

Location Restriction Demonstrations for Former Pond 2 and Former Pond 3

Leland Olds Station
Basin Electric Power Cooperative
Stanton, Mercer County, North Dakota

AECOM Project Number: 60634880
June 17, 2022

Prepared for:

Basin Electric Power Cooperative
1717 East Interstate Avenue
Bismarck, ND 58503

Prepared by:

AECOM
525 Vine Street
Cincinnati, OH. 45202
aecom.com

List of Acronyms

AECOM	AECOM Technical Services, Inc.
BEPC	Basin Electric Power Cooperative
CCR	coal combustion residuals
CFR	Code of Federal Regulations
ft amsl	feet above mean sea level
g	gravity
GIS	Geographic Information Systems
Landfill	CCR Landfill
LOS	Leland Olds Station
LRD	Location Restriction Demonstrations
PGA	peak ground acceleration
UHT	unified hazard tool
USGS	United States Geological Survey
WOTUS	Waters of the United States

Table of Contents

List of Acronyms	i
1. Introduction	1
2. Facility and CCR Unit Description	2
3. § 257.60 Placement Above the Uppermost Aquifer	3
3.1 § 257.60(a) Citation	3
3.2 Separation of Aquifer from the Base of CCR Unit	3
3.3 Federal Requirement [40 CFR § 257.60(b)]	4
4. § 257.61 Wetlands	5
4.1 § 257.61(a) Wetlands Citation	5
4.2 Wetlands Study	6
4.3 Federal Requirement [40 CFR §257.61(b)]	7
5. § 257.62 Fault Areas	8
5.1 § 257.62(a) Citation	8
5.2 Distance to Holocene Faults	8
5.3 Federal Requirement [40 CFR § 257.62(b)]	9
6. § 257.63 Seismic Impact Zones	10
6.1 § 257.63(a) Citation	10
6.2 Seismic Impact Zones	10
6.3 Federal Requirement [40 CFR § 257.63(b)]	12
7. § 257.64 Unstable Areas	13
7.1 §257.64(a)-(b) Citation	13
7.2 Unstable Areas, Settlement, Collapsible Soils	13
7.3 Federal Requirement [40 CFR § 257.64]	14
8. Limitations	15
9. References	16

Figures

Figure 6.1 Two-Percent Probability Exceedance Map	11
Figure 6.2 PSHA Deaggregation Program Result	11

Tables

Table 1 Peak Ground Acceleration at Leland Olds Station	10
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Attachments

- Attachment A Site Location Map
- Attachment B Well Location Map with Transect for Cross Section A to A'
- Attachment C Geologic Cross-Section A to A'
- Attachment D Former Pond 2 and Former Pond 3 Base Grade Elevation Drawing
- Attachment E Geologic Maps

Appendices

- Appendix A Biological Resources Technical Memorandum – LOS Multi-Unit LRD

1. Introduction

This Location Restriction Demonstrations (LRD) report was prepared by AECOM Technical Services, Inc. (AECOM) on behalf of the Basin Electric Power Cooperative (BEPC) for former Pond 2 and former Pond 3 at the Leland Olds Station near Stanton, North Dakota. Operation of both ponds for management of coal combustion residuals (CCR) was ceased prior to the October 19, 2015 deadline identified by the U.S. Environmental Protection Agency in the CCR Rule (40 Code of Regulations [CRF] 257 Subpart D), which obviates these ponds from the requirement to demonstrate compliance with location restrictions if the ponds undergo closure. However, to support the re-permitting of these inactive surface impoundments under North Dakota Department of Environmental Quality regulations, BEPC has elected to voluntarily demonstrate compliance with the location restrictions identified in the following subsections of the CCR Rule:

- § 257.60 Placement Above the Uppermost Aquifer
- § 257.61 Wetlands
- § 257.62 Fault Areas
- § 257.63 Seismic Impact Zones
- § 257.64 Unstable Areas

BEPC completed closure-in-place of both ponds by final grading of the pond materials and placement of an engineered cap and a stormwater management system in 2020. The CCR Rule requires the owner or operator to obtain certification from a qualified professional engineer stating that each demonstration meets the requirements of the applicable CCR Rule citation. AECOM used existing information provided by BEPC and obtained from public resources, as well as on-site subsurface investigations conducted by AECOM in 2017 and 2020, to evaluate each of the location restriction requirements and develop this LRD report.

This report presents the facility and CCR unit description information in Section 2, followed by the five location restriction demonstrations in Section 3 through Section 7. Report limitations and references are provided in Sections 8 and 9.

2. Facility and CCR Unit Description

Basin Electric Power Cooperative (BEPC) owns and operates the Leland Olds Station (LOS) located approximately 4 miles southeast of Stanton, Mercer County, North Dakota along the Missouri River (Attachment A). The LOS is an electricity generating station with two coal-fired units that generate a combined power of 669 megawatts. The plant first began commercial operation in June 1966.

CCR from the operation of the two generating units at LOS is currently managed as a dry product with final disposal occurring at the permitted (0143) Glenharold Mine CCR Landfill (Landfill). The Landfill, located approximately 3 miles southwest of the plant complex as illustrated on Attachment A, began accepting CCR in 1992. Prior to the permitting of the Landfill, CCR from LOS was directed to former Ponds 1 through 4 located on-site east of the station. Operation of these ponds involved the periodic removal of CCR materials that were then disposed on-site as fill south and southeast of the ponds. With the construction of the Landfill in 1992, the use of Pond 1 and Pond 4 was discontinued, and they were closed-in-place. Pond 2 and Pond 3 were retained for CCR (inert waste bottom ash/boiler slag) handling with process water flow directed from Pond 2 to Pond 3 before discharging through Outfall 003 in accordance with the LOS North Dakota Pollution Discharge and Elimination System permit.

LOS converted to dry handling of all CCR materials and the disposal of CCR in Ponds 2 and 3 was discontinued prior to the regulatory deadline of October 19, 2015, which qualifies Ponds 2 and 3 as inactive CCR surface impoundments under the CCR Rule. Construction activities to close Pond 2 and Pond 3 were completed in accordance with the state-issued permit and the CCR Rule (BEPC, 2020). Closure of the two ponds, completed in 2020, involved dewatering and final grading of the pond contents, and placement of an engineered cap and a stormwater management system.

3. § 257.60 Placement Above the Uppermost Aquifer

As noted in Section 1, former Ponds 2 and 3 qualify as “inactive” and are not “existing” CCR surface impoundments, which, when the units are closing, obviates the need to demonstrate compliance with the Placement Above the Uppermost Aquifer location restriction of 40 CFR § 257.60(a).

3.1 § 257.60(a) Citation

In accordance with 40 CFR § 257.60(a):

New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer, or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high water table).

3.2 Separation of Aquifer from the Base of CCR Unit

Two pieces of information are required to evaluate the “placement above the uppermost aquifer” criteria for the LOS former Ponds 2 and 3: the highest elevation of the uppermost aquifer under the ponds and the lowest elevation of the base of the ponds.

Subsurface investigations were performed in the on-site vicinity in 2017 and 2020. In 2017, BEPC contracted AECOM to conduct a site subsurface investigation that included the observation of the installation of eight (8) monitoring wells installed by drillers, licensed in the State of North Dakota. In 2020, a supplemental site subsurface investigation was performed by AECOM under contract with BEPC to install two investigation monitoring wells at the site. Locations of the monitoring wells installed at the site in 2017 and 2020 are shown on Attachment B.

The findings of these investigations describe the general lithology of the subsurface at the site as a vegetated topsoil cover underlain by approximately 35 feet of fill and undisturbed unconsolidated clay and clayey silt underlain by silty fine sand grading with gravel in some locations as illustrated in cross-section A to A' presented as Attachment C. Groundwater level data collected between the fall of 2017 and the fall of 2021 reported ground water elevations commonly observed between 1,659 and 1,661 feet above mean sea level (ft amsl) NAVD29. The maximum groundwater elevation of 1,664.86 ft amsl in the vicinity of the ponds was measured in monitoring well MW-2017-4 on July 23, 2018. This groundwater elevation and measurements recorded on July 23, 2018, from MW-2017-4 and other monitoring wells located proximal to the unit boundary of former Pond 2 and former Pond 3 are presented on the geologic cross-section A to A' (Attachment C). As illustrated on cross-section A to A', the uppermost aquifer consists of a silty fine sand grading with gravel, but the reported water levels rise up into the overlying clay and clayey silt units that underlie the ponds. The clay and silty clay units constitute a confining layer above the aquifer, which means that the highest elevation of the uppermost aquifer under the ponds is defined but the lower limit of the clay and silty clay units. As illustrated on cross-section A to A', this elevation is approximately 1,660 ft amsl.

Former Ponds 2 and 3 were constructed by excavating into the clay and silty clay confining units noted above. The lowest elevation of the base of the ponds are derived from contour maps provided by BEPC and presented herein as Attachment D. The drawing indicates that the minimum base grade for former Pond 3 is below 1,674 ft amsl but above 1,672 ft amsl and the minimum base grade for former Pond 2 is below 1,668 ft amsl but above 1,666 ft amsl.

These data indicate that there is a minimum separation of 12 feet between former Pond 3 and the uppermost aquifer and a minimum separation of 6 feet between former Pond 2 and the uppermost aquifer. Accordingly, the LOS former Pond 2 and former Pond 3 CCR units meet the placement above the uppermost aquifer requirements of 40 CFR § 257.60(a) for existing CCR surface impoundments.

3.3 Federal Requirement [40 CFR § 257.60(b)]

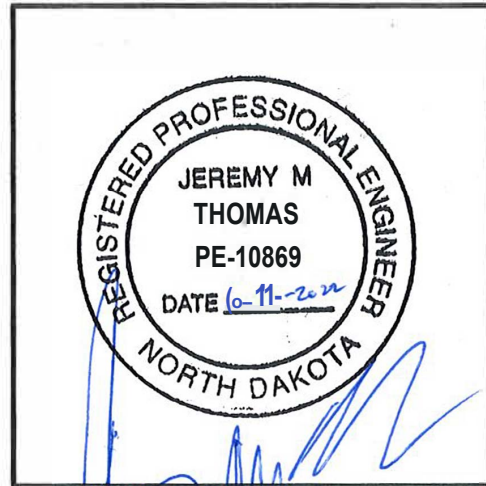
Certification Statement 40 CFR § 257.60(b) - Placement of an Existing CCR Surface Impoundment Above the Uppermost Aquifer

CCR Unit: Leland Olds Station Former Pond 2 and Former Pond 3

I, Jeremy Thomas, being a Registered Professional Engineer in good standing in the State of North Dakota, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR units, that the information contained in this Location Restriction Demonstrations Report dated June 17, 2022 meets the requirements of 40 CFR § 257.60(a).

Jeremy thomas
Printed Name

June 17, 2022
Date



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Exp. 12-31-2022

4. § 257.61 Wetlands

As noted in Section 1, former Ponds 2 and 3 qualify as “inactive” and are not “existing” CCR surface impoundments, which, when the units are closing, obviates the need to demonstrate compliance with the Wetlands location restriction of 40 CFR § 257.61(a).

4.1 § 257.61(a) Wetlands Citation

In accordance with 40 CFR § 257.61(a):

New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in wetlands, as defined in § 232.2 of this chapter, unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that the CCR unit meets the requirements of paragraphs (a)(1) through (5) of this section.

(1) Where applicable under section 404 of the Clean Water Act or applicable state wetlands laws, a clear and objective rebuttal of the presumption that an alternative to the CCR unit is reasonably available that does not involve wetlands.

(2) The construction and operation of the CCR unit will not cause or contribute to any of the following:

(i) A violation of any applicable state or federal water quality standard;

(ii) A violation of any applicable toxic effluent standard or prohibition under section 307 of the Clean Water Act;

(iii) Jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Endangered Species Act of 1973; and

(iv) A violation of any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.

(3) The CCR unit will not cause or contribute to significant degradation of wetlands by addressing all of the following factors:

(i) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the CCR unit;

(ii) Erosion, stability, and migration potential of dredged and fill materials used to support the CCR unit;

(iii) The volume and chemical nature of the CCR;

(iv) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of CCR;

(v) The potential effects of catastrophic release of CCR to the wetland and the resulting impacts on the environment; and

(vi) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.

(4) To the extent required under section 404 of the Clean Water Act or applicable state wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by first avoiding impacts to wetlands to the maximum extent reasonable as required by paragraphs (a)(1) through (3) of this section, then minimizing unavoidable impacts to the maximum extent reasonable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and reasonable compensatory mitigation actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands); and

(5) Sufficient information is available to make a reasoned determination with respect to the demonstrations in paragraphs(a)(1) through (4) of this section.

4.2 Wetlands Study

Simply stated, the wetlands location restriction requires that an existing CCR unit shall not be located in wetlands. To evaluate whether former Pond 2 and former Pond 3 comply with this restriction, BEPC contracted AECOM to perform a desktop analysis of wetlands and surface waters within the project area defined by former Pond 2 and former Pond 3 at LOS. The study used available desktop data to evaluate potential historic and/or current presence of waters of the United States (WOTUS). In addition, a desktop analysis was also performed to evaluate federally listed species to determine if they have potential to occur within the project area. The executive summary and figures from the AECOM report titled, *“Biological Resources Technical Memorandum – LOS Multi-Unit LRD”* are included in Appendix A.

The desktop analysis evaluated six federally threatened and endangered species that had the potential to occur within the project area. Of the six, one species is listed as federally endangered, four are listed as federally threatened, and one species is a federal candidate species. This analysis concluded that closure of the ponds would have “no effect” on these listed species.

For the WOTUS desktop analysis, it was concluded that no historic or current wetlands were/are present within the project area. Photo (historic and current) evaluation and analysis of historic data through the National Wetland Inventory and soil survey maps from the U.S Department of Agriculture-National Resource Conservation Service provided a data review that allowed for AECOM to conclude that no wetlands were present within the project area prior to construction of the ponds. Accordingly, the LOS former Pond 2 and former Pond 3 CCR units meet the wetlands restriction of 40 CFR § 257.61(a) for existing CCR surface impoundments.

4.3 Federal Requirement [40 CFR §257.61 (b)]

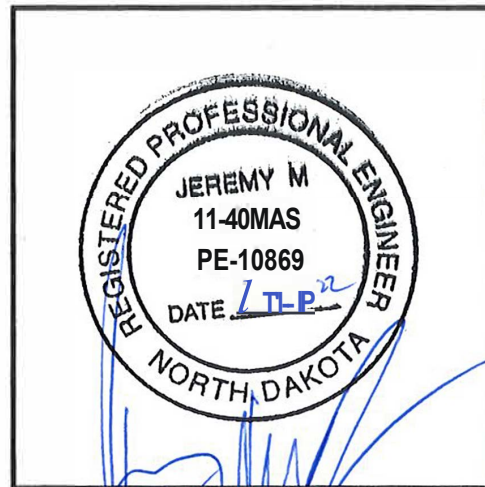
Certification Statement 40 CFR § 257.61 (b) - Location of an Existing CCR Surface Impoundment in Wetlands

CCR Unit: Leland Olds Station Former Pond 2 and Former Pond 3

I, Jeremy Thomas, being a Registered Professional Engineer in good standing in the State of North Dakota, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR units, that the demonstration that the CCR Unit is not located in wetlands, as included in this Location Restriction Demonstrations Report dated June 17, 2022 meets the requirements of 40 CFR § 257.61.

Jeremy Thomas
Printed Name

June 17, 2022
Date



5. § 257.62 Fault Areas

As noted in Section 1, former Ponds 2 and 3 qualify as “inactive” and are not “existing” CCR surface impoundments, which, when the units are closing, obviates the need to demonstrate compliance with the Fault Areas location restriction of 40 CFR § 257.62(a).

5.1 § 257.62(a) Citation

In accordance with 40 CFR § 257.62(a):

New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that an alternative setback distance of less than 60 meters (200 feet) will prevent damage to the structural integrity of the CCR unit.

5.2 Distance to Holocene Faults

As stated in the CCR Rule, a CCR unit is considered to be in a fault area if it is within 200 feet of the outermost damage zone of a fault that has seen displacement during the Holocene epoch, or within the last 12,000 years. As stated on page 21366 of the Preamble of the CCR Rule:

To investigate active faults, EPA expects owners and operators of CCR units to follow standard engineering and geologic practices. Technical considerations include:

(1) A geologic reconnaissance of the site to determine the location of active faults. Such a reconnaissance would include utilizing the seismic analysis maps and tools (Quaternary fault maps, earthquake probability maps) of the United States Geological Survey (USGS) Earthquake Hazards Program ([http:// earthquake.usgs.gov/hazards/apps/](http://earthquake.usgs.gov/hazards/apps/)); and

(2) A site fault characterization within 1000 meters of a site to determine whether it is within 60 meters of an active fault. Such characterizations would include subsurface exploration, including drilling or trenching, to locate any fault zones and evidence of faulting, trenching perpendicular to any faults or lineaments found within 60 meters of the site, and determination of the age of any displacements.

AECOM researched the United States Geological Survey (USGS) Geographic Information Systems (GIS) database for known Holocene faults. Since the Holocene faults are defined within the Quaternary Period, which is the last 2.6 million years to present, a figure presenting a USGS map showing Quaternary faults in proximity to the LOS Former Pond 2 and Former Pond 3 is provided in Attachment E. In addition, the North Dakota Geologic Survey has produced a geologic map of Mercer and Oliver Counties, which was evaluated for reported evidence of fault activity.

Findings from the research performed did not indicate the presence of active faults within 1,000 meters of the CCR units. Therefore, no further action (e.g., a site characterization) was performed.

Based on the results of the evaluation described herein, the LOS former Pond 2 and former Pond 3 units are not located within 60 meters (200 feet) of the outermost damage zone of a fault that has seen displacement during Holocene time. Accordingly, the LOS former Pond 2 and former Pond 3 CCR units meet the fault areas restriction of 40 CFR § 257.62(a) for existing CCR surface impoundments.

5.3 Federal Requirement [40 CFR § 257.62(b)]

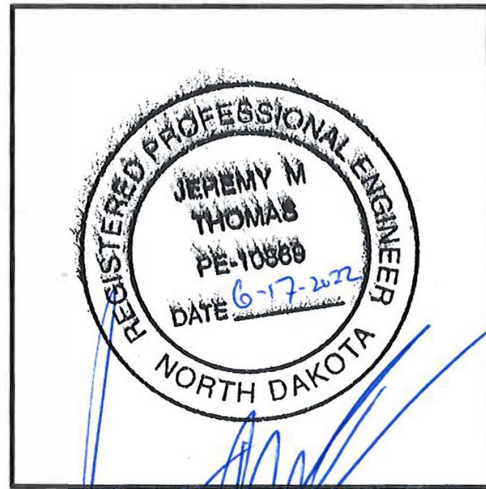
Certification Statement 40 CFR § 257.62(b) - Location of an Existing CCR Surface Impoundment within 60 Meters of a Fault Area

CCR Unit: Leland Olds Station Former Pond 2 and Former Pond 3

I, Jeremy Thomas, being a Registered Professional Engineer in good standing in the State of North Dakota, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR units, that the demonstration regarding the location of the CCR units relative to the outermost damage zone of a fault that has had a displacement in Holocene time, as included in the Location Restrictions Report dated June 17, 2022, meets the requirements of 40 CFR § 257.62.

Jeremy Thomas
Printed Name

June 17, 2022
Date



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6. § 257.63 Seismic Impact Zones

As noted in Section 1, former Ponds 2 and 3 qualify as “inactive” and are not “existing” CCR surface impoundments, which, when the units are closing, obviates the need to demonstrate compliance with the Seismic Impact Zones location restriction of 40 CFR § 257.63(a).

6.1 § 257.63(a) Citation

In accordance with 40 CFR § 257.63(a):

CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in seismic impact zones unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that all structural components including liners, leachate collection and removal systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

6.2 Seismic Impact Zones

As stated on page 21471 of the Preamble, the CCR Rule defines a *seismic impact zone* as “an area having a 2% or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth’s gravitational pull (g), will exceed 0.10 g in 50 years”. Figure 6.1 reproduces the 2014 National Seismic Hazard Model for the Conterminous United States national map of the 2% probability of exceedance in 50 years map of peak ground acceleration (Shumway, 2019). LOS former Pond 2 and former Pond 3 plot on the national map in the area reported as having less than 0.1 g of maximum expected horizontal acceleration, and the USGS provides a method to calculate the peak ground acceleration (PGA) of specific sites.

The USGS National Seismic Hazards Mapping Project, unified hazard tool (UHT) program, 2018 version can be used to calculate the PGA for specific site locations. The results of the UHT program specific to the study area are presented as Figure 6.2 (<https://earthquake.usgs.gov/hazards/interactive/>). The calculated PGA results for the LOS former Pond 2 and former Pond 3 location are presented in Table 2.

Table 1. Peak Ground Acceleration at Leland Olds Station

Location	Longitude	Latitude	Peak Ground Acceleration
Leland Olds Station Former Pond 2 and Former Pond 3	-101.31	47.30	0.022 g

The UHT program reports PGA results for lithified earth materials, which corresponds to seismic site classes between boundary B/C. The PGA is below 0.1 g and meets the criteria. Therefore, the LOS Former Pond 2 and Former Pond 3 is not located in a seismic impact zone. Accordingly, the LOS former Pond 2 and former Pond 3 CCR units meet the seismic impact zones restriction of 40 CFR § 257.63(a) for existing CCR surface impoundments.

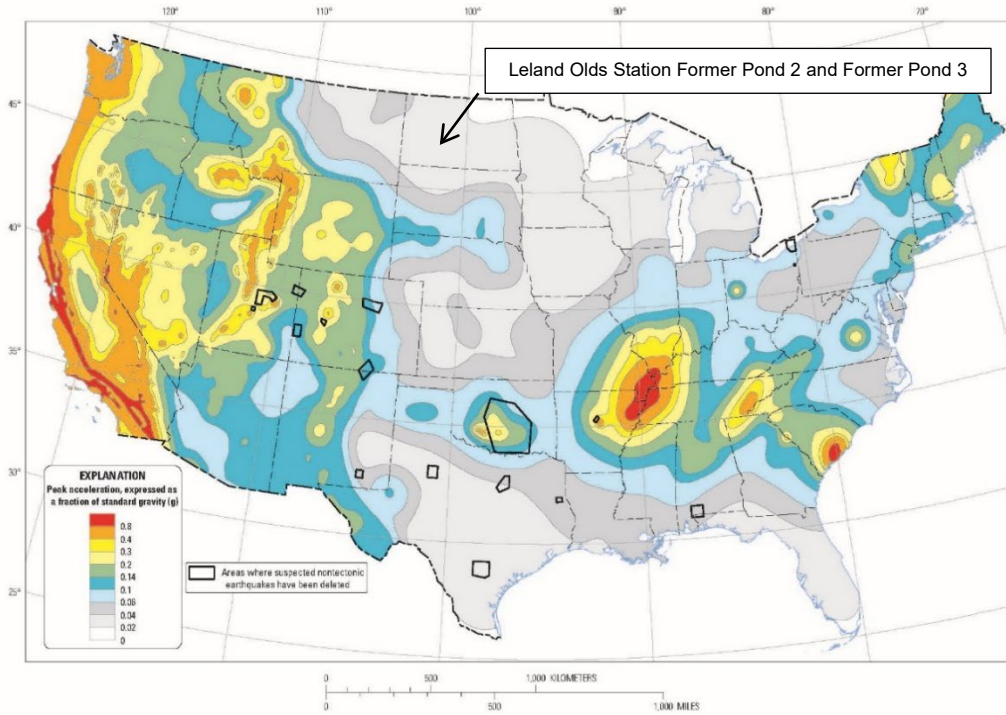


Figure 6.1 Two-Percent Probability of Exceedance in 50 Years Map of Peak Ground Acceleration

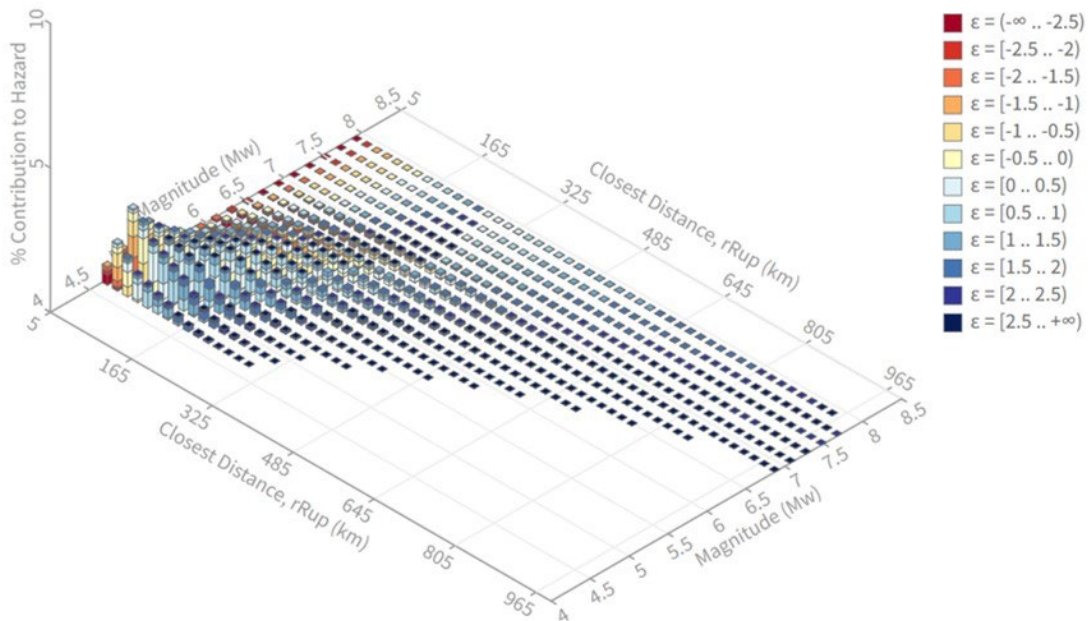


Figure 6.2 The UHT Program Result (PGA = 0.022 g)

6.3 Federal Requirement [40 CFR § 257.63(b)]

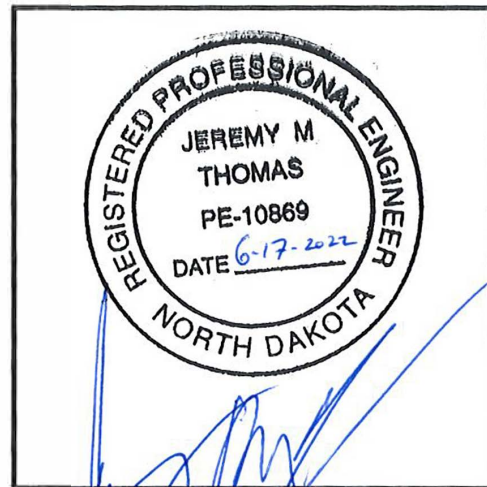
Certification Statement 40 CFR § 257.63(b) - Location of an Existing CCR Surface Impoundment in a Seismic Impact Zone

CCR Unit: Leland Olds Station Former Pond 2 and Former Pond 3

I, Jeremy Thomas, being a Registered Professional Engineer in good standing in the State of North Dakota, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR units, that the demonstration that the CCR Unit is not located in a seismic impact zone, as included in this Location Restriction Demonstrations Report dated June 17, 2022, meets the requirements of 40 CFR § 257.63.

Jeremy Thomas
Printed Name

June 17, 2022
Date



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7. § 257.64 Unstable Areas

As noted in Section 1, former Ponds 2 and 3 qualify as “inactive” and are not “existing” CCR surface impoundments, which, when the units are closing, obviates the need to demonstrate compliance with the Unstable Areas location restriction of 40 CFR § 257.64(a)-(b).

7.1 §257.64(a)-(b) Citation

In accordance with 40 CFR § 257.63(a) and (b):

(a) An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.

(b) The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable:

- (1) On-site or local soil conditions that may result in significant differential settling;*
- (2) On-site or local geologic or geomorphologic features; and*
- (3) On-site or local human-made features or events (both surface and subsurface).*

7.2 Unstable Areas, Settlement, Collapsible Soils

All CCR landfill lateral expansions are subject to the unstable areas location restriction.

Historical assessments have been completed on former Pond 2 and former Pond 3 at LOS. These assessments include a “*CCR Rule Report: Initial Safety Factor Assessment*” report on Pond 2 and a “*CCR Rule Report: Initial Safety Factor Assessment*” Report on Pond 3, which were evaluated as impoundments. The reports, both dated April 13, 2018, included a maximum storage pool loading, maximum surcharge pool loading, seismic factor of safety, and susceptibility to liquefaction soil calculations. Based on the calculated results, Pond 2 and Pond 3 met the safety requirements of 40 CFR § 257.73.

In addition, a “*CCR Rule Report: Initial Structural Stability Assessment*” report was completed on Pond 2 and a “*CCR Rule Report: Initial Structural Stability Assessment*” was completed on Pond 3. These reports, both dated April 13, 2018, included an assessment of: foundations and abutments; slope protection dike compaction, vegetated slopes; spillways; stability and structural integrity of hydraulic structures; and downstream slope inundation/stability. It was determined that the Spillway and downstream slope inundation/stability for Pond 2 were not applicable, but all other factors met the regulated structural stability assessment requirements [40 CFR § 257.73(d)(1)(i) through (viii)]. For Pond 3, it was determined the spillway, stability and structural integrity of hydraulic structures, and downstream slope inundation/stability were not applicable, but all other factors met the regulated Structural Stability Assessment requirements [40 CFR § 257.73(d)(1)(i) through (viii)].

In addition, the North Dakota GIS data portal was reviewed for abandoned mines. The closest abandoned mine is 2 to 3 miles from the Site and, therefore, there are no abandoned mines located under Pond 2 and Pond 3. Accordingly, the LOS former Pond 2 and former Pond 3 CCR units meet the unstable areas restriction of 40 CFR § 257.64(a) for existing CCR surface impoundments.

7.3 Federal Requirement [40 CFR § 257.64]

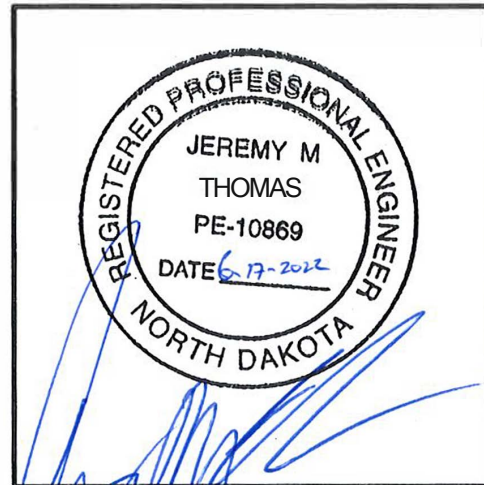
Certification Statement 40 CFR § 257.64(c)- Location of an Existing CCR Surface Impoundment in an Unstable Area

CCR Unit: Leland Olds Station Former Pond 2 and Former Pond 3

I, Jeremy Thomas, being a Registered Professional Engineer in good standing in the State of North Dakota, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR units, that the demonstration that the units are not located in an unstable area, as included in this Location Restriction Demonstrations Report, dated June 17, 2022, meets the requirements of 40 CFR § 257.64.

Jeremy Thomas
Printed Name

June 17, 2022
Date



EXP. 12-31-2022

8. Limitations

In preparing this report, AECOM has reviewed background information, design basis, and other additional data furnished to AECOM by BEPC, as well as relevant available information from previous and current investigations performed by AECOM and others at the site. AECOM has relied on this information as furnished without independent verification and is not responsible for the accuracy or completeness of this information. AECOM shall not be held responsible for conditions or consequences arising from relevant facts that might have been concealed, withheld, or not fully disclosed by responsible parties at the time this report was prepared. In addition, the conclusions expressed in this report are subject to certain conditions and assumptions, which are noted in this report and below. Any party reviewing this report must carefully review and consider all such conditions and assumptions.

The conclusions made in this report are based on the assumption that the subsurface soil, rock, and groundwater conditions at the Site do not deviate appreciably from those conditions disclosed in the site-specific exploratory borings. The conclusions in this report are also based on AECOM's understanding of current plant operations, maintenance, storm water handling, and ash handling procedures at the station based on information provided by BEPC. The passage of time may result in changes in site conditions and variations, technology, economic conditions, and regulatory provisions, all which could render the report inaccurate.

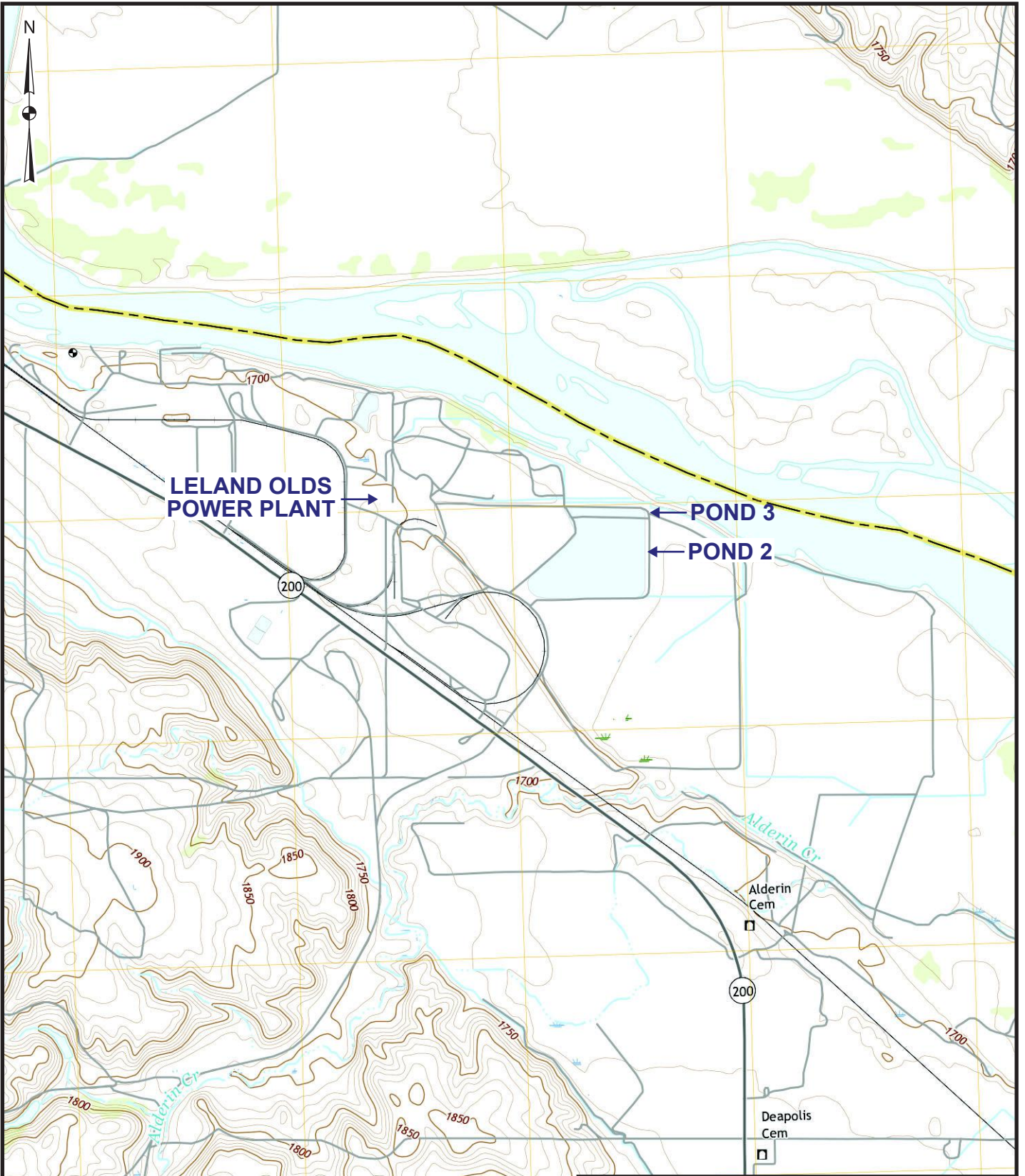
This report was prepared by AECOM in accordance with generally accepted engineering and scientific practice in effect at the time of AECOM's assessment of the subject property. This report was prepared pursuant to an agreement between AECOM and BEPC and is for the exclusive use of BEPC. Any reliance on this report shall be at the user's sole risk.

9. References

- U.S. Environmental Protection Agency. 2015. Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, 40 CFR §257. Federal Register, Volume 80, Subpart D, April 17, 2015.
- BEPC. 2020. Coal Combustion Residuals Surface Impoundment Closure Certification, Basin Electric Power Cooperative, Leland Olds Station, October 2020.
- USGS. 2015. National Map. Website: [//ngmdb.usgs.gov/maps/mapview/](http://ngmdb.usgs.gov/maps/mapview/)
- USGS. 2015. National Seismic Hazards Mapping Project, PSHA Deaggregation program, 2008 version. eohazards.usgs.gov/deaggint/2008/
- Shumway, A.M. 2019. Data Release for the 2014 National Seismic Hazard Model for the Conterminous U.S.: U.S. Geological Survey data release, <https://doi.org/10.5066/P9P77LGZ>.

Attachment A – Site Vicinity Map

G:\Cincinnati\DCS\Projects\ENV\60558359_BE_LOS_P2\1900-CAD-GIS\920-GIS or Graphics



0 2,000 4,000
 APPROXIMATE SCALE IN FEET

■ ND

Quadrangle Location

BASE MAP SOURCE: USGS 7½ minute topographic quadrangle map Stanton SE, North Dakota 2018.

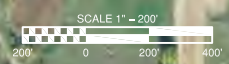
BASIN ELECTRIC POWER COOPERATIVE

FIGURE 1
 SITE VICINITY MAP
 LOS POND 2 AND POND 3 MULTIUNIT

JOB NO. 60558359

AECOM

Attachment B – Well Location Map with Cross-Section Transect



DRAWING: NORTH DAKOTA STATE PLANE NAD27 SOUTH ZONE-FT
 PHOTO: NAIP MERCER COUNTY FALL OF 2017 / UTM NAD83 ZONE 14N-METERS

- LEGEND**
- CCR RULE COMPLIANCE WELL
 - INVESTIGATION WELL (2020)
 - Geologic Cross Section A-A'
 - Terrace Boundary (Inferred)

 **BASIN ELECTRIC
POWER COOPERATIVE** **LELAND OLDS STATION
STANTON, NORTH DAKOTA**

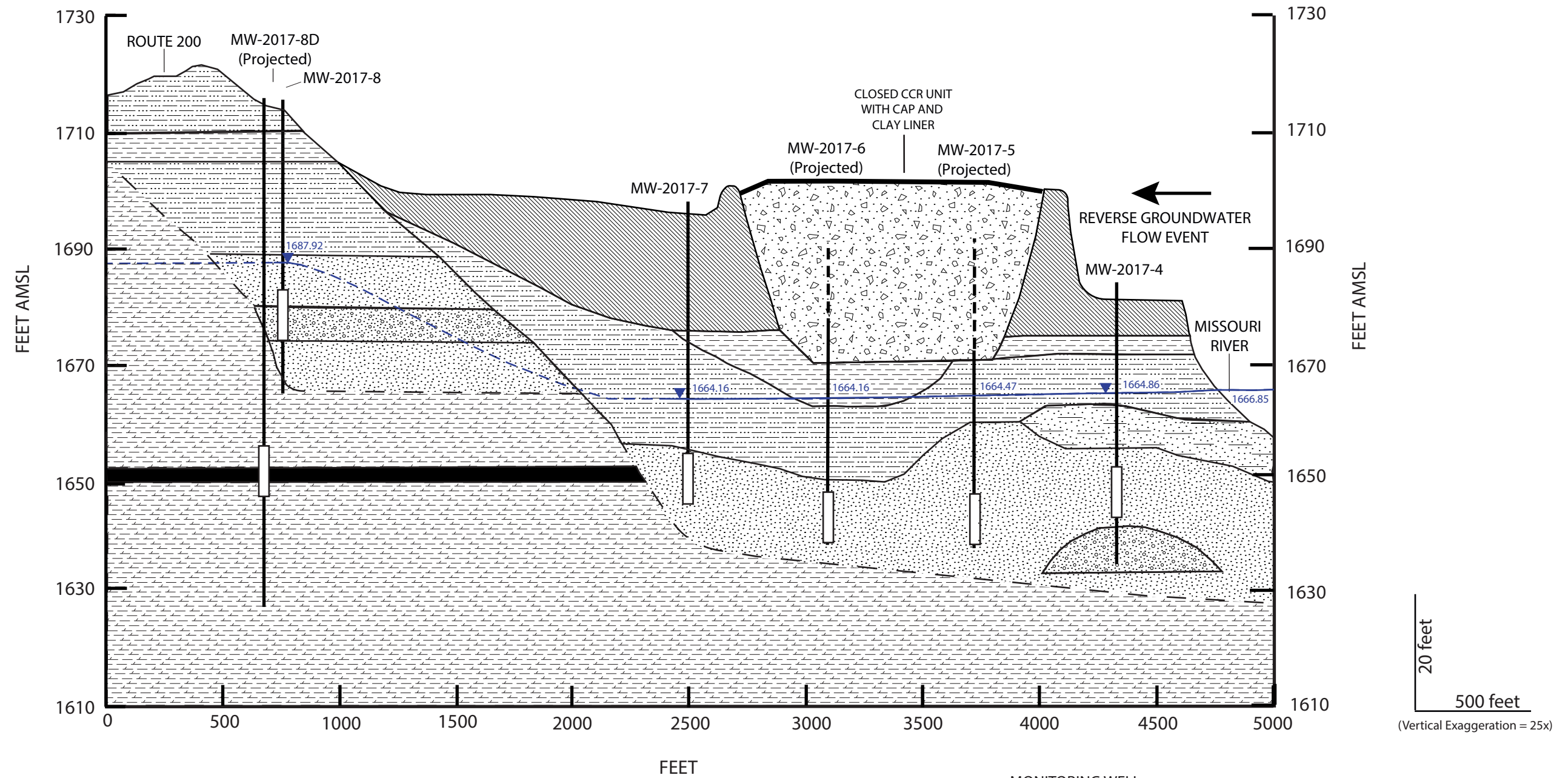
**FIGURE 1
BASIN LELAND OLDS STATION
GEOLOGIC CROSS SECTION
TRANSECT MAP**

JOB NO. 60634880 **AECOM**

Attachment C – Geologic Cross-Section A to A'

A SW

A' NE



LEGEND

- Fill
- Silt and Clayey Silt
- Silty Sand
- Sentinel Butte Formation (Dashed where inferred)
- Lignite
- Clay
- Sand
- Gravel
- Fill Material

Potentiometric Surface July 23, 2018 (Dashed where inferred)

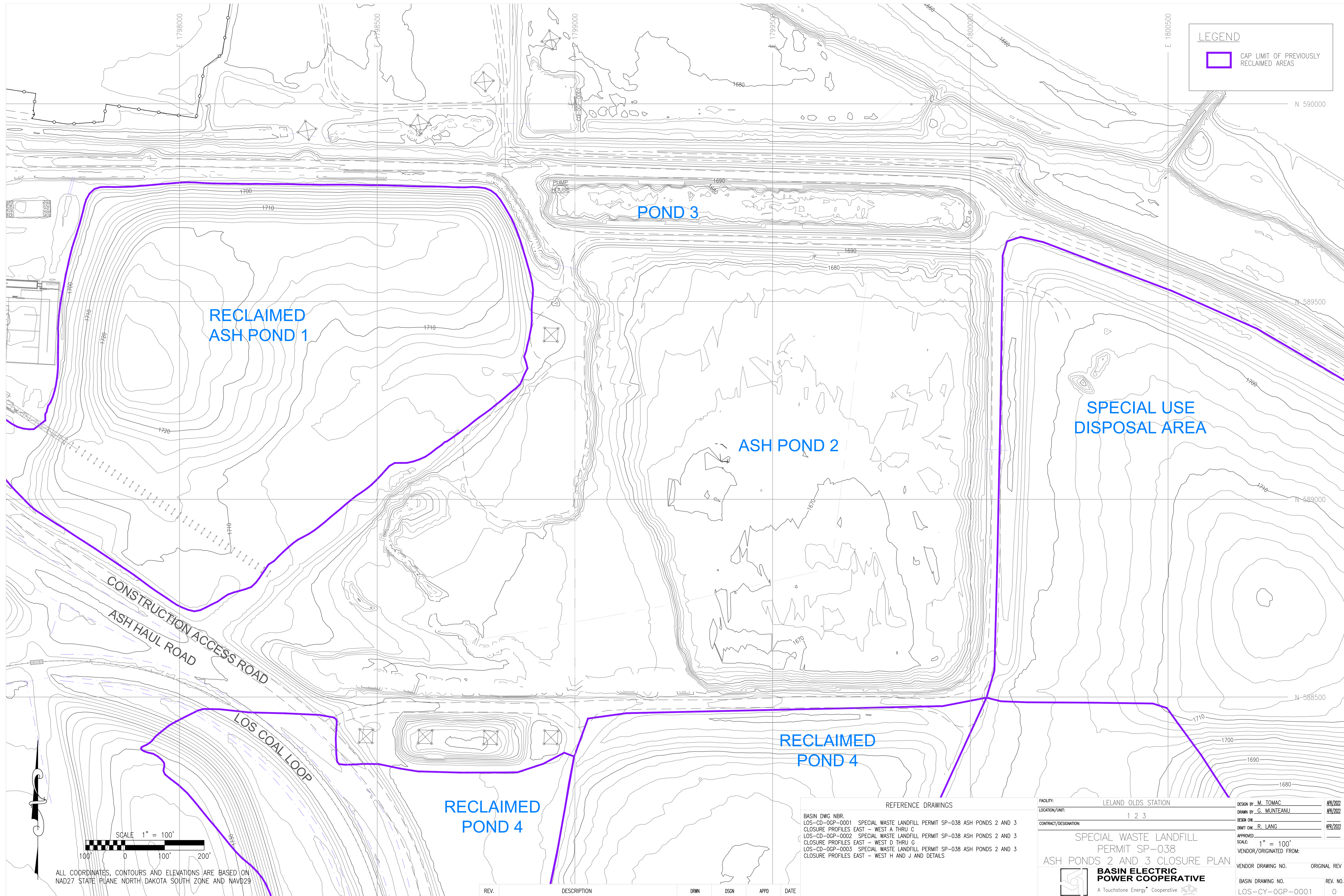
- MW-2017-8 MONITORING WELL LOCATION ID
- MONITORING WELL RISER (Dashed where projected through pond)
- MONITORING WELL SCREEN
- BACKFILL / COLLAPSE

BASIN ELECTRIC
POWER COOPERATIVE

LELAND OLDS STATION
STANTON, NORTH DAKOTA

FIGURE 2
 BASIN LELAND OLDS STATION
 GEOLOGIC CROSS SECTION A-A'
 JOB NO. 60634880 **AECOM**

Attachment D – Former Pond 2 and Former Pond 3 Base Grade Elevation Drawing



LEGEND

CAP LIMIT OF PREVIOUSLY RECLAIMED AREAS

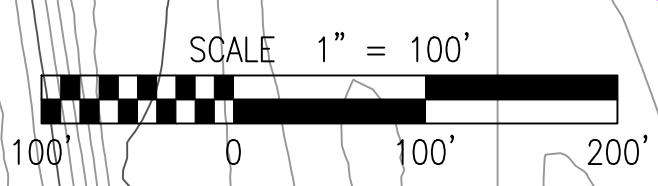
N 590000

N 589500

N 589000

N 588500

1710
1700
1690
1680



ALL COORDINATES, CONTOURS AND ELEVATIONS ARE BASED ON NAD27 STATE PLANE NORTH DAKOTA SOUTH ZONE AND NAVD29

REFERENCE DRAWINGS

BASIN DWG NBR.
 LOS-CD-OGP-0001 SPECIAL WASTE LANDFILL PERMIT SP-038 ASH PONDS 2 AND 3 CLOSURE PROFILES EAST - WEST A THRU C
 LOS-CD-OGP-0002 SPECIAL WASTE LANDFILL PERMIT SP-038 ASH PONDS 2 AND 3 CLOSURE PROFILES EAST - WEST D THRU G
 LOS-CD-OGP-0003 SPECIAL WASTE LANDFILL PERMIT SP-038 ASH PONDS 2 AND 3 CLOSURE PROFILES EAST - WEST H AND J AND DETAILS

FACILITY: LELAND OLDS STATION
 LOCATION/UNIT: 1 2 3
 CONTRACT/DESIGNATION:
SPECIAL WASTE LANDFILL PERMIT SP-038
ASH PONDS 2 AND 3 CLOSURE PLAN

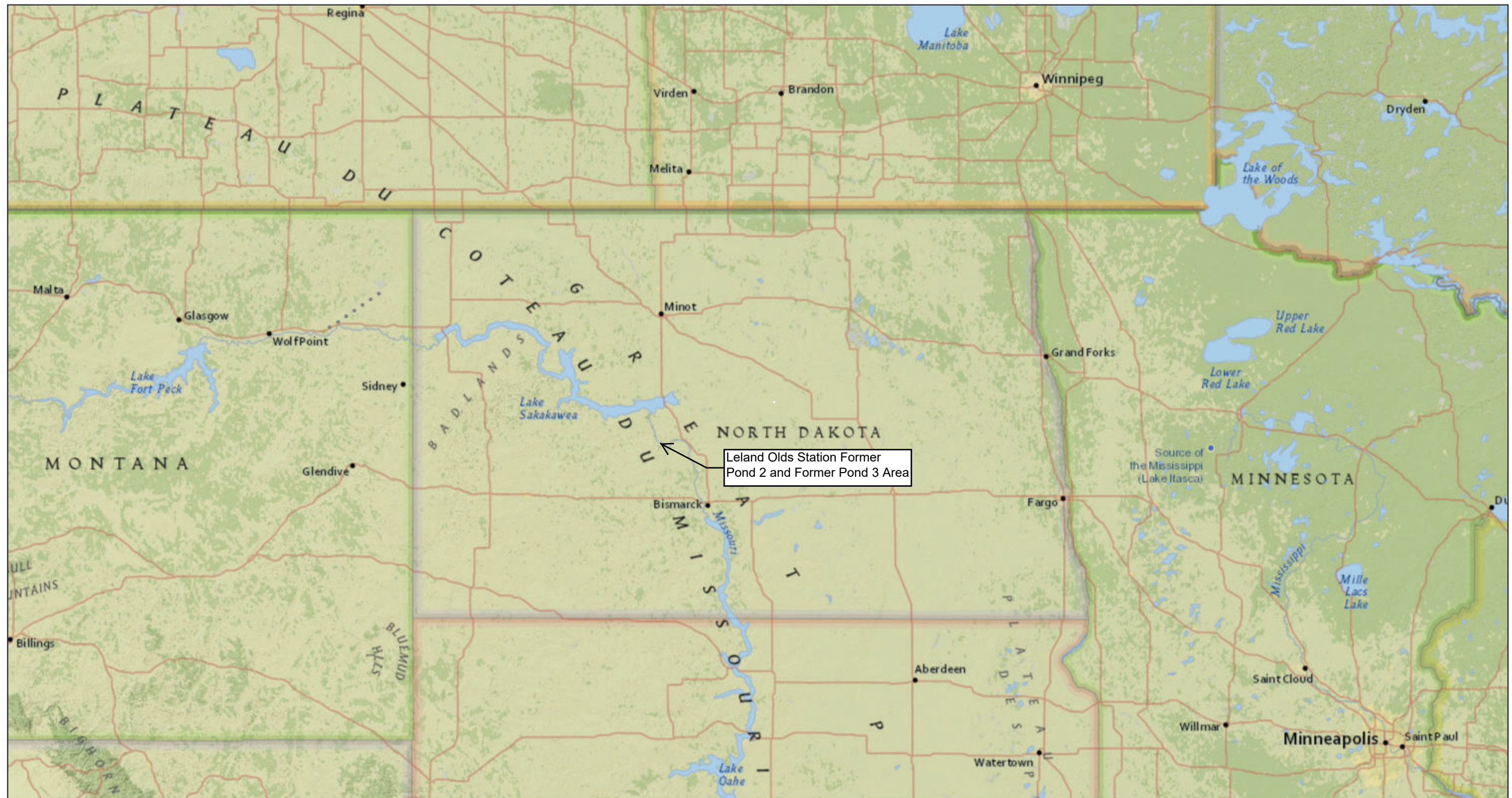
A Touchstone Energy Cooperative

DESIGN BY <u>M. TOMAC</u>	APR/2022
DRAWN BY <u>G. MUNTICANU</u>	APR/2022
DESIGN CHK. <u>R. LANG</u>	APR/2022
APPROVED:	
SCALE: 1" = 100'	
VENDOR/ORIGINATED FROM:	
VENDOR DRAWING NO.	ORIGINAL REV
BASIN DRAWING NO.	REV. NO.
LOS-CY-OGP-0001	0

REV.	DESCRIPTION	DRWN	DSGN	APPD	DATE

Attachment E – Geologic Maps

U.S. Geological Survey Quaternary Faults



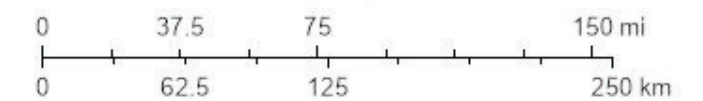
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Fault Areas

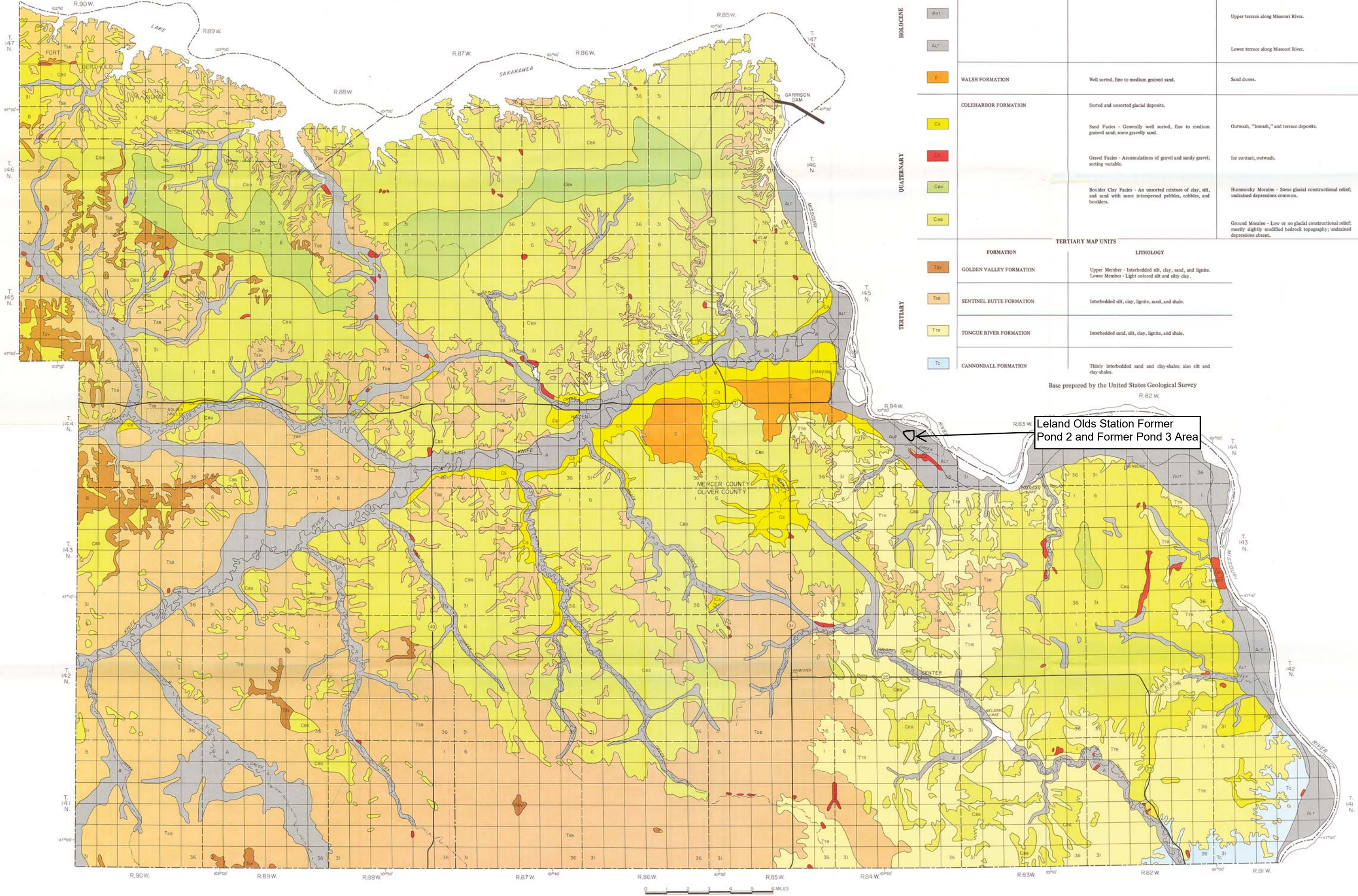
- Class B
- historic
- late Quaternary
- latest Quaternary
- middle and late Quaternary
- National Database
- Historic (< 150 years), well constrained location

- Historic (< 150 years), moderately constrained location
- Historic (< 150 years), inferred location
- Latest Quaternary (<15,000 years), well constrained location
- Latest Quaternary (<15,000 years), moderately constrained location
- Latest Quaternary (<15,000 years), inferred location
- Late Quaternary (< 130,000 years), well constrained location
- Late Quaternary (< 130,000 years), moderately constrained location
- Late Quaternary (< 130,000 years), inferred location
- Middle and late Quaternary (< 750,000 years), well constrained location
- Middle and late Quaternary (< 750,000 years), moderately constrained location
- Middle and late Quaternary (< 750,000 years), inferred location
- Undifferentiated Quaternary (< 1.6 million years), well constrained location
- Undifferentiated Quaternary (< 1.6 million years), moderately constrained location
- Undifferentiated Quaternary (< 1.6 million years), inferred location

1:4,622,324



National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



RECENT AND PLEISTOCENE MAP UNITS			
SYMBOL	FORMATION	LITHOLOGY	LANDFORM
A	WALSH FORMATION	Dark brown, gray or black silt, clay and sand.	Alluvium - Floodplain, terrace or lowland deposits.
Alt			Upper terrace along Missouri River.
AlT			Lower terrace along Missouri River.
E	WALSH FORMATION	Well sorted, fine to medium grained sand.	Sand dunes.
QUATERNARY			
Cs	COLEHARBOR FORMATION	Sorted and unsorted glacial deposits.	Outwash, "Inwash," and terrace deposits.
Cs		Sand Facies - Generally well sorted, fine to medium grained sand; some gravelly sand.	
Cg		Gravel Facies - Accumulations of gravel and sandy gravel; sorting variable.	Ice contact, outwash.
Cbn			Hummocky Moraine - Some glacial constructional relief; undrained depressions common.
Cbo			Ground Moraine - Low or no glacial constructional relief; mostly slightly modified bedrock topography; undrained depressions absent.
TERTIARY MAP UNITS			
FORMATION	LITHOLOGY		
Tsv	GOLDEN VALLEY FORMATION Upper Member - Interbedded silt, clay, sand, and lignite. Lower Member - Light colored silt and silty clay.		
Tsb	SENTINEL BUTTE FORMATION Interbedded silt, clay, lignite, sand, and shale.		
Ttr	TONGUE RIVER FORMATION Interbedded sand, silt, clay, lignite, and shale.		
Tc	CANNONBALL FORMATION Thinly interbedded sand and clay-shales; also silt and clay-shales.		

Base prepared by the United States Geological Survey
 R.82 W

Leland Olds Station Former
 Pond 2 and Former Pond 3 Area

A

North Dakota State Water Commission
North Dakota Geological Survey

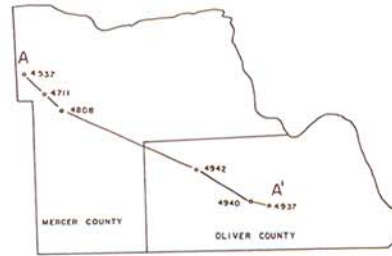
Plate 2. Cross section showing Fox Hills, Hell Creek, and Cenozoic Formations of Mercer and
Oliver Counties

Part I. Plate II
County Ground - Water Studies 15
Bulletin 56

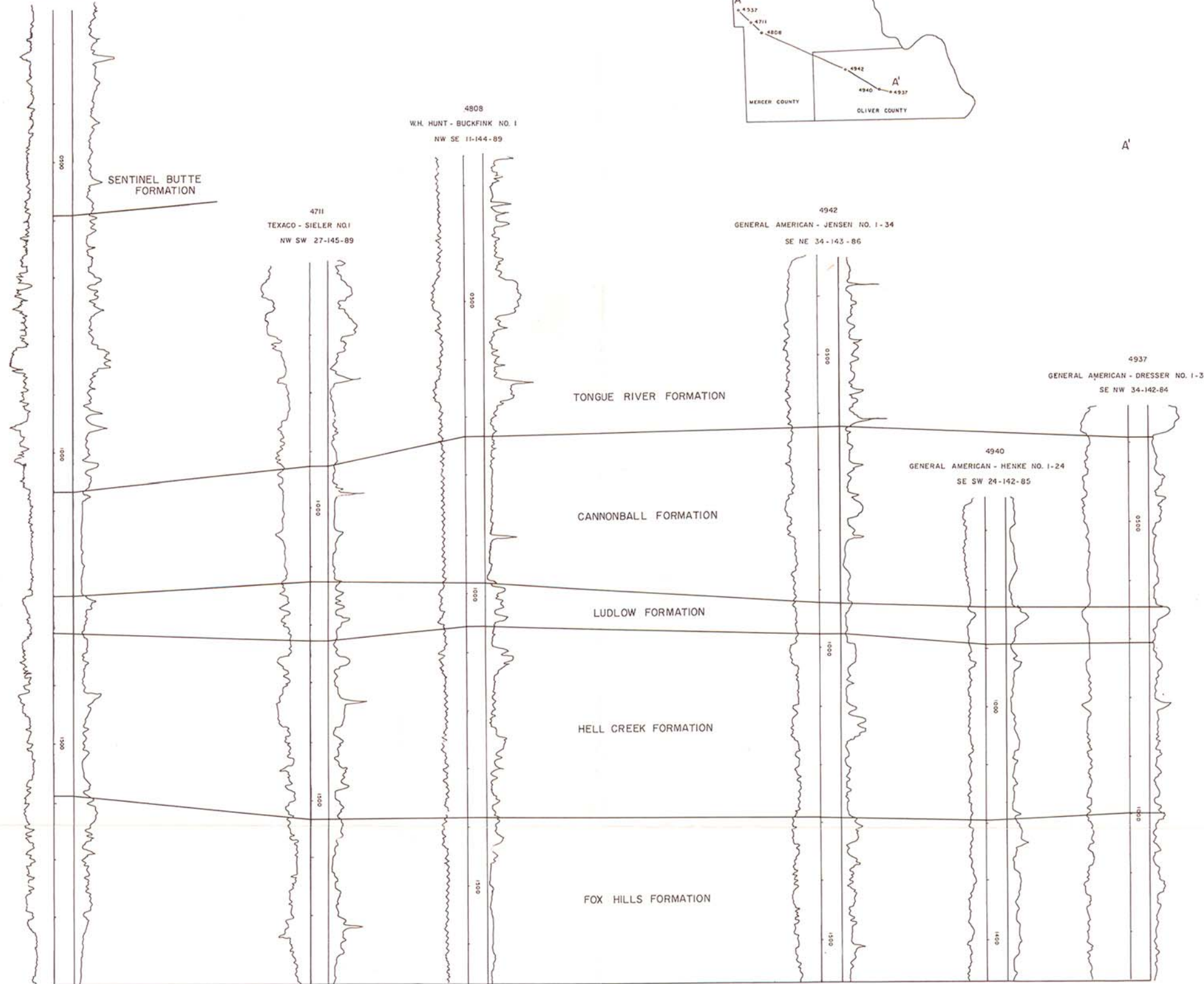
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SUN OIL - LINDEMAN NO. 1
SE NW 21-146-90

4711
TEXACO - SIELER NO. 1
NW SW 27-145-89

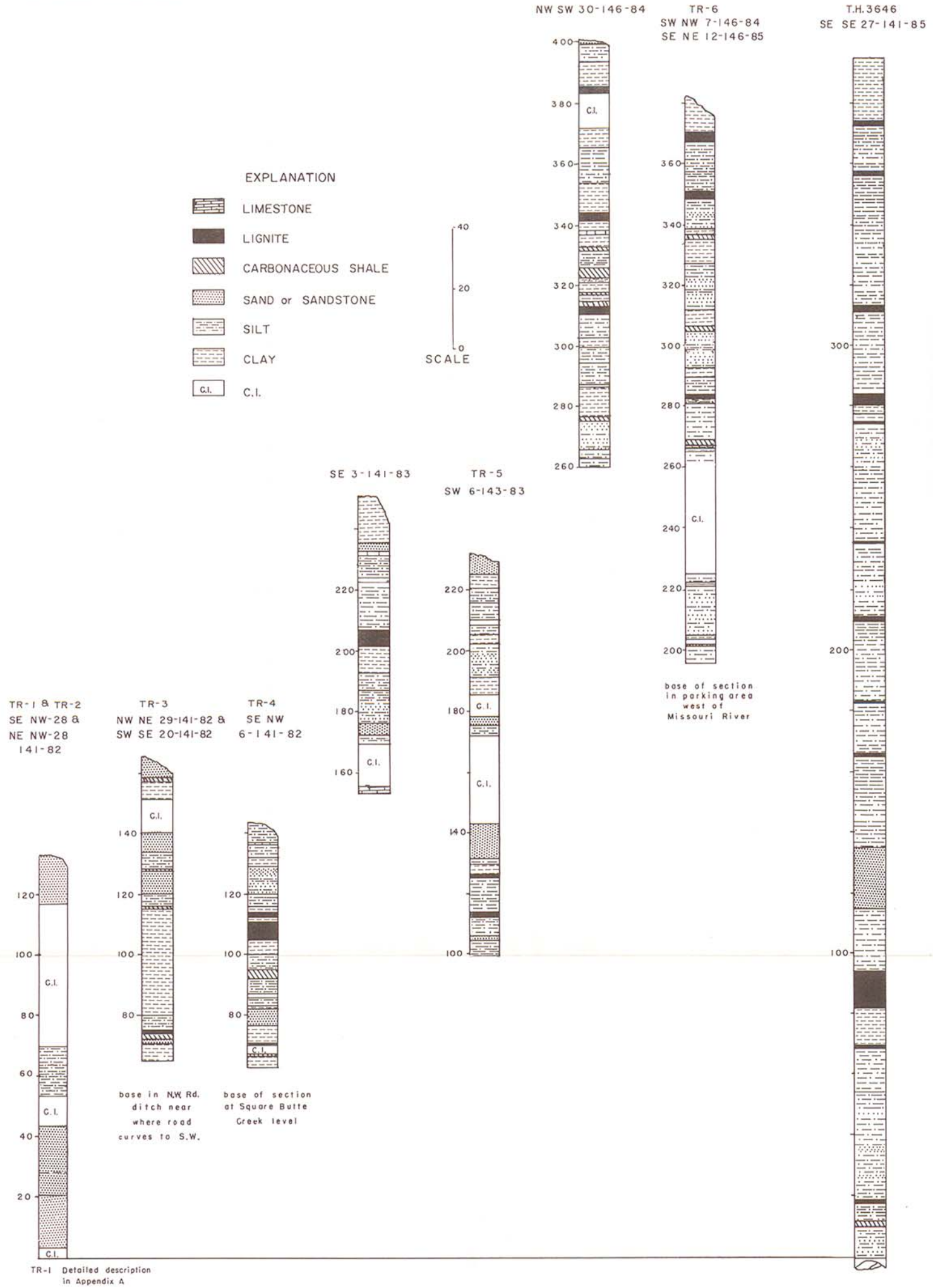
4808
W.H. HUNT - BUCKFINK NO. 1
NW SE 11-144-89

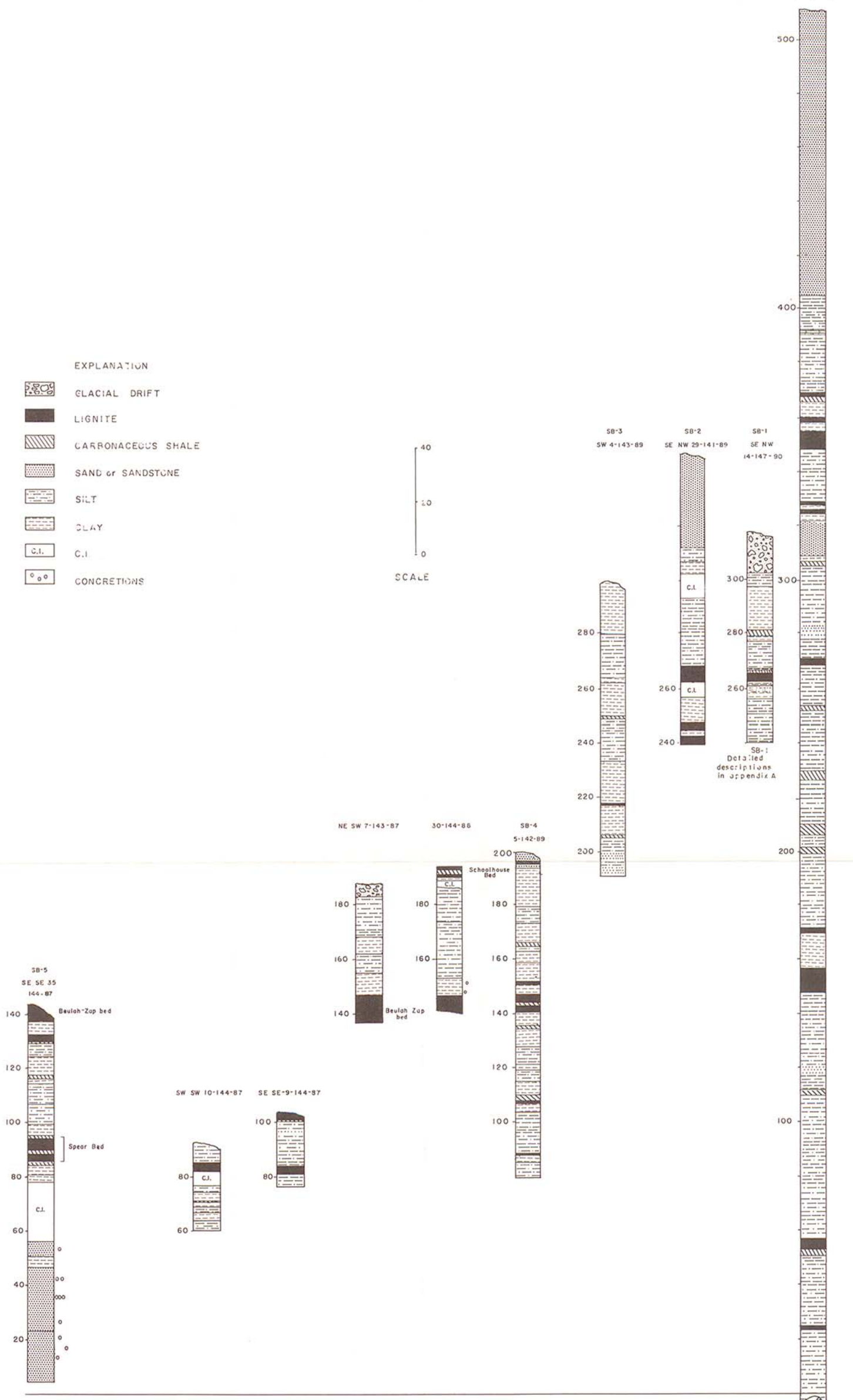


A'



Top of Pierre Formation





Appendix A – Biological Resources Technical Memorandum – LOS Multi-Unit LRD

Originator: Katelyn Behounek, Biologist II
 Reviewer: Kallin T. Snow, PhD, Senior Environmental Scientist

**Biological Resources Technical Memorandum
 Leland Olds Station (LOS) Former Pond 2 and Former Pond 3 Wetlands Location
 Restriction Demonstration (LRD)
 June 7, 2022**

Introduction

This Biological Resources Technical Memorandum was prepared by AECOM Technical Services, Inc. (AECOM) on behalf of the Basin Electric Power Cooperative (BEPC) for former Pond 2 and former Pond 3 at the Leland Olds Station in Stanton, North Dakota. Operation of both ponds for management of coal combustion residuals (CCR) was ceased prior to the October 19, 2015 deadline identified by the U.S. Environmental Protection Agency in the CCR Rule (40 Code of Federal Regulations [CFR] 257 Subpart D), which exempts these ponds from the requirement to demonstrate compliance with the wetlands location restrictions of 40 CFR § 257.61 and qualifies them as “inactive” surface impoundments. However, to support the selection of Closure-in-Place of these inactive surface impoundments, BEPC has elected to voluntarily demonstrate compliance with the wetlands restrictions required of active surface impoundments.

Methods

To evaluate compliance with the wetlands location restriction, AECOM conducted analysis using publicly available desktop resources and information provided directly by BEPC. The analysis evaluated the potential for biological resources to be present within the project boundary area. The resources evaluated include wetlands and waters, and federally threatened and endangered species. The primary reference regarding current habitats and land use was GoogleEarth® imagery from August 2021. Other websites utilized during the desktop analysis included the National Wetlands Inventory (NWI) (shown on Figure 2), National Hydrography Dataset (NHD) (shown on Figure 2), United States (U.S.) Department of Agriculture Web Soil Survey (shown on Figure 3), the Federal Emergency Management Agency (FEMA) Flood Maps, and U.S. Fish and Wildlife Service (USFWS) IPaC (Attachment A).

Table 1 – Records Search and Evaluation for Desktop Analysis

Data Theme	Data	Source ¹
Project Information	Site specific information	<ul style="list-style-type: none"> • Basin Electric Power Cooperative (BEPC)
Threatened and Endangered Species	Species Potentially Present	<ul style="list-style-type: none"> • IPaC Resource List (USFWS 2022a) • Critical habitat (USFWS 2002, USFWS 2022c) • North Dakota Game and Fish Species Identification Fact Sheets (NDGF 2019a) • Site photographs provided by BEPC

Table 1 – Records Search and Evaluation for Desktop Analysis

Data Theme	Data	Source ¹
Historic Wetlands and Surface Waters	Historic wetlands and surface waters found in vicinity of Project Site	<ul style="list-style-type: none"> • National Wetland Inventory (NWI) (USFWS 2022b) • National Hydrography Dataset (NHD) (USGS 2022) • Soil Resource Report for Mercer County, North Dakota (USDA NRCS 2022) • Site photographs provided by BEPC

¹ Acronyms: BEPC = Basin Electric Power Cooperative; IPaC = Information for Planning and Consultation; USFWS = U.S. Fish and Wildlife Service; NWI = National Wetland Inventory; NRCS = National Resource Conservation Service, NDGF = North Dakota Game and Fish; USDA = U.S. Department of Agriculture; NHD = National Hydrography Dataset.

Results

Wetlands and Surface Waters. The project boundary area that was evaluated for wetlands (Figure 1) was larger than the actual footprint of the former ponds, so as to cover some adjacent areas and provide a buffer zone from the closed ponds. The current online NWI (USFWS 2022b) mapped several historical features within the project area based on imagery from 1979 (without any update since that date). Pond 2, a lake habitat, was classified as L2UBFx. This code indicates that this is a Lacustrine (L) system with a Littoral (L) subsystem, and has an Unconsolidated Bottom (UB), and a water regime that is Semipermanently Flooded (F), and Excavated (x) (USFWS 2022b). Pond 3 was classified as a freshwater pond habitat PUBFx by NWI. This code indicates that this is a Palustrine (P) system with an Unconsolidated Bottom (UB) and a water regime that is Semipermanently Flooded (F) and Excavated (x) (USFWS 2022b). The special modifier, “excavated,” that is used in both of these codes identifies wetland basins or channels that were excavated by humans.

Two riverine habitats, R5UBFx and R5UBH, were also classified within the study area using the 1979 imagery. R5UBFx indicates that the system is Riverine (R) that is an Unknown Perennial (5) with an Unconsolidated Bottom (UB) and a water regime that is Semipermanently Flooded (F) and Excavated (x) (USFWS 2022b). R5UBH indicates that the system is a Riverine (R) that is an Unknown Perennial (5) with an Unconsolidated Bottom (UB) and a water regime that is Permanently Flooded (H) (USFWS 2022b). Analysis of the historic aerial photos indicates that these habitats were drainage ditches. Analysis of current photos indicates that these ditches do not contain wetlands, and comparison with historic photos indicates that the ditches were not altered when former Pond 2 and former Pond 3 were closed (USFWS 2022b). The features identified by NWI as described above were also identified by NHD. NHD classified Pond 2 and Pond 3 as reservoirs and the riverine habitat as canal/ditch (USGS 2022).

The USDA soil survey report (USDA NRCS 2022) indicates that three soil mapping units occur in the project boundary area. The ponds were mapped as miscellaneous water but have subsequently been drained and would be mapped as dumps, mine-ustorthents complex, 0 to 75 percent slopes, under current conditions. The major and minor components of this soil mapping unit are not hydric. Havrelon loam, 0 to 2 percent slopes, occasionally flooded, and Havrelon silty clay loam, 0 to 2 percent slopes, occasionally flooded, occur east and north of the former ponds. Havrelon loam and Havrelon silty clay loam are not hydric soils, but both mapping units may include minor components that are hydric, in channels and oxbows, in about 10 percent of the area.

When analyzing historic and current aerial photos of the study area, there were two areas of concern for potential wetlands due to the geomorphology and the landscape features present in the aerial imagery. BEPC provided current photos of these sites to AECOM for a more meticulous evaluation. These photos,

along with current aerial imagery of these two locations, are found in the photolog (AECOM 2022). Area of concern 1 is found east of Pond 2 and area of concern 2 is found north of Pond 3. In the historic aerial imagery for area of concern 1, there appeared to be a low spot with increased vegetation growth, which could indicate higher water retention. Upon current photo analysis, area of concern 2 was determined to be riverine habitat mapped by NWI, and in historic aerial imagery, there had appeared to be denser tree growth along this ditch, which could also indicate a wetter environment. Again, this ditch was not altered when Pond 3 was closed and upon further analysis of current photos, the area did not contain wetlands.

Based on the aforementioned analysis, AECOM concludes that there are no existing or historic wetlands within the study area.

Threatened and Endangered Species. The USFWS lists 6 threatened or endangered species with the potential to be present in the project boundary area. One of these species is federally endangered, four species are federally threatened, and one species is a federal candidate species (USFWS 2022c). The details of each are presented below in Table 2 along with conclusions regarding their potential presence in the project boundary area. Two species of note are further described below:

Piping plover (*Charadrius melodus*) is a federally threatened species that has critical habitat that falls just outside of the project area. Critical habitat and breeding range has been designated for this species throughout North Dakota in counties along the Missouri River, including Mercer County. Sightings have been recorded at the Missouri River - Stanton UPA Boating Access, located north of the Leland Olds Power Plant, May through July in 2020, as well as in May and June in 2021 (eBird 2009). There is potential occurrence for flyover for this species; however, they are not going to be attracted to the facility as they are true shorebirds in their habitat use. Thus, the project will have no effect on the species.

The Monarch butterfly (*Danaus plexippus*), a federal candidate species, could pass through this location, but no milkweed (*Asclepias* Spp.), which has a symbiotic relationship with the Monarch butterfly, was observed during photo analysis of the site. The photos utilized for the photo analysis were taken on April 16, 2022, can be seen in the photolog, and were provided to AECOM by BEPC (AECOM 2022). Because this species is a candidate species and not a federally listed species, there is currently no mitigation required for it.

Table 2 – Federally Listed Species Potentially Present in the LOS Multi-Unit LRD Project Boundary Area

Common Name	Scientific Name	Status ¹	Habitat Description	Potential Occurrence in Project Boundary Area ²	Conclusion
Birds					
Piping plover	<i>Charadrius melodus</i>	FT	Exposed shorelines and islands in large reservoirs and riparian areas. Gravel, sand, or pebble areas preferred. Final critical habitat has been designated for this species (USFWS 2002).	No suitable habitat, and project area is not directly in critical habitat. Critical habitat located on Missouri River east of project site.	<i>No effect.</i>

**Table 2 – Federally Listed Species Potentially Present in the
LOS Multi-Unit LRD Project Boundary Area**

Common Name	Scientific Name	Status ¹	Habitat Description	Potential Occurrence in Project Boundary Area ²	Conclusion
Red knot	<i>Calidris canutus rufa</i>	FT	Alkaline and freshwater lakes in the Missouri River system including sewage lagoons and large permeate freshwater wetlands. Critical habitat has been proposed for this species (USFWS 2021).	No suitable habitat, and project area is not within critical habitat.	<i>No effect.</i>
Whooping crane	<i>Grus americana</i>	FE	Utilize wetlands and cropland ponds for roosting, feeding, or both during migration, but no nesting recorded in North Dakota in 100 years. Large, shallow wetlands are used for roosting, and smaller wetlands are used for foraging. Critical habitat has been designated for this species (USFWS 1978).	No suitable habitat, and project area is not within critical habitat.	<i>No effect.</i>
Mammals					
Northern long-eared bat	<i>Myotis septentrionalis</i>	FT	Wooded habitat with roosts in trees under loose bark or within holes, hibernates in caves and mine shafts. No critical habitat has been designated for this species.	No suitable habitat within project area.	<i>No effect.</i>
Insects					
Dakota skipper	<i>Hesperia dacotae</i>	FT	Found in two types of prairie habitats - moist areas dominated by bluestem grass species with three wildflower species indicative of the habitat, wood lily (<i>Lilium philadelphicum</i>), harebell (<i>Campanula rotundifolia</i>) and smooth camas (<i>Zigadenus elegans</i>), and mesic upland prairies found on ridges and hillsides with bluestem grasses and needlegrasses dominating and purple coneflower (<i>Echinacea angustifolia</i>) typically found. Critical habitat has been designated for this species (USFWS 2015).	No suitable habitat, and project area is not within critical habitat.	<i>No effect.</i>

**Table 2 – Federally Listed Species Potentially Present in the
LOS Multi-Unit LRD Project Boundary Area**

Common Name	Scientific Name	Status ¹	Habitat Description	Potential Occurrence in Project Boundary Area ²	Conclusion
Monarch butterfly	<i>Danaus plexippus</i>	FC	Spring migration begins during mid-March. In breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily <i>Asclepias</i> spp.). Larvae consume plant, and migration occurs in autumn across North America to Mexico.	No critical habitat has been designated for this species. Possible to encounter obligate host plants on site.	<i>No effect.</i>

Source: USFWS 2022a.

Habitat information source: USFWS 1978, 2002, 2015, 2021, NDGF 2019a and NDGF 2019b.

¹ Status under Endangered Species Act

FE = federally endangered

FT = federally threatened

FC = federal candidate species

LOS = Leland Olds Station

LRD = Location Restriction Demonstration

²Potential for occurrence is based on desktop analysis.

Conclusions

An AECOM biologist completed a desktop analysis in May 2022 to examine wetlands and waters of the United States and federally threatened and endangered species with potential to occur within the LOS former Pond 2 and former Pond 3 location restriction demonstration project boundary area. No current or historic wetlands were determined to be present in the project boundary area. No suitable habitat for federally threatened or endangered species is present within the project boundary area. This information is accurate as of May 26, 2022 with the limitations as stated herein.

References

AECOM. 2022. LOS Multi Unit LRD Photolog.

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USFWS. 2022c. FWS Critical Habitat for Threatened and Endangered Species (Online Mapper). Available at: <http://criticalhabitat.fws.gov/>. Accessed: April 12, 2022.

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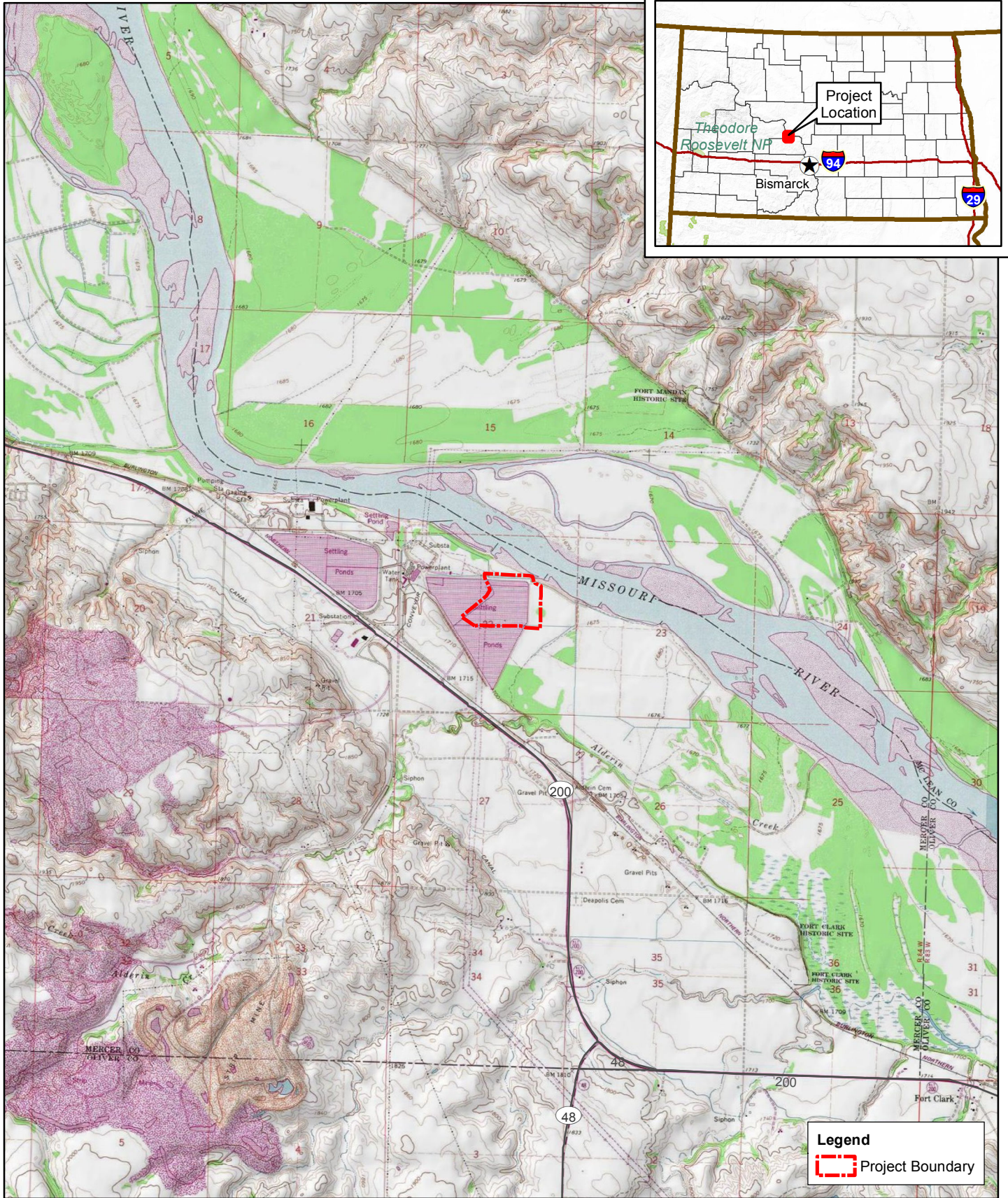
USFWS. 2015. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Dakota Skipper and Poweshiek Skipperling. Available at: <https://www.govinfo.gov/content/pkg/FR-2015-10-01/pdf/2015-24184.pdf#page=1>. Accessed: May 11, 2022.

USFWS. 2002. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northern Great Plains Breeding Population of the Piping Plover; Final Rule. (pp. 57638-57678). Available at: <https://www.govinfo.gov/content/pkg/FR-2002-09-11/pdf/02-21625.pdf>. Accessed: May 11, 2022.

USFWS. 1978. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Whooping Crane (pp. 20938). Available at: <https://www.govinfo.gov/content/pkg/FR-1978-05-15/pdf/FR-1978-05-15.pdf#page=1>. Accessed: May 11, 2022.

U.S. Geological Survey (USGS). 2022. USGS National Hydrography Dataset Best Resolution (NHD) - North Dakota (published 20220507). Accessed: June 1, 2022.

Figures



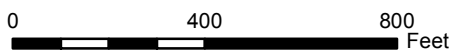
0 0.5 1 Miles
 Horizontal Projection: NAD83 UTM Zone 14N
 Topographic Map Source:
 ArcGIS Online (©2013 National Geographic Society)



Project Location Map

Legend
 Project Boundary

Basin Electric
 LOS Multi-use Project
 Mercer County, South Dakota



Horizontal Projection: NAD83 UTM Zone 14N
 Basemap Source:
 USDA NAIP Aerial Photography

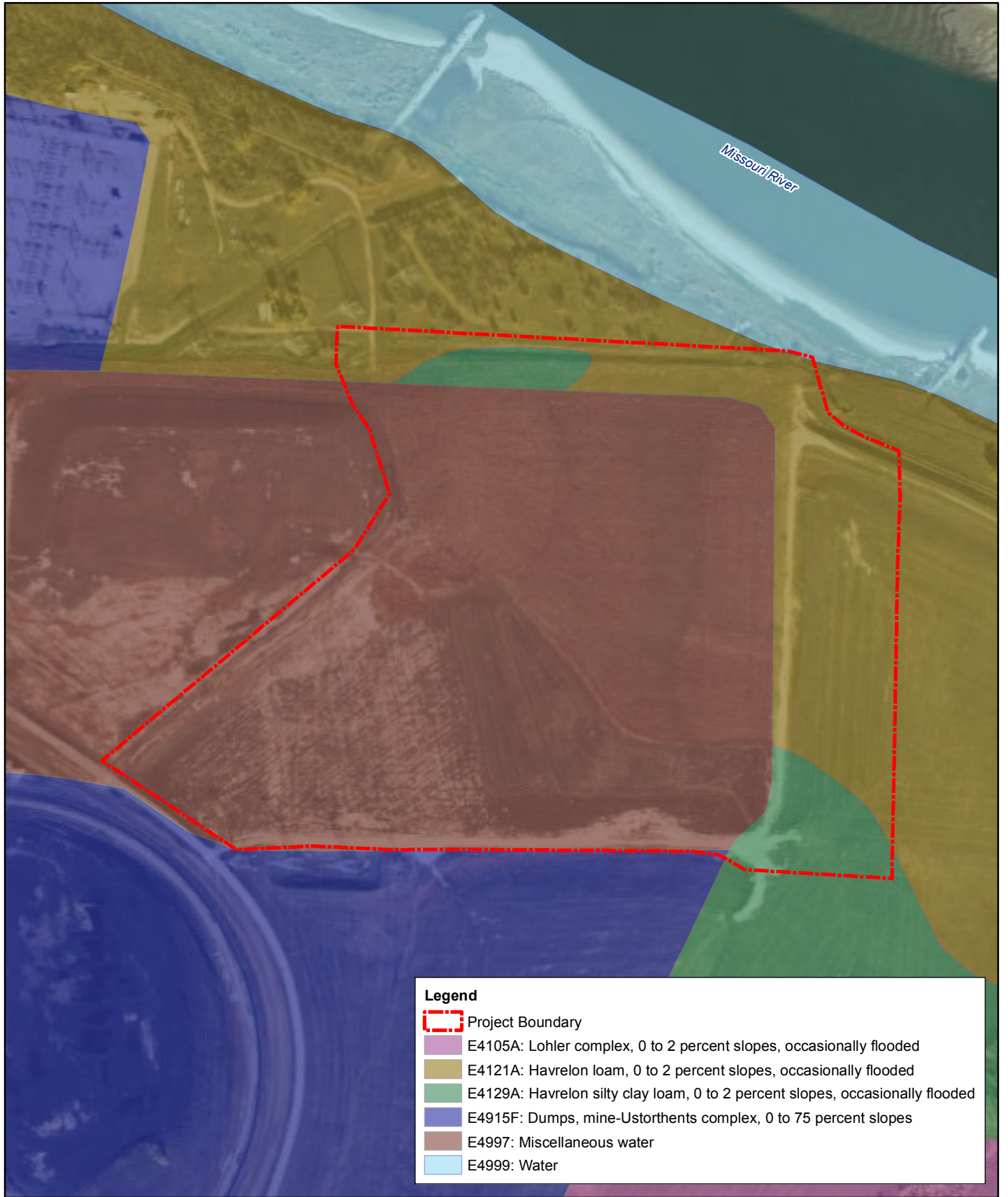


Legend	
	National Hydrography Dataset (NHD) Canal/Ditch
	Reservoir
	National Wetland Inventory (NWI) Freshwater Emergent Wetland
	Freshwater Pond
	Lake
	Riverine

**National Wetland Inventory and
 National Hydrography Dataset**

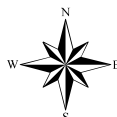
Basin Electric
 LOS Multi-use Project
 Mercer County, South Dakota

\\nadc1v1p172\DATA\Denver_GIS\Projects\LOS_MultiUnit_LR02_NWI.mxd



0 400 800 Feet

Horizontal Projection: NAD83 UTM Zone 14N
 Basemap Source:
 USDA NAIP Aerial Photography



Soil Mapping Units

Basin Electric
 LOS Multi-use Project
 Mercer County, South Dakota

Attachment A

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

Mercer County, North Dakota



Local office

North Dakota Ecological Services Field Office

☎ (701) 250-4481

📠 (701) 355-8513

3425 Miriam Avenue

Bismarck, ND 58501-7926

http://www.fws.gov/northdakotafieldoffice/endspecies/endangered_species.htm

NOT FOR CONSULTATION

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 species¹ 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 Fisheries²).

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. 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
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/9045</p>	Threatened

Birds

NAME	STATUS
<p>Piping Plover <i>Charadrius melodus</i></p> <p>There is final critical habitat for this species. The location of the critical habitat is not available.</p> <p>https://ecos.fws.gov/ecp/species/6039</p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>Wherever found</p> <p>There is proposed critical habitat for this species. The location of the critical habitat is not available.</p> <p>https://ecos.fws.gov/ecp/species/1864</p>	Threatened

Whooping Crane *Grus americana*

Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/758>

Insects

NAME

STATUS

Dakota Skipper *Hesperia dactotae*

Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/1028>

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

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 Act¹ and the Bald and Golden Eagle Protection Act².

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-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

THERE ARE NO MIGRATORY BIRDS OF CONSERVATION CONCERN EXPECTED TO OCCUR AT THIS LOCATION.

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 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 [AKN Phenology 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.

Coastal Barrier Resources System

Projects within the [John H. Chafee Coastal Barrier Resources System](#) (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local [Ecological Services Field Office](#) or visit the [CBRA Consultations website](#). The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the [official CBRS maps](#). The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: <https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation>

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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

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 tubercid 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.

NOT FOR CONSULTATION

Photographic Log

Client Name: Basin Electric Power Cooperation	Site Location: Leland Olds Station (LOS), Stanton, North Dakota	AECOM Project No.: 60634880
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Photo: #1	Date: April 16, 2022
Direction Photo Taken: Down	

Description:

Aerial photo of capped Ash Pond 2 and Pond 3 taken on December 2021 by MAXAR Technologies and Google Earth.

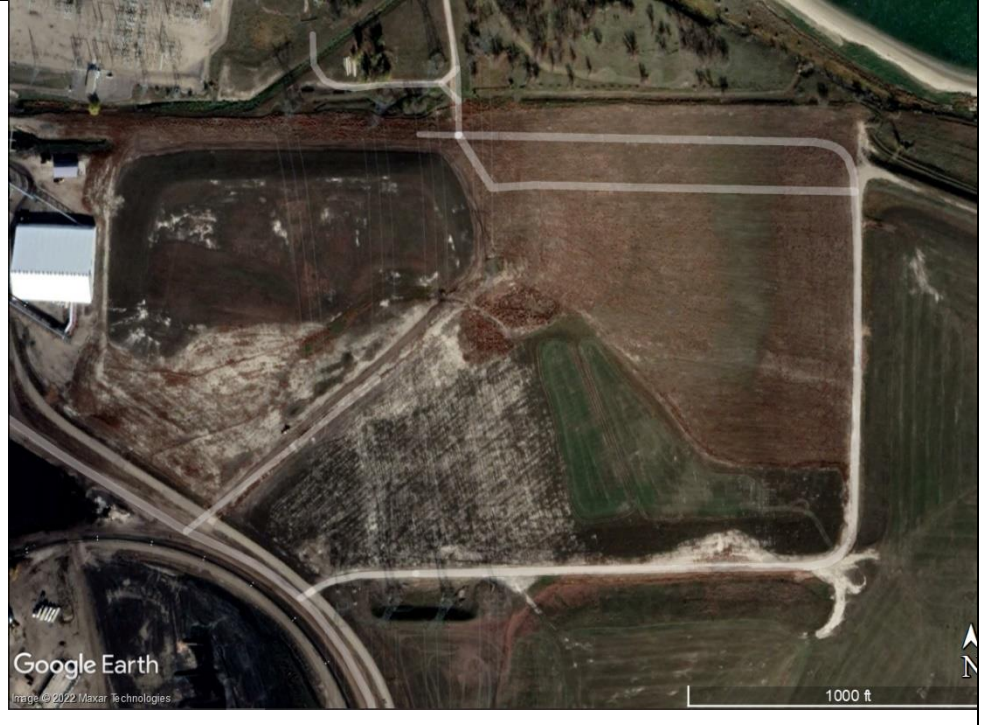


Photo: #2	Date: April 16, 2022
Direction Photo Taken: Down	

Description:

Overview aerial map for area of concern 1 along the eastern edge of Ash Pond 2, with points on the map referencing photos #3-6.

- Photo 3 facing North
- Photo 4 facing West
- Photo 5 facing South
- Photo 6 facing East



Client Name: Basin Electric Power Cooperation	Site Location: Leland Olds Station (LOS), Stanton, North Dakota	AECOM Project No.: 60634880
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Photo: #3	Date: April 16, 2022
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Direction Photo Taken: North

Description:

Photo in Area of Concern 1 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Photo: #4	Date: April 16, 2022
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Direction Photo Taken: West

Description:

Photo in Area of Concern for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #5

Date: April 16, 2022

Direction Photo Taken: South

Description:

Photo C in Area of Concern 1 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Photo: #6

Date: April 16, 2022

Direction Photo Taken: East

Description:

Photo D in Area of Concern 1 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #7

Date: April 16, 2022

Direction Photo Taken: Down

Description:

Overview Aerial map for Area of Concern 2 along the North edge of Pond 3, with the points on the map referencing photos #8-11.

- Photo 8 facing North
- Photo 9 facing West
- Photo 10 facing South
- Photo 11 facing East



Photo: #8

Date: April 16, 2022

Direction Photo Taken: North

Description:

Photo in Area of Concern 2 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #9

Date: April 16, 2022

Direction Photo Taken: West

Description:

Photo in Area of Concern 2 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Photo: #10

Date: April 16, 2022

Direction Photo Taken: South

Description:

Photo in Area of Concern 2 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #11

Date: March 25, 2022

Direction Photo Taken: East

Description:

Photo in Area of Concern 2 for overview of the site. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Photo: #12

Date: June 20, 2014

Direction Photo Taken: East

Description:

Historic photo showing overview of Ash Pond 2 and Pond 3. Photo taken on June 20, 2014, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #13

Date: August 28, 2015

Direction Photo Taken: East

Description:

Historic photo showing overview of Ash Pond 2 and Pond 3. Photo taken on August 28, 2015, and provided to AECOM by BEPC.



Photo: #14

Date: September 26, 2017

Direction Photo Taken: East

Description:

Historic photo showing Ash Pond 2 and Pond 3. The closing of Ash Pond 2 began in 2017 with approximately 23 acres capped. Photo taken on September 26, 2017, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #15

Date: July 20, 2018

Direction Photo Taken: East

Description:

Historic photo showing Ash Pond 2 and Pond 3. The southwest portion of Ash Pond 2 is capped. Photo taken on July 20, 2018, and provided to AECOM by BEPC.



Photo: #16

Date: September 7, 2018

Direction Photo Taken: East

Description:

Historic photo showing Ash Pond 2 and Pond 3. This is a higher perspective when compared with Photo #15. The southwest portion of Ash Pond 2 is capped. Photo taken on September 7, 2018, and provided to AECOM by BEPC.



Client Name: Basin Electric Power Cooperation

Site Location: Leland Olds Station (LOS), Stanton, North Dakota

AECOM Project No.: 60634880

Photo: #17

Date: April 16, 2022

Direction Photo Taken: East

Description:

Current photo of capped Ash Pond 2 and Pond 3. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



Photo: #18

Date: April 16, 2022

Direction Photo Taken: East

Description:

Current photo of the North edge of Pond 3. Photo taken on April 16, 2022, and provided to AECOM by BEPC.



