RECLAMATION
Managing Water in the West

Environmental Assessment 18-32-MP

Refuge Acquisition Agreement for Tertiary Treated Water for East Bear Creek Unit of the San Luis National Wildlife Refuge Complex (2018-2023)

Refuge Water Supply Program
Bureau of Reclamation, Mid-Pacific Region
Sacramento, California

September 2018

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Section 1 Introduction

The Bureau of Reclamation (Reclamation) proposes entering into an agreement with Santa Rita Water, LCC (Santa Rita) for the purchase of tertiary treated recycled water for the East Bear Creek Unit of the San Luis National Wildlife Refuge Complex (Refuge) (Proposed Action). The term of the Agreement will be one year with possible extensions up to five years and is expected to be executed in the fall of 2018. This Environmental Assessment (EA) covers the five-year period (2018-2023) for which the Agreement may be extended as agreed upon by Santa Rita and Reclamation.

The Proposed Action, located in Merced County, California (Figure 1), would allow for the purchase of Level 4 (L4) tertiary treated water (Acquired Water). Santa Rita proposes to provide the Refuge up to 6,000 acre-feet per year (AFY) of Acquired Water. The Acquired Water would leave the Gallo Farms Point of Discharge and likely join other instream flows in Bear Creek. The Acquired Water would travel down Bear Creek to the Refuge pump station approximately five miles west. This Agreement is essentially the same action as 2017 when Reclamation and Santa Rita had an Agreement (EA/FONSI 17-13-MP) for the purchase of tertiary treated recycled water for the Refuge, just a continuation of the same Agreement.

1.1 Need for the Proposal

The need for the Proposed Action is to provide L4 water supplies to the Refuge in accordance with requirements under Section 3406(d) of the Central Valley Improvement Act (CVPIA).

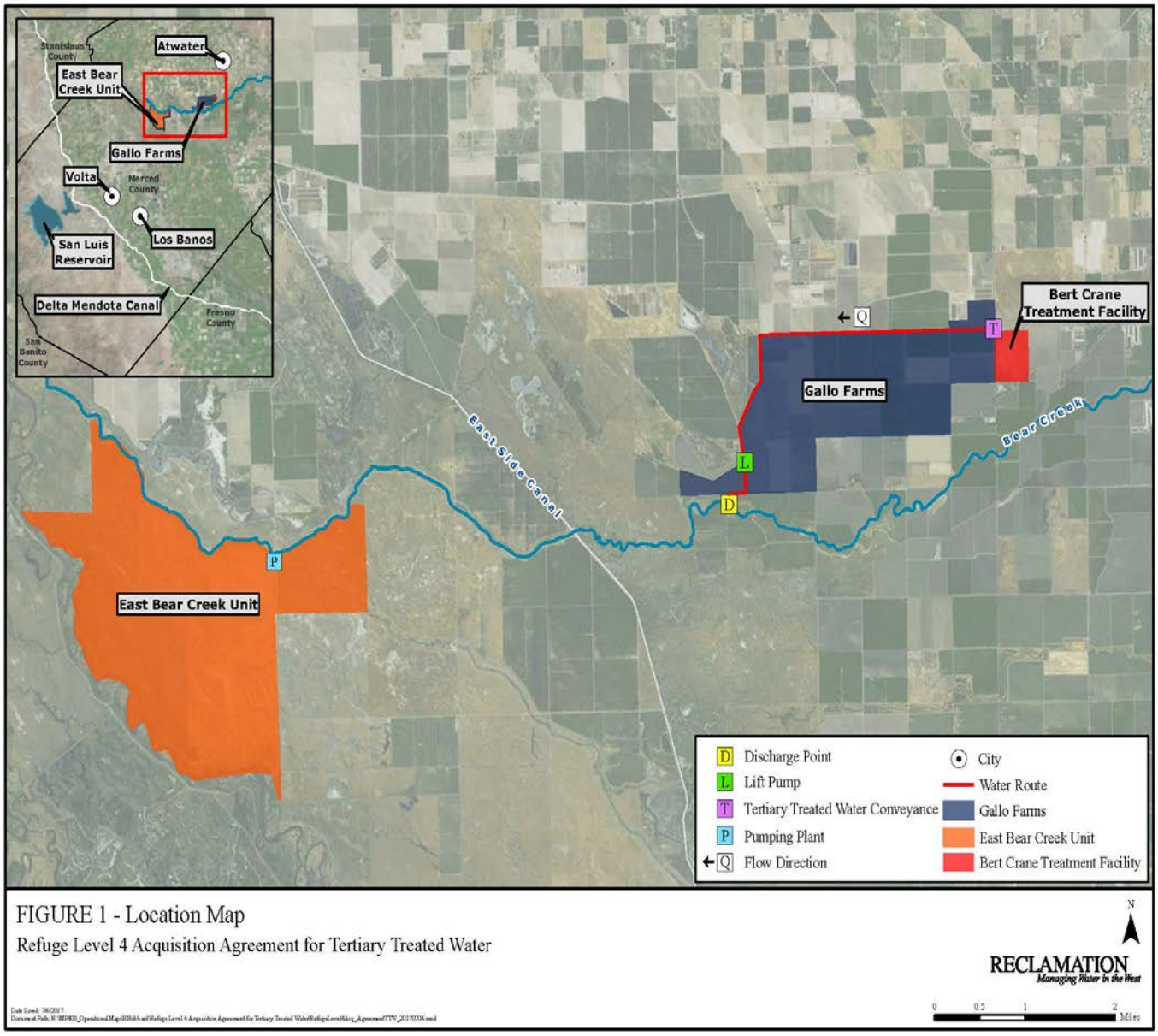

FIGURE 1 - Location Map

Refuge Level 4 Acquisition Agreement for Tertiary Treated Water

Section 2 Proposed Action and Alternatives

2.1 No Action Alternative

The No Action Alternative would consist of Reclamation not entering into an Agreement with Santa Rita to fund the acquisition of L4 tertiary treated recycled water supplies to help meet Refuge demand. The delivery of water to the Refuge from Santa Rita for purposes defined in this EA would not occur.

2.2 Proposed Action Alternative

The Proposed Action involves Reclamation entering into a one-year agreement with possible extensions for up to five years (2018-2023) with Santa Rita to purchase up to 6,000 AFY of tertiary treated recycled water for the Refuge. The Acquired Water would be pumped onto Refuge land and used for the benefit of wildlife. The Proposed Action would also provide up to 6,000 AFY of IL4 water to SOD CVPIA refuges[1].

The Acquired Water would leave the Gallo Point of Discharge into a natural channel where there is an existing pipe inlet and standpipe to Bear Creek. The Acquired Water will then blend with other instream flows in Bear Creek and the combined waters would travel to the Refuge pump station, approximately five miles west. The original source of the Acquired Water comes from the City of Atwater's Bert Crane Treatment Facility.

The Acquired Water would be metered at the discharge point on Gallo Farms to measure the volume of tertiary treated recycled water being discharged. A conveyance loss factor of 10% has been estimated based on a review of the type of channel flow, time of year and current condition of the channel. Water quality sampling of the Acquired Water will be conducted according to the attached monitoring plan (Appendix A), as was done in 2017/2018, to provide representative concentrations of the tertiary treated recycled water quality being discharged to Bear Creek.

[1] No recycled water from this Proposed Action will be delivered to State refuges or the Grassland Resource Conservation District. The L2 water being exchanged for IL4 will come from CVP Project Supply.

Section 3 Affected Environment and Environmental Consequences

This section discusses the affected environment and environmental consequences of the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist. Potential impacts to the following resources were considered and found to be minor. Brief explanations are provided below:

- Indian Trust Assets (ITA): ITAs are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. The closest ITA to the Proposed Action activity is about 50 miles away. Based on the nature of the Proposed Action it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the Proposed Action on actual Indian lands. The Proposed Action does not have the potential to affect ITAs.

- Indian Sacred Sites: The Proposed Action would not affect and/or prohibit access to and ceremonial use of Indian sacred sites.

- Cultural Resources: Reclamation has determined that the Proposed Action is the type of undertaking that does not have the potential to cause effects on historic properties, should such properties be present, pursuant to 36 CFR § 800.3(a)(1). As such, Reclamation has no further obligations under 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA).

- Environmental Justice: Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. No significant changes in refuge management or in agricultural communities or practices would result from the Proposed Action. Accordingly, the Proposed Action would not have disproportionately negative impacts on low-income or minority populations within the study area.

The overall study area includes specific analysis for each resource that may be directly or indirectly affected by the use of Acquired Water for habitat management purposes within the Refuge. The overall study area also includes Santa Rita's boundaries. The Refuge and Gallo Farms are located in Merced County (Figure 1). The counties are bounded by the Sierra Nevada Mountains to the east and the Pacific coastal range to the west. The study area region is characterized by flat valley lowland wetlands and agricultural lands, with a climate that is cool and moist in the winter and hot and dry in the summer.

3.1 Surface Water Resources

3.1.1 Affected Environment

Bear Creek has some minimal flood control features to limit potential for damages as it makes its way through the City of Merced, but is otherwise largely uncontrolled. At times, Bear Creek within the Proposed Action area has flows during the summer due to spill from Merced Irrigation District's delivery system. Flood flows that are not diverted make their way to the San Joaquin River. There are water rights associated with Bear Creek with diversions at various points including the Eastside Canal, but much of the flow in the lower reaches of Bear Creek are the result of releases of Merced River water into Bear Creek as operational spills or for subsequent diversion by downstream water users. Since fall of 2016, San Joaquin River Restoration Project (SJRRP) Restoration Flows have entered Bear Creek upstream of the Refuge. SJRRP anticipates that there will be year-round flows in most years, thus causing Bear Creek to no longer be an ephemeral channel due to the SJRRP flows.

Water quality in Bear Creek is generally good; however, the State Water Resources Control Board (SWRCB) has identified water quality impairments in 84 miles of Bear Creek (from Bear Valley to the San Joaquin River) located within Mariposa and Merced counties which includes the Proposed Action area (SWRCB 2014). Impairments are due to *Escherichia coli* and unknown toxicity although sources of the contaminants are unknown. The SWRCB has listed this section of Bear Creek as a Category 5 (a water segment where standards are not met and a Total Maximum Daily Load [TMDL] is required, but not yet completed, for at least one of the pollutants being listed for the segment). TMDLs are scheduled to be completed by 2021 (SWRCB 2014).

Gallo Farms is located northeast of the Refuge in Merced County as shown on Figure 1. Gallo Farms grows cattle feed to support its dairies and cheese manufacturing operation. Historically, Gallo Farms received secondary treated wastewater from the City of Atwater's previous wastewater treatment plant (WWTP) located near Freeway 99. With the completion of the City's new WWTP located on South Bert Crane Road, as shown on Figure 1, Gallo Farms now receives disinfected tertiary treated water from the new WWTP. The treated water has been used to irrigate seasonal corn crops for use as cattle feed at their dairies. With recent modifications to its cropping pattern and conservation efforts Gallo Farms has the capability to make the treated water it receives available to Reclamation for delivery to the Refuge.

The Refuge is located east of the San Joaquin River, in Merced County, and contains native uplands, seasonal wetlands, vernal pools, and riparian floodplain habitat. The Refuge is managed primarily for migratory waterfowl, shorebirds, marsh, water birds, and riparian birds and their associated habitat types, as well as for listed species. The Refuge provides critically important habitat for both resident species and the migratory waterfowl that utilize the Pacific Flyway, and requires substantial water supplies.

Historically, the water supplies delivered to the Refuge have been obtained by diverting water from Bear Creek via its riparian water rights or water annually acquired by Reclamation's Refuge Water Supply Program (RWSP) from willing sellers. The average annual supply purchased for the Refuge has been approximately 3,000 AF, substantially less than the optimal amount. As a result, the Refuge remains underdeveloped for optimum wetland management in support of migratory birds.

3.1.2 Environmental Consequences

No Action
Under the No Action Alternative, the Refuge would rely upon available Bear Creek flows or acquisitions from other sources as they have in the past and acquired water would not be delivered to the Refuge. Acquired water would also not be exchanged for CVP Project Supply and delivered to SOD refuges.

Proposed Action
The Proposed Action would not adversely affect CVP operations. Acquired water would be provided for reasonable and beneficial use within the Refuge, to meet habitat needs for wildlife.

Cumulative Impacts
No adverse impacts to surface water resources would result from implementation of the Proposed Action, therefore, the Proposed Action would not contribute to cumulative impacts to surface water resources.

3.2 Water Quality

3.2.1 Affected Environment

The City of Atwater's tertiary treated water sent to Gallo Farms has been extensively monitored since receiving the National Pollutant Discharge Elimination System permit. The most recent water quality monitoring results are attached in Appendix B for reference.

3.2.2 Environmental Consequences

No Action
The No Action Alternative would consist of Reclamation not entering into an agreement with Santa Rita to purchase tertiary treated water to help meet the Refuge's L4 water demands.

Proposed Action
The Proposed Action would include implementation of a water quality monitoring plan (see Appendix A) to ensure that water quality standards are not exceeded. If water quality monitoring indicates unsuitable water quality, water deliveries to Bear Creek and to the Refuge would be modified or curtailed as necessary to stay in compliance with established thresholds. Further detail is provided in the WQMP included in Appendix A. The WQMP includes monitoring of specific Chemicals of Emerging Concern (CECs) in addition to the monitoring that the City of Atwater undertakes.

Under the Proposed Action, surface water quality sampling and analysis will be conducted in Bear Creek to help ensure compliance with surface water quality objectives set for the Proposed Action. If a surface water quality objective is exceeded due to this Proposed Action, water discharged into Bear Creek and pumped into the Refuge may be modified or curtailed until surface water quality objectives are met. The water quality monitoring and reporting for the Proposed Action is described in the WQMP.

Cumulative Impacts
Under the Proposed Action, impacts to water quality would not be significant and monitoring would occur along with any follow-on actions required under the WQMP. Therefore, the Proposed Action would not contribute to cumulative impacts to water quality.

3.3 Biological Resources

3.3.1 Affected Environment

The habitats present at the Refuge are natural valley grasslands and developed marsh. The Refuge is managed primarily for migratory waterfowl, shorebirds, marsh and water birds, and their associated habitat types as well as for listed species. The Refuge provides wetland habitat as a major wintering ground and migratory stopover point for large concentrations of waterfowl, shorebirds and other waterbirds (Service 2012a). A rich botanical community of native bunchgrasses, native and exotic annual grasses, forbs, native shrubs, trees, and a variety of animal species are found within these areas.

Managed heavily for migratory waterfowl and their associated habitat types, the Refuge has additional implications with the Migratory Bird Treaty Act (MBTA). Many species of birds protected under the MBTA occur within the Proposed Action project area.

There are no large or sensitive riparian habitats that occur in the Proposed Action area or near the water delivery areas.

Agricultural lands within and adjacent to the study area include flood irrigated pastures, orchards, and row crops. Pastures are typically cultivated in alfalfa (*Medicago sativa*), rescue grass (*Bromus catharticus*), Johnson's grass (*Sorghum halepense*), tall fescue (*Festuca arundinaceae*), and Italian ryegrass (*Festuca perennis*). Some of the key orchard crops in the vicinity of the Proposed Action are apricot (*Prunus armeniaca*), English walnut *(Juglans regia*), and almond (*Prunus dulcis*) cultivars. Row crops include broccoli (*Brassica oleracea*), corn (*Zea mays*), and tomatoes (*Solanum lycopersicum*), among others. Flood irrigated pastures provide food, cover, and nesting grounds for wildlife species; the value of the habitat varies with crop type and agricultural practices. Bird diversity can be high in irrigated pastures. Species commonly utilizing pasture lands include red-winged blackbird (*Agelaius phoeniceus*), Brewer's blackbird (*Euphagus cyanocephalus*), western meadowlarks (*Sturnella neglecta*), European startling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), killdeer (*Charadrius vociferous*), American crow (*Corvus brachyrhynchos*), and American kestrel (*Falco sparverius*). Some pasture lands and crop fields provide suitable breeding habitat for northern harrier (*Circus cyaneus*). Small mammals in flood irrigated pasture and row crops provide important prey resources for raptors such as red-tailed hawk (*Buteo jamaicensis*) and Swainson's hawk (*Buteo swainsoni*).

The list of federally listed, proposed and candidate species is included in Appendix C (USFWS 2018). Although there are 14 species identified in the list, only those species that could potentially occur in the action area are analyzed in detail.

Giant Garter Snake

The giant garter snake inhabits wetland habitats and vegetated permanent water channels in scattered subpopulations in the Central Valley from Butte County in the north to Fresno County in the south. It is believed to be extirpated from the vicinity of Buena Vista and Tulare Lakes south of Fresno County. Giant garter snakes are always found in close proximity to permanent or semi-permanent water with vegetated perimeters. Giant garter snakes are aquatic feeders specializing in capturing small fish and frogs in or under water. The giant garter snake spends the winter in upland retreats above the high water level.

Swainson's Hawk

This species is the most migratory of all North American Buteos. It breeds and summers in the arid and semiarid regions of western North America and winters on the pampas of Argentina. The breeding population in California has declined by an estimated 90 percent. In 1979, the breeding population in California was estimated at 375 pairs.

San Joaquin Kit Fox
The San Joaquin kit fox, a state-listed threatened and federally listed endangered species, is a small nocturnal canid which now occurs in scattered populations from Contra Costa County south to Kern County. Historically, this species occupied extensive areas of semiarid lands in the San Joaquin Valley. Flat topography in valley bottoms with valley sink scrub, valley saltbush scrub, interior coast range saltbush scrub, nonnative grassland and alkali playa plain communities (described in Holland, 1986) are the typical habitat, but substantial populations have always inhabited the surrounding low foothills where slopes do not exceed 40 degrees (O'Farrell 1983). Agricultural, industrial, and urban developments have caused rapidly increasing rates of habitat loss.

The San Joaquin kit fox is an obligate year-round burrow dweller which feeds largely upon lagamorphs and kangaroo rats (but would utilize whatever prey is locally abundant). Numerous dens are excavated and inhabited in the course of a year and individuals may cover great distances while foraging and/or dispersing.

The San Joaquin kit fox is considered here because of the potential foraging habitat (irrigated pasture and seasonally flooded grassland and alkali sink scrub). No known active or potential kit fox dens have been observed within the study area.

3.3.2 Environmental Consequences

No Action
Conditions would remain the same as existing conditions if no action were taken. There would be no negative impacts to wildlife, including threatened and endangered species, their critical habitat, or general habitat types.

Proposed Action
The conveyance of tertiary treated water from Santa Rita to the Refuge would not adversely affect aquatic species or their habitat. Habitat for Delta smelt, Chinook salmon (spring and winter run), Central Valley steelhead, or green sturgeon would not be affected because no construction or major flow modifications are proposed on natural waterways. There would be no effect to federally listed fish species mentioned above and there would be no modification of critical habitat for the species as a result of the Proposed Action.

Water is expected to continue to be of suitable quality for other aquatic species at the Refuge. Water quality would be tested during the Proposed Action at the discharge point from Gallo Farms and at the Refuge pumping plant's intake. If water quality is determined to be of unsuitable quality, pumping into the Refuge conveyance system would be modified or curtailed.

Overall, the Proposed Action would provide a benefit to waterfowl, shorebirds, and raptors, as the water would be used for refuge management. The Proposed Action would not adversely affect any riparian habitats.

Cumulative Impacts
Implementation of the Proposed Action would not result in adverse effects to biological resources, and therefore could not contribute to cumulative impacts.

Section 4 Consultation and Coordination

4.1 Public Review Period
This EA will be made available for public review.

4.2 Resource Management Agencies
Reclamation has coordinated closely with USFWS during the planning and development of the short term project. USFWS has reviewed and provided input on the WQMP.

Section 5 References

Holland, Robert F. 1986. (Holland 1986), *Preliminary Descriptions of the Terrestrial Natural Communities of California.* Dated October 1986.

O'Farrell, T.P. 1983. (O'Farrell 1983) *San Joaquin kit fox recovery plan.* Prepared for the U.S. Fish and Wildlife Service, Portland, OR.

U.S. Bureau of Reclamation (Reclamation). 2014. (Reclamation 2014) Environmental Assessment, *Warren Act Contract for Conveyance and Storage of Groundwater from 4-S Ranch and SHS Ranch to Del Puerto Water District,* Dated July 30, 2014.

U.S. Fish & Wildlife Service. September 6, 2018. Species List Generator, Project Area within Merced, Stanislaus, and San Joaquin Counties. (https://ecos.fws.gov/ipac/location/FEMEONM7CVFH3EIIZC6A3CSC5A/resources)

Appendix A – Water Quality Monitoring Plan

RECLAMATION

Managing Water in the West

East Bear Creek Water Quality Monitoring Plan

U.S. Department of the Interior
Bureau of Reclamation

August 2017

Mission Statements

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RECLAMATION
Managing Water in the West

East Bear Creek Water Quality Monitoring Plan

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Contents

Introduction

The United States Bureau of Reclamation (Reclamation) will monitor the quality of water delivered to the East Bear Creek Refuge (Refuge, managed by the U.S. Fish and Wildlife Service or USFWS). Water delivered for the Proposed Project is treated municipal wastewater delivered to the Gallo Farms from the City of Atwater.

This monitoring effort is being developed in support of a provision in the *The Purchase of Tertiary Treated Water for Refuge Level 2 Water between the United States and Santa Rita, LLC (Gallo Farms)* (Agreement). Under the Agreement, Reclamation is responsible for implementing a water quality monitoring plan (WQMP) for water developed pursuant to the Agreement.

Surface and groundwater monitoring is carried out by Reclamation's Environmental Affairs Division, Environmental Monitoring Branch (MP-157) for Reclamation's Resources Division, Program Management Branch (MP-410).

Goals and Objectives

The principal intent of the WQMP is to ensure that water provided to the Refuge is of suitable quality to protect the beneficial uses of Refuge waters.

Background

Section 3406(d) of the Central Valley Project Improvement Act (CVPIA), Public Law 102-575, Title 34 (1992), authorizes and directs the Secretary of the Interior, through Reclamation, to deliver firm water supplies of suitable quality to 19 federal, state, and private wetland habitats, wildlife areas and wildlife refuges (collectively referred to as Refuges) located in the Central Valley.

The Refuge and Santa Rita have agreed to transfer up to 6,000 acre-feet (AF) per year (AFY) of tertiary-treated wastewater and managed waters from Gallo farmlands to the Refuge over a one-year period. Transferred waters would leave the Gallo Point of Discharge (see Fig 1, Water Transfer Route) and join instream flows, entering first at Bear Creek, then the East Side Canal, and then Bear Creek again until reaching the Refuge's pump station approximately 5 miles west. The lift pump on the Gallo property has a flow meter to measure the volume of discharge water to the natural channel. An existing pipe inlet and standpipe along the slough connection to Bear Creek provides the ability to discharge to the natural channel of Bear Creek that flows west to the location of the Refuge Lift Pump Facility. A conveyance loss factor of ten percent has been determined based on the review of the type of channel flow, time of year and current condition of the channel. Transfer waters are mostly a blend of the tertiary-treated wastewater, storm drainage flows and return flows from on-farm irrigation are infrequent flows, this blended flow will once again be blended with the existing waters in Bear Creek (the main facility to transport the waters), which will have a varying flow volume over the course of the year. Current sampling programs of the

tertiary-treated wastewater are available to provide a continuous monitoring of the water quality prior to discharge to Bear Creek. Transferred waters would be pumped onto refuge land and used in wetland areas for the benefit of wildlife and use on lands within the refuge boundary.

Transferred wastewater would be conveyed, in part, through the East Side Canal. The non-Central Valley Project (CVP) water would be used for irrigation on existing lands in the Refuge that currently receives CVP water (43 U.S.C. §523, Warren Act of 1911). Sections 3406(d)(1) and (d)(2) of the CVPIA authorize and direct the Secretary of the interior to acquire and provide sufficient water supplies necessary to meet the Level 4 Refuge Water Needs as identified in the San Joaquin Basin Action Plan/Kesterson Mitigation Plan Report. This water delivery will provide a portion of the water Level 4 water needs for the Refuge.

Reclamation Responsibilities – Water Quality Monitoring

Monitoring Sites

Monitoring will occur at three surface water sites (Table 1; Appendix A). Surface water sites were selected to be representative of surface water entering East Bear Creek via Gallo conveyance (Peck Drain) and water entering the Refuge (East Bear Creek Pump Station).

Target Analytes

Target analytes will be as follows: total dissolved solids, boron and selenium; and common physical water quality indicators – pH and electrical conductivity. (Table 2).

Field Methods and Materials

Water Quality Sample Collection

Design

The purpose of this sampling program is to characterize specific analytes in the above-described water supply, and to characterize the quality of the water delivered from Santa Rita and to further characterize that water after it has mixed with water in Bear Creek at its delivery point to the Refuge.

Surface water will be sampled from the discharge to East Bear Creek. Surface water will again be sampled from the East Bear Creek Pump Station discharge.

Schedule

Water quality samples for the constituents of primary concern (Table 2; Appendix A) will be collected monthly.

In order to allow time for quality assurance activities and for shipped samples to arrive at the analytical laboratory on a weekday, samples will be not be collected on a Thursday, Friday or Saturday.

Exact sampling dates will be coordinated with the Refuge Manager and/or Santa Rita. To determine/confirm appropriate sampling dates for the quarterly monitoring, the Environmental Monitoring (MP-157) project lead will contact the Refuge Manager and/or Santa Rita one week prior to sampling.

Sample Constituents and Frequency					
Location	**Flow Rate**	**EC, Temp, pH**	**Methyl Mercury**	**Constituents of Primary Concern (Table 1)**	**Constituents of Emerging Concern (CEC) (Table 3)**
Gallo Farms Point of Discharge	Continuous	Weekly	Once Initially	Monthly	Quarterly –Full list first then quarterly review
East Bear Creek Pump Station	Continuous (Refuge)	Weekly	-	Monthly	Once prior to Project commencement then Quarterly –Full list first then quarterly review

Procedures

All sample collection, sample transportation, and record keeping procedures will be performed in accordance with MP-157 standard operating procedures (Reclamation, 2012). At all times, care will be taken to ensure collection of environmental samples that are representative of the water as it exists in the environment. Nitrile gloves will be worn for all sample collection activities, only pre-cleaned equipment and bottles will be used, and samples will be preserved appropriately to ensure that sample chemical characteristics are not altered after collection.

Surface water grab samples will be collected using an HDPE sample churn splitter and then transferred to appropriate sample bottles (Table 2, Appendix A). At the time of sample collection, physical characteristics of water quality samples will be measured *in situ* using a pre-calibrated YSI 600 XL or YSI EXO multi-parameter Sonde.

Surface water grab samples will be collected where water is well mixed. Ground water samples will be collected at the well head; samples will be collected only after wells have been purged for at least three full minutes – or until pumped water appears clear and free of sediment for at least one full minute – whichever occurs later.

Analytical Methods

Chemical analyses will be performed by private analytical laboratories following standard analytical methods (Table 2, Appendix A). Specific analytical procedures are described in analytical methods documents which are available on-line and by request from Reclamation's Quality Assurance (QA) and Data Management Branch (MP-156) personnel.

Analytical methods were selected to have reporting limits (RLs) below the lowest applicable water quality limit (Table 3, Appendix A). Note that due to matrix effects and other sample-specific analytical complexities, achieved RLs will not always match method RLs.

Quality Assurance Methods

Field practices, laboratory practices, and analytical results are evaluated by Reclamation QA personnel in order to ensure that monitoring data and results are of the highest possible quality. For an in-depth description of the QA procedures associated with this project, see the *Quality Assurance Project Plan for Water Quality Monitoring for the CDFW R-4 Wildlife Areas Water Development Project* (Reclamation, 2016) and the *MP-156 Standard Operating Procedures Manual for Quality Assurance* (Reclamation, 2014).

Data Assessment Methods

Water quality will be assessed by comparing constituent concentrations with water quality standards for the protection of the beneficial uses.

Reporting and Other Actions

For any water quality data results of concern, MP-157 will immediately notify Reclamation's Refuge Water Acquisition Project Manager and the USFWS. Data for each water year will be assessed on a yearly basis and reports submitted to the Refuge Water Acquisition Program, Program Management Branch (MP-410) for review.

WQMP Revision Process

An annual review of the WQMP and associated QA Project Plan will identify and document any procedural changes necessary to the monitoring plan. WQMP and QA Project Plan revisions will reflect potential changes in contracted analytical laboratories, contact information, water quality standards, changes mandated through the adaptive management process, and any other circumstances affecting the monitoring effort.

Contact Information

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  sangerer@usbr.gov

Analytical Laboratory

To be determined

Safety

- Denise Arbuckle, Reclamation Safety Office
  Office: 916 978-5579

References

Reclamation, 2012, Standard Operating Procedures for Environmental Monitoring, United States Bureau of Reclamation, Mid Pacific Region, Environmental Monitoring and Hazardous Materials Branch, April, 133p.

Reclamation, 2014, Standard Operating Procedures for Quality Assurance, United States Bureau of Reclamation, Mid Pacific Region, Environmental Monitoring and Hazmat Branch. Print.

Reclamation, 2016. Quality Assurance Project Plan for Water Quality Monitoring for the CDFW R-4 Wildlife Areas Water Development Project: United States Bureau of Reclamation, Mid Pacific Region, Environmental Monitoring and Hazmat Branch, Version 2. Print.

Figures

Appendix A - Site Location Map

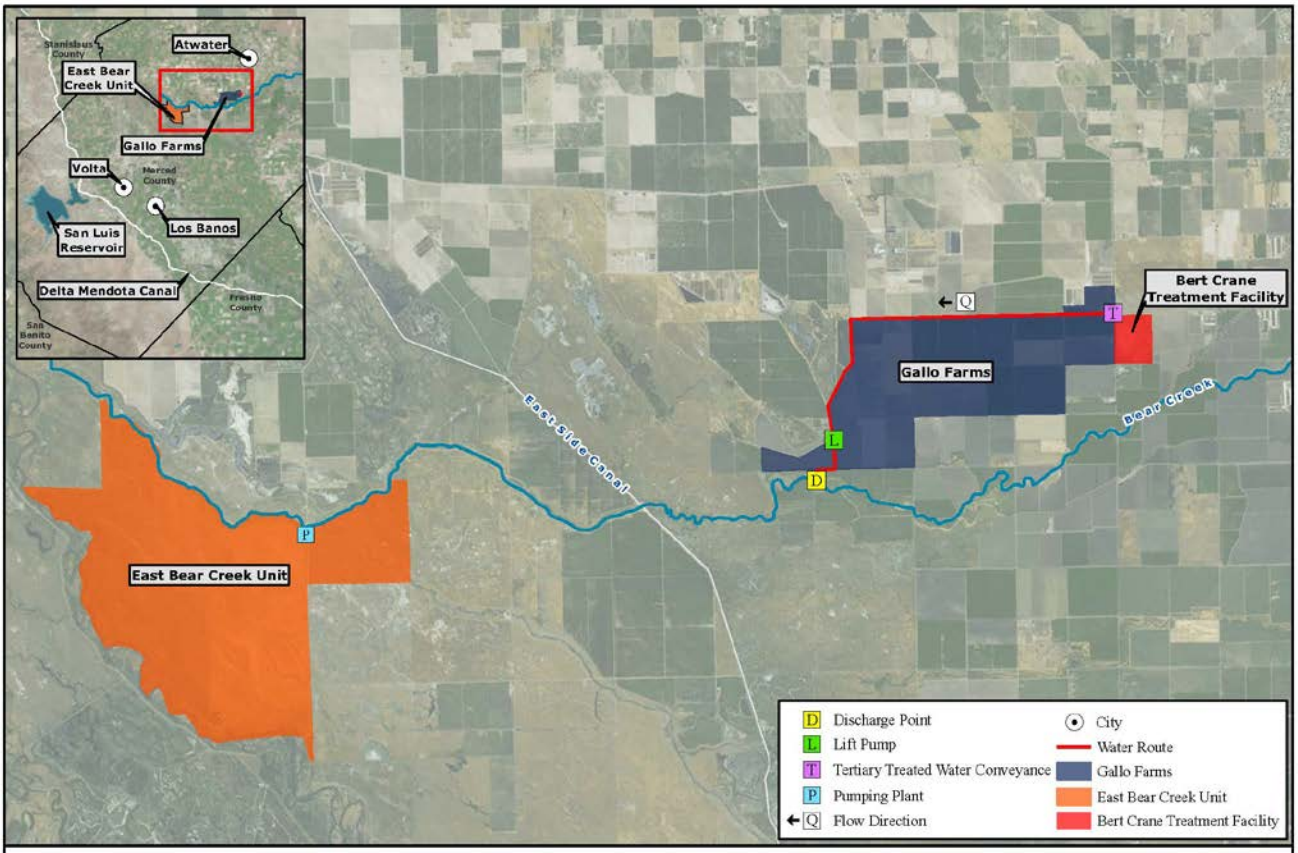


FIGURE 1 - Location Map
Refuge Level 4 Acquisition Agreement for Tertiary Treated Water

Tables

Table 1 Site Names and Locations

Site Name	Water Type	Latitude (N)	Longitude (W)
Gallo Farms Point of Discharge to Bear Creek	Surface Water	37° 15' 26.06"	-120° 41' 15.20"
East Bear Creek Pump Station	Surface Water	37° 15' 07.67"	-120° 46' 45.31"

Table 2 Analytes, Analytical Methods, QA Samples and Bottle Requirements

Analyte	Water Quality Threshold	Desired Method Reporting Limit (RL)
Selenium (µg/L)	Not to exceed 2	0.4
Boron (mg/L)	4	0.1
Total Dissolved Solids (mg/L)	-	10
Specific Conductance (µs/cm)	1,000	10
Aluminum (ug/L)	87	29
Arsenic (ug/L)	100	33
Beryllium (ug/L)	100	33
Cadmium (ug/L)	1.1	0.4
Chloride (mg/L)	106	35
Chromium III (ug/L)	84	28
Cobalt (ug/L)	50	17
Copper (ug/L)	4.1	1.4
Fluoride (mg/L)	1	0.33
Iron (ug/L)	1,000	330
Lead (ug/L)	0.92	0.3
Manganese (ug/L)	200	67
Mercury (ug/L)	0.77	0.26
Molybdenum (ug/L)	10	3.33
Nickel (ug/L)	24	8
Nitrate + Nitrite as N (ug/L)	10,000	3,300
pH	6.5-8.4	-
Silver (ug/L)	0.71	0.24
Sodium (ug/L)	-	-
Specific Conductance (ug/L)	1,000	330
Zinc (ug/L)	54	18

Table 3 - CEC List (Eurofins, Eaton Analytical test #DX_ABI_EDC)

2,4-D
4-nonylphenol - semi quantitative
4-tert-octylphenol
Acesulfame-K
Bendroflumethiazide
BPA
Butalbital
Butylparben
Chloramphenicol
Clofibric Acid
Diclofenac
Estradiol
Estrone
Ethinyl Estradiol - 17 alpha
Ethylparaben
Gemfibrozil
Ibuprofen
Iohexal
Iopromide
Isobutylparaben
Methylparaben
Naproxen
Propylparaben
Sucralose
Triclocarban
Triclosan
Warfarin
1,7-Dimethylxanthine
Acetaminophen
Albuterol
Amoxicillin (semi-quantitative)
Andorostenedione
Atenolol
Atrazine
Azithromycin
Bezafibrate
Bromacil
Caffeine
Carbadox
Carbamazepine
Carisoprodol
Chloridazon
Chlorotoluron
Cimetidine
Cotinine
Cyanazine
DACT
DEA
DEET
Dehydronifedipine
DIA
Diazepam
Dilantin
Diltiazem
Diuron
Erythromycin
Flumeqine
Fluoxetine
Isoproturon
Ketoprofen
Ketorolac
Lidocaine
Lincomycin
Linuron
Lopressor
Meclofenamic Acid
Meprobamate
Metazachlor
Metolachlor
Nifedipine
Norethisterone
OUST (Sulfameturon,methyl)
Oxolinic acid
Pentoxifylline

Phenazone	Sulfamethizole
Primidone	Sulfamethoxazole
Progesterone	Sulfathiazole
Propazine	TCEP
Quinoline	TCPP
Simazine	TDCPP
Sulfachloropyridazine	Testosterone
Sulfadiazine	Theobromine
Sulfadimethoxine	Theophylline
Sulfamerazine	Thiabendazole
Sulfamethazine	Trimethoprim

Table 4 Analytical Methods and Desired Reporting Limits

Analyte	Lowest Applicable WQ Standard		Desired RL (µg/L)	Method RL (µg/L)
	Objective	Limit (µg/L)		
TDS	FWAL - CC	87	≤ 20	≤ 20
Boron (total)	IR	100	≤ 20	≤ 0.5
Selenium (total)	BP	2	0.4	0.4
Temperature	BP	< 5 ^{0} F above receiving temp	Not Applicable	
Conductivity	BP	240 µS/cm		
pH	BP	6.5-8.5 units		

FWAL-CC: protection of chronically exposed fresh water aquatic life
BP: Basin Plan protections
IR: protection of agricultural uses (irrigation suitability).

Appendix B – City of Atwater WWTP Water Quality Results 2016

City of Atwater Effluent Waste Water Treatment Plant Water Quality Data 2016[2]

Monitoring Point	Parameter	Results/Qualifier	Units	Sample Date
EFF-001	Asbestos	ND	Fibers/L	11/1/2016
EFF-001	Chromium (VI) Total Recoverable	ND	ug/L	11/21/2016
EFF-001	Boron, Total Recoverable	0.18	mg/L	11/1/2016
EFF-001	Antimony, Total Recoverable	0.52	ug/L	11/1/2016
EFF-001	Arsenic, Total Recoverable	5.3	ug/L	11/1/2016
EFF-001	Beryllium, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Cadmium, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Chromium (III) Total Recoverable	0.62	ug/L	11/21/2016
EFF-001	Chromium, Total Recoverable	0.62	ug/L	11/1/2016
EFF-001	Chromium, Total Recoverable	0.62	ug/L	11/21/2016
EFF-001	Copper, Total Recoverable	2	ug/L	11/1/2016
EFF-001	Lead, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Nickel, Total Recoverable	1.1	ug/L	11/1/2016
EFF-001	Selenium, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Silver, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Thallium, Total Recoverable	ND	ug/L	11/1/2016
EFF-001	Zinc, Total Recoverable	34	ug/L	11/1/2016
EFF-001	Mercury, Total Recoverable	0.81	ug/L	11/1/2016
EFF-001	4,4-DDD	ND	ug/L	11/1/2016
EFF-001	4,4-DDE	ND	ug/L	11/1/2016
EFF-001	4,4-DDT	ND	ug/L	11/1/2016
EFF-001	alpha-BHC	ND	ug/L	11/1/2016
EFF-001	beta-BHC	ND	ug/L	11/1/2016
EFF-001	Chlordane	ND	ug/L	11/1/2016
EFF-001	delta-BHC	ND	ug/L	11/1/2016
EFF-001	Dieldrin	ND	ug/L	11/1/2016
EFF-001	Endosulfan I	ND	ug/L	11/1/2016
EFF-001	Endosulfan II	ND	ug/L	11/1/2016
EFF-001	Endosulfan Sulfate	ND	ug/L	11/1/2016
EFF-001	Endrin	ND	ug/L	11/1/2016

[2] Source:
http://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportEsmrAtGlanceServlet?reportID=1&firstRun=Y&facilityName=atwater&partyName=&regDrop=&countyDrop=&orderNo=&wdid=&npdesPermit=&ciNo=&reportTypeDrop=&reportFreqDrop=&reportYearDrop=2017&runReport=Run+Report

EFF-001	Endrin Aldehyde	ND	ug/L	11/1/2016
EFF-001	gamma-BHC	ND	ug/L	11/1/2016
EFF-001	Heptachlor	ND	ug/L	11/1/2016
EFF-001	Heptachlor Epoxide	ND	ug/L	11/1/2016
EFF-001	PCB-1016	ND	ug/L	11/1/2016
EFF-001	PCB-1221	ND	ug/L	11/1/2016
EFF-001	PCB-1232	ND	ug/L	11/1/2016
EFF-001	PCB-1242	ND	ug/L	11/1/2016
EFF-001	PCB-1248	ND	ug/L	11/1/2016
EFF-001	PCB-1254	ND	ug/L	11/1/2016
EFF-001	PCB-1260	ND	ug/L	11/1/2016
EFF-001	1,2-Dichloropropane	ND	ug/L	11/1/2016
EFF-001	1,2-Diphenylhydrazine	ND	ug/L	11/1/2016
EFF-001	1,3-Dichlorobenzene	ND	ug/L	11/1/2016
EFF-001	1,4-Dichlorobenzene	ND	ug/L	11/1/2016
EFF-001	2,4,6-Trichlorophenol	ND	ug/L	11/1/2016
EFF-001	2,4-Dichlorophenol	ND	ug/L	11/1/2016
EFF-001	2,4-Dimethylphenol	ND	ug/L	11/1/2016
EFF-001	2,4-Dinitrophenol	ND	ug/L	11/1/2016
EFF-001	2,4-Dinitrotoluene	ND	ug/L	11/1/2016
EFF-001	2,6-Dinitrotoluene	ND	ug/L	11/1/2016
EFF-001	2-Chloronaphthalene	0.25	ug/L	11/1/2016
EFF-001	2-Chlorophenol	ND	ug/L	11/1/2016
EFF-001	2-Nitrophenol	ND	ug/L	11/1/2016
EFF-001	3,3-Dichlorobenzidine	ND	ug/L	11/1/2016
EFF-001	4,6-Dinitro-2-methylphenol	ND	ug/L	11/1/2016
EFF-001	4-Bromophenyl Phenyl Ether	ND	ug/L	11/1/2016
EFF-001	4-Chloro-3-methylphenol	0.53	ug/L	11/1/2016
EFF-001	4-Chlorophenyl Phenyl Ether	ND	ug/L	11/1/2016
EFF-001	4-Nitrophenol	ND	ug/L	11/1/2016
EFF-001	Acenaphthene	ND	ug/L	11/1/2016
EFF-001	Acenaphthylene	ND	ug/L	11/1/2016
EFF-001	Acrolein	ND	ug/L	11/21/2016
EFF-001	Acrylonitrile	ND	ug/L	11/21/2016
EFF-001	Aldrin	ND	ug/L	11/1/2016
EFF-001	Anthracene	ND	ug/L	11/1/2016
EFF-001	Benzidine	ND	ug/L	11/1/2016
EFF-001	Benzo(a)anthracene	ND	ug/L	11/1/2016
EFF-001	Benzo(a)pyrene	ND	ug/L	11/1/2016
EFF-001	Benzo(b)fluoranthene	ND	ug/L	11/1/2016
EFF-001	Benzo(ghi)perylene	ND	ug/L	11/1/2016
EFF-001	Benzo(k)fluoranthene	ND	ug/L	11/1/2016
EFF-001	Bis (2-Chloroethoxy) Methane	ND	ug/L	11/1/2016
EFF-001	Bis (2-Chloroethyl) Ether	ND	ug/L	11/1/2016
EFF-001	Bis (2-Chloroisopropyl) Ether	ND	ug/L	11/1/2016

EFF-001	Bis (2-Ethylhexyl) Phthalate	1.6	ug/L	11/1/2016
EFF-001	Butylbenzyl Phthalate	ND	ug/L	11/1/2016
EFF-001	Carbon Tetrachloride	ND	ug/L	11/1/2016
EFF-001	Chrysene	ND	ug/L	11/1/2016
EFF-001	cis-1,3-Dichloropropene	ND	ug/L	11/1/2016
EFF-001	Dibenzo(a,h)anthracene	ND	ug/L	11/1/2016
EFF-001	Diethyl Phthalate	ND	ug/L	11/1/2016
EFF-001	Dimethyl Phthalate	ND	ug/L	11/1/2016
EFF-001	Di-n-butyl Phthalate	ND	ug/L	11/1/2016
EFF-001	Di-n-octyl Phthalate	ND	ug/L	11/1/2016
EFF-001	Fluoranthene	ND	ug/L	11/1/2016
EFF-001	Fluorene	ND	ug/L	11/1/2016
EFF-001	Hexachlorobenzene	ND	ug/L	11/1/2016
EFF-001	Hexachlorobutadiene	ND	ug/L	11/1/2016
EFF-001	Hexachlorocyclopentadiene	ND	ug/L	11/1/2016
EFF-001	Hexachloroethane	ND	ug/L	11/1/2016
EFF-001	Indeno (1,2,3-cd) Pyrene	ND	ug/L	11/1/2016
EFF-001	Isophorone	ND	ug/L	11/1/2016
EFF-001	Naphthalene	ND	ug/L	11/1/2016
EFF-001	Nitrobenzene	ND	ug/L	11/1/2016
EFF-001	N-Nitrosodimethylamine	ND	ug/L	11/1/2016
EFF-001	N-Nitrosodi-n-Propylamine	ND	ug/L	11/1/2016
EFF-001	N-Nitrosodiphenylamine	ND	ug/L	11/1/2016
EFF-001	Pentachlorophenol	ND	ug/L	11/1/2016
EFF-001	Phenanthrene	ND	ug/L	11/1/2016
EFF-001	Phenol, Single Compound	ND	ug/L	11/1/2016
EFF-001	Pyrene	ND	ug/L	11/1/2016
EFF-001	Tetrachloroethene	ND	ug/L	11/1/2016
EFF-001	Toxaphene	ND	ug/L	11/1/2016
EFF-001	trans-1,2-Dichloroethene	ND	ug/L	11/1/2016
EFF-001	trans-1,3-Dichloropropene	ND	ug/L	11/1/2016
EFF-001	Cyanide, Total (as CN)	ND	mg/L	11/1/2016
EFF-001	1,1,1-Trichloroethane	ND	ug/L	11/1/2016
EFF-001	1,1,2,2-Tetrachloroethane	ND	ug/L	11/1/2016
EFF-001	1,1,2-Trichloroethane	ND	ug/L	11/1/2016
EFF-001	1,1-Dichloroethane	ND	ug/L	11/1/2016
EFF-001	1,1-Dichloroethylene	ND	ug/L	11/1/2016
EFF-001	1,2,4-Trichlorobenzene	ND	ug/L	11/1/2016
EFF-001	1,2-Dichlorobenzene	ND	ug/L	11/1/2016
EFF-001	1,2-Dichloroethane	ND	ug/L	11/1/2016
EFF-001	2-Chloroethylvinyl Ether	ND	ug/L	11/21/2016
EFF-001	Benzene	ND	ug/L	11/1/2016
EFF-001	Bromoform	ND	ug/L	11/1/2016
EFF-001	Bromomethane	ND	ug/L	11/1/2016
EFF-001	Chlorobenzene	ND	ug/L	11/1/2016

EFF-001	Chloroethane	ND	ug/L	11/1/2016
EFF-001	Chloroform	ND	ug/L	11/1/2016
EFF-001	Chloromethane	ND	ug/L	11/1/2016
EFF-001	Dibromochloromethane	ND	ug/L	11/1/2016
EFF-001	Dichlorobromomethane	ND	ug/L	11/1/2016
EFF-001	Ethylbenzene	ND	ug/L	11/1/2016
EFF-001	Methylene Chloride	ND	ug/L	11/1/2016
EFF-001	Toluene	ND	ug/L	11/1/2016
EFF-001	Trichloroethene	ND	ug/L	11/1/2016
EFF-001	Vinyl Chloride	ND	ug/L	11/1/2016

Appendix C – Federally Listed, Proposed & Candidate Species

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Merced County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Fresno Kangaroo Rat Dipodomys nitratoides exilis — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5150

San Joaquin Kit Fox Vulpes macrotis mutica — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2873

Reptiles

NAME	STATUS

Blunt-nosed Leopard Lizard Gambelia silus — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/625

Giant Garter Snake Thamnophis gigas — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS

California Red-legged Frog Rana draytonii — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/2891

California Tiger Salamander Ambystoma californiense — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS

Delta Smelt Hypomesus transpacificus — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS

Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus — Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio	Endangered
There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/8246	
Vernal Pool Fairy Shrimp Branchinecta lynchi	Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/498	
Vernal Pool Tadpole Shrimp Lepidurus packardi	Endangered
There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2246	

Flowering Plants

NAME	STATUS
Colusa Grass Neostapfia colusana	Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/5690	

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Colusa Grass Neostapfia colusana	Final
https://ecos.fws.gov/ecp/species/5690#crithab	
Conservancy Fairy Shrimp Branchinecta conservatio	Final
https://ecos.fws.gov/ecp/species/8246#crithab	

Hoover's Spurge Chamaesyce hooveri — Final
For information on why this critical habitat appears for your project, even though Hoover's Spurge is not on the list of potentially affected species at this location, contact the local field office.
https://ecos.fws.gov/ecp/species/3019#crithab

Vernal Pool Fairy Shrimp Branchinecta lynchi — Final
https://ecos.fws.gov/ecp/species/498#crithab

Vernal Pool Tadpole Shrimp Lepidurus packardi — Final
https://ecos.fws.gov/ecp/species/2246#crithab

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

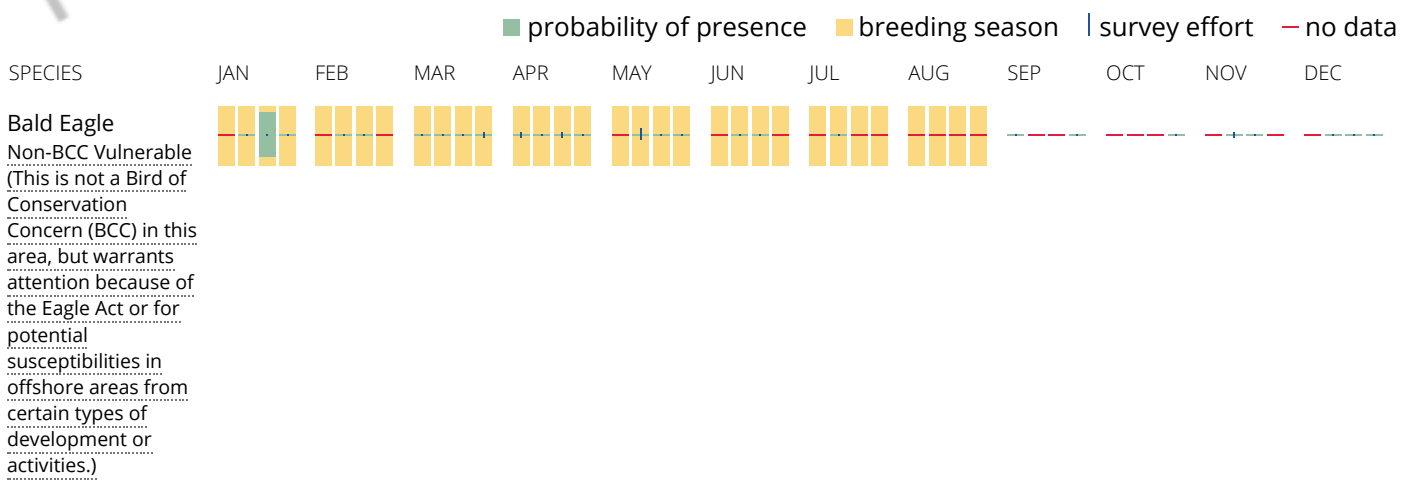
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

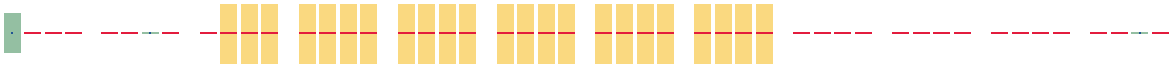
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

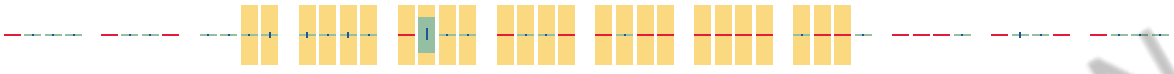


Burrowing Owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



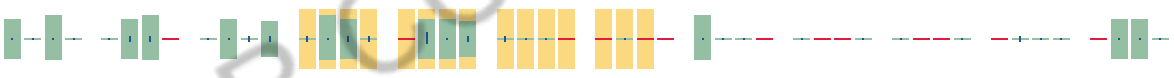
Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

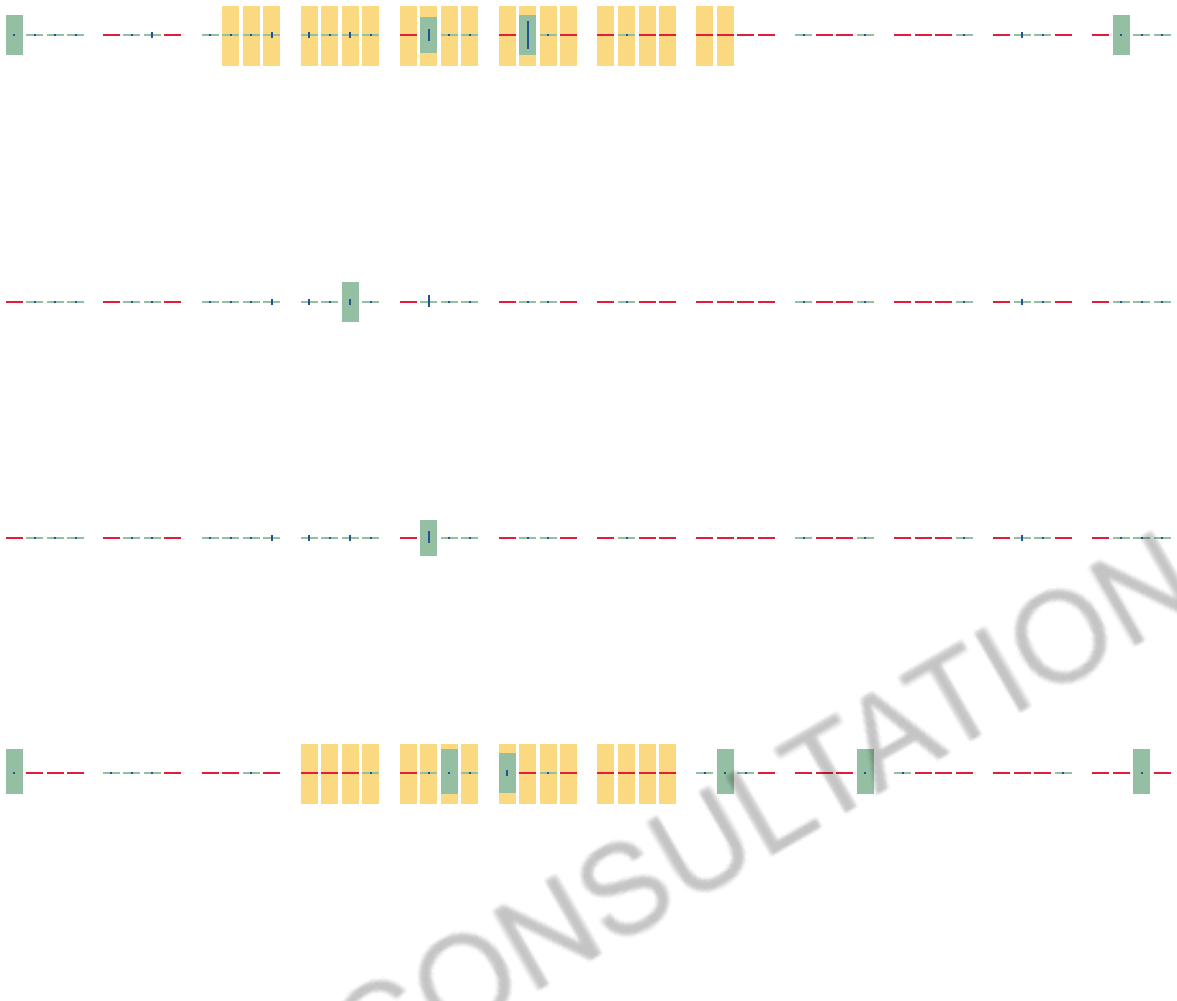
Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Yellow-billed Magpie
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1K
- PEM1A
- PEM1C
- PEM1F
- PEM1/USC
- PEM1Ah
- PEM1Ch
- PEM1Kx

PEM1J
PEM1Fh
PEM1/SSCh
PEM1/SSC

FRESHWATER FORESTED/SHRUB WETLAND

PSS/EM1K
PSS/EM1C
PSSC
PSSKh
PFOKx
PFOK
PSS/EM1A
PSSCx

FRESHWATER POND

PUSC
PUSA
PUBF
PUBK
PUBFh
PUS/EM1Ch
PABF

LAKE

L2UBK
L2UBF
L2UBFh
L2USCh

RIVERINE

R2UBH
R2UBHx
R4SBCx
R4SBC
R5UBFx
R5UBF
R2USC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.