FY 2024 Drinking Water State Revolving Fund Project Plan Amendment

City of Sturgis

Project No. 210478
April 13, 2023

FY 2024 Drinking Water State Revolving Fund
Project Plan Amendment

Prepared For:
City of Sturgis
Sturgis, Michigan

April 13, 2023
Project No. 210478

Final Draft

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List of Abbreviations/Acronyms

City	City of Sturgis
DWSRF	Drinking Water State Revolving Fund
EGLE	Michigan Department of Environment, Great Lakes, and Energy
gpd	gallons per day
ROW	right of way
SDWA	Safe Drinking Water Act
WWTP	Wastewater Treatment Plant

1.0 Introduction

In February 2023, the City of Sturgis (City) retained Fishbeck to complete a Drinking Water State Revolving Fund (DWSRF) Project Plan Amendment for improvements to the City's water system. This amendment will focus on the addition of a Wastewater Treatment Plant (WWTP) Loop. The three projects detailed in the FY 2022 Project Plan have been carried over. These projects have updated schedules to take advantage of the available grant funding. The scope of each project detailed in the previous project plan, remains unchanged.

In preparing and submitting a Project Plan Amendment, the City is hoping to take advantage of additional Bipartisan Infrastructure Law funds allocated to the DWSRF program. The purpose of this document is to meet the project planning requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). In addition to this new funding source, the state generally offers some form of principal forgiveness each year. When the state is awarded a federal capitalization grant, Congress, and the Safe Drinking Water Act (SDWA) mandate a range of that grant be used as additional subsidization to eligible recipients. Michigan generally chooses to apply this additional subsidization as principal forgiveness to overburdened or significantly overburdened communities.

This Amendment will focus on the addition of a WWTP Loop (Figure 1 and Figure 2).

2.0 Need for the Project

2.1 Wastewater Treatment Plant Loop

The distribution main on Treatment Plant Road is a 6-inch dead-end main. The dead-end is approximately 2,450 feet. Dead-end lines result in a breakdown of chlorine residuals, thereby limiting their disinfection abilities. Chlorine residual also helps to keep lead out of solution, which is important where lead services and old water mains exist within the distribution system. Where feasible, dead-end lines are gradually being removed from the system to eliminate the associated maintenance, operation efforts, and water safety concerns.

2.2 Compliance with the Drinking Water Standards Defined in Act 399

EGLE issued a Sanitary Survey for the City water system in 2020. The document listed numerous recommendations for the water system. The City has addressed the recommendations within the Sanitary Survey. The 2016 Water System General Plan revised in January 2021 makes 5- and 20-year capital improvements recommendations.

2.3 Orders or Enforcement Actions

No court or enforcement orders, or written enforcement actions have been issued to the City regarding the water system.

2.4 Drinking Water Quality Problems

The aesthetic quality of the water produced by the City's wells is generally good. There are no known drinking water problems in the overall distribution system. Polyphosphate polymer is added to the water prior to entering the distribution system for aesthetics to minimize "red water," helping to control corrosion and scale in the water.

3.0 Analysis of Alternatives

3.1 No Action

The 6-inch distribution main on Treatment Plant Road is a dead end, resulting in increased maintenance, operation efforts, and water safety concerns.

3.2 Optimum Performance of Existing System

The existing 6-inch main on Treatment Plant Road cannot function optimally in its current dead-end configuration.

3.3 Regionalization

A regional alternative is not available.

3.4 Construction - Wastewater Treatment Plant Loop

The distribution main at the WWTP Loop, located on Treatment Plant Road, is currently a 6-inch dead-end water main. The construction alternative includes the installation of approximately 935 feet of 8-inch water main from Treatment Plant Road to the existing 12-inch water main in South Centerville Road, eliminating the dead-end main.

4.0 Selected Alternative

The selected alternative is the construction of the wastewater treatment plant loop.

4.1 Design Parameters

Table 1 – Design Parameters: Wastewater Treatment Plant Loop

Loop water main/remove dead-end	935 feet of 8-inch water main

4.2 Useful Life

The WWTP loop will use Ductile Iron pipe. The expected useful life is 50 years and will exceed the loan term.

4.3 Water and Energy Efficiency

Water and energy conservation efforts will be implemented where operationally practical throughout the proposed project.

4.4 Schedule for Design and Construction

The tentative schedule for the proposed projects presented in Table 2 below reflects dates for Quarter 3 of the EGLE FY 2024 Financing Schedule.

Table 2 – FY 2024 Project Schedule for Design and Construction

Activity	N. Clay Street and N. Park Street	St. Joseph Street	WWTP Loop	E. Hatch Street
Final Plans and Specs	By Feb 13, 2024	By Feb 13, 2024	By Feb 13, 2024	By Feb 11, 2025
Bidding	By Mar 6, 2024	By Mar 6, 2024	By Mar 6, 2024	By Mar 5, 2025
Loan Closing	*March 25, 2024*	*March 25, 2024*	*March 25, 2024*	*March 25, 2024*
Construction Start	June 2024	June 2024	June 2024	Spring 2025
Construction End	July 2024	October 2024	July 2024	Summer 2025

4.5 Cost Summary

This section summarizes the proposed projects and their estimated project costs including engineering, design, administrative and legal costs, and construction. Engineering costs include preparation of the project plan, design, construction, and inspection services. The cost estimates presented in this report reflect January 2023 costs. These cost estimates were prepared to determine approximate project costs to aid the City in its planning and

budgeting process. There are several factors that could cause the actual project costs to deviate from these estimates. These include the competitive bidding climate at the time that the construction bids are received, inflation, and additions to or changes in the scope of the project that may occur during the design process. The total estimated costs for the proposed projects are summarized in Table 3 below.

Table 3 – Summary of Estimated Project Costs

Costs	St. Joseph Street	N. Clay Street and N. Park Street	WWTP Loop	E. Hatch Street	Total
Estimated Capital Cost	$751,000.00	$355,000.00	$174,000.00	$598,000.00	**$1,878,000.00**
Project Contingency	$112,650.00	$53,250.00	$26,100.00	$89,700.00	**$281,700.00**
Engineering, Administration, Legal	$187,750.00	$88,750.00	$43,500.00	$149,500.00	**$469,500.00**
Project Total	**$1,051,400.00**	**$497,000.00**	**$243,600.00**	**$837,200.00**	**$2,629,200.00**

4.6 User Costs

The daily cost per 1000 gallons of water to finance the projects over a 20-year period at an interest rate of 2.75% (obtained from EGLE as the DWSRF interest rate) was calculated for the city and is summarized in Table 4.

Table 4 – Estimated User Cost to Finance the Projects

Daily Cost per 1000 gallons	Estimated Monthly Cost @ 400 gpd
$0.17	$2.03

The current average monthly cost for a family of four is presented below in Table 5, along with the adjusted monthly cost after all proposed projects have been financed.

Table 5 – Current and Adjusted Typical Monthly Cost for Family of Four

Current Monthly Cost	Adjusted Monthly Cost
$55.26	$57.29

4.7 Implementability

The water distribution system is owned and operated by the City. The City has water service agreements with all customers, and no amendments to the agreements will be necessary for the DWSRF loan. All financial and loan-related work will be handled by the City.

5.0 Environmental and Public Health Impacts

At this time, EGLE does not know which projects will be considered equivalency projects for FY 2024. Equivalency projects are those which must contact federal crosscutter authorities, as discussed in the *Applicant Actions Related to Revolving Funds (SRF/FWQIF/DWSRF) Project Planning*. Any contact with federal crosscutters will be completed as directed by EGLE after the final Project Priority List is released and equivalency projects are formally identified.

5.1 Direct Impacts

5.1.1 Construction Impacts

5.1.1.1 Areas to Be Impacted During Construction

The WWTP Loop water main is proposed within an industrial improved, and vacant area. The new water main will be installed within an existing 16.5-foot right of way (ROW) and adjacent 30-foot utility easement between Treatment Plant Road and Centerville Road (M-66). Removal and replacement of pavement, curb and gutter or sidewalk is not expected at Centerville Road as the existing water main is near the west ROW line of Centerville Road. Though some trees exist along the easement, no substantial tree removals are anticipated. Some pavement removals will be required for crossing Treatment Plant Road to connect the new loop water main on the west side of the road. All grass within the ROW will be restored in kind.

5.1.1.2 Construction Methods

Construction of the WWTP Loop water main will be completed by open cut at standard water main depth. Trench width is expected to be 8-10 feet wide, only disturbing the undeveloped lawn area between Treatment Plant Road and Centerville Road (M-66).

5.1.1.3 Impacts Upon Sensitive Features

Map 1 depicts the major surface waters within the City. The proposed project will not have any effect on rivers or streams.

Map 2 depicts the location of wetlands with respect to the proposed project. As a highly developed city with few natural water features, there are few wetlands and minimal flood hazards. The two types of wetlands within the city limits are scattered along the fringes where population density is low. Almost eight acres are freshwater forested wetlands that flood for only a portion of the year, typically during the growing season. More common in Sturgis, but still a rare find in the landscape, are freshwater emergent wetlands. Taking up 14 acres, these wetlands are characterized by perennial plants and vegetation that are present for most of the growing season. None of the proposed projects occur within a wetland, and no negative impacts to the wetlands are expected because of the proposed projects.

According to the Flood Insurance Rate Maps created by the Federal Emergency Management Agency, almost no land in Sturgis is at risk of a 1% annual chance flood hazard. As depicted on Map 3, none of the proposed projects occur within a floodplain and no negative impacts to the floodplains are expected because of the proposed project.

The prime farmland within the City is depicted Map 4. The WWTP Loop crosses a small area of prime farmland. This area is not currently being used for farming and is surrounded by Industrial properties. Restoration of the ROW will be in kind, and no existing or future farmland will be impacted.

5.1.1.4 Endangered Species

Endangered or threatened species are defined as those species that are or could become endangered or threatened, and therefore, are protected under the Endangered Species Act. The objective of the act is to preserve and restore species threatened with extinction. The federally listed endangered and threatened species for the WWTP Loop project are detailed in Table 6. Appendix 1 contains a list of the state listed endangered, threatened, rare, and special concern species for St. Joseph County.

Table 6 – Federally Threatened and Endangered Species

Name	Status
Copperbelly Water Snake	Threatened
Indiana Bat	Endangered
Mitchell's Satyr Butterfly	Endangered
Eastern Massasauga	Threatened
Eastern Prairie Fringed Orchid	Threatened
Northern Long-Eared Bat	Threatened

The proposed project will occur near the edge of urban areas where some suitable wildlife habitat may be present. A list of the IPaC resources for the project area can be found in Appendix 1.

5.1.1.5 Historical/Archeological/Tribal Resources

To identify sites of historical and cultural significance, the National Register of Historic Places, Michigan Historical Markers, and the list of Michigan State Historic Sites by county were reviewed. The only listing of reference is the historical marker for the Sturges-Young Auditorium. No direct historical or archeological impacts are expected because of the proposed project.

5.1.1.6 Traffic Impacts

Roads to be closed, including Treatment Plant Road, are only used for WWTP operation. No impacts to Centerville Road (M-66) are expected. No adverse impacts to major street patterns are anticipated. Construction for projects of this type is generally limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 7 a.m. to 1 p.m. of Saturday. Vehicular and pedestrian access to all properties will be maintained throughout construction.

5.1.1.7 Water Quality

The proposed WWTP Loop water main construction project will provide reliability and continued high-quality water. The proposed projects will not affect surface or groundwater quality or quantity.

5.1.2 Operational Impacts

The completed water main will not result in any negative operational impacts.

5.1.3 Social Impacts

The proposed WWTP Loop project will result in direct cultural and social benefits. Public health and safety will benefit from the increased quality and reliability the proposed project will create. The construction phase of the projects will create jobs and contribute favorably to the local economy. No detour or public access to facilities or businesses is expected. The anticipated increased user costs, as discussed in Section 3.6, are minimal.

5.2 Indirect Impacts

Indirect impacts are those caused or facilitated by the proposed project but will be removed in time and/or distance. Indirect negative impacts are not anticipated but the following should be evaluated for the DWSRF Project Plan:

- Changes in the rate, density, or type of development (residential/commercial/industrial).
- Changes in land use (e.g., open space, floodplains, prime agricultural land, and coastal zones).
- Changes in air or water quality stemming from development including impacts from increased traffic.
- Changes to the natural areas and sensitive species or ecosystems due to secondary growth.
- Changes to aesthetic aspects of the community.
- Resource consumption over the useful life of the project.

5.3 Cumulative Impacts

Cumulative impacts are those impacts to the environment that increase in magnitude over time or that result from individually minor but collectively significant actions taking place over time. No cumulative environmental impacts are anticipated.

6.0 Mitigation

Measures that will be taken to avoid, eliminate, or mitigate potential short-term environmental impacts include the following:

- Traffic – use of designated traffic routes for construction traffic, as well as flagmen, warning signs, barricades, and cones.
- Air emissions – use of calcium chloride or water for dust control and proper maintenance on heavy equipment to reduce exhaust emissions.
- Noise control – use designated daytime work hours, use mufflers on all equipment, and minimize work on weekends and/or holidays.
- Soil erosion and sedimentation control – use riprap, hay bales, erosion control fence, silt fence, etc.
- Restoration – use topsoil, seed, sod, mulch, gravel, and pavement.

Measures that will be taken to avoid, eliminate, or mitigate potential long-term environmental impacts include the following:

- Soils disposal and contaminated soils: The contract will include an allowance to landfill any contaminated soils that are discovered.
- A Soil Erosion Plan for construction will be filed with the St. Joseph County Drain Commission Office. The plan will also be reviewed by the EGLE Land and Water Management Division. The plan will summarize the quantity of soils that will be excavated, locations where soil will be stored, the destination of soils (onsite or offsite) and measures that will be taken (silt fence, sod, etc.) to minimize erosion.

7.0 Public Participation

7.1 Public Meeting

A formal public hearing will be held during the regularly scheduled Commission meeting on April 26, 2023 at 6 p.m. The following items will be discussed during the public hearing, followed by a question and comment period.

- A description of the drinking water quality needs and problems to be addressed by the proposed project and the principal alternatives that were considered.
- A description of the recommended alternative, including its capital costs and a cost breakdown by project components.
- A discussion of project financing and costs to users, including the proposed method of project financing and estimated monthly debt retirement; the proposed annual, quarterly, or monthly charge to the typical residential customer, and any special fees that will be assessed.
- A description of the anticipated social and environmental impacts associated with the recommended alternative and the measures that will be taken to mitigate adverse impacts.

7.2 Public Meeting Advertisement

The public hearing will be advertised on the City's website, Facebook page, and in the Sturgis Journal from April 14 to April 26, 2023. The advertisement will list the public hearing date, describe the availability of the report for viewing, and briefly described the proposed projects and estimated costs. The advertisement will be included in Appendix 2.

7.3 Public Meeting Summary

Following the formal public hearing, Appendix 2 will contain the following information:

- A copy of the slides presented during the meeting.
- A typed list with the names and addresses of the people who attend the public hearing.
- Specific concerns that were raised during the meeting and the responses.
- Written comments that were received during the public notice period and the responses.
- A description of any changes that were made to the project as a result of the public participation process.

7.4 Adoption of the Project Planning Document

Following the formal public hearing on April 26, 2023, the City Commission will be asked to pass a resolution formally adopting the project plan. Following this meeting, Appendix 3 will include the Resolution Adopting the Final Project Plan.

Figures

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E Hatch St: N Prospect St to N Lakeview Ave

St Joseph Street: N Centerville Rd to N Nottawa St

N Clay St: John to West St

N Park St: Neuman St to St Joseph St

WWTP Loop: Treatment Plant Rd to S. Centerville Rd (M-66)

WATER SYSTEM RECOMMENDED IMPROVEMENTS

NORTH

FEET 0 450 900

LEGEND

Proposed Project Areas

DATA SOURCES: GIS BASE MAP ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL. WATER DISTRIBUTION SYSTEM FROM CITY OF STURGIS.

FIGURE NO. 1

PROJECT NO. 210478

City of Sturgis

St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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WASTE WATER TREATMENT PLANT LOOP

NORTH

0 100 200 FEET

LEGEND

Proposed Project Areas

DATA SOURCES: GIS BASE MAP ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL.
WATER DISTRIBUTION SYSTEM FROM CITY OF STURGIS.

FIGURE NO. 2

PROJECT NO. 210478

City of Sturgis
St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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Maps

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Omena Lake
Grey Lake
Schrader Rd
N Centerville Rd
N M 66
Grey Lake R
N Lakeview Rd
1010 ft
N Big Hill Rd
Grim Rd
Wait Rd
66
1027 ft
Minnewaukan Lake
Thunderbird Dr
Kirsch Municipal Airport
N Centerville St
N Clay St
N Nottawa St
N Lakeview Ave
969 ft
Wall Fields
Spence Fields
Langrick Park
Jean St
Broadus St
E Main St
Thurston Woods Park
E Hatch St
Griffith St
Progress St
St Joseph St
W West St
902 ft
E West St
Sturgis
W Chicago Rd
12
Ivanhoe St
S 4th St
S Monroe St
S Jefferson St
S Clay St
S Nottawa St
S Orange St
S Park St
Walker St
Myrtle St
Cottage
S Lakeview Ave
S Franks Ave
Vicky Dr
Elaine Dr
White School Rd
Magnolia Ave
W South St
E South St
Sunnyfield Rd
Big Hill Rd
Baker Lake
Williams Lake
W Fawn River Rd
Fawn River Rd
902 ft
Lakeview Rd
Nye Drain
Bogen Rd
N County Rd
Gilmore Lake
Fawn River
Fawn River
Fawn River
80

LEGEND

Watercourse

Waterbody

City Limits

DATA SOURCES: GIS BASE MAP ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL.

NORTH

MAJOR SURFACE WATERS

0 1,000 2,000 FEET

MAP NO. 1

PROJECT NO. 210478

City of Sturgis

St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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Omena Lake
Grey Lake
Schrader Rd
N Centerville Rd
N M 66
Grey Lake Rd
N Lakeview Rd
1010 ft
N Big Hill Rd
Grim Rd
Wait Rd
66
1027 ft
Minnewaukan Lake
Thunderbird Dr
Kirsch Municipal Airport
N Centerville St
N Clay St
N Nottawa St
N Lakeview Ave
969 ft
Wall Fields
Spence Fields
Langrick Park
Jean St
Broadus St
E Main St
Thurston Woods Park
E Hatch St
Griffith St
Progress St
St Joseph St
W West St
902 ft
E West St
Sturgis
W Chicago Rd
12
Ivanhoe St
S 4th St
Walker St
Myrtle St
S Monroe St
S Nottawa St
S Jefferson St
S Clay St
S Park St
S Orange St
Cottage
S Lakeview Ave
S Franks Ave
Baker Lake
Magnolia Ave
W South St
E South St
Sunnyfield Rd
White School Rd
Vicky Dr
Elaine Dr
Big Hill Rd
Williams Lake
W Fawn River Rd
Fawn River Rd
902 ft
Lakeview Rd
Nye Drain
Bogen Rd
65
80
Star Mill
N County Rd

LEGEND

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Watercourse
- Waterbody
- City Limits

DATA SOURCES: GIS BASE MAP AND WETLAND DATA ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL.

NORTH

WETLANDS

FEET
0 1,000 2,000

MAP NO. 2

PROJECT NO. 210478

City of Sturgis

St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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FEMA FLOOD HAZARD ZONES

NORTH

0 1,000 2,000 FEET

LEGEND

- 1% Annual Chance Flood Hazard
- Watercourse
- Waterbody
- City Limits

DATA SOURCES: GIS BASE MAP DATA ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL.
FEMA FLOOD PLAIN DATA ACCESSED VIA ESRI LIVING ATLAS.

MAP NO. 3

PROJECT NO. 210478

City of Sturgis

St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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PRIME FARMLAND

NORTH

0 1,000 2,000 FEET

LEGEND

- Prime Farmland
- Farmland of Local Importance
- Farmland of Statewide Importance
- Farmland of Unique Importance
- Not Prime Farmland
- Watercourse
- Waterbody
- City Limits

DATA SOURCES: GIS BASE MAP DATA ACCESSED THROUGH STATE OF MICHIGAN GIS OPEN DATA PORTAL.
PRIME FARMLAND ACCESSED VIA ESRI LIVING ATLAS.

MAP NO. 4

PROJECT NO. 210478

City of Sturgis

St. Joseph County, Michigan

Drinking Water State Revolving Fund (DWSRF)
FY 2024 Project Plan Amendment

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Appendix 1

MICHIGAN STATE UNIVERSITY
Michigan Natural Features Inventory
MSU Extension

County Element Data

The lists include all elements (species and natural communities) for which locations have been recorded in MNFI's database for each county. Information from the database cannot provide a definitive statement on the presence, absence, or condition of the natural features in any given locality, since much of the state has not been specifically or thoroughly surveyed for their occurrence and the conditions at previously surveyed sites are constantly changing. The County Elements Lists should be used as a reference of which natural features currently or historically were recorded in the county and should be considered when developing land use plans.

Choose a county St. Joseph

St. Joseph County

Code Definitions

Species

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Acris blanchardi	Blanchard's cricket frog		T	G5	S2S3	1	1909
Agalinis auriculata	Eared foxglove		X	G3	SX	1	1837
Alasmidonta marginata	Elktoe		SC	G4	S3?	17	2019
Alasmidonta viridis	Slippershell		T	G4G5	S2S3	12	2016
Ammodramus savannarum	Grasshopper sparrow		SC	G5	S4	1	2006
Amorpha canescens	Leadplant		SC	G5	S3	20	2017
Arnoglossum plantagineum	Prairie indian-plantain		SC	G4G5	S3	1	2012
Asclepias hirtella	Tall green milkweed		T	G5	S2	2	2006
Asclepias purpurascens	Purple milkweed		T	G5?	S2	3	2010
Astragalus canadensis	Canadian milk vetch		T	G5	S1S2	2	1954
Baptisia lactea	White or prairie false indigo		SC	G4Q	S3	21	2017
Battus philenor	Pipevine swallowtail		SC	G5	S2S3	2	1987
Berula erecta	Cut-leaved water parsnip		T	G4G5	S2	6	2012
Besseya bullii	Kitten-tails		E	G3	S1	3	1985
Boechera missouriensis	Missouri rock-cress		SC	G5	S2	3	1950
Bombus affinis	Rusty-patched bumble bee	LE	SC	G2	SH	3	1981

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Bombus auricomus	Black and gold bumble bee		SC	G5	S2	3	2021
Bombus pensylvanicus	American bumble bee		SC	G3G4	S1	2	1959
Bombus terricola	Yellow banded bumble bee		SC	G3G4	S2S3	1	1941
Bouteloua curtipendula	Side-oats grama grass		E	G5	S1	2	1961
Brickellia eupatorioides	False boneset		SC	G5	S2	9	2018
Calamagrostis stricta ssp. *stricta*	Narrow-leaved reedgrass		T	G5T5	S1	1	1986
Calephelis muticum	Swamp metalmark		SC	G3	S1	1	1956
Carex albolutescens	Sedge		T	G5	S2	1	1939
Carex lupuliformis	False hop sedge		T	G4	S2	1	1915
Carex trichocarpa	Hairy-fruited sedge		SC	G4	S2	1	1902
Catocala dulciola	Quiet underwing		SC	G3	S2S3	2	1996
Cistothorus palustris	Marsh wren		SC	G5	S3	1	2000
Clemmys guttata	Spotted turtle		T	G5	S2	5	2017
Coregonus artedi	Lake herring or Cisco		T	GNR	S3	2	2011
Coreopsis palmata	Prairie coreopsis		T	G5	S2	6	2022
Cuscuta campestris	Field dodder		SC	G5	S1	1	1937
Cyclonaias tuberculata	Purple wartyback		T	G5	S2	8	2019
Cypripedium candidum	White lady slipper		T	G4	S2	1	2007
Dichanthelium microcarpon	Small-fruited panic-grass		SC	GNR	SX	1	1985
Echinacea purpurea	Purple coneflower		X	G4	SX	1	1838
Echinodorus tenellus	Dwarf burhead		E	G5?	S1	1	1837
Eleocharis equisetoides	Horsetail spike rush		SC	G4	S3	1	1954
Eleocharis melanocarpa	Black-fruited spike-rush		SC	G4	S3	1	1986
Emydoidea blandingii	Blanding's turtle		SC	G4	S2S3	4	2021
Endodeca serpentaria	Virginia snakeroot		T	G4	S2	2	1981
Epioblasma triquetra	Snuffbox	LE	E	G3	S1S2	7	2005
Erimyzon claviformis	Creek chubsucker		E	G5	S1	3	1940
Eryngium yuccifolium	Rattlesnake-master or button snakeroot		T	G5	S2	6	2013
Erynnis persius persius	Persius dusky wing		T	G5T1T3	S3	1	1987
Euonymus	Wahoo		SC	G5	S3	1	2009

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
atropurpureus							
Fontigens nickliniana	Watercress snail		SC	G5	S2S3	2	2009
Fuirena pumila	Umbrella-grass		T	G4	S2	1	1985
Gentiana alba	White gentian		E	G4	S1	1	1838
Geum virginianum	Pale avens		SC	G5	S1S2	1	1963
Haliaeetus leucocephalus	Bald eagle		SC	G5	S4	4	2019
Helianthus hirsutus	Whiskered sunflower		SC	G5	S3	1	1978
Helianthus mollis	Downy sunflower		T	G4G5	S2	2	2009
Hesperia ottoe	Ottoe skipper		T	G3	S1	1	1981
Hydrastis canadensis	Goldenseal		T	G3G4	S2	1	1899
Justicia americana	Water willow		T	G5	S2	2	2017
Lasmigona compressa	Creek heelsplitter		SC	G5	S3	3	1969
Lasmigona costata	Flutedshell		SC	G5	SNR	16	2019
Lepisosteus oculatus	Spotted gar		SC	G5	S2S3	11	2017
Ligumia nasuta	Eastern pondmussel		E	G4	S2	1	Historical
Ligumia recta	Black sandshell		E	G4G5	S1?	2	2019
Lipocarpha micrantha	Dwarf-bulrush		SC	G5	S3	2	1961
Lithobates palustris	Pickerel frog		SC	G5	S3S4	2	2017
Morus rubra	Red mulberry		T	G5	S2	1	1981
Moxostoma carinatum	River redhorse		T	G4	S2	3	2010
Myotis lucifugus	Little brown bat		SC	G3G4	S1	1	1979
Myotis sodalis	Indiana bat	LE	E	G2	S1	3	2005
Neonympha mitchellii mitchellii	Mitchell's satyr	LE	E	G2T2	S1	2	2008
Nerodia erythrogaster neglecta	Copperbelly water snake	LT	E	G5T3	S1	1	1997
Notropis anogenus	Pugnose shiner		E	G3	S1S2	1	2011
Notropis chalybaeus	Ironcolor shiner		X	G4	S1	2	1940
Oecanthus laricis	Tamarack tree cricket		SC	G3?	S3	1	2000
Panax quinquefolius	Ginseng		T	G3G4	S2S3	1	1967
Pandion haliaetus	Osprey		SC	G5	S4	1	2019
Pantherophis spiloides	Gray ratsnake		SC	G4G5	S2S3	1	2020
Papaipema astuta	Astute stoneroot borer moth		SC	G2G4	SNR	1	1980
Papaipema cerina	Golden borer		SC	G2G4	S2	1	2009

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Papaipema maritima	Maritime sunflower borer		SC	G3	S2	2	2009
Papaipema silphii	Silphium borer moth		T	G3G4	S1	2	1989
Phlox bifida	Cleft phlox		X	G5?	SX	2	1988
Phlox maculata	Wild sweet William		T	G5	S1	1	1950
Photedes includens	Included cordgrass borer moth		SC	G4	SNR	1	2001
Platanthera ciliaris	Orange- or yellow-fringed orchid		E	G5	S1S2	2	1936
Platanthera leucophaea	Prairie white-fringed orchid	LT	E	G2G3	S1	1	2017
Pleurobema sintoxia	Round pigtoe		SC	G4G5	S3	15	2019
Poa paludigena	Bog bluegrass		T	G3G4	S2	3	1947
Polytaenia nuttallii	Prairie parsley		X	G5	SX	1	1837
Potamilus alatus	Pink heelsplitter		SC	G5	SNR	1	2005
Protonotaria citrea	Prothonotary warbler		SC	G5	S3	2	1997
Rhynchospora macrostachya	Tall beakrush		SC	G4	S3S4	1	1985
Rhynchospora recognita	Globe beak-rush		E	G5?	S1	1	1898
Ruellia humilis	Hairy wild petunia		T	G5	S1	7	2015
Sabatia angularis	Rosepink		T	G5	S2	6	2009
Schinia lucens	Leadplant moth		E	G4	S1	1	1999
Scleria triglomerata	Tall nut rush		SC	G5	S3	2	1950
Scutellaria elliptica	Hairy skullcap		SC	G5	S3	8	2018
Setophaga cerulea	Cerulean warbler		T	G4	S3	2	2022
Setophaga citrina	Hooded warbler		SC	G5	S3	1	2009
Setophaga discolor	Prairie warbler		E	G5	S3	1	1997
Setophaga dominica	Yellow-throated warbler		T	G5	S3	2	1997
Silene stellata	Starry campion		T	G5	S2	6	2018
Silphium integrifolium	Rosinweed		T	G5	S2	2	1986
Sistrurus catenatus	Eastern massasauga	LT	SC	G3	S3	4	2019
Smilax herbacea	Smooth carrion-flower		SC	G5	S3	1	1979
Speyeria idalia	Regal fritillary		E	G3?	SH	3	1984
Spiza americana	Dickcissel		SC	G5	S3	1	2006
Stellaria crassifolia	Fleshy stitchwort		E	G5	S1	1	1890

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank	Occurrences in County	Last Observed in County
Stenelmis douglasensis	Douglas stenelmis riffle beetle		SC	G1G3	S1S2	1	1933
Symphyotrichum sericeum	Western silvery aster		T	G5	S2	2	1936
Terrapene carolina carolina	Eastern box turtle		SC	G5T5	S2S3	6	2009
Toxolasma parvum	Lilliput		E	G5	S1	1	2019
Trillium sessile	Toadshade		T	G5	S2S3	1	1947
Truncilla truncata	Deertoe		SC	G5	S2S3	1	2005
Utterbackia imbecillis	Paper pondshell		SC	G5	S2S3	5	2019
Venustaconcha ellipsiformis	Ellipse		SC	G4	S3	15	2019
Viburnum prunifolium	Black haw		SC	G5	S3	1	2018
Villosa iris	Rainbow		SC	G5	S3	13	2016
Viola pedatifida	Prairie birdfoot violet		T	G5	S1	1	1980
Vitis vulpina	Frost grape		T	G5	S1S2	1	1976
Zizania aquatica	Wild rice		T	G5	S2S3	3	2014

Natural Communities

Community Name	Global Rank	State Rank	Occurrences in County	Last Observed in County
Bog	G3G5	S4	1	2009
Coastal Plain Marsh	G2	S2	1	1985
Dry-mesic Prairie	G3	S1	3	1983
Dry-mesic Southern Forest	G4	S3	1	2009
Floodplain Forest	G3?	S3	1	1996
Hardwood-Conifer Swamp	G4	S3	1	2009
Mesic Southern Forest	G2G3	S3	1	2009
Prairie Fen	G3	S3	4	2010
Southern Wet Meadow	G4?	S3	2	2009

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

St. Joseph County, Michigan

Local office

Michigan Ecological Services Field Office

(517) 351-2555
(517) 351-1443

2651 Coolidge Road Suite 101

2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360

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.

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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. IPaC only shows species that are regulated by USFWS (see FAQ).
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
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Reptiles

NAME	STATUS
Copperbelly Water Snake Nerodia erythrogaster neglecta No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7253	Threatened
Eastern Massasauga (=rattlesnake) Sistrurus catenatus Wherever found This species only needs to be considered if the following condition applies: • For all Projects: Project is within EMR Range No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2202	Threatened

Insects

NAME	STATUS

NAME	STATUS
Mitchell's Satyr Butterfly Neonympha mitchellii mitchellii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8062	Endangered
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid Platanthera leucophaea Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

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

There are no critical habitats at this location.

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 https://www.fws.gov/program/migratory-birds/species

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.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
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
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.	Breeds Dec 1 to Aug 31
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Henslow's Sparrow Ammodramus henslowii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31

Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

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.

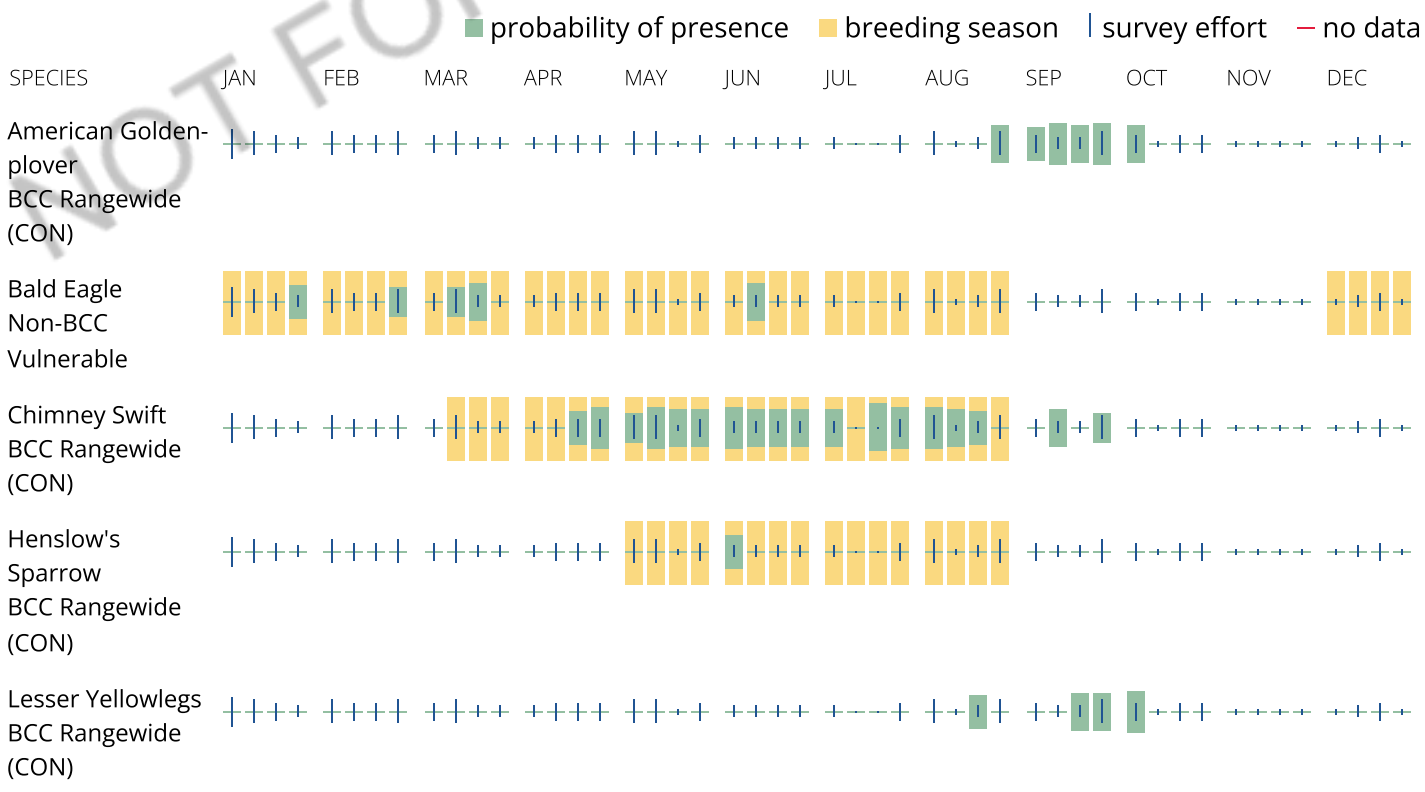
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

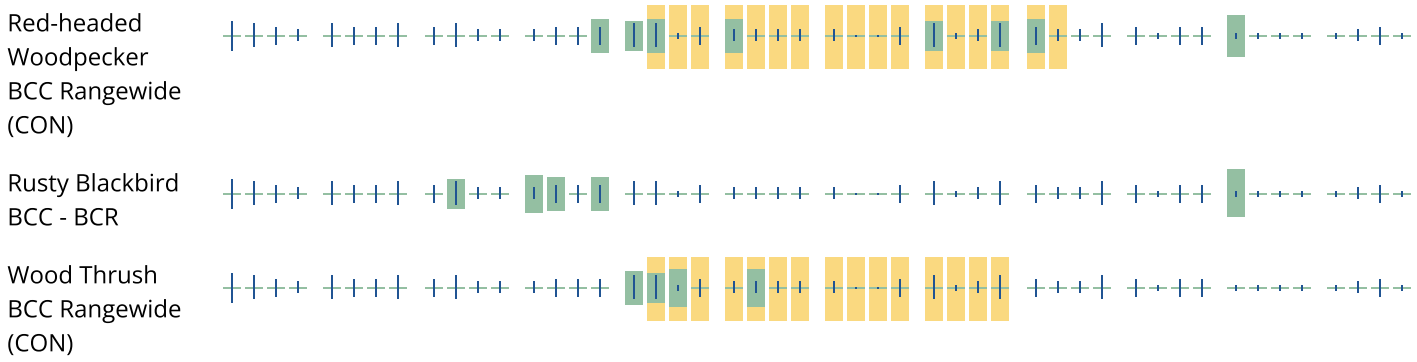
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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.





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 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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

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.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

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.

Appendix 2

Appendix 3