



Environment

Submitted to:
Basin Electric Power Cooperative
Laramie River Station
Wheatland, WY

Submitted by:
AECOM
Fort Collins, CO
60632474
January 17, 2024

Basin Electric Power Cooperative Laramie River Station

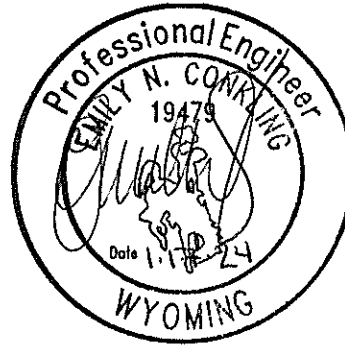
Coal Combustion Residual Surface Impoundment Annual Inspection Report – 2023

Inspection Completed by:

I certify that this report has been prepared in accordance with 40 Code of Federal Regulations (CFR) 257.83(b)(2) requiring a written Annual Inspection Report prepared by a Qualified Professional Engineer (QPE) as set forth in the *Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments* for the Basin Electric Power Cooperative (BEPC) Laramie River Station (LRS) surface impoundments for 2023.



Emily Conkling, PE
Environmental Engineer
Wyoming PE #19479
Expires 12-31-2024



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Acronyms

AECOM	AECOM Technical Services, Inc.
amsl	above mean sea level
BAP	bottom ash pond
BEPC	Basin Electric Power Cooperative
CCR	coal combustion residual
CFR	Code of Federal Regulations
E-EHP	East Emergency Holding Pond
FGD	flue gas desulfurization
IDF	InFlow Design Flood
ft	foot or feet
LRS	Laramie River Station
QPE	Qualified Professional Engineer
W-EHP	West-Emergency Holding Pond
yr	year

1.0 Introduction

In accordance with 40 Code of Federal Regulations (CFR) 257.83(b)(2), the purpose of this document is to fulfill the requirements for an Annual Inspection Report prepared by a Qualified Professional Engineer (QPE) to ensure the design, construction, operation, and maintenance of the Basin Electric Power Cooperative (BEPC) Laramie River Station (LRS) surface impoundments is consistent with recognized and generally accepted good engineering standards.

LRS operates three coal-fired boilers, resulting in the production of coal combustion residuals (CCRs). CCRs are defined in 40 CFR 257.53 as: "CCR means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers."

CCRs generated at LRS (and thus regulated under 40 CFR 257) include bottom ash, flue gas desulfurization (FGD) materials, and fly ash.

1.1 CCR Production and Handling

On a daily average, approximately 1,200 tons of FGD materials and fly ash are generated at LRS. The moisture conditioned CCRs (fly ash and FGD material) are transported by haul truck to the on-site LRS landfill, where the CCRs are dumped, spread, and compacted. Bottom ash is managed in surface impoundments adjacent to the landfill. The landfill is addressed in a separate Annual Inspection Report.

1.2 Purpose and Use of CCR Units

Bottom ash and boiler slag from LRS are sluiced to Bottom Ash Pond (BAP) 3. Water from BAP 3 is decanted into BAPs 1 and 2, and then recirculated for various plant processes. Flue gas emission control residuals and water treatment plant lime slurry are sluiced in the West-Emergency Holding Pond (W-EHP). Water from the W-EHP is decanted into the East EHP (E-EHP).

1.3 CCR Unit Watershed

The general area around LRS consists of a physiographic feature called the Wheatland Flats that covers approximately 125 square miles. The Wheatland Flats are made up of seven distinct river terraces that rise 25 to 160 feet above the present stream levels of the Laramie River. The entire LRS Site is constructed on the fourth and fifth river terraces. As such, the CCR surface impoundments are located within the Laramie River watershed. **Figure 1** shows the LRS property on a composite United States Geological Survey 7.5 minute topographic map.

1.4 Facility Description

The five CCR surface impoundments at LRS (BAP-1, BAP-2, BAP-3, W-EHP, and E-EHP) were constructed in 1980, during the original construction of the LRS. The impoundment dikes were largely constructed by excavating the impoundment basins and placing the excavated material directly along the perimeter of the basins to form the impoundment dikes. BAP-1 and 2 and the E-EHP were retrofit in accordance with the CCR Rule requirements in 2020 and 2021 (AECOM 2020, 2022). Because they were considered unlined, BAP-3 and the W-EHP ceased accepting waste prior to April 11, 2021. BEPC completed partial retrofit of BAP-3 during the 2022 construction season and AECOM completed retrofit construction certification in January 2023. The interior (i.e., pond side) was retrofit with a new CCR compliant liner and contains liquids and the exterior (i.e., land side) contains dry CCR and slopes of the BAP impoundment dikes were constructed at an approximately 3:1 horizontal:vertical inclination.

BAP-1 and BAP-2 have surface areas of approximately 15.5 and 30.9 acres, respectively, and are separated by a north-south oriented divider dike. The impoundment dikes for BAP-1 and BAP-2 have an approximate 23-ft maximum structural height (BEPC 2016).

BAP-3 is located directly south of BAP-1 and BAP-2 and has a surface area of approximately 35.4 acres after the partial retrofit. The impoundment dike for BAP-3 has an approximate 25-ft structural height (BEPC 2016).

The E-EHP and W-EHP have surface areas of approximately 27.9 and 30.1 acres, respectively, and are separated by a northwest-southeast oriented divider dike.

1.4.1 Foundation and Abutment Materials

Surface geology in the vicinity of LRS consists of Quaternary-age alluvial terrace sand, colluvium, and loess deposits, underlain by the bedrock of the Arikaree Formation (lower Miocene/Oligocene). The colluvium and loess deposits typically consist of fine-grained sands, silty sands, and silts with intermittent deposits of clay and gravel with thicknesses reportedly ranging from about 0 to 50 feet. Colluvial soils are typically identified as loose, unconsolidated deposits of silt, sand, and gravel that have accumulated at the base of hill slopes and ridges through erosional processes (rainwash, downward creep, etc.). Loess deposits are formed by the accumulation of wind-blown dusts and are composed of predominantly silt-sized particles. The Arikaree Formation typically consists of light gray to tan, fine-grained, poorly bedded sandstone containing numerous magnetite grains, with some lenses of siltstone, limestone, and tuff.

The engineering properties of the foundation and abutment construction materials can be reviewed in the October 2016 "Coal Combustion Residual Surface Impoundment History of Construction Documentation" (BEPC 2016).

1.4.2 Spillways and Diversion Features

LRS is a zero-discharge facility. No spillways are present. The CCR units are all above grade; as such, diversion structures are not used. In 2016, the storage capacity of the impoundments was evaluated for a 24-hour duration design storm for the 1,000-year (yr) Inflow Design Flood (IDF) using an AutoCAD Civil3D computer model. The computer model evaluated the ability of the ponds to collect and control the 1,000-yr IDF under existing operational and maintenance procedures. The Civil3D model results for the impoundments indicate that all the CCR units have sufficient storage to adequately manage inflows during peak discharge conditions created by the 1000-yr IDF. Therefore, the spillway requirements in 257.73(d)(1)(v)(A) and (B) are not applicable to the impoundments at LRS.

2.0 Review of Existing Information

Existing information regarding the status and condition of the LRS surface impoundments was reviewed as part of the QPE annual inspection effort. The evaluation included review of the facility CCR Rule operating record, files associated with previous state permitting, and past inspection reports. No indications of structural instability have been observed to date for any of the CCR units at LRS.

2.1 CCR Unit Documents and Operating Records

Below is a list of documents reviewed for this annual report:

- Coal Combustion Residual Surface Impoundment History of Construction Documentation (BEPC 2016)
- Coal Combustion Residual Surface Impoundment Annual Inspection 2020 (BEPC 2021)
- Coal Combustion Residual Surface Impoundment Annual Inspection 2021 (BEPC 2022)
- Coal Combustion Residual Surface Impoundment Annual Inspection 2022 (BEPC 2023)
- CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, East Emergency Holding Pond (AECOM 2020)
- CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 1 (AECOM 2021a)
- CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 1 (AECOM 2021b)
- CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 1 (AECOM 2021c)
- CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 2 (AECOM 2021d)
- CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 2 (AECOM 2021e)
- CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 3 (AECOM 2021f)
- CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 3 (AECOM 2021g)
- CCR Rule Report: Periodic Safety Factor Assessment, East Emergency Holding Pond (AECOM 2021h)
- CCR Rule Report: Periodic Structural Stability Assessment, East Emergency Holding Pond (AECOM 2021i)
- CCR Rule Report: Periodic Safety Factor Assessment, West Emergency Holding Pond (AECOM 2021j)
- CCR Rule Report: Periodic Structural Stability Assessment, West Emergency Holding Pond (AECOM 2021k)
- CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 2 (AECOM 2022)
- CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 3 (AECOM 2023)

2.2 Weekly Inspection Review

During 2023, qualified individuals (generally the LRS Environmental Coordinator) conducted weekly inspections for any appearance of actual or potential structural weakness and other conditions which were disrupting or had the potential to disrupt the operation or safety of the CCR unit(s). Appearances of structural weakness may include but are not limited to: (1) signs of piping and other internal erosion; (2) transverse, longitudinal, and desiccation cracking; (3) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions; (4) animal burrows; (5) excessive or lacking vegetation cover; and (6) slope erosion. A review of the periodic inspection reports for the LRS CCR landfill indicated no signs of actual or potential structural weakness or other adverse conditions as described above. The completed weekly inspection checklists are filed in the operating record.

3.0 On-site Annual Inspection of Facility

The annual inspection was conducted on Wednesday, December 6, 2023, starting at 7:00 a.m. Mountain Standard Time outside of the LRS administrative offices. The weather was sunny and approximately 60 degrees Fahrenheit. No snow cover was observed during the inspection visit.

Personnel in attendance for the inspection included:

- Emily Conkling, PE (WY #19479), AECOM
- Olivia Helinski, AECOM

A completed annual inspection form is provided as **Attachment A**. A sample weekly inspection form used by LRS staff is provided as **Attachment B**. Figures and a photo log from the December 6, 2023 inspection are included as **Attachment C**.

3.1 Findings

The findings of the annual inspection and a review of facility records are summarized in the following subsections. Depth and volume values listed in Sections 3.1.1 and 3.1.2 were provided by LRS staff from their monitoring instrumentation (Cummings 2023; Dihle 2024).

3.1.1 BAPs

- There have been no changes in the geometry of the BAPs since the previous annual inspection.
- Instrumentation: All three BAPs have an AMATEK ultrasonic probe for water level measurements. The probes for BAP-1 and BAP-2 are located in the pumphouse, and the probe for BAP-3 is located at the overflow weir on the north edge of the pond.
- Minimum depth of impounded water and CCR since the previous annual inspection:
 - BAP-1: 33.9 ft
 - BAP-2: 3.0 ft
 - BAP-3: Estimated 4.6 ft (pond level below staff gauge which begins at 5 ft)
- Maximum depth of impounded water and CCR since the previous annual inspection:
 - BAP-1: 36.2 ft
 - BAP-2: 14.0 ft
 - BAP-3: 18.8 ft
- Maximum recorded reading since the previous annual inspection:
 - BAP-1: 4,563.2 ft amsl
 - BAP-2: 4,553 ft amsl
 - BAP-3: 4,584.3 ft amsl
- Depth and elevation of impounded water and CCR at the time of the 2023 annual inspection:
 - BAP-1: Depth of 34.7 ft with a water elevation of 4,561.7 ft amsl
 - BAP-2: Depth of 5.3 ft with a water elevation of 4,544.3 ft amsl
 - BAP-3: Depth of 18.8 ft with a water elevation of 4,584.3 ft amsl
- Approximate volume of impounded water and CCR at the time of the 2023 annual inspection:
 - BAP-1: 117.6 million gallons
 - BAP-2: 93.0 million gallons
 - BAP-3: 190.8 million gallons

- viii. Remaining estimated storage capacity at the time of the 2023 annual inspection:
 - a. BAP-1: 18.0 million gallons
 - b. BAP-2: 121.2 million gallons
 - c. BAP-3: 48.5 million gallons
- ix. There are no appearances of an actual or potential structural weakness of the impoundments, nor are there any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the BAPs and appurtenant structures. Minor erosion was noted on the landside of the eastern dike of BAP-1 (Photos 13 through 15 of **Attachment C**).
- x. There are no other changes that may affect the stability or operation of the impounding structure since the previous annual inspection.

3.1.2 EHPs

- i. There have been no changes in the geometry of the EHPs since the previous annual inspection.
- ii. While there is an AMATEK ultrasonic probe in E-EHP that measures water level (located at the pump building), there is no instrument in W-EHP. W-EHP was surveyed throughout the year; data reported below for W-EHP are approximate.
- iii. Minimum depth of impounded water and CCR since the previous annual inspection:
 - a. W-EHP: 8.0 ft
 - b. E-EHP: 9.7 ft
- iv. Maximum depth of impounded water and CCR since the previous annual inspection:
 - a. W-EHP: 8.5 ft
 - b. E-EHP: 20.7 ft
- v. Maximum recorded reading since the previous annual inspection:
 - a. W-EHP: 4,524.5 ft amsl
 - b. E-EHP: 4,534.7 ft amsl
- vi. Depth and elevation of impounded water and CCR at the time of the 2023 annual inspection:
 - a. W-EHP: Depth of 8.0 ft with a water elevation of 4,524 ft amsl
 - b. E-EHP: Depth of 9.7 ft with a water elevation of 4,523.7 ft amsl
- vii. Approximate volume of impounded water and CCR at the time of the 2023 annual inspection:
 - a. W-EHP: 19.7 million gallons
 - b. E-EHP: 66.8 million gallons
- viii. Remaining storage capacity at the time of the 2023 annual inspection:
 - a. W-EHP: 72.6 million gallons
 - b. E-EHP: 39.6 million gallons
- ix. There are no appearances of an actual or potential structural weakness of the impoundments, nor are there any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the BAPs and appurtenant structures.
- xi. There are no other changes that may affect the stability or operation of the impounding structure since the previous annual inspection.

It should be noted that the elevations for the bottoms of the BAPs and EHPs vary slightly, and the elevations cited above are approximate. Cited elevations are not to be considered as built or uniformly applicable across the entire bottom of the ponds. Cited elevations for the toe of the units are also approximated. Additionally, for all ponds, CCR deposition at the bottom of the pond is not evenly distributed across the entire pond area such that the volume of storage (water and CCR) is approximate as well.

4.0 Conclusions

As noted in the CCR Rules §257.83(b)(5), “If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.”

Items identified during the annual inspection and items identified during the document review that are regarded as potential deficiencies are discussed in Section 4.2 below.

4.1 Recommendations Other Than Normal Maintenance

No recommendations other than normal maintenance items were noted.

4.2 Deficiencies Discovered

During the annual inspections, several erosional rills were noted in the eastern slope of the capped portion of BAP-3 (photo #18 of Attachment C) and minor erosional rills were noted in the land side of the eastern dike of BAP-1 (photos 13 through 15 of **Attachment C**). No releases were identified during inspection.

4.3 Corrective Measures Taken

On July 25, 2023, holes in the liner for BAP-3 were noted by LRS staff. The holes were inspected for any damage to the underlying geosynthetic clay liner; no damage was observed. The small liner holes were patched by LRS staff on August 9, 2023 (Rademacher 2023). The information on the holes and repairs was reviewed, area of repair was observed, and the response appears to be adequate for the corrective measure.

LRS was aware of the erosion rills in the eastern slope of the capped portion of BAP-3 prior to the annual inspection, and planning for corrective measures was already in progress. Reseeding in the area was planned for the week of January 8, 2024, but was delayed due to weather. LRS will complete the reseeded as soon as practicable in early 2024. Minor grading was conducted in December by plant staff to correct areas at the base of the slope in preparation of additional seeding. AECOM recommends that LRS continue to monitor the area to review how the vegetation is growing and to identify any future potential deficiencies until the vegetation is further established and the erosion potential is minimized. Additionally, AECOM recommends that LRS monitor the eastern dike of BAP-1 to monitor the minor erosional rills noted.

5.0 References

AECOM Technical Services, Inc. (AECOM). 2020. CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, East Emergency Holding Pond. November 3.

AECOM. 2021a. CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 1, Laramie River Station. October 12.

AECOM. 2021b. CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 1, Laramie River Station. October 12.

AECOM. 2021c. CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 1. March 18.

AECOM. 2021d. CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 2, Laramie River Station. October 12.

AECOM. 2021e. CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 2, Laramie River Station. October 12.

AECOM. 2021f. CCR Rule Report: Periodic Safety Factor Assessment, Bottom Ash Pond 3, Laramie River Station. October 12.

AECOM. 2021g. CCR Rule Report: Periodic Structural Stability Assessment, Bottom Ash Pond 3, Laramie River Station. October 12.

AECOM. 2021h. CCR Rule Report: Periodic Safety Factor Assessment, East Emergency Holding Pond, Laramie River Station. October 12.

AECOM. 2021i. CCR Rule Report: Periodic Structural Stability Assessment, East Emergency Holding Pond, Laramie River Station. October 12.

AECOM. 2021j. CCR Rule Report: Periodic Safety Factor Assessment, West Emergency Holding Pond, Laramie River Station. October 12.

AECOM. 2021k. CCR Rule Report: Periodic Structural Stability Assessment, West Emergency Holding Pond, Laramie River Station. October 12.

AECOM. 2022. CCR Construction Certification, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 2. February 4.

AECOM. 2023. CCR Construction Criteria, Basin Electric Power Cooperative Laramie River Station, Bottom Ash Pond 3. January 6.

Basin Electric Power Cooperative (BEPC). 2016. Coal Combustion Residual Surface Impoundment History of Construction Documentation, Basin Electric Power Cooperative, Laramie River Station. October.

BEPC. 2021. Coal Combustion Residual Surface Impoundment Annual Inspection 2020, Basin Electric Power Cooperative, Laramie River Station. January.

BEPC. 2022. Coal Combustion Residual Surface Impoundment Annual Inspection 2021, Basin Electric Power Cooperative, Laramie River Station. January.

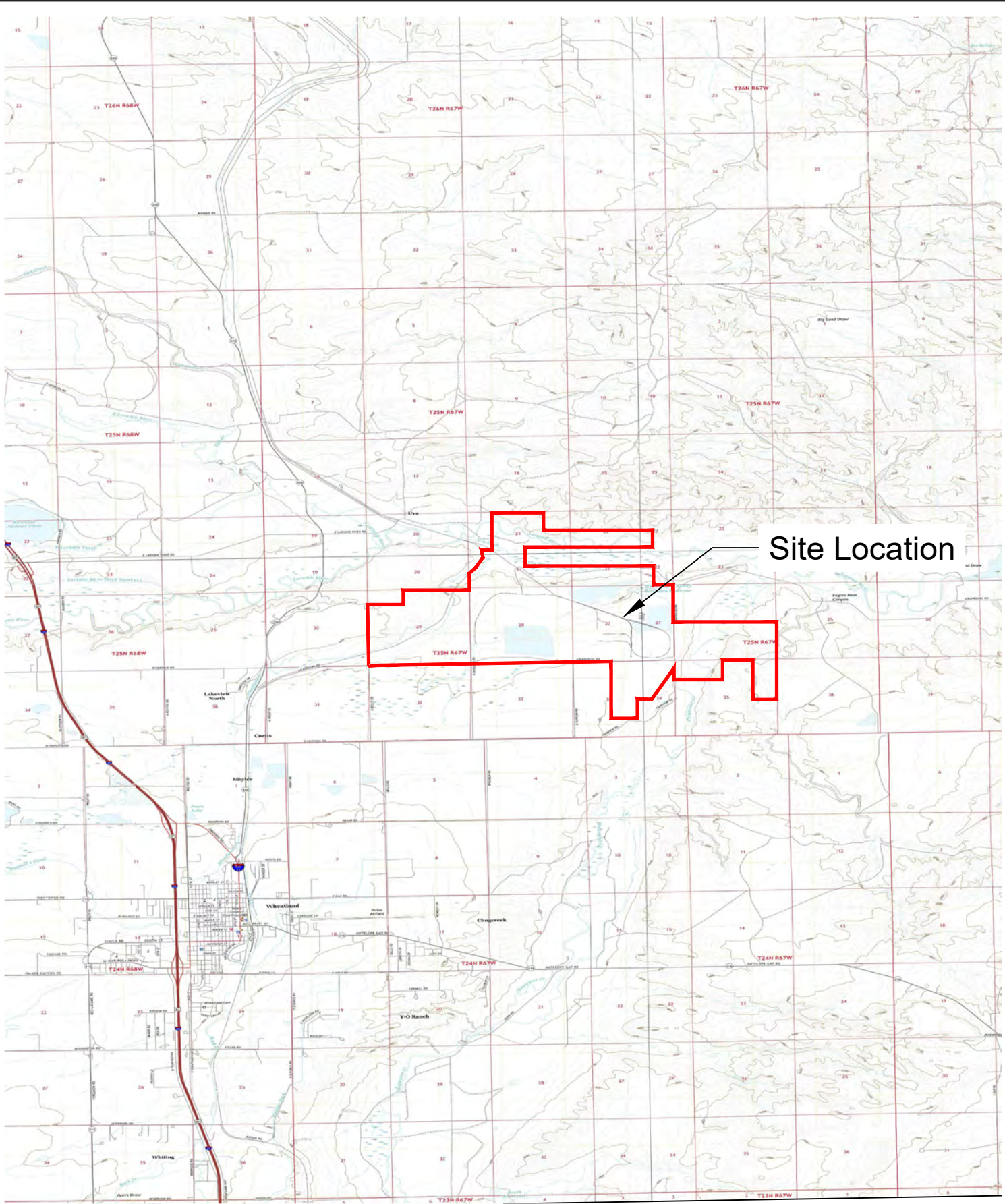
BEPC. 2023. Coal Combustion Residual Surface Impoundment Annual Inspection 2022, Basin Electric Power Cooperative, Laramie River Station. January.

Cummings, D. 2023. Personal Communication. December 11.

Dihle, M. 2024. Personal Communication. January 3.

Rademacher, E. 2023. Personal Communication. August 9.

Figure

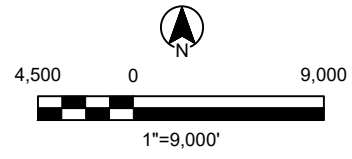


Site Location

Source: USGS 7.5-Minute Series US Topo

Basin Electric Power Cooperative
Annual Inspection Report
Wheatland, Wyoming
Project No.: 60632474 Date: 12/21/2023

Site Location Map
December 6, 2023



AECOM
Figure 1

**Attachment A
Federal CCR Annual
Inspection Form**

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 2 of 3

Station: LRS

CCR Unit: BAP-1

Date: 12/6/2023

2) Are there any instruments associated with the impoundment?

X		
X		

2a) Are the instruments in good condition?

2b) Location:

2c) Type:

2d) Purpose:

Pumphouse

AMATEK ultrasonic probe

water level measurement

3) Are there any appearances of actual or potential structural weakness?

	X	
	X	
	X	
	X	
	X	
	X	
X		
	X	
	X	
	X	

3a) signs of piping or other internal erosion

3b) transverse, longitudinal, or desiccation cracking

3c) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions

3d) animal burrows

3e) excessive or lacking vegetative cover

3f) slope erosion

good vegetation cover on landside

minor (<6") erosion rills on landside of the east dike road

4) Are there any other conditions which are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

5) Are there any signs of distress or malfunction of the CCR unit and appurtenant structures?

6) Are there any conditions of the hydraulic structures that could disrupt the structural integrity or continued safe operation?

Measurements:

Maximum recorded readings of each instrument since previous annual inspection: 124.067 million gallons

Minimum depth and elevation of impounded water and CCR since previous annual inspection: 33.9 ft depth and 4560.9 ft amsl elevation

Maximum depth and elevation of impounded water and CCR since previous annual inspection: 36.2 ft depth and 4563.2 ft amsl elevation

Depth and elevation of impounded water and CCR at time of inspection: 34.7 ft depth and 4561.7 ft amsl elevation

Storage capacity of impounding structure at time of inspection: 17.986 million gallons

Approximate volume of impounded water and CCR at time of inspection: 117.634 million gallons

Surface Area (acres): 15.5 acres

Elevation of impoundment dike crest: 4,565 ft amsl

Elevation of impoundment dike toe: 4,540 ft amsl

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 3 of 3

Station: LRS

CCR Unit: BAP-1

Date: 12/6/2023

Additional Comments: N/A

Individual Completing Form: Emily Conkling
Print

Signature 

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 2 of 3

Station: LRS

CCR Unit: BAP-2

Date: 12/6/2023

2) Are there any instruments associated with the impoundment?

X		
X		

2a) Are the instruments in good condition?

2b) Location:

2c) Type:

2d) Purpose:

Pumphouse

AMATEK ultrasonic probe

water level measurement

3) Are there any appearances of actual or potential structural weakness?

	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	

3a) signs of piping or other internal erosion

3b) transverse, longitudinal, or desiccation cracking

3c) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions

3d) animal burrows

3e) excessive or lacking vegetative cover

3f) slope erosion

4) Are there any other conditions which are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

5) Are there any signs of distress or malfunction of the CCR unit and appurtenant structures?

6) Are there any conditions of the hydraulic structures that could disrupt the structural integrity or continued safe operation?

Measurements:

Maximum recorded readings of each instrument since previous annual inspection: 169.296 million gallons

Minimum depth and elevation of impounded water and CCR since previous annual inspection: 3.0 ft depth and 4542 ft amsl elevation

Maximum depth and elevation of impounded water and CCR since previous annual inspection: 14.0 ft depth and 4553 ft amsl elevation

Depth and elevation of impounded water and CCR at time of inspection: 5.3 ft depth and 4544.3 ft amsl elevation

Storage capacity of impounding structure at time of inspection: 121.182 million gallons

Approximate volume of impounded water and CCR at time of inspection: 92.978 million gallons

Surface Area (acres): 30.9 acres

Elevation of impoundment dike crest: 4,565 ft amsl

Elevation of impoundment dike toe: 4,540 ft amsl

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 3 of 3


Station: LRS

CCR Unit: BAP-2

Date: 12/6/2023

Additional Comments: Some sediment/gravel buildup on liner in NW corner and S side; no action needed but recommend monitoring for any holes in liner that may develop

Individual Completing Form: Emily Conkling
Print

Signature 

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 2 of 3

Station: LRS

CCR Unit: BAP-3

Date: 12/6/2023

2) Are there any instruments associated with the impoundment?

X		
X		

2a) Are the instruments in good condition?

2b) Location:

2c) Type:

2d) Purpose:

Overflow weir on north edge of pond

AMATEK ultrasonic probe

water level measurement

3) Are there any appearances of actual or potential structural weakness?

	X	
	X	

3a) signs of piping or other internal erosion

3b) transverse, longitudinal, or desiccation cracking

3c) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions

3d) animal burrows

3e) excessive or lacking vegetative cover

3f) slope erosion

X		
	X	

cracking/light erosion under pipes on E side of pond

	X	
	X	

erosion rills in eastern slope of capped portion (see picture)

X		
	X	

4) Are there any other conditions which are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

	X	
	X	

5) Are there any signs of distress or malfunction of the CCR unit and appurtenant structures?

	X	
	X	

6) Are there any conditions of the hydraulic structures that could disrupt the structural integrity or continued safe operation?

Measurements:

Maximum recorded readings of each instrument since previous annual inspection: 190.777 million gallons

Minimum depth and elevation of impounded water and CCR since previous annual inspection: 4.6 ft depth (estimated; below staff gauge) and 4570.1 ft amsl elevation

Maximum depth and elevation of impounded water and CCR since previous annual inspection: 18.8 ft depth and 4584.3 ft amsl elevation

Depth and elevation of impounded water and CCR at time of inspection: 18.8 ft depth and 4584.3 ft amsl elevation

Storage capacity of impounding structure at time of inspection: 48.523 million gallons

Approximate volume of impounded water and CCR at time of inspection: 190.777 million gallons

Surface Area (acres): 35.4 acres

Elevation of impoundment dike crest: 4,590 ft amsl

Elevation of impoundment dike toe: 4,565 ft amsl

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 3 of 3


Station: LRS

CCR Unit: BAP-3

Date: 12/6/2023

Additional Comments: N/A

Individual Completing Form: Emily Conkling
Print

Signature 

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 2 of 3

Station: LRS

CCR Unit: W-EHP

Date: 12/6/2023

2) Are there any instruments associated with the impoundment?

	X	
		X

2a) Are the instruments in good condition?

2b) Location:

2c) Type:

2d) Purpose:

N/A
N/A
N/A

3) Are there any appearances of actual or potential structural weakness?

	X	
	X	
	X	
X		
	X	
	X	
	X	
	X	
	X	
	X	

3a) signs of piping or other internal erosion

3b) transverse, longitudinal, or desiccation cracking

3c) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions

3d) animal burrows

3e) excessive or lacking vegetative cover

3f) slope erosion

manmade excavations from pilot testing; berm stability unaffected

4) Are there any other conditions which are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

5) Are there any signs of distress or malfunction of the CCR unit and appurtenant structures?

6) Are there any conditions of the hydraulic structures that could disrupt the structural integrity or continued safe operation?

Measurements:

Maximum recorded readings of each instrument since previous annual inspection: N/A - no instruments

Minimum depth and elevation of impounded water and CCR since previous annual inspection: 8.0 ft depth and 4524 ft amsl elevation

Maximum depth and elevation of impounded water and CCR since previous annual inspection: 8.5 ft depth and 4524.5 ft amsl elevation

Depth and elevation of impounded water and CCR at time of inspection: 8.0 ft depth and 4524 ft amsl elevation

Storage capacity of impounding structure at time of inspection: 72.586 million gallons

Approximate volume of impounded water and CCR at time of inspection: 19.654 million gallons

Surface Area (acres): 30.1 acres

Elevation of impoundment dike crest: 4,540.5 ft amsl

Elevation of impoundment dike toe: 4,520.5 ft amsl

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 3 of 3

Station: LRS

CCR Unit: W-EHP

Date: 12/6/2023

Additional Comments: N/A

Individual Completing Form: Emily Conkling
Print

Signature 

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 2 of 3

Station: LRS

CCR Unit: E-EHP

Date: 12/6/2023

2) Are there any instruments associated with the impoundment?

X		
X		

2a) Are the instruments in good condition?

2b) Location:

2c) Type:

2d) Purpose:

Pump building

AMATEK ultrasonic probe

water level measurement

3) Are there any appearances of actual or potential structural weakness?

	X	
	X	
	X	
X		
	X	
	X	
	X	
	X	
	X	
	X	
	X	

3a) signs of piping or other internal erosion

3b) transverse, longitudinal, or desiccation cracking

3c) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions

3d) animal burrows

3e) excessive or lacking vegetative cover

3f) slope erosion

light desiccation cracking in pond floor of dry area; no cracks in berm walls
manmade excavations from pilot testing; berm stability unaffected

4) Are there any other conditions which are disrupting or have the potential to disrupt the operation and safety of the CCR unit?

5) Are there any signs of distress or malfunction of the CCR unit and appurtenant structures?

6) Are there any conditions of the hydraulic structures that could disrupt the structural integrity or continued safe operation?

Measurements:

Maximum recorded readings of each instrument since previous annual inspection: 98.845 million gallons

Minimum depth and elevation of impounded water and CCR since previous annual inspection: 9.7 ft depth and 4523.7 ft amsl elevation

Maximum depth and elevation of impounded water and CCR since previous annual inspection: 20.7 ft depth and 4534.7 ft amsl elevation

Depth and elevation of impounded water and CCR at time of inspection: 9.7 ft depth and 4523.7 ft amsl elevation

Storage capacity of impounding structure at time of inspection: 39.6 million gallons

Approximate volume of impounded water and CCR at time of inspection: 66.8 million gallons

Surface Area (acres): 27.9 acres

Elevation of impoundment dike crest: 4,540.5 ft amsl

Elevation of impoundment dike toe: 4,520 ft amsl

Federal CCR Annual Inspection Form - Surface Impoundment

Rev. 0

Page 3 of 3


Station: LRS

CCR Unit: E-EHP

Date: 12/6/2023

Additional Comments: N/A

Individual Completing Form: Emily Conkling
Print

Signature 

**Attachment B
Sample LRS Weekly
Inspection Form**

**Basin Electric Power Cooperative –Laramie River Station (LRS)
 CCR Surface Impoundment and CCR Landfill
 Periodic Inspection Checklist**

Inspector: David Cummings Date: 9/26/23

Surface Impoundment Standards: At intervals not exceeding seven days, inspect the surface impoundment for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR surface impoundment unit.

Yes	No	N/A	
	X		1. Does vegetation growth exceed 6" in height on surface impoundment dikes?
	X		2. Is there excessive, turbid, or sediment-laden seepage present?
	X		3. Are there signs of piping and other internal erosion?
	X		4. Is transverse, longitudinal, and severe desiccation cracking present?
	X		5. Are slides, bulges, boils, sloughs, scarps, sinkholes, or depressions present?
	X		6. Are there abnormally high or low pool levels?
	X		7. Are there animal burrows?
	X		8. Are there areas with excessive or lacking vegetative cover?
	X		9. Is any slope erosion present?
	X		10. Is any unusual debris present in the impoundment?

Actions taken to correct deficiencies (any question answered "Yes") or other comments:

Surface Impoundment Hydraulic Structure Standards: At intervals not exceeding seven days, inspect the discharge of all outlets of hydraulic structures which pass underneath the base of the CCR surface impoundment or through the dike of the CCR surface impoundment. Facilities may have more than one outlet requiring periodic inspection.

Yes	No	N/A	
	X		1. Is there any abnormal discoloration at discharge outlets?
	X		2. Is there any flow or discharge of debris or sediment?

Actions taken to correct deficiencies (any question answered "Yes") or other comments :

Landfill Standards: At intervals not exceeding seven days, inspect for any appearances of actual or potential structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit.

Yes	No	N/A	
	X		1. Are there signs of piping and other internal erosion?
	X		2. Is transverse, longitudinal, and severe desiccation cracking present?
	X		3. Are slides, bulges, boils, sloughs, scarps, sinkholes, or depressions present?
	X		4. Are there animal burrows?
	X		5. Is any slope erosion present?

Actions taken to correct deficiencies (any question answered "Yes") or other comments:

CCR Fugitive Dust Standards: At intervals not exceeding seven days, inspect for CCR fugitive dust originating from CCR units, roads, and other CCR material management and material handling activities.

Yes	No	N/A	
	X		1. Is there any CCR dust observed at landfill(s)?
	X		2. Is there any CCR dust observed at surface impoundments(s)?
	X		3. Is there any CCR dust observed during ash loading or unloading activities?
	X		4. Is there any CCR dust observed during ash transport or other handling??

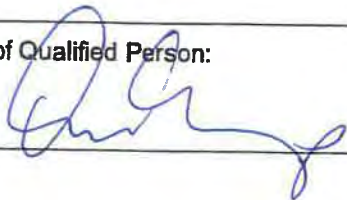
Actions taken to correct deficiencies (any question answered "Yes") or other comments:

Surface Impoundment Instrumentation Standards: At intervals not exceeding 30 days, inspect all CCR surface impoundment unit instrumentation.

Yes	No	N/A	
		X	1. Is XXX instrumentation in good working order and functioning as designed?
		X	2. Is XXX instrumentation in good working order and functioning as designed?

Actions taken to correct deficiencies (any question answered "No") or other comments:

Signature of Qualified Person:

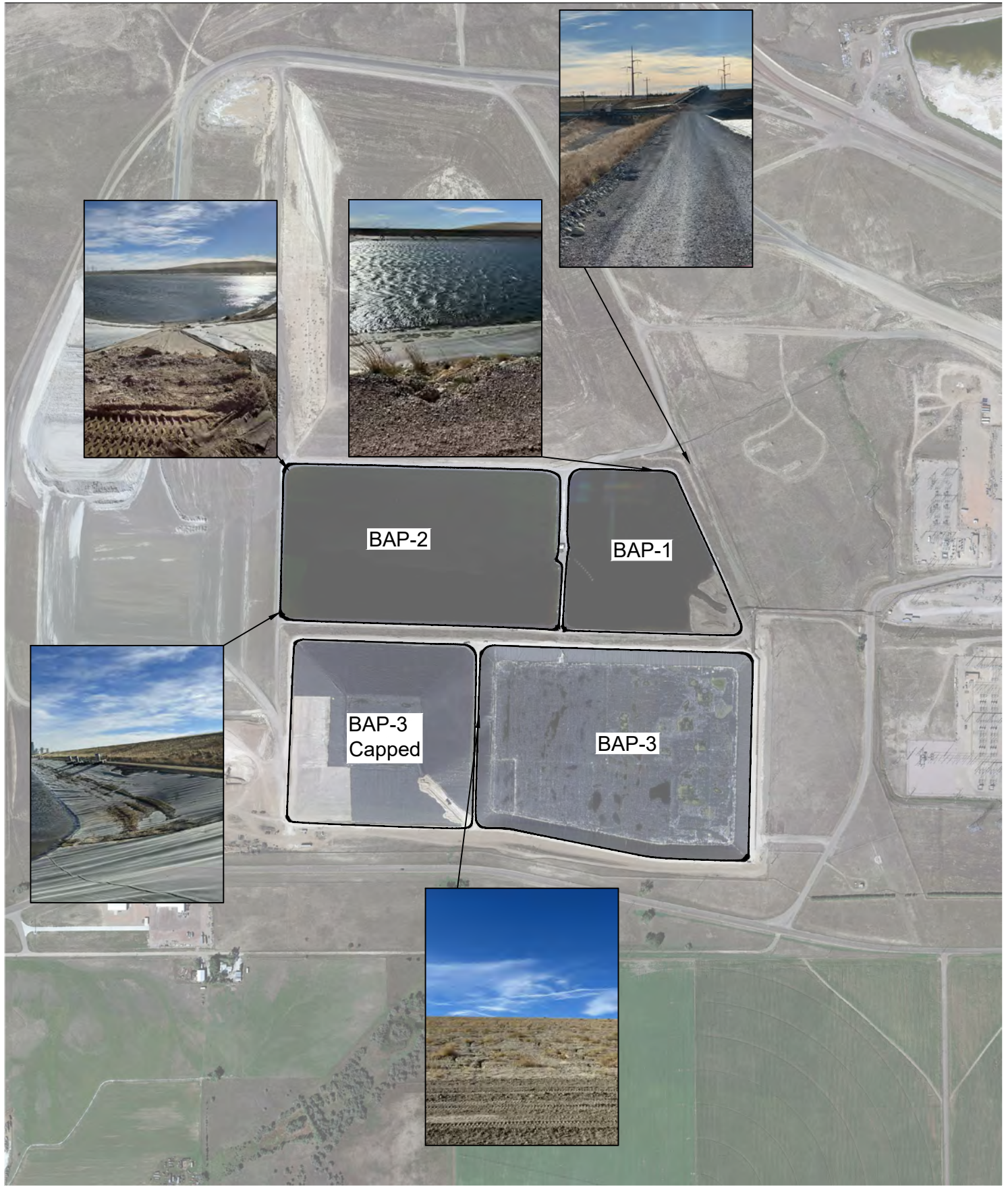


Title:

Env. Coord.

**Attachment 3
Photo Log of Annual
Inspection**

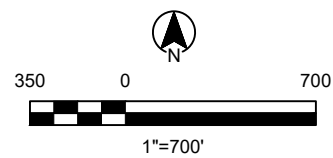
File: \\na.aecom.com\is\AMER\ForCollins-USFCO4\F001\Data\WORKING\60632474_Basin_2020_Support\600-Deliverables\DELIV2023_CCR_Inspection\Reports\023LandfillRPT\Figure\CA\IE\HPS\PhotoMap_AA.dwg Layout: LandfillBAP Date: 21 Dec, 2023 Xrefs:



Aerial Source: Google Earth Pro

Basin Electric Power Cooperative
Bottom Ash Ponds
Wheatland, Wyoming
Project No.: 60632474 Date: 12/21/2023

Bottom
Ash
Ponds
Photo Map
December 6, 2023



AECOM
Attachment C




PHOTOGRAPHIC LOG

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 1	Date: 12/6/23		
Direction Photo Taken: Northwest			
Description: <u>Location:</u> southeast corner of E-EHP The inlet of the E-EHP is pictured.			

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 2	Date: 12/6/23		
Direction Photo Taken: Southeast			
Description: <u>Location:</u> Northern side of BAP-1 Slight sediment buildup is present on the liner.			


PHOTOGRAPHIC LOG

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 3	Date: 12/6/23		
Direction Photo Taken: Southeast			
Description: <u>Location:</u> Eastern road of BAP-1 Small erosional rills are forming along the eastern road of BAP-1, outside of the liner area.			

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 4	Date: 12/6/23		
Direction Photo Taken: Southeast			
Description: <u>Location:</u> Northwest corner of BAP-2 Fabric has been placed over the liner to create a potential exit/escape route for animals.			

PHOTOGRAPHIC LOG

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 5	Date: 12/6/23		
Direction Photo Taken: East			
Description: <u>Location:</u> Southwest corner of BAP-2 Sediment buildup on top of liner is present along the southern side of BAP-2.			

Client Name: Basin Electric Power Cooperative		Site Location: Laramie River Station, Wheatland, WY	Project No. 60632474
Photo No. 6	Date: 12/6/23		
Direction Photo Taken: West			
Description: <u>Location:</u> Capped side of BAP-3 Desiccation cracking is shown. Repairs are scheduled for early 2024; some work has begun as seen at the bottom of the picture.			