2016 Coal Combustion Residuals Annual Inspection

Dave Johnston Power Plant

Industrial Landfill

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

November 23, 2016

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

Contents

Appendices

1 Findings

This annual inspection and report are being completed for the purpose of providing due diligence by PacifiCorp to ensure the safety of its coal combustion residual facilities. The inspection was performed according to the requirements for annual inspection 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].

URS found no observations that would indicate imminent failure of the embankment for the Dave Johnston Power Plant Expansion Landfill. There is no indication of movement of the embankment. Figure 1-1 on the following page is an aerial photograph of the landfill.

The photograph log in Appendix A provides a baseline of landfill conditions to compare with when performing future inspections. There were not observed deficiencies.

The coal combustion residual (CCR) rules requirement for signage is not applicable to CCR landfills. They are only required for surface water impoundments. Therefore signage for the Dave Johnston Expansion Landfill is not required.

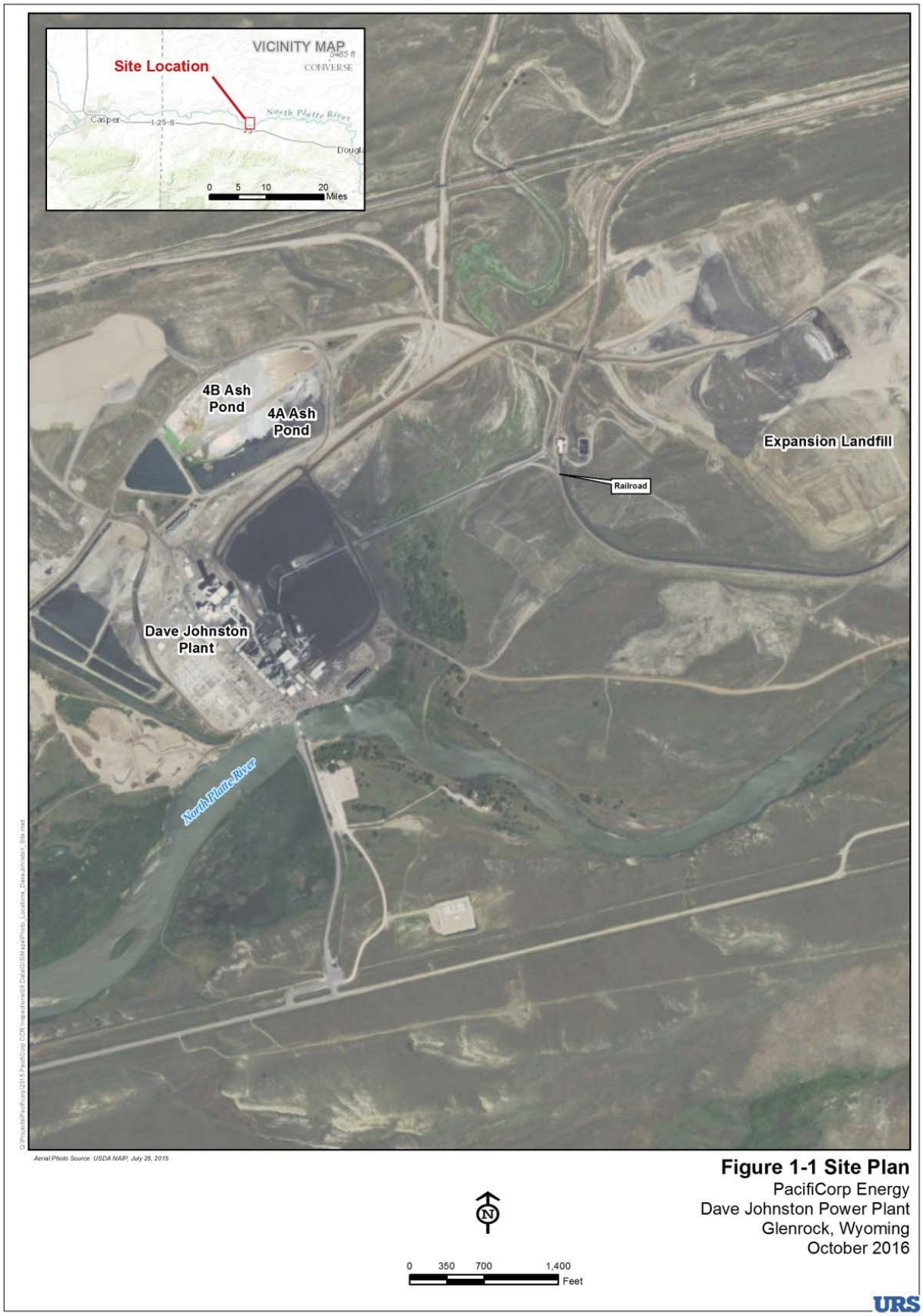

Figure 1-1. Dave Johnston Power Plant Expansion Landfill

2 Description and History of Expansion Landfill

2.1 General Overview

The Dave Johnston Plant (Plant) is operated by PacifiCorp Energy (PacifiCorp).

FGD scrubber waste, fly ash, and bottom ash produced by the plant are disposed of in the Expansion Landfill. These waste materials are delivered to the landfill by truck.

2.2 Location

The Expansion Landfill is located approximately 0.9 miles northeast of the Dave Johnston Power Plant. The plant is located five miles southeast of Glenrock, Wyoming on the north bank of the North Platte River [2].

2.3 Dave Johnston Expansion Landfill Description

The Dave Johnston Power Plant Expansion Landfill accepts only CCR material; consequently, there is no industrial waste disposed of in the landfill. The Expansion Landfill consists of three stages, each with a planned design life of 5 years [2]. Figure 2-1 shows the design layout for the three stages.

The Expansion Landfill includes an area of approximately 122.6 acres [4]. There is one retention basin that collects runoff from all three phases. It is located south of Stage 3 and east of Stage 1.

2.4 Performance History

There are no reported incidences of slope failure or movement of the landfill embankment in the record files. There has been some minor erosion of the final cover on the south face of Stage 1. Refer to Photos 7 and 8, Appendix A.

2.5 Construction History

The plant has disposed of CCR at the Expansion Landfill since July 1, 1993 [2].

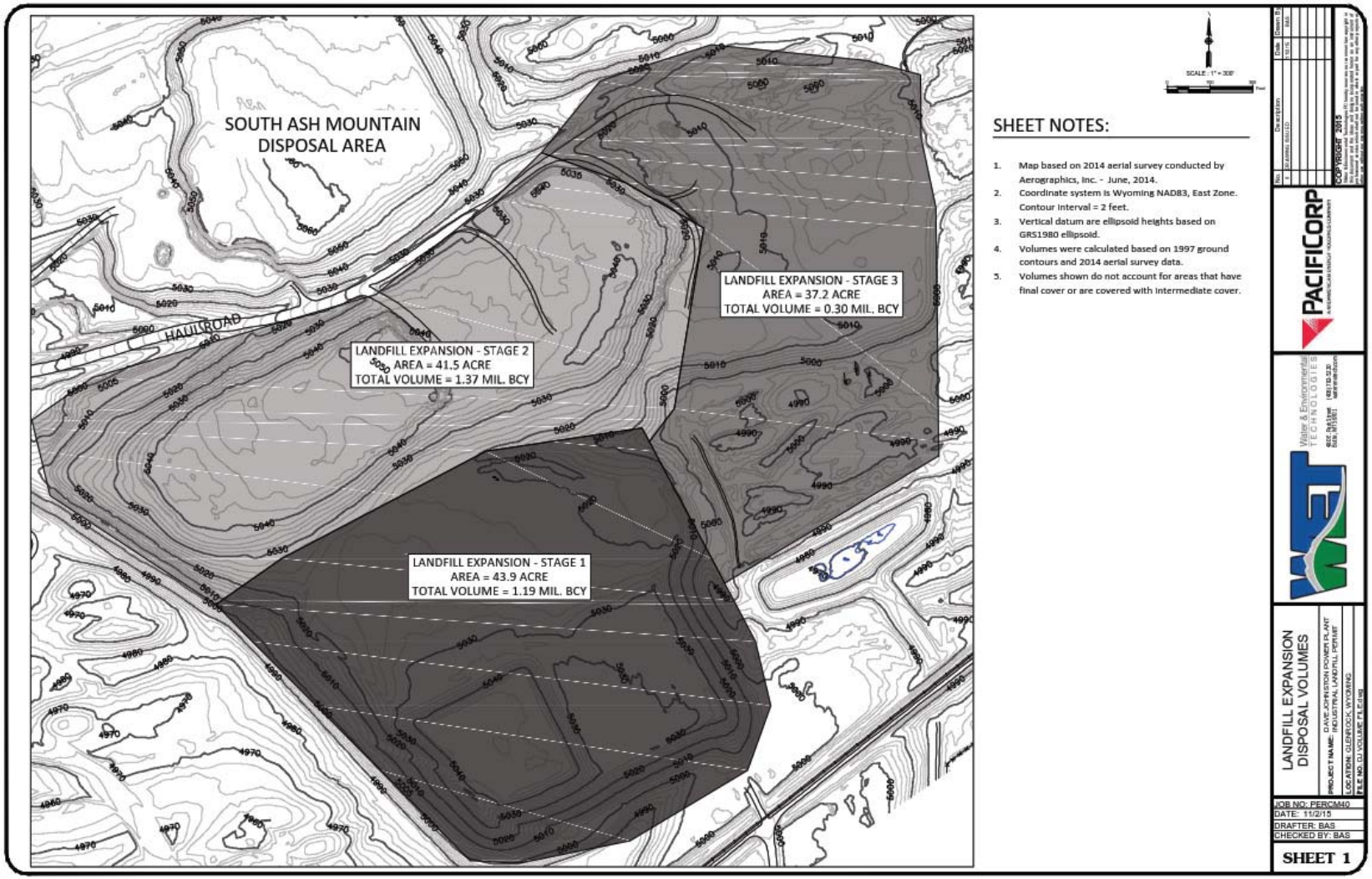

Figure 2-1. Site Plan and Disposal Volumes for Expansion Landfill [4]

2.6 Review of Operating Record Files

The list of operating records to be reviewed during the annual inspection as contained in 40 CFS §257, Disposal of Coal Combustion Residuals for Electric Utilities is "CCR unit design and construction information required by §§2557.73(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 subsections describe the review of operating record files.

2.6.1 Design and Construction Information

URS reviewed the documents in Section 5. However, there are no design or construction drawings in the record files for the current geometry of the landfill. The Operations Manual [2] references Appendix B, Landfill Stage Development Plans, but the appendix are not part of the record files. However, PacifiCorp periodically surveys the site and prepares a topographic map of the landfill [5].

2.6.2 Previous Periodic Structural Analyses

There are no previous structural analyses of the Dave Johnston Expansion Landfill.

2.6.3 Results of Inspection by a Qualified Person

The Expansion Landfill is subject to periodic inspections by the Dave Johnston Power Plant staff. URS reviewed the inspection reports and did not find anything that would affect the safety of the ash pond. These inspections are documented and retained by PacifiCorp. A sample of PacifiCorp's Inspection Form can be found in Appendix C. In the opinion of this report author, the interim inspections by the plant staff are adequate and appropriate for this CCR unit.

2.6.4 Results of Previous Annual Inspections

This is the first annual periodic inspection following the initial and only annual inspection conducted under CCR rules [1]. In 2015, URS completed the initial independent inspection for Dave Johnston Plant Expansion Landfill under the CCR rules [6]. There are no previous annual inspection reports.

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 is a list of references for the Dave Johnston Expansion Landfill.

3 Field Inspection of Dave Johnston Landfill

A field inspection was conducted on September 7, 2016 by URS staff, Rick J. Cox, P.E. and Matt Zion. Personnel from the Dave Johnston Power Plant accompanied the URS team during the 2016 field inspection. Dave Johnston Plant staff participated in a close-out meeting with the URS team to review observations and answer additional questions.

A photograph log documenting features and their condition 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 the report and remain attached whenever the report is forwarded or otherwise reproduced.

3.1 General

The field inspection was performed by the URS inspection team by driving to the crest of Stage 2. From there the team drove to the south face of Stage 3. The team inspected the east and north side of Stage 3 for potential drainage pathways. The inspection progressed to the Sedimentation basin and then along, southwest face of Stage 2, southwest and southeast faces of Stage 1 and terminating at the west side of the southwest face of Stage 2. In addition to inspection of the Expansion Landfill, the team observed a potential drainage path from the Expansion Landfill to the Horseshoe Sedimentation Basin. Refer to Photos 4, Appendix A. Intermittently, photos were taken of the outer face of the embankment to provide a baseline for 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, Appendix A. In addition to documenting current features, the photo log of existing conditions is intended to aid future inspections.

3.2 Dave Johnston Expansion Landfill Geometry

The Operations Manual [2] reports that the landfill was constructed initially with containment dikes of excavated material. It also states that material is placed in the landfill in lifts of 6 to 24 inches to a maximum height of 20 to 23 feet on a 4 horizontal to 1 vertical slope. Figure 3-1 is a cross section of the final configuration.

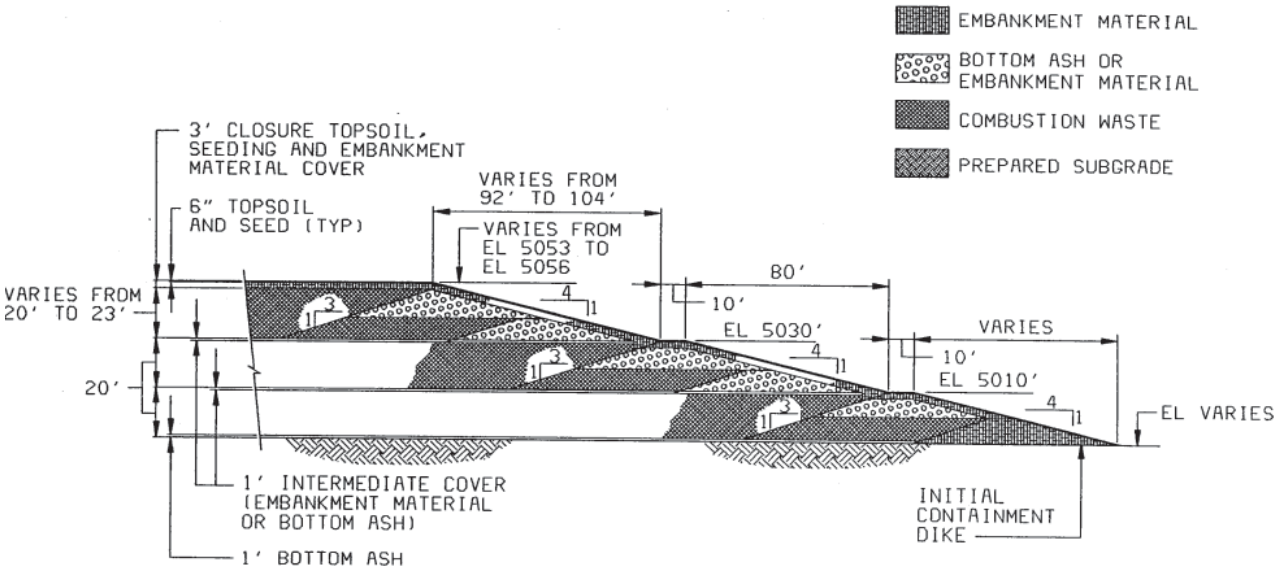

Figure 3-1. Cross Section of Final Landfill Configuration [2]

3.3 Volume of CCR

PacifiCorp estimated the volume of CCR in storage in mid-2016 at 12.5 million cubic yards.

3.4 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.

3.5 Observed Changes

There were no observable changes that would indicate any safety concerns. Photographs were taken of embankment faces of the landfill to compared with photographs from 2015. There were no observed changes. These locations are marked on the Appendix A overview map and should be observed in future inspections for change.

3.6 Limitations and Consultant Qualifications

3.6.1 Limitations

This report presents observations, and conclusions drawn from a review of pertinent documents referenced in Section 5, and a field inspection of the Dave Johnston Expansion Landfill. The purpose of the review and inspection has been to assess the safety or adequacy of the facilities 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. URS makes no other warranty, either expressed or implied.

3.6.2 Professional Engineer Qualifications

The professional engineer for this inspection is Rick J. Cox. He is licensed in the State of Wyoming (13825) as a civil engineer. He has over 33 years' experience in civil/structural engineering and has performed inspections and safety evaluations on dams, canals and numerous other water containing structures.

4 References

[1] 40 CFS § 257 Disposal of Coal Combustion Residuals from Electric Utilities, April 17, 2015.

[2] Black & Veatch, "Combustion Waste Landfill Expansion Project, Operations Manual" June, 1992.

[3] PacifiCorp Energy [Online] Available: http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/EnergyGeneration_FactSheets/RMP_GFS_Dave_Johnston.pdf. [Accessed: 23-Nov-2014].

[4] Water & Environmental Technologies, "Landfill Expansion Disposal Volumes" drawing, June, 2014.

[5] Water & Environmental Technologies, "Landfill Expansion Disposal Site, Ash Cell Development" drawing, January 29, 2015.

[6] URS, "2015 Coal Combustion Residuals Annual Inspection: Dave Johnston Power Plant Expansion Landfill," December, 2015.

Appendix A

Photograph Log


4
3
1
2
Expansion Landfill
9
5
Railroad
6
8
7
Aerial Photo Source: USDA NAIP, July 28, 2015
Legend
Approximate Photo Point
N
0
350
700
1,400
Feet
Photo Locations
Expansion Landfill
PacifiCorp Energy
Dave Johnston Power Plant
Glenrock, Wyoming
October 2016
URS

Photograph No. 1 View of stage 2 of the expansion landfill looking west.

Photograph No. 2 View of stage 2 of the expansion landfill looking east.

Photograph No. 3 View of stage 3 of the landfill looking west.

Photograph No. 4 View of landfill western retention basin.

Photograph No. 5 View of landfill eastern retention basin.

Photograph No. 6 View of closed area of landfill looking west.

Photograph No. 7 View of erosion rill on south face of stage 1.

Photograph No. 8 View of erosion rill.

Photograph No. 9 View of stage 2 of the expansion landfill.

Appendix B

Annual Inspection Report Form

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

Annual Landfill Inspection Report

Feature Name: **Dave Johnston Expansion Landfill**

Feature ID:

Date: **September 7, 2016**

Station/Owner PacifiCorp	**County,** Converse	**State** Wyoming
Inspected By Rick J. Cox, P.E. and Matt Zion	**Date** 9-7-2016	**Phone No.** 801-904-4096

Type of Inspection ☐ Initial ☒ Periodic ☐ Follow up ☐ Other

Weather ☐ Wet ☒ Dry ☐ Snow Cover ☐ Other

Remarks
Inspector accompanied by Dawn Cerny, Environmental Analyst, Dave Johnston Power Plant. This was the second inspection under CCR regulations. Stage 2 is the active area of the three stages.

Total Precipitation last 24 hrs
none

COVER

PROBLEMS				COVER
☐ 1. None ☐ 2. Animal burrows ☐ 3. Animal damage ☐ 4. Weeds & Brush	☐ 5. Vegetation >2" dia. ☐ 6. Vegetation islands ☐ 7. Poor grass cover ☐ 8. Slope Stability	☐ 9. Settlement ☐ 10. Cracks ☒ 11. Erosion ☐ 12. Rills	☐ 13. Seepage ☐ 14. Ponding ☐ 15. Other	☒ Vegetation ☐ Gravel ☒ Soil ☐ Other

Comments /Action Items:

Actions ☐ None ☒ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

SLOPES & PERIMETER BERMS

PROBLEMS				COVER:
☐ 1. None ☐ 2. Animal burrows ☐ 3. Animal damage ☐ 4. Weeds & Brush	☐ 5. Vegetation >2" dia. ☐ 6. Bare spots >25ft^2 ☐ 7. Poor grass cover ☐ 8. Slope Stability	☐ 9. Settlement ☐ 10. Cracks ☐ 11. Erosion ☐ 12. Rills	☐ 13. Seepage ☐ 14. Ponding ☐ 15. Other	☐ Vegetation ☐ Gravel ☐ Soil ☐ Asphalt ☐ Other

OBSERVATIONS	
16. Do slopes and berms provide positive drainage?	☒ Yes ☐ No ☐ NA
17. Is there exposed waste on exterior slopes?	☐ Yes ☐ No ☒ NA

Comments /Action Items:

Actions ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

PACIFICORP ENERGY
A DIVISION OF PACIFICORP

Annual Landfill Inspection Report

Feature Name: **Dave Johnston Expansion Landfill**

Feature ID:

Date: **September 7, 2016**

LECHATE SYSTEM

PROBLEMS

☒1. None ☐2. Sump	☐3. Piping leaking ☐4. Containment Leaking	☐5. Tank leaking ☐6. Other	

OBSERVATIONS

7. Is the Leachate transmission system functioning properly?	☐Yes ☐No ☒NA
8. Is the leak detections system functioning properly?	☐Yes ☐No ☒NA

Comments /Action Items:

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

EROSION SEDIMENT CONTROLS

PROBLEMS

☒1. None ☐2. Channel	☐3. Ditch Failure. ☐4. Ditch Washouts	☐5. Debris ☐6. Sediment	☐7. Silt Fences ☐8. Filter Socks	☐9. Rip Rap Aprons ☐10. Other

OBSERVATIONS

11. No erosion or sediment controls	☐**Yes** ☒**No**
12. Are drop structures in good repair?	☐**Yes** ☐**No** ☒**N/A**
13. Are perimeter run-on diversion ditches present and in good repair?	☐**Yes** ☐**No** ☐**N/A**
14. Are perimeter run-off diversion ditches present and in good repair?	☐**Yes** ☐**No** ☒**N/A**

Comments /Action Items

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

Other

Observations

1. Are temporary covers functioning as intended?	☐**Yes** ☐**No** ☒**N/A**
2. Are Stormwater systems functioning as intended?	☒**Yes** ☐**No** ☐**N/A**
3. Fences and Gates in good condition?	☐**Yes** ☐**No** ☒**N/A**
4. Security devices in good condition?	☐**Yes** ☐**No** ☒**N/A**
5. Signs in good condition?	☐**Yes** ☐**No** ☒**N/A**
6. Reference monuments/Survey Monuments in good condition? Not observed.	☐**Yes** ☐**No** ☒**N/A**

Comments /Action Items

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

Inspector Signature 

Date 9-7-2016

Appendix C

Example PacifiCorp Inspection Form

Dave Johnston
Landfill Inspection Report

CCR Landfill Name: **Dave Johnston Expansion Landfill**	Date:	Inspected By:
Inspection Frequency: ❑ Routine ❑ Weather/Seismic Event ❑ Other: _____		
Type of Landfill: ❑ Active ❑ Inactive	Weather Conditions: ❑ Wet ❑ Dry ❑ Snow Cover ❑ Windy ❑ Other	

Operations

Checks & Observations	
1. Placement procedures are being followed.	❑ Yes ❑ No
2. Dust control is effective.	❑ Yes ❑ No
3. Dust control logs are complete and available.	❑ Yes ❑ No
4. Haul road maintained and dust controlled.	❑ Yes ❑ No
Observations:	
Actions: ❑ None ❑ Maintenance ❑Monitoring ❑ Engineering	Notification/Work Order#:

Cover (if applicable)

Problems				Cover
❑ None ❑ Animal burrows ❑ Animal damage	❑ Slope stability ❑ Settlement ❑ Cracks	❑ Erosion ❑ Rills	❑ Seepage ❑ Ponding ❑ Other	❑ Vegetation ❑ Gravel ❑ Soil ❑ Other
5. Exterior slopes in good condition, with no exposed CCR waste (non-beneficial).				❑ Yes ❑ No
Observations:				
Actions: ❑ None ❑ Maintenance ❑Monitoring ❑ Engineering			Notification/Work Order#:	

Slopes & Perimeter Berms

Problems				Cover
❑ None ❑ Animal burrows ❑ Animal damage	❑ Slope stability ❑ Settlement ❑ Cracks	❑ Erosion ❑ Rills	❑ Seepage ❑ Ponding ❑ Other	❑ Vegetation ❑ Gravel ❑ Soil ❑ Other
Observations				
6. Slopes and berms provide positive drainage.				❑ Yes ❑ No
Observations:				
Actions: ❑ None ❑ Maintenance ❑Monitoring ❑ Engineering			Notification/Work Order#:	

Erosion Sediment Controls					
	Problems				
	❑ None	❑ Ditch Failure ❑ Ditch Washouts	❑ Debris ❑ Sediment	❑ Berms ❑ Bales/Waddles	❑ Other
	Observations				
	7. Erosion or sediment controls in good condition.				❑ Yes ❑ No
	8. Drop inlet or other storm water controls structures are in good repair.				❑ Yes ❑ No
	9. Perimeter run-on and run-off diversion ditches present and in good repair.				❑ Yes ❑ No
	Observations:				
	Actions: ❑ None ❑ Maintenance ❑Monitoring ❑ Engineering			Notification/Work Order#:	

Other		
	Observations	
	10. Temporary covers functioning as intended.	❑ Yes ❑ No
	11. Storm water systems functioning as intended.	❑ Yes ❑ No
	12. Any appearance 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 landfill?	❑ Yes ❑ No
	13. Other non-structural or non-emergency safety issues.	❑ Yes ❑ No
	Observations:	
	Actions: ❑ None ❑ Maintenance ❑Monitoring ❑ Engineering	Notification/Work Order#:

Inspector Signature: _____ Date: _____