

2020 Coal Combustion Residuals Annual Inspection

Jim Bridger Power Plant *Industrial Landfill*



Prepared for
PacifiCorp
North Temple Office
1407 West North Temple
Salt Lake City, Utah 84116

FINAL December 18, 2020

AECOM

756 East Winchester, Suite 400
Salt Lake City, Utah 84107



Contents

1	Findings	2
2	Description and History of Industrial Landfill	3
2.1	General Overview	3
2.2	Location.....	3
2.3	Jim Bridger Industrial Landfill Description	3
2.4	Performance History	4
2.5	Construction History	4
2.6	Review of Operating Record Files	4
2.6.1	Design and Construction Information.....	4
2.6.2	Previous Periodic Structural Analyses.....	4
2.6.3	Results of Inspection by a Qualified Person.....	4
2.6.4	Results of Previous Annual Inspections	4
3	Field Inspection of Jim Bridger Landfill	5
3.1	General.....	5
3.2	Jim Bridger Industrial Landfill Geometry	5
3.3	Observed or Potential Structural Weaknesses	5
3.4	Volume of CCR	6
3.5	Observed Changes	6
4	Limitations and Consultant Qualifications	6
4.1	Limitations.....	6
4.2	Professional Engineer Qualifications	6
5	References	7

Appendices

- Appendix A Photograph Log
- Appendix B Annual Inspection Report Form

1 Findings

This annual inspection and report were completed for the purpose of providing due diligence by PacifiCorp and reasonable assurance, to the extent obtained by the due diligence, of continued safe operation of its coal combustion residual (CCR) facilities. The inspection was performed, and this report was prepared, in accordance with the requirements for annual inspections under 257.84 (for CCR landfills) of 40 CFR Parts 257 and 261, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities, Final Rule, dated April 17, 2015 [1].

AECOM found no observations that would indicate imminent failure of the landfill slopes for the Jim Bridger Power Plant Industrial Landfill. There is no indication of movement of the embankment. Figure 1-1 is an aerial photograph of the landfill and retention basins taken June 24, 2017.

Observations from the 2020 inspection found areas of minor erosion of the final cover consistent with erosion observed in 2019 (refer to Photos 2, 3, and 4, Appendix A). There were no indications of movement of the embankments. The South Retention Basin was observed to have some water and approximately 10 feet of freeboard. The North Retention basin also had some water and approximately 10 feet of freeboard, providing storage capacity in both in the event of a high runoff (photos 9, 11, 12).

The photograph log in Appendix A provides a basis for comparison of landfill conditions with future inspection observations.



Figure 1-1. Jim Bridger Power Plant Industrial Landfill

2 Description and History of Industrial Landfill

2.1 General Overview

The Jim Bridger Power Plant is operated by PacifiCorp. Fly ash and bottom ash produced by the plant are disposed of in the Industrial Landfill. These waste materials are delivered to the landfill by haul truck.

2.2 Location

The Industrial Landfill is located approximately 1.8 miles north of the Jim Bridger Power Plant. The plant is located seven miles north of Point of Rocks, Wyoming [2]. The landfill is accessed by a haul road along its southern boundary that is accessed from 9-Mile Road.

2.3 Jim Bridger Industrial Landfill Description

The Jim Bridger Power Plant consists of the power generating facility, numerous ponds, and the Industrial Landfill. This study specifically addresses the CCR waste landfill identified as the Jim Bridger Power Plant Industrial Landfill. Figure 1-1 shows an aerial image of the landfill. The Industrial Landfill

includes an area of approximately 213 acres¹. It includes the CCR deposition area and an approximately 9-acre area for industrial waste. There are two retention basins that collect runoff from the landfill. One is located near the north and the other near the south side of the landfill.

2.4 Performance History

There are no reported incidences of slope failure or movement of the landfill embankment in the record files. In the summer of 2015, there were two significant flooding events that caused erosion of portions of the northeast face. The eroded material was all contained in the retention basin on the north side of the landfill. Maintenance of erosion-prone slopes was completed in 2017 and there is no residual evidence of the 2015 events. On March 12, 2017, the north retention basin reached the spillway and overflowed. The incident was reported to the State of Wyoming and a Significant Event- Root Cause Analysis Report was prepared [3]. The basin was completely drained, and sediment was removed in 2018, as observed during the 2018 annual inspection [4].

2.5 Construction History

The plant has disposed of CCR at the Industrial Landfill since 1986 [2].

2.6 Review of Operating Record Files

The list of operating records to be reviewed during the annual inspection as contained in 40 CFR §257, Disposal of Coal Combustion Residuals for Electric Utilities is “CCR unit design and construction information required by §§257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections” [1]. The following subsection describes the review of operating record files.

2.6.1 Design and Construction Information

Design and construction information for the Jim Bridger Industrial Landfill is found in the Industrial Landfill Permit [5]. The drainage control features are described in a report by Tetra Tech that includes drainage collection ditches and two retention basins [6].

2.6.2 Previous Periodic Structural Analyses

There are no previous structural analyses of the Jim Bridger Industrial Landfill.

2.6.3 Results of Inspection by a Qualified Person

The Jim Bridger Industrial Landfill is subject to periodic inspections by the Jim Bridger Power Plant staff. AECOM reviewed a sample of the inspection reports. These inspections are documented and retained by PacifiCorp. In the opinion of this report author, the interim inspections by the plant staff are adequate and appropriate , as required by the CCR rules and industry standards, for this CCR unit.

2.6.4 Results of Previous Annual Inspections

This is the sixth annual periodic inspection conducted under CCR rules [1] for the Jim Bridger Industrial Landfill. URS performed the initial inspection in 2015 and subsequent inspections in 2016 [7], 2017 [8],

¹ AECOM calculated area from aerial photography, Google Earth, June 24, 2017.

2018 [4], and 2019 [9] under the CCR rule. However, Wyoming Department of Environmental Quality conducted inspections [10] of the landfill in 2011, 2008, 2003, and 1993 for compliance with the Wyoming Solid and Hazardous Waste Rules and Regulations. None of the observations from this or previous inspections have indicated imminent safety or slope instability concerns.

This report and other pertinent reports and data are accessible at the following website:

<http://www.berkshirehathawayenergyco.com/ccr/ppw.html>

Section 5 of this report provides a list of references reviewed for this report for the Jim Bridger Industrial Landfill.

3 Field Inspection of Jim Bridger Landfill

A field inspection was conducted on September 29, 2020, by AECOM staff, Bryan Franke, P.E., and Michael Smith. Personnel from the Jim Bridger Power Plant were available to the AECOM team during the 2020 field inspection.

A photograph log documenting surface features and conditions at the time of the inspection is presented in Appendix A. These photos are referenced in the report.

The Annual Inspection Report Form is presented in Appendix B. This checklist should be considered an integral part of this report and remain attached whenever this report is forwarded or otherwise reproduced.

3.1 General

The field inspection was performed by the AECOM inspection team by driving and walking various locations within the facility, which are in use or operation, including the north retention basin and south retention basin. Intermittently, photos were taken of facility operations and features to provide a basis for comparison with future inspections.

Features and conditions were documented on the Annual Inspection Report Form (Appendix B) and were photographed. The approximate locations of the photos are detailed in the inspection photograph log overview map located at the beginning of the Photograph Log in Appendix A. In addition to documenting current features, the photo log of existing conditions is intended to aid with future inspections.

3.2 Jim Bridger Industrial Landfill Geometry

There are no cross sections of the Industrial Landfill in the record file. However, based on observations from the site inspection the finished slopes are between approximately 3 horizontal to 1 vertical (3:1) and 4:1.

3.3 Observed or Potential Structural Weaknesses

There were no appearances of actual or potential structural weakness or existing conditions that are disrupting, or have the potential to disrupt, the operation and safety of the CCR unit.

3.4 Volume of CCR

Plant staff estimated the current volume of CCR stored in the landfill in 2020 at approximately 14.8 million cubic yards. This represents very little change from 2019. Plant staff indicated that nearly all fly ash is sold, and bottom ash was being stored at FGD Pond 2 for the purpose of beneficially using the bottom ash in the eventual closure of FGD Pond 2. PacifiCorp has submitted a demonstration to the EPA to establish a record and seek approval according to 40 CFR 257.103(f)(1) to allow FGD Pond 2 to continue to receive the CCR waste that has no alternative disposal options past April 11, 2021 (the cease receipt of waste deadline for unlined surface impoundments) until the new FGD Pond is complete prior to October 15, 2023². In order to meet the current CCR regulations, bottom ash is now being taken directly to the CCR Landfill for storage until FGD Pond 2 begins closure.

3.5 Observed Changes

Since the landfill inspection in 2019, which was performed under the CCR rules [1], the only changes were 1) additional erosion of portions of the final cover and 2) the south retention basin contains some water (Plant staff indicated this water is from a recent large snowstorm).

4 Limitations and Consultant Qualifications

4.1 Limitations

This report presents observations, and conclusions drawn from a review of pertinent documents referenced in Section 5, and a field inspection of the Jim Bridger Industrial Landfill. The purpose of the review and inspection has been to assess the safety or adequacy of the facilities according to industry standards against catastrophic failure of the major constructed elements during normal operations or unusual or extreme events based on visual inspection and available information. A secondary purpose is to identify any potential deficiencies related to the CCR rules [1].

The conclusions and professional opinions presented herein were developed by the independent consultant and are in accordance with generally accepted engineering principles and practices at the time and location the services were provided. AECOM makes no other warranty, either expressed or implied.

4.2 Professional Engineer Qualifications

The professional engineer for this inspection is Bryan Franke. He is licensed in the State of Wyoming (16929) as a civil engineer. He has over 7 years of experience in civil/geotechnical engineering and has performed inspections and safety evaluations on dams, canals, and numerous other water and waste-containing structures.

² Explanation of bottom ash management practices as provided by PacifiCorp on December 15, 2020. Prior to the preparation of this report, delivery of bottom ash to FGD Pond 2 ceased; bottom ash is now taken directly to the CCR Landfill.

5 References

- [1] 40 CFS § 257 Disposal of Coal Combustion Residuals from Electric Utilities, April 17, 2015.
- [2] Water & Environmental Technologies, “2014 Annual Report, Ash Landfill Ground Water Monitoring Program”, May 11, 2015.
- [3] Wyoming Department of Environmental Quality, “Significant Event – Root Cause Analysis Report, April, 9, 2015.
- [4] AECOM, “2018 Coal Combustion Residuals Annual Inspection, Jim Bridger Power Plant, Industrial Landfill”, November 1, 2018
- [5] State of Wyoming, “Industrial Siting Permit, Jim Bridger Unit 4”, February 6, 1976.
- [6] Tetra Tech, “CCR Rule Operating Criteria § 257.81 Run-on and Run-off Controls for CCR Landfills, Ash Landfill, Jim Bridger Plant”, September 28, 2016.
- [7] URS, “2016 Coal Combustion Residuals Annual Inspection, Jim Bridger Power Plant, Industrial Landfill”, October 20, 2016.
- [8] URS, “2017 Coal Combustion Residuals Annual Inspection, Jim Bridger Power Plant, Industrial Landfill”, November 30, 2017.
- [9] AECOM, “2019 Coal Combustion Residuals Annual Inspection, Jim Bridger Power Plant, Industrial Landfill”, December 5, 2019.
- [10] Wyoming Department of Environmental Quality, “Compliance Evaluation Inspection Jim Bridger Power Plant and Industrial Landfill”. 2011, 2008, 2003, 1993.

References not cited:

- [11] GEI, “Final Coal Ash Impoundment - Specific Site Assessment Report, PacifiCorp, Jim Bridger Power Station”, September, 2009.
- [12] PacifiCorp, “Plant Brochure: Jim Bridger Plant”, Point of Rocks, Wyoming, 2011.
- [13] URS, “2014 Coal Combustion Residuals Impoundment Inspection and Assessment – Hunter Power Plant Ash Landfill”, January 6, 2015.
- [14] URS, “2015 Coal Combustion Residuals Annual Inspection, Jim Bridger Power Plant, Industrial Landfill”, December 29, 2015.
- [15] Wyoming Department of Environmental Quality, “Operating Permit, Jim Bridger Power Plant Industrial Landfill”, April 26, 2013.

Appendix A
Photograph Log



Legend

● Approximate Photo Point

0 250 500 1,000
Feet

Photo Locations
Industrial Landfill
PacifiCorp
Jim Bridger Power Plant
Point of Rocks, Wyoming
September, 2020
AECOM



Photograph No. 1 View of industrial landfill signage indicating name and accepted wastes.



Photograph No. 2 View of minor erosional features of existing cap.

Inspection Photographs

PacifiCorp

Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-2



Photograph No. 3 View of minor erosional rill of existing cap.



Photograph No. 4 View of minor erosional rill of existing cap.

Inspection Photographs

PacifiCorp
Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-3



Photograph No. 5 View of active CCR placement area, looking northeast.



Photograph No. 6 View of active CCR placement area, looking east.

Inspection Photographs

PacifiCorp

Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-4



Photograph No. 7 View of industrial waste placement on northwest edge of ash, looking southwest.



Photograph No. 8 View of edge of placement area, looking southwest.

Inspection Photographs

PacifiCorp
Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-5



Photograph No. 9 View of Northern Retention Basin. Note wild horses at far edge. Looking east.



Photograph No. 10 View of final cap and sparse vegetation on eastern slope of landfill.

Inspection Photographs

PacifiCorp
Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-6



Photograph No. 11 View of South Retention Basin, looking northwest.



Photograph No. 11 View of South Retention Basin, looking northeast.

Inspection Photographs

PacifiCorp
Industrial Landfill – Jim Bridger Power Plant

September 29, 2020

Page No. A-7

Appendix B
Annual Inspection Report Form



Annual Landfill Inspection Report

Issue Date: 8-24-2015
Form XXXXX Revision A

Page 1 of 2

Feature Name:
Jim Bridger Industrial Landfill

Feature ID:
XXXXX

Date:
September 29, 2020

Station/Owner PacifiCorp	County, Sweetwater	State Wyoming
Inspected By Bryan Franke, P.E., and Michael Smith	Date September 29, 2020	Phone No. 801-904-4047
Type of Inspection <input type="checkbox"/> Initial <input checked="" type="checkbox"/> Periodic <input type="checkbox"/> Follow up <input type="checkbox"/> Other		Weather <input type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry <input type="checkbox"/> Snow Cover <input type="checkbox"/> Other
Remarks This was the periodic inspection under CCR regulations.		
Total Precipitation last 24 hrs None		

COVER	PROBLEMS				COVER
	<input type="checkbox"/> 1. None <input type="checkbox"/> 2. Animal burrows <input type="checkbox"/> 3. Animal damage <input type="checkbox"/> 4. Weeds & Brush	<input type="checkbox"/> 5. Vegetation >2" dia. <input type="checkbox"/> 6. Vegetation islands <input type="checkbox"/> 7. Poor grass cover <input type="checkbox"/> 8. Slope Stability	<input type="checkbox"/> 9. Settlement <input type="checkbox"/> 10. Cracks <input checked="" type="checkbox"/> 11. Erosion <input checked="" type="checkbox"/> 12. Rills	<input type="checkbox"/> 13. Seepage <input type="checkbox"/> 14. Ponding <input type="checkbox"/> 15. Other	<input checked="" type="checkbox"/> Vegetation <input type="checkbox"/> Gravel <input checked="" type="checkbox"/> Soil <input checked="" type="checkbox"/> Other Temp bottom ash
	Comments /Action Items : Minor erosion of placed cap. Photos 2, 3, and 4 of photo log.				
	Actions <input type="checkbox"/> None <input checked="" type="checkbox"/> Maintenance <input type="checkbox"/> Monitoring <input type="checkbox"/> Minor Repair <input type="checkbox"/> Engineering				
SLOPES & PERIMETER BERMS	PROBLEMS				COVER:
	<input checked="" type="checkbox"/> 1. None <input type="checkbox"/> 2. Animal burrows <input type="checkbox"/> 3. Animal damage <input type="checkbox"/> 4. Weeds & Brush	<input type="checkbox"/> 5. Vegetation >2" dia. <input type="checkbox"/> 6. Bare spots >25ft ² <input type="checkbox"/> 7. Poor grass cover <input type="checkbox"/> 8. Slope Stability	<input type="checkbox"/> 9. Settlement <input type="checkbox"/> 10. Cracks <input type="checkbox"/> 11. Erosion <input type="checkbox"/> 12. Rills	<input type="checkbox"/> 13. Seepage <input type="checkbox"/> 14. Ponding <input type="checkbox"/> 15. Other	<input type="checkbox"/> Vegetation <input type="checkbox"/> Gravel <input type="checkbox"/> Soil <input type="checkbox"/> Asphalt <input type="checkbox"/> Other
	OBSERVATIONS				
	16. Do slopes and berms provide positive drainage?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	17. Is there exposed waste on exterior slopes?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Comments /Action Items :					
Actions <input checked="" type="checkbox"/> None <input type="checkbox"/> Maintenance <input type="checkbox"/> Monitoring <input type="checkbox"/> Minor Repair <input type="checkbox"/> Engineering					

Annual Landfill Inspection Report

 Feature Name:
Jim Bridger Industrial Landfill

 Feature ID:
 XXXXX

 Date:
September 29, 2020

LEACHATE SYSTEM	PROBLEMS			
	<input checked="" type="checkbox"/> 1. None	<input type="checkbox"/> 3. Piping leaking	<input type="checkbox"/> 5. Tank leaking	
	<input type="checkbox"/> 2. Sump	<input type="checkbox"/> 4. Containment Leaking	<input type="checkbox"/> 6. Other	
	OBSERVATIONS			
	7. Is the Leachate transmission system functioning properly?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
8. Is the leak detections system functioning properly?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Comments /Action Items :				
Actions <input checked="" type="checkbox"/> None <input type="checkbox"/> Maintenance <input type="checkbox"/> Monitoring <input type="checkbox"/> Minor Repair <input type="checkbox"/> Engineering				
EROSION SEDIMENT CONTROLS	PROBLEMS			
	<input checked="" type="checkbox"/> 1. None	<input type="checkbox"/> 3. Ditch Failure.	<input type="checkbox"/> 5. Debris	<input type="checkbox"/> 7. Silt Fences
	<input type="checkbox"/> 2. Channel	<input type="checkbox"/> 4. Ditch Washouts	<input type="checkbox"/> 6. Sediment	<input type="checkbox"/> 8. Filter Socks
	<input type="checkbox"/> 9. Rip Rap Aprons			
	<input type="checkbox"/> 10. Other			
	OBSERVATIONS			
	11. No erosion or sediment controls			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	12. Are drop structures in good repair?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	13. Are perimeter run-on diversion ditches present and in good repair?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	14. Are perimeter run-off diversion ditches present and in good repair?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Comments /Action Items : Basins are cleared out and available for runoff and sediment control.				
Actions <input checked="" type="checkbox"/> None <input type="checkbox"/> Maintenance <input type="checkbox"/> Monitoring <input type="checkbox"/> Minor Repair <input type="checkbox"/> Engineering				
Other	Observations			
	1. Are temporary covers functioning as intended?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	2. Are Stormwater systems functioning as intended?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	3. Fences and Gates in good condition?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	4. Security devices in good condition?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	5. Signs in good condition?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	6. Reference monuments/Survey Monuments in good condition?			<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
	Comments /Action Items : Currently, about 90% of fly ash is sold. Bottom ash is being placed in FGD Pond 2. Construction of new cell for landfill in progress.			
Actions <input type="checkbox"/> None <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Monitoring <input type="checkbox"/> Minor Repair <input type="checkbox"/> Engineering				

 Inspector Signature *Bryan Franke*
 Date 09/29/2020