Canyon Ferry Wildlife Management Area Management Plan

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TABLE OF CONTENTS

TABLE OF CONTENTS – CONT

TABLE OF CONTENTS – CONT

TABLE OF CONTENTS – CONT

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY:

Canyon Ferry Wildlife Management Area (WMA) encompasses approximately 5,920 acres and is located just north of Townsend in Broadwater County, MT where the Missouri River flows into Canyon Ferry Reservoir (Reservoir). The WMA is somewhat unique in that it was created in 1957 by a Memorandum of Understanding (MOU) between the Bureau of Reclamation (BOR) and what was then the Montana Department of Fish & Game. Canyon Ferry WMA is mostly Bureau of Reclamation administered property which the current Montana Fish, Wildlife & Parks (FWP) manages through a long-term management agreement with BOR. The management agreement outlines the specific responsibilities of each agency regarding the WMA. BOR provides a significant share of the funding that is used to administer and manage the WMA through five-year financial assistance agreements. Canyon Ferry WMA is a mix of agricultural leases, ponds, and associated lands managed by FWP to provide habitat for waterfowl, pheasants and other upland game birds, big game species (primarily white-tailed deer and moose), furbearers, and nongame species. Canyon Ferry WMA also provides various public recreation opportunities including hunting (big game, waterfowl, and upland game bird), trapping by permit, and birdwatching.

OVERVIEW

This management plan provides a description of Canyon Ferry WMA and lays out the goals and issues associated with management of Canyon Ferry WMA. The plan provides information related to FWP's overall management direction for its wildlife management areas as well as information regarding potential future management actions that may occur on Canyon Ferry WMA, both for communication to interested publics and for guiding FWP staff. Some actions resulting from this plan may require additional analysis and public input, as required by the Montana Environmental Policy Act (MEPA).

STATEWIDE GOAL FOR WMAs

Montana's wildlife management areas are lands managed by Montana Fish, Wildlife & Parks to benefit a diversity of wildlife species and their habitats on behalf of the public and provide compatible public access for fish and wildlife related recreation.

CANYON FERRY WMA GOAL

Canyon Ferry WMA will be managed to provide habitat for the diversity of wildlife species that use the area and to provide for compatible public enjoyment of those resources.

To help achieve this multifaceted goal, FWP has written the Canyon Ferry WMA Management Plan. This document will provide guidance for FWP staff associated directly or indirectly with management of Canyon Ferry WMA on how the WMA will be managed and will serve as a reference along with FWP's long-term management agreement with BOR for establishing annual work plans for the WMA.

PHYSICAL DESCRIPTION

Canyon Ferry WMA is located on the south end of Canyon Ferry Reservoir just north of Townsend, Montana (Figures 1 and 2) in Broadwater County. The area encompasses approximately 5,920 acres at the Missouri River inlet to the reservoir. The BOR administers most of the land associated with the WMA, the exception being the old '51 Ranch' property (129 acres) on the northwest side of the WMA which was purchased by FWP in 1995. Because of the irregular shape of the WMA boundary, a lengthy legal description is not given here. This description is presented in the 1957 MOU between the then Montana Department of Fish & Game and BOR and supplements, which can be obtained from the BOR or FWP.

Topography

Canyon Ferry WMA lies on the south end of Canyon Ferry Reservoir in the Missouri River valley near Townsend, Montana between the Elkhorn Mountains to the west and the Big Belt Mountains to the east. The terrain is generally flat, typical of a valley river bottom. As the Missouri River passes through the WMA, banks are low and subject to flooding during high water events or ice-jamming events in the winter. Portions of the WMA are also within the Canyon Ferry Reservoir flood pool, so become flooded whenever the Corps of Engineers (COE) manages Canyon Ferry Reservoir water levels at the flood pool stage.

Geology

The Townsend area Missouri River valley is an intermountain basin with exposed geology formed during the Tertiary and Quaternary periods (Lorentz and McMurtrey 1956). During the Oligocene, Miocene, and at some places during the Pliocene epochs, this basin was the site of fluviatile and lacustrine sedimentation. The materials deposited in the basin were derived from

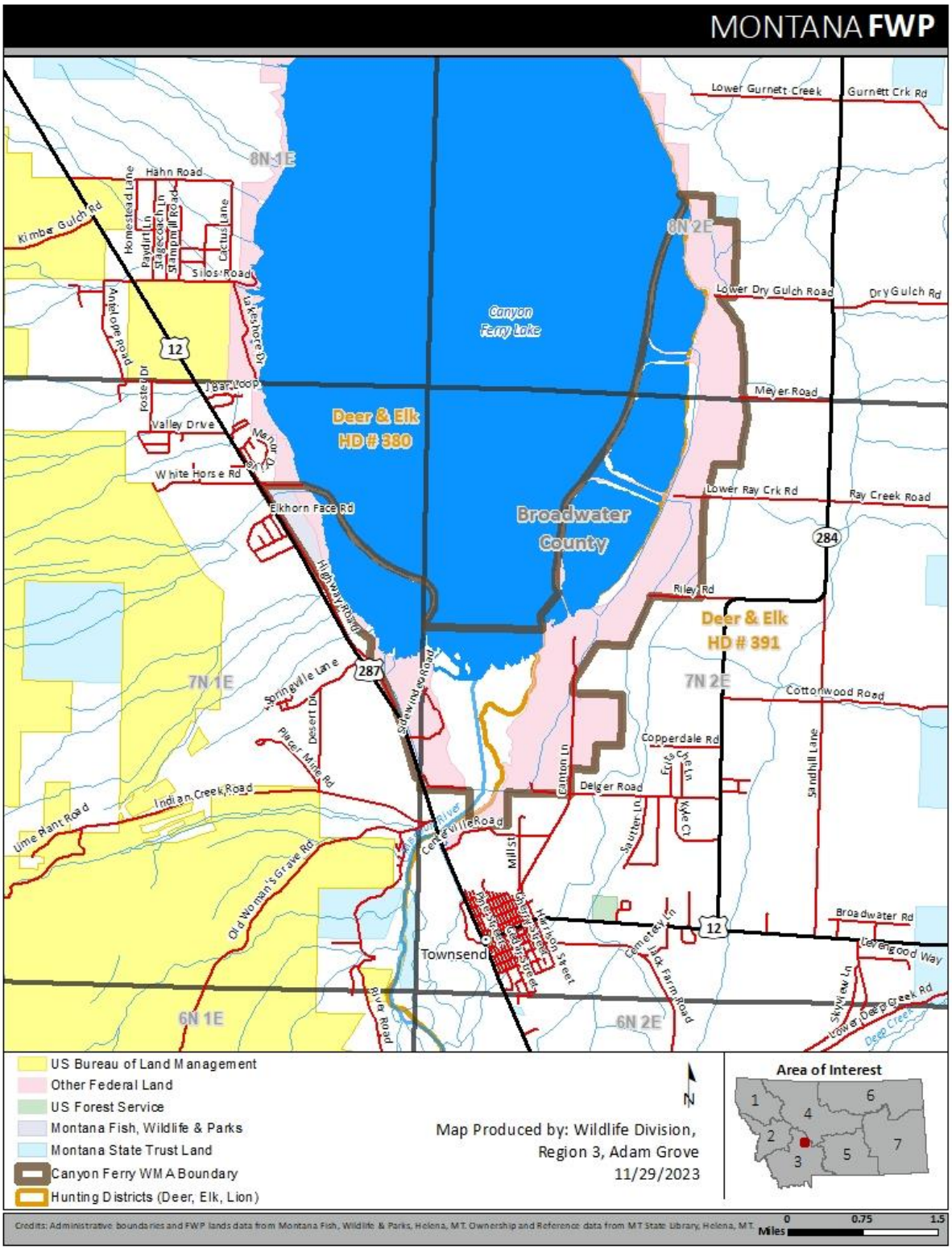

Figure 1. General location of Canyon Ferry WMA.

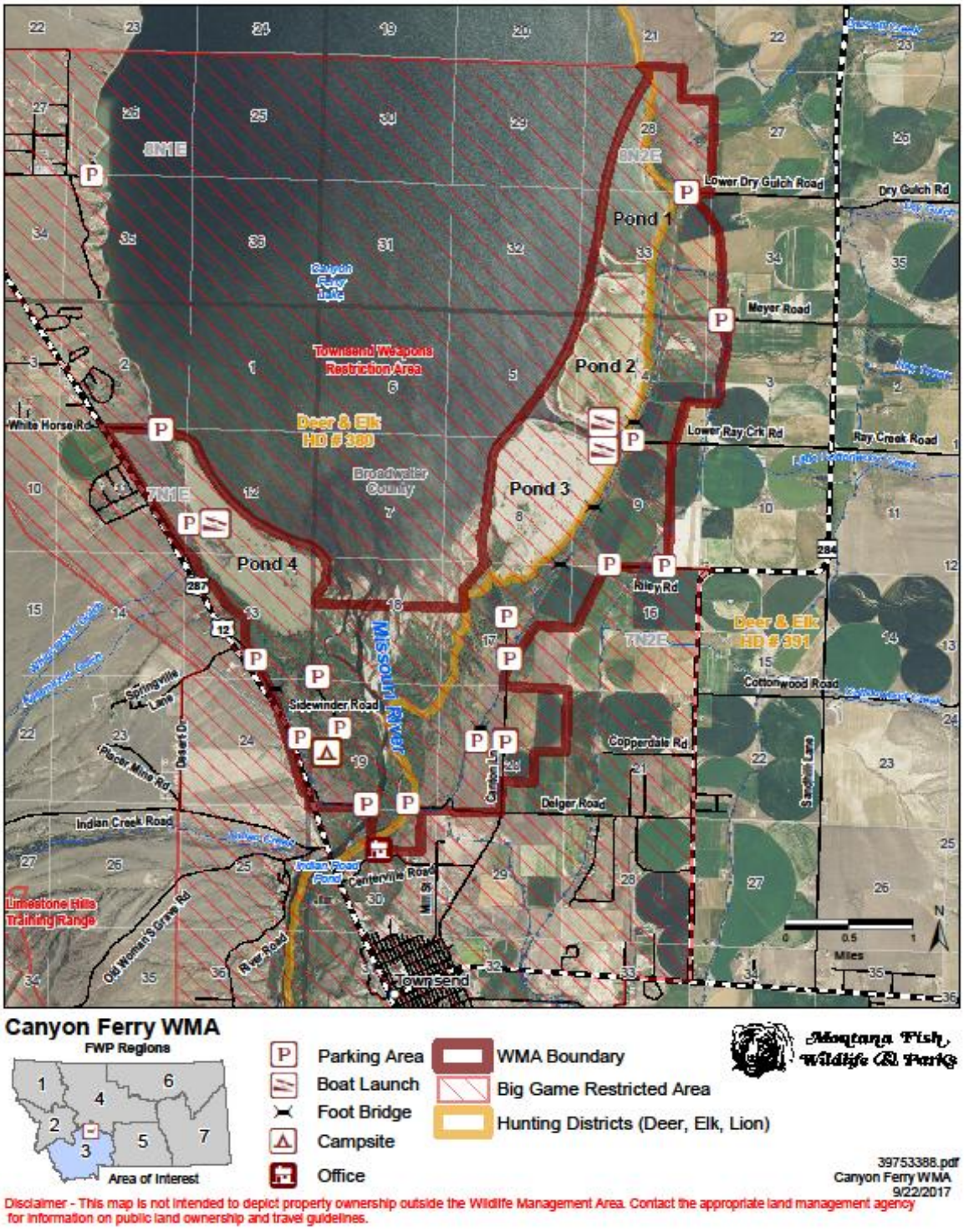

Figure 2. Canyon Ferry WMA map.

sedimentary rocks in the mountains which border the basin, mixed with airborne volcanic ash from nearby sources.

The Missouri River probably came into existence during the Quaternary period and began to meander across the valley leaving its deposits. Glaciers in the Big Belt Mountains to the east contributed to the Quaternary deposits during the Pleistocene epoch. Tertiary deposits are characterized as light colored, fine-textured sediments and small amounts of interbedded sand and gravel, along with some finer-grained volcanic ash. The younger Quaternary alluvium, overlying much of the deep Tertiary deposits, are comprised of granite, quartzite cobbles, sand, silt, and gumbo clay or bentonite.

These geologic processes have resulted in the formation of several specific soil types found on the WMA. In general, the soils on Canyon Ferry WMA are comprised of five major soil series (Olsen and et al 1977). The soil occurring along both sides of the Missouri river is comprised mostly of Aeric fluvaquent, a poorly drained loamy soil. River islands are made up of Rivra gravelly loam, a deep gravelly and cobbly sandy alluvium. Thess silt loam, a gravelly to cobbly loam, occurs along the west side of the WMA between Pond 4 and U.S. Highway 287. The major soil series on the east side of the WMA is Brocko silt loam, a wind laid silty loam. Approximately one-half section of land in the southeast corner of the WMA is comprised of Scravo cobbly loam, a gravelly loam. See Appendix G for a soils map of Canyon Ferry WMA.

Climate

Selected climatological data for the Townsend area where Canyon Ferry WMA is located is shown in Table 1. Average annual precipitation is roughly only 10.7 inches due to a rain-shadow effect. May and June are typically the wettest months, and most precipitation occurs during the April through September period. Precipitation in the summer months typically occurs during thunderstorm events. Strong winds coming off the nearby mountain slopes are common throughout the year.

Table 1. Average monthly rainfall, snowfall, and temperature for Townsend, Montana, 1948-2016.

Month	Average Precipitation (inches)	Average Snowfall (inches)	Average Temperature (°F)	
			Min	Max
January	0.38	5.2	10.8	32.9
February	0.25	3.5	15.6	39.2
March	0.54	3.9	21.9	47.5
April	0.80	1.6	30.1	58.0
May	1.76	0.4	38.5	67.1
June	2.19	0.0	45.9	74.4
July	1.25	0.0	50.5	83.4
August	1.17	0.0	48.2	82.5
September	0.93	0.2	39.6	71.6
October	0.61	0.8	30.9	60.1
November	0.42	3.0	21.3	44.5
December	0.35	4.8	13.3	35.0
Total	10.65	23.3	30.5	58.0

Source: WRCC 2021

MANAGEMENT UNITS

Ponds

There are four major ponds (Figure 2) on Canyon Ferry WMA formed by the dike systems. The ponds were constructed back in the early to mid-1970s primarily for dust abatement (see Appendix A – History) which was an issue that resulted from construction of Canyon Ferry Reservoir, but their importance for providing habitat for waterfowl, wading birds, and other wildlife has evolved over time. The ponds are approximately 360-380 surface acres each and contain over 325 man-made islands with most of the islands occurring in Ponds 3 and 4 (See Appendix I for maps of the ponds). Water depths average about three feet and are generally shallow along pond margins and have a maximum depth of approximately seven to nine feet. Because of the somewhat porous nature (by design for dust abatement) of the dikes between Canyon Ferry Reservoir and the four ponds, as water levels in the Reservoir rise, water levels in the ponds rise as well from seepage through the dikes and subsurface seep until the ponds match the water level in the Reservoir. At higher Reservoir levels, seepage may also occur through one of the 12 outlet control structures located on the pond dikes (each pond dike has two to four control structures) whose designed purpose was to control water flow between the ponds and the Reservoir. Unfortunately, many of these structures no longer function.

When water levels in Canyon Ferry Reservoir are lower, water for Ponds 2-4 comes exclusively from the two canals found on the WMA. The east canal provides water to Ponds 2 and 3, while the west canal provides water to Pond 4. Water for Pond 1 currently comes from left-over water from the Montana Ditch (an irrigation diversion from the Missouri River), which flows into Pond 1, or Ray Creek which flows into the Montana Ditch, and from Canyon Ferry Reservoir itself via seepage. The eastside canal used to provide water to Pond 1 as well, but due to an engineering design flaw it was always difficult to get water all the way down the canal to the pond. Over the years the upper end of the canal filled with silt and vegetation and efforts to get water all the way down the east canal to Pond 1 were terminated.

In Ponds 2-4, aquatic vegetation has slowly become established and is now propagating on its own along pond margins from early trans-plantings of cattails, bulrushes, and spikerushes. Submergent vegetation is also prominent in Ponds 2-4. Submergent stands are frequently dominated by sago pondweed, shortspike milfoil, and elodea; but a variety of other submergent species are also found in Ponds 2-4. Likely due to some soils related issue, little to no emergent or submergent vegetation is found in Pond 1.

In addition to the four large ponds, several small ponds/wetlands varying in size from less than one acre to approximately 5 acres in size also occur on the WMA. Several wetland/pond areas are located on the west side of Pond 4. These areas currently have little open water because of the overabundance of cattails. Two small ponds were constructed years ago (1987) for a Ducks Unlimited project on the west side of the east canal approximately one-half mile north of the east canal headgate. The water for these ponds was to come from the east canal. However, because of soil porosity issues the ponds never held water when originally constructed.

There are a couple of more pond systems located on the extreme northeast side of the WMA (east/northeast of Pond 1). One is fed by Gurnett Creek, and it can go dry depending upon the amount of water coming down Gurnett Creek. Canyon Ferry WMA is located at the end of Gurnett Creek, and FWP has a very junior water right for water in the creek. This pond system is currently suffering from an overabundance of cattails resulting in a lower than desired ratio of open water to cattails.

While the second pond in this area can get water from Gurnett Creek, its primary water source is irrigation wastewater from the neighboring private property. This pond is surrounded by brush and trees. Water depths in the small ponds typically average two feet or less depending on water availability.

Water Management of the Four Large Ponds

Outside of winter when the ponds are frozen over, water levels in the four large ponds are typically monitored at weekly intervals by means of gauging boards placed by outlet structures on the dike systems. Gauging boards are placed in the ponds each spring after the ice leaves and are surveyed from known elevations on the outlet structures (Table 2).

Table 2. Elevations and locations on outlet structures used to survey in water level gauging boards.

Water Level Gauging Stations				
	Pond 1	**Pond 2**	**Pond 3**	**Pond 4**
Outlet Used	South outlet	South outlet	South outlet	Middle outlet
Elevation	3807.17	3807.65	3805.23	3807.46
Elev. Taken from	Grating	Bolt	Grating	Grating

Water level management in the large ponds is important for a variety of reasons including dust abatement responsibilities related to FWP's management agreement with the BOR, isolation of nesting islands from the mainland during critical times, and providing proper water levels to maximize aquatic vegetation within the pond system. Current suggested pond levels by time-period for each pond are presented in Table 3.

Table 3. Suggested water level elevations by time-period for ponds 1-4.

Suggested water level elevations by time period for ponds 1 - 4				
Date	**Pond 1**	**Pond 2**	**Pond 3**	**Pond 4**
March	3796.2	3795.3	3796.0	3796.2
April	3796.2	3795.3	3796.0	3796.2
May	3795.5	3795.0	3795.5	3795.5
June - August	(+/- 0.2 to 0.3)	(+/- 0.2 to 0.3)	(+/- 0.2 to 0.3)	(+/- 0.2 to 0.3)
September - Freeze-up	3795.5	3794.5	3795.0	3795.0

NOTE: June – August:

- When possible, fluctuate ponds levels around May elevations by 0.2 to 0.3 feet depending on where the emergent vegetation zone is located on the pond margins to stimulate emergent vegetation growth and expose wet mud flats allowing the germination of emergent seedlings.
- Fluctuating water levels in May is not always possible due to Reservoir levels and/or river/canal flows.

The desired water levels for the four large Canyon Ferry WMA ponds varies depending upon the time of the year. Goose nesting season starts with the early spring thaw, and around the middle of March, pond levels should be sufficiently deep to secure nesting islands from mammalian predators. Maximum optimal water levels vary by pond, but the desirable water elevation during the goose nesting period is around 3796 feet. Following the goose nesting season, from about the middle of May to early June, it is desirable when possible, to slowly draw the ponds down to allow for the establishment and increased production of emergent and submergent vegetation. Unfortunately, it is often not possible to draw the ponds down during this time period because of high Reservoir water elevations which keep water levels in the ponds high through seepage.

The next major phase in water level management is in the fall during the hunting season. While some drawdown is desirable during this period to expose mud flats which are attractive waterfowl loafing sites, there needs to be enough water in the ponds for waterfowl hunters to launch boats. Low water levels in the Missouri River that time of the year can make it difficult to get the ponds refilled to desired elevations to provide boat access for waterfowl hunters. Water levels desired during this period are below the 3796-foot spring elevation.

Generally, the ponds freeze up at the fall water elevations, and Ponds 2, 3, and 4 typically lose about a foot of water elevation or more over the winter; although, in drier years large portions of those ponds can dry up during the winter. Pond 1 typically goes dry or at least almost dry every winter. Water flow to the canals is reduced to a minimum flow just prior to the river freezing and jamming. This reduces the potential for excessive flow in the canals caused by river ice jams which, in turn, increase the head of water on the headgates.

While the prescribed water elevations and water management are what is recommended during the yearly cycle, it is not always possible to follow this type of detailed water level management due to circumstances beyond the control of FWP. Since the ponds were originally primarily designed for dust abatement, the dikes were designed to be fairly porous. As a result, water filtrates back and forth through the dikes between the ponds and the reservoir depending upon the water elevations in each.

During years of normal or high runoff, BOR (COE management when water is put into the flood pool) fills Canyon Ferry Reservoir to a level of 3797.0 feet elevation or higher if the Reservoir is put into the flood pool. When this happens, the water level in the Reservoir is higher than in the pond systems and water seeps through the dikes until water levels in the ponds stabilize with that of the Reservoir. So, there is no control over the system at this point. In addition, in high water years the Reservoir is typically not drawn down until early to mid-August. Thus, water levels cannot be drawn down in the ponds to desirable levels until late summer. Also, as mentioned previously, a combination of low Reservoir levels and low river flows may prevent ponds being refilled to desired levels in the fall, if they are drawn down at all during the summer.

In addition to the problem of dike porosity regarding regulating water levels in the four large ponds, there are also currently issues related to the 12 outlet control structures which are supposed to help control water flow between the ponds and the Reservoir. The designed life expectancy of these structures has been exceeded resulting in many of those outlet control structures not working at all or not working properly, as they leak to various degrees. Repair or replacement of the outlet control structures, which has not happened to date, is the responsibility of the BOR. Most of the outlet control intake culverts in the ponds are also not flush with the bottom of the ponds which limit their effectiveness when conducting pond drawdowns.

Pond Drawdowns

Carp are bottom feeders that keep sediment stirred up in the ponds which reduces water clarity and prevents sunlight penetration. This inhibits the growth of submergent aquatic vegetation and aquatic invertebrates which are both important from a waterfowl habitat aspect. As such, carp presence in the ponds is undesirable particularly in large numbers. Prior to 2015, winter drawdowns were conducted to eliminate carp from the pond systems with limited success. Pond 3 in particular could typically never be drawn down enough in the winter to achieve a carp kill. Winter drawdowns were initiated usually in early December after pond surfaces were frozen. As the ponds were drawn down, a covering of ice was left on the pond bottom, reducing the potential for windblown silt. Ponds were held down for about one month and then refilled.

Since 2015, pond drawdowns (Pond 4 in 2015 and Pond 3 in 2017) to kill carp have been initiated in lower water years around mid-summer (late July/early August) following the waterfowl nesting season. Once Reservoir levels were at least one foot below the pond water elevation, water from the pond's supply canal was not allowed to enter the pond, and functioning outlet structures on the dikes were opened to drain as much water out of the pond as possible. Because the ponds couldn't be drained using the outlet structures alone given their locations and how the ponds were constructed, a dredge pump was ultimately used throughout September and October to pump as much water out as possible before a solid freeze. While some water remained, it was shallow enough to achieve an effective carp kill.

The pond drawdowns lasted until mid-to-late spring the following year. Rather than being filled by canal water initially, ponds were allowed to slowly fill naturally through the porous soils and dikes as Reservoir levels rose in the spring following snow melt. Canal water was then allowed to flow back into the ponds in late spring/early summer. It usually takes about one month to refill a pond once active water management is reinitiated depending upon Reservoir elevations and river flows. The longer drawdown period has allowed for more soil aeration, which in turn with the improved water clarity post drawdown has enhanced vegetative and aquatic invertebrate responses to the drawdown.

In conjunction with the pond drawdowns, fish barriers were installed to help keep larger spawning fish out of the canals and ultimately the ponds. The barriers were only marginally successful, as they routinely plugged with debris, which backed water up and allowed fish to get over the top of the barriers and into the ponds. The barriers were also damaged multiple times by ice events. Because of the maintenance problem, the upper barriers were removed, while the lower barriers filled in with silt deposition.

Exceptional drought conditions occurred in 2021 which resulted in extremely low flows in the Missouri River and thus little to no water going into the canals. As a result, Pond 2 went totally dry, and Pond 4 was reduced to a very small area of water. A total carp kill occurred in both ponds because of these conditions. When events like this occur, it extends the amount of time between necessary FWP initiated pond drawdowns to achieve a carp kill.

Agricultural Leases/Cropland

About 11.9 % of Canyon Ferry WMA (705.2 acres as of 2023 – Table 4) is currently in agricultural farming leases (Figure 3). Four lessees currently lease the existing six agricultural lease parcels. There is also an apiary lease. The agricultural leases currently run for a seven (7) year time period (2023-2029). The length of the leasing period can be changed whenever the agricultural farming leases come up for renewal. Anything related to the agricultural lease process, lease provisions, or lease requirements are subject to potential change whenever the leases are renewed, if FWP feels that a change is needed to improve management of Canyon Ferry WMA for wildlife. The Department goes through a public environmental assessment (EA) process whenever the leases come up for renewal.

Agricultural farming leases have existed on Canyon Ferry WMA since the early days of the WMA. The leases provide food and cover for a host of wildlife species that use the WMA, while also demonstrating that sustainable agricultural production can co-exist with and benefit many wildlife species. Wildlife that use the agricultural leases include a large variety of waterfowl species, ring-necked pheasants, gray partridges, mourning doves, white-tailed deer, mule deer, moose, occasionally elk and antelope, sandhill cranes, and numerous nongame species.

Table 4. Approximate Canyon Ferry WMA agricultural lease acreages for 2023-29 lease period.

Parcel #	Total Farmed Acres	Cropped Acres	Food Plot Set-Aside Acres*
45A	227.4	216.7	10.7
47	84.6	79.65	4.95
48	68.8	55.0	13.8
62A & 63A	91.3	83.1	8.2
73A	91.1	85.2	5.9
90	140.3	133.4	6.9
Totals	**703.5**	**653.05**	**50.45**

* Food plot set-aside acres may vary year to year depending upon the individual lease and/or the amount of acreage that is planted to a grain/alternative crop on any individual lease in a given year.

Of the six current agricultural leases, five are currently cash leases and one is a payment in-kind lease (payment is in services rendered in lieu of a cash lease payment). For the cash leases, the annual lease payment is based on the number of acres to be farmed for production for the year. Currently, cash lessees are required to leave 12.5% of the amount of grain (or alternative crop) acreage produced on the lease on an annual basis as a food plot set-aside. The lessees are not charged rent for the acreage included in the annual food plot set-aside. One of the lessees (Parcel 90) is also currently required to irrigate adjacent shelterbelts at least 3 times a year. For the in-kind lease, the lessee is required to leave 20% of the farmed lease acres as a food plot in lieu of a cash lease payment. For the in-kind lease the food plot can either be grain, or an FWP approved special game bird food plot mix.

Currently the agricultural leases are farmed for a combination of alfalfa and grain (or approved alternative crop) with the specific amounts and percentages varying by lease (roughly a 50% alfalfa, 50% grain/alternative crop mix for the cash leases; 80/20 mix for the in-kind lease). Grain crops can consist of barley, wheat or corn and may not be harvested as a hay or silage crop unless special approval is received from FWP. If approved by FWP, lessees may plant an alternative crop such as sunflowers, millet, grain sorghum, canola, turnips or any other alternative crop that is approved by FWP instead of a conventional grain crop.

Planting alternative crops can improve overall soil health and help break grain disease cycles. The payment in-kind lease is planted to alfalfa, not including the food plot, except for when the alfalfa is being rotated out, at which point it is planted to grain or an alternative crop. Currently, hay may not be cut prior to June 25 on any of the leases. This date provides protection for any nesting ring-necked pheasants and waterfowl that may be utilizing the alfalfa for a large portion of the nesting season and allows the lessees to harvest their first cutting of hay while it still has fairly-high nutritional quality. In addition, that date also allows the lessees to get two to three cuttings of alfalfa during the year depending on the year and the environmental conditions.

Lease rates for the 2023-2029 lease period for Canyon Ferry WMA agricultural farming leases will be based on the most recent three-year average of reported cash rental rates for all reporting counties, including ‘other’, within the Central Montana District, as reported/updated by the National Agricultural Statistics Service (NASS). Rates stopped being reported for Districts (ex.-Central Montana District) as a whole in 2021, but information for some individual counties is still being reported. Lessees provide the irrigation water for the agricultural leases using their own irrigation water shares and their own pivots or wheel-lines. Because this value is provided by the lessees, the calculated lease rate is based on the midpoint between irrigated and dryland cash rental rates (as reported by NASS). The bee yard (apiary) lease for the 2023-2029 lease period will be $175/year. The bee yard lessee is not required to perform any work for FWP as part of the lease. However, the lessee is required have bear deterrent electric fence around the bee yard, as black bears are occasionally found on the WMA.

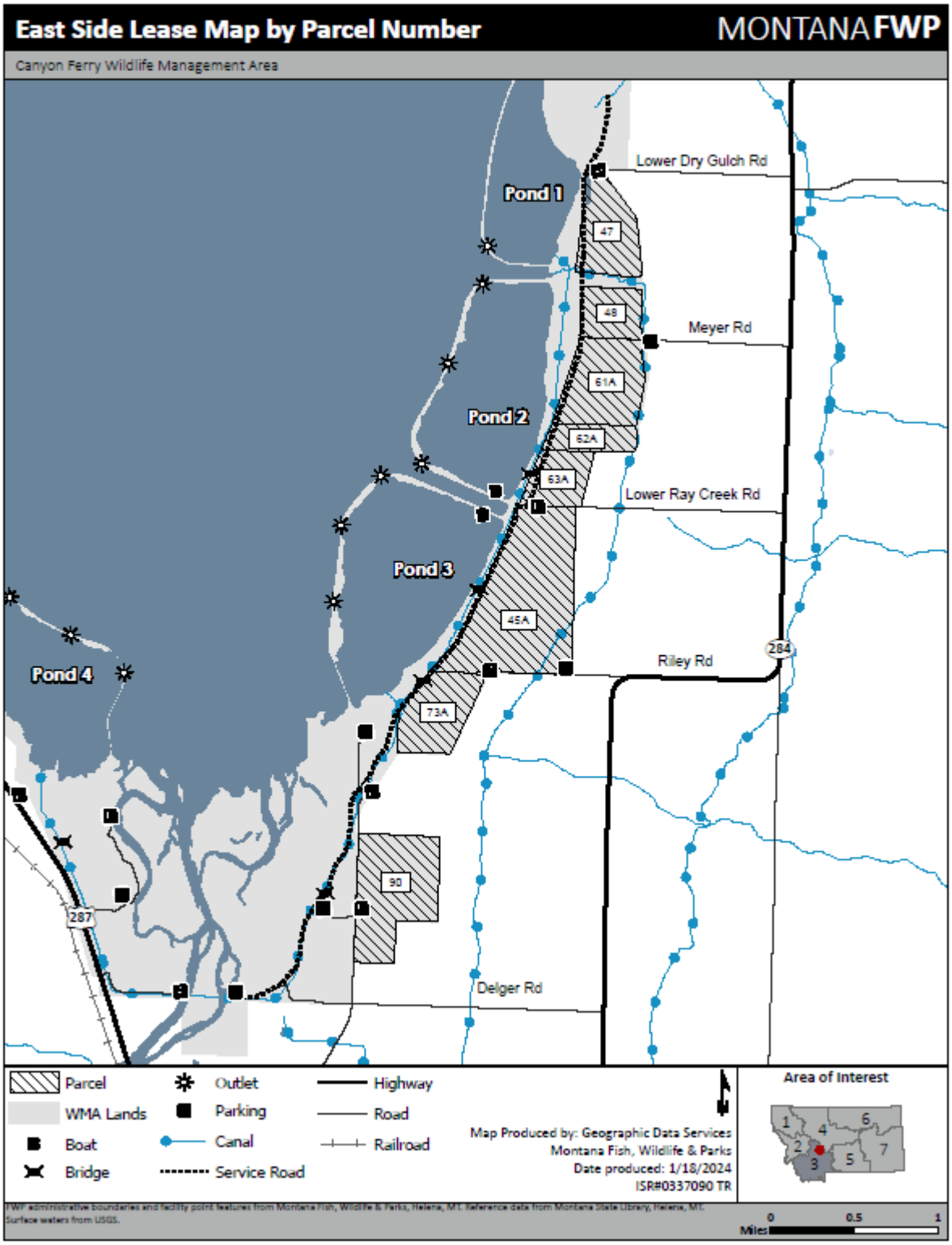

Figure 3. Canyon Ferry WMA agricultural lease parcels – note Parcel 61A is no longer leased but instead is actively managed for habitat by FWP.

Agricultural farming lessees are responsible for completing specific work (growing food plot set asides, irrigating shelterbelts) for FWP as part of the lease arrangement. As a result, the total cost of the cash leases is discounted for the specific work to be completed. Estimated farming and irrigation costs are used to determine the discount rate used for every food plot set-aside acre grown, while irrigation costs are used alone to determine the discount rate for irrigating growing shelterbelts. Estimated farming costs (total operating costs) are based on the average of the three most recent years of available information from the United States Department of Agriculture's (USDA) Economic Research Service (ERS) for the Basin and Range Region which includes the Broadwater County area. Other USDA data, which takes into consideration water purchase costs, pumping costs, and costs associated with replacement, maintenance, and repair of irrigation equipment were used to estimate irrigation costs.

When FWP asks the lessees to do other habitat improvement work on the WMA during the lease period, the monetary value for that work is determined on an as needed basis. The cost to the lessee for this additional work is deducted from either that year's cash lease payment, the following year's lease payment depending upon the timing, or some other equitable payment arrangement is made.

For the in-kind lease, the 20% total farmed acreage set-aside rate is an approximate acreage required to balance the 2023 cash-lease payment amount against the 2023 farming cost discount rate for the set-aside acreage. Given the nature and requirements of this in-kind lease arrangement (payment for services rendered), the food plot set-aside acreage requirement in lieu of a cash-lease payment will be maintained at 20% of the farmed leased acreage for the duration of the lease agreement.

Managed Habitat Areas Near Agricultural Leases/Cropland

Over the years a considerable amount of habitat work has been done in the areas near the existing agriculture leases. A minimum of 100 acres of dense nesting cover has been planted over the years in the areas adjacent to or around the farmed acres on the agricultural leases. Plantings for dense nesting cover have included at a minimum the following species in one combination or another: tall wheatgrass, intermediate wheatgrass, basin wildrye, yellow sweet-clover, various alfalfa varieties, small burnett, black-eyed susan, purple prairie clover, purple coneflower and yarrow. Many of the plantings have been taken over by smooth brome and reed canary grass which may be diminishing their value as dense nesting cover.

In addition to the dense nesting cover plantings, a lot of time and effort has been spent over the years to establish shelterbelts in areas around the existing agricultural leases and other areas of the WMA. At a minimum, approximately 36 acres of shelterbelts of various size and design (number of rows) have been planted near or around the agricultural leases over the years with most of the plantings occurring in the last 25-30 years. Planted species include caragana, Russian olive, Rocky Mountain juniper, golden currant, alpine currant, Nanking cherry, chokecherry, silver buffaloberry, wild rose, lilac, cotoneaster, serviceberry, Canada red cherry, smooth sumac, sand cherry and possibly other species as well. Caragana, Russian olive (no longer allowed to plant because of its invasive nature), and Rocky Mountain juniper are the species that typically have done the best over the years.

All the existing agricultural lease parcels, except Parcel 47, have a shelterbelt or remnants of a shelterbelt associated with it. Success of both the initial shelterbelt planting efforts and efforts to replant trees in some of those shelterbelts has varied. Some shelterbelt plantings met with limited success due to a combination of herbivory from deer and mice, insufficient water availability, and competition from herbaceous species even when black fabric was used when the shelterbelt was first planted.

Former Meyer's Lease (Parcel 61A)

The former Meyer's agricultural ease (Parcel 61A, Figures 3 and 4) is approximately 127 acres in size and was an original 'preferential' lease on Canyon Ferry WMA. 'Preferential' leases were agricultural leases on Canyon Ferry WMA which were granted to some individuals displaced by the building of Canyon Ferry Reservoir. The lessee in this case lived on the property for nearly 50 years. When the lessee decided to forego his agricultural lease in 2007, FWP decided to manage the property itself for wildlife (primarily pheasants) rather than putting the parcel back out for bid as an agricultural lease.

For years FWP planned to construct two waterfowl impoundments on the property where the old Ray Creek channel ran through it with water from the Montana Ditch of which FWP has a share of. However, FWP was unsuccessful, after years of going through the process, in obtaining the necessary change-in-water use permit from the Montana DNRC which would have changed FWP's water use from strictly irrigation to a combination of wildlife and irrigation use. As a result, the project was cancelled.

FWP has planted a portion of the Meyer's property to dense nesting cover (approximately 62 acres to date) and planted approximately two acres of shelterbelts on the property. The shelterbelts largely failed to become established with only caragana and Rocky Mountain juniper becoming established to some extent and much of the Rocky Mountain juniper has died in recent years. FWP has also managed approximately 11 acres of the property as food plots in recent years.

Species planted as part of the food plot mixes include barley, sorghum-Sudan grass, white proso millet, grain sorghum, forage turnips, forage radishes, peas, oats, and annual sunflowers. FWP has established one pheasant brood strip on the property and could possibly construct another one in the future. FWP is also looking at increasing the number of acres planted to dense nesting cover and food plots in the future (Figure 4). Given that FWP only has one share of water from the MT Ditch, limited irrigation equipment, and manpower, logistically it is only possible for FWP staff currently to irrigate around a maximum of 40-50 acres at any time.

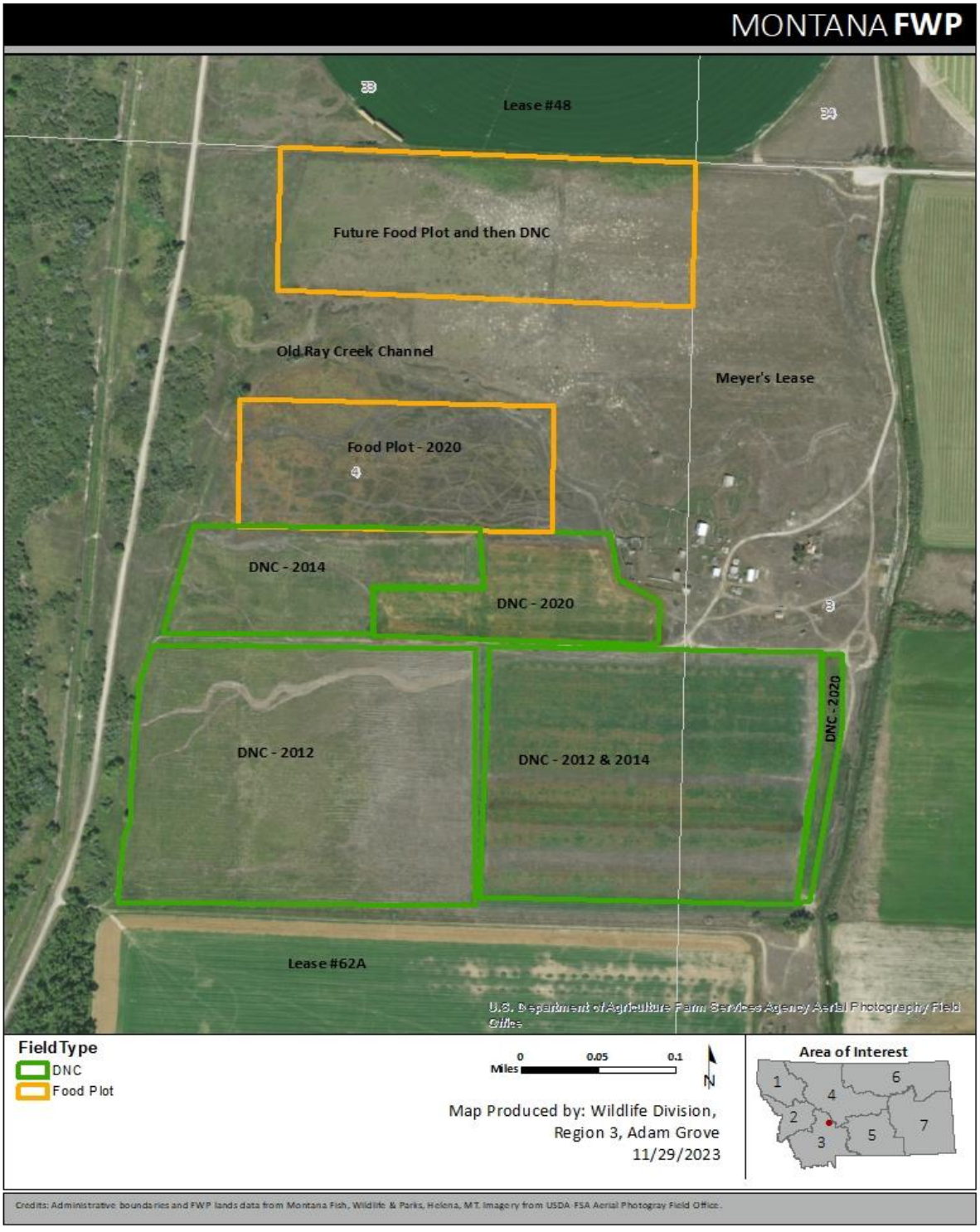

Figure 4. Map of former Meyer's lease showing existing and planned food plots and dense nesting cover (DNC).

51 Ranch Area

In 1995 FWP acquired 129 acres of the old '51 Ranch' property located to the west of Pond 4 as an addition to Canyon Ferry WMA. It is the only portion of Canyon Ferry WMA habitat that is owned by FWP. FWP also acquired the fenced Canton Lane shop compound from the BOR in 2020 which is used for storing equipment and materials. The '51 Ranch' property is located between Pond 4 and U.S. Hwy 12/287 (Figure 5). The property has been the focus of extensive efforts to improve the existing habitat for upland game birds and waterfowl since its acquisition. Roughly 85 acres of dense nesting cover habitat, which took years and multiple attempts to establish, and about 12 acres of shelterbelts have been planted since the property's acquisition. The shelterbelts generally fared much better than many other shelterbelt areas on the WMA, as a combination of wheel lines, hand lines, and a drip-irrigation system was used to provide water for nearly a decade after the shelterbelts were planted to help the trees/shrubs become established. While the old drip irrigation system that was used on the '51 Ranch' is still present, it is no longer functional. When it was operational, it required a tremendous amount of maintenance.

Natural or Naturalized Areas

Natural or naturalized areas comprise over 50% of the acreage on Canyon Ferry WMA. Other than noxious weed control efforts, these areas have had little to no active vegetation management over the years. Rather than being actively managed like other portions of the WMA, these areas have generally been managed by allowing natural processes to occur. Much of this acreage is riverine or riparian habitat associated with the Missouri River which bisects Canyon Ferry WMA for approximately two miles as it flows toward Canyon Ferry Reservoir, and riparian/mesic type habitat around the edges of the ponds or next to the WMA's two canals.

Cottonwood is the dominant tree species associated with the river riparian habitat and is typically found with a Rocky Mountain juniper or willow understory. Willow also occurs along the river in the more disturbed areas and is the dominant woody species in mesic upland sites. However, a considerable amount of the willows found in the mesic upland sites are dead. Some dead willows are also found elsewhere on the WMA. Silver buffalo berry is also a common component of the WMA's river-riparian habitat. Various grass species are found in the WMA's natural riparian habitat and sub-irrigated areas with the dominant being reed canary grass. In areas dominated by reed canary grass there is a large amount of accumulated vegetative litter.

Natural or naturalized areas on the WMA also include drier non-riparian areas and the islands in the four large ponds. Russian olive, an introduced invasive species, is quite prevalent in the drier non-riparian areas of the WMA. Native shrubs such as woods rose, and big sagebrush can also be found in some of these areas. Herbaceous vegetation in the drier non-riparian areas is dominated by a variety of introduced species such as smooth brome, crested wheatgrass, and tall wheatgrass. Smooth brome and crested wheatgrass are particularly common in areas that likely were farmed at some point prior to the existence of the WMA. Vegetation on the islands in the four ponds consists primarily of willow, Russian olive, reed canary grass, yellow sweet-clover, and a variety of annual plants including many noxious weed species.

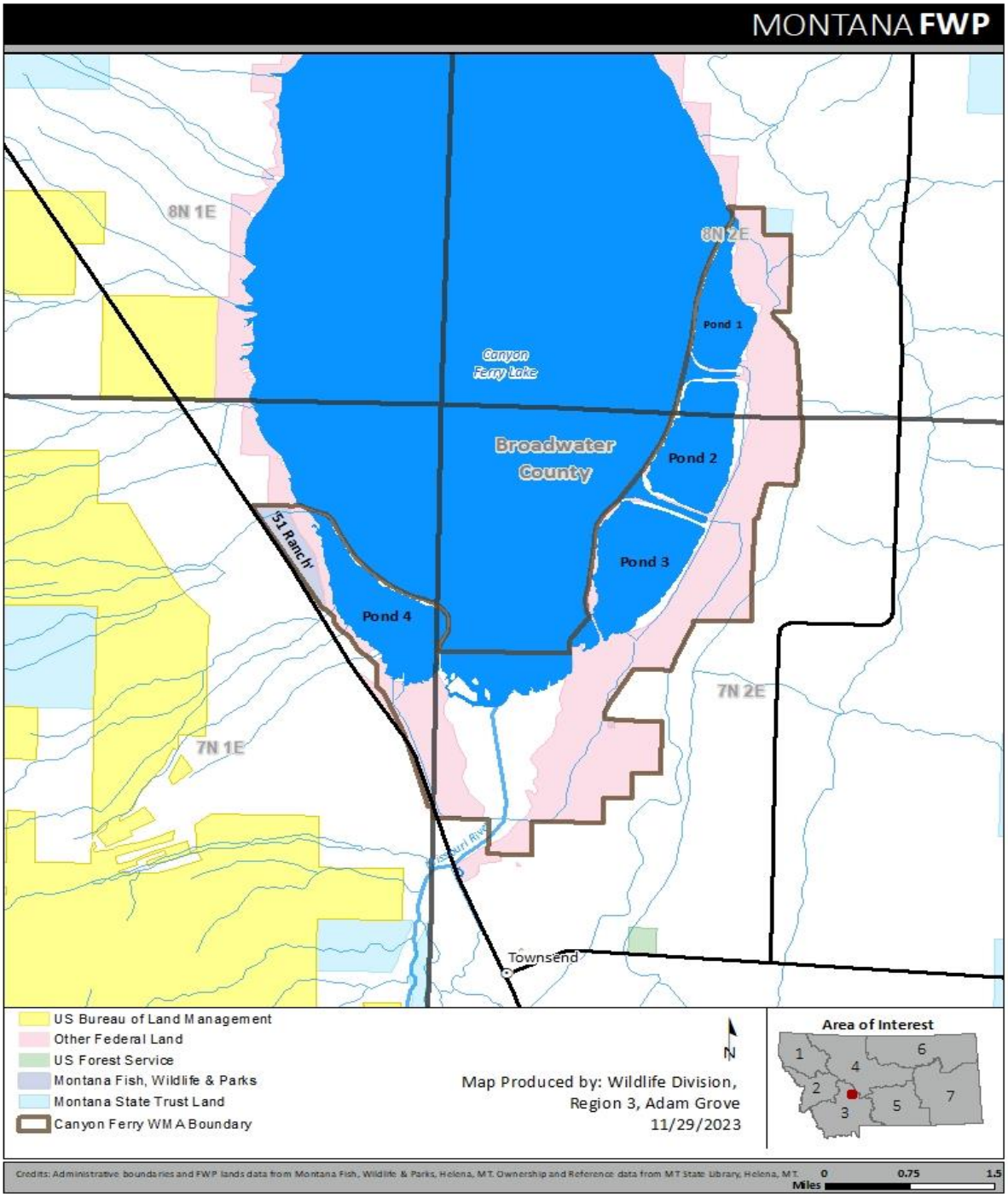

Figure 5. Map showing ’51 Ranch’ location.

OVERALL MANAGEMENT DIRECTION OF CANYON FERRY WMA

In addition to the Department's responsibilities under its long-term management agreement (No. R12MU60088, 2012) with BOR, Canyon Ferry WMA will be managed primarily for the purpose of providing quality habitat for waterfowl, ring-necked pheasants and other upland game birds, big game (primarily white-tailed deer and moose), furbearers, and nongame species. The WMA will be managed secondarily for public recreation including hunting – see following objectives.

Waterfowl

Objective: Maintain or improve overall waterfowl habitat quality on the WMA for both seasonal migrants (primary emphasis) and resident Canada geese and ducks.

Pheasants and Other Upland Game Birds

Objective: Maintain or improve overall quality of habitat for upland game birds (primarily ring-necked pheasants) on the WMA to increase production, recruitment and annual survival.

Big Game

Objective: Provide productive yearlong habitat for big game species that utilize the WMA (primarily white-tailed deer and moose). Management of white-tailed deer numbers will take into consideration habitat limitations, hunter opportunity/hunter numbers and tolerance levels of Canyon Ferry WMA's agricultural lessees and surrounding private landowners.

The current management objective for white-tailed deer numbers on the WMA and the immediate surrounding area is 225-350 wintering deer, as this appears to be a population level where depredation problems are minimal. This level also provides plenty of opportunity to hunt and view deer on the WMA.

Nongame Species and Furbearing Animals

Objective: Provide a diversity of habitats for a wide variety of furbearer species and nongame species to provide opportunities for trapping and recreational viewing. Management of beaver (when necessary) will be consistent with FWP's responsibilities under its management agreement with the BOR. Predator or predacious nongame species such as coyotes, skunks, and racoons will be managed taking into consideration the WMA's primary objectives of managing for waterfowl and upland game bird species. In addition to aiding the survival of ground nesting upland game birds, removal of depredating species such as racoons and skunks primarily through permitted trapping will also minimize the effects on ground nesting passerines.

Public Recreation

Objective: Manage access and recreational opportunity on Canyon Ferry WMA to continue to allow a multitude of recreational uses including hunting, permitted trapping, wildlife watching, and various forms of non-wildlife related recreation. While recreation use of the WMA is important, particularly hunting related recreation, the primary function of the WMA is to provide quality wildlife habitat for the species that make use of the WMA. As such, recreation will be managed to minimize its impacts to the WMA's wildlife and wildlife habitat.

HABITAT MANAGEMENT

Wetland/Waterfowl Habitat

While Canyon Ferry WMA's ponds are managed primarily to provide seasonal or yearlong habitat for waterfowl, they also provide important habitat for other wildlife species including shorebirds and other wetland dependent birds. Aquatic vegetation and aquatic invertebrates are important food resources for waterfowl and other bird species associated with aquatic environments. Shallow water edges and mudflats associated with changing water levels are extremely productive habitats for invertebrates which are an important food resource for many species of waterfowl and shorebird species. Emergent species such as cattails and bulrushes can provide important nesting habitat for some species of ducks and other nongame birds, while also potentially providing cover throughout the year for ring-necked pheasants.

Wetland/Waterfowl Habitat Management Issues/Concerns:

- Limited ability to effectively manage water levels in any of the four large ponds (water impoundments) due to system limitations.
- Seasonal foods for waterfowl may be limited.
- When carp numbers are high in the large ponds, it dramatically reduces water clarity in those ponds which negatively affects submergent vegetation and aquatic invertebrates. This results in a decline in overall waterfowl habitat quality.
- Limited quantity and quality of nesting cover/habitat for the resident geese and ducks that are present on the WMA. This can lead to excessive predation on waterfowl nests and young birds. There are large areas of the WMA dominated by reed canary grass which provides poor nesting habitat for waterfowl.
- Limited secure areas for resident molting geese and ducks.
- Cattail and bulrush stands have lost their structural effectiveness in some areas due to being crushed down repeatedly by snow drifts and ice.
- Cattails have mostly filled in some of the small ponds resulting in the loss of the desired mix of open water and cover in these areas.
- Noxious weeds (primarily spotted knapweed) are an issue on many islands in Pond 4 and on some islands in Pond 3.

Management Strategies/Actions/Prescriptions to Improve Wetland/Waterfowl Habitat:

- Continue to coordinate with BOR to get broken water control structures fixed to better regulate water levels in the four large ponds. FWP staff will engage with BOR staff to try and get BOR to develop a plan and timeline for fixing/replacing the broken water control structures. The existing water control structures have outlived their original designed operation lifespan. BOR has done work to repair the pond/reservoir dikes over the years with most recent work being completed in 2019.
- Water clarity concerns or time since last drawdown will help determine when a drawdown needs to be done. When needed, drawdowns will be done in years with lower snowpack levels (influences amount of run-off and thus water elevations in Canyon Ferry Reservoir) and will start in mid to late summer when reservoir elevations have dropped below the elevation of the pond to be drawn down (necessary to get the water out of the pond). The drawdown will continue until the following spring when Reservoir elevations naturally start to fill the pond through dike and subsurface seepage. Drawdowns will be done to:
    - remove carp,
    - aerate pond soils, thus promoting submergent and emergent vegetation and aquatic invertebrates,
    - improve habitat in and along the margins of the ponds to benefit other species such as non-game wetland birds.
- When possible, in the spring, manipulate water levels in the large ponds to increase emergent vegetation along pond margins. In addition to providing quality habitat for waterfowl and wetland birds, stands of cattails can also often provide quality winter cover for ring-necked pheasants.
- When possible, use mechanical means or prescribed fire to improve stand structure of cattails and bulrushes as needed (when stands have become crushed down by snowdrifts and ice) along pond margins. Treatment timing will be critical as the desire is for the stands to regrow not to be killed.
- Use mechanical means or prescribed fired in combination with flooding to kill cattails in the small waterfowl ponds to increase the amount of open water as needed.
- Monotypic stands of reed canary grass, smooth brome, or crested wheatgrass, which exist along the canals, small pond developments, and in accessible areas east of the larger ponds will be converted to more attractive nesting cover where feasible. This would benefit both waterfowl and ring-necked pheasants. Reed canary grass areas along the east canal may particularly be areas to target, as those areas likely get some subirrigation from the canal which may allow stands to become established. Conversion of reed canary stands may require a combination of prescribed fire, herbicide spraying, and tillage to be successful.
- Existing stands of adequate nesting cover will be rejuvenated as needed using potentially either mechanical means, prescribed grazing, or prescribed fire. This would again benefit not only waterfowl but potentially pheasants as well.
- Use mechanical means or prescribed fire to periodically remove willows and other shrub/tree species from along pond shorelines in some spots to improve access to adjacent nesting and brood-rearing habitat. In particular, some spots along the shorelines

adjacent to the bays between the ponds should be cleared of trees/shrubs to allow access to the bays, and some spots along the east shorelines of Ponds 1-3 should be opened up to allow access to potential nesting cover areas and the east canal.

- Provide and maintain attractive palatable goose grazing areas adjacent to goose production areas. This would primarily occur along the east side of Pond 3 and the southeast end of Pond 2.
- Reduce predator habitat where feasible and continue to allow permitted trapping on the WMA.
- Maintain use of grain or alternative crop set-asides on agricultural farming leases through at least the 2023-2029 leasing period to provide a seasonal food source for wintering waterfowl.
- Bio-bugs were put out on islands in Pond 4 over several years (2017-2020) for biological control of spotted knapweed. Monitoring over time will determine if the bugs are successful in eliminating or at least controlling spotted knapweed on the islands enough to allow other more desirable vegetation to become established. If monitoring determines that it is necessary, more bugs will be put out in the future.
- Look at repairing the headgate in the east canal that provides water to the old Ducks Unlimited (DU) ponds, as it no longer functions.
- If it is feasible to repair the headgate, then determine if the old DU constructed ponds west of the east canal will hold water since they have vegetated in over the years by using prescribed fire to burn off the vegetation and running water into the ponds. If the ponds won't hold water, then using bentonite to help seal the ponds may be explored depending on the cost and logistics involved.

Ring-Necked Pheasant (and other upland game bird) Habitat

Ring-necked pheasant (here after just pheasant/pheasants) and other upland game bird habitat can be found throughout Canyon Ferry WMA. While wild turkeys, which were released on the WMA in the early 2000s, gray (Hungarian) partridges, and even possibly sharp-tailed grouse (very scarce) can be found in limited numbers in some areas of the WMA, pheasants are by far the most abundant upland game bird on the WMA and receive the most management emphasis. Areas on Canyon Ferry WMA that are or have been managed primarily for or to a large degree for pheasants include the agricultural crop leases, the managed habitat areas near the crop leases, the former Meyer's lease (parcel 61A) area, and the '51 Ranch' area.

Issues Related to Pheasant and Other Upland Game Birds Habitat Quality:

- Quality and quantity of nesting cover may be inadequate in some areas. There are large areas dominated by reed canary grass or other invasive grass species that provide poor nesting cover for pheasants and other upland game birds (and waterfowl).
- Quality winter cover that is near winter food resources maybe lacking in some areas.
- The lack of sufficient rainfall and limitations in the ability to irrigate areas makes it difficult to get stands of new herbaceous vegetation (nesting cover) or shelterbelts established. Competition from species such as reed canary grass, smooth brome, and

crested wheatgrass also makes it difficult to establish or maintain areas of high-quality nesting cover.
- Winter food availability may be limited in some areas.
- Quality brood rearing habitat that provides food and cover may be limiting.
- Nest predation may be a limiting factor to some degree because of the quantity/quality of nesting cover.

Management Strategies/Actions/Prescriptions to Maintain or Improve the Quality of Pheasant and Other Upland Game Bird Habitat

- Where and when feasible, convert unsuitable cover adjacent to the agricultural farming leases (or in other suitable areas of the WMA) to nesting and/or winter cover. The larger the blocks of nesting/winter cover the better. Stands of reed canary grass, smooth brome, and crested wheatgrass, all of which provide lower quality nesting habitat, are found throughout the WMA. Conversion of reed canary and smooth brome stands may require a combination of prescribed fire, herbicide spraying, and tillage to be successful.
- In areas where shelterbelt plantings have had limited success, convert these areas to herbaceous stands of winter cover using species such as basin wildrye, and/or tall and intermediate wheatgrass, if possible and if not already present.
- Use mechanical means or prescribed fire to rejuvenate dead/decadent stands of willows and other sprouting shrubs in the vicinity of the agricultural farming leases to improve winter cover for pheasants. Willows and sprouting shrubs will respond favorably to the use of prescribed fire.
- Maintain current system of hay and grain (or suitable alternative crops) production with required amounts of winter grain (or suitable alternative crop) food set-asides on the WMA's agricultural leases for at least the 2023-2029 leasing period. Again, anything related to the agricultural lease process, lease provisions, or lease requirements are subject to potential change whenever the leases are renewed (public EA process). So, if FWP feels that a change is needed regarding management of the agricultural farming leases to improve management of Canyon Ferry WMA for wildlife at some point, then the change would be made when the leases came up for renewal.
- The current food plot on the Meyer's lease will be continued until roughly 2026. At that time the food plot will be converted to dense nesting cover. A new food plot approximately 17 acres in size north of the Ray Creek channel will be planted when the existing food plot is planted to dense nesting cover. The field will need to be mechanically and chemically fallowed for a couple of years starting in about 2024 prior to it being planted to a food plot in approximately 2026. After five to six years that food plot will then be converted to dense nesting cover.
- Maintain the existing brood strip on the former Meyer's lease and possibly create another one if feasible. Creation of an additional brood strip may necessitate a new headgate and culvert from the Montana Ditch which would require coordination with the Montana Ditch Company.
- If possible, establish perennial or semi-perennial food plot(s) of 1-5 acres in size on the old 51 Ranch portion of the property west of Pond. If food plots cannot be established, then efforts will be made to establish dryland alfalfa and/or other desired forbs into the

existing plant community. While desired, habitat work on the old 51 Ranch property is currently constrained by a couple of things. First, moving slow moving equipment on U.S. Hwy 12/287 is dangerous given the traffic volume and vehicle speeds on that highway. Secondly, given the lack of moisture that the WMA receives, trying to establish any sort of vegetation without irrigation is a challenge.

- Where feasible, utilize mowing, prescribed grazing, or prescribed fire to manipulate and rejuvenate decadent areas of herbaceous cover, including existing areas of dense nesting cover, across the WMA as needed.
- Reduce predator habitat where feasible and continue to allow permitted trapping on Canyon Ferry WMA to help address nest predation issues.
- If feasible, develop a new center pivot agricultural lease in the crested wheatgrass dominated area east of the east canal and north of the old RY timber mill. The feasibility of the pivot and hence the agricultural lease will depend upon having enough water in the east canal to meet both FWP's primary responsibility of providing water to Ponds 2 and 3 and the irrigation demands of the agricultural lease.

Big Game Habitat

Canyon Ferry WMA is managed to provide productive yearlong habitat for the big game species that utilize the WMA which are primarily white-tailed deer and moose. Canyon Ferry WMA will occasionally get some use by mule deer, elk, pronghorn, black bears and possibly even mountain lions (along the river), but this use is generally sporadic, limited and seasonal in nature; although, mule deer are becoming more common throughout the year.

Big Game Habitat Issues

- In many areas, stands of willows or shrubs are dead or dying resulting in a decline in the amount of browse available to big game species; or the living vegetation is above the browse zone, so the browse is unavailable to smaller big game species found on the WMA such as white-tailed deer.
- Much of the herbaceous vegetation (reed canary grass, crested wheatgrass, smooth brome, etc) on the WMA is likely not utilized to any great extent by white-tailed deer or other big game that utilize the WMA especially when it has become decadent.
- White-tailed deer make extensive use of the alfalfa plantings on the WMA; however, excessive depredations on alfalfa or other agricultural crops on the WMA or adjacent private land may occur at higher white-tailed deer numbers.

Management Strategies/Actions/Prescriptions to Address Big Game Habitat Issues

- Use prescribed fire or mechanical means to manipulate and rejuvenate decadent stands of herbaceous and woody (browse) cover across Canyon Ferry WMA where feasible, and when and where desired. Prescribed fire would typically not be used in river riparian areas. Species adapted to browsing such as willows and sprouting shrub species (see Appendix D for list of willow and shrub species found on the WMA) will respond favorably to the use of prescribed fire. Improving stands of willow cover in areas next to

or near the agricultural farming leases will also benefit pheasants. Removing layers of old residual herbaceous material, particularly with the use of prescribed fire, in places dominated by reed canary grass or other undesirable invasive grass species may allow more forbs and other more desirable plant species for big game (and pheasants) to become established.

- Prescribed grazing could also be used in stands of herbaceous cover where feasible; however, the lack of adequate fencing and water availability for livestock grazing are issues in many areas of the WMA.
- Where possible, convert monoculture stands of crested wheatgrass and reed canary grass to more desirable/palatable herbaceous species for big game to include native vegetation species. Reed canary grass areas along the east canal may particularly be areas to target, as those areas likely get some subirrigation from the canal which may allow seeded stands to become established. Improving the plant composition in those areas would also be beneficial to pheasants and waterfowl.
- If white-tailed deer numbers increase above the management objective, or depredation problems on agricultural lessees' alfalfa fields (or on neighboring alfalfa fields) become an issue, then additional antlerless white-tailed deer B-licenses valid only on the WMA can be issued. B-license numbers can also be regulated if white-tailed deer numbers drop below the management objective.

Nongame Species Habitat

Canyon Ferry WMA provides riparian, wetland, open water, and grassland savannah habitats that are attractive to a variety of nongame species for feeding, nesting, and raising young. The WMA provides breeding and migratory habitat for nongame species and provides wildlife viewing opportunities for those people who enjoy viewing nongame species. Birdwatching is a popular activity on the WMA, as among its various bird species it provides ample opportunities to view shorebirds and other migrating waterbirds. Over 200 species of birds, most of them nongame birds, have been identified at one time or another using the WMA (see Appendix E for the Canyon Ferry WMA bird list).

The Montana Natural Heritage Program (MNHP) maintains a database with sightings of wildlife species, with categories by status. Species of Concern (SOC) are native taxa that are at-risk due to declining population trends, threats to their habitats, and/or restricted distribution. Potential Species of Concern (PSOC) are animals with potential vulnerability or for which additional data are needed before an accurate status assessment can be made. Species with Special Status (SSS) are species with some legal protections in place but are otherwise not a Montana Species of Concern.

A search of the MNHP database (12/7/2023) for Canyon Ferry WMA identified 189 documented nongame wildlife species (one amphibian species, six reptile species, 172 bird species and 10 mammal species). However, it must be noted that not all wildlife species known to use Canyon Ferry WMA have been entered into the MNHP database**.** Lists of known Canyon Ferry WMA wildlife species and species that could potentially be present on the WMA based on their range, presence of associated habitats, or predictive distribution models along with the statuses of those known or potential species are provided in Appendix F (includes MNHP information).

Reptiles and Amphibians

The Canyon Ferry WMA provides habitat for aquatic amphibians and reptiles as well as species that depend on the grassland savannah. Northern leopard frogs are frequently observed on the WMA. Their SOC status applies to the populations west of the continental divide. They are common east of the divide. Generalist species, such as the two garter snake species (including a black melanistic phase/variety of the common garter snake) found on the WMA, use the available terrestrial and aquatic habitat. Specialist species including the North American racer, gophersnake, and prairie rattlesnake may also be found on the WMA. The WMA's available habitats could also potentially provide habitat for six additional amphibians and reptiles.

Mammals

Nongame mammal species found on Canyon Ferry WMA may use all of the available habitats, but certain habitat features are critical to their persistence. The woodlands and other natural features found on the WMA provide key roosting opportunities for six bat species that have been observed in the area, three of which are listed SOC and one of which is a PSOC. These bat species use the WMA during their breeding season as well as other times of the year. The proximity of the WMA's roosting features to Canyon Ferry Reservoir and the Missouri River provide bats ample foraging opportunities. Therefore, maintaining natural roost features such as snags, will be key to allowing bats to continue to use the WMA. The grasslands found in the WMA provide mammalian habitat for specialist species dependent on that environment. There are numerous small mammal species that could occur in the meadows as well as the mid-sized carnivores that depend on them for prey.

Birds

In addition to other bird species, Canyon Ferry WMA is home to large numbers of nesting aquatic birds. Commonly seen nesting species include American white pelicans, double-crested cormorants, and a variety of gull species. American white pelican and double-crested cormorant nests are found on some low elevation islands with minimal vegetation (result of colonial nesters) in Ponds 2 and 3 (primarily Pond 3). Caspian tern nests have also been documented over the years in Pond 2. Because of their very nature, colonial nesters can produce large numbers of young on relatively few islands.

During migration, the number of nongame bird species using the WMA increases considerably. It provides migratory stopover habitat for migrating shorebirds and bird species dependent on grasslands and woodlands for habitat. Grasslands on the WMA provide habitat for migrating grassland bird species and breeding habitat for specialist species such as bobolinks and long-billed curlews. Similarly, the riparian shrublands and woodlands provide habitat for a multitude of migrating species as well as breeding habitat for species that depend on having woodlands near open water.

Nongame Species Habitat Issues

- Many nongame species use emergent vegetation such as cattails and bulrushes for nesting or breeding habitat and cover. The quantity or quality of emergent vegetation is lacking

in some areas around the ponds. Water level management in the main reservoir by BOR can impede managing water levels in the ponds to maximize production of emergent and submergent vegetation.

- Island colonial nesting species can negatively impact waterfowl habitat quality through the destruction of cover and thus can negatively impact the production of local geese and ducks.
- Predatory species, such as raccoons and skunks, can significantly impact nest success of colonial nesting species through extensive nest predation, if water depths in the ponds are insufficient to isolate the islands from the shore during the nesting season.
- Flooding of colonial nesting islands which results in loss of nesting habitat, nests, and young birds can be a problem, particularly on islands used by Caspian terns which nest later than the other colonial nesting species that use the WMA. Island flooding in the ponds is a result of high Canyon Ferry Reservoir water levels. At a certain point, as water levels in the Reservoir rise, water levels in the ponds also rise regardless of FWP management actions to control water levels because of seepage through the pond dikes. Flooding of any pond islands typically occurs when the Reservoir reaches full pool or flood pool status.
- Potential loss of or disturbance of roosting features for bats (e.g. snags, mature trees, rocky outcrops).
- Loss of grassland habitat as it becomes overgrown with shrubs or trees and can no longer support grassland specialist species.
- Monoculture stands of species such as reed canary grass, smooth brome, and crested wheatgrass provide poor habitat for nongame species.
- Many shrubs and willows have become decadent or dead over the years reducing habitat quality for nongame species.

Management Strategies/Actions/Prescriptions to Address Nongame Species Habitat Issues

- Continue to coordinate with the BOR to get broken water control structures fixed to allow better water level control in the four large ponds. FWP staff will engage with BOR staff in an attempt to get the BOR develop a plan and timeline for fixing/replacing the broken water control structures. The existing water control structures have outlived their original designed operation lifespan.
- When possible, in the spring, manipulate water levels in the large ponds to increase emergent vegetation along pond margins. In addition to providing quality habitat for nongame wetland birds, stands of cattails can also often provide quality habitat for waterfowl and winter cover for pheasants.
- When possible, use mechanical means or prescribed fire to improve stand structure of cattails and bulrushes as needed along pond margins. Structural effectiveness of cattails and bulrushes has been lost in some areas due to stands being crushed down repeatedly by snow drifts and ice. Treatment timing will be critical, as the desire is for the stands to regrow, not to be killed.
- Use prescribed fire (would typically not be used in river riparian areas) or mechanical means to manipulate and rejuvenate decadent/dead stands of shrubs and willows and overgrown grassland areas across the WMA as needed to improve the quality of these

habitat types. This will improve habitat for both nongame species and game species. Willows and other sprouting shrubs will respond favorably to the use of prescribed fire.
- Take action to protect current roosting features for bats from disturbance and potentially provide additional roosting opportunities in the form of bat boxes.
- Where possible, convert monoculture stands of crested wheatgrass and reed canary grass to more desirable herbaceous species with a focus on native herbaceous species. This will again benefit nongame and game species.
- Allocate currently used colonial nesting islands in Ponds 2 and 3 to colonial nesters. Other islands in Ponds 2 & 3 with better cover will be managed for nesting waterfowl by maintaining or improving the amount of attractive nesting cover as possible. The islands used by pelicans and cormorants are kept track of as part of the annual colonial nesting survey (Appendix C). If the number of islands used by colonial nesters starts to increase considerably, efforts will need to be explored to control that expansion of habitat use.
- Efforts were made during the winter of 2022 to build up the elevation of an island in Pond 2 which has been used by Caspian terns for nesting. The project was done to reduce the likelihood of the nests being flooded out as water elevations in the pond rise in conjunction with increased water elevations in the Reservoir. Approximately 150 yards of dirt and gravel were dumped on the island to build up its elevation.
- Reduce depredation on ground nesting birds (game and nongame) by controlling numbers of depredating mammals such as racoons and skunks, primarily through permitted recreational trapping.

Furbearing Animals

With the diversity of habitats found on the WMA, Canyon Ferry WMA hosts a collection of species legally classified as furbearers including beaver, muskrat, mink, otter, and bobcat, and other small to mid-sized furbearing animals that are either classified as predators (coyote, weasel species, striped skunk and potentially spotted skunk) or nongame (badger, raccoon, red fox).

Issues Related to Furbearing Animals

- Aquatic furbearers such as muskrats have the potential to dig holes and damage canal banks or pond dikes.
- Beavers have the potential to create dams in the WMA's two canals and to plug water control structures.
- Furbearers and other mid-sized mammalian carnivores/omnivores have the potential to affect ground nesting, and colonial nesting bird populations by predating on adult birds, young nestlings, and on eggs.

Management Strategies/Actions/Prescriptions to Address Issues with Furbearing Animals

- Manage numbers of aquatic furbearers (beaver and muskrat), primarily through permitted recreational trapping, to prevent damage to canals, dikes, and water control structures.
- Reduce depredation on ground nesting birds (game and nongame) by controlling numbers of depredating mammals, primarily through permitted recreational trapping.

WILDLIFE MONITORING

Historically, wildlife monitoring surveys conducted on the WMA included goose and duck nesting surveys, goose breeding pair and production surveys, pheasant crowing counts, and white-tailed deer track surveys. However, for various reasons, these surveys were discontinued over the years. Current wildlife monitoring efforts (see Appendix C) conducted on the WMA include:

- a colonial nesting bird survey (American white pelicans, cormorants, Caspian terns) done annually in late May,
- roving patrols to check hunters on the youth weekend and the opening weekends of the general waterfowl and pheasant seasons,
- a spring aerial white-tailed deer survey flown as part of a larger survey area which includes the Crow Creek and Missouri River areas,
- an occasional moose survey flown as part of a larger HD 380 moose survey,
- a sandhill crane survey, flown as part of a larger Rocky Mountain sandhill crane population survey effort.

In addition to the current wildlife monitoring surveys, future monitoring efforts could include nongame surveys for reptiles, amphibians, and bats.

WEED MANAGEMENT

Objective: Control noxious weeds on Canyon Ferry WMA using chemical and other means of control with a primary focus along project roads, canals, boundary fences, and heavy use areas such as parking areas.

Terrestrial Weeds

Noxious weeds are well established on and across Canyon Ferry WMA, and FWP currently expends considerable resources controlling those noxious weeds. Given the WMA's location in relation to the upper Missouri River watershed, and flooding events which deposit fresh supplies of noxious weed seeds annually on the WMA, considerable resources will likely need to continue to be devoted to weed management on the WMA into the future.

Weed management on the WMA is guided by Montana FWP's Statewide Integrated Noxious Weed Management Plan which was developed in accordance with The Montana Weed Management Plan. The Montana County Weed Control Act (7-22-2151 MCA) is the mechanism by which weeds are classified as "noxious". Noxious weeds found on CFWMA include: Canada thistle, houndstongue, spotted knapweed, Russian knapweed, diffuse knapweed, field bindweed, dalmation toadflax, yellow toadflax, perennial pepperweed, rush skeletonweed, common tansy, leafy spurge, and white-top. Other species may also be present.

The department's agricultural farming lessees are responsible for controlling noxious weeds on their individual WMA agricultural leases. Weed management on the remainder of the WMA has

been done through the combined efforts of FWP personnel and licensed contractors. FWP chemical or mechanical control efforts are mostly focused on or near parking areas, roadways, food-plots, shelterbelts, and areas of nesting cover. A licensed contractor is used annually to chemically spray other areas of the WMA.

FWP has used biological control agents intermittently on the WMA since the 1990s. Bugs have been used for Canada thistle [Canada thistle stem weevils (*Ceutorhynchus* (*Hadroplontus*) *litura*), and stem gall flies (*Urophora cardui*)], spotted knapweed [knapweed root weevils (*Cyphocleonus achates*) and blunt knapweed flower weevils (*Larinus obtusus*)], and most recently (starting in 2021) for common mullein (*Gymnetron tetrum* – common mullein seed eating weevil). Biological control efforts for spotted knapweed involved releasing bugs on some of the islands in the Pond 4, as these areas typically can't be sprayed with chemical herbicides. Unless new biological control agents are approved for release for other noxious weed species found on Canyon Ferry WMA, active biological control efforts on the WMA may be discontinued sometime in the next few years, as currently released bug species should be well established on the WMA by then.

Aquatic Invasive Vegetation

The aquatic invasives Eurasian watermilfoil and curlyleaf pondweed are found in the WMA's two canals that supply water to Ponds 2-4. At least one of the canals has been chemically treated with aquatic herbicide since 2014, and both canals have been treated for many years now. Eurasian watermilfoil is also found in the Cottonwood side channel and in the Missouri River delta area. Past Eurasian watermilfoil control efforts on the WMA included hand pulling, covering with mats, and trying to dry the canals up. None of those efforts were successful in eliminating the Eurasian watermilfoil.

Eurasian watermilfoil and curlyleaf pondweed are found upstream of Canyon Ferry WMA in the Jefferson River watershed and other places, so control efforts on the WMA will be ongoing. Unfortunately, the choice of chemicals that can be used to control the two aquatic invasives on the WMA is extremely limited because of fisheries and wildlife concerns. There is growing concern that the aquatic invasive species may become resistant to the two chemical herbicides that are currently being used which are currently the only available options.

INFRASTRUCTURE

Signs and Boundary Markers

The entire boundary of Canyon Ferry WMA is fenced and signed with WMA boundary signs, and signs are replaced as needed. Given the multiple entrances to the WMA, there is currently no large WMA entrance sign similar to what is found on other FWP WMAs – there is a small sign at Pond 4. All the major entrances and/or parking areas are posted with an aerial map of the WMA (Figure 2) and a copy of the WMA Rules and Regulations (see Appendix B). "No Unauthorized Motor Vehicles" signs are displayed where appropriate and other signs are put up

as necessary seasonally (hunting and trapping related signs etc). Four information kiosk signs are located at the Pond 4 parking lot on the west side of the WMA.

Buildings

The headquarters building on Canyon Ferry WMA consists of an office with two attached shop areas and is located on Centerville Road. The building, which is owned by BOR, dates back to at least the 1950s and was formerly a slaughterhouse. The building is used by FWP staff that includes the Townsend area wildlife biologist, a wildlife technician, a seasonal WMA maintenance person, the Townsend area fisheries biologist, and a fisheries technician. The headquarters building compound area is susceptible to winter flooding from the Missouri River when ice jams occur. A dike system was built around the compound years ago to help address this issue. However, annual flooding risks remain. The compound and office flooded in 2012 when there was 18 inches of ice water in the headquarters office for a couple days.

While BOR allows FWP to use the building free of charge, FWP is responsible for its maintenance and the utilities associated with the building – costs are typically split between wildlife and fisheries. There is also a new (2017) equipment storage shed (24' x 80'), a trailer house (784 sq. feet, with an added-on entry) which is used intermittently by agency staff as needed, and several other small storage sheds including a couple which are roofed but open sided. Many of the storage sheds are shared by wildlife, fisheries, and enforcement. In 2020, BOR transferred the ownership of a maintenance/equipment shop and its associated fenced compound along Canton Road to FWP. The office compound buildings and the Canton Lane shop area will be maintained as necessary going forward.

Other buildings on the WMA are owned by the BOR and consist of a barn for equipment storage on Parcel 45A and an abandoned house and outbuildings on Parcel 61A. Parcel 61A is the old Meyer's preferential lease. The State Historical Preservation Office (SHPO) and BOR have determined that the structures on the property are a significant cultural resource. Because of that determination, BOR who administers the property has to date not granted FWP permission to tear or burn down any of the structures, even though many of them are a safety/health hazard due to their condition.

At FWP staff's request, FWP, BOR, and SHPO staff held a field meeting on site in June 2023 to look at the structures and to discuss the current condition of the structures at the site. FWP's desire is to retain some of the structures that are in better condition to maintain the historical cultural resource aspect and to remove the rest of the structures that are in poor condition or are hazards. Discussions regarding what to do with all the building are ongoing.

Irrigation Equipment

The Department has a John Deere irrigation pump (65 hp), two 1,000-foot wheel-lines, and a small amount of handline that are currently used for irrigating habitat improvement projects on the old Meyer's lease (Parcel 61A). The pump, wheel-lines and handlines require a fair amount of maintenance and repair annually.

Campgrounds

BOR maintains the Cottonwood Campground, on the west side of the WMA as a non-fee site. Other than at BOR's Cottonwood campground, no camping is allowed on Canyon Ferry WMA.

Parking Areas and Boat Launches

There are 17 designated Parking Areas (see Figure 2) on Canyon Ferry WMA, and one developed, and two primitive boat launch areas. The developed boat launch area provides access to Pond 4, while the two undeveloped boat launch areas provide access to Ponds 2 and 3. There is no boat launch area that provides access to Pond 1, and there are no current or foreseeable plans to develop one given the location of the pond's dike in relation to the lower Dry Gulch parking area. Canyon Ferry WMA rules are posted at all the parking areas. The parking areas are maintained as needed with maintenance typically just involving blading and mowing (if grass is present) the parking area.

Roads

FWP maintains the internal road system on the WMA. Maintenance activities typically involve mowing or blading the roads as necessary. The roads into the two canal intakes and the Cottonwood campground area are jointly maintained by BOR and FWP. The four primary access roads (Riley Road, Lower Ray Creek Road, Meyers Road, Lower Dry Gulch Road) on the eastside of the WMA and Canton Lane are county roads for all or at least a portion of their length – typically county jurisdiction stops at the WMA property boundary. As such, those portions that are a county road are maintained by Broadwater County with the remainder maintained by FWP.

In 2020, approximately 0.45 miles of road into the west headgate, 0.60 miles into the east headgate, 0.25 miles into a parking lot west of Canton Lane, and 0.30 miles into the south Pond 3 parking area were improved (Figure 6). Improvements included hauling in road mix fill material where needed, blading, and compacting the roads.

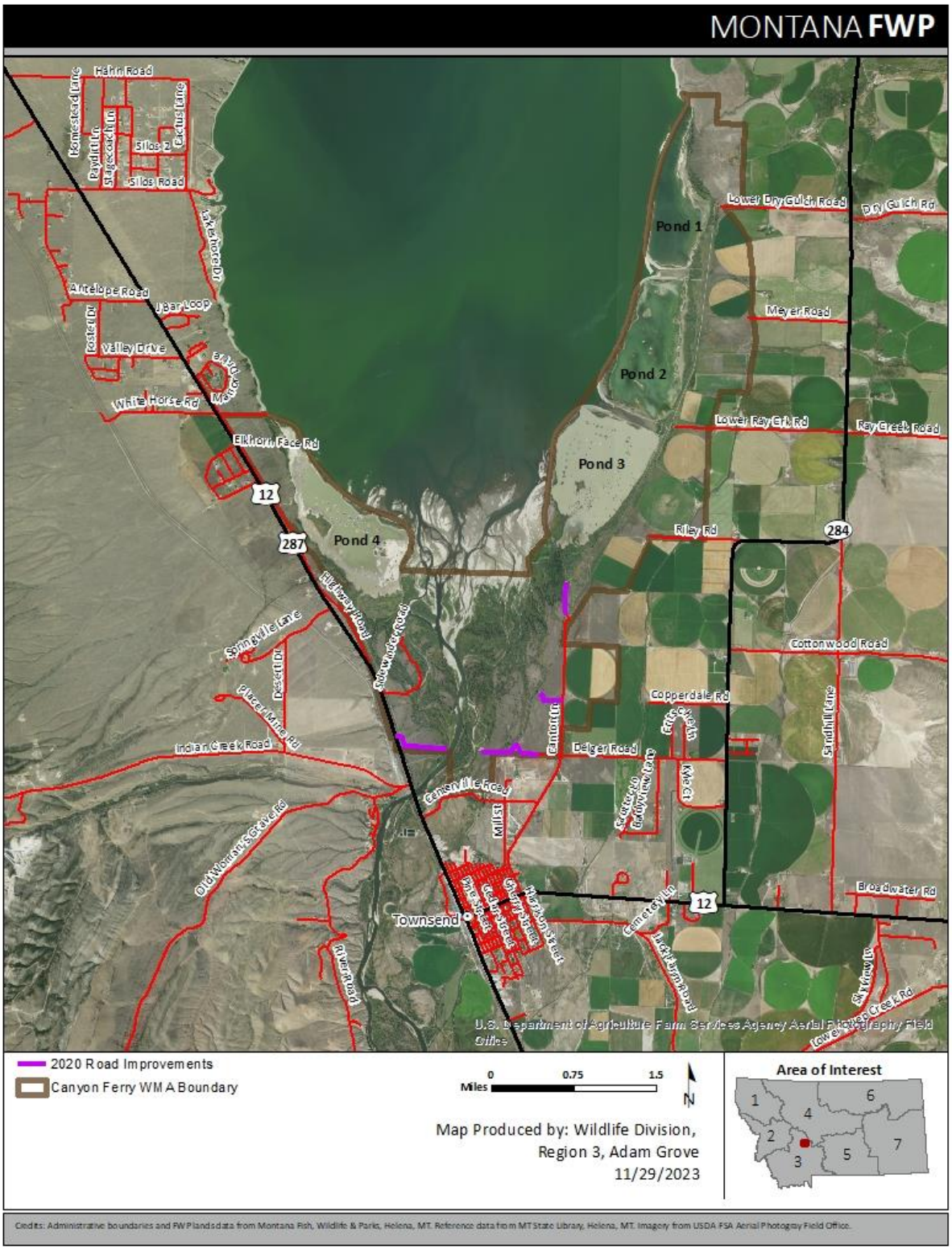

Figure 6. Roads improved in 2020 shown in purple.

Bridges

FWP maintains five walkway bridges that cross the canals. Four old wooden walking bridges were replaced with metal bridges in 2019 with funding from BOR. It is the BOR's responsibility to maintain and replace all the road bridges (2) and road culverts (8) on the WMA.

Fences and Gates

The WMA has approximately 14.5 miles of perimeter fence and approximately 3.95 miles of interior fence. Perimeter and interior fences are maintained as necessary. The primary purpose of the existing interior fences is to prevent people from driving or using motorized vehicles where they are not supposed to.

Starting in 2015, FWP began surveying and replacing the WMA's perimeter fences. As of 2023, approximately 7.8 miles perimeter fence has been replaced (Figure 7). Boundary fence replacement is expected to continue for the next several years at least with another approximately 2.0 miles of boundary fence expected to be replaced by the end of FY 26. There are six 'powder river' swing gates on the WMA and 13 pipe gates. The gates are used to restrict motorized access to the WMA.

While in need of replacement, the department will hold off on replacing Canyon Ferry WMA boundary fence adjacent to U.S. Hwy 12/287 for at least the time being. It's believed that within the next 5-10 years the Montana Department of Transportation will likely do major reconstruction of U.S. Hwy 12/287 adjacent to the WMA which may involve replacing the WMA boundary fence along the highway right-away as part of the reconstruction effort. If the boundary fence along U.S. Hwy 12/287 isn't replaced as part of a highway reconstruction effort, then FWP will replace it over time. The other remaining stretches of boundary fence that have yet to be replaced will continue to be evaluated for replacement and will be replaced when necessary.

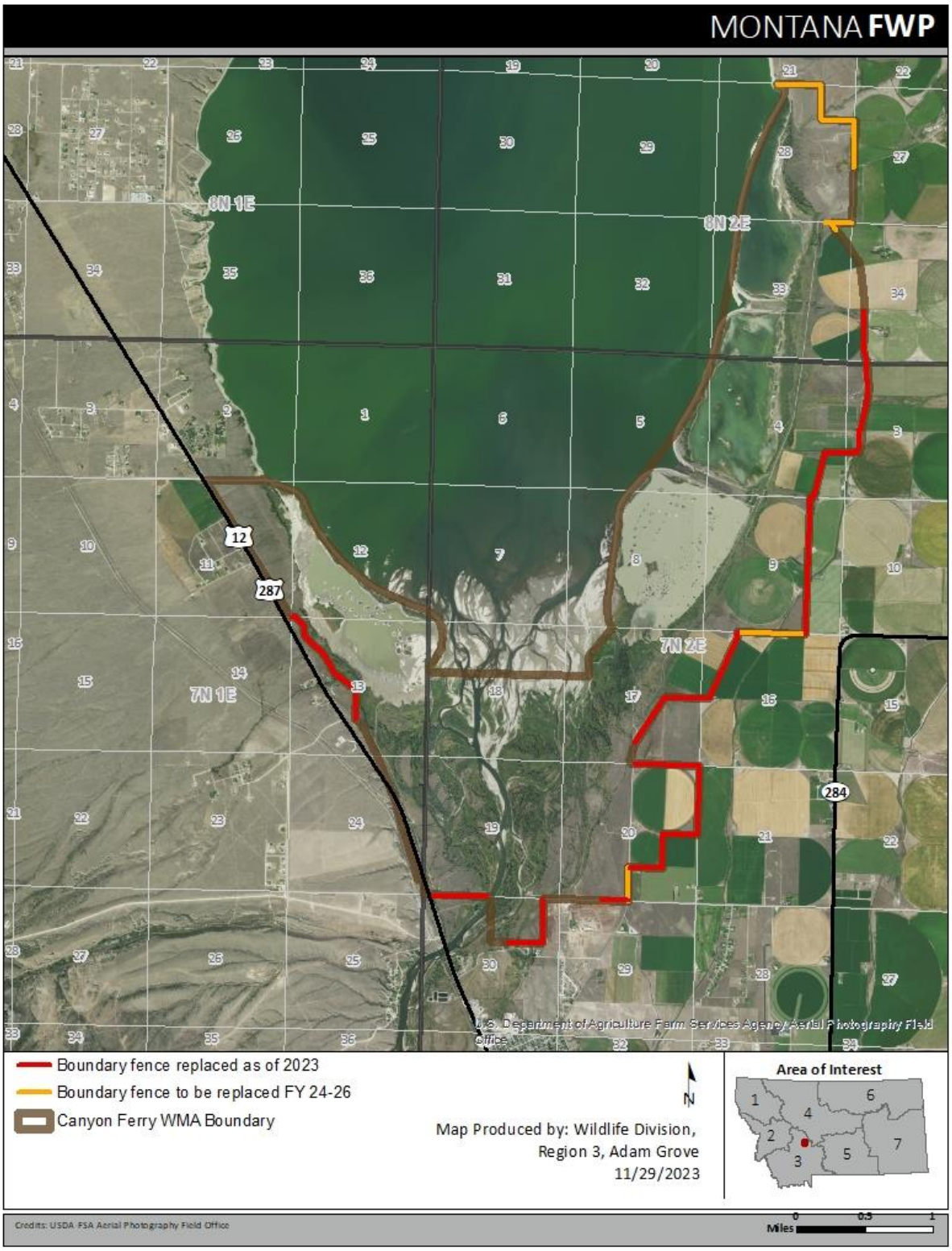

Figure 7. Fence replacement efforts on Canyon Ferry WMA.

Water Control Structures

Canals

There are two canals on Canyon Ferry WMA which provide water from the Missouri River to the WMA's ponds. The east canal which supplies water to Ponds 2 and 3 is approximately 3.8 miles long, while the west canal which supplies water to Pond 4 is approximately 1.8 miles long. Each canal has a multiple headgate intake structure that includes a debris rack to catch river debris and prevent it from clogging or jamming the intakes. Log booms, which deflect large debris from clogging the intake debris racks, are installed prior to spring runoff and are removed before winter ice up begins. While the log booms help prevent large debris from clogging the intake racks, smaller debris must still be manually removed from the intake racks at least once daily to increase water flow into the canals.

In addition to cleaning the debris racks and annual canal chemical treatments for aquatic invasives, periodic mechanical canal cleaning is necessary to maintain adequate water flows by removing vegetation and sediment deposits in the canal systems. Large sediment loads are carried by the river and are deposited in the canals, especially if the intakes are open much when spring runoff is occurring. The entire westside canal was cleaned in about 1996 and the upper (nearest the intake) half mile was cleaned again in 2017. The eastside canal was cleaned from the intake down to the pond 2 inlet in the late 1990's, and it was cleaned from its intake to the first road culvert where the intake access road crosses the canal in the fall of 2023. BOR is responsible for cleaning sediment from and repair of the canals along with repair/replacement of the canal intakes and canal headgates.

Outlet Control Structures

There are 12 outlet control structures whose purpose is to control water flow between the ponds and the Reservoir. The outlet control structures were put in when the pond dikes were constructed back in the mid-1970s. The design life expectancy of the outlet control structures has been exceeded resulting in a large number of the structures not working at all or not working properly, i.e. they leak to various degrees. Repair/replacement of the outlet control structures is the BOR's responsibility.

PUBLIC RECREATION

Objective: Manage access and recreational opportunity on Canyon Ferry WMA to continue to allow when and where appropriate a multitude of recreational uses on the WMA including hunting, watching wildlife, trapping, and various forms of non-wildlife related recreation while minimizing impacts to wildlife. Since the primary purpose of the WMA is to manage for wildlife and wildlife habitat, recreational use will be managed secondarily to the primary purpose. The primary recreation purpose that the WMA is managed for is for hunting of the game species that are found on the WMA. To date, most of the nonhunting recreational use on the WMA has had limited impact on wildlife use of the WMA. Much of this recreational use involves people, and often their dogs, just walking along the WMA's canals or along the pond/reservoir dikes.

Public Recreation Issues

- Canyon Ferry WMA receives a tremendous amount of use year-round from a multitude of users, and over the years, there has been interest by some user groups to create established designated walking and bike trails throughout the WMA that would enhance nonhunting recreational use.
- There is a statewide concern regarding the recruitment, retention, and reactivation of hunters.
- There can be hunter use conflicts between white-tailed deer hunters and pheasant or waterfowl hunters on the WMA.
- Some members of the general public may not be aware of the current access plan and may not know where and what types of access exist and what type of restrictions may be in effect.
- Some types of access may at times conflict with certain wildlife or wildlife habitat objectives such as providing secure nesting/brood rearing areas for birds; providing habitat security for white-tailed deer during the hunting season; and preventing damage to the soil and vegetation.
- Access may be inadequate for certain user groups such as individuals with impaired mobility.
- Management of mosquitos on the WMA.

Management Strategies to Address Public Recreation Issues

- Wildlife and wildlife habitat are the primary purposes of Canyon Ferry WMA and as such the WMA will be managed primarily for those purposes and not to enhance nonhunting related recreational activities. There is a concern that creating a designated trail system on the WMA would lead to increased nonhunting recreational activity on the WMA leading to increased disturbance of the wildlife species that use the WMA. As such, FWP will look to avoid creating designated walking and biking trails on the WMA.
- If, and when necessary, FWP will close areas at least seasonally to improve wildlife security, reduce disturbance impacts, or to address other resource concerns or issues.
- To address the issues of recruitment, retention, and reactivation of hunters, multiple pheasant releases will be done annually on the WMA for the foreseeable future.
- If hunter use conflicts start to become more of an issue, then FWP may look at a system where a certain type of hunting activity is only allowed on certain days of the week or in certain areas of the WMA etc.
- An updated map of Canyon Ferry WMA was produced in 2017 (Figure 2) which shows all the major access points on the WMA. The back of the map has the WMA rules and regulations on it (see Appendix B). To make members of the public more aware of the map and rules, FWP will:
    - Ensure that the current WMA maps and rules are displayed at all access points to the WMA.
    - Ensure copies of the WMA map and rules are available to the public at the WMA headquarters building.

    - Include the WMA map and rules on the Canyon Ferry WMA portion of the FWP website.
    - Provide copies of the WMA map and rules at FWP's Region 3 and Helena Area Resource Offices.
- The current travel plan addresses wildlife security and resource damage concerns. Access to the WMA will be reviewed periodically to ensure it continues to address wildlife security and resource damage concerns in the future.
- There are currently no American Disability Act access facilities, such as wheelchair accessible trails and wildlife viewing pads on the WMA. In coordination with the BOR, evaluate areas on the WMA where wheelchair access, including trails, wildlife viewing pads, and hunting blinds could be developed that don't conflict with the WMA primary purpose of managing for wildlife and wildlife habitat.
- FWP is required under its long-term agreement with BOR to manage mosquitoes on the WMA. Funding for mosquito control comes from the BOR on an annual basis. FWP contracts out mosquito management services which currently involves doing larvae surveys and either ground or aerial applications of larvicide. Mosquito numbers are worse in the years that the Core of Engineers uses the Canyon Ferry Reservoir flood pool, as the flood pool overlaps part of the WMA. When the Reservoir goes into flood pool status it results in large, vegetated areas of the WMA being flooded creating great mosquito habitat.

TRAVEL PLAN

Motorized vehicles are restricted to main access roads and designated parking areas (Figure 2), except for FWP staff use and use by agricultural lessees or other specially permitted individuals. During waterfowl season, vehicles can access the boat launch area on Ponds 2 and 3 for boat launching purposes only. However, vehicles must be parked in the designated lower Ray Creek parking area and not on the dikes.

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APPENDICES

Appendix A. History

Canyon Ferry Reservoir, a Bureau of Reclamation project, was formed by the construction of a dam on the Missouri River in 1954. Wildlife management responsibilities on certain areas administered by BOR surrounding the reservoir were transferred to what was then the Montana Department of Fish & Game (MDFG) by a Memorandum of Understanding (MOU) signed in 1957. Initially, MDFG management efforts dealt with agricultural leases on the south end of the reservoir and few intensive management activities were undertaken. As a result of flood control needs, water level management changed in 1966, resulting in exposure of as much as 9,100 acres of mud flats, which under the right conditions became a source of blowing dust. Complaints from agricultural interests and citizens of Townsend prompted BOR to seek a solution. After a series of unsuccessful efforts to address the situation, the decision was made to construct dikes and dredge silt from the mud flats into the dike system where the silt could be covered with water year-round. Biologists from MDFG and Montana State University were invited to provide input into the overall design of both the ponds and islands placed in the ponds (Childress and Eng 1979). Construction was initiated in the early 1970s and completed in 1978. The result was the current four-pond system totaling 1,925 acres and containing a total of 325 artificial islands, most of which were built by the dredge. The ponds and surrounding uplands were placed under the management of MDFG as Canyon Ferry Wildlife Management Area (Figure 1). Canyon Ferry WMA is somewhat unique compared to FWP's other wildlife management areas, in that the department does not own most of the land that is included in the WMA. The only portion of the WMA that FWP owns is the old ’51 Ranch’ property (129 acres) which the department purchased in 1995.

Prior to dike construction, a population of 40 to 50 pairs of Canada geese occupied the delta area of the reservoir and nested on river islands in this area. These birds were restricted from expanding by lack of additional nesting habitat. With the addition of the newly-created habitat, geese began to utilize the pond system immediately. A dramatic increase in the local breeding numbers of Canada geese occurred following project completion with the availability of this manmade habitat. In 1991 a total of 530 nests were located on the pond portion of Canyon Ferry WMA.

While Canada geese were initially the big success story of the WMA, efforts have also been made over the years to improve habitat for ducks on the WMA. In 1987, a MARSH (matching state and Duck's Unlimited funds) project was completed with the building of two small ponds, providing breeding pair habitat for ducks. During the winter of 1989, Ducks Unlimited funded a project which placed topsoil on islands in Pond 4 in an effort to help establish quality nesting cover for ducks. During the winter of 1990, 3 acres of new islands were constructed as a mitigation project for the loss of river island habitat resulting from a hydroelectric retrofit of Toston Dam. State Duck Stamp money provided funding for the establishment of 50 acres of dense nesting cover seeded in 1991. Efforts to improve pheasant habitat on the WMA have also been made over the years, particularly in the last 25 years or so, as a large number of acres have been planted to dense nesting cover and shelterbelts.

The first management plan for this area was written in 1972, prior to construction of the dike system. A second management plan for Canyon Ferry WMA was completed in 1992 (Carlsen and Northrup 1992).

Appendix B: Canyon Ferry WMA rules and regulations

1. Motor vehicles must remain on established roads as posted.
2. Parking is allowed only in designated areas (see WMA map). Camping is only allowed at the Cottonwood camping area. Camping is not allowed in parking areas. Parking is not allowed at Pond 2 & 3 boat ramps – unload boats at the boat ramps and park vehicles in the designated parking area.
3. Fires may be built only in the established fire rings at the Cottonwood camping area. Fires are not allowed in the parking areas.
4. Cutting of trees or shrubs by the general public, and damaging, removing or defacing any property is prohibited.
5. Removal or disturbance of topsoil is prohibited except for farming practices occurring as part of an authorized agricultural lease or as part of an authorized habitat improvement project.
6. Dumping of animal carcasses is prohibited. This doesn't include boned-out animal remains legally harvested on Canyon Ferry WMA.
7. Livestock grazing is prohibited without a lease.
8. Lands and waters shall not be polluted or littered in any manner.
9. These lands may not be used for commercial purposes without a permit.
10. Camping by commercial interests is prohibited without a permit.
11. A group use permit is required for groups of 10 or more people.
12. Snowmobile use is prohibited on Canyon Ferry WMA.
13. No fireworks may be discharged on these lands.
14. Trapping on these lands is by permit only – see trapping regulations.
15. No rifles may be discharged on these lands (area is part of Townsend Weapons Restriction Area). Weapons discharge is only allowed for lawful hunting purposes. Target or clay pigeon shooting and discharge of paint ball guns is prohibited.
16. No boats are allowed on Canyon Ferry WMA ponds from March 1 through August 31.
17. No permanent blinds, tree stands, or goose pits may be constructed on these lands. All blinds or stands, including temporary ones, must be removed within 10 days of the end of the hunting season. Goose pits must be refilled after use.
18. For the protection of nesting birds, unrestrained dogs are prohibited from March 1 through June 30; i.e. dogs are not allowed to roam at large during that time period and must be on a leash.

Appendix C. Canyon Ferry WMA survey and monitoring results

Table 5. White-tailed deer survey results for the Canyon Ferry WMA.

Year	Post Season	PS Fawns: 100 Does	Bucks:100 Does (PS)	Spring # Deer	Fawns/ 100 Adults
2024	NS			218	19.1
2023	NS			268	13.6
2022	NS			222	29.1
2021	NS			148	21.3
2020	NS			NS	
2018-19	NS			171	22.6
2017-18	366	25.6	8.4	294	10.1
2016-17	168	27.3	9.1	268	43.3
2015-16	323	33.8	10.1	174	19.2
2014-15	202	20.4	6	183	22.8
2013-14	251	52.2	25.2	177	19.3
2012-13	NS			NS	
2011-12	329	54.1	15.5	341	52.2
2010-11	440	74.8	16.5	585	38.4
2009-10	474	55.2	15.9	370	57.8
2008-09	NS			NS	
2007-08	172	67.4	24.7	236	58.4
2006-07	253	64.6	7.5	249	67.1
2005-06	260	65.2	23.7	229	44
2004-05	290	46.3	8	261	67.3
2003-04	164	49	18.4	117	36
2002-03	86	38.5	26.9	164	41.4
Ave ('02/03-'24)	**270**	**48.2**	**15.4**	**246**	**35.9**

NS - No survey flown

Table 6. Pelican and cormorant nest numbers on Canyon Ferry WMA.

YEAR		Pelican		Cormorant
1994		975		582
1995		1084		559
1996		1085		510
1997		1089		499
1998		1196		612
1999		1487		631
2000		1804		579
2001		1941		634
2002		2078		732
2003		1802		838
2004		1821		557
2005		2107		461
2006		2394		486
2007		2443		372
2008		2032		484
2009		1907		340
2010		2244		371
2011		886		360
2012		2051		285
2013		2556		330
2014		1710		282
2015		1898		249
2016		1592		215
2017		1638		162
2018		1643		98
2019		688		72
2020		690		143
2021		1425		74
2022		1578		125
2023		940		164
2024		903		221
Ave		**1603**		**388**
'94-'24				

Table 7. Pelican nests by island.

Pelican Island Nesting Use 1995 to present																							
Island #	*(*) denotes Pond 2. Islands 22 thru 76 are in Pond 3.*																						
Year	10*	11*	12*	13*	14*	15*	16*	17*	18*	19*	20*	22	66	67	68	69	70	71	72	73	74	75	76
1995					356	185	1		76	209	257												
1996		47	45	31	350	148			80	142	242												
1997		31	41	38	243	251			22	194	283												
1998	467	35	2		151	92			28	31	95				195								
1999		15			200	16			21	129	264				259		416						
2000					80				18		109			427	125	127	159			225	294		
2001														164	220	80	57		37	9	144		555
2002										235	441			282	18				62	25	142		169
2003						15					59			177	52		59	1	44	18	45		162
2004						177								176	290		87			21	241		227
2005										9				229	148		102		63	39	151		235
2006														221	196		140		83	47	219		364
2007										234	299			188	378		220		41	49	128		257
2008										1				380	154		181	2	61	49	273		395
2009														103	91		26			39	117		172
2010										1				179	41		21		45	25	145		95
2011														111	182		20		6	6	86		40
2012														285	89		97		149	82	100		254
2013														268	44	70	124		91	146	137		448
2014													64	217	111	2	31	1	42	25	88		106
2015													65	210	236		72		42	32	121	13	260
2016							1							236	152	38	185		45	70	129	43	116
2017										28			29	319	277		132			60	12	21	44
2018						342				514	787												
2019										1					163	57	164						
2020										1					85	64							
2021													82	268	312		268			130	64	24	
2022													73	420	327		199			75	123	63	268
2023													52		184		160			55	48		105
2024														76	200	60	177			19			

Table 7 – cont.

Pelican Island Nesting Use 1995 to present																					
Island #	*Pond 3.*																				
Year	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
1995																					
1996																					
1997																					
1998																					
1999																					
2000					240																
2001					266				166				243								
2002					106	127			51	72	240		108								
2003					11				54	78	153		133		256		293	152			
2004					28				184	148			86		114			12			
2005			42		83				80	111	104	81	121		224		169	1			
2006			119	110			66	58	94						176		320	34	52		
2007					143		74	108	63	152	100	9									
2008							183	159	132				5	57							
2009					30		73	56	156	147			64	47	282	187	317				
2010			152			13	69	27	1	50	31				121	27	303	51	1	308	548
2011			3							52	3				50		71				256
2012						22	84	65	95	50	23		66	235	104	261					
2013						17	92	87	68	73	91	46	105		17	178	102			352	
2014			25		147		56	61	60	110	43	28	51	15	62	82	311			1	118
2015			21						89		47	13	66	21	157	77	209				
2016			35	2	40	35	85	11	72	99	34	14		61	71	18					
2017			35		81			56		101	50	10	78		9	82	214				
2018																					
2019			8						13	100	32	36	46		31	37					
2020			51		16		4		80	130	89	47	70		4			49			
2021			70	95	41				38	19	14										
2022		4								26											
2023					53	31			79	76	33		64								
2024					55		80		70	60	10		38						3	55	

Table 8. Cormorant nests by island.

Cormoront Island Nesting Use 1995 to present																							
Island #	*(*) denotes Pond 2 22 thru 76 are islands in Pond 3.*																						
Year	10*	11*	12*	13*	14*	15*	16*	17*	18*	19*	20*	22	46	66	67	68	69	70	71	72	73	74	76
1995						69			75	352	63												
1996						51			89	237	77												
1997						23			67	283	74												
1998		31				52			62	313	116												
1999						89			68	263	168					7							
2000						132			81	151	142					2	29	5					
2001									90	401						7	83	25					
2002									56	462							86						
2003						3			66	333	78					9	183	110					
2004									43	236							131						
2005									29	138					12		122	81					
2006									14	149					19		134	43					
2007									8	223					4	10		37					
2008									9	174					24	9	122	38			41		
2009									7	120					24	4	52	24			40		
2010									8	97					37	33	32	69		5	55		
2011									7	87					28	41	61	69			47		
2012									6	55					27	3	22	84			68	1	
2013									8	90					4	57		54			29		
2014									6						8	39	46	77			53		
2015									1					4		8	53	83			42		
2016									1	21						4		42			32		
2017									15	2							56	50			23		
2018									18	80													
2019																	3						
2020									47														
2021									2								68	4					
2022																	69	44			2		
2023									33								104	1					
2024									98														

Table 8 – cont.

Cormoront Island Nesting Use 1995 to present																					
Island #	*Pond 3.*																				
Year	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
1995																					
1996																					
1997																					
1998																					
1999																					
2000																					
2001																					
2002																					
2003	56																				
2004	41								1												
2005	49		27		3																
2006	53		4	16	41				13												
2007	66	32							2												
2008	67																				
2009	33								13	23											
2010	24																	31			
2011	16	4																			
2012	17	5											31								
2013		15		34			5		1				33								
2014	12		5				4	9	4				18	15							
2015	16		15		3				15				9								
2016	63	22	22	1					7												
2017	16																				
2018																					
2019	54	13								1			1								
2020	50	14	1						5	19	1	6									
2021																					
2022	10																				
2023	14									12											
2024	112	11																			

Table 9. Caspian tern nesting survey information.

Caspian Tern Island Nesting use 1990 to present in Pond 2					
Island #	16	17	18	19	
Year					TOTAL
1990	20				20
1991	25				25
1992	16	31			45
1993	39	12			51
1994	12				12
1995	22	19			41
1996	32				32
1997	5				5
1998					0
1999	2				2
2000					0
2001	28	7			35
2002	24	18	1		43
2003	11	21			32
2004	12				12
2005					0
2006		6			6
2007		2			2
2008			2	9	11
2009		12			12
2010		5		6	11
2011	2	8		2	12
2012	10	7			17
2013	19		8		27
2014					0
2015	1				1
2016	1				1
2017	1				1
2018					0
2019	1				1
2020					0
2021					0
2022					0
2023					0
2024					0
Average					**13**

Table 10. Canyon Ferry WMA pheasant hunter/harvest information for opening day, 1990-2023.

Year	Est. # 1/ Hunters	Pheasants/Hunter Checked	Est. Total 2/ Harvest	Pheasant/ Hr Hunted	% Juveniles
1990	65	0.34	22	0.1	100
1991	63	0.38	24	0.13	67
1992	70	0.79	55	0.17	83
1993	106	0.48	51	0.18	84
1994	86	0.58	50	0.2	68
1995	89	0.64	57	0.2	75
1996	124	0.2	25	0.09	22
1997	100	0.31	31	0.11	-
1998	105	-	-	-	-
2002	98	0.1	10	0.04	-
2003	86	0.1	9	0.04	-
2004	118	0.33	38	0.13	-
2005	95	0.35	39	0.17	-
2006	45	0.62	28	0.23	54
2007	104	0.91	95	0.43	85
2008	96	0.59	57	0.18	100
2009	97	0.5	48	0.19	100
2010	119	0.33	39	0.13	67
2011	121	0.27	33	0.11	83
2012	87	0.19	17	0.08	33
2013	105	0.19	20	0.14	75
2014	77	0.31	24	0.17	83
2015	66	0.81	53	0.42	90
2016	91	0.79	71	0.28	81
2017	53	0.72	38	0.24	95
2018	81	0.68	55	0.25	96
2019	131	0.56	73	0.22	90
2020	149	0.38	57	0.2	76
2021	161	0.47	76	0.16	100
2022*	322	0.74	238	0.32	99
2023*	333	0.54	180	0.23	94
Ave	**111.1**	**0.47**	**53.8**	**0.18**	**80.0**

*Pheasants released prior to the general opener.

1/ Estimated # Hunters = (Hunters checked/# Vehicles Checked) X (Total # Vehicles)

2/ Estimated Total Harvest = Estimated # Hunters X Birds/Hunter

Table 11. Waterfowl harvest on Canyon Ferry WMA opening weekend, 1999-2023.

Year	# Hunters	Est. # Hunters[1]	# Geese	Geese/ Hunter[2]	Est. Goose Harvest[3]	# Ducks	Ducks/ Hunter	Est. Duck Harvest
2023	173	330	8	0.05	17	283	1.6	528
2022	150	313	8	0.05	16	451	3	939
2021	87	133	4	0.05	7	138	1.6	212
2020	139	245	5	0.04	10	245	1.8	431
2019	103	158	16	0.16	25	454	4.4	698
2018	92	162	9	0.1	16	274	3	481
2017	101	163	2	0.02	3	140	1.4	226
2016	88	217	12	0.14	21	129	1.5	220
2015	78	119	32	0.41	49	113	1.5	173
2014								
2013	69	119	8	0.11	13	81	1.2	139
2012	77	158	9	0.11	17	59	0.76	120
2011	70	192	0	0	0	130	1.4	273
2010	132	266	37	0.28	74	103	0.8	207
2009	102	245	3	0.03	7	140	1.4	336
2008	96	239	1	0.01	2	133	1.4	332
2007	107	224	12	0.11	25	168	1.6	352
2006	108	246	9	0.08	20	123	1.1	270
2005	94	241	5	0.05	12	122	1.3	313
2004	89	195	5	0.06	12	163	1.8	357
2003	95	210	2	0.02	4	60	0.6	132
2002	134	249	25	0.19	47	151	1.1	281
2001	-	-	-	-	-	-	-	-
2000	139	347	24	0.17	58	197	1.4	473
1999	156	458	37	0.24	110	187	1.2	550
Ave	**107.8**	**227.3**	**11.9**	**0.1**	**24.6**	**175.8**	**1.6**	**349.7**

1 Estimated # Hunters = # hunters/vehicle checked x Total # vehicles.

[2] Birds/Hunter = # Birds checked/# Hunters checked.

[3] Estimated Harvest = Estimated # Hunters x Birds/Hunter.

Table 12. Duck harvest composition, Canyon Ferry WMA opening weekend, 2004-2023.

	Species																																						
	Mallard		Pintail		Gadwall		Wigeon		Shoveler		GW Teal		BW Teal		Cinnamon Teal		Wood Duck		Redhead		Canvas-back		L. Scaup		Ruddy Duck		Golden-Eye		Buffle-head		C. Merg		H. Merg		Ring-neck		Coot		Tot
Year	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	
2023	32	11.3	3	1.0	9	3.2	32	11.3	11	3.9	37	13.1	40	14.1	3	1.0	-		17	6.0	-		19	6.7	4	1.4	3	1.0	24	8.5	4	1.4	18	6.3	**15**	**5.3**	12	4.2	283
2022	40	8.9	12	2.7	20	4.4	19	4.2	8	1.8	231	51.2	79	17.5	1	<1	5	1.1	10	2.2	1	<1	-		-		1	<1	-		3	<1	5	1.1	**1**	**<1**	14	3.1	450
2021	47	34	5	3.6	13	9.4	23	16.7	5	3.6	22	15.9	9	6.5	5	3.6	1	<1	3	2.2	1	<1	1	<1	-		-		-		-		-		-		3	2.2	138
2020	23	9	4	2	28	11	24	10	7	3	119	49	8	3	2	1	-		-		-		3	1	1	<1	-		12	5	2	1	12	5	-		-		245
2019	158	35	17	3.7	51	11.2	106	23.3	7	1.5	74	16.3	20	4.4	-		1	<1	1	<1	-		-		-		-		5	1.1	4	1.0	8	1.7	**1**	**<1**	1	<1	454
2018	39	14	10	3.6	38	13.9	57	20.8	12	4.4	42	15.3	26	9.5	2	<1	3	1.1	4	1.5	-		1	<1	-		2	<1	3	1.1	7	2.6	10	3.6	**1**	**<1**	17	6.2	274
2017	18	13	-		9	6	21	15	8	6	27	19	36	26	-		-		1	<1	-		-		-		1	<1	2	1	9	6	6	4	-		2	1	140
2016	8	6	5	4	10	8	15	12	1	<1	61	47	21	16	1	<1	2	1.6	2	1.6	-		-		-		-		-		3	2.3	-		-		-		129
2015	45	40	9	8.0	13	11.5	18	15.9	2	1.8	9	8.0	6	5.3	3	2.7	-		1	<1	-		-		-		-		-		1	<1	4	3.5	**1**	**<1**	-		113
2014																																							
2013	17	21	2	2.5	21	26	16	19			2	2.5	5	6			1	1.2							3	1.2			1	1.2	3	3.7	8	9	**2**	**2.5**			81
2012	15	22	1	1.4	4	5.8	4	5.8			21	30.8	1	1.4	2	2.9	1	1.4	1	1.4	3	4.4							1	1.4			3	4.4	**2**	**2.9**			59
2011	58	45	13	10	5	4	9	7	2	2	10	8	\10	8			2	2	5	4			5	4			3	2			5	4	1	<1	**2**	**2**			130
2010	`		2	2	5	5	4	4	2	2	9	9	9	9	-		-		14	14	-		5	5	-		-		4	4	7	7	7	7			1	1	103
2009	42	29	1	<1	7	5	20	14	7	5	26	18	14	10	-		1	<1	7	5			2	1			4	3	-		6	4	2	1	-		-		140
2008	38	28	3	2	24	18	2	2	8	6	12	9	7	5			2	2	12	9	Closed		0		1	<1	5	4	2	2	14	10	2	2	1	1	0		134
2007	8	5	3	2	8	5	8	5	2	1	33	20	45	27	--		0	0	26	16	2	1	5	3	-		3	2	3	2	16	10	2	1	3	2	1	<1	168
2006	38	29	2	2	14	11	5	4	3	2	14	11	5	4	--		1	<1	37	28	-		3	2	-		-		-		-		1	<1	-		-		123
2005	16	13	-		15	12	3	3	7	6	24	20	13	11	-		-	<1	23	19	1	<1	6	5	-		1	<1	2	2	1	<1	4	3	1	<	-		122
2004	54	33	-		6	4	34	21	1	<1	42	26	17	10	-		-		2	1	-		2	1	-		-		1	<1	3	2	1	<1	-		-		163

Appendix D: Canyon Ferry WMA plant species list

Non-flowering vascular plants

Equisetum arvense L. ("field horsetail")
Equisetum laevigatum A. Braun ("smooth horsetail")

Flowering plants

MAGNOLIOPSIDA = ("Dicots")

Amaranthaceae ("Pigweed Family")
Amaranthus hybridus L. ("slim amaranth")

Anacardiaceae ("Sumac Family")
Rhus trilobata Nutt. ("skunkbush sumac")

Apiaceae (=Umbelliferae) ("Carrot Family")
Conium maculatum L. ("poison-hemlock")
Pastinaca sativa L. ("wild parsnip")
Sium suave Walt. ("hemlock waterparsnip")

Asclepiadaceae ("Milkweed Family")
Asclepias speciosa Torr. ("showy milkweed")

Asteraceae (=Compositae) ("Composite Family")
Achillea millefolium L. ("common yarrow")
Acroptilon repens (L.) DC. ("Russian knapweed")
Antennaria rosea Greene ("rose pussytoes")
Arctium lappa L. ("greater burdock")
Artemisia campestris L. ("field sagewort")
Artemisia cana Pursh ("silver sagebrush")
Artemisia dracunculus L. ("tarragon")
Artemisia frigida Willd. ("fringed sagewort")
Artemisia ludoviciana Nutt. ("cudweed sagewort")
Artemisia tridentata Nutt. ("big sagebrush")
Bidens cernua L. ("nodding beggartick")
Centaurea diffusa Lam ("diffuse knapweed")
Centaurea maculosa Lam. ("spotted knapweed")
Chondrilla juncea L. ("rush skeletonweed")
Chrysothamnus viscidiflorus (Hook.) Nutt. ("yellow rabbitbrush")
Cirsium arvense (L.) Scop. ("Canada thistle")
Cirsium flodmani (Rydb.) Arthur ("Flodman's thistle")
Cirsium vulgare (Savi) Ten. ("Bull Thistle")
Conyza canadensis L. ("Canadian horseweed")

Echinacea sp. Moench (“purple coneflower”)
Ericameria nauseosa (Pall. ex Pursh.) G.L. Nesom & Baird ("rubber rabbitbrush")
Erigeron glabellus Nutt. ("streamside fleabane")
Euthamia occidentalis Nutt. (“western goldentop”)
Gnaphalium palustre Nutt. ("western marsh cudweed")
Grindelia squarrosa (Pursh) Dunal. ("curlycup gumweed")
Helenium autumnale L. ("common sneezeweed")
Helianthus annuus L. ("common sunflower")
Helianthus nuttallii T. & G. ("Nuttall's sunflower")
Heterotheca villosa (Pursh) Nutt. ("hairy goldenaster")
Hymenoxys richardsonii (Hook.) Cock. ("pinque rubberweed")
Iva axillaris Pursh ("povertyweed")
Iva xanthifolia Nutt. ("giant sumpweed")
Lactuca pulchella (Pursh) D. ("blue-lettuce")
Lactuca serriola L. ("prickly lettuce")
Liatris punctata Hook. ("dotted blazing star")
Ratibida columnifera (Nutt.) Woot. & S. ("prairie coneflower")
Rudbeckia hirta (“black-eyed Susan”)
Rudbeckia laciniata L. ("cutleaf coneflower")
Senecio serra Hook. ("tall ragwort")
Solidago canadensis L. ("Canada goldenrod")
Solidago gigantea Aiton ("giant goldenrod")
Solidago missouriensis Nutt. (“Missouri goldenrod”)
Sonchus asper (L.) Hill ("spiny sowthistle")
Symphyotrichum campestre Nutt. ("western meadow aster")
Symphyotrichum chilensis Nees. ("Pacific aster")
Symphyotrichum foliaceum Lindl. ("leafybract-Aster")
Symphyotrichum spathulatum (Lindl.) G.L. Nesom ("western mountain aster")
Tanacetum vulgare L. ("common tansy")
Taraxacum officinale F.H. Wigg. ("common dandelion")
Tragopogon dubius Scop. ("yellow salsify")
Xanthium strumarium L. ("rough cocklebur")

Balsaminaceae ("Touch-me-not Family")
Impatiens ecornuta Gerry Moore, Zika & Rushworth ("spurless touch-me-not")

Boraginaceae ("Borage Family")
Cynoglossum officinale L. ("hound's-tongue")
Lappula occidentalis (S. Watson) Greene ("flatspine stickseed")

Brassicaceae (=Cruciferae) ("Mustard Family")
Alyssum desertorum Stapf. ("desert madwort")
Berteroa incana (L.) DC. ("hoary alyssum")
Brassica juncea (L.) Czern. ("India mustard")
Camelina microcarpa Andrz. ex DC ("littlepod false flax")

Capsella bursa-pastoris (L.) Medik. ("sheperd's purse")
Cardaria draba (L.) Desv. (“whitetop”)
Cardaria pubescens (C.A. Mey.) Jarmolenko ("hairy whitetop")
Descurainia incana (Bernh. ex Fisch. & C.A. Mey.) Dorn ("mountain tansymustard")
Lepidium densiflorum Schrad. ("common pepperweed")
Lepidium latifolium L. (“perennial pepperweed”)
Lesquerella ludoviciana (Nutt.) Wats. ("foothill bladderpod")
Nasturtium officinale W.T. Aiton. ("watercress")
Rorippa islandica (Oeder) Barbas. ("northern marsh watercress")
Sisymbrium altissimum (L.) Britt. ("tall tumblemustard")
Sisymbrium loeselii L. ("small tumblemustard")
Thlaspi arvense L. ("field pennycress")

Cactaceae ("Cactus Family")
Escobaria missouriensis Sweet. D.R. Hunt ("Missouri foxtail cactus")
Escobaria vivipara (Nutt.) Buxbaum ("spinystar")
Opuntia polyacantha Haw. ("plains pricklypear cactus")

Capparaceae (=Capparidaceae) ("Caper Family")
Cleome serrulata Pursh ("Rocky Mountain beeplant")

Caprifoliaceae ("Honeysuckle Family")
Symphoricarpos occidentalis Hook. ("western snowberry")

Chenopodiaceae ("Goosefoot Family")
Atriplex hortensis L. ("garden orache")
Bassia scoparia (L.) A.J. Scott ("kochia")
Chenopodium album L. ("lambsquarters")
Chenopodium glaucum L. ("oakleaf goosefoot")
Chenopodium simplex (Torr) Raf. ("mapleleaf goosefoot")
Krascheninnikovia lanata (Pursh) A. Meeuse & Smit ("winterfat")
Salsola kali L. ("Russian thistle")
Sarcobatus vermiculatus (Hook.) Torr. ("greasewood")
Suaeda calceoliformis (Hook) Moq. ("Pursh's seepweed")

Convolvulaceae ("Morning-glory Family")
Calystegia sepium L. R. Br. ("hedge false bindweed")
Convolvulus arvensis L. ("field bindweed")

Elaeagnaceae ("Oleaster Family")
Elaeagnus angustifolia L. ("Russian olive")
Shepherdia argentea (Pursh) Nutt. ("silver buffaloberry")

Euphorbiaceae ("Spurge Family")
Euphorbia esula L. ("leafy spurge")

Fabaceae (=Leguminosae) ("Pea Family")
- *Astragalus bisulcatus* (Hook.) A. Gray ("twogrooved milkvetch")
- *Astragalus cicer* L. ("cicer's or chickpea milkvetch")
- *Astragalus canadensis* L. ("Canadian milkvetch")
- *Astragalus agrestis* Doulas ex. G. Don ("purple milkvetch")
- *Caragana sp.* ("caragana")
- *Dalea purpurea* Vent. ("purple prairie clover")
- *Glycyrrhiza lepidota* Pursh ("wild licorice")
- *Lathyrus latifolius* L. ("perennial pea")
- *Medicago lupulina* L. ("black medick")
- *Medicago sativa* L. ("alfalfa")
- *Melilotus officinalis* (L.) Lam. ("sweetclover")
- *Oxytropis riparia* Litv. ("Oxus locoweed")
- *Pisum sativum* L. ("garden pea")
- *Thermopsis divaricarpa* A. Nelson ("spreadfruit goldenbanner")
- *Trifolium fragiferum* L. ("strawberry clover")
- *Trifolium hybridum* L. ("alsike clover")
- *Trifolium pratense* L. ("red clover")
- *Vicia americana* Muhl. ex. Wild ("American vetch")

Gentianaceae ("Gentian Family")
- *Gentiana affinis* Gris. ("pleated gentian")

Grossulariaceae ("Gooseberry Family")
- *Ribes aureum* Pursh ("golden currant")
- *Ribes oxyacanthoides* L. ("Canadian gooseberry")

Haloragaceae ("Water milfoil Family")
- *Myriophyllum sibiricum* Kom. ("shortspike milfoil")
- *Myriophyllum spicatum* L. ("Eurasian watermilfoil")

Lamiaceae (=Labiatae) ("Mint Family")
- *Lycopus asper* Greene ("rough bugleweed")
- *Mentha arvensis* L. ("wild mint")
- *Nepeta cataria* L. ("catnip")
- *Physostegia parviflora* Nutt. ex Gray ("western false dragonhead")
- *Salvia x sylvestris* L. (pro sp.) [nemorosa x pratensis] ("woodland sage")
- *Scutellaria galericulata* L. ("marsh skullcap")
- *Stachys palustris* L. ("marsh hedgenettle")

Lemnaceae (Duckweed Family)
- *Lemna minor* L. ("common duckweed")
- *Spirodela polyrrhiza* (L.) Schleid. ("common duckmeat")

Linaceae ("Flax Family")
Linum rigidum Pursh ("stiffstem flax")
Linum usitatissimum L. ("common flax")

Loasaceae ("Loasa Family")
Mentzelia laevicaulis (Hook) Torr. & A. Gray ("smoothstem blazingstar")

Malvaceae ("Mallow Family")
Sphaeralcea coccinea (Nutt.) Rydb. ("scarlet globemallow")

Nyctaginaceae ("Four-o'clock Family)
Mirabilis linearis (Pursh) Heimeri ("narrowleaf four-o'clock")

Oleaceae ("Olive Family")
Syringa sp. L. ("lilac")

Onagraceae ("Evening Primrose Family")
Chamaenerion angustifolium (L.) Scop ("fireweed")
Epilobium glandulosum Lehm. ("fringed willowherb")
Epilobium brachycarpum C. Presi ("tall annual willowherb")
Gaura coccinea Nutt. ex. Pursh ("scarlet gaura")
Oenothera biennis L. ("common evening primrose")

Plantaginaceae ("Plantain Family"
Plantago major L. ("common plantain")
Plantago patagonica Jacq. ("woolly plantain")

Polemoniaceae ("Phlox Family")
Collomia linearis Nutt. ("tiny trumpet")

Polygonaceae ("Buckwheat Family")
Eriognium strictum Benth ("blue mountain buckwheat")
Polygonum aviculare L. ("prostrate knotweed")
Polygonum erectum L. ("erect knotweed")
Polygonum lapathifolium L. ("curlytop knotweed")
Polygonum amphibium L. ("water knotweed")
Rumex crispus L. ("curly dock")
Rumex maritimus ("golden dock")
Rumex occidentalis S.Wats. ("western dock")
Rumex salicifolius Weinm. ("willow dock")

Portulacaceae ("Purslane Family")
Portulaca oleracea L. ("pigweed")

Primulaceae ("Primrose Family")
Lysimachia ciliate L. ("fringed loosestrife")

Ranunculaceae ("Buttercup Family")
Clematis ligusticifolia Nutt. ("western white clematis")
Ranunculus acris L. ("tall buttercup")
Ranunculus aquatilis L. ("white water crowfoot")
Ranunculus cymbalaria Pursh ("alkali buttercup")
Ranunculus repens L. ("creeping buttercup")
Ranunculus sceleratus L. ("cursed buttercup")
Thalictrum venulosum Trel. ("veiny meadow-rue")

Rosaceae ("Rose Family")
Amelanchier sp. Medik ("serviceberry")
Argentina anserina (L.) Rydb. ("silverweed cinquefoil")
Cotoneaster sp. Medik ("cotoneaster")
Geum macrophyllum Willd. ("largeleaf avens")
Prunus sp. L. ("Canada red cherry")
Prunus pumila L. ("sandcherry")
Prunus tomentosa Thunb ("Nanking cherry")
Prunus virginiana L. ("chokecherry")
Rosa woodsii Lindl ("Woods' rose")
Sanguisoba minor Scop ("small burnet")

Rubiaceae ("Madder Family")
Galium trifidum L. ("threepetal bedstraw")

Salicaceae ("Willow Family")
Populus angustifolia James ("narrowleaf cottonwood")
Populus tremuloides Michx. ("quaking aspen")
Salix alba L. ("white willow")
Salix amygdaloides Anders. ("peachleaf willow")
Salix bebbiana Sarg. ("bebb willow")
Salix exigua Nutt. ("narrowleaf willow")

Scrophulariaceae ("Figwort Family")
Linaria dalmatica (L.) Mill. ("dalmatian toadflax)
Linaria vulgaris Mill ("yellow toadflax or butter and eggs")
Orthocarpus luteus Nutt. ("yellow owl's clover")
Verbascum thapsus L. ("common mullein")
Veronica americana Schwein. ex. Benth. ("American speedwell")
Veronica peregrina L. ("neckweed")

Solanaceae ("Potato Family")
Hyoscyamus niger L. ("black henbane")

Solanum dulcamara L. ("climbing nightshade")
Solanum triflorum Nutt. ("cutleaf nightshade")

Urticaceae ("Nettle Family")
Parietaria pensylvanica Muhl. ex. Willd. ("Pennsylvania pellitory")
Urtica dioica L. ("stinging nettle")

Verbenaceae ("Verbena Family")
Verbena bracteata Cav. ex. L. & R. ("bigbract verbena")
Verbena hastata L. ("swamp verbena")

LILIOPSIDA ("Monocots")

Alismataceae ("Water-Plantain Family")
Sagittaria latifolia Willd. ("broadleaf arrowhead")

Cyperaceae ("Sedge Family")
Bolboschoenus maritimus (L.) Palla ("cosmopolitan bulrush")
Carex athrostachy Olney ("slenderbeak sedge")
Carex aurea Nutt. ("golden sedge")
Carex douglasii Boott. ("Douglas' sedge")
Carex duriuscula C.A. Mey. ("needleaf sedge")
Carex hystericina Muhl. ex Willd ("bottlebrush sedge")
Carex laeviconica Dewey ("smoothcone sedge")
Carex lasiocarpa Ehrh. ("woollyfruit sedge")
Carex nebrascensis Dewey ("Nebraska sedge")
Carex praegracilis W. Boott. ("clustered field sedge")
Cyperus squarrosus L. ("Bearded flatsedge")
Eleocharis quinqueflora (Hartmann) O. Schwarz ("fewflower spikerush")
Eleocharis palustris (L). Roem. & Schult. ("common spikerush")
Schoenoplectus americanus (Pers.) Volkart ex Schinz & R. Keller ("chairmaker's bulrush")
Schoenoplectus tabernaemontani (C.C. Gmel.) Palla ("softstem bulrush")
Scirpus microcarpus J. Presl & C. Presl ("panicled bulrush")

Hydrocharitaceae ("Tape-grass Family")
Elodea nuttallii (Planch.) H. St. John ("elodea or western waterweed"

Iridaceae ("Iris Family")
Iris missouriensis Nutt. ("Rocky Mountain Iris")

Juncaceae ("Rush Family")
Juncus balticus Willd. ("baltic rush")
Juncus confusus Coville ("Colorado rush")
Juncus longistylis Torr. ("longstyle rush")
Juncus torreyi Coville ("Torrey's Rush")

Juncaginaceae ("Arrow-grass Family")
Triglochin maritima L. ("seaside arrowgrass")

Liliaceae ("Lily Family")
Allium textile A. Nels. & J.F. Macbr. ("textile onion")
Asparagus officinalis L. ("garden asparagus")
Maianthemum stellatum (L.) Link ("little false Solomon's-seal")

Poaceae (=Gramineae) ("Grass Family")
Achnatherum hymenoides (Roem. & Schult.) Barkworth ("Indian ricegrass")
Agropyron cristatum (L.) Gaertn. ("crested wheatgrass")
Agrostis capillaris L. ("colonial bentgrass")
Agrostis gigantea Roth ("redtop")
Agrostis scabra Willd. ("rough bentgrass")
Agrostis stolonifera L. ("creeping bentgrass")
Alopecurus aequalis Sobol. ("shortawn foxtail")
Avena sativa L. ("common oats"
Beckmannia syzigachne (Steud.) Fern. ("American sloughgrass")
Bouteloua gracilis (Willd ex Kunth) Lag. ex Griffiths ("blue grama")
Bromus arvensis L. ("field brome")
Bromus ciliatus L. ("fringed bromegrass")
Bromus inermis Leyss. ("smooth brome")
Bromus tectorum L. ("cheatgrass")
Calamagrostis stricta (Timm) Koeler ssp. inexpansa (A. Gray) C.W. Greene ("northern reedgrass")
Dactylis glomerata L. ("orchardgrass")
Distichlis spicata (L.) Greene ("saltgrass")
Echinochloa crus-galli (L.) P. Beauv. ("barnyardgrass")
Elymus elymoides (Raf.) Swezey ("squirreltail")
Elymus glaucus Buckl. ("blue wildrye")
Elymus repens (L.) Gould ("quackgrass")
Elymus trachycaulum (Link) Gould ex Shinners ("slender wheatgrass")
Hesperostipa comata (Trin. & Rupr.) Barkworth ("needle and thread")
Hierochloe odorata (L.) Beauv. ("sweetgrass")
Hordeum jabatum L. ("foxtail barley")
Hordeum vulgare L. ("common barley")
Leymus cinereus (Scribn. & Merr.) A. Love ("basin wildrye")
Muhlenbergia asperifolia (Nees. & Mey. ex Trin.) Parodi ("alkali muhly/scratchgrass")
Muhlenbergia richardsonis (Trin.) Rydb. ("mat muhly")
Nassella viridula (Trin.) Barkworth ("green needlegrass")
Panicum milaceum L. ("proso millet")
Pascopyrum smithii (Rydb.) A. Love ("western wheatgrass")
Phalaris arundinacea L. ("reed canarygrass")
Phleum pratense L. ("timothy")
Phragmites australis (Cav.) Trin. ex Steud. ("common reed")

Poa compressa L. ("Canada bluegrass")
Poa nemoralis L. ("wood bluegrass")
Poa pratensis L. ("Kentucky bluegrass")
Poa secunda J. Presl ("Sandberg bluegrass")
Poa trivialis L. ("rough bluegrass")
Polypogon monspeliensis (L.) Desf. ("annual rabbitsfoot grass")
Psathyrostachys juncea (Fish.) Nevski ("Russian Wildrye")
Puccinellia nuttalliana (Schult.) Hitchc. ("Nuttall's alkaligrass")
Schedonorus pratensis (Huds.) P. Beauv. ("meadow fescue")
Setaria viridis (L.) P. Beauv. ("green bristlegrass")
Sorghum bicolor (L.) Moench *ssp. bicolor* ("grain sorghum")
S*orghum bicolor var. bicolor × bicolor var. sudanense [unnamed hybrid]* ("sorghum-sudangrass")
Spartina pectinata Bosch ex Link ("prairie cordgrass")
Thinopyrum elongatum (Podp.) Z.-W. Liu & R.-C. Wang ("tall wheatgrass")
Thinopyrum intermedium (Host) Barkworth & D.R. Dewey ("intermediate wheatgrass")
Triticum aestivum L. ("common wheat")

Potamogetonaceae ("Pondweed Family")
Potamogeton crispus (L.) ("curlyleaf pondweed")
Stuckenia filiformis (Pers.) Borner ("fineleaf pondweed")
Stuckenia pectinatus (L.) Borner ("sago pondweed")

Sparganiaceae ("Bur-reed Family")
Sparganium eurycarpum Engelm. ("broadfruit bur-reed")

Typhaceae ("Cattail Family")
Typha latifolia L. ("common cattail")

Conifers

PINOPSIDA

Cupressaceae ("Cypress Family")
Juniperus scopulorum Sarg. ("Rocky Mountain juniper")

Pinaceae ("Pine Family")
Picea A. Dietr. ("spruce")
Pinus sp. L. ("pine")

Appendix E: Canyon Ferry WMA Bird species list

Canyon Ferry WMA Bird Species	Status	Spring	Summer	Fall	Winter	Date of first observation
Common Loon	t	r		o		15-Apr
Red-necked Grebe	B	r	o			
Pied-billed Grebe	t	o	o			14-Apr
Horned Grebe	t	o		o		16-Apr
Eared Grebe	B	o	o	u		12-May
Western Grebe	B	c	c	c		6-May
Clark's Grebe	t	o	u	o		7-May
American White Pelican	B	c	c	c		24-Mar
Double-crested Cormorant	B	c	c	c		24-Mar
Great Blue Heron	B	c	c	u		1-Apr
Great Egret	t	r				
Snowy Egret	t		r			
Black-crowned Night-Heron	t		o			
White-faced Ibis	t	o	r			15-May
Trumpeter Swan	t	u		u	o	12-Mar
Tundra Swan	t	u		u	r	10-Mar
Greater White-fronted Goose	t	r				
Snow Goose	t	u		o		7-Mar
Ross's Goose	t	o				19-Mar
Canada Goose	W,B	c	c	c	u	
Wood Duck	B	c	c	o		27-Mar
Eurasian Wigeon	t	r				12-Mar
American Wigeon	b	c	c	c	r	20-Mar
Gadwall	B	c	c	c		23-Mar
Green-winged Teal	b	c	u	c		15-Mar
Mallard	W,B	c	c	c	c	
Northern Pintail	B	c	u	c		17-Mar
Blue-winged Teal	b	c	c	u		15-Apr
Cinnamon Teal	b	c	c			9-Apr
Northern Shoveler	b	c	c	c		24-Mar
Canvasback	t	o	r	o		20-Mar
Redhead	B	c	c	c		22-Mar
Ring-necked Duck	t	c		o		27-Mar
Greater Scaup	t	r		o		
Lesser Scaup	b	c	o	o		20-Mar
Surf Scoter	t			r		
White-winged Scoter	t			r		
Common Goldeneye	W,B	c	u	o	c	
Barrow's Goldeneye	t	r		o	r	
Bufflehead	b	c	o	c	r	19-Mar
Hooded Merganser	B	c	u	o		10-Mar
Red-breasted Merganser	t	c		r		15-Mar
Common Merganser	B	c	c	c	o	5-Mar
Ruddy Duck	t	u	r	o		9-Apr
Turkey Vulture	t	u	u	o		14-Apr
Osprey	B	c	c	o		9-Apr
Bald Eagle	W	c	u	u	c	
Northern Harrier	b,W	u	o	o	o	
Sharp-shinned Hawk	W,b	o	o	o	o	
Cooper's Hawk	b	o		r		
Northern Goshawk	W	o			r	

Canyon Ferry WMA Bird Species	Status	Spring	Summer	Fall	Winter	Date of first observation
Swainson's Hawk	b	o	o			7-May
Red-tailed Hawk	B,W	c	c	c	o	
Ferruginous Hawk	B	r				
Rough-legged Hawk	W	o		o	c	
Golden Eagle	t	o				
American Kestrel	b	o	o	o		13-Apr
Merlin	W	r	r	o	u	
Gyrfalcon	t	r			r	
Prairie Falcon	W	r		o	u	
Peregrine Falcon	t	o	o	o		
Wild Turkey	B,W	c	o	u	r	
Ruffed Grouse	t	r				
Sharp-tailed Grouse	t			r	r	
Gray Partridge	B,W	r	r	r	r	
Ring-necked Pheasant	B,W	c	c	c	c	
Sora	b	o	o	o		
Virginia Rail	b	r	r			
American Coot	B	c	c	c	r	26-Mar
Sandhill Crane	B	c	c	o		22-Mar
American Golden-Plover	t			o		
Black-bellied Plover	t	r		o		9-May
Semipalmated Plover	t		o	r		
Killdeer	B	c	c	c		
Black-necked Stilt	t	o	r			12-Apr
American Avocet	B	c	c	r		5-Apr
Wilson's Snipe	B,W	r	o	r	r	
Long-billed Dowitcher	t	o	o	u		14-May
Marbled Godwit	t	o	o			3-May
Long-billed Curlew	t	u	o			9-Apr
Greater Yellowlegs	t	o	c	o		9-Apr
Lesser Yellowlegs	t	o	u	o		24-Apr
Solitary Sandpiper	t	r	o	r		3-May
Spotted Sandpiper	b	u	c	o		10-May
Willet	t	o	o			3-May
Red Knot	t	r	r			17-May
Sanderling	t		r	o		
Semipalmated Sandpiper	t		u	o		
Western Sandpiper	t	r	u	o		5-May
Least Sandpiper	t	r	o	o		12-May
Baird's Sandpiper	t	r	o	u		
Pectoral Sandpiper	t		u	u		
Dunlin	t			r		
Stilt Sandpiper	t		r	r		
Wilson's Phalarope	b	u	c	r		8-May
Red-necked Phalarope	t		r	r		
Ring-billed Gull	B	c	c	c	o	9-Mar
California Gull	B	c	c	u	r	21-Mar
Glaucous Gull	t				r	
Herring Gull	t	u	o	u	r	13-Mar
Bonaparte's Gull	t	r	r	r		
Franklin's Gull	t	c	c	o		8-Apr

Canyon Ferry WMA Bird Species	Status	Spring	Summer	Fall	Winter	Date of first observation
Caspian Tern	B	c	c			12-Apr
Common Tern	t	o	o			5-May
Forster's Tern	t	o	o	r		5-May
Black Tern	t	r	r			24-May
Rock Pigeon	B,W	c	c	c	c	
Mourning Dove	B	c	c	c		4-May
Eurasian Collared-Dove	t	o	o	o	o	
Great Horned Owl	B,W	c	u	o	r	
Long-eared Owl	t	r				
Short-eared Owl	t	r	r			
Common Nighthawk	t	r	o			14-May
White-throated Swift	t		r			
Belted Kingfisher	b	o	o	o	o	
Red-naped Sapsucker	b	o				5-May
Williamson's Sapsucker	t		r			
Downy Woodpecker	b,W	u	c	o	o	
Hairy Woodpecker	t	r	r		r	
Northern Flicker	B,W	c	c	c	c	
Western Wood-Pewee	B	r	c	r		
Willow Flycatcher	B	o	c	r		14-May
Least Flycatcher	B	o	c	o		19-May
Hammond's Flycatcher	t		r			
Dusky Flycatcher	t	r	r	r		
Say's Phoebe	t		r			
Western Kingbird	B	u	c			14-May
Eastern Kingbird	b	u	c	r		17-May
Horned Lark	B,W	c	c	u	c	
Tree Swallow	B	c	c	r		25-Mar
Violet-green Swallow	b	o	r			10-May
Northern Rough-wing Swallow	t	o	o			5-May
Bank Swallow	b	r	o	r		8-May
Cliff Swallow	B	u	c	r		6-May
Barn Swallow	b	u	c	o		5-May
American Pipit	t	r		u		12-Apr
Golden-crowned Kinglet	t			r		
Ruby-crowned Kinglet	t	r		o		
Bohemian Waxwing	W			o	c	
Cedar Waxwing	B,W	c	c	u	u	
Rock Wren	t		u	r		
House Wren	B	u	c	r		17-May
Marsh Wren	B	c	c	o		29-Mar
Gray Catbird	B	o	c	o		19-May
Sage Thrasher	t	r				12-Apr
Mountain Bluebird	B	c	u			19-Mar
Townsend's Solitaire	W	r		o	c	
Veery	B	r	u			14-May
Swainson's Thrush	t	o	o	r		14-May
Hermit Thrush	t	r	r			
American Robin	B,W	c	c	c	c	
Black-capped Chickadee	B,W	c	c	c	c	
Mountain Chickadee	t	r		r	r	

Canyon Ferry WMA Bird Species	Status	Spring	Summer	Fall	Winter	Date of first observation
Northern Shrike	W	o		o	r	
Loggerhead Shrike	t	r				
Black-billed Magpie	B,W	c	c	c	c	
American Crow	b	c	o	o	o	
Common Raven	B,W	c	c	c	c	
European Starling	B,W	c	c	c	o	
Warbling Vireo	b	r	o	r		21-May
Red-eyed Vireo	t	r	r			24-May
Orange-crowned Warbler	t	r	o	o		
Yellow Warbler	B	u	c	o		17-May
Yellow-rumped Warbler	b	u	o	u		5-May
American Redstart	b		r			
Northern Waterthrush	t	r		r		24-May
MacGillivray's warbler	t		r			
Common Yellowthroat	b	o	o	o		7-May
Wilson's Warbler	t	r	o	u		24-May
Western Tanager	t		o			16-Jun
Spotted Towhee	t		r	r		
American Tree Sparrow	W	u		u	c	
Chipping Sparrow	t	o	u	o		12-May
Clay-colored Sparrow	B	o	u	o		12-May
Brewer's Sparrow	t		r	r		
Vesper Sparrow	b	u	c	u		8-May
Lark Sparrow	B	o	u	r		17-May
Savannah Sparrow	b	u	c	o		5-May
Grasshopper Sparrow	b	u	u			
Baird's Sparrow	t		r			
Song Sparrow	B,W	c	c	c	u	
Lincoln's Sparrow	t	r		o		14-May
White-crowned Sparrow	t	o		u		3-May
White-throated Sparrow	t			r		
Harris's Sparrow	t			r		
Dark-eyed Junco	t	o		r		
McCown's Longspur	t		r			
Black-headed Grosbeak	b	o	u			24-May
Lazuli Bunting	b	o	o			17-May
Bobolink	b		o			
Red-winged Blackbird	B,W	c	c	u	o	
Western Meadowlark	B	c	c	c		13-Mar
Yellow-headed Blackbird	B	u	c	r		24-Apr
Brewer's Blackbird	b	u	c	u		7-May
Common Grackle	b	u	o			7-May
Brown-headed Cowbird	b	u	c			9-May
Bullock's Oriole	B	u	c	r		7-May
House Finch	B,W	c	u	u	c	
Common Redpoll	W				o	
Pine Siskin	t			r	r	
American Goldfinch	b	o	c	o		6-May
House Sparrow	B,W	c	c	c	c	

Key for Canyon Ferry WMA Bird Species List:

Status

B – Direct evidence of breeding

b – Indirect evidence of breeding

t – Observed, no evidence of breeding

W – Over wintering

Seasons of occurrence

SP – Spring, March thru May

S – Summer, June to mid-August

F – Fall, mid-August thru November

W- Winter, December thru February

Relative abundance by season

c – Common to Abundant, usually found on every visit in moderate to large numbers

u – Uncommon, usually present in low numbers but may be missed

o – Occasional, seen only a few times during a season, not present in all suitable habitat

r- Rare, one to low numbers occur, but not every year

First- Average date of first observation during the year

*Canyon Ferry WMA bird species list compiled by Bob Martinka (retired FWP)

Appendix F: Lists of known and potentially present wildlife species on Canyon Ferry WMA

Amphibians

Common Name	Scientific Name	Habitat	Distribution	Detection	MT Status
northern leopard frog	*Lithobates pipiens*	wetlands, floodplain pools	resident	observed	SOC
western toad	*Anaxyrus boreas*	wetlands, floodplain pools	resident	observed	SOC
boreal chorus frog	*Pseudacris maculata*	marshes, ponds, small lakes, wet meadows	resident	potential	
plains spadefoot	*Spea bombifrons*	wetlands, floodplain pools	resident	potential	
western tiger salamander	*Ambystoma mavortium*	prairie ponds, lakes and reservoirs	resident	potential	

Reptiles

Common Name	Scientific Name	Habitat	Distribution	Detection	MT Status
terrestrial gartersnake	*Thamnophis elegans*	generalist	resident	observed	
North American racer	*Coluber constrictor*	sagebrush grassland	resident	observed	
prairie rattlesnake	*Crotalus viridis*	sagebrush grassland	resident	observed	
painted turtle	*Chrysemys picta*	ponds, lakes, streams	resident	observed	
gophersnake	*Pituophis catenifer*	sagebrush grassland	resident	observed	
common gartersnake	*Thamnophis sirtalis*	generalist	resident	observed	
western milksnake	*Lampropeltis gentilis*	rock outcrops	resident	potential	SOC
northern rubber boa	*Charina bottae*	montane forest	resident	potential	
greater short-horned lizard	*Phrynosoma hernandesi*	sandy / gravelly soils	resident	potential	SOC

Birds – Species of Special Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
bald eagle	*Haliaeetus leucocephalus*	riparian forest	resident year round	SSS
long-billed curlew	*Numenius americanus*	grasslands	migratory summer breeder	SOC
thick-billed longspur	*Rhynchophanes mccownii*	grasslands	migratory summer breeder	SOC
mountain plover	*Charadrius montanus*	grasslands	migratory summer breeder	SOC
American white pelican	*Pelecanus erythrorhyncho*	lakes, ponds, reservoirs	migratory summer breeder	SOC
Clark's grebe	*Aechmophorus clarkii*	lakes, ponds, reservoirs	migratory summer breeder	SOC
Caspian tern	*Hydroprogne caspia*	large rivers, lakes	migratory summer breeder	SOC
common tern	*Sterna hirundo*	large rivers, lakes	migratory summer breeder	SOC
bobolink	*Dolichonyx oryzivorus*	moist grasslands	migratory summer breeder	SOC
common loon	*Gavia immer*	mountain lakes w/ emergent veg	migratory summer breeder	SOC
veery	*Catharus fuscescens*	riparian forest	migratory summer breeder	SOC
ferruginous hawk	*Buteo regalis*	sagebrush grassland	migratory summer breeder	SOC
green-tailed towhee	*Pipilo chlorurus*	shrub woodland	migratory summer breeder	SOC
white-faced Ibis	*Plegadis chihi*	wetlands	migratory summer breeder	SOC
franklin's gull	*Leucophaeus pipixcan*	wetlands	migratory summer breeder	SOC
black-necked stilt	*Himantopus mexicanus*	wetlands	migratory summer breeder	SOC
black-crowned night-heron	*Nycticorax nycticorax*	wetlands	migratory summer breeder	SOC
Forster's tern	*Sterna forsteri*	wetlands	migratory summer breeder	SOC
horned grebe	*Podiceps auritus*	wetlands	migratory summer breeder	SOC
Clark's nutcracker	*Nucifraga columbiana*	conifer forest	resident year round	SOC
evening grosbeak	*Coccothraustes vespertinu*	conifer forest	resident year round	SOC
cassin's finch	*Haemorhous cassinii*	drier conifer forest	resident year round	SOC
golden eagle	*Aquila chrysaetos*	grasslands	resident year round	SOC
American goshawk	*Accipiter atricapillus*	mixed conifer forests	occasional to rare	SOC
great blue heron	*Ardea herodias*	riparian forest	resident year round	SOC
trumpeter swan	*Cygnus buccinator*	lakes, ponds, reservoirs	resident year round	SOC
sharp-tailed grouse	*Tympanuchus phasianellu*	shrub grassland	resident year round	SOC
sage thrasher	*Oreoscoptes montanus*	sagebrush	migratory summer breeder	SOC
Brewer's sparrow	*Spizella breweri*	sagebrush	migratory summer breeder	SOC
loggerhead shrike	*Lanius ludovicianus*	shrubland	migratory summer breeder	SOC
rufous hummingbird	*Selasphorus rufus*	riparian shrub	migratory summer breeder	PSOC
short-eared Owl	*Asio flammeus*	grasslands	resident year round	PSOC
Barrow's goldeneye	*Bucephala islandica*	mountain lakes and wetlands	resident year round	PSOC
hooded Merganser	*Lophodytes cucullatus*	rivers, riparian/wetland	resident year round	PSOC

Bird Species Observed – No Special Status

Common Name	Scientific Name	Habitat	Distribution
American avocet	*Recurvirostra americana*	wetlands	migratory summer breeder
American coot	*Fulica americana*	wetlands	resident year round
American crow	*Corvus brachyrhynchos*	open habitat with tree component	resident year round
American golden-plover	*Pluvialis dominica*	wetland margin	uncommon migrant
American goldfinch	*Spinus tristis*	open riparian forest	migratory summer breeder
American kestrel	*Falco sparverius*	grasslands	resident year round
American pipit	*Anthus rubescens*	alpine	migratory summer breeder
American redstart	*Setophaga ruticilla*	riparian forest	migratory summer breeder
American robin	*Turdus migratorius*	generalist	resident year round
American tree aparrow	*Spizelloides arborea*	open forest	migratory winter resident
American wigeon	*Mareca americana*	lakes / open water wetland	resident year round
Baird's sandpiper	*Calidris bairdii*	wetland margin	common migrant
Baltimore oriole	*Icterus galbula*	riparian forest	migratory summer breeder
bank swallow	*Riparia riparia*	riparian/stream banks	migratory summer breeder
barn swallow	*Hirundo rustica*	human made structures	migratory summer breeder
belted kingfisher	*Megaceryle alcyon*	streams, riparian forest	resident year round
black-bellied plover	*Pluvialis squatarola*	river, lake, and reservoir margins	common migrant
black-billed magpie	*Pica hudsonia*	open habitat with tree component	resident year round
black-capped chickadee	*Poecile atricapillus*	mixed forest	resident year round
black-headed grosbeak	*Pheucticus melanocephalus*	riparian forest	migratory summer breeder
blue jay	*Cyanocitta cristata*	mixed forest	resident year round
blue-winged teal	*Spatula discors*	wetlands	migratory summer breeder
Bohemian waxwing	*Bombycilla garrulus*	open conifer forest	migratory winter resident
Bonaparte's gull	*Chroicocephalus philadelphia*	lakes, ponds, reservoirs	common migrant
Brewer's blackbird	*Euphagus cyanocephalus*	generalist	resident year round
brown-headed cowbird	*Molothrus ater*	grasslands	migratory summer breeder
buff-breasted sandpiper	*Calidris subruficollis*		uncommon migrant
bufflehead	*Bucephala albeola*	wetlands	resident year round
Bullock's oriole	*Icterus bullockii*	riparian forest	migratory summer breeder
cackling goose	*Branta hutchinsii*	wetlands	uncommon migrant
California gull	*Larus californicus*	lakes, ponds, reservoirs	migratory summer breeder
calliope hummingbird	*Selasphorus calliope*	conifer forest	migratory summer breeder

Bird Species Observed – No Special Status continued

Common Name	Scientific Name	Habitat	Distribution
Canada goose	*Branta canadensis*	wetlands	resident year round
canvasback	*Aythya valisineria*	wetlands	migratory summer breeder
cedar waxwing	*Bombycilla cedrorum*	open mixed-forest	resident year round
chipping sparrow	*Spizella passerina*	conifer forest	migratory summer breeder
cinnamon teal	*Spatula cyanoptera*	wetlands	migratory summer breeder
clay-colored sparrow	*Spizella pallida*	shrubland, riparian edge	migratory summer breeder
cliff swallow	*Petrochelidon pyrrhonota*	open habitat / river edge	migratory summer breeder
common goldeneye	*Bucephala clangula*	wetlands	resident year round
common grackle	*Quiscalus quiscula*	open forest	migratory summer breeder
common merganser	*Mergus merganser*	montane rivers	resident year round
common nighthawk	*Chordeiles minor*	grasslands	migratory summer breeder
common raven	*Corvus corax*	open habitat with tree component	resident year round
common redpoll	*Acanthis flammea*	open woodland and shrub	migratory winter resident
common yellowthroat	*Geothlypis trichas*	riparian shrub	migratory summer breeder
Cooper's hawk	*Accipiter cooperii*	forest	resident year round
dark-eyed junco	*Junco hyemalis*	forest	resident year round
dark-eyed junco (montana)	*Junco hyemalis montanus*		resident year round
dark-eyed junco (pink-sided)	*Junco hyemalis mearnsi*	forest	migratory summer breeder
double-crested cormorant	*Nannopterum auritum*	wetlands	migratory summer breeder
downy woodpecker	*Dryobates pubescens*	riparian forest	resident year round
dunlin	*Calidris alpina*	wetland margin	uncommon migrant
dusky flycatcher	*Empidonax oberholseri*	shrubland	migratory summer breeder
eared grebe	*Podiceps nigricollis*	wetlands	migratory summer breeder
eastern kingbird	*Tyrannus tyrannus*	grasslands	migratory summer breeder
Eurasian collared-dove	*Streptopelia decaocto*	human made structures	resident year round
European starling	*Sturnus vulgaris*	generalist	resident year round
gadwall	*Mareca strepera*	wetlands	resident year round
grasshopper sparrow	*Ammodramus savannarum*	grasslands	migratory summer breeder
gray catbird	*Dumetella carolinensis*	riparian shrub	migratory summer breeder
gray partridge	*Perdix perdix*	grasslands	resident year round
great egret	*Ardea alba*	wetlands	uncommon migrant
great horned owl	*Bubo virginianus*	forest	resident year round

Bird Species Observed – No Special Status continued

Common Name	Scientific Name	Habitat	Distribution
greater yellowlegs	*Tringa melanoleuca*	wetlands	common migrant
green-winged teal	*Anas crecca*	wetlands	resident year round
hairy woodpecker	*Dryobates villosus*	mixed forest	resident year round
hermit thrush	*Catharus guttatus*	conifer forest	migratory summer breeder
herring gull	*Larus argentatus*	lakes, ponds, reservoirs	migratory winter resident
horned lark	*Eremophila alpestris*	grasslands	resident year round
house finch	*Haemorhous mexicanus*	open forest	resident year round
house sparrow	*Passer domesticus*	human made structures	resident year round
house wren	*Troglodytes aedon*	deciduous forest	migratory summer breeder
killdeer	*Charadrius vociferus*	riparian forest	resident year round
Lapland longspur	*Calcarius lapponicus*	open fields	migratory winter resident
lark sparrow	*Chondestes grammacus*	grasslands	migratory summer breeder
lazuli bunting	*Passerina amoena*	riparian shrub	migratory summer breeder
least flycatcher	*Empidonax minimus*	riparian forest	migratory summer breeder
least sandpiper	*Calidris minutilla*	wetland margin	common migrant
lesser scaup	*Aythya affinis*	ponds / wetland	resident year round
lesser yellowlegs	*Tringa flavipes*	wetlands	common migrant
Lincoln's sparrow	*Melospiza lincolnii*	forest wetland	migratory summer breeder
long-billed dowitcher	*Limnodromus scolopaceus*	wetland margin	common migrant
long-eared owl	*Asio otus*	open woodland / hardwood draws	resident year round
Macgillivray's warbler	*Geothlypis tolmiei*	shrub woodland	migratory summer breeder
mallard	*Anas platyrhynchos*	shallow water ponds, reservoirs, wetlands	resident year round
marbled godwit	*Limosa fedoa*	grasslands	migratory summer breeder
marsh wren	*Cistothorus palustris*	wetlands	migratory summer breeder
merlin	*Falco columbarius*	forest	resident year round
mountain bluebird	*Sialia currucoides*	open forest	migratory summer breeder
mountain chickadee	*Poecile gambeli*	mixed conifer forests	resident year round
mourning dove	*Zenaida macroura*	open forest	resident year round
Nashville warbler	*Leiothlypis ruficapilla*	mixed forest / shrubland	migratory summer breeder
northern flicker	*Colaptes auratus*	mixed forest	resident year round
northern flicker (red-shafted)	*Colaptes auratus cafer*	mixed forest	resident year round
northern harrier	*Circus hudsonius*	grasslands	resident year round
northern pintail	*Anas acuta*	ponds / wetland	resident year round
northern rough-winged swallow	*Stelgidopteryx serripennis*	open habitat / generalist	migratory summer breeder
northern shoveler	*Spatula clypeata*	wetlands	migratory summer breeder

Bird Species Observed – No Special Status continued

Common name	Scientific Name	Habitat	Distribution
northern shrike	*Lanius borealis*	open shrubland	migratory winter resident
northern waterthrush	*Parkesia noveboracensis*	forest wetland	migratory summer breeder
olive-sided flycatcher	*Contopus cooperi*	early seral forest / shrub patches	migratory summer breeder
orange-crowned warbler	*Leiothlypis celata*	deciduous forest	migratory summer breeder
osprey	*Pandion haliaetus*	lakes and riparian wetlands	migratory summer breeder
pectoral sandpiper	*Calidris melanotos*	wetland margin	common migrant
peregrine falcon	*Falco peregrinus*	cliffs / canyons	resident year round
pied-billed grebe	*Podilymbus podiceps*	wetlands	resident year round
pine grosbeak	*Pinicola enucleator*	conifer forest	resident year round
pine siskin	*Spinus pinus*	mixed forest	resident year round
pomarine jaeger	*Stercorarius pomarinus*		Accidental
prairie falcon	*Falco mexicanus*	grasslands	resident year round
red crossbill	*Loxia curvirostra*	conifer forest	resident year round
red-breasted merganser	*Mergus serrator*	montane rivers	common migrant
red-breasted Nuthatch	*Sitta canadensis*	forest	resident year round
red-eyed vireo	*Vireo olivaceus*	riparian forest	migratory summer breeder
redhead	*Aythya americana*	wetlands	resident year round
red-naped sapsucker	*Sphyrapicus nuchalis*	mixed conifer forests	migratory summer breeder
red-necked grebe	*Podiceps grisegena*	lakes, ponds, reservoirs	migratory summer breeder
red-necked phalarope	*Phalaropus lobatus*	lakes, ponds, reservoirs	common migrant
red-tailed hawk	*Buteo jamaicensis*	open habitat / woody draws	resident year round
red-winged blackbird	*Agelaius phoeniceus*	wetlands	resident year round
ring-billed gull	*Larus delawarensis*	lakes, ponds, reservoirs	migratory summer breeder
ring-necked duck	*Aythya collaris*	wetlands	resident year round
ring-necked pheasant	*Phasianus colchicus*	shrub grassland	resident year round
rock pigeon	*Columba livia*	human made structures	resident year round
rock wren	*Salpinctes obsoletus*	rocky habitat	migratory summer breeder
ross's goose	*Anser rossii*	wetlands	common migrant
ruffed grouse	*Bonasa umbellus*	forest	resident year round
rough-legged hawk	*Buteo lagopus*	open habitat with tree component	migratory winter resident
ruby-crowned kinglet	*Corthylio calendula*	conifer forest	migratory summer breeder
ruddy duck	*Oxyura jamaicensis*	wetlands	migratory summer breeder
sanderling	*Calidris alba*	wetland margin	common migrant
sandhill crane	*Antigone canadensis*	wet meadows	migratory summer breeder

Bird Species Observed – No Special Status continued

Common Name	Scientific Name	Habitat	Distribution
savannah sparrow	*Passerculus sandwichensis*	grasslands	migratory summer breeder
Say's phoebe	*Sayornis saya*	shrub grassland, rock outcrop	migratory summer breeder
semipalmated plover	*Charadrius semipalmatus*	river, lake, and reservoir margins	common migrant
semipalmated sandpiper	*Calidris pusilla*	wetland margin	common migrant
sharp-shinned hawk	*Accipiter striatus*	forest	resident year round
short-billed dowitcher	*Limnodromus griseus*	wetland margin	uncommon migrant
snow goose	*Anser caerulescens*	wetlands	common migrant
snowy egret	*Egretta thula*	wetlands	migratory rare summer breeder
solitary sandpiper	*Tringa solitaria*	wetlands	migratory rare summer breeder
song sparrow	*Melospiza melodia*	riparian shrub	resident year round
sora	*Porzana carolina*	marsh	migratory summer breeder
spotted sandpiper	*Actitis macularius*	wetland margin	migratory summer breeder
spotted towhee	*Pipilo maculatus*	shrubland, riparian edge	migratory summer breeder
stilt sandpiper	*Calidris himantopus*	wetland margin	common migrant
Swainson's hawk	*Buteo swainsoni*	sagebrush grassland	migratory summer breeder
Swainson's thrush	*Catharus ustulatus*	mature forest	migratory summer breeder
Townsend's solitaire	*Myadestes townsendi*	open conifer forest	resident year round
tree swallow	*Tachycineta bicolor*	open habitat / wooded edge	migratory summer breeder
tundra swan	*Cygnus columbianus*	wetlands	common migrant
turkey vulture	*Cathartes aura*	open habitat / generalist	migratory summer breeder
vesper sparrow	*Pooecetes gramineus*	grasslands	migratory summer breeder
violet-green swallow	*Tachycineta thalassina*	conifer forest	migratory summer breeder
Virginia rail	*Rallus limicola*	wetlands	migratory summer breeder
warbling vireo	*Vireo gilvus*	riparian shrub	migratory summer breeder
western bluebird	*Sialia mexicana*	shrub woodland	migratory summer breeder
western flycatcher	*Empidonax difficilis*	riparian forest	migratory summer breeder
western grebe	*Aechmophorus occidentalis*	lakes, ponds, reservoirs	migratory summer breeder
western kingbird	*Tyrannus verticalis*	grasslands	migratory summer breeder
western meadowlark	*Sturnella neglecta*	grasslands	migratory summer breeder
western sandpiper	*Calidris mauri*	wetland margin	common migrant
western tanager	*Piranga ludoviciana*	conifer forest	migratory summer breeder
western wood-pewee	*Contopus sordidulus*	mixed forest	migratory summer breeder

Bird Species Observed – No Special Status continued

Common Name	Scientific Name	Habitat	Distribution
white-breasted nuthatch	*Sitta carolinensis*	forest	resident year round
white-crowned sparrow	*Zonotrichia leucophrys*	forest shrub	migratory summer breeder
white-throated swift	*Aeronautes saxatalis*	cliffs / canyons	migratory summer breeder
wild turkey	*Meleagris gallopavo*	open habitat / generalist	resident year round
willet	*Tringa semipalmata*	grasslands	migratory summer breeder
willow flycatcher	*Empidonax traillii*	riparian shrub	migratory summer breeder
Wilson's phalarope	*Phalaropus tricolor*	wetlands	migratory summer breeder
Wilson's snipe	*Gallinago delicata*	wet meadows	resident year round
Wilson's warbler	*Cardellina pusilla*	riparian shrub	migratory summer breeder
wood duck	*Aix sponsa*	wetlands	resident year round
yellow warbler	*Setophaga petechia*	riparian shrub	migratory summer breeder
yellow-breasted chat	*Icteria virens*	riparian shrub	migratory summer breeder
yellow-headed blackbird	*Xanthocephalus xanthocephal*	wetlands	migratory summer breeder
yellow-rumped warbler	*Setophaga coronata*	conifer forest	migratory summer breeder
yellow-rumped warbler (Audubon's)	*Setophaga coronata audubon*	conifer forest	migratory summer breeder
yellow-rumped warbler (myrtle)	*Setophaga coronata coronata*	conifer forest	common migrant

Birds – Potentially Present Species of Concern

Common Name	Scientific Name	Habitat	Distribution	MT Status
Sprague's pipit	*Anthus spragueii*	grasslands	migratory summer breeder	SOC
yellow-billed cuckoo	*Coccyzus americanus*	prairie riparian forest	migratory rare summer breeder	SOC
black-billed cuckoo	*Coccyzus erythropthalmus*	riparian forest	migratory summer breeder	SOC
Lewis's woodpecker	*Melanerpes lewis*	riparian forest	migratory summer breeder	SOC
American bittern	*Botaurus lentiginosus*	wetlands	migratory summer breeder	SOC
black tern	*Chlidonias niger*	wetlands	migratory summer breeder	SOC
ovenbird	*Seiurus aurocapilla*	deciduous forest	migratory summer breeder	PSOC
broad-tailed hummingbird	*Selasphorus platycercus*	montane shrublands / woodlands	migratory summer breeder	PSOC
western screech-owl	*Megascops kennicottii*	riparian forest	resident year round	PSOC
common poorwill	*Phalaenoptilus nuttallii*	shrub grassland	migratory summer breeder	PSOC

Birds – Potentially Present Species of No Special Status

Common Name	Scientific Name	Habitat	Distribution
American dipper	*Cinclus mexicanus*	riparian conifer forest	resident year round
American three-toed woodpecker	*Picoides dorsalis*	conifer forest burns	resident year round
barn owl	*Tyto alba*	sagebrush grassland	resident year round
black-chinned hummingbird	*Archilochus alexandri*	riparian forest	migratory summer breeder
fox sparrow	*Passerella iliaca*	forest shrub	migratory summer breeder
lark bunting	*Calamospiza melanocorys*	sagebrush grassland	migratory summer breeder
lesser goldfinch	*Spinus psaltria*	open forest	migratory rare summer breeder
northern mockingbird	*Mimus polyglottos*	generalist	migratory rare summer breeder
upland sandpiper	*Bartramia longicauda*	grasslands	migratory summer breeder

Mammals – Observed Species of Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
hoary bat	Lasiurus cinereus	riparian and forest	migratory summer breeder	SOC
long-eared Myotis	Myotis evotis	forest	resident year round	SOC
little brown myotis	Myotis lucifugus	generalist	resident year round	SOC
North American porcupine	Erethizon dorsatum	mixed forest	resident year round	PSOC
silver-haired bat	Lasionycteris noctivagans	riparian and forest	resident year round	PSOC

Mammals – Potentially Present Species of Status

Common Name	Scientific Name	Habitat	Distribution	MT Status
Townsend's big-eared bat	*Corynorhinus townsendii*	caves in forested habitats	resident year round	SOC
spotted bat	*Euderma maculatum*	cliffs with rock crevices	migratory summer breeder	SOC
long-legged myotis	*Myotis volans*	conifer forest	resident year round	SOC
fringed myotis	*Myotis thysanodes*	riparian and dry mixed conifer forest	resident year round	SOC
dwarf shrew	*Sorex nanus*	rocky habitat	resident year round	SOC
Preble's shrew	*Sorex preblei*	sagebrush grassland	resident year round	SOC
western spotted skunk	*spilogale gracilis*	riparian shrub	resident year round	PSOC

Mammals – Observed Species of No Special Status

Common Name	Scientific Name	Habitat	Distribution
American badger	*Taxidea taxus*	sagebrush grassland	resident year round
American black bear	*Ursus americanus*	conifer forest	occasional
American mink	*Neogale vison*	riparian forest	resident year round
beaver	*Castor canadensis*	streams, lakes, ponds	resident year round
big brown bat	*Eptesicus fuscus*	generalist	resident year round
bobcat	*Lynx rufus*	generalist	resident year round
coyote	*Canis latrans*	generalist	resident year round
deer mouse	*Peromyscus maniculatu*	generalist	resident year round
elk	*Cervus elaphus*	generalist	occasional year round
house mouse	*Mus musculus*	generalist	resident year round
long-tailed weasel	*Neogale frenata*	open habitat / generalist	resident year round
masked shrew	*Sorex cinereus*	generalist	resident year round
meadow vole	*Microtus pennsylvanicu*	wet meadows	resident year round
moose	*Alces alces*	riparian, wet meadows	resident year round
mountain cottontail	*Sylvilagus nuttallii*	sagebrush, willow, riparian	resident year round
mountain lion	*Puma concolor*	forest, river bottoms	rare
mule deer	*Odocoileus hemionus*	montane shrublands / woodlands	resident year round
muskrat	*Ondatra zibethicus*	streams, lakes, ponds	resident year round
northern river otter	*Lontra canadensis*	streams, riparian forest	resident year round
pronghorn	*Antilocapra americana*	grasslands	occasional year round
raccoon	*Procyon lotor*	generalist	resident year round
red fox	*Vulpes vulpes*	generalist	resident year round
Richardson's ground squirrel	*Urocitellus richardsoni*	grasslands	resident year round
southern red-backed vole	*Clethrionomys gapperi*	moist mature forest	resident year round
striped skunk	*Mephitis mephitis*	open habitat / generalist	resident year round
vagrant shrew	*Sorex vagrans*	moist forest	resident year round
western small-footed myotis	*Myotis ciliolabrum*	mixed forest	resident year round
white-tailed deer	*Odocoileus virginianus*	generalist	resident year round
white-tailed jackrabbit	*Lepus townsendii*	grasslands	resident year round
yellow-bellied marmot	*Marmota flaviventris*	talus slopes / rock outcrops	resident year round
yellow-pine chipmunk	*Neotamias amoenus*	dry conifer shrub	resident year round

Mammals – Potentially Present Species of No Special Status

Common Name	**Scientific Name**	**Habitat**	**distribution**
bushy-tailed woodrat	*Neotoma cinerea*	generalist	resident year round
California myotis	*Myotis californicus*	mature forest	resident year round
Columbian ground squirrel	*Urocitellus columbianus*	valley to alpine meadows	resident year round
least weasel	*Mustela nivalis*	open forest	resident year round
long-tailed vole	*Microtus longicaudus*	generalist	resident year round
northern grasshopper mouse	*Onychomys leucogaster*	sagebrush grassland	resident year round
northern pocket gopher	*Thomomys talpoides*	open habitat / generalist	resident year round
prairie vole	*Microtus ochrogaster*	grasslands	resident year round
red squirrel	*Tamiasciurus hudsonicus*	forest	resident year round
sagebrush vole	*Lemmiscus curtatus*	sagebrush	resident year round

Appendix G: Canyon Ferry WMA soils information

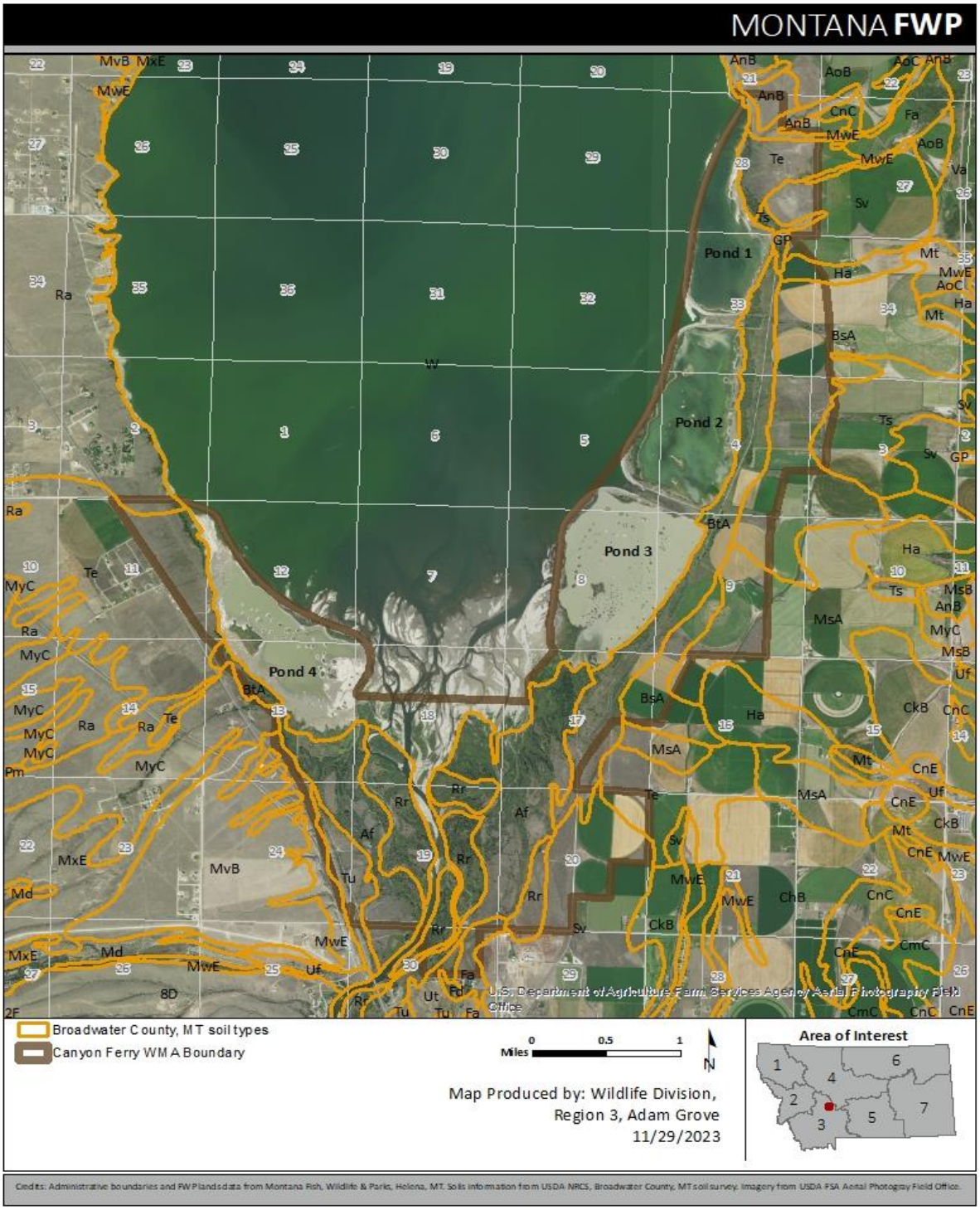

Figure 8: Soils map of Canyon Ferry WMA – see soils key.

Canyon Ferry WMA Soils Key:

Af – Aeric Fluvaquents

AnB – Amesha cobbly sandy loam, 1 to 4 percent slopes

BsA – Brocko silt loam, 0 to 2 percent slopes

BtA- Brocko silt loam, wet, 0 to 2 percent slopes

Fa – Fairdale silt loam

Gp – Gravel pit

Ha – Havre loam

MsA – Mussel loam, 0 to 2 percent slopes

MwE – Musselshell-Crago channery loams, 15 to 35 percent

Ra – Radersburg very cobbly loam,

Rr – Rivra gravelly loam

Sv – Scravo cobbly loam

Te – Thess silt loam

Ts – Thess-scravo complex

Tu – Toston silty clay loam

Ut – Ustic Torriorthents saline

Appendix H: Water rights

Reclamation holds the water rights to canal water which originates from the Missouri River and supplies the main pond systems. Water rights totaling 306-acre feet from the Missouri River and Gurnett Creek (which supplies small ponds) were filed for in 1987 (see water rights on following pages). A groundwater right was filed in 1995 for a well on the old ’51 Ranch’ portion of Canyon Ferry WMA that FWP owns.

FORM NO. 601 R6/86

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620

Permit to Appropriate Water

THIS PROVISIONAL PERMIT TO APPROPRIATE WATER IS HEREBY ISSUED TO:

US DEPT OF INTERIOR BUREAU OF RECLAMATION
PO BOX 36900
BILLINGS MT 59107-6900

UPON FINDING THAT THE REQUIREMENTS OF SECTION 85-2-311 MCA HAVE BEEN MET.

PERMIT NUMBER: 66118-S41I

PRIORITY DATE: AUGUST 24, 1987 AT 11:53 A.M.

SOURCE: MISSOURI RIVER

TOTAL FLOW RATE: 2.00 CFS

TOTAL VOLUME: 153.00 ACRE FEET PER YEAR

DIVERSION POINT: SWSESE SEC. 19 TWP. 07N RGE. 02E BROADWATER CO

PERIOD OF APPROPRIATION: MAR 01 - NOV 15

USE: 2.00 CFS UP TO 153.00 AC-FT (MAR 01 - NOV 15)
FOR WATERFOWL

PLACE OF USE: SWSESW SEC. 17 TWP. 07N RGE. 02E BROADWATER CO
FOR WATERFOWL

W2NENW SEC. 20 TWP. 07N RGE. 02E BROADWATER CO
FOR WATERFOWL

DIVERSION MEANS: HEADGATE WITH DITCH OR PIPELINE

RESERVOIR: OFF STREAM CAPACITY OF 8.7 AC-FT
W2NENW SEC. 20 TWP. 07N RGE. 02E BROADWATER CO

** REQUIREMENTS FOR PERMIT HOLDER:
THE DEADLINE FOR COMPLETION OF THIS PERMIT, AND FILING OF THE NOTICE OF COMPLETION OF PERMITTED WATER DEVELOPMENT (FORM 617) SHALL BE NOVEMBER 30, 1989, VERIFYING THAT THE APPROPRIATION OF WATER HAS BEEN COMPLETED AS PERMITTED.

** PRIOR RIGHTS:
THIS PERMIT IS SUBJECT TO ALL PRIOR EXISTING WATER RIGHTS IN THE SOURCE OF SUPPLY. FURTHER; THIS PERMIT IS SUBJECT TO ANY FINAL DETERMINATION OF EXISTING WATER RIGHTS, AS PROVIDED BY MONTANA LAW.

FAILURE TO COMPLY WITH ANY TERMS AND CONDITIONS HEREIN MAY RESULT IN THE LOSS OF THE WATER RIGHT GRANTED BY THIS PERMIT.

** TRANSFER OF OWNERSHIP:
UPON A CHANGE IN OWNERSHIP OF ALL OR ANY PORTION OF THIS PERMIT, THE PARTIES TO THE TRANSFER SHALL FILE WITH THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION A WATER RIGHT TRANSFER CERTIFICATE, FORM 608, PURSUANT TO SECTION 85-2-424, MCA.

WITNESS

ADMINISTRATIVE ASST: RONALD J GUSE

DATE: OCTOBER 22,1987 WATER RIGHTS BUREAU, WATER RESOURCES DIVISION

FORM NO. 601 R6/86

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620

Permit to Appropriate Water

THIS PROVISIONAL PERMIT TO APPROPRIATE WATER IS HEREBY ISSUED TO:

US DEPT OF INTERIOR BUREAU OF RECLAMATION
PO BOX 36900
BILLINGS MT 59107-6900

UPON FINDING THAT THE REQUIREMENTS OF SECTION 85-2-311 MCA HAVE BEEN MET.

PERMIT NUMBER: 66119-S41I

PRIORITY DATE: AUGUST 24, 1987 AT 11:54 A.M.

SOURCE: GURNETT CREEK

TOTAL FLOW RATE: 2.00 CFS

TOTAL VOLUME: 153.00 ACRE FEET PER YEAR

DIVERSION POINT: NENESE SEC. 28 TWP. 08N RGE. 02E BROADWATER CO

PERIOD OF APPROPRIATION: MAR 01 - NOV 15

USE: 2.00 CFS UP TO 153.00 AC-FT (MAR 01 - NOV 15)
FOR WATERFOWL

PLACE OF USE: N2NESE SEC. 28 TWP. 08N RGE. 02E BROADWATER CO
FOR WATERFOWL

DIVERSION MEANS: HEADGATE WITH DITCH OR PIPELINE

RESERVOIR: OFF STREAM CAPACITY OF 7.4 AC-FT
N2NESE SEC. 28 TWP. 08N RGE. 02E BROADWATER CO

** REQUIREMENTS FOR PERMIT HOLDER:
THE DEADLINE FOR COMPLETION OF THIS PERMIT, AND FILING OF THE NOTICE OF COMPLETION OF PERMITTED WATER DEVELOPMENT (FORM 617) SHALL BE NOVEMBER 30, 1989, VERIFYING THAT THE APPROPRIATION OF WATER HAS BEEN COMPLETED AS PERMITTED.

** PRIOR RIGHTS:
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FAILURE TO COMPLY WITH ANY TERMS AND CONDITIONS HEREIN MAY RESULT IN THE LOSS OF THE WATER RIGHT GRANTED BY THIS PERMIT.

** TRANSFER OF OWNERSHIP:
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WITNESS

ADMINISTRATIVE ASST: RONALD J GUSE

DATE: OCTOBER 22,1987 WATER RIGHTS BUREAU, WATER RESOURCES DIVISION

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 41I 96167-00 GROUND WATER CERTIFICATE
Version: 1 -- ORIGINAL RIGHT
Version Status: ACTIVE

Owners: MONTANA, STATE OF DEPT OF FISH WILDLIFE & PARKS
PO BOX 200701
HELENA, MT 59620-0701

Priority Date: OCTOBER 4, 1995 at 10:27 A.M.
Enforceable Priority Date: OCTOBER 4, 1995 at 10:27 A.M.

Purpose (use): STOCK
Maximum Flow Rate: 30.00 GPM
Maximum Volume: 3.40 AC-FT

Source Name: GROUNDWATER
Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

ID	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1		SWSENE	11	7N	1E	BROADWATER

Period of Diversion: JANUARY 1 TO DECEMBER 31
Diversion Means: WELL
Well Depth: 58.00 FEET
Static Water Level: 33.00 FEET
Casing Diameter: 6.62 INCHES

Purpose (Use): STOCK
Volume: 3.40 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

ID	Acres	Govt Lot	Qtr Sec	Sec	Twp	Rge	County
1			SWSENE	11	7N	1E	BROADWATER

Remarks:

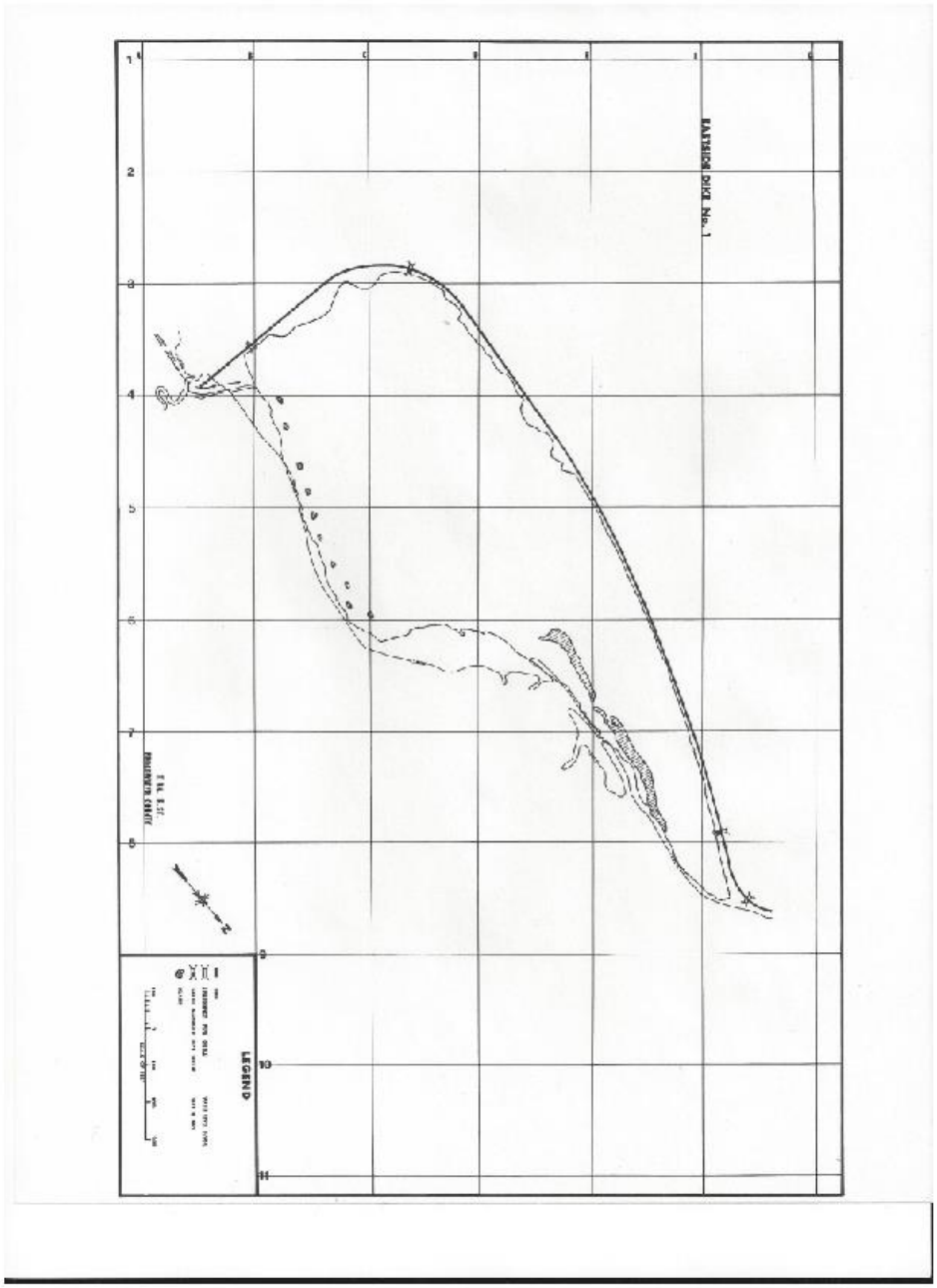
MISCELLANEOUS INFORMATION
THIS CERTIFICATE IS FOR THE SAME WELL AND REPLACES 41I-T084738-00. 12/14/95

OWNERSHIP UPDATE RECEIVED
NOTICE OF WATER RIGHT TRANSFER RECEIVED 01/18/96.

OWNERSHIP UPDATE RECEIVED
NOTICE OF WATER RIGHT TRANSFER RECEIVED 01/18/96.

Appendix I: Old maps of the four large Canyon Ferry WMA ponds.

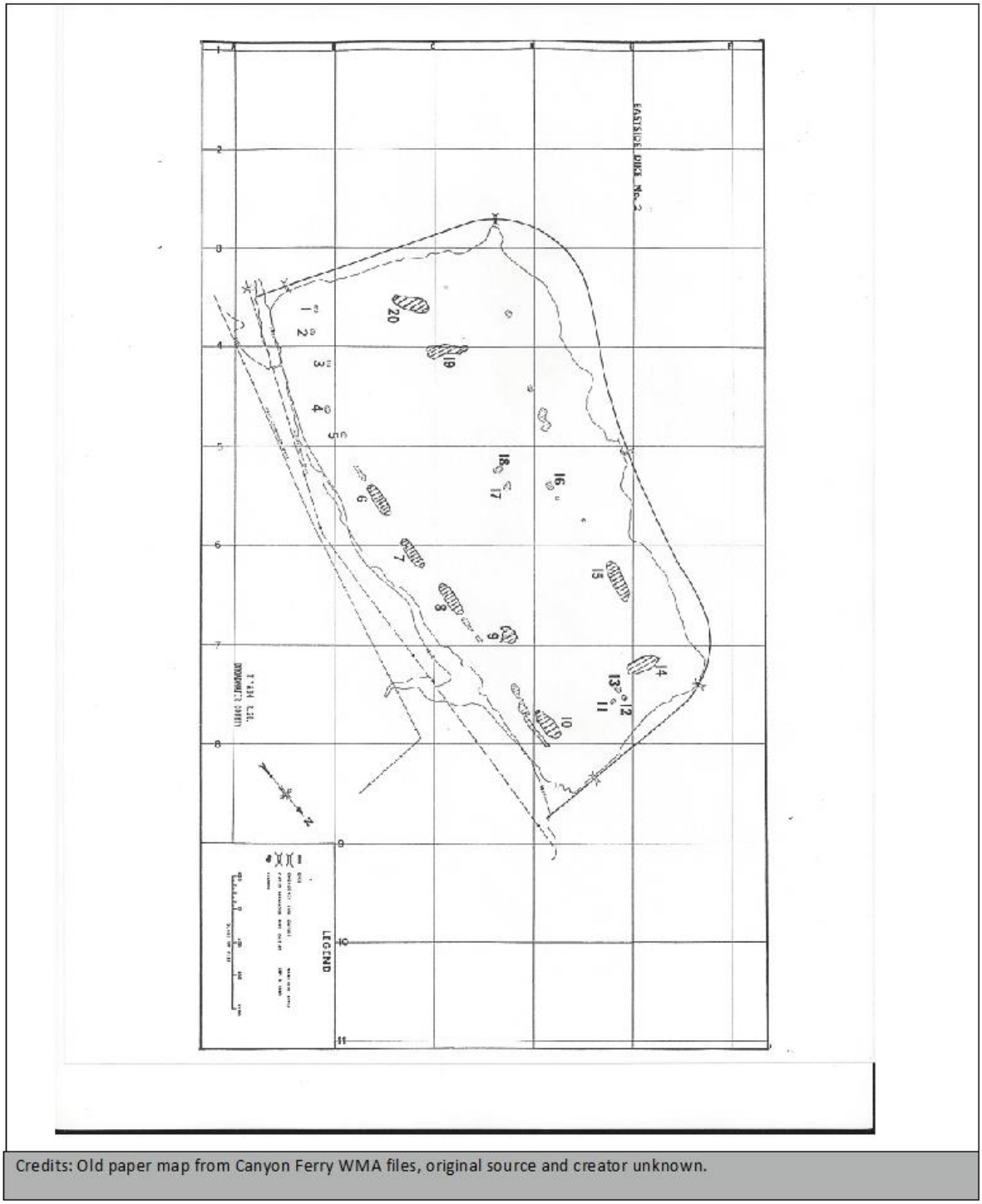
Canyon Ferry WMA - Pond 1 MONTANA **FWP**



Credits: Old paper map from Canyon Ferry WMA files, original source and creator unknown.

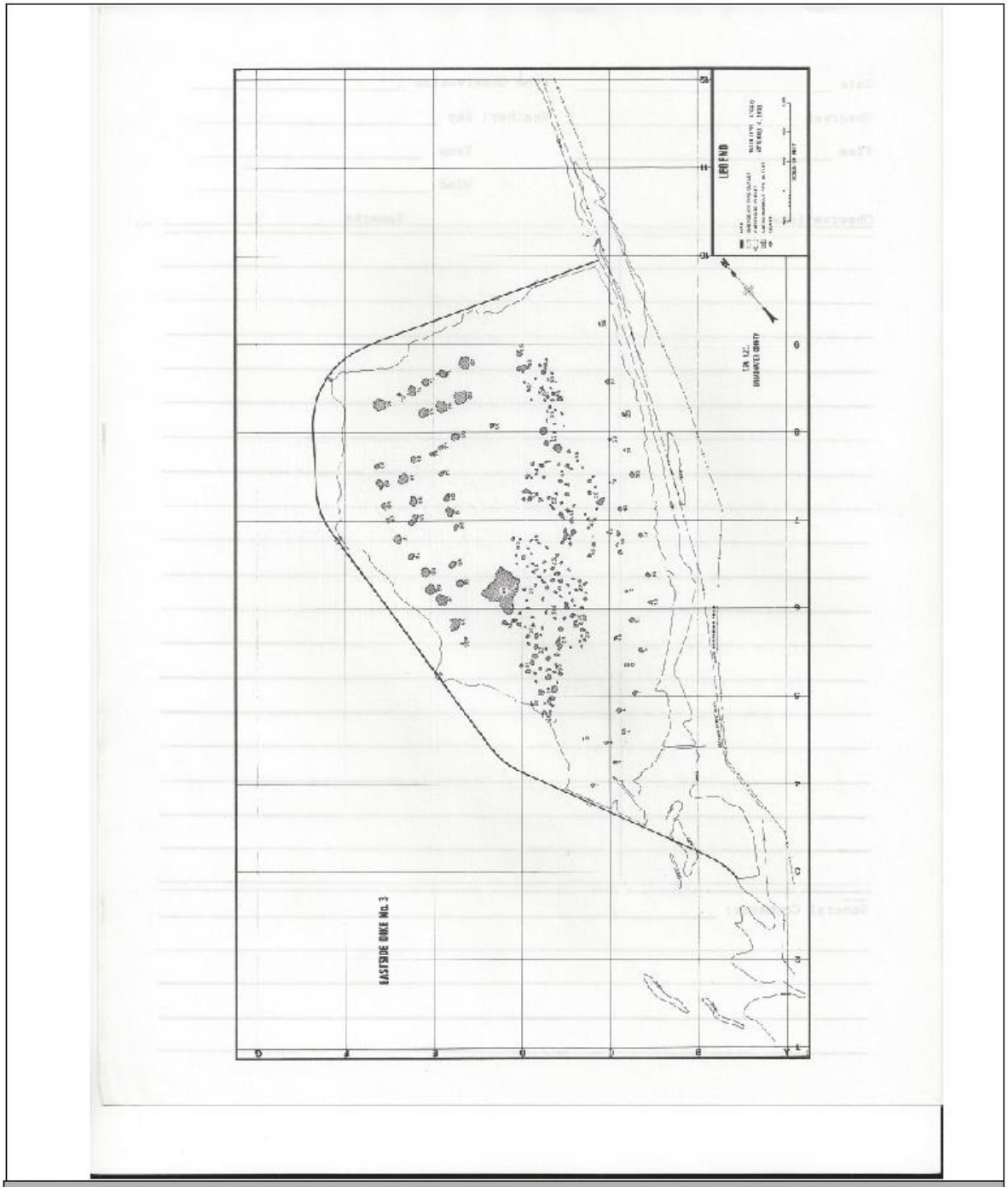
Figure 9. Map of Pond 1.

Canyon Ferry WMA - Pond 2 MONTANA **FWP**



Credits: Old paper map from Canyon Ferry WMA files, original source and creator unknown.

Figure 10. Map of Pond 2.



Credits: Old paper map from Canyon Ferry WMA files, original source and creator unknown.

Figure 11. Overall map of Pond 3.

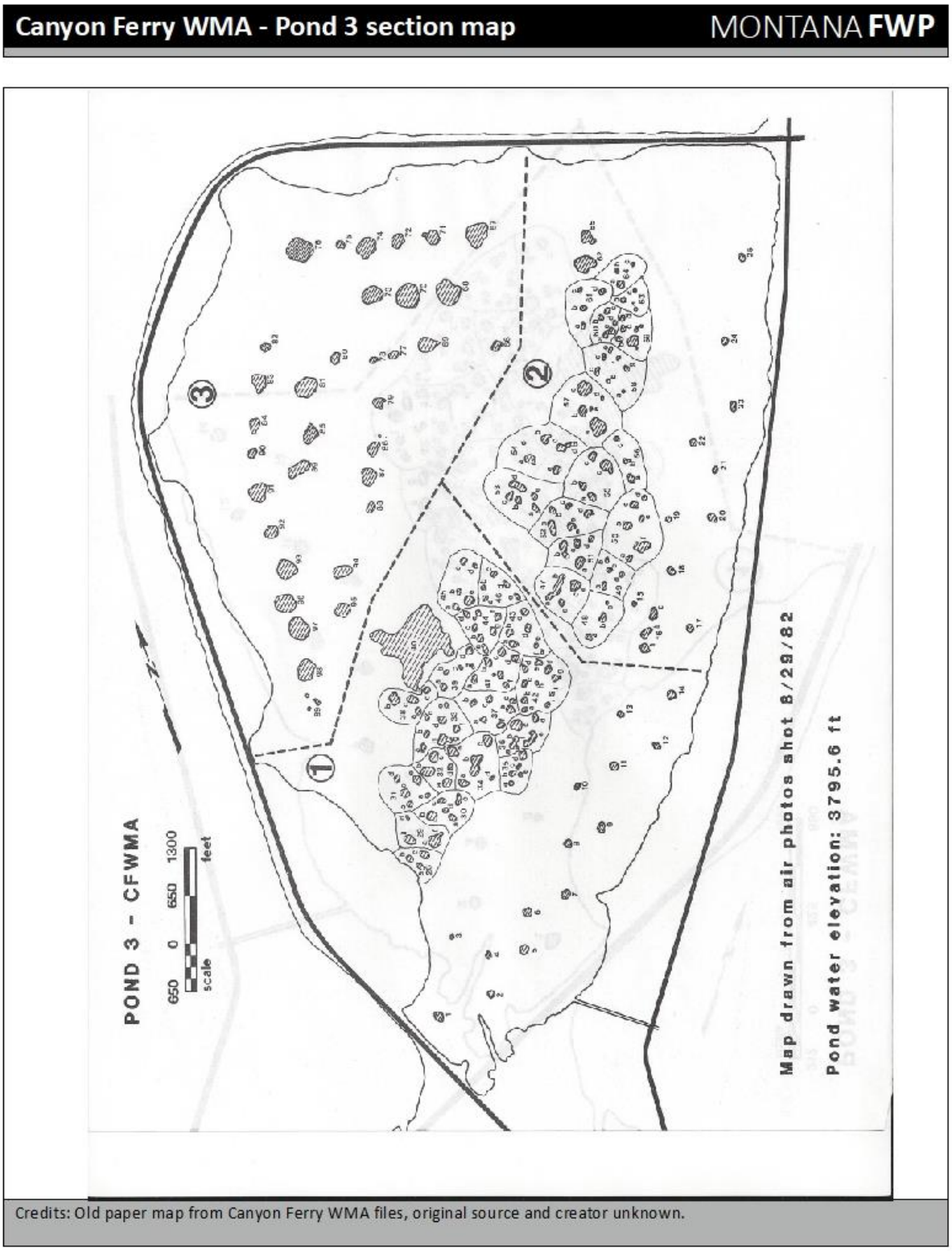


Figure 12. Sectional map of Pond 3.

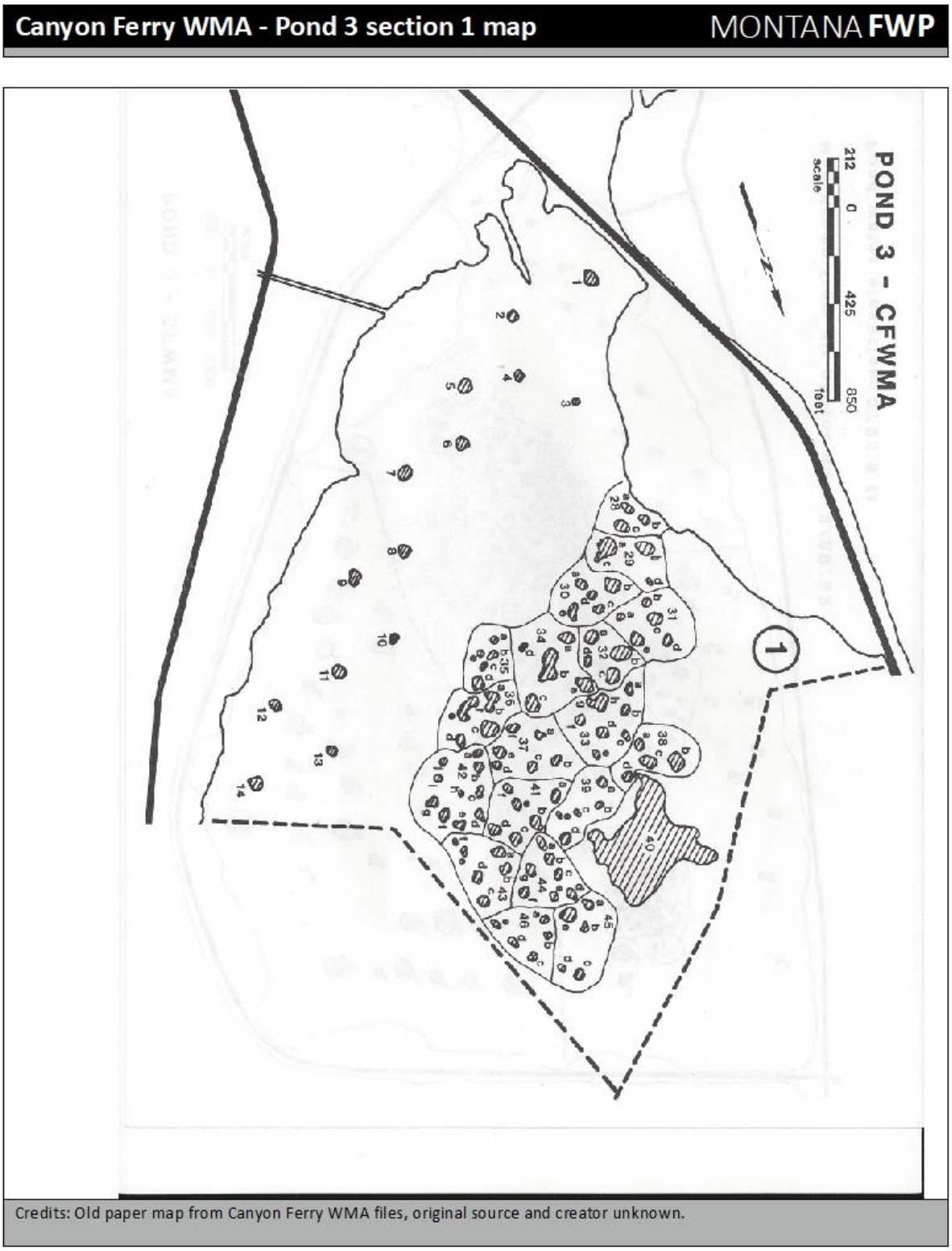


Figure 13. Map of Pond 3 section 1.

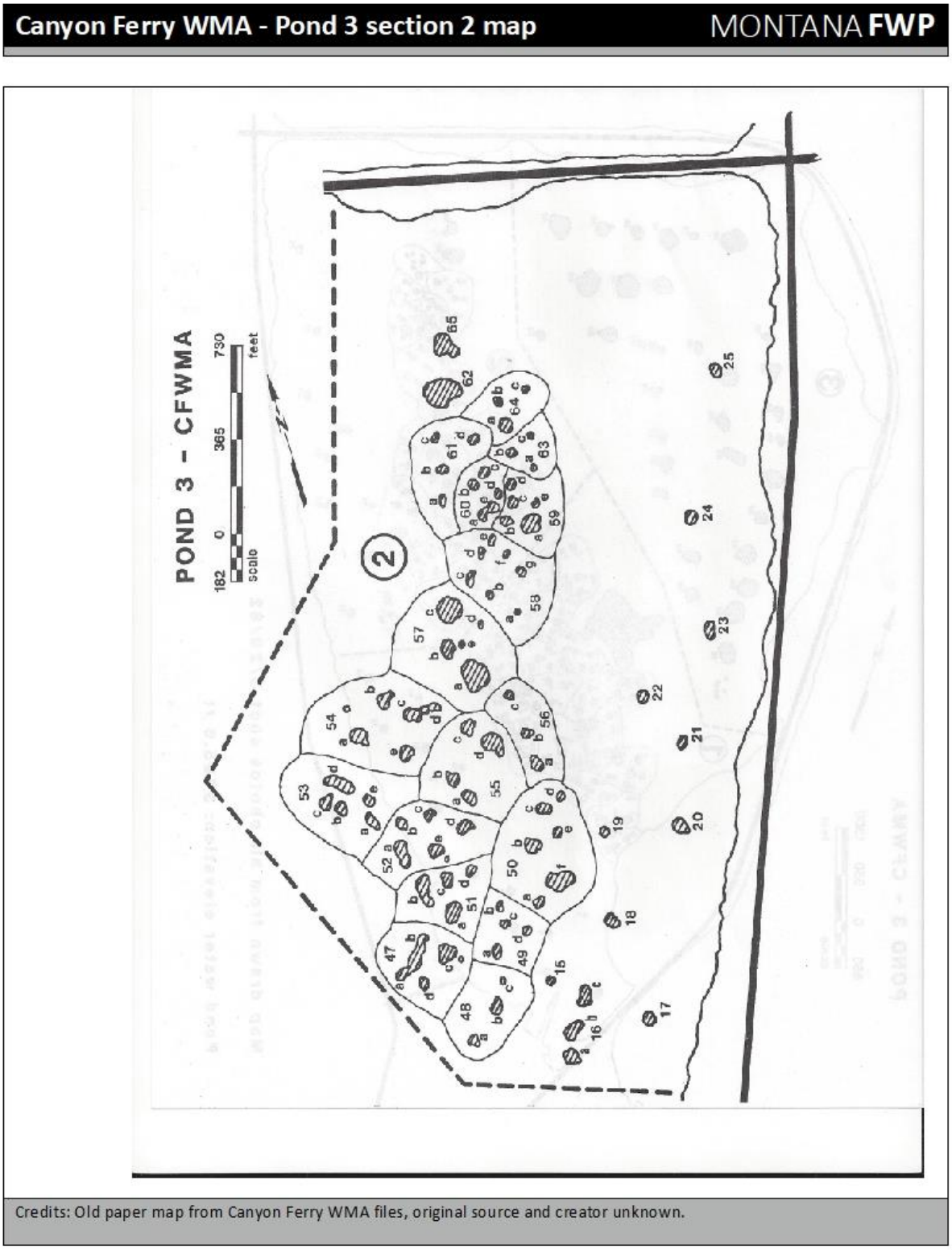


Figure 14. Map of Pond 3 section 2.

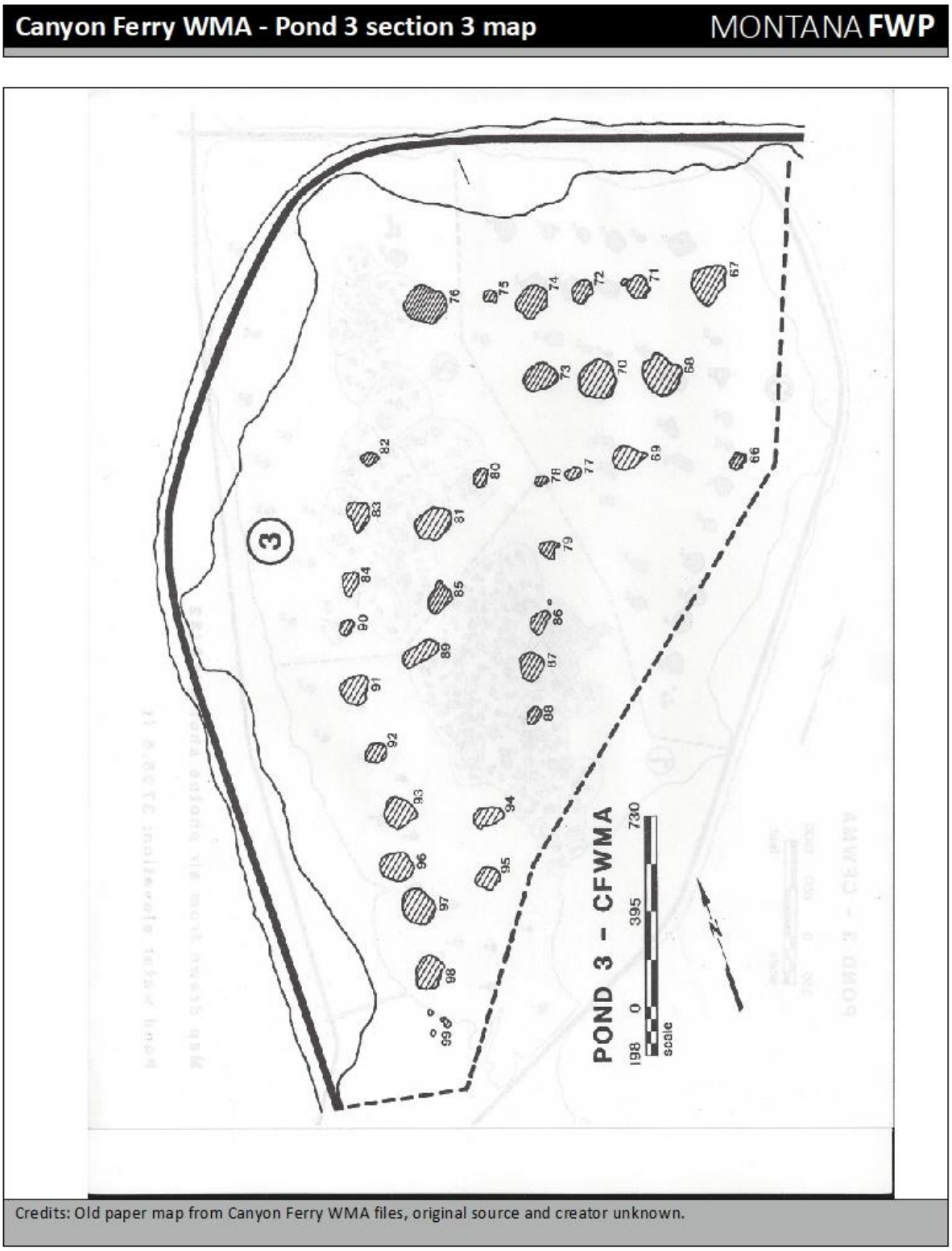


Figure 15. Map of Pond 3 section 3.

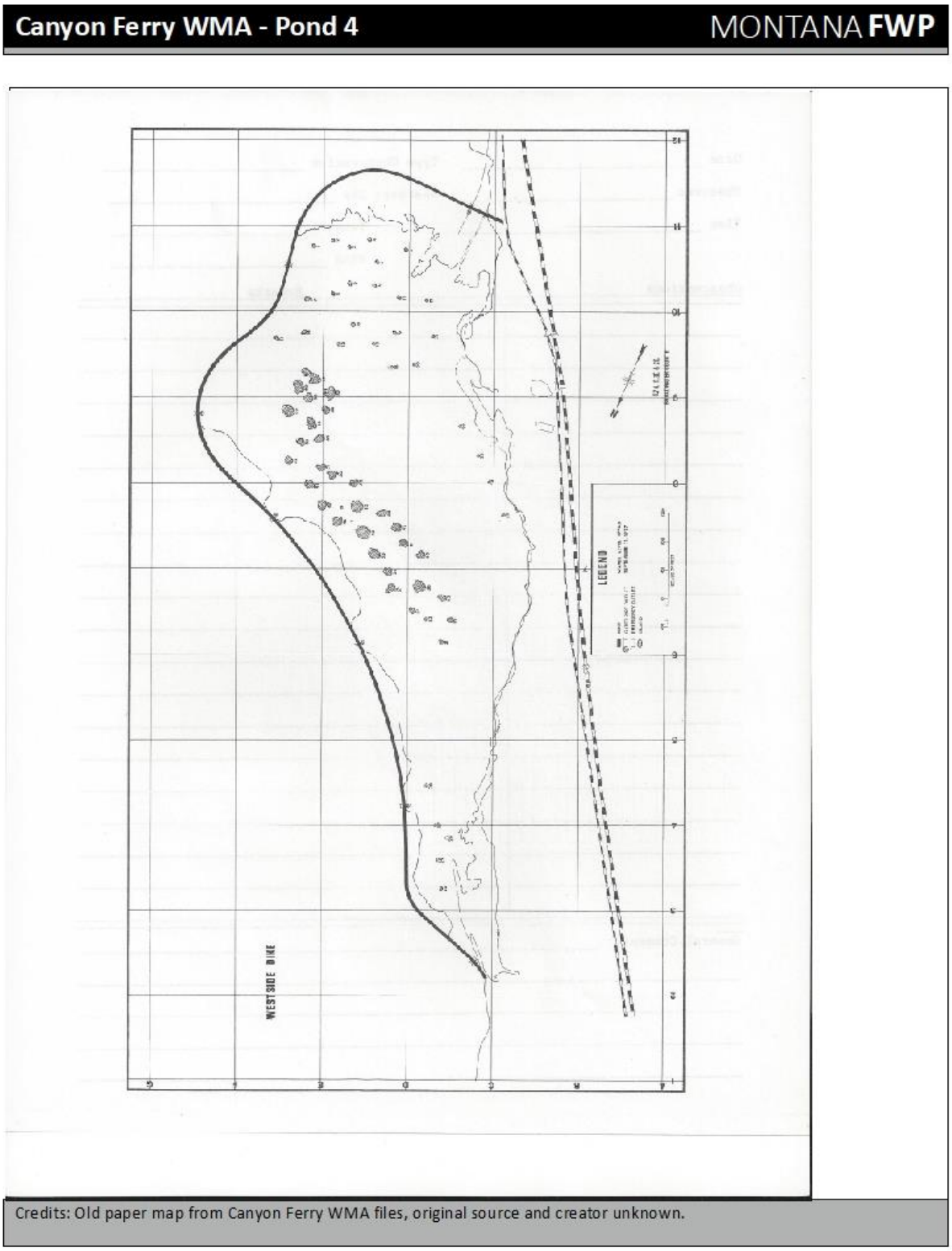


Figure 16. Map of Pond 4.