



TS POWER PLANT CCR LANDFILL – 2018 INSPECTION

Prepared for:



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NewFields Project 475.0221.004
December 18, 2018



12-18-18



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1. INTRODUCTION

This report presents the results of the November 2018 Inspection of the Coal Combustion Residue (CCR) Landfill at the TS Power Plant (TSPP), which is owned and operated by Newmont Nevada Energy Investment, LLC. The project site is located approximately three (3) miles north of the Interstate 80 Dunphy exit in Eureka County, Nevada as shown in Figure 1.

This report is intended to meet the 2015 Coal Combustion Residual Rule 40CFR Part 257.84(b) requiring an annual inspection by a qualified professional engineer for existing CCR landfills.

2. PROJECT DESCRIPTION

The TSPP is a 242 MW coal-fired power plant commissioned in 2008 and is one of the newest and most advanced coal fired power plants in the United States. Sub-bituminous coal from the Powder River Basin in Wyoming is the primary fuel at the facility. The coal contains approximately 5.4 percent ash. At full load, the plant burns approximately 110 tons/hour (tph) of coal and generates about 5.9 tph of ash.

The TSPP facilities are located within Sections 11 and 14, Township 33N and Range 48E and includes a CCR landfill located approximately 0.5 miles northeast of the power plant. The CCR landfill is a fully geomembrane-lined facility (80-mil HDPE) with a total designed footprint of approximately 36 acres and a maximum CCR design height of 60 feet. During the operational life of the power plant, the CCR landfill will be constructed incrementally as six (6) adjoining six (6)-acre cells plus two (2) storage ponds to contain run-off from the design storm event falling on the landfill. The individual cells are to be developed in stages as needed to provide storage capacity for the planned life of the power plant facility. Each cell is hydraulically independent. The design storage can be achieved at a maximum CCR height of 60 feet. In addition to ash, the CCR landfill was designed and permitted to contain cooling tower side stream softening filter press sludge. A 2017 modification to the Class III Landfill Permit issued by the Nevada Division of Environmental Protection allows for the disposal of two additional waste streams: site-generated construction and demolition (C&D) debris and spent baghouse bags. To date, there has been no disposal of these two waste streams in the landfill.

Currently, two cells (Cell 1 and Cell 2) and one pond (Pond 1) have been constructed. Cell 1, the southwestern cell of the landfill, was part of original plant construction and has operated from 2008 to present. Cell 2, an identical six acre cell immediately north of Cell 1, was constructed in 2013 and is currently accepting the designated waste streams. Based on deposition information, the landfill currently contains approximately 294,500 cubic yards of designated waste. Cell 1 has approximately 35 to 40 feet of material placed. Vehicle access to Cell 1 is currently restricted and



material placement is occurring in Cell 2 in approximately 10-foot lifts expanding to the north. Currently, Cell 2 has approximately 10 to 15% coverage on a single lift.

Stormwater control consists of internal collection of precipitation falling on the landfill facility (contact water or run-off) and the diversion of external non-contact water (run-on). To provide internal storm water collection and drainage, the base of CCR landfill was graded to drain from the northwest to southeast at a slope of 1.4 percent. Internal drainage reports to the collection pond located at the down gradient end of the facility. The individual landfill cells are separated by 3-foot high and 12-foot wide (base width) internal divider berms constructed with 2:1 (horizontal to vertical) slopes. Perimeter containment is provided by 20-foot wide (base width) by 5-foot high perimeter berms with 2:1 fill or 2:1 cut slopes within natural soils.

The landfill cells are fully lined with an 80-mil HDPE geomembrane liner placed over a prepared subgrade. The lining system extends to the external containment berms. A drainage blanket with an integral network of underdrain piping overlies the geomembrane and serves as the storm water runoff and leachate collection system. The drainage blanket consists of a 2-foot thick layer of free draining gravel. The internal underdrain piping consists of perforated 4-inch and 8-inch diameter corrugated polyethylene pipe (CPEP) placed on 30-foot centers within the drainage blanket material. A collection channel is located along the eastern down gradient edge of the individual cells to collect storm water runoff and leachate. The channel discharges to the storm water pond(s) located at the southern margin of the landfill.

Two storm water collection ponds have been designed down gradient and adjacent to Cell 1 and Cell 4. The western pond, Pond 1, has been constructed and serves Cell 1 and Cell 2 and the future Cell 3. The southeastern Pond 2 (future) will serve Cells 4, 5 and 6 once they are placed into operation. The ponds are lined with an 80-mil HDPE geomembrane overlying a geosynthetic clay liner (GCL).

The landfill facilities are separated from run-on from the natural up gradient watersheds by the perimeter berms surrounding the facility and the storm water diversion system. The diversion channels have been designed to safely pass the peak flow from a 100-year, 24-hour storm event.

2.1. Site Inspection

The Inspection of the CCR Landfill was conducted on November 13, 2018. The work items for the inspection involved the following elements:

- A site visit and inspection of the facility was performed by Kerry Magner, P.E. of NewFields;
- The results of the inspection of the facility were briefly discussed with site personnel;



- Photographs were taken of typical and key features noted during the inspection;
- Inspection tables were completed to document the inspection; and
- A summary report was prepared.

Appendix A includes the tables completed for the November 2018 inspection. Selected photographs taken during the site inspection are presented in Appendix B of this report. A CD with all of the photographs taken during the site inspection and an electronic copy of this report are also provided in Appendix B. Figure 1 provides a vicinity map and Figure 2 presents a general site plan of the CCR landfill showing the location of relevant features of the facility.

3. KEY OBSERVATIONS MADE DURING INSPECTION

3.1. General Condition of the Landfill Perimeter

The entire perimeter of the facility was toured as part of the inspection and appeared to be in good to excellent condition. Photographs 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 are illustrative of typical conditions along the facility perimeter. The perimeter containment berms were observed to be well constructed and the HDPE liner is exposed and appears to be in excellent condition. No signs of damage to the lining system were noted during the inspection. General housekeeping practices around and within the facility were good and the facility appeared to be well maintained.

No signs of leachate flow, seepage, global slope instability, or significant deformation were observed within the facility during the site inspection.

3.2. General Condition of the CCR

The materials placed within the landfill are predominantly contained within Cell 1 to an approximate height of 35 to 40 feet. Vehicle access to Cell 1 is currently restricted and material placement is occurring in Cell 2 in approximately 10-foot lifts expanding to the north. Placement of material is proceeding to the north into Cell 2. Materials have been placed with approximate angle of repose slopes and some isolated areas with minor raveling or sloughing of overly wet materials were reported in the 2017 inspection. No significant raveling or sloughing was observed. Photographs 1, 4, 5, 6, 13, and 14 show typical conditions of the materials contained within the landfill. To prevent excessive sloughing we would recommend avoiding placement of successive lifts directly on the crest of the slope, such that overall design stack slope angle is achieved. Deposition should occur a short distance from the crest of the slope. Any sloughing that occurs onto the perimeter berm should be removed and the slope regraded such that drainage around the toe of the stacked materials is maintained.



No signs of seepage, global slope instability, or significant deformation were observed within the facility during the site inspection.

3.3. Collection Pond

As shown in Photograph 2 and 3, the collection pond had a water level approximately 4 feet below the inlet spillway. No leachate flow from the landfill to the pond was observed at the time of the inspection. The HDPE geomembrane was in good condition and no damage or defects were noted.

3.4. Stormwater Controls

Stormwater is routed around the perimeter of the facility by diversion channels and/or the perimeter berms that surround the landfill. Typical diversions are shown in Photographs 5, 7, 8, 9, 10, 11, 12, and 13. An access ramp over the perimeter berm is located near the southwest corner of Cell 1 (Photograph 12). Stormwater controls were observed to be consistent with the intent of the design and no issues were noted as part of the inspection.

4. SUMMARY

The following conclusions are formed based on the site inspection performed in November 2018 by NewFields.

The facility appears to be functioning as the design intended and appears to be well maintained. No signs of seepage, leachate, global instability or major deformation were observed. No significant engineering or operational issues were observed or identified as part of this inspection.

Ongoing and routine programs at the landfill include the following:

- Continue weekly site monitoring and inspection of the facility to monitor the crest, downstream slopes and exposed liner for signs of damage, instability, slumping, erosion, seepage or other abnormal conditions (ongoing by TSPP personnel).
- In Cell 1 and Cell 2, to prevent excessive sloughing avoid placement of successive lifts directly on the crest of the slope. Deposition should occur a short distance from the crest of the slope. Any sloughing that occurs onto the perimeter berm should be removed and the slope regraded.
- Document the monitoring activities, including visual inspections of the facility (ongoing by TSPP personnel).



- Periodically check drainage channels and culverts for blockage and sediment to confirm functionality (ongoing by TSPP personnel).

If you have any questions or require additional information, please contact the undersigned.

Sincerely,

NewFields Mining Design & Technical Services

Handwritten signature of Kerry A. Magner in blue ink.

Kerry A. Magner, P.E.
Senior Geotechnical Engineer II

Reviewed by:

Handwritten signature of Kevin Lutes in black ink.

Kevin Lutes, P.E.
Principal, Partner

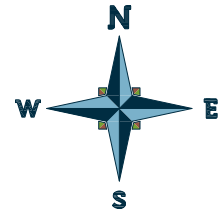
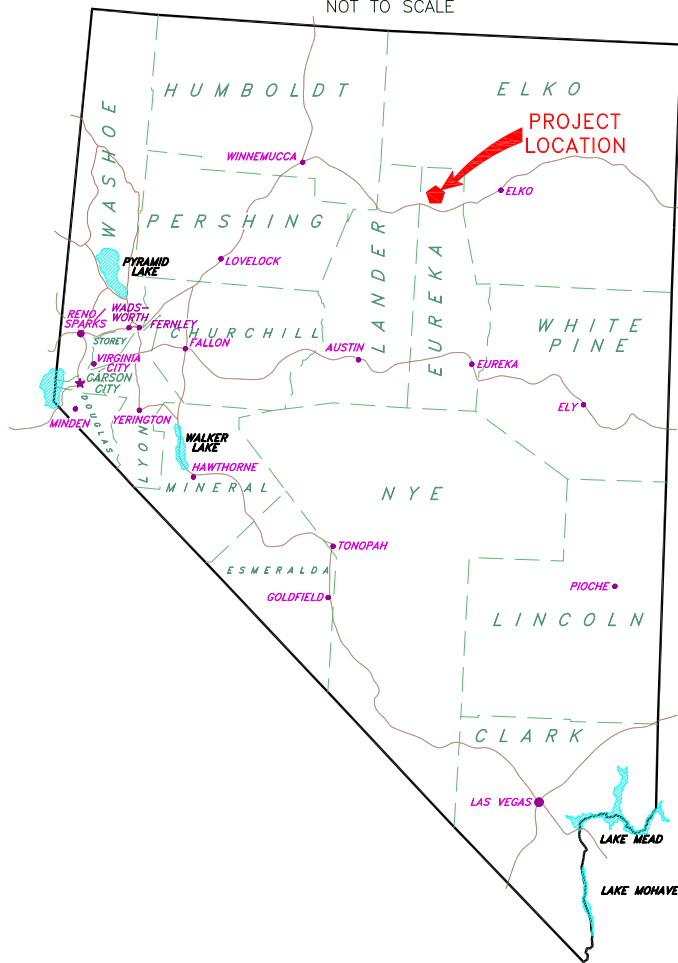
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FIGURES

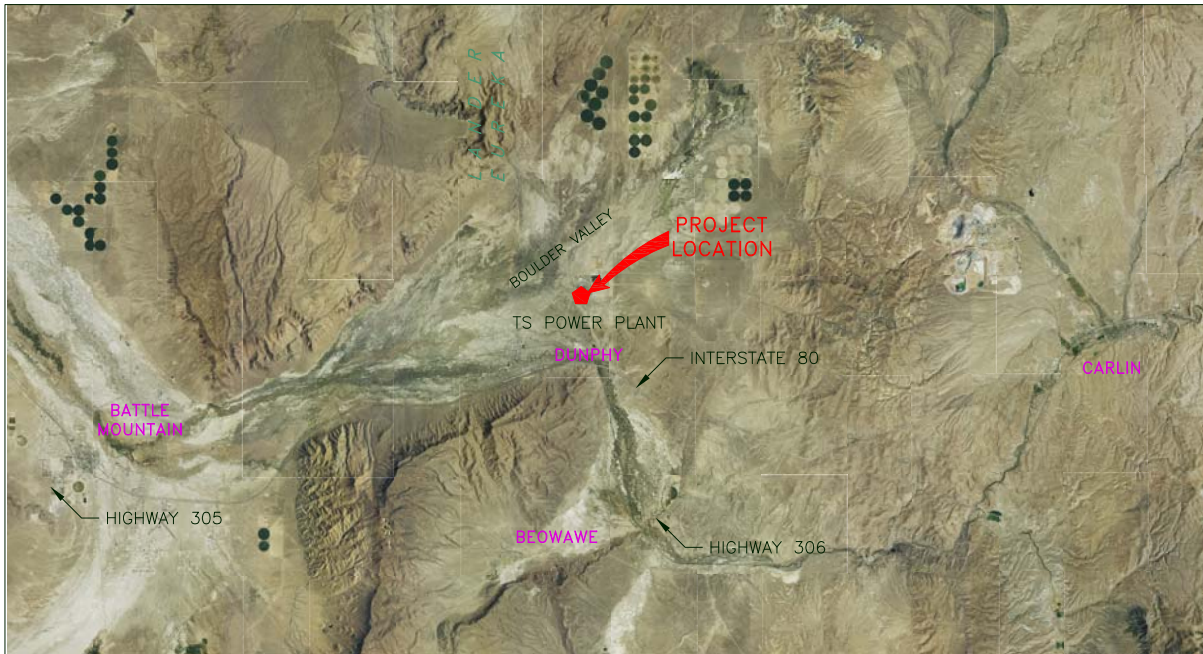
LOCATION MAP

NOT TO SCALE



VICINITY MAP

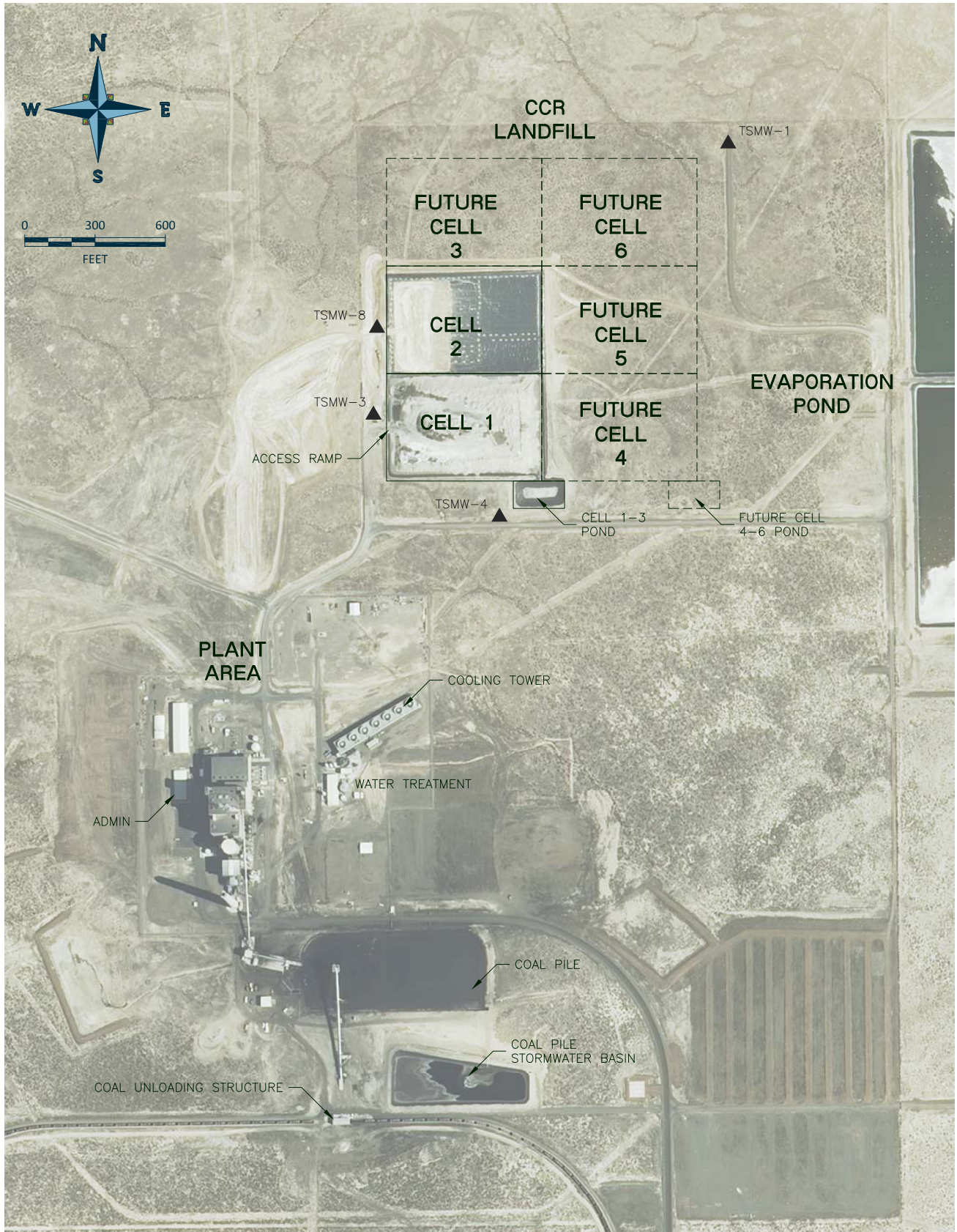
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NOTE:
PHOTO DATE: AUGUST 2013.
SOURCE: NAIP

		AREA	TS POWER PLANT	CLIENT	NEWMONT
		PROJECT	2018 INSPECTION CCR LANDFILL		
PROJECT NUMBER	LOCATION	FIGURE TITLE			
475.0221	EUREKA COUNTY, NEVADA	VICINITY MAP			
DOCUMENT FILENAME		FIGURE NUMBER	REVISION		
TSPP-221-1DK-0004_0 - VICINITY MAP.DWG		1	0		





NOTE:
 PHOTO DATE: AUGUST 2013.
 SOURCE: NAIP

		AREA	TS POWER PLANT	CLIENT	NEWMONT
		PROJECT	2018 INSPECTION CCR LANDFILL		
PROJECT NUMBER	LOCATION	FIGURE TITLE			
475.0221	EUREKA COUNTY, NEVADA	GENERAL SITE PLAN			
DOCUMENT FILENAME	TSP-221-1DK-0003_0.DWG	FIGURE NUMBER	2	REVISION	0



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APPENDIX A
Inspection Tables

TABLE A.1
Background Information
2018 CCR Landfill Inspection
TS Power Plant, Eureka County, Nevada

Inspected by:	Kerry A. Magner, P.E.
Approved and reviewed by:	Kevin Lutes, P.E.
Inspection Date:	November 13, 2018
Weather conditions:	Sunny, light winds and cool
Purpose of facility:	Storage of CCR and cooling tower side stream softening filter press sludge.
Date of last Facility Inspection by the EOR:	N/A
Date of last Facility Inspection Report:	December 2017
Initial construction date:	Cell 1 - 2008 and Cell 2 - 2013
Original facility engineered by:	AMEC (2005)
Type of facility:	Non-Impounding landfill. Fully geomembrane lined with 80-mil HDPE. External stormwater/leachate collection pond lined with 80-mil HDPE over GCL.
Watershed:	The up gradient watershed is collected and routed to the east and west via stormwater diversion channels.
Monitoring:	Four groundwater monitoring wells in the area surrounding the landfill. Three down gradient and one up gradient a shown on Figure 2.
Design/as-built data available:	Yes. On-site.
Volume of solids stored:	294,500 cubic yards of solids.
CCR production rate:	5.9 tons per hour of ash (Approximately 15,300 cubic yards in 2018).
Special 'as-built' features:	None
US features inspected/reviewed:	Yes
Perimeter walk-over conducted:	Yes
Discharge facilities inspected:	N/A
Surveillance program available:	Yes
Storage ponds/other facilities inspected:	Stormwater/Leachate Collection Pond (Pond 1) down gradient of Cell 1-2 facility.
New developments DS of facility:	None
General condition of facility:	Overall, facility is in good condition. No signs of leachate, seepage, instability or distress.
Next Inspection required:	Annually

TABLE A.2
Inspection of Facility
2018 CCR Landfill Inspection
TS Power Plant, Eureka County, Nevada

OBSERVED FEATURES	YES	NO	PHOTO NOS.	COMMENTS / NOTES
1.0 Facility Perimeter				
1.1 Evidence of Erosion		X	1,4,5,6,12, and 13	No erosion along the perimeter of the landfill berms was noted.
1.2 Evidence of Movement		X	See 1.1	
1.3 Evidence of Sloughing		X	See 1.1	Not in the constructed perimeter berms.
1.4 Evidence of Cracking		X	See 1.1	
1.5 Vegetation	X	X	7,8,9,10,11,14, and 15	Minor vegetation on the liner cover material
1.6 Other Unusual Conditions		X		
1.7 Evidence of Repairs		X		
2.0 Landfill Materials				
2.1 Lateral Movement	X	X	4,5,6, and 13	Some minor sloughing noted in 2017 inspection, No change in 2018 inspection.
2.2 Evidence of Settlement		X		
2.3 Evidence of Cracking		X		
2.4 Erosion		X	See 2.1	Localized.
2.5 Other Unusual Conditions		X		
2.6 Evidence of Repairs		X		
2.7 Miscellaneous		X		
3.0 General				
3.1 Solution Pond(s)	X		2 and 3	External Stormwater/Leachate Collection Pond. Composite lined with 80-mil HDPE over GCL.
3.2 Embedded/buried structures		X		
3.3 Accessible by Truck	X		12	Landfill access ramp
3.4 Public Access		X	2, 3, and 4	Area fenced.
3.5 Other Unusual Conditions		X		

APPENDIX B
Selected Photographs



Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 1. Southwest Corner of CCR, Cell 1 - View Northeast

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 2. Collection Pond 1 - View Northwest

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 3. Collection Pond 1 - View West

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 4. South Perimeter Berm, Southeast Corner, Cell 1 - View West

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 5. East Perimeter Berm, Southeast Corner, Cell 1 - View North



Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
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Photo 6. Southeast Corner of CCR, Cell 1 - View Northwest

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
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December 17, 2018



Photo 7. East Perimeter Berm, Northeast Corner, Cell 1 and 2 - View South

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 8. North Perimeter Berm, Northeast Corner, Cell 2 - View West



Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 9. Northeast Corner of CCR, Cell 2 - View Southwest

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 10. North Perimeter Berm, Northwest Corner, Cell 2 - View East

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 11. West Perimeter Berm, Northwest Corner, Cell 1 and 2 - View South

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 12. North Perimeter Berm, Southwest Corner, Cell 1 - View North

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 13. South Perimeter Berm, Southeast Corner, Cell 1 - View East

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 14. Cell 2 Deposition - View West

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 15. Cell 2 Deposition - View South

Newmont Nevada Energy Investment, LLC
December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 16. CCR Stockpile, Cell 1 and 2 - View West

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December 2018 Inspection
CCR Landfill, TS Power Plant
Photo Log – Appendix A
Project No. 475.0221.004
December 17, 2018



Photo 17. CCR Stockpile, Cell 1 and 2 - View West