



# **Coal Combustion Residuals Landfill**

## **Location Restrictions Demonstrations**

### ***Antelope Valley Station Landfill Lateral Expansion***

Prepared for  
Basin Electric Power Cooperative

March 2022

Coal Combustion Residuals Landfill  
Location Restrictions Demonstrations  
Antelope Valley Station Landfill Lateral Expansion

March 2022

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## Certifications

I hereby certify that I have or my agent has examined the facility and, being familiar with the provisions of 40 CFR 257 Subpart D, attest that the following demonstrations for this Coal Combustion Residuals landfill lateral expansion are in accordance with good engineering practice, including consideration of applicable industry standards. I certify that the following demonstrations meet the requirements of 40 CFR § 257.60, § 257.61, § 257.62, § 257.63, and § 257.64 for this facility.



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Seth W. Hueckman  
Barr Engineering Co.  
ND Registration Number PE-10057

Dated this 17th day of March 2022

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# 1 Introduction

Antelope Valley Station (AVS) is a lignite coal-fired power plant consisting of two units that generate about 900 megawatts (MW) combined. The power plant, owned and operated by Basin Electric Power Cooperative (Basin Electric), is located approximately eight miles northwest of Beulah in Mercer County, North Dakota. Coal ash from AVS is disposed at the Section 7 Landfill, regulated as a coal combustion residuals (CCR) landfill under Permit No. 0160 issued by the North Dakota Department of Environmental Quality (NDDEQ). CCR management is subject to Federal Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments per 40 CFR 257 Subpart D.

The existing landfill was first permitted by the North Dakota Department of Health, now NDDEQ, for solid waste disposal in 1995. The existing landfill currently consists of four cells, Cells 1-4. The first phase of liner construction was completed in 1996 and the final phase of the existing landfill liner was completed in 2015. Future Cells 5-8 are a lateral expansion to the existing landfill. The existing landfill and lateral expansion are considered to be one CCR unit (Cells 1-8). The CCR location restrictions demonstrations in this report have been developed to satisfy the requirements of 40 CFR § 257.60 through 40 CFR § 257.64, as they apply to the lateral expansion (Cells 5-8) of the existing CCR landfill.

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## 2 § 257.60 Placement Above Uppermost Aquifer

As stated in 40 CFR § 257.60:

*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).*

### 2.1 Demonstration

Groundwater at AVS is monitored on a regular basis with a CCR groundwater monitoring system. Figure 1 shows the groundwater monitoring system for the uppermost aquifer below the CCR unit. It consists of the following ten wells:

- Upgradient wells:
  - MW-18(S)
  - MW-19(S)
  - MW-21(S)
  
- Downgradient wells:
  - MW-15(S)
  - MW-16(S)
  - MW-17(S)
  - MW-20(S)
  - MW-22(S)
  - MW-23(S)
  - MW-24(S)

Table 2-1 presents a summary of groundwater levels at each of the monitoring wells over the period of record. Monitoring wells MW-21(S) through MW-24(S) were installed in the fall of 2020 and have a shorter monitoring period than the other wells. The uppermost aquifer (Spaer Bed) generally has low permeability and water levels in some wells recover slowly after purging and sampling; only water levels believed to represent static equilibrium are shown in Table 2-1. All water levels have been below an elevation of 1894 feet. The proposed lowest base of the clay liner for Cells 5-8 is at approximate elevation 2050 feet, or over 156 feet above the highest water level in Table 2-1. Therefore, Cells 5-8 will be constructed with a base that is greater than 5 feet above the upper limit of the uppermost aquifer.

**Table 2-1 Groundwater Level Results**

Well	Top of Casing Elevation	Date	Water Level	Groundwater Elevation
MW-15(S)	2104.77	7/13/2016	219.19	1885.58
		2/22/2017	219.25	1885.52
		3/21/2017	219.50	1885.27
		4/19/2017	219.12	1885.65
		5/23/2017	219.09	1885.68
		6/28/2017	219.05	1885.72
		7/24/2017	219.14	1885.63
		8/16/2017	219.15	1885.62
		4/25/2018	219.60	1885.17
		10/10/2018	219.34	1885.43
		5/21/2019	219.32	1885.45
		10/16/2019	219.10	1885.67
		10/26/2020	219.46	1885.31
MW-16(S)	2124.58	2/22/2017	236.95	1886.64
		4/25/2018	236.91	1886.68
		10/10/2018	236.81	1886.78
		5/21/2019	236.68	1886.91
		10/16/2019	236.54	1887.05
		10/26/2020	237.25	1886.34
MW-17(S)	2124.89	7/13/2016	238.60	1886.29
		2/22/2017	238.69	1886.20
		4/19/2017	238.62	1886.27
		5/23/2017	238.47	1886.42
		6/28/2017	238.56	1886.33
		7/24/2017	238.64	1886.25
		8/16/2017	238.66	1886.23
		4/25/2018	238.93	1885.96
		10/10/2018	238.73	1886.16
		5/21/2019	238.64	1886.25
		10/16/2019	238.69	1886.20
		10/21/2020	238.40	1886.49
		11/3/2020	238.64	1886.25

Well	Top of Casing Elevation	Date	Water Level	Groundwater Elevation
MW-18(S)	2091.60	7/13/2016	198.75	1892.85
		2/22/2017	198.61	1892.99
		4/19/2017	198.59	1893.01
		5/23/2017	198.60	1893.00
		6/28/2017	198.47	1893.13
		7/24/2017	198.70	1892.90
		8/16/2017	198.70	1892.90
		4/25/2018	199.31	1892.29
		10/10/2018	198.99	1892.61
		5/21/2019	199.08	1892.52
		10/16/2019	198.86	1892.74
		10/21/2020	198.65	1892.95
		11/3/2020	198.57	1893.03
MW-19(S)	2042.56	7/13/2016	149.15	1893.41
		2/22/2017	149.34	1893.22
		3/21/2017	149.39	1893.17
		4/19/2017	149.00	1893.56
		6/28/2017	148.89	1893.67
		7/24/2017	149.12	1893.44
		8/16/2017	149.11	1893.45
		4/25/2018	149.72	1892.84
		10/10/2018	149.37	1893.19
		5/21/2019	149.42	1893.14
		10/16/2019	149.17	1893.39
				10/26/2020
MW-20(S)	2107.47	4/25/2018	221.47	1886.00
		10/10/2018	220.73	1886.74
		5/21/2019	220.63	1886.84
		10/16/2019	220.53	1886.94
		10/26/2020	221.00	1886.47
		11/3/2021	221.42	1886.05
MW-21(S)	2094.72	10/21/2020	202.11	1892.61
		11/3/2020	202.20	1892.52
MW-22(S)	2093.90	10/21/2020	209.98	1883.92
		11/3/2020	209.87	1884.03



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Well	Top of Casing Elevation	Date	Water Level	Groundwater Elevation
MW-23(S)	2080.16	10/21/2020	dry	NA
		11/3/2020	dry	NA
MW-24(S)	2070.74	10/21/2020	207.40	1863.34
		11/3/2020	206.95	1863.79

Based on the groundwater monitoring data, Cells 5-8 meet the requirements of § 257.60.

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## 3 § 257.61 Wetlands

As stated in 40 CFR § 257.61:

*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.*

### 3.1 Demonstration

Barr completed a field and desktop wetland review of the proposed expansion area in accordance with the 1987 United States Army Corps of Engineers (USACE) Wetland Delineation Manual for the Great Plains Region. The methods and results of this effort were documented in the Aquatic Resource Delineation Report dated June 11, 2021 (Barr, 2021a). The review identified 6 aquatic resources within the study area, labeled as AV-01 to AV-06 as shown on Figure 2. Barr requested an Approved Jurisdictional Determination (AJD) from the USACE for the 6 aquatic resources within the proposed landfill expansion area. The USACE determined that the 6 aquatic resources are not waters of the United States and are not jurisdictional under Section 404 of the Clean Water Act. These aquatic resources are not regulated because they are a category of resource that has been excluded pursuant to the Navigable Waters Protection Rule. The USACE Approved Jurisdictional Determination letter and supporting information is included in Appendix A. In general, the rationale for the exclusion determination was that 1) the aquatic resources are largely isolated within the landscape and do not have a jurisdictional connection with a tributary, 2) artificial ditch created by an adjacent roadway, or 3) developed within a mine spoil backfill/stockpile area.

Based on the field and desktop wetland review of the expansion area, and the USACE determination that the six aquatic resources are not waters of the United States, Cells 5-8 meet the requirements of § 257.61.

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## 4 § 257.62 Fault Areas

As stated in 40 CFR § 257.62:

*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.*

### 4.1 Demonstration

The area surrounding AVS was analyzed using the Quaternary Fault and Fold Database for the United States from the U.S. Geological Survey (Database) to determine if Cells 5-8 are greater than 200 feet from the outermost damage zone of any faults that have had displacement in Holocene time. The Database contains information on faults and associated folds in the United States that demonstrate geological evidence of surface deformation in large earthquakes during the Quaternary Period (last 2.6 million years to the present). According to the Database, no outermost damage zones associated with faults with displacement in Holocene times are located near AVS or within 200 feet of the proposed footprint for Cells 5-8. A map displaying known faults in the United States is provided as Figure 3.

Based on the results of the Database analysis, Cells 5-8 meet the requirements of § 257.62.

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## 5 § 257.63 Seismic Impact Zones

As stated in 40 CFR § 257.63:

*New 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.*

### 5.1 Demonstration

Per 40 CFR § 257.53, a seismic impact zone is defined 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.” A desktop review of available seismic data was performed to determine whether Cells 5-8 are located within a seismic impact zone. 2014 USGS National Seismic Hazard Maps show that Cells 5-8 are located in an area of less than 0.10-g horizontal acceleration, as illustrated on Figure 4. In addition, the USGS National Seismic Hazards Mapping Project, PSHA Deaggregation program, 2014 version, was used to determine that the peak ground acceleration for the site location is estimated at 0.0237 g.

Based on a desktop review of available seismic data, Cells 5-8 meet the requirements of § 257.63.

## 6 § 257.64 Unstable Areas

As stated in 40 CFR § 257.64:

*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.*

*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).*

### 6.1 Demonstration

An unstable areas demonstration was previously prepared for the existing landfill (Cells 1-4) in 2018 and is included in Appendix B.

Cells 5-8 will be constructed over mine spoils as is the case with the existing landfill. The spoils and groundwater conditions were examined and evaluated during the site investigation and included in the Site Characterization Report (Barr, 2021b). The findings indicate that conditions are similar to those observed during the study and operation of the existing landfill.

The surface topography, with the exception of the existing landfill, is relatively level; therefore, there is no observed potential for a nearby topographical feature to cause an instability that would impact the landfill. The subsurface consists of spoil with an average thickness of 142 feet overlying the Fort Union formation.

A key factor that improves the overall stability of the spoil foundation is the lack of groundwater. The local groundwater table is identified within native material at a depth of approximately 60 feet below the base of the spoil. This is important when evaluating stability as an established groundwater aquifer within the spoil would both promote consolidation and reduce the material strength.

Since this is a human-made deposition through backfilling of a previous open pit mine, there is the potential for consolidation and settlement due to additional loading from the landfill. The potential for settlement was evaluated and found to be negligible based on observed conditions. As stated above, groundwater is not present within the spoil thereby further minimizing the potential for consolidation from dissipation of pore pressure following additional loading from the landfill. Settlement is expected to be dominated by volumetric change related to elastic deformation. A sensitivity analysis was carried out

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and included in the Engineering Report (Barr, 2021c); the calculations indicated a maximum potential settlement of 6 to 8 inches below the highest portion of the landfill.

The CCR landfill is not located in an unstable area and meets the requirements of § 257.64.

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## 7 References

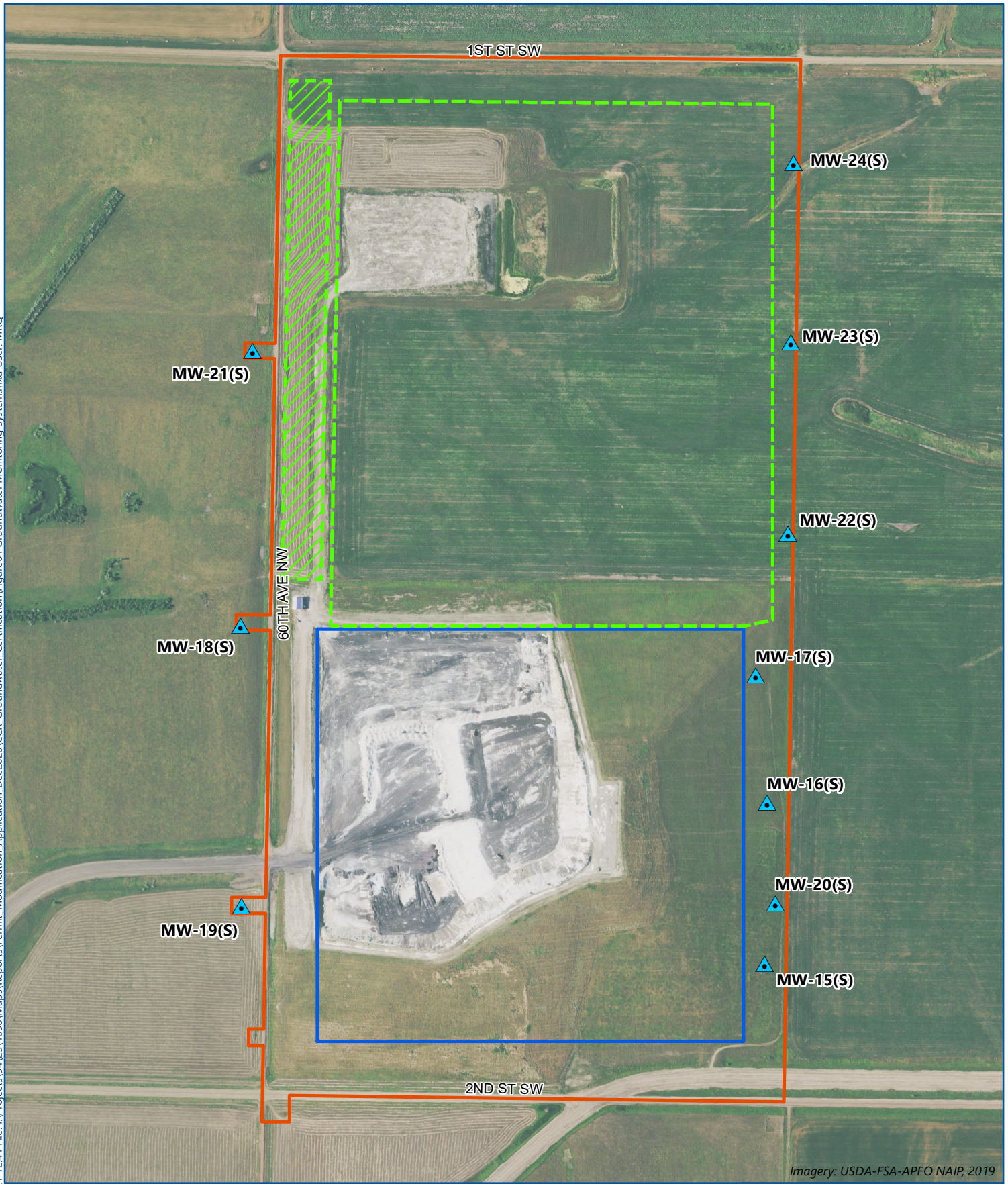
Barr, 2021a. Aquatic Resource Delineation Report, Antelope Valley Station Landfill Lateral Expansion Project, June 2021.

Barr, 2021b. Site Characterization Report, Antelope Valley Station Landfill Expansion Area, April 2021.






Barr, 2021c. Engineering Report, Antelope Valley Station Landfill, April 2021.

## Figures





Imagery: USDA-FSA-APFO NAIP, 2019

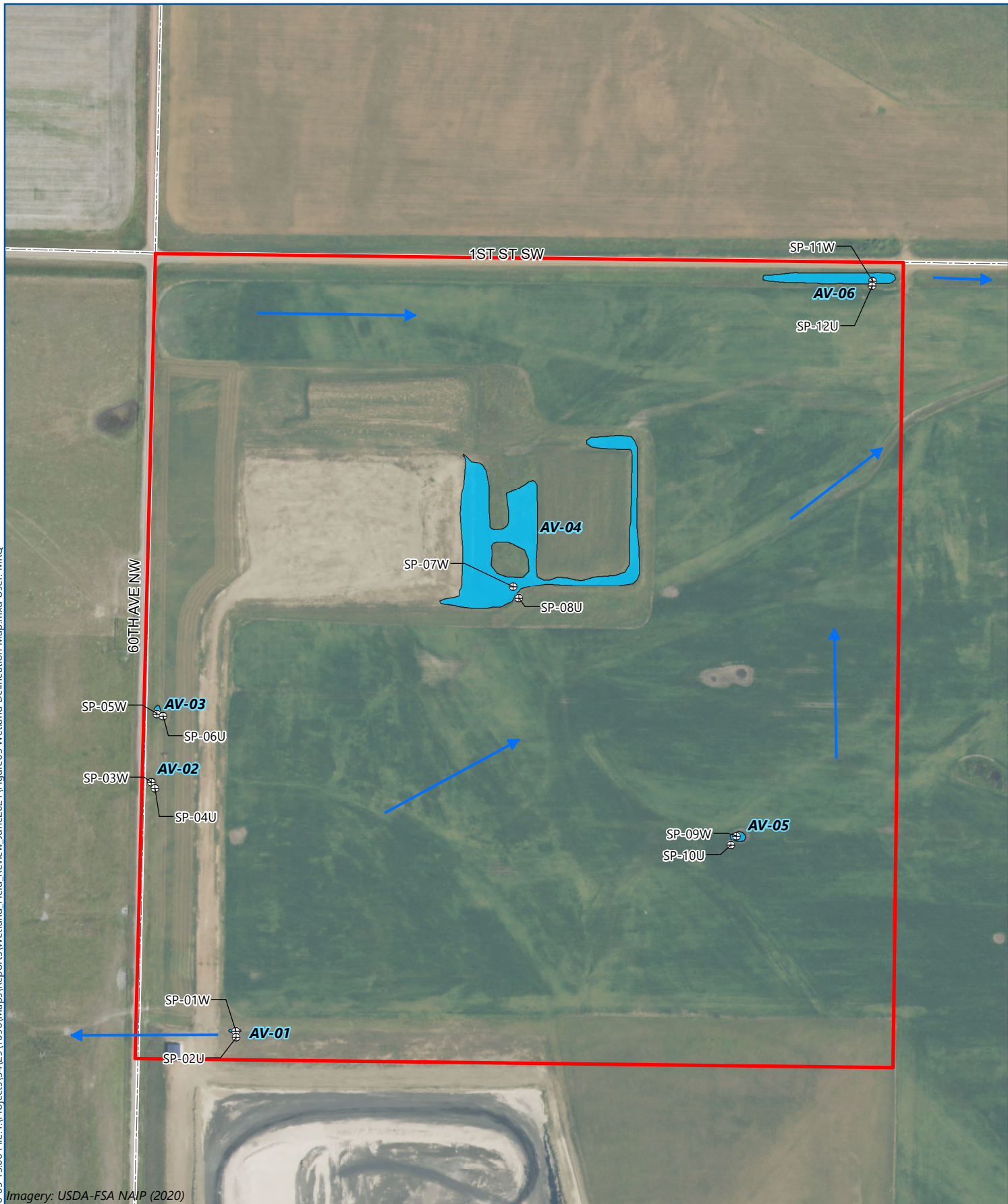
-  CCR Groundwater Monitoring System Well
-  Permit Boundary
-  Existing Landfill Liner
-  Landfill Liner Expansion
-  Leachate Management Area



**CCR GROUNDWATER  
MONITORING SYSTEM**  
Basin Electric Power Cooperative  
Antelope Valley Station Landfill  
Mercer County, North Dakota

**FIGURE 1**

Barr Footer: ArcGIS 10.8.1, 2021-06-03 15:06 File: I:\Projects\34\29\1096\Maps\Reports\Wetland\_Field\_Review\_June2021\Figure05 Wetland Delineation Map.mxd User: MRQ



Imagery: USDA-FSA NAIP (2020)



- Study Area
- Public Land Survey Section
- ➔ Flow Direction

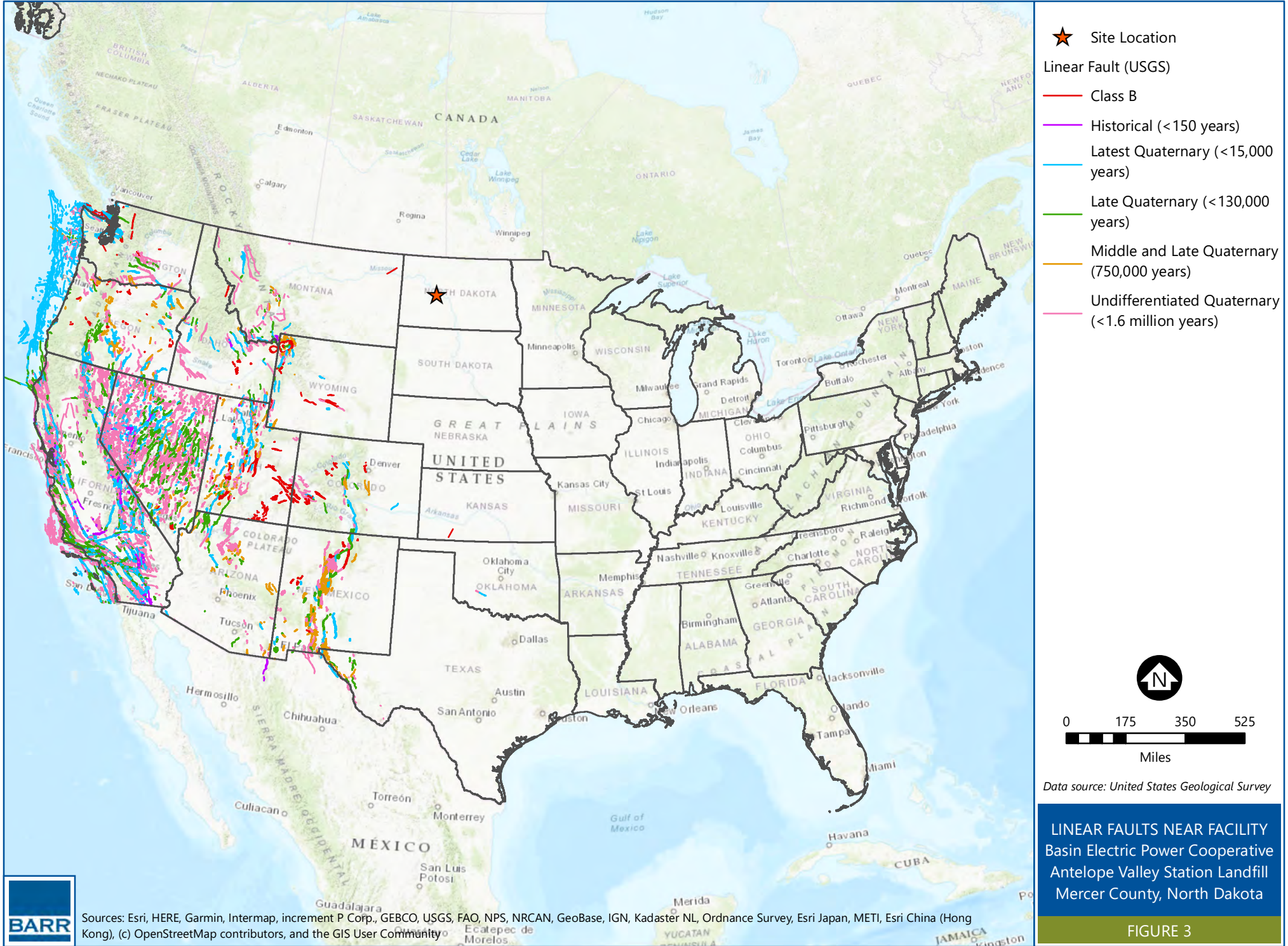
- Data Plot Delineated
- ☾ Wetlands

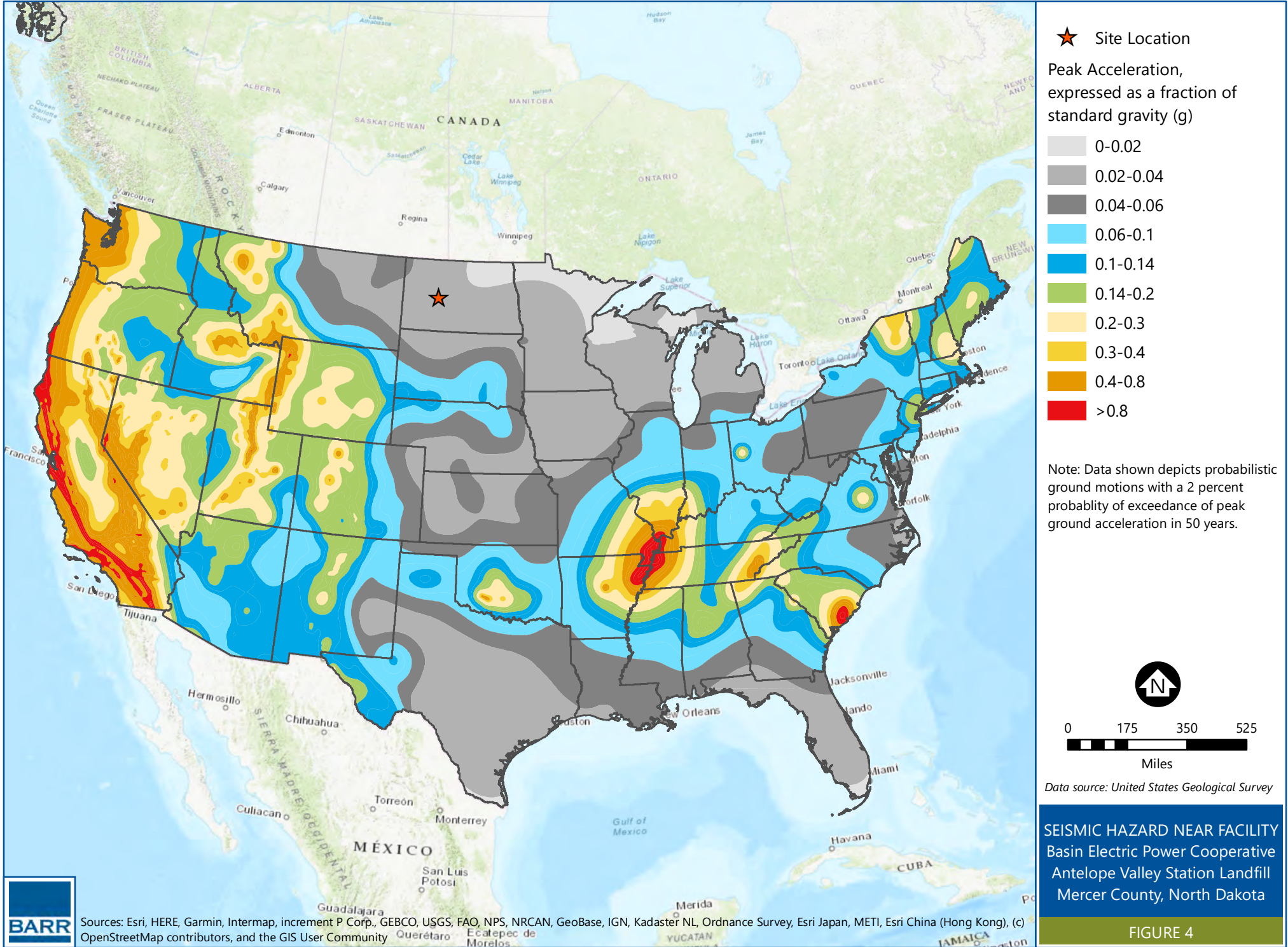


Date: 6/11/2021  
 Project: Antelope Valley Landfill Lateral Expansion  
 Delineator: MShalley (Barr Engineering)

**WETLAND DELINEATION**  
 Basin Electric Power Cooperative  
 Antelope Valley Station Landfill  
 Mercer County, North Dakota

FIGURE 2





## **Appendix A**

### **USACE Approved Jurisdictional Determination Letter**



**DEPARTMENT OF THE ARMY**  
CORPS OF ENGINEERS, OMAHA DISTRICT  
NORTH DAKOTA REGULATORY OFFICE  
3319 UNIVERSITY DRIVE  
BISMARCK, NORTH DAKOTA 58504-7565

July 28, 2021

NWO-2021-00419-BIS

Basin Electric Power Cooperative  
Attn: Kevin Solie  
1717 East Interstate Avenue  
Bismarck, ND 58503

Dear Mr. Solie:

We are responding to your June 16, 2021 request for an approved jurisdictional determination (AJD) for the Antelope Valley Station waste landfill project based on the submitted aquatic resource delineation report prepared by Barr Engineering. The 168-acre project site is located approximately 11 miles northwest of Hazen at the intersection between 60th Avenue NW and 1st Street SW in the NW $\frac{1}{4}$  of Section 7, Township 145 North, Range 87 West, Latitude 47.395929° North, Longitude - 101.822374° West, Mercer County, North Dakota.

Based on the information submitted, we have determined through completing an AJD that **Wetlands AV-01, AV-02, AV-03, AV-04, AV-05, and AV-06** as depicted in the submitted aquatic resource delineation report are not waters of the United States and are not jurisdictional under Section 404 of the Clean Water Act. These aquatic resources are not regulated because they are a category of resource that has been excluded pursuant to the Navigable Waters Protection Rule.

An AJD has been completed for the aquatic resources listed above and is enclosed for your information. The AJD may also be viewed at our website located at: <http://www.nwo.usace.army.mil/Missions/Regulatory-Program/North-Dakota/Jurisdictional-Determination.aspx>. The AJD will be available on the website within 30 days. You may also request copies of the supporting materials the Corps used in determining this AJD.

This AJD determination is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 Code of Federal Regulations (CFR) Part 331.

A Notification of Appeal Process (NAP) and Request for Appeal (RFA) form is enclosed. If you request to appeal this AJD determination you must submit a completed RFA form to the Northwestern Division Office at the following address: Administrative

Appeal Review Officer, Army Corps of Engineers, Northwestern Division, P.O. Box 2870, Portland, Oregon 97208-2870.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer service survey found on our website at [http://corpsmapu.usace.army.mil/cm\\_apex/f?p=regulatory\\_survey](http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey).

Please refer to identification number NWO-2021-00419-BIS in any correspondence concerning this project. If you have any questions, please contact Jonathan Hegna by email at [Jonathan.R.Hegna@usace.army.mil](mailto:Jonathan.R.Hegna@usace.army.mil) or telephone at 701-255-0015, Extension 2002. For more information regarding our program, please visit our website at <http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx>.

Sincerely,



Toni R. Erhardt  
Senior Project Manager  
North Dakota Regulatory Office

Enclosures



**U.S. ARMY CORPS OF ENGINEERS  
REGULATORY PROGRAM  
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)  
NAVIGABLE WATERS PROTECTION RULE**

**I. ADMINISTRATIVE INFORMATION**

Completion Date of Approved Jurisdictional Determination (AJD): 7/28/2021

ORM Number: NWO-2021-00419

Associated JDs: N/A

Review Area Location<sup>1</sup>: State/Territory: North Dakota City: Hazen County/Parish/Borough: Mercer

Center Coordinates of Review Area: Latitude 47.397592° North Longitude -101.817969° West

**II. FINDINGS**

**A. Summary:** Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- There are “navigable waters of the United States” within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- There are “waters of the United States” within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

**B. Rivers and Harbors Act of 1899 Section 10 (§ 10)<sup>2</sup>**

§ 10 Name	§ 10 Size	§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A.	N/A.

**C. Clean Water Act Section 404**

Territorial Seas and Traditional Navigable Waters ((a)(1) waters): <sup>3</sup>			
(a)(1) Name	(a)(1) Size	(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):			
(a)(2) Name	(a)(2) Size	(a)(2) Criteria	Rationale for (a)(2) Determination
N/A.	N/A.	N/A.	N/A.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):			
(a)(3) Name	(a)(3) Size	(a)(3) Criteria	Rationale for (a)(3) Determination
N/A.	N/A.	N/A.	N/A.

Adjacent wetlands ((a)(4) waters):			
(a)(4) Name	(a)(4) Size	(a)(4) Criteria	Rationale for (a)(4) Determination
N/A.	N/A.	N/A.	N/A.

<sup>1</sup> Map(s)/figure(s) are attached to the AJD provided to the requestor.

<sup>2</sup> If the navigable water is not subject to the ebb and flow of the tide or included on the District’s list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.

<sup>3</sup> A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.





**U.S. ARMY CORPS OF ENGINEERS  
REGULATORY PROGRAM  
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)  
NAVIGABLE WATERS PROTECTION RULE**

**D. Excluded Waters or Features**

Excluded waters ((b)(1) – (b)(12)): <sup>4</sup>			
Exclusion Name	Exclusion Size	Exclusion <sup>5</sup>	Rationale for Exclusion Determination
Wetland AV-01	0.01 acre(s)	(b)(1) Non-adjacent wetland.	Based on review of historical satellite imagery and hydrology mapping, wetland AV-01 is not adjacent to an a(1) – a(3) water. The wetland is largely isolated within the landscape and does not have a jurisdictional connection with a tributary or TNW. Therefore, wetland AV-01 meets the criteria for the b(1) exclusion.
Wetland AV-02	0.01 acre(s)	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1).	Based on review of historical satellite imagery and the submitted delineation report, this wetland feature constitutes an artificial ditch that was created by the construction of the adjacent roadway. The feature is not an a(1) or a(2) water, nor is it constructed through an adjacent wetland. Therefore, wetland AV-02 meets the criteria for the b(5) exclusion.
Wetland AV-03	0.02 acre(s)	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1).	Based on review of historical satellite imagery and the submitted delineation report, this wetland feature constitutes an artificial ditch that was created by the construction of the adjacent roadway. The feature is not an a(1) or a(2) water, nor is it constructed through an adjacent wetland. Therefore, wetland AV-03 meets the criteria for the b(5) exclusion.
Wetland AV-04	2.72 acre(s)	(b)(1) Non-adjacent wetland.	Based on review of historical satellite imagery, hydrology mapping, and the delineation report wetland AV-04 is not adjacent to an a(1) – a(3) water. The wetland is largely isolated within the landscape and does not have a jurisdictional connection with a tributary or TNW. The wetland appears to have developed within a mine spoil backfill area. Therefore, wetland AV-04 meets the criteria for the b(1) exclusion.
Wetland AV-05	0.03 acre(s)	(b)(1) Non-adjacent wetland.	Based on review of historical satellite imagery and hydrology mapping, wetland AV-05 is not adjacent to an a(1) – a(3) water. The wetland is largely isolated within the landscape and does not have a jurisdictional connection with a

<sup>4</sup> Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.

<sup>5</sup> Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.



**U.S. ARMY CORPS OF ENGINEERS  
REGULATORY PROGRAM  
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)  
NAVIGABLE WATERS PROTECTION RULE**

Excluded waters ((b)(1) – (b)(12)): <sup>4</sup>				
Exclusion Name	Exclusion Size		Exclusion <sup>5</sup>	Rationale for Exclusion Determination
				tributary or TNW. Therefore, wetland AV-05 meets the criteria for the b(1) exclusion.
Wetland AV-06	0.35	acre(s)	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1).	Based on review of historical satellite imagery and the submitted delineation report, this wetland feature constitutes an artificial ditch that was created by the construction of 1st Street SW. The feature is not an a(1) or a(2) water, nor is it constructed through an adjacent wetland. Therefore, wetland AV-06 meets the criteria for the b(5) exclusion.
N/A.	N/A.	N/A.	N/A.	N/A.

**III. SUPPORTING INFORMATION**

**A. Select/enter all resources** that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

- Information submitted by, or on behalf of, the applicant/consultant: [Aquatic resource delineation report with data collected on May 18, 2021 by consultant.](#)

This information is sufficient for purposes of this AJD.

Rationale: [N/A](#)

- Data sheets prepared by the Corps: [Title\(s\) and/or date\(s\).](#)
- Photographs: [Aerial and Other: Photographs taken by consultant on May 18, 2021 for delineation report. Satellite imagery from Google Earth Pro.](#)
- Corps site visit(s) conducted on: [Date\(s\).](#)
- Previous Jurisdictional Determinations (AJDs or PJDs): [ORM Number\(s\) and date\(s\).](#)
- Antecedent Precipitation Tool: [provide detailed discussion in Section III.B.](#)
- USDA NRCS Soil Survey: [Title\(s\) and/or date\(s\).](#)
- USFWS NWI maps: [USFWS National Wetland Inventory Mapper](#)
- USGS topographic maps: [USGS The National Map](#)

**Other data sources used to aid in this determination:**

Data Source (select)	Name and/or date and other relevant information
<a href="#">USGS Sources</a>	<a href="#">USGS The National Map</a>
<a href="#">USDA Sources</a>	<a href="#">N/A.</a>
<a href="#">NOAA Sources</a>	<a href="#">National Snow Analysis database</a>
<a href="#">USACE Sources</a>	<a href="#">ORM2 Database</a>
<a href="#">State/Local/Tribal Sources</a>	<a href="#">FEMA / ND SWC Risk Assessment Map Service</a>
<a href="#">Other Sources</a>	<a href="#">N/A.</a>

**B. Typical year assessment(s):**

[A number of satellite images and photographs were evaluated and compared as point-in-time data sources to evaluate hydrological conditions in combination with other data sources. The APT tool was used to determine whether these point-in-time data sources represented hydrological conditions of a typical year.](#)



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A wide range of dates and seasons were targeted to obtain information on how hydrology can vary at the site. Only point-in-time data sources that met typical year requirements were used to assert jurisdiction under the Navigable Waters Protection Rule. All APT reports generated are available for review within the file record.

Photos and Satellite Imagery Data Reviewed:

Google Earth Pro, 08/01/2016 imagery ----- APT indicated normal conditions  
Google Earth Pro, 09/23/2013 imagery ----- APT indicated wetter than normal conditions  
Google Earth Pro, 12/31/2009 imagery ----- APT indicated normal conditions  
Google Earth Pro, 06/07/2004 imagery ----- APT indicated drier than normal conditions  
  
Delineation Site Visit Photos, 05/18/2021 Photos ----- APT indicated drier than normal conditions.

**C. Additional comments to support AJD: N/A**

## **Appendix B**

### **Existing Landfill Unstable Areas Demonstration**

October 5, 2018

**AECOM Project No.**  
60587593

Basin Electric Power Cooperative  
294 County Road 15  
Beulah, North Dakota 58523

**Engineer's Certification of Unstable Areas Demonstration, Existing CCR Landfill, EPA Final CCR Rule, Antelope Valley Station, Beulah, North Dakota**

**1. Purpose**

The purpose of this document is to certify that the Unstable Areas Demonstration for the Basin Electric Power Cooperative (BEPC) Antelope Valley Station existing CCR Landfill is in compliance with the Unstable Areas demonstration specified in the Final CCR Rule at 40 CFR §257.64. Pursuant to § 257.64(d)(1), the owner or operator of an existing CCR landfill must complete the unstable areas location demonstration no later than October 17, 2018.

**2. Background**

According to 40 CFR 257.64(a) of the EPA Final CCR Rule, any existing or new CCR landfills, and new and existing CCR surface impoundments, and all lateral expansions of CCR units must not be located in unstable areas zones unless the owner or operator demonstrates that all structural components including liners, leachate collection and removal systems, and surface water control systems, are designed to resist movements associated with the unstable area.

**3. Summary of Findings**

Based on review of historical documents, geological data, and geotechnical exploration reports, AECOM has concluded that BEPC Antelope Valley Station existing landfill is not located in a region with risk of subsidence or excessive differential settlement, and has determined that the existing Landfill of the BEPC Antelope Valley Station is not in an unstable area and meets the requirements of the EPA Final CCR Rule 40 CFR §257.64.

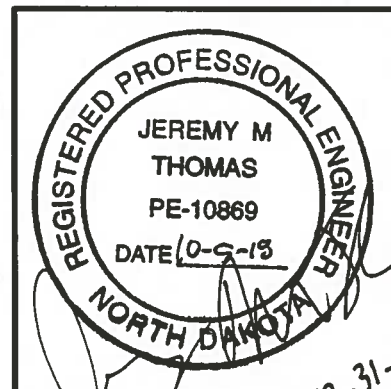
**4. Certification**

I, Jeremy M. 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 and that the information contained herein is accurate as of the date of my signature below. I certify that the Unstable Area Demonstration for CCR, dated 10/18/2018, for the above-referenced CCR Unit meets the unstable areas location requirements of 40 CFR § 257.64(a), as 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 Unit will not be disrupted..

Jeremy M. Thomas  
Printed Name

October 5, 2018  
Date

AECOM  
558 N Main Street  
Oshkosh, WI 54901  
920.235.0321



Exp. 12-31-18