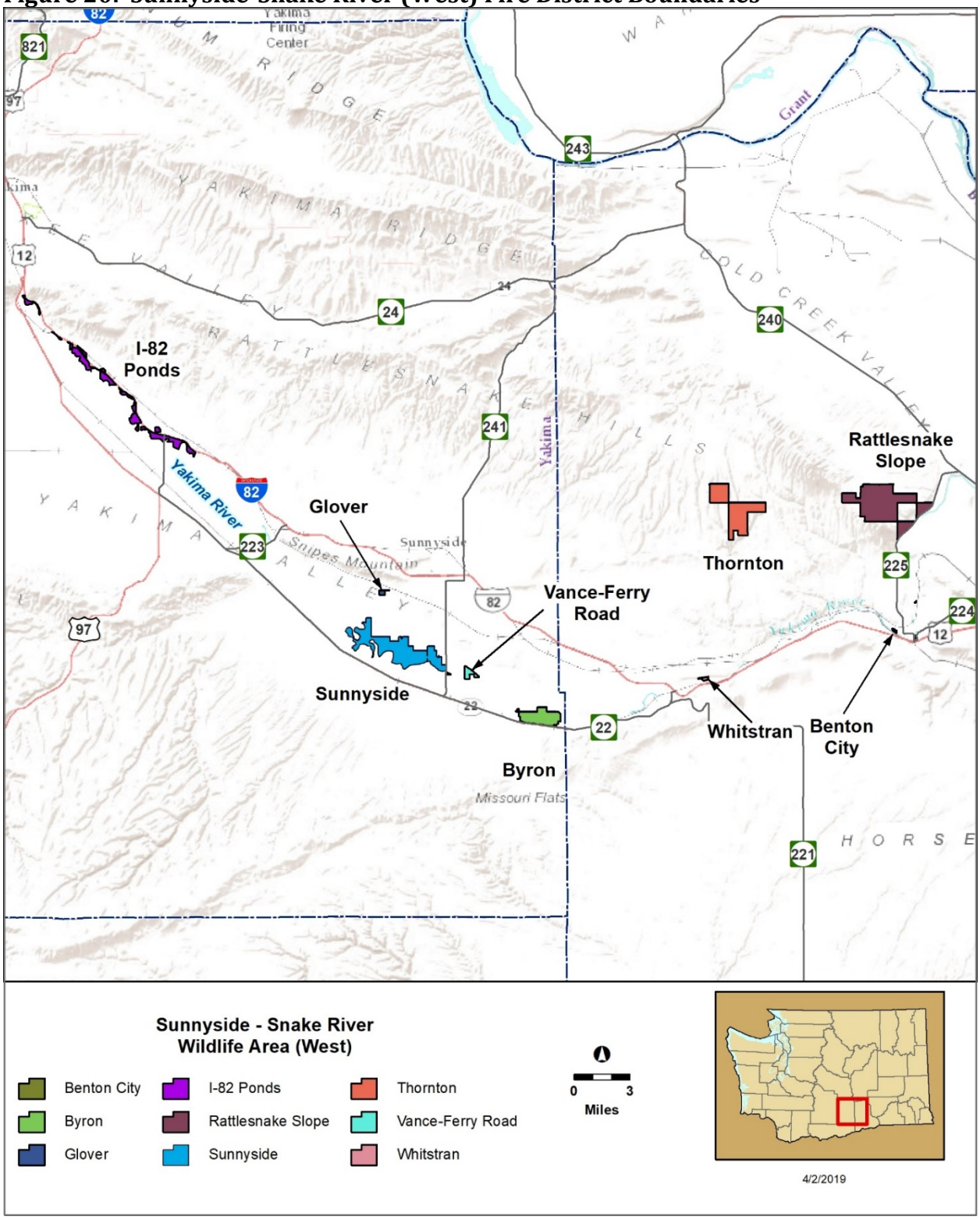
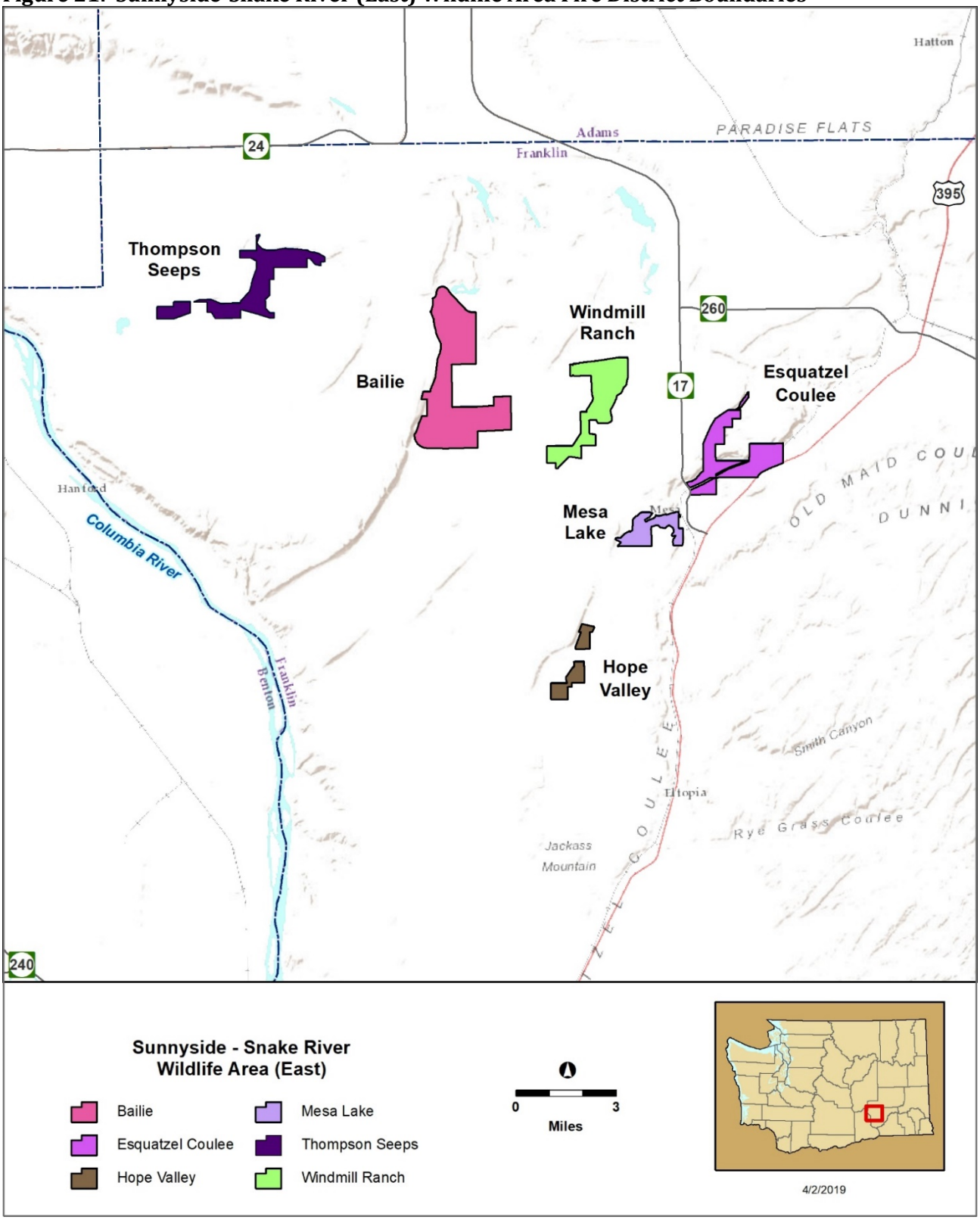


Figure 21: Sunnyside-Snake River (East) Wildlife Area Fire District Boundaries



Appendix D. Sunnyside-Snake River Wildlife Area Wetland Management Plan

Introduction

This wetland plan is based on current project area conditions and reflects common goals resulting from discussions between wildlife area staff, district biologists, and comments from the public. An adaptive plan is required to address the dynamic nature of the Sunnyside / Snake River Wildlife Area wetland systems, and continued updates will be necessary to maintain the value of this document. The purpose of the Sunnyside / Snake River Wildlife Area Wetland Management Plan is to provide guidance to field staff to help maintain and improve wetland habitat and recreational value throughout the next ten years. This plan supports the mission of Washington Department of Fish and Wildlife, provides a strategic framework for continued management efforts and aligns with the rest of the goals and objectives of the ten-year management plan.

Part 1: Wetland Management

Wetland Types

Wetlands of the Sunnyside / Snake River Wildlife Area are classified under three main wetland types – riverine, lacustrine, and palustrine. Riverine wetlands occur in a river channel and lack trees, shrubs and emergent vegetation. Riverine wetland habitat on the wildlife area is found on units along the Yakima River – I-82 Ponds, Sunnyside, Byron, Whitstran, and Benton City. Lacustrine wetlands are characterized by topographic depressions or old river channels, are greater than eight hectares in size, and lack emergent vegetation (open water) on more that 30 percent of the surface area. Lacustrine wetland habitat is found on the Sunnyside, Bailie, Hope Valley, and Mesa Lake units. Palustrine wetlands have emergent vegetation, are less than 8 hectares in size, are less than two meters deep, and lack wave-formed shorelines. Palustrine wetland habitat is found on all units except Rattlesnake Slope and Thornton.

The Sunnyside Valley Irrigation Canal was completed in 1923. The Yakima Project built six reservoirs in the Yakima River headwaters by 1933.The Columbia Basin Irrigation Project was developed following the completion of the Grand Coulee Dam in 1942. Most of the wetlands in the wildlife area are impacted by irrigation water delivery, and directly enhances approximately X acres of wetland habitat. All wetlands associated within the wildlife area are impacted by the various irrigation district operating-regimes. This creates an unknown level of uncertainty for wetland planning because factors such as timing, rates, levels, and unanticipated shut-offs are outside of the control of WDFW managers. The Columbia Basin and Yakima Valley had far fewer wetlands prior to the establishment of irrigation. The original wetlands functioned naturally by recharging during fall and winter rains and spring snowmelt and gradually receding during the hot, dry summer. Natural wetlands are dynamic and typically experience wet-dry cycles. This periodic drying is critical for maintaining wetland productivity and habitat value. The irrigation-influenced wetlands within the wildlife area have a relatively consistent hydro-period throughout the growing season (and entire year in some locations). This consistency can compromise wetland function and accelerate issues such as invasive species, sedimentation, and succession.

Ecological Integrity

Many of the wetlands throughout the wildlife area are not natural. Their existence is a direct result of irrigation development throughout the Columbia Basin and the Yakima Valley. The network of designed

irrigation canals and ditches either supply water directly to wetlands, or seepage from these waterways moves to nearby low areas creating wetland habitat. These wetlands provide habitat to a wide variety of wildlife and offer outdoor recreational opportunities. However, they are not a priority for ecological monitoring at this time.

The Yakima Basin Integrated Plan is a product of multiple City, County, State, Federal, and Non-Governmental entities working together for a common goal of water and resource protection. The Yakima River corridor, and in particular that stretch adjacent to the wildlife area units (Sunnyside and I-82 Ponds), is of considerable importance. The Integrated Plan has identified this stretch of the Yakima River for protection of existing habitat and improving natural hydrology. Wildlife area staff will work with representatives of the Integrated Plan to assure wildlife area needs are met, and habitat conditions are improved where possible.

Risk Management

The greatest risk to any wetland is the availability of water. As many of the wetlands across the wildlife area receive water from irrigation sources, they are at less risk than other wetlands in other regions. However, as water conservation becomes more and more promoted, and irrigation efficiencies continue to improve, the "excess" water that has previously been supplied to the wildlife area wetlands will likely decrease. As these decreases become reality, wildlife area staff will have to assess management decisions to provide the most habitat and wildlife benefits throughout the year, and from year to year.

The natural wear and tear of time on infrastructure is also an important risk to consider. All infrastructure has a limited lifespan. Many water control structures across the wildlife area are near, or past, that intended lifespan. Wildlife area management staff must evaluate all of the existing infrastructure and develop a replacement schedule based on critical need. Replacement designs need to support anticipated future water regimes and potential management activities, and adequate funding to replace and maintain the infrastructure needs to be secured.

Recreation

The wetlands and wetland habitat of the wildlife area supports a variety of outdoor recreational opportunities. The most participated activity is waterfowl hunting. Over 1,000 hunter visits occur each year. Wetland habitat provides travel corridors and cover for mule deer and elk, along with other small game species. Larger wetlands, ponds and lakes support populations of fish for anglers. The plethora of wildlife also invite individuals out for wildlife viewing. Over 200 species of birds are known to utilize the wildlife area. Many species of wetland plants are considered important to Native Peoples for collection and harvesting.

All of these considerations pose issues to wildlife area management staff. Wetlands need to periodically dry in order to maintain their overall productivity. Historically these dry periods would occur during the summer. These dry periods allow annual plants to grow and produce seeds, which are important food sources during the fall and winter. However, water regimes of irrigation districts typically produce the highest flows during the hottest, driest stretches of summer. These summer water regimes support breeding populations of wildlife that may not otherwise stay in the region. Summer water regimes also support unusually higher populations of mosquitos that have been found to carry West Nile Virus, thus putting visitors at risk.

Management actions that provide the most benefit to one form of recreation don't necessarily benefit other recreation activities. Wildlife area management staff must evaluate all wetlands on an annual basis to

determine which management activities will be implemented for each wetland. Not all wetlands will support all recreational activities every year, but the recreational opportunities will still be available each year.

Part II: Units

Sunnyside Unit

The Snipes Reserve portion of the unit is closed to the public and provides nesting and brood rearing habitat for waterfowl during the spring and summer, as well as resting and loafing sanctuary during the fall hunting season. Within the confines of the Snipes Reserve are **Bound's Lake** and **Horseshoe Pond.** Part of **Bos Lake** extends onto the wildlife area from adjacent private property.

On the east end of the unit is the **Johnson Wetland and pond**. This wetland has potential to provide nesting and brood rearing habitat for waterfowl. It is a popular hunting location during the fall hunting season. Upstream is **Morgan Lake**, and then **Bridgeman Pond**. These two wetlands also have potential for nesting and brood rearing waterfowl, and provide hunting sites during season. Closest to the office are the **North Haystack Pond** and the **South Haystack Pond**. Downstream is **Giffen Lake**. This is the largest wetland on the unit. An electric pump station delivers water to the **Rice Paddy Wetlands**. This is a complex of man-made wetland cells and the most popular hunting wetlands on the unit. Soil types do not retain water for very long after the pumps are shut down. Cost of electricity determines how long and when water is supplied to these wetlands. Repairs need to be made to the berms that separate the individual cells so they will hold more water during the hunting season. The **90-acre Field** also receives water from pumping out of Giffen Lake. The soil types prevent this area from holding water without pumping. This wetland area provides ideal nesting habitat, and some hunting opportunities throughout the season. The **Brady Wetland** provides excellent nesting and brood rearing habitat for waterfowl, and is a popular hunting wetland. All of these wetlands can receive water from flood events of the Yakima River. Their primary source of water is irrigation water. At the west end of the unit is the **South Emerald Oxbow**. This wetland does not have any consistent water supply, only flood water. This wetland does provide nesting and brood rearing habitat. This

Sunnyside Unit Wetlands

unit is the first property acquired by WDFW in the Sunnyside / Snake River Complex. Wetland management has been ongoing since then and much of the infrastructure is old and in need of replacement or upgrades.

Byron Ponds Unit

The **Byron Ponds** can provide excellent nesting and brood rearing habitat for waterfowl, along with tremendous waterfowl hunting opportunities. Consistent water supply during critical time periods and the ability to manage weeds effectively dictate the high or low level of productivity in the past. Water is supplied from an irrigation ditch, and from excess water released by the neighboring Grandview Water Treatment Plant. In recent years, the amount of water available has decreased, causing wetland water levels to decrease, and allowing emergent vegetation to increase above desired amounts.

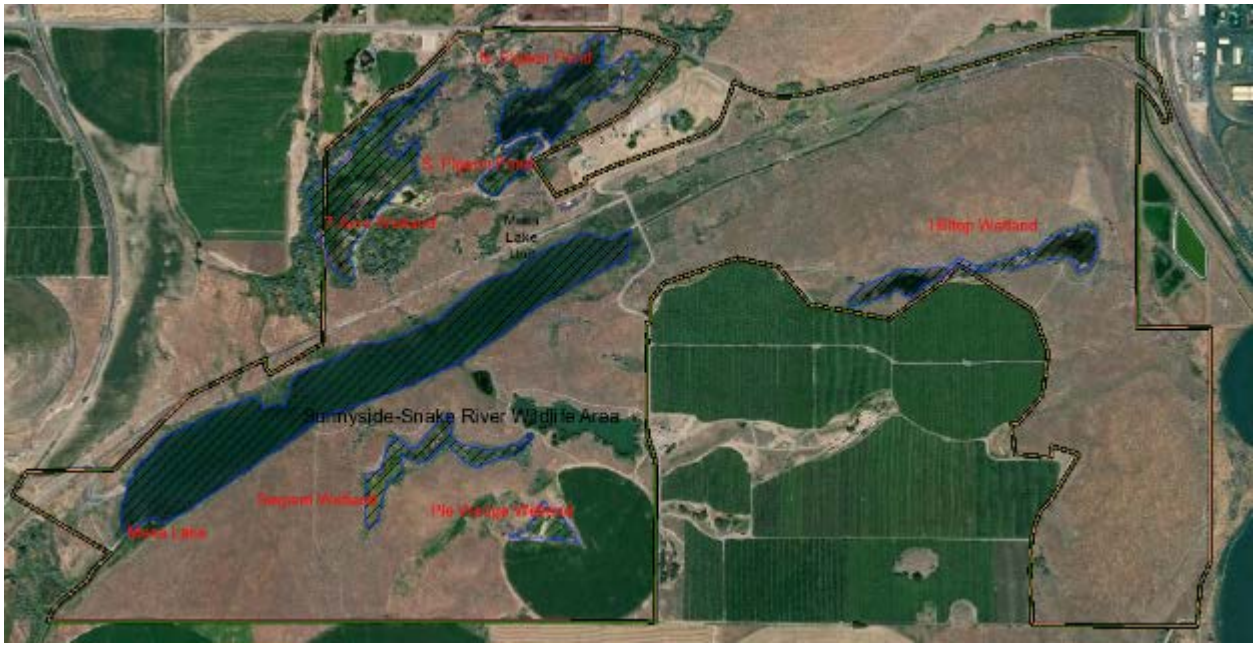
Byron Unit wetlands

Mesa Lake Unit

Mesa Lake is a long finger lake that is supplied by irrigation water. Although there is a water control structure on the downstream end of the lake, water level management is primarily controlled by the local irrigation district. Some nesting and brood rearing occurs around the lake. In the northwest corner of the property is the **7-acre Wetland**. This wetland receives water from an irrigation ditch, and groundwater seepage from the adjacent hillside. Even though the irrigation water can be periodically diverted away, the amount of groundwater makes management efforts difficult. Also north of Mesa Lake are the **Upper and Lower Pigeon Ponds**. These two wetlands receive water from the same irrigation ditch as the 7-acre wetland. Water can be diverted at the ditch to the 7-acre wetland or the pigeon ponds, or split between both wetlands.

There are three different wetlands on the south side of the property. The **Hilltop Wetland** is east of the privately owned orchard (on top of the mesa). This wetland receives runoff water from the orchard and there is no water control structure for water level management. This wetland also lies within the city limits

of Mesa. The **Serpent Wetland** typically supports only some nesting and little brood rearing. The water for this wetland is supplied by a pump system shared with the neighboring orchard. Soil types within the



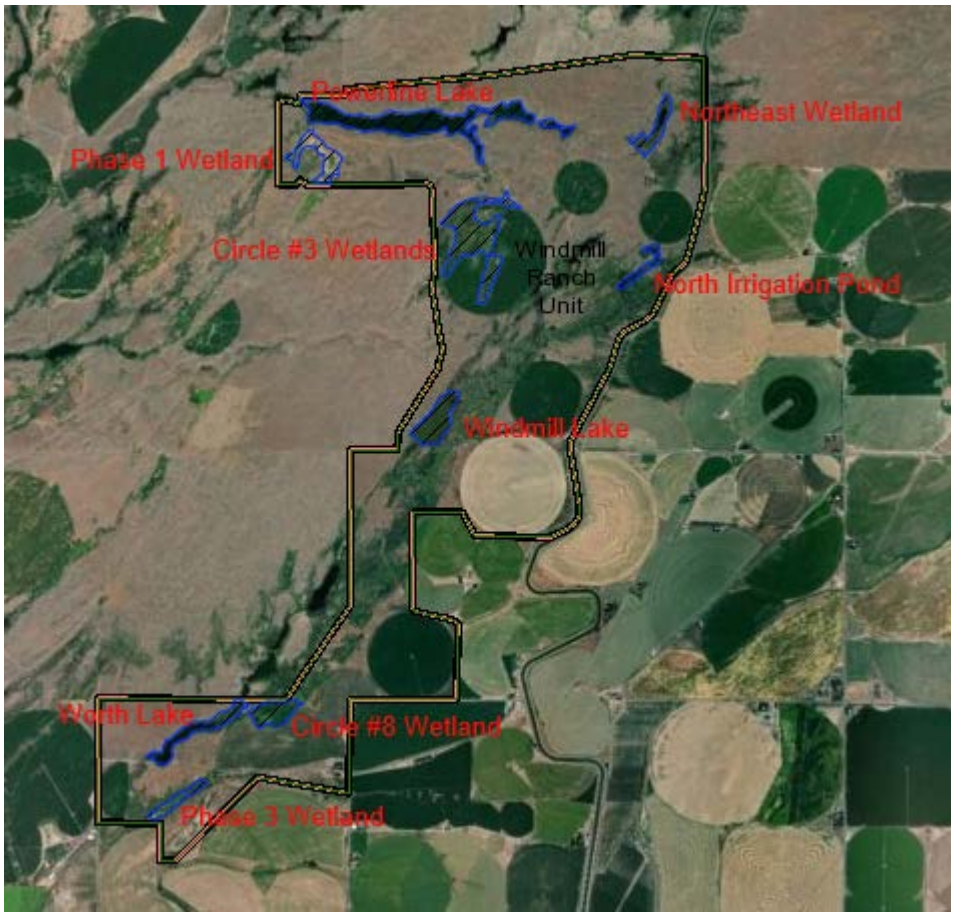
Mesa Lake Unit wetlands

wetland allow water to seep away, which makes year-round water cost prohibitive. The seepage allows for a natural moist soil draw-down. The **Pie Wedge Wetland** sits within the agricultural crop field on the south end of the property. This wetland currently does not have a water control structure and efforts will be made to install one in the future.

<u>Windmill Ranch Unit</u>

At the north end of the property is **Powerline Lake**. This lake is very deep, with steep rock sides. Nesting and brood rearing is limited. Management actions are limited. Some waterfowl hunting does occur. This body of water is focused primarily on fish recreation. At the west end of the lake is the **Phase 1 Wetland**. This wetland receives water from Powerline Lake through a gravity-fed gate. In the northeast corner of the property is the **Northeast Wetland**. This wetland currently does not have a water control structure for water level management. This needs to be addressed before any management activity can occur. South of the Circle #1 crop field is the **North Irrigation Pond**. This wetland provides excellent nesting and brood rearing habitat. This wetland receives water directly from the irrigation canal, and feeds additional wetland habitat downstream. The **Circle #3 Wetlands** sit inside crop field circle #3. This is a series of small wetlands with grass borders, terraced downhill through the crop field. They provide excellent nesting and brood rearing habitat. These wetlands receive water directly from the irrigation pivot. In the middle of the property is **Windmill Lake**. This lake currently has an undersized overflow pipe, and no water control structure for water level management. A water control structure will need to be installed. At the far south end of the property is the **Phase 3 Wetlands**. This is a series of small wetlands terraced downhill. Water is supplied to these wetlands from a diversion on the irrigation ditch. Across the service road is **Worth Lake**. This lake is

mostly deep, open water with steep banks. Worth Lake is supplied by overflow water from Windmill Lake, further upstream. Adjacent to Worth Lake is the **Circle #8 Wetland**. This wetland sits in crop field #8 with a grass border. This wetland is supplied directly by the irrigation pivot.

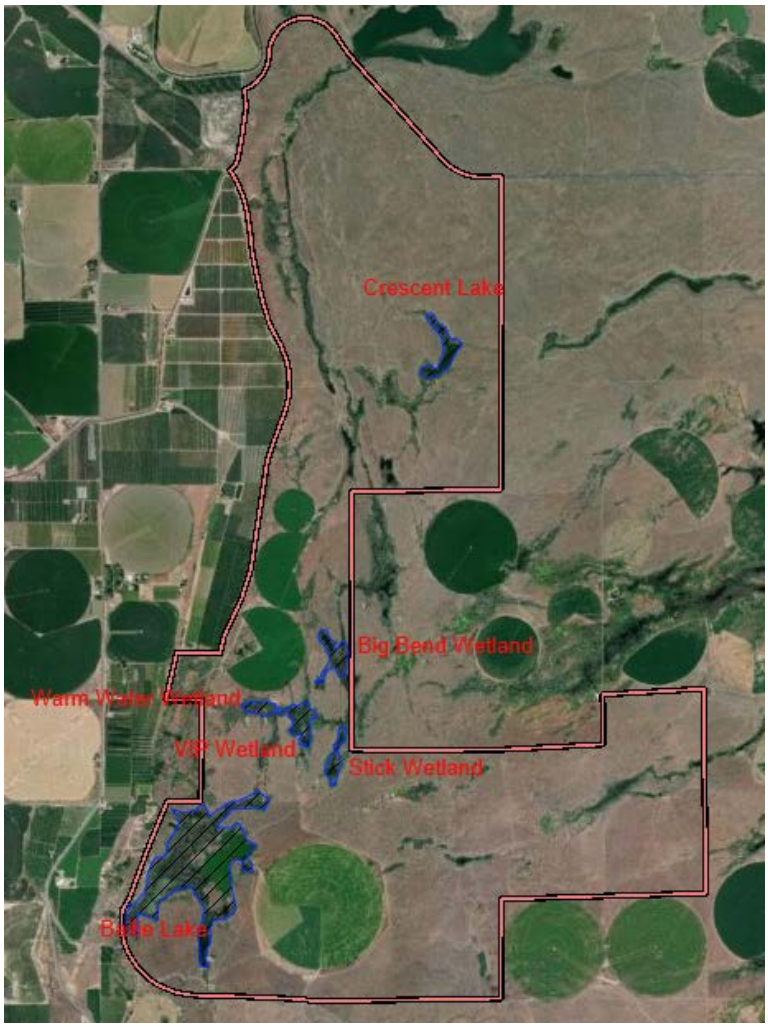


Windmill Ranch Unit wetlands

Bailie Ranch Unit

The Bailie Unit is a privately owned and operated ranch. WDFW has a perpetual easement to allow public hunting. The easement allows WDFW to participate in wetland management with coordination from the ranch. **Bailie Lake** is a large lake at the south end of the property. The east half of the lake is open water, but the west half is a dense stand of cattails. An irrigation ditch flows north to south through the unit. The amount of water is variable throughout the year, but it is constant.

There are four main wetlands in the middle of the Bailie Youth Ranch. The **Stick Wetland** is the furthest east. This wetland is supplied by a culvert that diverts water from the main irrigation ditch. The **V.I.P. Wetland** is a large wetland where the irrigation ditch opens up into a large basin. The **Big Bend Wetland** receives backwater from the irrigation ditch. This wetland is a depression formed within the basalt rock at the ground surface. The **Warm Water Wetland** is the furthest west. This wetland receives spring water from the adjacent ridge. The constant flow of spring water adds to the difficulty in managing this wetland. Another wetland is situated in the northeast corner of the property. This is **Crescent Lake**. This lake receives a combination of spring water and backwater from the irrigation ditch.



Bailie Ranch Unit wetlands

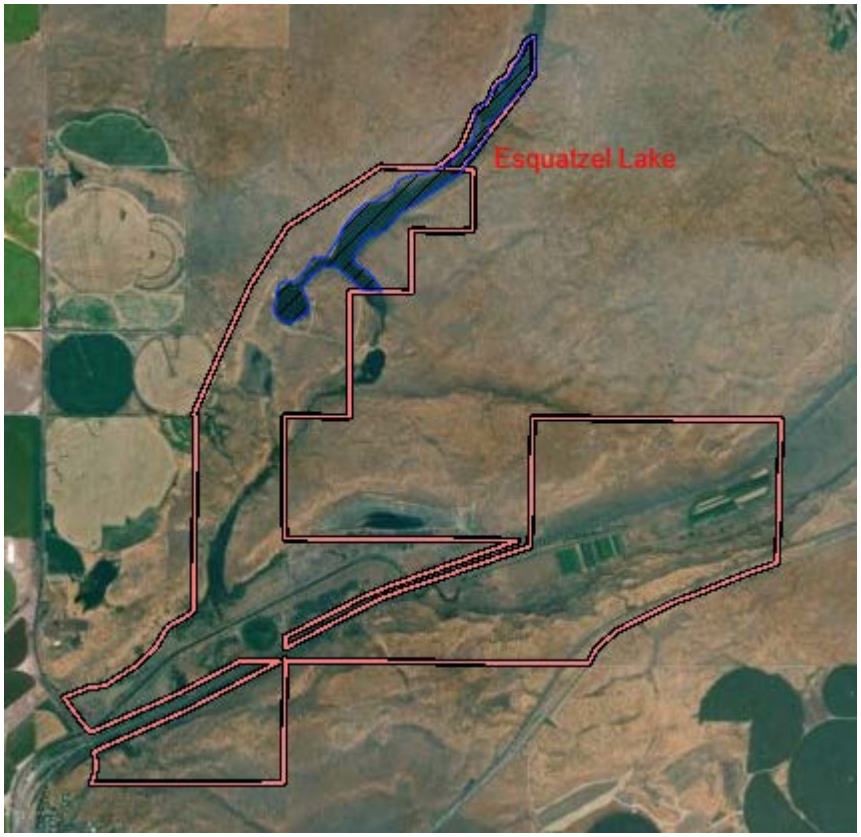
Hope Valley Unit

The Hope Valley Unit contains of a single, large irrigation water supply lake, **Clark Pond**. The south half of the lake is open water, but the north half is a dense stand of cattails. Water enters the property from the north via an irrigation ditch. The lake has a single outlet at the south end. All water management is conducted by the irrigation district.

Hope Valley Unit wetlands

Esquatzel Coulee Unit

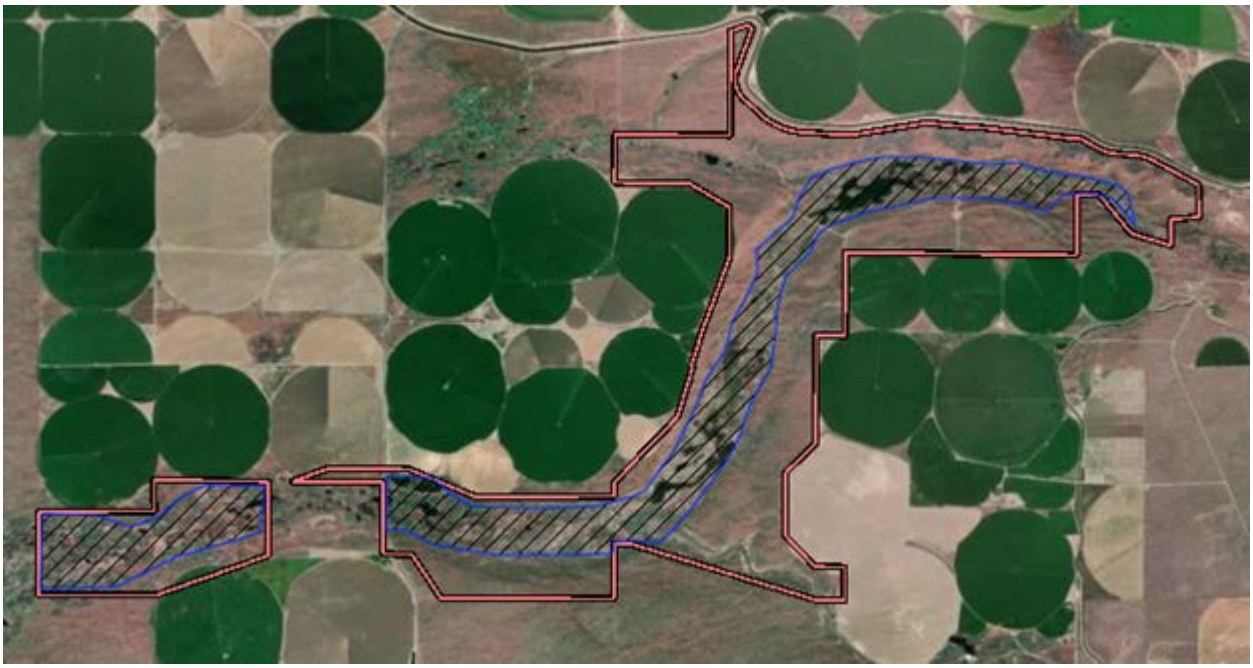
There is only one lake on this property. **Esquatzel Lake** is a deep open water lake with steep banks. The lake is shallow at the north end where irrigation water enters the lake, and at the south end where water flows out of the lake. There is no man-made infrastructure for managing the water level of this lake. Emergent vegetation is minimal and management actions available are minimal. Although many people access **Railroad Lake** from this unit, this lake is on private property.



Esquatzel Coulee wetlands

Thompson Seeps Unit

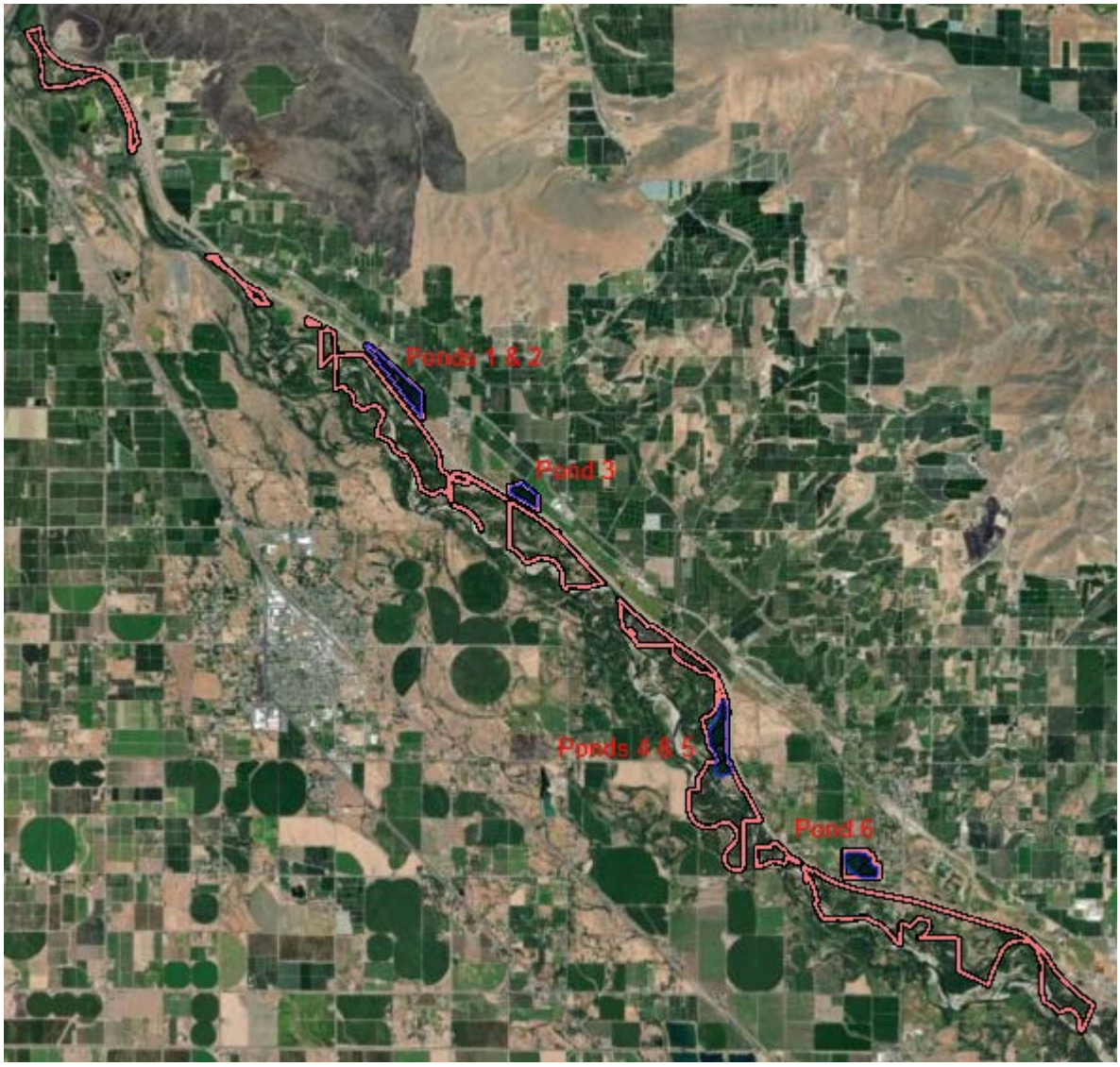
This unit consists of a wide canyon that collects wasted irrigation water and seepage from a large irrigation canal. As water meanders down through the canyon, it collects in multiple open areas creating wetland habitat. Previously there were two lakes on the property created by beaver dams and debris flow. Changes in the water regime by the irrigation district and the wear of time caused the lakes to diminish. There are no manageable wetlands on this unit at this time, but efforts are already being made to create a plan for developing a series of manageable wetlands on this unit.



Thompson Seeps Unit wetlands

I-82 Ponds Unit

The I-82 Ponds unit is a series of land parcels situated between the Yakima River and Interstate 82. There are six ponds on the unit. These ponds were initially borrow pits for fill material during the construction of the interstate. These ponds have been intended to provide public fishing opportunities. The ponds are stocked with fish and the parking areas are managed by the Access Program. The rest of the property consists of riparian habitat and old river oxbows, and provides access to the Yakima River. The wetland habitat on this unit is not actively managed. The high frequency of flooding precludes the installation of water control structures.



I-82 Ponds Unit wetlands

Part III: Management Actions

Management actions identified for wetland management during the next 10 years include:

- Implement a 10-year plan for wetland management and restoration, which is focused on enhancements and includes development of new wetlands on the wildlife area. This will include prioritizing areas for restoration, working with partners to identify common goals, identifying funding sources, working with conservation districts to help leverage opportunities with other land owners, minimize conflicts with upland bird habitat, and tie in with other state plans, conservation initiatives and other partners.

- Coordinate with the Yakima Basin Integrated Plan and their efforts in the Wapato Reach, as well as other areas of the Yakima River system.

- Coordinate with the City of Grandview to ensure a consistent supply of water to the Byron Ponds for wildlife and recreation. This will also include coordination with the Mosquito Control District and the Washington Department of Health.

- Develop a protocol for management of nuisance beavers on the wildlife area by 2022. This will include coordination with irrigation districts, the Yakama Nation, and other organizations.

- Maintain and restore floodplain functions throughout the Yakima River Valley. Coordination with irrigation districts, the Yakima Basin Integrated Plan, County Agencies, and other conservation organizations will be critical.

- Evaluate the function and benefits to wildlife and recreationalists of the refuges and reserves for promoting the greatest ecological value. The evaluation should be completed by 2022. There are established reserves on the Sunnyside and Byron units, and a waterfowl refuge on the Yakima River affecting the Vance-Ferry unit. The evaluation with include coordination with the Game Division, Toppenish National Wildlife Refuge, and other regional staff.

- Develop a prescribed burn plan for wetlands by 2022. Input will be received by the Agency Burn Team and local fire districts.

- Develop regularly scheduled waterfowl surveys for use in assessing management actions. Wildlife area and regional staff shall determine the most appropriate information to collect, and then establish protocols and schedules for the surveys.

- Identify opportunities to improve / increase waterfowl hunting opportunities. This will include identifying areas for placement of blinds, improving field-hunting opportunities, and collecting data for user-driven desires.

- Improve fishing opportunities by managing aquatic weeds in stocked lakes. Currently trout are stocked in Ponds 1-6 of the I-82 Ponds unit and Powerline Lake on the Windmill Ranch unit. Wildlife area staff will work with the Fish Program to collaborate on aquatic weed control efforts and evaluate other lakes/ponds/wetlands for potential stocking efforts.

- Water level management is crucial to wetland management. Wildlife area staff will maintain and upgrade water control structures as necessary. Wildlife area staff will coordinate with Ducks Unlimited whenever possible, as well as seek grants and additional funding from other sources. Water control structure replacement / upgrade is needed at:
    - Giffen Lake – Sunnyside Unit
    - Bos Lake – Sunnyside Unit
    - Pie-Wedge Wetland – Mesa Lake Unit
    - Windmill Lake – Windmill Ranch Unit
    - Northeast Wetland – Windmill Ranch Unit

- Many wetlands are overgrown with emergent vegetation, thus reducing the wetland value and function. Wetlands identified for vegetative restoration efforts include:
    - Morgan Lake – Sunnyside Unit
    - Bridgeman Pond – Sunnyside Unit
    - All of the ponds at Byron Unit
    - Circle #3 Wetlands – Windmill Ranch Unit
    - V.I.P. Wetland – Bailie Unit
    - Bailie Lake – Bailie Unit
    - Clark Pond – Hope Valley Unit

- The Rice Paddies are popular wetlands for waterfowl hunting and recreational bird watching. The low-head berms that create the paddies are in need of restructuring. Wildlife area staff will work with other regional staff to develop a system for maintaining the each berm and providing for movement of water between each cell.

- The Johnson Wetland is a popular wetland for waterfowl hunting. Staff will work with the local Agriculture Permit holder to increase food resources in the wetland. Staff will also work with irrigation districts to maintain adequate water supplies throughout the hunting seasons.

- Staff will work with Ducks Unlimited, the Bureau of Reclamation, and local irrigation districts to continue developing wetland habitat throughout the Thompson Seeps Unit. The unit is a waste way for excess irrigation water. Decadent vegetation and the lack of water management capabilities hinders the unit from reaching its full wetland potential. Clearing old overgrowth, developing low-head berms and installing a few water control structures would improve the wetland function throughout the unit.

Appendix E. Cultural History Summary

Early history

Indigenous peoples inhabited the Columbia Basin and Lower Yakima Valley for at least 12 thousand years. The Tribes and Bands of the Yakama Nation inhabited the Lower Yakima Valley associated with the western units of the wildlife area. The Waunapum, Wawyukma, and Chamnapum inhabited parts of the Columbia Basin associated with the eastern units of the wildlife area. Settlements consisted of both permanent and winter villages, and spring campsites. Native Peoples fished, harvested root crops, collected berries, gathered other culturally significant plants, and hunted. The Yakamas and others later adopted horses, which aided with hunting big game animals. Native peoples in the region had an extensive trade network for exchanging resources.

Arrival of immigrants

Regular contact between Euro-Americans and Native Peoples began in the 19th century. Trading posts were established by the Pacific Fur Company, the North West Company, and the Hudson Bay Company. Missionaries followed the traders. In the later decades of the 19th century, settlers began arriving in the region in large numbers. The Yakima Treaty created the Yakama Indian Reservation in 1855.

The Indians of Washington were affected by a gradual loss of territory, autonomy and sometimes of personal and cultural identity. However, due to the initially large number of the Yakama, and their long resistance to and separation from the encroaching Euro-American culture, the Yakama have been able to preserve and use their native language within their communities.

Homestead settlement

The earliest "settlers" to the Columbia Basin were merely passing through on their way west of the Cascades. After tensions with Native Peoples began to subside, settler numbers began to increase. Grazing cattle on the lush bunch grasses of the basin was the economic factor that prompted people to stay in the area.

Due to the low seasonal precipitation of the basin, farming did not become economically feasible until irrigation projects began in the late 1860s. Early irrigation efforts were private companies, and small in scale. The Newlands Reclamation Act of 1902 permitted the Federal Government to participate directly in land reclamation and irrigation projects, and by 1910, Yakima County had the highest percentage of irrigated land in the state.

In 1943, the federal government took control of much of the land north of Benton City and Richland. The purpose was unknown to the residents at the time. Local landowners were forced to sell their property, and the towns of Hanford and White Bluffs were condemned. The federal government established the Hanford Nuclear Reservation for the Manhattan Project of World War II.

The communities of the Tri-Cities and Yakima are some of the fastest growing in Washington State, and the country. These communities are still greatly affected by the Hanford Nuclear Reservation, and agriculture continues to grow and support the local economy.

Wildlife Management

The Columbia Basin and Lower Yakima Valley fish and game populations are quite diverse. The combination of wetland, riparian, riverine, and upland shrubsteppe habitats supports a variety of large and small terrestrial and aquatic mammals; as well as birds, reptiles, amphibians, and insects.

In 1972, a small group of elk colonized the shrubsteppe habitat of the Hanford Nuclear Reservation. This herd has grown rapidly because of high reproductive success. The topographically diverse habitat of the reservation, and the minimal harassment associated with the high security of the nuclear reservation are also believed to contribute to the elk population growth.

Today people primarily use the Sunnyside-Snake River Wildlife Areas for hunting and fishing. Waterfowl hunting is the most popular recreational activity. Big game (deer and elk) hunting and upland bird hunting are also popular. Two units (Sunnyside and Hope Valley) are designated pheasant release sites. The wildlife area provides access to the Yakima River for hunting and fishing, and a half dozen ponds and lakes are stocked with trout. The various units also attract hikers, bird watchers, mountain bikers and horseback riders.

Cultural Resource Surveys

State and federal laws require WDFW to review sites for archeological resources on any ground-disturbing project. The agency then evaluates the findings and devises a cultural resource protection plan to protect the integrity of historic properties. WDFW has conducted an extensive cultural resource survey of the wildlife area. Five units of the wildlife area provide mitigation credits to Bonneville Power Administration for dams built on the Columbia River. Three other units were purchased as habitat mitigation to the U.S. Army Corps of Engineers for dams on the Snake River.

Appendix F. Public Response Summary (SEPA)

Comments compiled after public review