



## **DECEMBER 2015 INSPECTION CCR LANDFILL TS POWER PLANT**

Prepared for:



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914 Dunphy Ranch Road  
Battle Mountain, Nevada 89820**

Prepared by:



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**NewFields Project 475.0221  
January 2016**



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Selected Photographs  
CD of all Photographs & Electronic Inspection Report



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## 1. INTRODUCTION

This report presents the results of the December 2015 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 Residue 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.

Currently, two cells (Cell 1 and Cell 2) and one (1) 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 (6) acre cell immediately north of Cell 1, was constructed in 2013 and is currently accepting the designated waste streams. Based on recent survey information, the landfill currently contains approximately 227,000 cubic yards of designated waste. Cell 1 has approximately 20 feet of material placed and the placement of ash is progressing to the north into Cell 2. Currently, Cell 2 has very little material on it.

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 December 8, 2015. The work items for the inspection involved the following elements:

- A site visit and inspection of the facility was performed by Paul Kaplan 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
- This report was prepared.



Appendix A includes the tables completed for the December 2015 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**

#### **3.1.1. 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 2, 4, 7, 12, 13, 18, 20, 30, 32, 35, and 47 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.

#### **3.1.2. General Condition of the CCR**

The materials placed within the landfill are predominantly contained within Cell 1 to an approximate height of 20 feet. 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 was evident (Photographs 33, 34, 35 and 43). Photographs 2-3, 24, 37, 53-57 and 67-68 show typical conditions of the materials contained within the landfill.

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

#### **3.1.3. Collection Pond**

As shown in Photograph 61-65 (panorama), the collection pond (Pond 1) had minor residual water in the base of the pond. 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.



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### **3.1.4. 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 17, 22, 44, 50, 51 and 72. An access ramp over the perimeter berm is located near the southwest corner of Cell 1 and a culvert (Photographs 50 and 51) was noted beneath the ramp to convey runoff around the facility. 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 December 2015 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).
- 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).

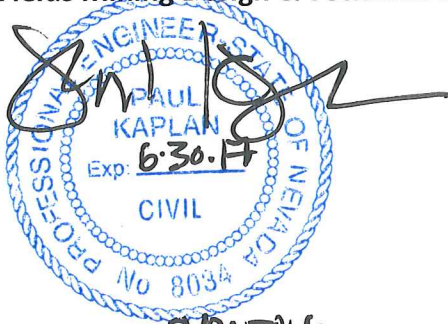


If you have any questions or require additional information, please contact the undersigned.

Sincerely,

**NewFields Mining Design & Technical Services**

Reviewed by:



Paul Kaplan, P.E. **EVANZIL**  
Principal

Nancy Anne Card, P.E.  
Associate

PK/NAC/ng

Addressee: (2) + electronic via e-mail

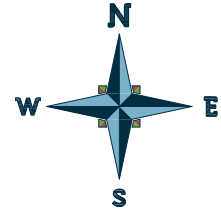
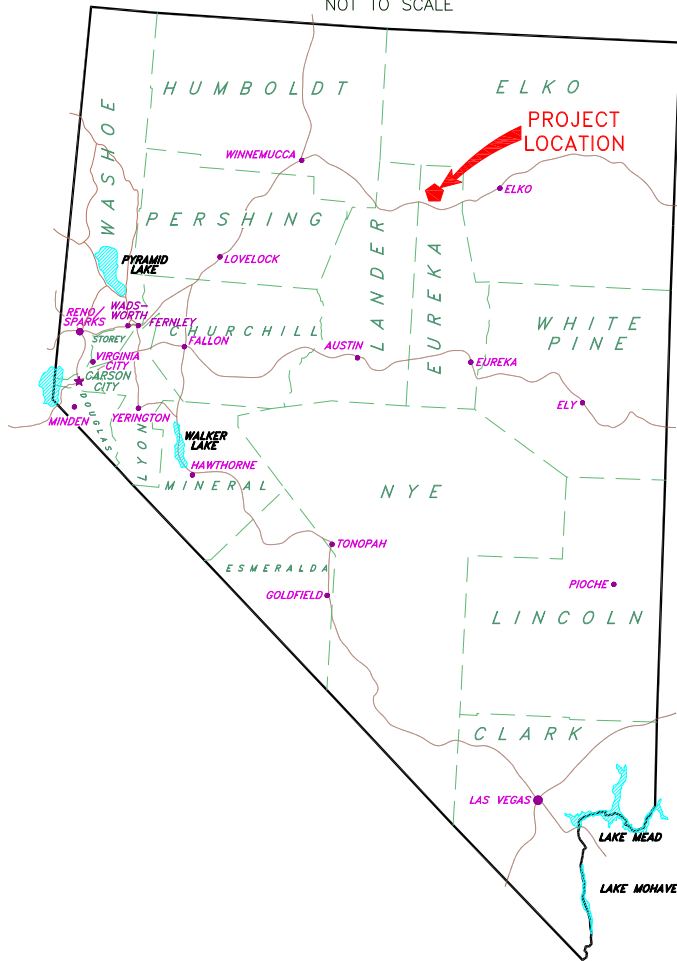
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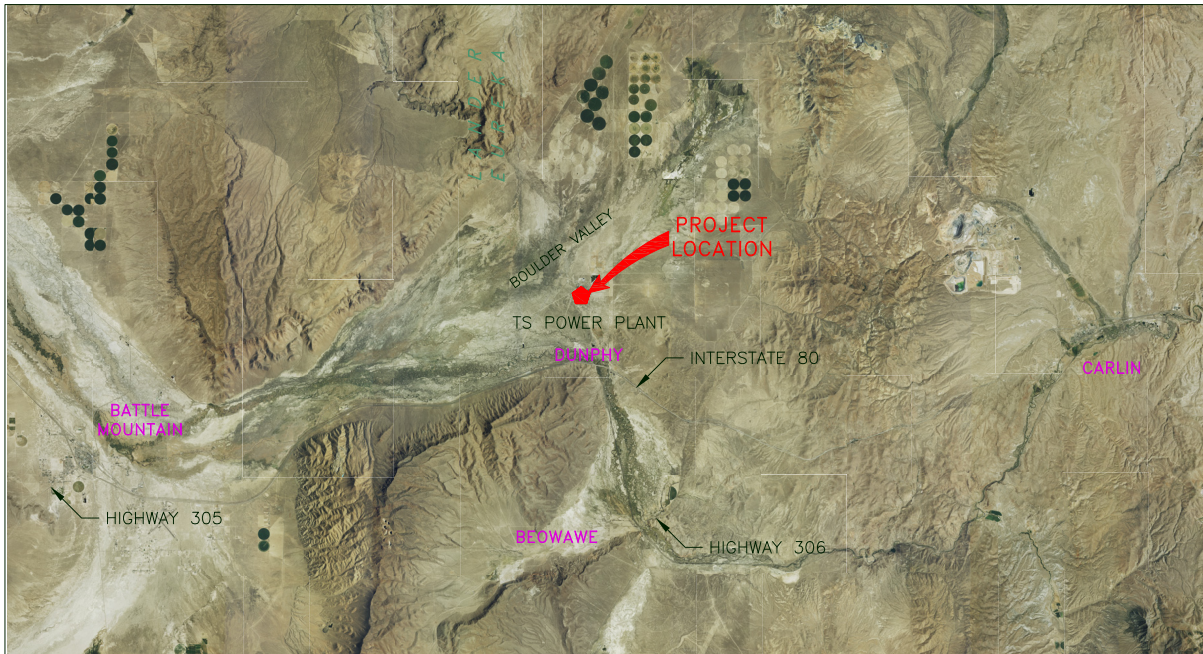
## FIGURES



**LOCATION MAP**  
NOT TO SCALE



**VICINITY MAP**  
NOT TO SCALE



NOTE:  
PHOTO DATE: AUGUST 2013.  
SOURCE: NAIP

		AREA	TS POWER PLANT	CLIENT	NEWMONT
		PROJECT	DECEMBER 2015 INSPECTION CCR LANDFILL		
PROJECT NUMBER	LOCATION	FIGURE TITLE			
475.0221	EUREKA COUNTY, NEVADA	VICINITY MAP			
DOCUMENT FILENAME	FIGURE NUMBER			REVISION	
TSPP-221-1DK-0001_0.DWG	1			0	





NOTE:  
 PHOTO DATE: AUGUST 2013.  
 SOURCE: NAIP

		AREA	TS POWER PLANT	CLIENT	NEWMONT
		PROJECT	DECEMBER 2015 INSPECTION CCR LANDFILL		
PROJECT NUMBER	LOCATION	FIGURE TITLE			
475.0221	EUREKA COUNTY, NEVADA	GENERAL SITE PLAN			
DOCUMENT FILENAME		FIGURE NUMBER	REVISION		
TSP-221-1DK-0002_0.DWG		2	0		



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**APPENDIX A**  
**Inspection Tables**

**TABLE A.1**  
**Background Information**  
**December 2015 CCR Landfill Inspection**  
**TS Power Plant, Eureka County, Nevada**

Inspected by:	Paul Kaplan, P.E.
Approved and reviewed by:	Nancy Anne Card, P.E.
Inspection Date:	December 8, 2015
Weather conditions:	Cloudy, 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:	N/A
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:	227,000 cubic yards of solids.
CCR production rate:	5.9 tons per hour of ash.
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**  
**December 2015 CCR Landfill Inspection**  
**TS Power Plant, Eureka County, Nevada**

OBSERVED FEATURES	YES	NO	PHOTO NOS.	COMMENTS / NOTES
<b>1.0 Facility Perimeter</b>				
1.1 Evidence of Erosion		X	2, 3, 4, 5, 6, 7, 9, 12, 13, 16, 17, 18, 21, 22, 27, 28, 30, 3235, 38, 43, 44, 45, 47	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	8, 14, 19, 20, 21	Minor vegetation on the liner cover material
1.6 Other Unusual Conditions		X		
1.7 Evidence of Repairs		X		
<b>2.0 Landfill Materials</b>				
2.1 Lateral Movement	X	X	30, 33, 34, 39, 43	Some minor sloughing noted in CCR.
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		
<b>3.0 General</b>				
3.1 Solution Pond(s)	X		Pano 40-42, Pano 61-65	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		3, 6	Landfill access ramp
3.4 Public Access		X		Area fenced.
3.5 Other Unusual Conditions		X		

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**APPENDIX B**  
**Selected Photographs**  
**CD of all Photographs & Inspection Report**



**Panoramic Photographs 0002-003:** West side of Cell1 with access ramp. TSMW3 is visible on left.



**Photograph 0004:** West side of Cell 1 north of access ramp (looking north).



**Photograph 0007:** West side of Cell 2 (looking north).





**Photograph 0012:** West side of Cell 2 near northwest corner (looking south).



**Photograph 0013:** Northwest corner of Cell 2 (looking east).



**Photograph 0016:** Northwest corner of Cell 2 (looking east).



**Photograph 0017:** North perimeter berm along edge of Cell 2.



**Photograph 0018:** Northeast corner of Cell 2 (looking south).



**Photograph 0020:** Northeast corner of Cell 2 (looking west).



**Photograph 0022:** Stormwater diversion swale at north side of Cell 2 (looking west).



**Photograph 0024:** Southeast corner of Cell 2 at Cell 1-2 berm (looking west).



**Photograph 0030:** Cell 1 collection channel on east side (looking south).



**Photograph 0032:** Cell 1 collection channel on east side (looking south).



**Photograph 0033:** Localized slough on east side of Cell 1 (collection channel area).



**Photograph 0034:** Localized sloughing of ash fill on east side of Cell 1.



**Photograph 0035:** South side of Cell 1 at outlet to pond (looking west).



**Photograph 0037:** Southeast corner of Cell 1 (looking north).



Newmont Nevada Energy Investment, LLC  
December 2015 Inspection  
CCR Landfill, TS Power Plant  
Photo Log – Appendix A  
Project No. 475.0221  
January 8, 2016

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**Panoramic Photographs 0040-0042:** Collection Pond 1.





**Photograph 0043:** South side of Cell 1.



**Photograph 0044:** Downgradient edge of Cell 1. Stormwater diversion channel is on the right.



**Photograph 0047:** Southwest corner of Cell 1 (looking north to access ramp).



**Photograph 0050:** Drainage culvert beneath access ramp to Cell 1 (upstream end).



**Photograph 0051:** Drainage culvert beneath access ramp to Cell 1 (downstream end).



**Panoramic Photographs 0053-0057:** Top of ash fill in Cell 1.



**Panoramic Photographs 0061-0065:** Collection Pond 1 at southeast corner of Cell 1.



**Panoramic Photographs 0067-0068:** Typical south side of Cell 1. Collection Pond in foreground.



**Photograph 0072:** Stormwater diversion channel on east side of Pond 1.