FOUR CORNERS POWER PLANT
Lined Ash Impoundment,
Lined Decant Water Pond,
Combined Waste Treatment Pond,
Upper Retention Sump, and
Dry Fly Ash Disposal Area

Annual
CCR Impoundment and
Landfill Inspection Report

2017

GENERATION ENGINEERING
Design Engineering
P.O. BOX 53999
PHOENIX, ARIZONA 85072

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1.0 INTRODUCTION

Arizona Public Service Company (APS) prepared this report to comply with the Environmental Protection Agency's (EPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule (2015) requiring "*...inspections by a qualified professional engineer at intervals not exceeding one year to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards*" (CFR 257.83(b)(1) for CCR surface impoundments and CFR 257.84(b)(1) for CCR landfills). AECOM staff participated in the CCR unit inspection and provided technical support in the preparation of this document.

This report includes a review of relevant data in the operating record as well as visual inspections of the Lined Ash Impoundment, the Lined Decant Water Pond, the Combined Waste Treatment Pond, the Upper Retention Sump, and the Dry Fly Ash Disposal Area. The Lined Ash Impoundment and Lined Decant Water Pond are instrumented with piezometers, inclinometers, settlement monuments, and settlement rods.

Inspection Conducted by



Byron R. Conrad, P.E.
Consulting Geological Engineer
Design Engineering
Generation Engineering
Arizona Public Service Company

Cletis B. Mark
Civil Engineer
Plant Engineering
Four Corners Power Plant
Arizona Public Service Company

Lee M. Wright, P.E.
Geotechnical Engineer
AECOM
7720 North 16th Street, Suite 100
Phoenix, Arizona

2.0 SITE BACKGROUND AND INSPECTION CONDITIONS

The Four Corners Power Plant (FCPP, the Plant) is located in Fruitland, New Mexico, approximately 20 miles west of Farmington, New Mexico and 13 miles southeast of Shiprock, New Mexico. The Plant is immediately south of Morgan Lake and primarily in Section 36, Township 29 North, Range 16 West on the Navajo Indian Reservation in San Juan County. Units 1, 2, and 3 are permanently closed and decommissioned. Units 4 and 5 burn low sulfur coal and have a total net generating capacity of 1,540 megawatts.

The coal combustion process produces bottom ash (silty sand, Unified Soil Classification System SM), fly ash (low plasticity silt, Unified Soil Classification System ML), and flue gas desulfurization (FGD) solids. The Plant is operated as a low volume water usage system. The Lined Ash Impoundment (LAI) is used for Coal Combustion Residuals (CCR) disposal and the Lined Decant Water Pond (LDWP) is used to temporarily store water drained from the LAI. The Dry Fly Ash Disposal Area (DFADA) is a CCR landfill used to dispose of dry CCR from Units 4 and 5. The Upper Retention Sump (URS) collects water from drains located on the Plant site and receives CCR in storm water, process water, and Plant washdown from several sources within the Plant. The Combined Waste Treatment Pond (CWTP) is a settling pond for bottom ash sluice water and various storm water, process water, and Plant washdown streams. The CWTP discharges through a NPDES-permitted outfall to Morgan Lake. These five coal combustion waste facilities are the subject of this inspection report.

The field inspection was conducted on Monday, November 13, 2017 and Tuesday, November 14, 2017. Conditions were mild (30-69 degrees Fahrenheit) with clear skies. Winds were light throughout both days. Approximately 6.8 inches of precipitation had fallen since the start of the year based on data recorded at the Four Corners Regional Airport in Farmington, New Mexico (Weather Underground 2017).

Instrumentation at the LAI and LDWP generally consists of open standpipe PVC piezometers, vibrating wire piezometers, inclinometers, settlement monuments, and settlement rods measured using a Global Positioning Survey (GPS) System. Water levels in the open standpipe piezometers are measured with an electronic water level indicator attached to a cable stamped with increments of 0.01 feet. Water level data for the vibrating wire piezometers are downloaded at a central readout box and processed by Plant personnel. Data for the inclinometers, settlement monuments, and settlement rods are also gathered and processed by Plant personnel.

The benchmarks for the elevations reported for GPS surveys of the settlement monuments at the Four Corners Power Plant are based on one of three survey monuments: EMMA, an aluminum cap, and two Southern California Edison (SCE) brass caps – HV-53, and HV-61. The latitude and longitude of the monuments are based on the NAD83 datum. The elevations of EMMA, HV-53, and HV-61 are 5382.251, 5331.214, and 5085.898 feet, respectively.

3.0 IMPOUNDMENT DESCRIPTIONS

3.1 LINED ASH IMPOUNDMENT (LAI)

The LAI is represented on Figure 1 – Lined Ash Impoundment (LAI).

The LAI (listed by the New Mexico Office of the State Engineer (NMOSE) Dam Safety Bureau as dam number D-634) was constructed between 2003 and 2014, has a maximum storage capacity of 5,986 acre-feet, and is approximately 107 feet high. The embankment is approximately 6,400 feet long and is classified under the New Mexico Administrative Code (NMAC) as "intermediate" size and "significant" hazard potential. The impoundment is lined with a single HDPE geomembrane. The nominal (lowest) crest elevation (EL) is 5280.0 feet. The maximum operating water level is EL 5275.2 feet and the water level was observed to be at approximate EL 5268 feet during the inspection.

3.2 LINED DECANT WATER POND (LDWP)

The LDWP is represented on Figure 2 – Lined Decant Water Pond (LDWP).

The LDWP (NMOSE dam number D-635) was constructed in 2003, has a maximum storage capacity of 435 acre-feet, and has a statutory height of approximately 16 feet (the LDWP was constructed on top of Ash Pond 3 and is 90 feet above the original ground surface along the South and West Embankments). The embankment is approximately 5,488 feet long and is classified under the NMAC as "intermediate" size and "significant" hazard. The impoundment is lined with two HDPE geomembranes and a leak detection layer. The maximum surcharge reservoir level is EL 5213.2 feet and the reservoir level was observed to be at approximate EL 5207 feet during the inspection.

3.3 COMBINED WASTE TREATMENT POND (CWTP)

The CWTP is represented on Figure 3 – Combined Waste Treatment Pond (CWTP).

The CWTP is an approximately 13-acre unlined detention pond located adjacent to Morgan Lake. The CWTP is not regulated by NMOSE. It was constructed in 1978, has a maximum storage capacity of 137 acre-feet, and is approximately 32 feet high. The embankment is approximately 1,800 feet long and is classified under the NMAC as "small" size and "low" hazard. The CWTP is used as a settling basin for ash-impacted wastewater prior to discharge to Morgan Lake through a monitored National Pollutant Discharge Elimination System (NPDES) permitted discharge point. The primary source of water entering the CWTP is from bottom ash recovery and transport processes at Units 4 and 5. Bottom ash is hydraulically transported to the Units 4 and 5 hydrobins where the transport water is separated and conveyed to the CWTP. Ash and other sediment settle in separate earthen settling basins within the CWTP footprint prior to the water overflowing into the main CWTP.

3.4 UPPER RETENTION SUMP (URS)

The Upper Retention Sump is represented on Figure 4 – Upper Retention Sump (URS).

The URS is an approximately 1.09-acre, unlined surge pond associated with operation of the flue gas desulfurization (FGD) systems for treatment of flue gas from Units 4 and 5. The URS is not regulated by NMOSE. Lime slurry is transferred from the URS into various FGD absorber vessels as needed to operate and maintain the overall FGD system.

3.5 DRY FLY ASH DISPOSAL AREA (DFADA)

The DFADA is represented on Figure 5 – Dry Fly Ash Disposal Area (DFADA).

The DFADA is a lined landfill and dry fly ash disposal facility. The DFADA currently consists of three conjoined cells: Sites 1, 2, and 3. Construction at the three Sites has been ongoing since 2007. The DFADA has a maximum intended capacity of 6,261 acre-feet and an ultimate maximum height of approximately 105 feet. Site 1 is constructed with an HDPE geomembrane overlying a compacted clay subgrade. Sites 2 and 3 are constructed with a composite liner system selected for general compliance with the EPA's *Guide for Industrial Waste Management*: a geosynthetic clay liner (GCL) overlain by an HDPE geomembrane. A drainage layer was installed over the HDPE geomembrane in all three cells as recommended in the EPA guidance. Each cell is connected to a leachate collection system designed to remove water from the storage area. The leachate collection system generally consists of a drainage layer, collection piping, a removal system, and a protective filter layer.

4.0 FIELD INSPECTIONS

This section contains the 2017 annual field inspections conducted by APS and accompanied by a representative from AECOM at the LAI (Section 4.1), the LDWP (Section 4.2), the CWTP (Section 4.3), the URS (Section 4.4), and the DFADA (Section 4.5).

4.1 APS FIELD INSPECTION – LINED ASH IMPOUNDMENT (LAI)

<table>
<tr><td colspan="2">Lined Ash Impoundment (LAI)</td><td colspan="2">State Identification Number (SID): D-634</td><td rowspan="15">Not Applicable</td><td rowspan="15">No</td><td rowspan="15">Yes</td><td rowspan="15">Monitor</td><td rowspan="15">Repair</td><td rowspan="15">Investigate</td></tr>
<tr><td>SID: D-634</td><td>Dam Name: Lined Ash Impoundment (LAI)</td><td>Type: Zoned earth and ash fill with geomembrane</td><td>Purpose: Fly ash and FGD sludge disposal</td></tr>
<tr><td colspan="2">Contact(s): Byron Conrad, P.E. (APS)</td><td colspan="2">Report Date: January 12, 2018</td></tr>
<tr><td colspan="2">Inspected by: Byron Conrad, P.E. (APS), Lee Wright, P.E. (AECOM)</td><td colspan="2">Inspection Date: November 13, 2017</td></tr>
<tr><td colspan="2">Reviewed by: Byron Conrad, P.E. (APS)</td><td colspan="2">Review Date: December 26, 2017</td></tr>
<tr><td colspan="2">Design Dam Crest Elevation (ft): 5,280</td><td colspan="2">Design Spillway Crest Elevation (ft): 5,277.84
(rim of 8-foot-diameter riser; no spillway)</td></tr>
<tr><td colspan="2">Design Total Freeboard (ft): 4.8 (West Embankment)
2.8 (East, South, and North Embankments)</td><td colspan="2">Measured Total Freeboard (ft): 12 (in the Southwest Corner)</td></tr>
<tr><td colspan="2">Statutory Dam Height (ft): 107 (South Embankment)</td><td colspan="2">Structural Height (ft): 107 (South Embankment)</td></tr>
<tr><td colspan="2" rowspan="2">Dam Crest Length (ft): 6,400</td><td>Upstream Slope:
3:1 (West Embankment)
2:1 (South Embankment)</td><td>Downstream Slope:
3:1 (West Embankment)
2:1 (South Embankment)</td></tr>
<tr><td colspan="2">Dam Crest Width (ft): 30 (West Embankment)
20 (South Embankment)</td></tr>
<tr><td colspan="2" rowspan="2">Reservoir Area (acres): 129.16 (at EL 5280 ft)</td><td>Lat: 36° 41' 05"
(per NMOSE permit)</td><td rowspan="2">Water Rights: N/A</td></tr>
<tr><td>Long: 108° 30' 26"
(per NMOSE permit)</td></tr>
<tr><td colspan="2">Reservoir Storage (ac-ft): 5,364
(normal operating capacity)</td></tr>
<tr><td colspan="4">Inflow Design Flood/Safe Flood-Passing Capacity: PMF – fully contained</td></tr>
<tr><td colspan="2">Reservoir Level During Inspection (ft): 5,268</td><td>Photos: Yes</td><td>Pages: 5</td></tr>
</table>

Lined Ash Impoundment (LAI)		SID: **D-634**		N/A	No	Yes	Mon	Rep	Inv
COMPLIANCE CHECKLIST									
1	***CONDITION SUMMARY, LICENSE, EAP, NEXT INSPECTION***								
a	Recorded downstream hazard: **Significant**		Should hazard be revised?		**X**				
b	If high hazard, estimate downstream persons-at-risk (PAR): **N/A**		Is there a significant increase since the last inspection?		**X**				
c	Recorded size: **Intermediate**		Should size be revised?		**X**				
d	Any safety deficiencies? **No**		Describe:		**X**				
e	Any statute or rule violations? **No**		Describe and list required action:		**X**				
f	Safe storage level on License: **5,275.2 feet**		Should level be revised:		**X**				
g	Any License violations? **No**		Describe and list required action:		**X**				
h	Date of current License: **October 27, 2015**		Should new License be issued?		**X**				
i	Date of last Emergency Action Plan revision: **2/2017**		Should EAP be revised? **See comment ix.**		**X**				
j	Any Agency actions? **No**		Describe and list required action:		**X**				
k	Normal inspection frequency: **Annually**		Should inspection frequency be revised?		**X**				
l	Recommended date for next inspection: **November 2018**								

MONITORING CHECKLIST									
2	***INSTRUMENTATION AND MONITORING***								
a	Describe: **West Embankment** **1) Six clusters of three vibrating wire piezometers each (varying elevations),** **2) Four buried settlement rods to measure settlement at depth,** **3) Two inclinometers, and** **4) Two crest survey/settlement monuments.** **North Toe Buttress** **1) Eleven clusters of three vibrating wire piezometers and one cluster of two vibrating wire piezometers (varying elevations),** **2) Eight buried settlement rods to measure settlement at depth, and** **3) Three inclinometers.** **Other** **1) Permanent water elevation markers on the geomembrane liner at three locations within the impoundment.** **2) No inflow or outflow measurement devices.**								
b	Any repair or replacement required? **No.**		Describe:		**X**				
c	Date of last monitoring report: **January 2017**		Should new readings be taken and new report provided? **Monthly measurement and annual reporting are required.**		**X**				

DAM EMBANKMENT CHECKLIST								
3	***DAM CREST***							
a	Settlements, slides, depressions?			**X**				
b	Misalignment?			**X**				
c	Longitudinal/Transverse cracking? **Transverse cracks were observed in the anchor trench in the western half of the South Embankment (photo IMG_5190). See comment i.**				**X**	**X**		
d	Animal burrows?			**X**				
e	Adverse vegetation?			**X**				
f	Erosion?			**X**				

Lined Ash Impoundment (LAI)		SID: **D-634**	N/A	No	Yes	Mon	Rep	Inv
4	***UPSTREAM SLOPE***							
a	Erosion?	**The upstream slope is covered with geomembrane.**		**X**				
b	Inadequate ground cover?			**X**				
c	Adverse vegetation?			**X**				
d	Longitudinal/Transverse cracking?			**X**				
e	Inadequate riprap?		**X**					
f	Stone deterioration?		**X**					
g	Settlements, slides, depressions, bulges?	**The liner is bulging in two locations. See comment ii.**			**X**	**X**		
h	Animal burrows?			**X**				
5	***DOWNSTREAM SLOPE***							
a	Erosion?	**See comment iv.**			**X**	**X**		
b	Inadequate ground cover?	**The West and South Embankment slopes are faced with bottom ash that supports only sporadic and uneven vegetation.**		**X**				
c	Adverse vegetation?			**X**				
d	Longitudinal/Transverse cracking?			**X**				
e	Inadequate riprap?		**X**					
f	Stone deterioration?		**X**					
g	Settlements, slides, depressions, bulges?			**X**				
h	Soft spots or boggy areas?			**X**				
i	Movement at or beyond toe?			**X**				
j	Animal burrows?			**X**				
6	***ABUTMENT CONTACTS***							
a	Erosion?			**X**				
b	Differential movement?			**X**				
c	Cracks?			**X**				
d	Settlements, slides, depressions, bulges?			**X**				
e	Seepage?			**X**				
f	Animal burrows?			**X**				

7	***SEEPAGE/PIPING CONTROL DESIGN FEATURE(S)***							
a	Describe:	**Historic seepage at the downstream toe of the South Embankment is captured using a French drain beneath the toe. There was no flow from the outlet at the time of inspection (photo IMG_5353).**						
b	Internal drains flowing?			**X**				
c	Seepage at or beyond toe?			**X**				
d	If so, does seepage contain fines?		**X**					
e	Evidence of sand boils at or beyond toe?			**X**				

RESERVOIR CHECKLIST								
8	***RESERVOIR***							
a	High water marks?				**X**			
b	Erosion/slides into pool area?			**X**				
c	Sediment accumulation?	**Suspended FGD solids and fly ash settle in the impoundment.**			**X**			
d	Floating debris present?	**Sparse debris on top of the impounded ash.**		**X**				
e	Depressions, sinkholes, or vortices?			**X**				
f	Low ridges/saddles allowing overflow?			**X**				
g	Structures below dam crest elevation?	**Yes. See comment vii.**			**X**	**X**		

Additional comments and recommendations for the LAI:

i. The transverse cracks observed in the anchor trench along the South Embankment (photo IMG_5190) did not appear to be widespread or indicative of adverse conditions along the crest. The area should be monitored and repaired if the cracks become more widespread.

ii. The liner is bulging along the western portion of the South Embankment. In early summer, APS discovered several tears in the liner when the water level in the LAI was higher. APS repaired the tears in October (photo IMG_1877), but water had already entered the space between the liner and the compacted clay along the upstream slope. The water migrated down the liner/clay contact and lifted the liner along the ponded water level (photos IMG_5216 and IMG_5228). APS has since been drawing down the water level in the LAI. The LAI embankment was designed to be stable without the geomembrane liner (URS 2012); however, the upstream slope and the toe drain along the South Embankment should be monitored for evidence of internal erosion. Evidence could include benching along the upstream slope due to the erosive action of water against the clay and cloudy seepage flowing out of the toe drain. The South Embankment toe drain was dry on the date of this inspection (photo IMG_5353).

iii. APS is currently pumping water from the LAI to use in the Plant for power generation processes. The water is being pumped from the Southwest Corner to the riser pipe via an HDPE pipe placed along the crest of the West Embankment (photo IMG_5244). The pipe is lying on the upstream crest (hinge point) and pumping is performed during daylight hours as a precaution against leaks that may damage the embankment.

iv. The downstream slope of the West Embankment had recent erosion repairs (photo IMG_1886) and minor recent erosion rills. These local erosional features may require repair in the future (photos IMG_1884 and IMG_1887) and should be monitored.

v. There are small tears in the liner on the crest of the Northwest Embankment (photo IMG_5275). The tears should be repaired to prevent stormwater or other runoff from entering the space beneath the liner.

vi. The North Toe Buttress (NTB) was constructed as part of the 5280 Lift of the LAI to provide additional stability in the northern portion of the West Embankment (photo IMG_5252). The NTB appeared to be in good condition during the inspection. The NTB foundation instruments are recorded on an interval not to exceed 30 days and indicate normal, expected foundation conditions.

vii. The primary outlet from the LAI is an 8-foot diameter vertical, perforated HDPE riser connected at the bottom to 16-inch and 8-inch diameter HDPE gravity pipe outlets that drain into the LDWP. The observations in the 2016 inspection indicated that the 8-inch HDPE pipe appeared to be partially clogged. During this inspection, the 16-inch pipe appeared to be draining freely, but the 8-inch pipe may still be partially clogged (photo IMG_1893). APS will monitor the 8-inch pipe and determine if it should be cleaned at a later date.

viii. The V-ditch that is used to transport FGD slurry to the LAI was partially rerouted when APS determined that the slope of the solids being deposited in the LAI was not steep enough to allow FGD to settle as intended. Approximately 50 feet of the V-ditch was rerouted further upstream (photos IMG_5301 and IMG_5304).

ix. APS updated the Emergency Action Plan in February 2017. The plan has been posted to the publicly accessible website to comply with the requirement in CFR 257.73.

x. The 2016 inspection noted that vegetation was observed growing through two tears in the liner along the Northwest Embankment and that a block of sandstone was observed on the upstream slope of the Northwest Embankment (photo IMG_5290). Prior to this inspection, the vegetation was removed, the liner was repaired, and the block of sandstone was removed.

xi. The 7-day inspection reports for the period between October 1, 2016 and September 30, 2017 do not indicate that there were any appearances of actual or potential structural weakness or other conditions which have the potential to disrupt the operation or safety of the CCR unit.

4.2 APS FIELD INSPECTION – LINED DECANT WATER POND (LDWP)

<table>
<tr><td colspan="3">Lined Decant Water Pond (LDWP)</td><td colspan="3">State Identification Number (SID): D-635</td></tr>
<tr><td>SID: D-635</td><td>Dam Name: Lined Decant Water Pond (LDWP)</td><td colspan="2">Type: Zoned earth and ash fill with double-liner geomembrane and leak detection</td><td>Purpose: Store recycled LAI decant water and collected groundwater</td></tr>
<tr><td colspan="2">Contact(s): Byron Conrad, P.E. (APS)</td><td colspan="3">Report Date: January 12, 2018</td></tr>
<tr><td colspan="2">Inspected by: Byron Conrad, P.E. (APS), Lee Wright, P.E. (AECOM)</td><td colspan="3">Inspection Date: November 13, 2017</td></tr>
<tr><td colspan="2">Reviewed by: Byron Conrad, P.E. (APS)</td><td colspan="3">Review Date: December 26, 2017</td></tr>
<tr><td colspan="2">Design Dam Crest Elevation (ft): 5,216</td><td colspan="3">Design Spillway Crest Elevation: No spillway</td></tr>
<tr><td colspan="2">Design Total Freeboard (ft): 2.8 (above the maximum surcharge level, EL 5213.2)</td><td colspan="3">Measured Total Freeboard (ft): 13</td></tr>
<tr><td colspan="2">Statutory Dam Height (ft): 16</td><td colspan="3">Structural Height (ft): 16</td></tr>
<tr><td colspan="2">Dam Crest Length (ft): 5,488</td><td colspan="2">Upstream Slope: 2:1</td><td>Downstream Slope: 1.5:1</td></tr>
<tr><td colspan="2" rowspan="2">Dam Crest Width (ft): 20</td><td colspan="2">Lat: 36° 41' 00" (per NMOSE permit)</td><td rowspan="2">Water Rights: N/A</td></tr>
<tr><td colspan="2">Long: 108° 30' 45" (per NMOSE permit)</td></tr>
<tr><td colspan="2">Reservoir Area (acres): 45.4 (at el. 5213.2 ft) per APS drawing 150793.2.1</td><td colspan="3">Reservoir Storage (ac-ft): 435 (normal operating capacity)</td></tr>
<tr><td colspan="5">Inflow Design Flood/Safe Flood-Passing Capacity: PMF – fully contained</td></tr>
<tr><td colspan="2">Reservoir Level During Inspection (ft): 5,207</td><td colspan="2">Photos: Yes</td><td>Pages: 4</td></tr>
</table>

Not Applicable	No	Yes	Monitor	Repair	Investigate

Lined Decant Water Pond (LDWP)		SID: **D-635**		N/A	No	Yes	Mon	Rep	Inv
COMPLIANCE CHECKLIST									
1	***CONDITION SUMMARY, LICENSE, EAP, NEXT INSPECTION***								
a	Recorded downstream hazard: **Significant**	Should hazard be revised?			**X**				
b	If high hazard, estimate downstream persons-at-risk (PAR): **N/A**	Is there a significant increase since the last inspection?			**X**				
c	Recorded size: **Intermediate**	Should size be revised?			**X**				
d	Any safety deficiencies? **No**	Describe:			**X**				
e	Any statute or rule violations? **No**	Describe and list required action:			**X**				
f	Safe storage level on License: **5,213.2 feet**	Should level be revised:			**X**				
g	Any License violations? **No**	Describe and list required action:			**X**				
h	Date of current License: **February 7, 2008**	Should new License be issued?			**X**				
i	Date of last Emergency Action Plan revision: **2/2017**	Should EAP be revised? **See comment i.**			**X**				
j	Any Agency actions? **No**	Describe and list required action:			**X**				
k	Normal inspection frequency: **Annually**	Should inspection frequency be revised?			**X**				
l	Recommended date for next inspection: **November 2018**								

MONITORING CHECKLIST									
2	***INSTRUMENTATION AND MONITORING***								
a	Describe: **Instrumentation:** **1) Eight standpipe piezometers** **2) Two crest survey/settlement monuments.** **Other** **1) Interstitial geomembrane leak detection and evacuation pump.** **2) Surveyed level markings on geomembrane liner.** **3) No inflow measurement devices.** **4) Outflow estimation by LDWP pump rating/hours of operation, if needed.**								
b	Any repair or replacement required? **No.**	Describe:			**X**				
c	Date of last monitoring report: **January 2017**	Should new readings be taken and new report provided? **Monthly measurement and annual reporting are required.**			**X**				

DAM EMBANKMENT CHECKLIST								
3	***DAM CREST***							
a	Settlements, slides, depressions?			**X**				
b	Misalignment?			**X**				
c	Longitudinal/Transverse cracking?			**X**				
d	Animal burrows?			**X**				
e	Adverse vegetation?			**X**				
f	Erosion?			**X**				
4	***UPSTREAM SLOPE***							
a	Erosion? **The upstream slope is covered with geomembrane.**			**X**				
b	Inadequate ground cover?			**X**				
c	Adverse vegetation?			**X**				
d	Longitudinal/Transverse cracking?	**X**						
e	Inadequate riprap?	**X**						
f	Stone deterioration?	**X**						
g	Settlements, slides, depressions, bulges?			**X**				
h	Animal burrows?			**X**				

Lined Decant Water Pond (LDWP)		SID: **D-635**	N/A	No	Yes	Mon	Rep	Inv
5	***DOWNSTREAM SLOPE***							
a	Erosion?	**Minor rilling on the South, West, and North Embankments. See comment ii.**			**X**	**X**		
b	Inadequate ground cover?	**The LDWP West and South Embankment slopes are faced with bottom ash that supports only sporadic and uneven vegetation. A lime-based, white- and turquoise-colored dust suppression agent is applied in accordance with the Plant's Dust Control Plan.**		**X**				
c	Adverse vegetation?			**X**				
d	Longitudinal/Transverse cracking?			**X**				
e	Inadequate riprap?		**X**					
f	Stone deterioration?		**X**					
g	Settlements, slides, depressions, bulges?			**X**				
h	Soft spots or boggy areas?			**X**				
i	Movement at or beyond toe?			**X**				
j	Animal burrows?			**X**				
6	***ABUTMENT CONTACTS***							
a	Erosion?			**X**				
b	Differential movement?			**X**				
c	Cracks?			**X**				
d	Settlements, slides, depressions, bulges?			**X**				
e	Seepage?			**X**				
f	Animal burrows?			**X**				
7	***SEEPAGE/PIPING CONTROL DESIGN FEATURE(S)***							
a	Describe:	**All pumps and pumping systems appeared to be functioning at the time of the inspection.**		**X**				
b	Internal drains flowing?				**X**			
c	Seepage at or beyond toe?			**X**				
d	If so, does seepage contain fines?		**X**					
e	Evidence of sand boils at or beyond toe?			**X**				

RESERVOIR CHECKLIST								
8	***RESERVOIR***							
a	High water marks?				**X**			
b	Erosion/slides into pool area?			**X**				
c	Sediment accumulation?	**Minor amounts of suspended FGD solids and fly ash may settle in the impoundment.**			**X**			
d	Floating debris present?			**X**				
e	Depressions, sinkholes, or vortices?			**X**				
f	Low ridges/saddles allowing overflow?			**X**				
g	Structures below dam crest elevation?	**The interstitial geomembrane leak detection and evacuation pump system includes a pump situated between the two geomembrane liners. See comment iii.**			**X**			

Additional comments and recommendations for the LDWP:

i. APS updated the Emergency Action Plan in February 2017. The plan has been posted to the publicly accessible website to comply with the requirement in CFR 257.73.

ii. The external slopes of the embankments show evidence of minor erosion rilling (photos IMG_5354, IMG_5361, and IMG_5425). APS has been maintaining the affected areas by regrading and recompacting eroded areas (photo IMG_5421). At the time of the inspection, several locations along the South, West, and North Embankments had recently been repaired. The current program appears to be sufficient and should be continued such that rills are repaired if the erosion depth exceeds one foot.

iii. The LDWP interstitial geomembrane leak detection and evacuation pump was operating at the time of the inspection (photo IMG_5386). Because of the water chemistry in the LDWP, the commercially available, submersible pumps break down on a regular basis. APS has determined that regularly replacing the pumps is more economical and feasible than temporarily decommissioning the entire pond and constructing a different access port configuration. Because the pump is replaced on a regular basis, the Plant should continue to monitor the system for signs the pump has or is about to break down.

iv. There were several holes and tears in the liner along the South, North, and East Embankments (photos IMG_5382, IMG_5429, IMG_5438, and IMG_5442). FCPP personnel stated that they were aware of several existing tears and intend to repair them.

v. The liner was observed to be pulling out of the anchor trench in isolated areas along the West and East Embankments (photos IMG_5408 and IMG_5435). The area where the liner was observed pulling out of the anchor trench during the 2016 inspection has been repaired (photo IMG_5411).

vi. The 7-day inspection reports for the period between October 1, 2016 and September 30, 2017 do not indicate that there were any appearances of actual or potential structural weakness or other conditions which have the potential to disrupt the operation or safety of the CCR unit.

4.3 APS FIELD INSPECTION – COMBINED WASTE TREATMENT POND (CWTP)

<table>
<tr><td colspan="3">Combined Waste Treatment Pond (CWTP)</td><td colspan="3">State Identification Number (SID): N/A</td></tr>
<tr><td>SID: N/A</td><td>Dam Name: Combined Waste Treatment Pond (CWTP)</td><td>Type: Earth</td><td>Purpose: CCR-impacted surface water collection</td><td rowspan="15">Not Applicable
No
Yes
Monitor
Repair
Investigate</td></tr>
<tr><td colspan="2">Contact(s): Byron Conrad, P.E. (APS)</td><td colspan="2">Report Date: January 12, 2018</td></tr>
<tr><td colspan="2">Inspected by:Byron Conrad, P.E. (APS), Cletis Mark (APS), Lee Wright, P.E. (AECOM)</td><td colspan="2">Inspection Date: November 14, 2017</td></tr>
<tr><td colspan="2">Reviewed by: Byron Conrad, P.E. (APS)</td><td colspan="2">Review Date: December 26, 2017</td></tr>
<tr><td colspan="2">Design Dam Crest Elevation (ft): 5,335</td><td colspan="2">Design Spillway Crest Elevation (ft): 5,328.77</td></tr>
<tr><td colspan="2">Design Total Freeboard (ft): 7</td><td colspan="2">Measured Total Freeboard (ft): Not measured</td></tr>
<tr><td colspan="2">Statutory Dam Height (ft): 32 (max), 22.81 (avg)</td><td colspan="2">Structural Height (ft): 32 (max), 22.81 (avg)</td></tr>
<tr><td colspan="2">Dam Crest Length (ft): 1,800</td><td>Upstream Slope: 2:1</td><td>Downstream Slope: 1.5:1</td></tr>
<tr><td colspan="2" rowspan="2">Dam Crest Width (ft): 24-30</td><td>Lat: 34° 41′ 29.19″N</td><td rowspan="2">Water Rights: N/A</td></tr>
<tr><td>Long: 108° 28′ 28.73″W</td></tr>
<tr><td colspan="2">Reservoir Area (acres): 13.7</td><td colspan="2">Reservoir Storage (ac-ft): 137 (maximum)</td></tr>
<tr><td colspan="4">Inflow Design Flood/Safe Flood-Passing Capacity: Not Calculated</td></tr>
<tr><td colspan="2">Reservoir Level During Inspection (ft): 5,328.77 (water was passing through the spillway)</td><td>Photos: Yes</td><td>Pages: 4</td></tr>
</table>

Combined Waste Treatment Pond (CWTP)			SID: **N/A**	N/A	No	Yes	Mon	Rep	Inv
COMPLIANCE CHECKLIST									
1	***CONDITION SUMMARY, LICENSE, EAP, NEXT INSPECTION***								
a	Recorded downstream hazard:	**Low**	Should hazard be revised?		**X**				
b	If high hazard, estimate downstream persons-at-risk (PAR): **N/A**		Is there a significant increase since the last inspection?		**X**				
c	Recorded size:	**Small**	Should size be revised?		**X**				
d	Any safety deficiencies?	**No**	Describe:		**X**				
e	Any statute or rule violations?	**No**	Describe and list required action:		**X**				
f	Safe storage level on License:	**N/A**	Should level be revised:		**X**				
g	Any License violations?	**No**	Describe and list required action:		**X**				
h	Date of current License:	**N/A**	Should new License be issued?		**X**				
i	Date of last Emergency Action Plan revision: **N/A**		Should EAP be revised?		**X**				
j	Any Agency actions?	**No**	Describe and list required action:		**X**				
k	Normal inspection frequency:	**Annually**	Should inspection frequency be revised?		**X**				
l	Recommended date for next inspection: **November 2018**								

MONITORING CHECKLIST									
2	***INSTRUMENTATION AND MONITORING***								
a	Describe: **There are four monitoring wells for this structure to comply with groundwater monitoring requirements.**								
b	Any repair or replacement required? **N/A**		Describe: **N/A**		**X**				
c	Date of last monitoring report:	**January 2017**	Should new readings be taken and new report provided? **Annual reporting is required.**			**X**			

DAM EMBANKMENT CHECKLIST									
3	***DAM CREST***								
a	Settlements, slides, depressions?	**The crest appeared to be flat (with a slight grade to the upstream side) and in good condition.**			**X**				
b	Misalignment?				**X**				
c	Longitudinal/Transverse cracking?				**X**				
d	Animal burrows?	**None observed. The road is graded regularly. Continue to monitor.**			**X**		**X**		
e	Adverse vegetation?	**None observed. The road is graded regularly. See comment i.**			**X**				
f	Erosion?				**X**				
4	***UPSTREAM SLOPE***								
a	Erosion?					**X**			
b	Inadequate ground cover?				**X**				
c	Adverse vegetation?	**Vegetation on the upstream slope generally consists of tall grasses in the middle and eastern portion of the embankment. See comment i.**			**X**				
d	Longitudinal/Transverse cracking?				**X**				
e	Inadequate riprap?					**X**			
f	Stone deterioration?			**X**					
g	Settlements, slides, depressions, bulges?				**X**				
h	Animal burrows?	**None observed. Continue to monitor.**			**X**		**X**		

Combined Waste Treatment Pond (CWTP)		SID: **N/A**	N/A	No	Yes	Mon	Rep	Inv
5	***DOWNSTREAM SLOPE***							
a	Erosion?	**See comment ii.**			**X**	**X**		
b	Inadequate ground cover?			**X**				
c	Adverse vegetation?	**Isolated instances of adverse vegetation (photo IMG_1927).**			**X**		**X**	
d	Longitudinal/Transverse cracking?			**X**				
e	Inadequate riprap?	**See comment iii.**		**X**				
f	Stone deterioration?			**X**				
g	Settlements, slides, depressions, bulges?	**A few instances of isolated, irregular slopes (photo IMG_5613).**			**X**	**X**		
h	Soft spots or boggy areas?			**X**				
i	Movement at or beyond toe?	**Cannot observe.**	**X**					
j	Animal burrows?	**None observed. Continue to monitor.**		**X**		**X**		
6	***ABUTMENT CONTACTS***							
a	Erosion?			**X**				
b	Differential movement?			**X**				
c	Cracks?			**X**				
d	Settlements, slides, depressions, bulges?			**X**				
e	Seepage?			**X**				
f	Animal burrows?	**None observed. Continue to monitor.**		**X**		**X**		
7	***SEEPAGE/PIPING CONTROL DESIGN FEATURE(S)***							
a	Describe:	**None.**						
b	Internal drains flowing?		**X**					
c	Seepage at or beyond toe?	**Cannot observe.**	**X**					
d	If so, does seepage contain fines?		**X**					
e	Evidence of sand boils at or beyond toe?		**X**					

RESERVOIR CHECKLIST								
8	***RESERVOIR***							
a	High water marks?				**X**			
b	Erosion/slides into pool area?			**X**				
c	Sediment accumulation?	**See comment iv.**			**X**			
d	Floating debris present?			**X**				
e	Depressions, sinkholes, or vortices?			**X**				
f	Low ridges/saddles allowing overflow?			**X**				
g	Structures below dam crest elevation?	**Twin 30-inch reinforced concrete pipe outlets are located at the eastern side of the CWTP.**			**X**			

Additional comments and recommendations for the CWTP:

i. Minor vegetation (grass, small trees, and shrubs) was observed on the slopes during this inspection (photos IMG_1921, IMG_1927, and IMG_5604). Trees and shrubs observed on the downstream slope in the 2015 inspection have been removed. Continue removing vegetation in accordance with the NMOSE vegetation maintenance guidelines "*Vegetation Management on Dams*" (2011). The tall grass on the upstream slope of the embankment is beginning to establish and has grown significantly since the 2016 inspection. The vegetation on the upstream slope should be removed using the same NMOSE vegetation guidelines as the downstream slope to prevent woody vegetation from establishing as well.

ii. Several instances of minor erosion were observed on the downstream slope above the riprap (photos IMG_5598 and IMG_5624). These areas should be monitored and repaired if the erosion depth exceeds one foot.

iii. APS installed additional riprap on the downstream slope of the embankment in August 2017 to prevent wave erosion along the slope (photo IMG_5633). The additional riprap was placed from approximately 5 feet below the canal water surface to approximately 2 feet above the canal water surface.

iv. The facility includes seven decant cells in the western half of the CWTP (IMG_5577). Flow from the collection distribution vault is directed to the selected cells. Settled solids are periodically removed and decanted water flows to the CWTP free water pond. Suspended sediment and CCR settle in the decant cells in the western half of the impoundment.

v. An HDPE pipe is laying across the upstream slope along most of the embankment (IMG_5607 and IMG_5618). The pipe was previously utilized for dredging the main portion of the CWTP prior to the installation of the decant cells and is no longer in use.

vi. During the 2015 bathymetric survey, an area in the west side of the crest was identified as being approximately 6 inches lower than the design elevation. The low spot was corrected near the end of August 2017 when aggregate base course was placed on top of the crest and bladed to match the surrounding grade (photo IMG_5635).

vii. The 7-day inspection reports for the period between October 1, 2016 and September 30, 2017 do not indicate that there were any appearances of actual or potential structural weakness or other conditions which have the potential to disrupt the operation or safety of the CCR unit.

4.4 APS FIELD INSPECTION – UPPER RETENTION SUMP (URS)

<table>
<tr><td colspan="2">Upper Retention Sump (URS)</td><td colspan="2">State Identification Number (SID): N/A</td><td rowspan="15">Not Applicable</td><td rowspan="15">No</td><td rowspan="15">Yes</td><td rowspan="15">Monitor</td><td rowspan="15">Repair</td><td rowspan="15">Investigate</td></tr>
<tr><td>SID: N/A</td><td>Dam Name: Upper Retention Sump</td><td>Type: Incised</td><td>Purpose: CCR-impacted surface water collection</td></tr>
<tr><td colspan="2">Contact(s): Byron Conrad, P.E. (APS)</td><td colspan="2">Report Date: January 12, 2018</td></tr>
<tr><td colspan="2">Inspected by: Byron Conrad, P.E. (APS), Cletis Mark (APS), Lee Wright, P.E. (AECOM)</td><td colspan="2">Inspection Date: November 14, 2017</td></tr>
<tr><td colspan="2">Reviewed by: Byron Conrad, P.E. (APS)</td><td colspan="2">Review Date: December 26, 2017</td></tr>
<tr><td colspan="2">Design Dam Crest Elevation (ft): 5,350.5</td><td colspan="2">Design Spillway Crest Elevation: None</td></tr>
<tr><td colspan="2">Design Total Freeboard (ft): 6.5</td><td colspan="2">Measured Total Freeboard (ft): Not measured</td></tr>
<tr><td colspan="2">Statutory Dam Height (ft): 0 (incised)</td><td colspan="2">Structural Height (ft): 0 (incised)</td></tr>
<tr><td colspan="2">Dam Crest Length (ft): 900 (approx.)</td><td>Upstream Slope: 2:1</td><td>Downstream Slope: N/A</td></tr>
<tr><td colspan="2" rowspan="2">Dam Crest Width (ft): Varies</td><td>Lat: 36°41'14.26"N</td><td rowspan="2">Water Rights: N/A</td></tr>
<tr><td>Long: 108°28'37.91"W</td></tr>
<tr><td colspan="2">Reservoir Area (acres): 1.09</td><td colspan="2">Reservoir Storage (ac-ft): 10.7</td></tr>
<tr><td colspan="4">Inflow Design Flood/Safe Flood-Passing Capacity: Not Calculated</td></tr>
<tr><td colspan="2">Reservoir Level During Inspection (ft): Approx. 5,341.5 (by observation)</td><td>Photos: Yes</td><td>Pages: 4</td></tr>
</table>

Upper Retention Sump (URS)			SID: **N/A**	N/A	No	Yes	Mon	Rep	Inv
COMPLIANCE CHECKLIST									
1	***CONDITION SUMMARY, LICENSE, EAP, NEXT INSPECTION***								
a	Recorded downstream hazard:	**Very Low**	Should hazard be revised?		**X**				
b	If high hazard, estimate downstream persons-at-risk (PAR): **N/A**		Is there a significant increase since the last inspection?		**X**				
c	Recorded size:	**Small**	Should size be revised?		**X**				
d	Any safety deficiencies?	**No**	Describe:		**X**				
e	Any statute or rule violations?	**No**	Describe and list required action:		**X**				
f	Safe storage level on License:	**N/A**	Should level be revised:		**X**				
g	Any License violations?	**No**	Describe and list required action:		**X**				
h	Date of current License:	**N/A**	Should new License be issued?		**X**				
i	Date of last Emergency Action Plan revision: **N/A**		Should EAP be revised?		**X**				
j	Any Agency actions?	**No**	Describe and list required action:		**X**				
k	Normal inspection frequency:	**Annually**	Should inspection frequency be revised?		**X**				
l	Recommended date for next inspection:	**November 2018**							

MONITORING CHECKLIST									
2	***INSTRUMENTATION AND MONITORING***								
a	Describe:	**There are no instruments or other monitoring devices for this structure due to its small size.**							
b	Any repair or replacement required? **N/A**		Describe: **N/A**		**X**				
c	Date of last monitoring report:	**January 2017**	Should new readings be taken and new report provided? **N/A**		**X**				

DAM EMBANKMENT CHECKLIST								
3	***DAM CREST***							
a	Settlements, slides, depressions?			**X**				
b	Misalignment?			**X**				
c	Longitudinal/Transverse cracking?			**X**				
d	Animal burrows?	**None observed. Continue to monitor.**		**X**		**X**		
e	Adverse vegetation?			**X**				
f	Erosion?			**X**				
4	***UPSTREAM SLOPE***							
a	Erosion?	**See comments i and ii.**			**X**	**X**		
b	Inadequate ground cover?			**X**				
c	Adverse vegetation?			**X**				
d	Longitudinal/Transverse cracking?			**X**				
e	Inadequate riprap?			**X**				
f	Stone deterioration?	**Cracks were observed throughout the soil cement facing.**			**X**			
g	Settlements, slides, depressions, bulges?			**X**				
h	Animal burrows?	**None observed. Continue to monitor.**		**X**		**X**		

Upper Retention Sump (URS)		SID: **N/A**	N/A	No	Yes	Mon	Rep	Inv
5	***DOWNSTREAM SLOPE***							
a	Erosion?	**There is no downstream slope.**	**X**					
b	Inadequate ground cover?		**X**					
c	Adverse vegetation?		**X**					
d	Longitudinal/Transverse cracking?		**X**					
e	Inadequate riprap?		**X**					
f	Stone deterioration?		**X**					
g	Settlements, slides, depressions, bulges?		**X**					
h	Soft spots or boggy areas?		**X**					
i	Movement at or beyond toe?		**X**					
j	Animal burrows?		**X**					
6	***ABUTMENT CONTACTS***							
a	Erosion?	**There are no abutments for the incised CCR Unit.**	**X**					
b	Differential movement?		**X**					
c	Cracks?		**X**					
d	Settlements, slides, depressions, bulges?		**X**					
e	Seepage?		**X**					
f	Animal burrows?		**X**					
7	***SEEPAGE/PIPING CONTROL DESIGN FEATURE(S)***							
a	Describe:	**None.**						
b	Internal drains flowing?		**X**					
c	Seepage at or beyond toe?	**There is no downstream toe.**	**X**					
d	If so, does seepage contain fines?		**X**					
e	Evidence of sand boils at or beyond toe?		**X**					

RESERVOIR CHECKLIST								
8	***RESERVOIR***							
a	High water marks?				**X**			
b	Erosion/slides into pool area?			**X**				
c	Sediment accumulation?	**Suspended sediment and FGD solids settle in the reservoir. The reservoir is periodically dewatered and the sediment and solids are removed.**			**X**			
d	Floating debris present?			**X**				
e	Depressions, sinkholes, or vortices?			**X**				
f	Low ridges/saddles allowing overflow?			**X**				
g	Structures below dam crest elevation?	**Yes. There is an evacuation pump system, pump chamber, and at least two reinforced concrete inlet pipes. The evacuation pump system discharges to above-ground lines.**			**X**			

Additional comments and recommendations for the URS:

i. The URS is partially lined with soil cement (photo IMG_5552). Where the slope is unlined, erosion has resulted in undermining portions of the cement on the crest around the perimeter of the Unit (photo IMG_5513). The cement is beginning to crack and fall away from the crest in these areas (photo IMG_5519). Monitor this area and compare it to the next annual inspection.

ii. A new discharge pipe has been installed along the North Embankment (photo IMG_5550). Repeated outflows have resulted in an isolated area of erosion on the upstream face of the North Embankment (photo IMG_5511). Current operations do not indicate that this poses a dam safety issue, but the erosion should be monitored until the URS is taken out of service.

iii. The current sediment level did not allow a visual inspection of the concrete access ramp along the North Embankment (photo IMG_5488). There was a significant volume of sediment/solids piled around the ramp and on top of the above-ground natural gas pipe. A yellow guardrail has also been dumped on top of the gas pipe guardrail (photo IMG_5497). Plant environmental will investigate who has been improperly disposing of material in the URS to stop this dumping.

iv. Accumulated solids in the URS are periodically removed with excavation and haulage equipment after the pond is dewatered. There is an access ramp in the northwest corner of the URS.

v. The 7-day inspection reports for the period between October 1, 2016 and September 30, 2017 do not indicate that there were any appearances of actual or potential structural weakness or other conditions which have the potential to disrupt the operation or safety of the CCR unit.

4.5 APS FIELD INSPECTION – DRY FLY ASH DISPOSAL AREA (DFADA)

<table>
<tr><td colspan="2">Dry Fly Ash Disposal Area (DFADA)</td><td colspan="2">State Identification Number (SID): N/A</td><td rowspan="13">Not Applicable</td><td rowspan="13">No</td><td rowspan="13">Yes</td><td rowspan="13">Monitor</td><td rowspan="13">Repair</td><td rowspan="13">Investigate</td></tr>
<tr><td>SID: N/A</td><td>Landfill Name: Dry Fly Ash Disposal Area (Cells 1, 2, and 3)</td><td>Type: Lined Landfill</td><td>Purpose: Permanent storage of dry CCR (fly ash, bottom ash, dry FGD solids) and select construction debris (e.g. concrete and wood)</td></tr>
<tr><td colspan="2">Contact(s): Byron Conrad, P.E. (APS)</td><td colspan="2">Report Date: January 12, 2018</td></tr>
<tr><td colspan="2">Inspected by: Byron Conrad, P.E. (APS), Lee Wright, P.E. (AECOM)</td><td colspan="2">Inspection Date: November 13, 2017</td></tr>
<tr><td colspan="2">Reviewed by: Byron Conrad, P.E. (APS)</td><td colspan="2">Review Date: December 29, 2017</td></tr>
<tr><td colspan="2">Design Maximum Ash Elevation (ft): 5,295</td><td colspan="2">Current Ash Elevation (ft):
Based on survey data from FHI:
Cell 1 is ~ EL 5285 feet (August 2017)
Cell 2 is ~ EL 5265 feet (August 2017)
Cell 3 is ~ EL 5238 feet (May 2017)</td></tr>
<tr><td colspan="2">Dam Crest Length (ft): Not applicable</td><td>Design Side Slope:
Varies. 4:1 on final outside slopes, 2:1 on internal slopes.</td><td>Observed Side Slope:
Varies. 4:1 on final outside slopes, 2:1 on internal slopes.</td></tr>
<tr><td colspan="2" rowspan="2">Dam Crest Width (ft): Not applicable</td><td>Lat: 36°40'43.27"N</td><td rowspan="2">Water Rights: N/A</td></tr>
<tr><td>Long: 108°30'12.2 W</td></tr>
<tr><td colspan="2">Landfill Area (acres): 94.8 (Current, Cells 1, 2, and 3)</td><td colspan="2">Landfill Capacity (ac-ft): 6,261 for Cells 1, 2, and 3</td></tr>
<tr><td colspan="4">Inflow Design Flood/Safe Flood-Passing Capacity: Diversion of 100-year, 24-hour run-on storm. Storage of impacted run-off from 25-year, 24 hour storm, spillway passage of impacted run-off from 100-year, 24-hour storm.</td></tr>
<tr><td colspan="2">Photos: Yes</td><td colspan="2">Pages: 3</td></tr>
</table>

Dry Fly Ash Disposal Area (DFADA)		SID: N/A		N/A	No	Yes	Mon	Rep	Inv
MONITORING CHECKLIST									
1	***INSTRUMENTATION AND MONITORING***								
a	Describe:	**There are no instruments or other monitoring devices for this structure.**							
b	Any repair or replacement required?	**N/A**	Describe: **N/A**		**X**				
c	Date of last monitoring report:	**January 2017**	Should new readings be taken and new report provided? **N/A**		**X**				
2	***CONDITION SUMMARY***								
a	Waste placed in good practices?					**X**			
3	***LANDFILL CONFIGURATION***								
a	Settlements, slides, slope stability?				**X**				
b	Cracking?				**X**				
c	Run on control?					**X**	**X**	**X**	
d	Run off control?					**X**			
e	Erosion?	**See comment ii.**				**X**		**X**	
f	Dust control issues?				**X**		**X**		

Additional comments and recommendations for the DFADA:

i. There is evidence of head-cutting at the inlet to the Storm Water Diversion Channel (photo DSCF8381). The affected area appears to be relatively unchanged compared to the 2015 and 2016 observations. Sediment is accumulating in the adjacent detention basin. Re-evaluate the channel performance of the inlet to understand if the drainage pattern has changed or whether additional erosion control measures should be applied.

ii. A local storm event in late October resulted in significant erosion along the western edge of Cell 3 (photo IMG_5177). The berm was augmented along the downstream edge. The Plant will remove the material that washed into the collection channel and attach new HDPE liner to rebuild the channel/berm.

iii. Ash placement and compaction at the DFADA is in approximate 6-inch thick lifts using end dumps and with compaction applied by a tractor-pulled, smooth, static drum. CCR solids placed for construction appeared to be placed in accordance with the contract specifications for density control.

iv. Run on control – The run on control system consists of a detention basin and diversion ditch to direct storm water around the DFADA. In addition to the head-cutting at the inlet, there was also significant (approximately 5 feet deep) erosion at the outlet south of Cell 1 (photo IMG_5131) and sediment accumulation upstream of the outlet (photo IMG_5143). The run on control system otherwise appears to be in good condition and the absence of excessive erosion at the toe of Cells 1 and 2 indicates that the run on control system is functioning as intended.

v. Run off control – There are no external runoff collection ditches. Internal drain systems report to two separate lined leachate cell collection ponds for Cells 1 and 2 (photo IMG_5230). Cell 3 drains to the Cell 1 collection pond. The water level in these two ponds is maintained by the ash haul contractor by use of a mobile suction pump. This water is utilized for dust control on site.

vi. There is damage to the geomembrane lining the crest of the Cell 2 collection pond (photo IMG_5179) and along the geomembrane liner in the saddle between the Cell 1 and Cell 2 collection ponds. These areas should be repaired and measures should be implemented to prevent future damage.

vii. Several plants were observed to have taken root through holes in the Pyramat geosynthetic covering along the west side of Cell 1 (photo IMG_5152). These do not currently appear to affect the stability of the landfill, but could ultimately affect the integrity of the Pyramat.

viii. The 7-day inspection reports for the period between October 1, 2016 and September 30, 2017 do not indicate that there were any appearances of actual or potential structural weakness or other conditions which have the potential to disrupt the operation or safety of the CCR unit.

5.0 DATA REVIEW

5.1 LINED ASH IMPOUNDMENT

5.1.1 Geometry Changes Since Last Inspection

There have not been any significant changes to the geometry of the unit since the last inspection in 2016.

5.1.2 Instrumentation

The location of geotechnical and other related instrumentation in the vicinity of the LAI are shown on Figure 6 – Lined Ash Impoundment (LAI) Instrumentation Map.

The minimum and maximum recorded readings for each instrument over the October 1, 2016 – September 30, 2017 (current) review period are reported in the following table:

Instrument Name	Minimum	Maximum	Unit
LAI Piezometers (10/1/16 to 9/30/17)			
P-7.1	5196.87[1]	5196.87[1]	elevation head
P-7.2	5191.35[1]	5191.35[1]	elevation head
P-7.3	5184.75[1]	5184.75[1]	elevation head
P-8.1	5196.60[1]	5196.60[1]	elevation head
P-8.2	5182.10[1]	5182.10[1]	elevation head
P-8.3	5174.10[1]	5174.10[1]	elevation head
P-9.1	5196.87[1]	5196.87[1]	elevation head
P-9.2	5183.97[1]	5183.97[1]	elevation head
P-9.3	5170.87[1]	5170.87[1]	elevation head
P-10.1	5198.22[1]	5198.22[1]	elevation head
P-10.2	5184.22[1]	5184.22[1]	elevation head
P-10.3	5173.72[1]	5173.72[1]	elevation head
P-11.1	5200.72	5201.77	elevation head
P-11.2	5189.65[1]	5189.65[1]	elevation head
P-11.3	5174.65[1]	5174.65[1]	elevation head
P-12.1	5202.54[1]	5202.54[1]	elevation head
P-12.2	5186.54[1]	5186.54[1]	elevation head
P-12.3	5176.54[1]	5176.58	elevation head
[1] Porewater pressure measurements are negative (draining condition)			

Instrument Name	Minimum	Maximum	Unit
NTB Piezometers (10/1/16 to 9/30/17)			
P-100.1	5202.06[1]	5202.06[1]	elevation head
P-100.2	5190.06[1]	5190.06[1]	elevation head
P-100.3	5183.23[1]	5183.23[1]	elevation head
P-101.1	5185.93[1]	5185.93[1]	elevation head
P-101.2	5184.20	5184.72	elevation head
P-101.3	5172.69	5174.54	elevation head
P-102.1	5188.85[1]	5188.85[1]	elevation head
P-102.2	5174.60[1]	5174.61	elevation head
P-102.3	5168.52	5169.84	elevation head
P-103.1	5185.91[1]	5185.91[1]	elevation head
P-103.2	5170.91[1]	5170.91[1]	elevation head
P-103.3	5160.91	5161.59	elevation head
P-104.1	5198.72[1]	5198.72[1]	elevation head
P-104.2	5185.47[1]	5185.47[1]	elevation head
P-104.3	5178.47[1]	5178.47[1]	elevation head
P-105.1	5184.82[1]	5184.93	elevation head
P-105.2	5174.16[1]	5174.16[1]	elevation head
P-105.3	5162.24	5163.51	elevation head
P-106.1	5186.09[1]	5186.09[1]	elevation head
P-106.2	5165.51[1]	5165.51[1]	elevation head
P-106.3	5160.90	5161.00	elevation head
P-107.1	5197.27[1]	5197.58	elevation head
P-107.3	5173.44[1]	5173.44[1]	elevation head
P-108.1	5184.26[1]	5184.26[1]	elevation head
P-108.2	5173.59[1]	5174.48	elevation head
P-108.3	5173.42	5175.25	elevation head
P-109.1	5188.76[1]	5188.76[1]	elevation head
P-109.2	5172.51[1]	5172.51[1]	elevation head
P-109.3	5165.07	5165.80	elevation head
P-110.1	5184.28[1]	5184.60	elevation head
P-110.2	5171.86[1]	5171.86[1]	elevation head
P-110.3	5163.44[1]	5163.44[1]	elevation head
P-111.1	5187.29[1]	5187.44	elevation head
P-111.2	5172.33[1]	5172.33[1]	elevation head
P-111.3	5160.56	5160.85	elevation head
[1] Porewater pressure measurements are negative (draining condition)			

Instrument Name	Minimum	Maximum	Unit
Survey Monuments (10/1/16 to 9/30/17)			
SM7	5215.901	5215.967	EL (ft)
SM9	5217.087	5217.141	EL (ft)
Settlement Rods (10/1/16 to 9/30/17)			
SR-7	5250.797	5250.871	EL (ft)
SR-8	5256.224	5256.296	EL (ft)
SR-9	5248.641	5248.731	EL (ft)
SR-10	5248.877	5248.946	EL (ft)
SR-100	5222.296	5222.359	EL (ft)
SR-101	5205.492	5205.570	EL (ft)
SR-102	5205.329	5205.411	EL (ft)
SR-104	5219.351	5219.422	EL (ft)
SR-105	5205.063	5205.137	EL (ft)
SR-106	5205.327	5205.397	EL (ft)
SR-109	5206.542	5206.617	EL (ft)
SR-110	5205.841	5205.917	EL (ft)
Inclinometers (10/1/16 to 9/30/17)			
I-1	0	0.1524	in
I-2	0	0.1260	in
I-103	0	0.1410	in
I-107	0	0.1002	in
I-111	0	0.0864	in
Open Standpipe Piezometers (10/1/16 to 9/30/17)			
P-23	5157.03	5157.19	EL (ft)
P-24	Dry	Dry	
P-25	Dry	Dry	

The data for the piezometers over the current review period indicate no significant elevation changes or trends related to the performance of the dam.

The data for the settlement rods and inclinometers over the current review period indicate no significant elevation changes or trends related to the performance of the dam.

5.1.3 CCR and Water Elevations

The average depth of CCR in the LAI at the time of the inspection was approximately 69.7 feet, which corresponds to an average elevation of 5274.7 feet.

5.1.4 Storage Capacity

The estimated remaining maximum storage capacity of the LAI at the time of the inspection was 63.32 acre-feet (ac-ft).

5.1.5 Approximate Impounded Volume at Time of Inspection

The approximate volume of impounded CCR in the LAI at the time of the inspection was 5,308.17 ac-ft.

5.1.6 Structural Weakness or Operational Change/Disruption

No conditions associated with structural weakness were identified during the field inspection.

Water was observed to have entered the space between the geomembrane liner and compacted clay layer on the upstream face of the dam in the western portion of the South Embankment. The most likely path for the water to exit this area is through the compacted clay layer. The upstream slope and the toe drain along the South Embankment should be monitored for evidence of internal erosion that could be associated with the movement of water. No other conditions that are or could be disruptive to the operation and safety of the CCR unit and appurtenant structures were identified during the field inspection.

There are no significant changes to the structural integrity or operation of the dam since the 2016 inspection.

5.2 LINED DECANT WATER POND

5.2.1 Geometry Changes Since Last Inspection

There have not been any significant changes to the geometry of the unit since the last inspection in 2016.

5.2.2 Instrumentation

The location of geotechnical and other related instrumentation in the vicinity of the LDWP are shown on Figure 7 – Lined Decant Water Pond (LDWP) Instrumentation Map.

The minimum and maximum recorded readings for each instrument over the October 1, 2016 – September 30, 2017 (current) review period are reported in the following table:

Instrument Name	Minimum	Maximum	Unit
Survey Monuments (10/1/16 to 9/30/17)			
SM7	5215.901	5215.967	EL (ft)
SM9	5217.087	5217.141	EL (ft)
Open Standpipe Piezometers (10/1/16 to 9/30/17)			
P-18	Dry	Dry	
P-19	Dry	Dry	
P-20	Dry	Dry	
P-21	Dry	Dry	
P-22	Dry	Dry	
P-23	5157.03	5157.19	EL (ft)
P-24	Dry	Dry	
P-25	Dry	Dry	

The data for the survey monuments over the current review period indicate no significant elevation changes or trends related to the performance of the dam.

The data for the piezometers over the current review period indicate no significant elevation changes or trends related to the performance of the dam.

5.2.3 CCR and Water Elevations

The depth of water in the LDWP at the time of the inspection was observed to be 3 feet at the staff gauge near the center of the East Embankment, which corresponds to a water surface elevation of approximately 5207 feet. The LDWP does not impound a significant quantity of solids.

5.2.4 Storage Capacity

The estimated maximum remaining storage capacity of the LDWP at the time of the inspection was approximately 353 ac-ft.

5.2.5 Approximate Impounded Volume at Time of Inspection

The approximate volume of impounded water in the LDWP at the time of the inspection was 164 ac-ft.

5.2.6 Structural Weakness or Operational Change/Disruption

No conditions associated with structural weakness were identified during the field inspection.

No conditions that are or could be disruptive to the operation and safety of the CCR unit and appurtenant structures were identified during the field inspection.

There are no significant changes to the structural integrity or operation of the dam since the 2016 inspection.

5.3 COMBINED WASTE TREATMENT POND

5.3.1 Geometry Changes Since Last Inspection

There have not been any significant changes to the geometry of the unit since the last inspection in 2016.

5.3.2 Instrumentation

There are no instruments associated with the CWTP.

5.3.3 CCR and Water Elevations

The depth to water in the CWTP at the time of the inspection was observed to be approximately 8.25 feet, which corresponds to a water surface elevation of approximately 5328.77 feet (water was observed to be flowing over the spillway crest). The solids captured in the CWTP are removed by long reach excavator or dredged as needed.

5.3.4 Storage Capacity

The estimated maximum remaining storage capacity of the CWTP at the time of the inspection was 21.4 ac-ft.

5.3.5 Approximate Impounded Volume at Time of Inspection

The approximate volume of impounded water in the CWTP at the time of the inspection was 115.6 ac-ft.

5.3.6 Structural Weakness or Operational Change/Disruption

No conditions associated with structural weakness were identified during the field inspection.

The 2016 field inspection identified a lack of downstream armoring and oversteepened downstream slopes along the embankment. APS placed additional riprap armoring along the downstream slope during 2017 to address these issues.

There are no significant changes to the structural integrity or operation of the dam since the 2016 inspection.

5.4 UPPER RETENTION SUMP

5.4.1 Geometry Changes Since Last Inspection

There have not been any significant changes to the geometry of the unit since the last inspection in 2016.

5.4.2 Instrumentation

There are no instruments associated with the URS.

5.4.3 CCR and Water Elevations

The depth of water in the URS at the time of the inspection was approximately 2.5 feet, which corresponds to a water surface elevation of approximately 5341.5 feet. Sediment can accumulate in the URS and is removed by earthwork equipment when required. The depth and quantity of solids could not be estimated during the inspection.

5.4.4 Storage Capacity

The estimated maximum remaining storage capacity of the URS at the time of the inspection was 8.89 ac-ft.

5.4.5 Approximate Impounded Volume at Time of Inspection

The approximate volume of impounded water in the URS at the time of the inspection was 1.81 ac-ft.

5.4.6 Structural Weakness or Operational Change/Disruption

No conditions associated with structural weakness were identified during the field inspection.

No conditions that are or could be disruptive to the operation and safety of the CCR unit and appurtenant structures were identified during the field inspection.

There are no significant changes to the structural integrity or operation of the impoundment since the 2016 inspection.

5.5 DRY FLY ASH DISPOSAL AREA

5.5.1 Geometry Changes Since Last Inspection

Site 3 continued to receive ash loading after the 2016 inspection. Site 3 is divided into approximately four sequential sections from the east to the west. APS places ash in these sections from east to west to maintain a grade that will allow stormwater to drain off the west side of Site 3.

5.5.2 Instrumentation

There are no instruments associated with the DFADA.

5.5.3 CCR Volume

The approximate volume of CCR in the DFADA at the time of the inspection was estimated to be 4,359 ac-ft based on the August 2017 survey performed by the ash placement contractor (FHI). Significant volumes of CCR had not been placed at the DFADA between the August 2017 survey and the time of the inspection.

5.5.4 Structural Weakness or Operational Change/Disruption

No conditions associated with structural weakness were identified during the field inspection.

No conditions that are or could be disruptive to the operation and safety of the CCR unit and appurtenant structures were identified during the field inspection.

There are no significant changes to the structural integrity or operation of the landfill since the 2016 inspection.

6.0 OPERATION AND MAINTENANCE RECOMMENDATIONS

The following items were noted during inspections as requiring attention.

6.1 LINED ASH IMPOUNDMENT

Observed Condition	Action Item
1) The liner is bulging along the western portion of the South Embankment.	Monitor the upstream slope and the toe drain for signs of water loss and/or internal erosion.
2) There is an HDPE pipe along the West Embankment crest being used to pump water from the Southwest Corner to the riser pipe.	The pipe is lying on the upstream crest (hinge point) and pumping should continue to be used only during daylight hours as a precaution against leaks that may damage the embankment.
3) Minor erosion rilling, was observed on the external slopes of the LDWP at the time of the inspection.	Continue ongoing repair program for repairing rills if the erosion depth exceeds one foot.
4) There are small tears in the liner on the crest of the Northwest Embankment.	Repair the tears.
5) The 8-inch HDPE outlet pipe may be partially clogged.	Clean the 8-inch HDPE outlet pipe as necessary.

6.2 LINED DECANT WATER POND

Observed Condition	Action Item
1) The liner in the anchor trench in the central portion of the West Embankment appeared to be pulling out of the trench.	Investigate the cause of the damage and repair the liner as necessary.
2) Minor erosion rilling, was observed on the external slopes of the LDWP at the time of the inspection.	Continue ongoing repair program for repairing rills if the erosion depth exceeds one foot.
3) There are small holes and tears in the liner along the South, North, and East Embankments.	Repair the tears and holes.

6.3 COMBINED WASTE TREATMENT POND

Observed Condition	Action Item
1) Vegetation removal along the upstream and downstream slopes should be performed in accordance with the NMOSE vegetation maintenance guidelines "*Vegetation Management on Dams*" (2011) reference.	This will be an ongoing maintenance requirement.
2) Several instances of minor erosion were observed on the downstream slope above the riprap.	Continue ongoing repair program for repairing erosion if the erosion depth exceeds one foot.
3) There is an HDPE pipe laying across the upstream slope along most of the embankment.	Recommend removal of the pipe.

6.4 UPPER RETENTION SUMP

Observed Condition	Action Item
1) Erosion beneath the new discharge pipe on the North Embankment and below the edge of the crest.	Monitor the erosion and repair as necessary. This will be an ongoing maintenance requirement.
2) There has been uncontrolled dumping resulting in garbage being placed in the CCR unit.	Investigate who has been improperly disposing of material and remediate the situation.

6.5 DRY FLY ASH DISPOSAL AREA

Observed Condition	Action Item
1) There is erosion at the inlet and outlet of the Storm Water Diversion Channel.	With future expansion of the DFADA, perform an engineering re-evaluation to understand whether the run off pattern has changed or whether a different erosion control method should be applied. Monitor erosion and repair as required.
2) There is erosion along the western edge of Cell 3. The erosion washed ash material into the stormwater collection channel along the toe.	Repair the erosion and excavate the eroded material. Review the current runoff control configuration and determine whether or not the system is functioning as intended.
3) There is damage to the geomembrane liner along the Cell 2 collection pond, the saddle between the Cell 1 and Cell 2 collection ponds, and the Cell 3 berm.	Repair the liner.
4) Several plants are growing through the Pyramat geosynthetic along the western toe of Cell 1.	Monitor the plant growth and remove the vegetation if it is determined to be damaging the primary geomembrane liner.

7.0 REFERENCES

Arizona Public Service Corporation. 2017. *Four Corners Power Plant Lined Ash Impoundment, Lined Decant Water Pond, Combined Waste Treatment Pond, Upper Retention Sump, and Dry Fly Ash Disposal Area – Annual CCR Impoundment and Landfill Inspection Report – 2016*. January.

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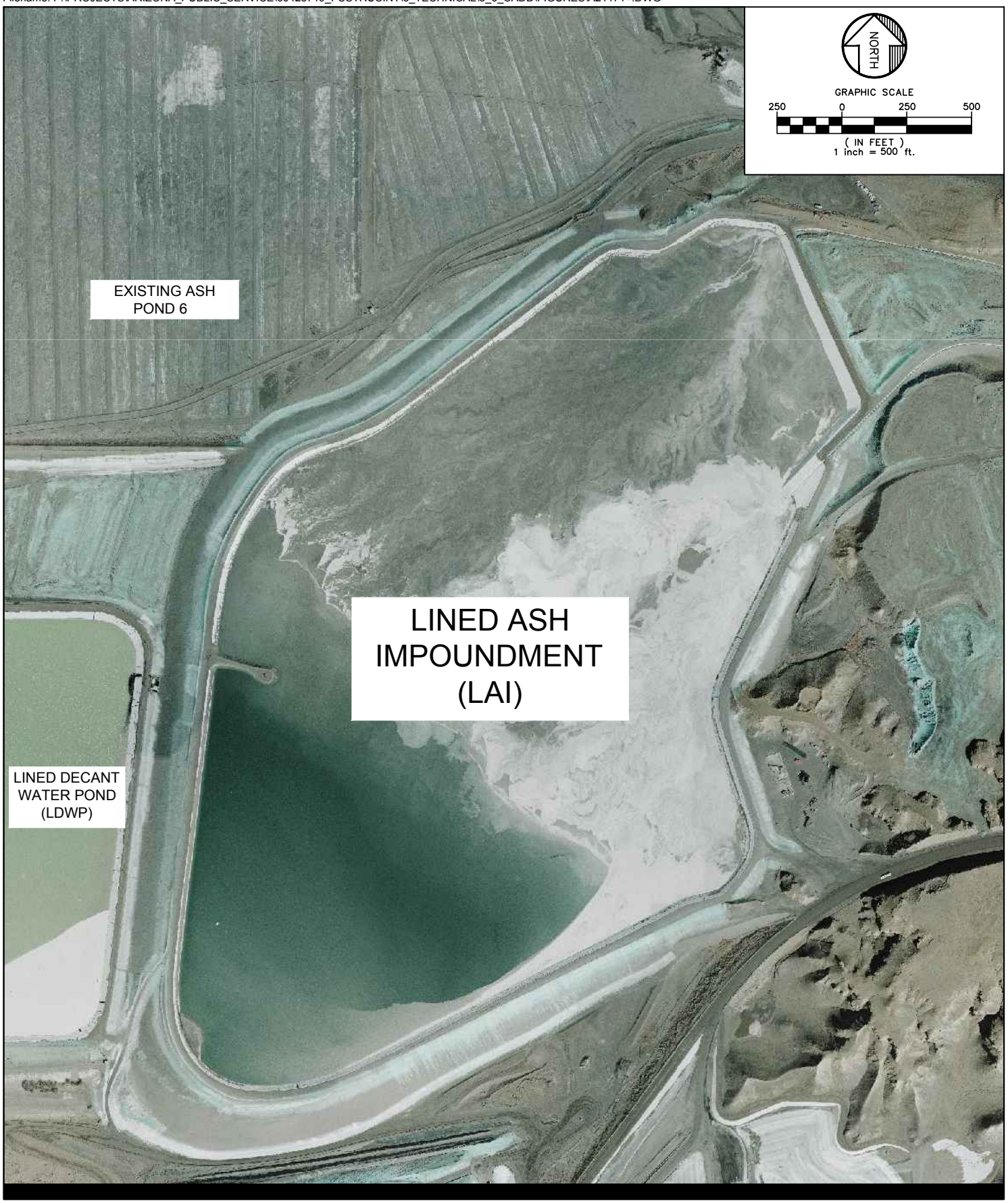
URS, 2012. *Engineering Design Report – Lined Ash Impoundment – 5280 Lift – Four Corners Power Plant – San Juan County, New Mexico – NMOSE File No. D-634*. Prepared for Arizona Public Service. March.

Weather Underground, Web. 2017. "Weather History for KFMN – November, 2017." <https://www.wunderground.com/history/airport/KFMN/2017/11/13/CustomHistory.html?dayend=14&monthend=11&yearend=2017&req_city=&req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=>. 14 November.

FIGURES

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ANSI A 8.5" x 11"



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CCR IMPOUNDMENT AND LANDFILL INSPECTION REPORT
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LINED ASH IMPOUNDMENT (LAI)

AECOM

FIGURE 1

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FOUR CORNERS POWER PLANT
CCR IMPOUNDMENT AND LANDFILL INSPECTION REPORT
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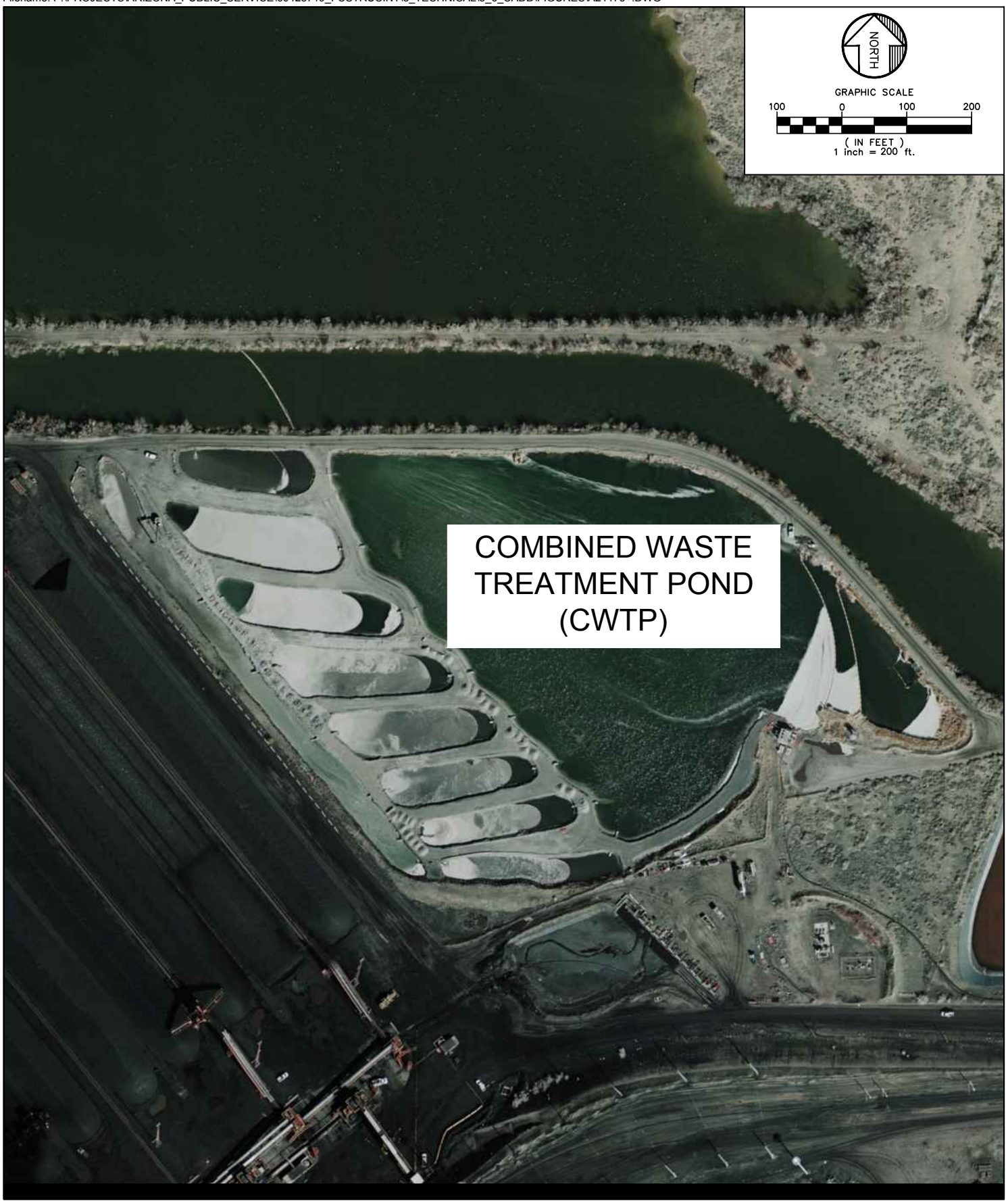
LINED DECANT WATER POND (LDWP)

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FIGURE 2

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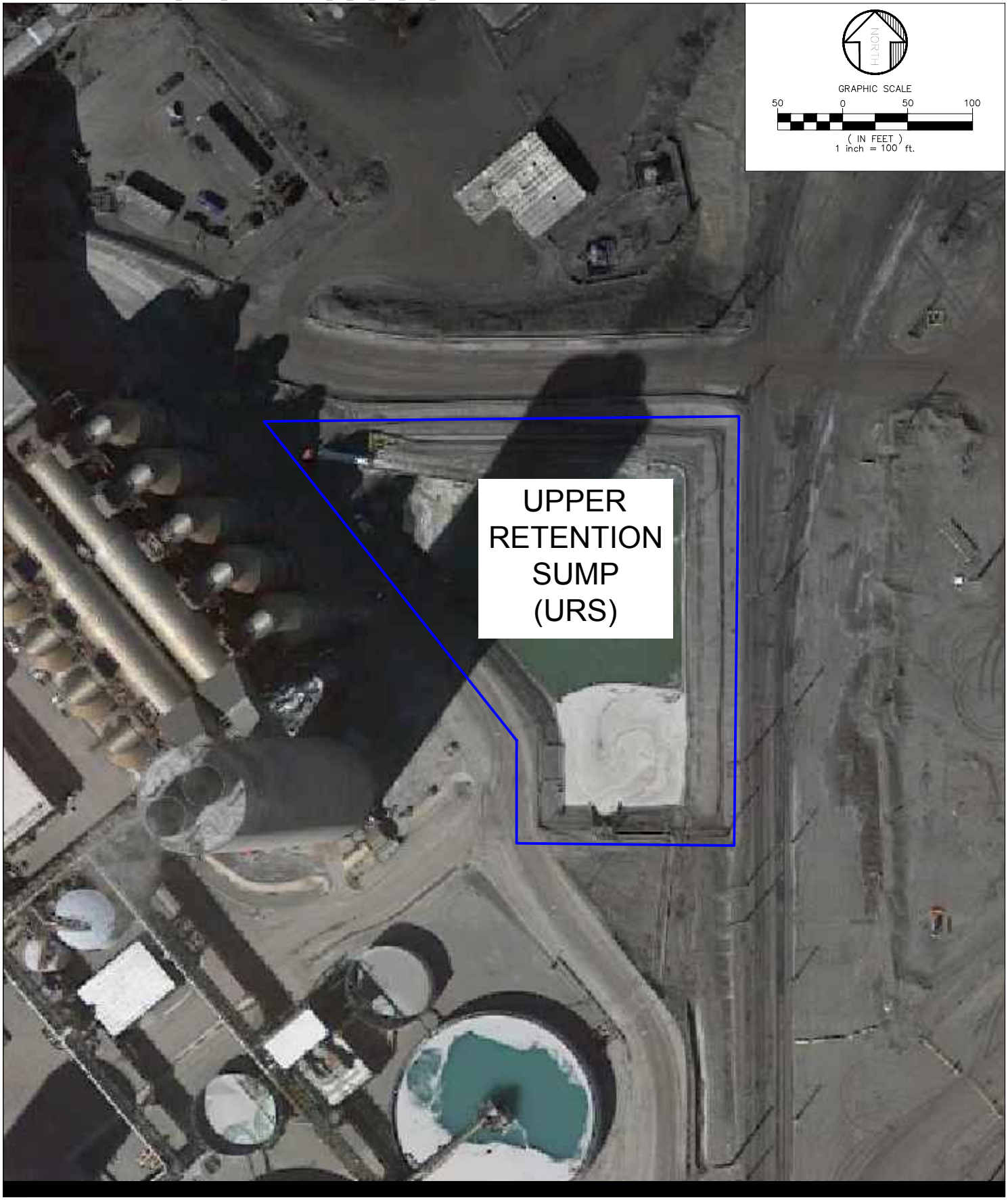
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COMBINED WASTE TREATMENT POND (CWTP)

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FIGURE 3

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UPPER
RETENTION SUMP
(URS)

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FIGURE 4

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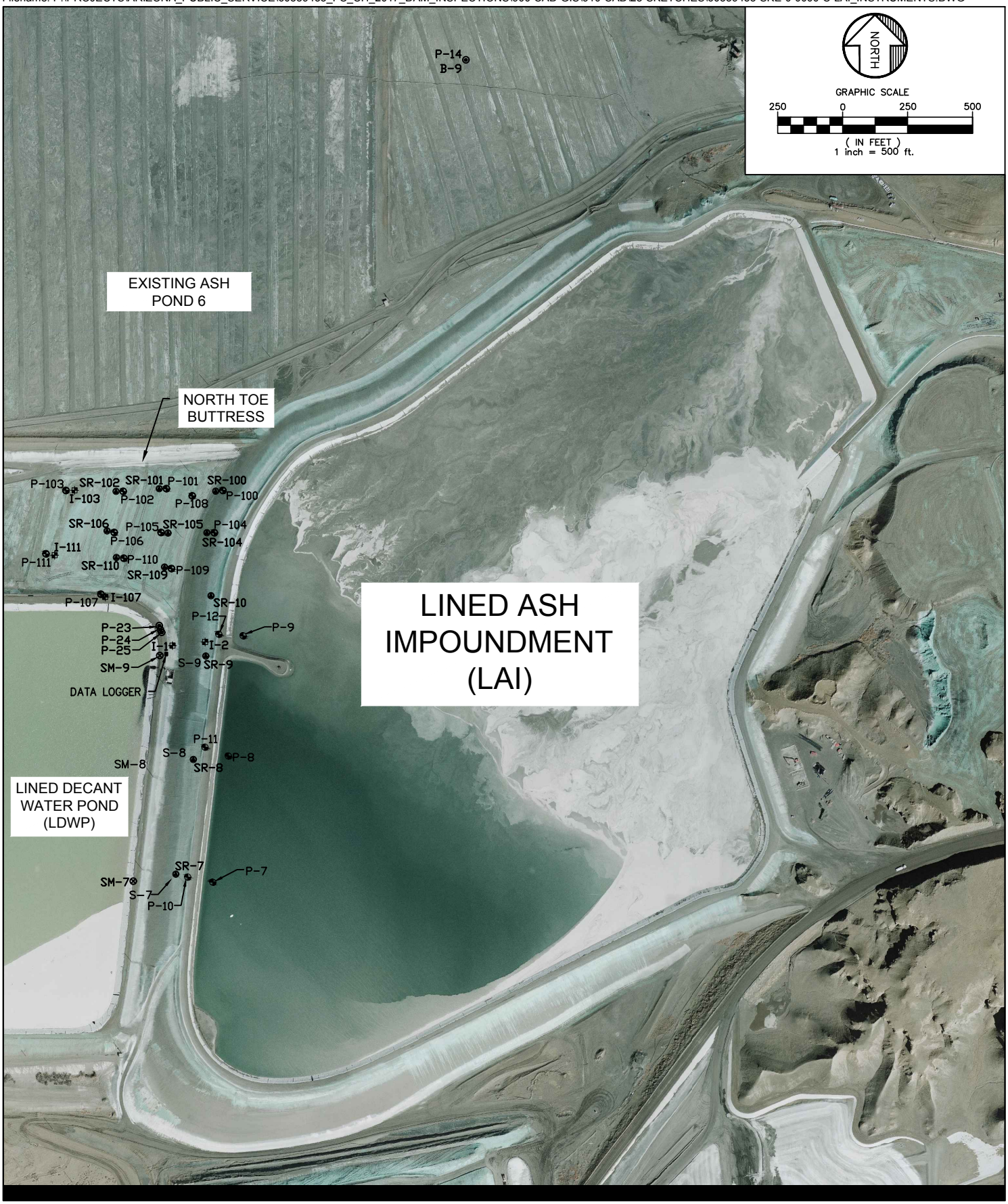
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DRY FLY ASH
DISPOSAL AREA
(DFADA)

AECOM

FIGURE 5

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CCR IMPOUNDMENT AND LANDFILL INSPECTION REPORT
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LINED ASH IMPOUNDMENT (LAI) INSTRUMENTATION MAP

AECOM

FIGURE 6

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ANSI A 8.5" x 11"



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CCR IMPOUNDMENT AND LANDFILL INSPECTION REPORT
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LINED DECANT WATER POND (LDWP) INSTRUMENTATION MAP

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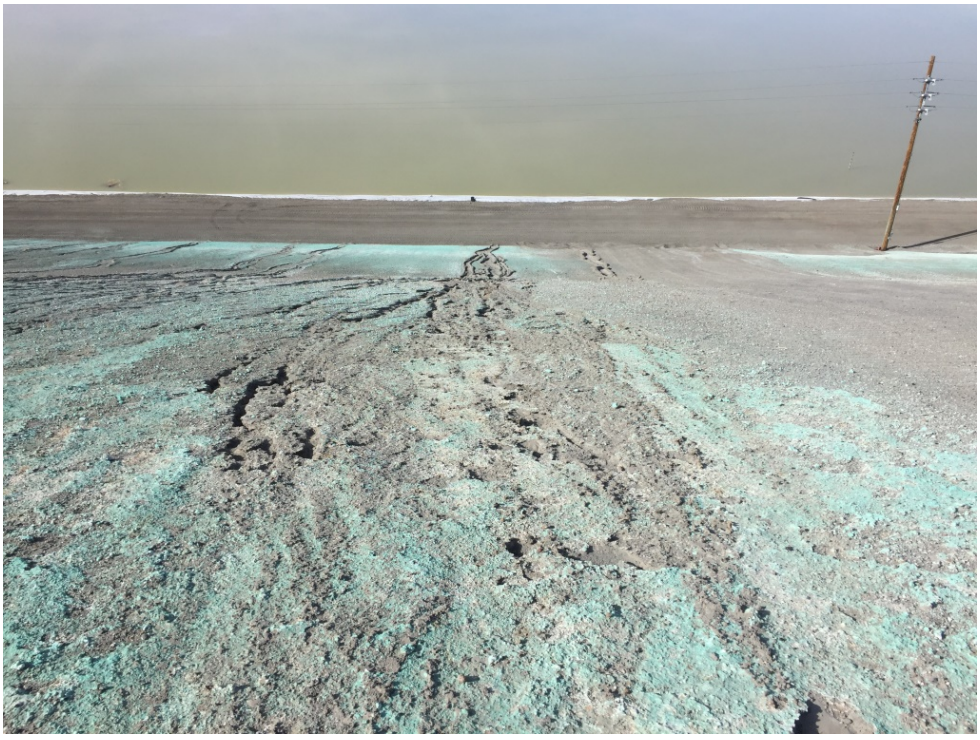
FIGURE 7

APPENDIX A

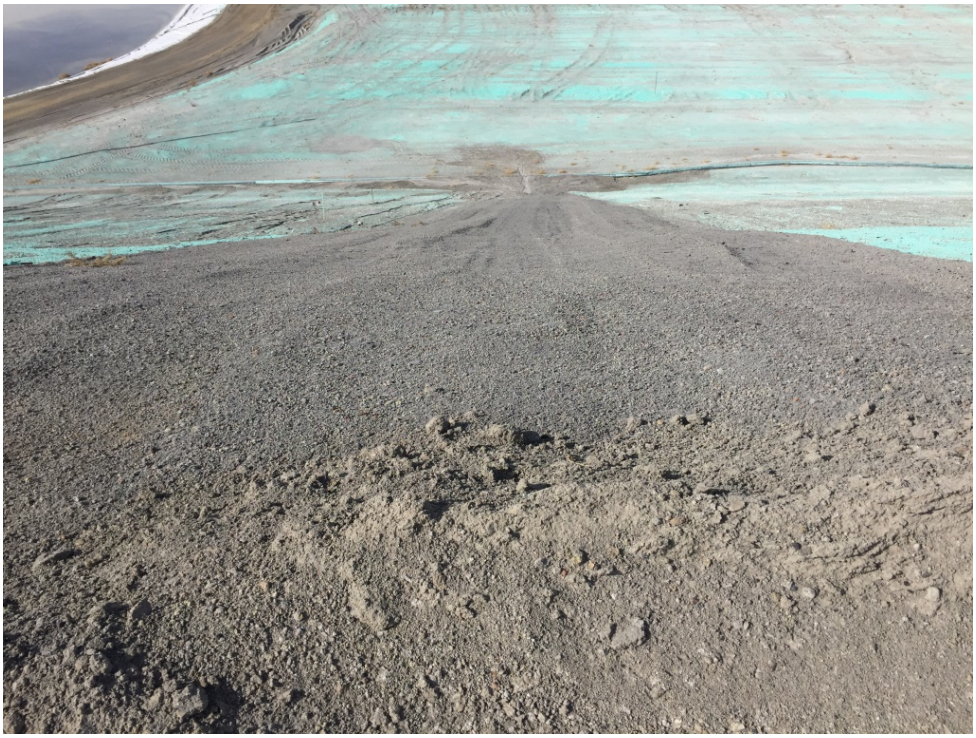
LINED ASH IMPOUNDMENT (LAI) PHOTO LOG



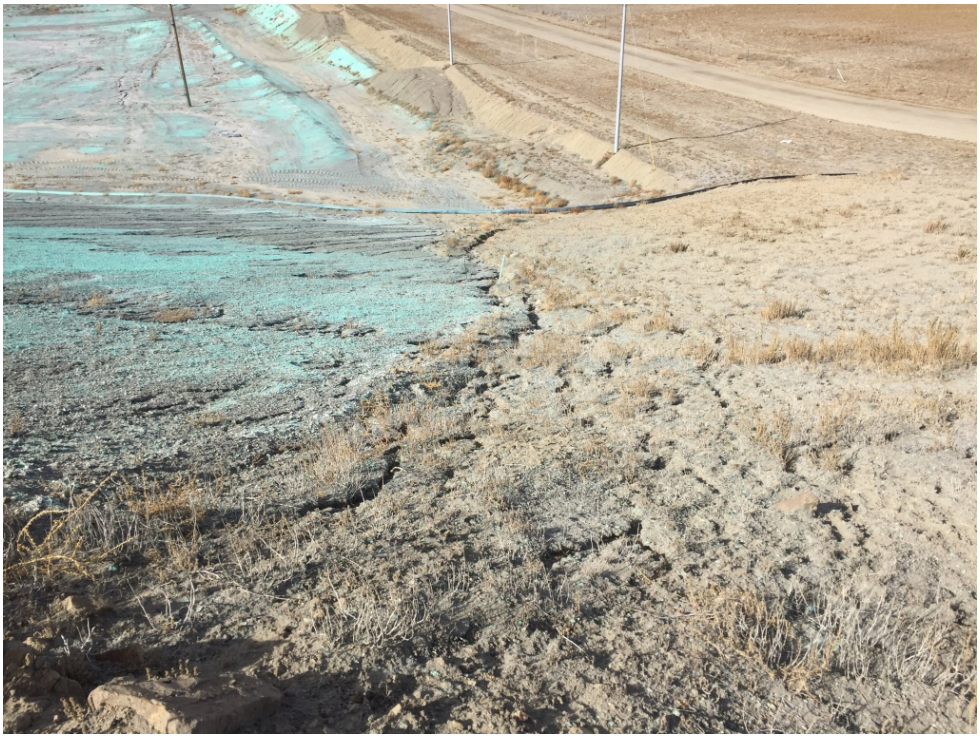
20171113 – IMG_1877
Repairs of the geomembrane liner along the western portion of the South Embankment.



20171113 – IMG_1884
Minor erosion rills along the downstream slope of the West Embankment.



20171113 – IMG_1886
Area of repaired erosion along the downstream slope of the West Embankment.



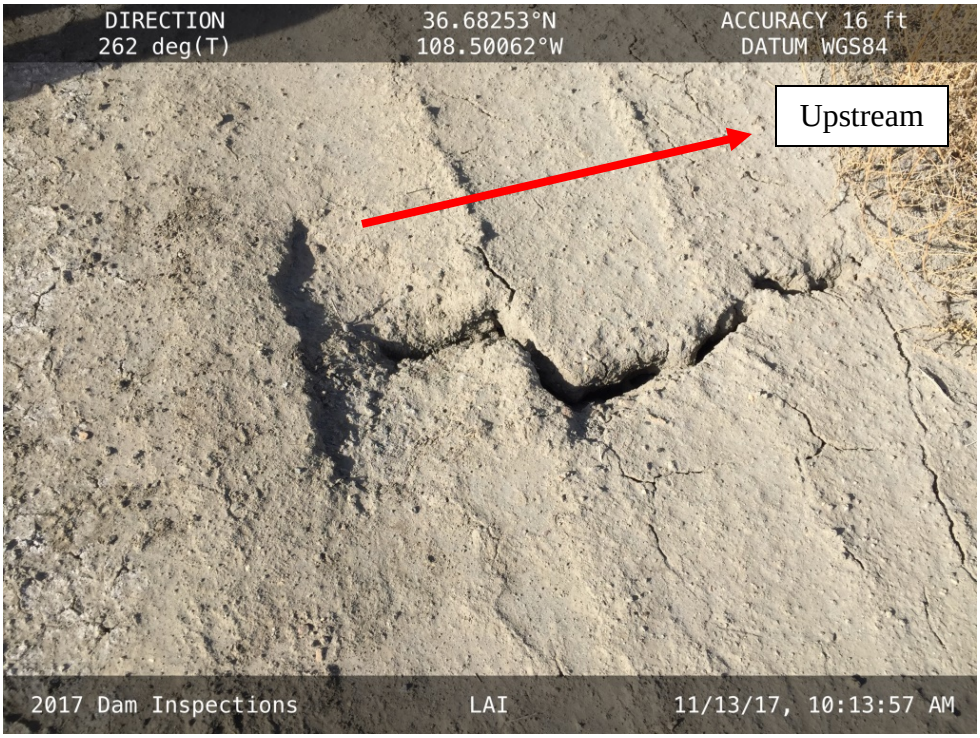
20171113 – IMG_1887
Minor erosion rills along the downstream slope of the West Embankment.



20171113 – IMG_1893
The 16-inch and 8-inch diameter HDPE gravity pipe outlets draining into the LDWP.



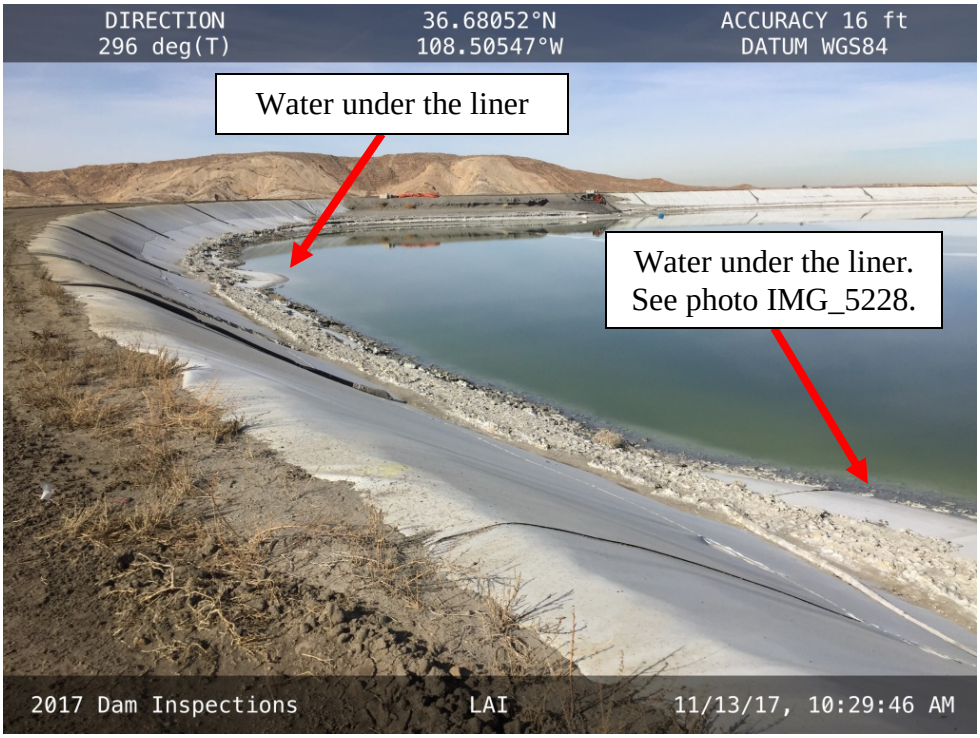
20171113 – IMG_5080
The downstream slope of the South Embankment along DFADA Cell 3, facing west.



20171113 – IMG_5190
A transverse crack on the crest of the South Embankment extending from the edge of the anchor trench to the upstream slope.



20171113 – IMG_5193
The crest of the South Embankment, facing west.



20171113 – IMG_5216
The upstream slope in the southwest corner, facing west.



20171113 – IMG_5228
The upstream slope in the South Embankment, facing east.



20171113 – IMG_5238
The upstream slope of the West Embankment, facing north from the South Embankment.



20171113 – IMG_5244
The crest of the West Embankment, facing north.



20171113 – IMG_5252
The North Toe Buttress, facing northwest from the crest of the West Embankment.



20171113 – IMG_5263
The crest and upstream slope of the Northwest Embankment, facing north.



20171113 – IMG_5275
Tears in the liner along the Northwest Embankment.



20171113 – IMG_5277
The crest of the Northwest Embankment, facing northwest.



20171113 – IMG_5290
The upstream slope of the Northwest Embankment.



20171113 – IMG_5293
The crest and upstream slope of the East Embankment, facing south.



20171113 – IMG_5301
The junction of the new and abandoned routes for the V-ditch used to transport FGD slurry.



20171113 – IMG_5304
The abandoned route of the V-ditch used to transport FGD slurry.



20171113 – IMG_5317
The downstream slope of the East Embankment, facing south.



20171113 – IMG_5320
The crest of the East Embankment, facing north.



20171113 – IMG_5328
The perforated HDPE riser pipe along the West Embankment, facing west.



20171113 – IMG_5329
Water being pumped from the Southwest Corner of the LAI into the HDPE riser pipe.



20171113 – IMG_5335
The downstream toe of the West Embankment, facing south.



20171113 – IMG_5353
The South Embankment toe drain in a dry condition.

APPENDIX B

LINED DECANT WATER POND (LDWP) PHOTO LOG



20171113 – IMG_1881
The downstream slope of the South Embankment, facing west from the crest of the LAI.



20171113 – IMG_1899
Area of repaired erosion along the downstream slope of the South Embankment.



20171113 – IMG_5239
The upstream slope and South Embankment crest, facing west from the crest of the LAI.



20171113 – IMG_5241
Overview of the LDWP, facing west from the LAI crest.



20171113 – IMG_5344
The LDWP pump station in the northeast corner of the perimeter embankment.



20171113 – IMG_5354
The South Embankment of the LDWP and Ash Pond 3, facing northwest from the toe.



20171113 – IMG_5356
The South Embankment of the LDWP and Ash Pond 3, facing north from the toe.



20171113 – IMG_5357
The South Embankment of the LDWP and Ash Pond 3, facing northeast from the toe.



20171113 – IMG_5358
The West Embankment of the LDWP and Pond 3, facing east from the toe.



20171113 – IMG_5361
The West Embankment of the LDWP and Pond 3, facing northeast from the toe.



20171113 – IMG_5366
The East Embankment upstream slope, facing north.



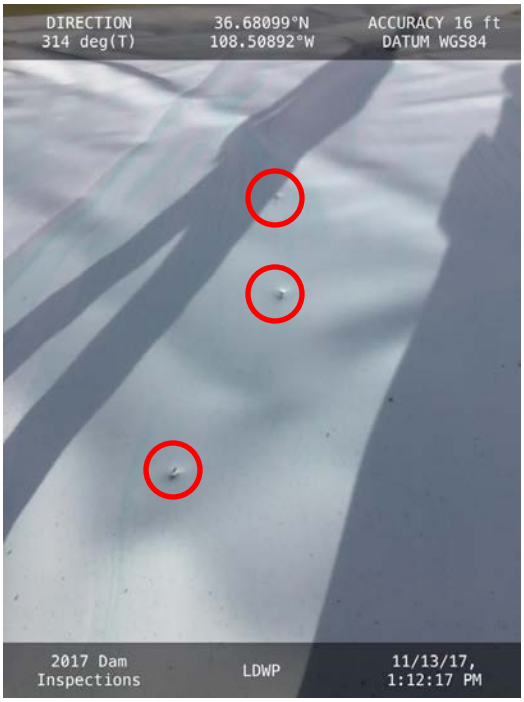
20171113 – IMG_5367
The East Embankment crest, facing north.



20171113 – IMG_5379
The South Embankment upstream slope, facing west.



20171113 – IMG_5380
The South Embankment crest, facing west.



20171113 – IMG_5382
Three holes and depressions in the liner along the upstream slope in the eastern portion of the South Embankment.



20171113 – IMG_5384
The West Embankment upstream slope, facing north.



20171113 – IMG_5386
The South Embankment upstream slope, facing east.



20171113 – IMG_5388
Area of repaired erosion along the West Embankment, facing west toward the toe.



20171113 – IMG_5390
The West Embankment crest and downstream slope, facing south.



20171113 – IMG_5404
The West Embankment upstream slope, facing south from the center of the embankment.



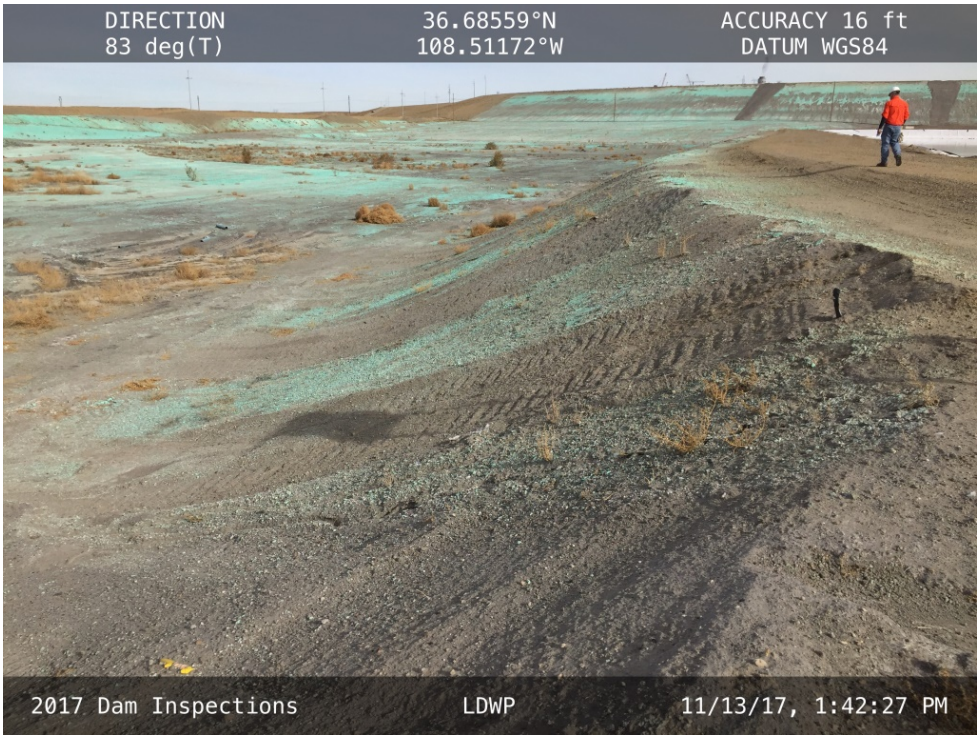
20171113 – IMG_5405
The West Embankment downstream slope, facing north from the center of the embankment.



20171113 – IMG_5408
The liner pulling out of the anchor trench in the northern portion of the West Embankment.



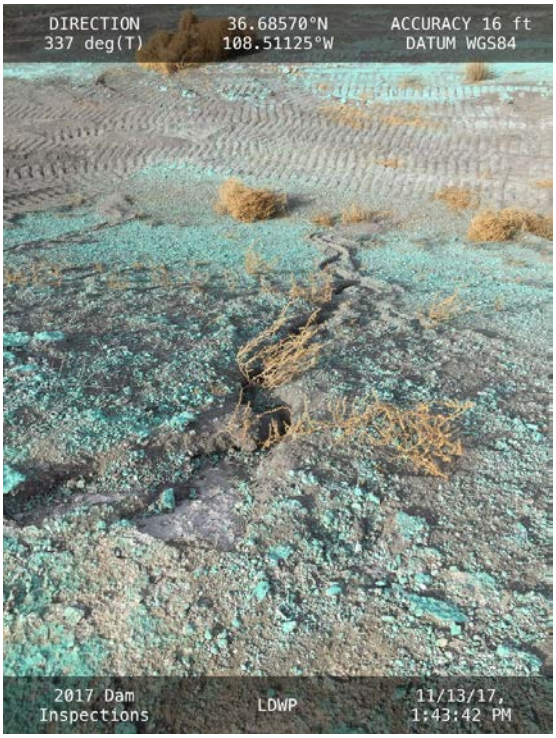
20171113 – IMG_5411
Repaired area of the liner, observed pulling out of the anchor trench during the 2016 inspection.



20171113 – IMG_5421
Areas of repaired erosion along the North Embankment, facing east.



20171113 – IMG_5424
The North Embankment crest, facing east.



20171113 – IMG_5425
Erosion rill forming along the North Embankment downstream slope, facing toward the toe.



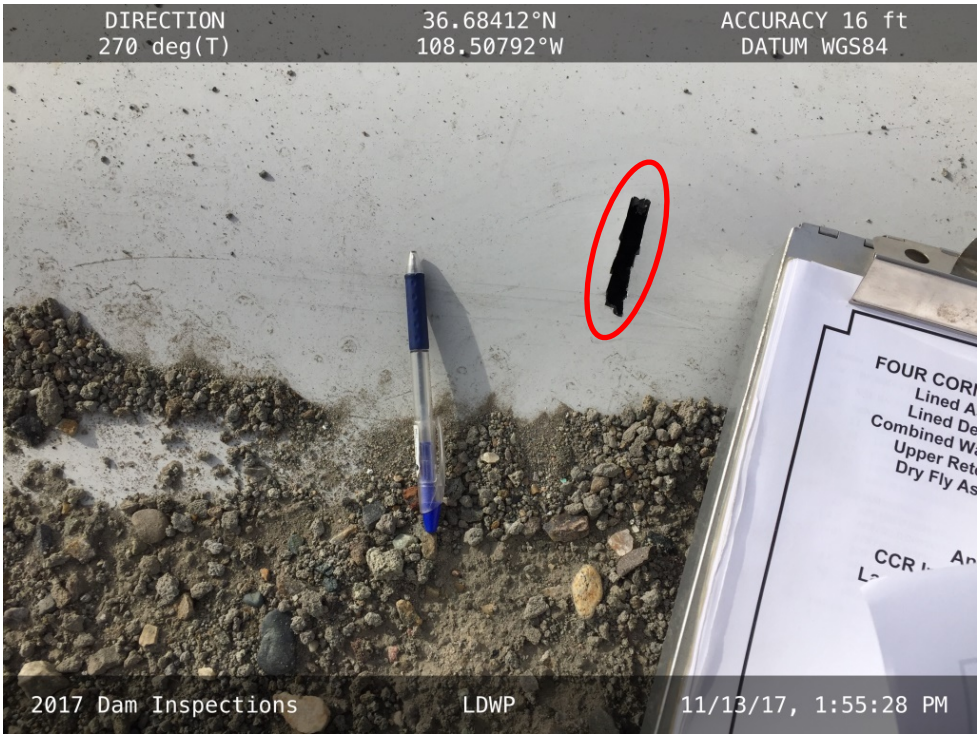
20171113 – IMG_5429
Tears in the liner along the North Embankment.



20171113 – IMG_5432
The North Embankment upstream slope, facing west from the East Embankment.



20171113 – IMG_5435
The liner pulling out of the anchor trench in the East Embankment.



20171113 – IMG_5438
A tear in the liner along the East Embankment.



20171113 – IMG_5442
Tears in the liner along the East Embankment.

APPENDIX C

COMBINED WASTE TREATMENT POND (CWTP) PHOTO LOG



20171114 – IMG_1921
The downstream slope of the CWTP embankment with new riprap installed.



20171114 – IMG_1927
Woody vegetation along the downstream slope to be monitored and removed when necessary.



20171114 – IMG_5577
Outlet pipes for the decant cells in the CWTP impoundment.



20171114 – IMG_5581
The crest along the eastern leg of the CWTP embankment, facing northwest.



20171114 – IMG_5582
The downstream slope and the outfall to the discharge canal, facing north.



20171114 – IMG_5585
The downstream slope of the CWTP, facing northwest.



20171114 – IMG_5591
The weir in the impoundment leading to the discharge canal outfall.



20171114 – IMG_5598
Minor erosion rills forming on the embankment.



20171114 – IMG_5602
The CWTP embankment crest, facing northwest.



20171114 – IMG_5604
The reservoir and vegetation along the upstream slope of the embankment, facing northwest.



20171114 – IMG_5607
A pipe laying across the upstream slope of the embankment, facing west.



20171114 – IMG_5613
The downstream slope along the northern portion of the embankment, facing west.



20171114 – IMG_5614
The CWTP embankment crest, facing east.



20171114 – IMG_5618
The upstream slope along the northern portion of the embankment, facing east.



20171114 – IMG_5620
The upstream slope along the northern portion of the embankment, facing west.



20171114 – IMG_5624
Minor erosion rills forming on the downstream slope.



20171114 – IMG_5633
The downstream slope along the northern portion of the embankment, facing west.



20171114 – IMG_5635
The crest on the west side of the northern portion of the embankment, facing east.

APPENDIX D

UPPER RETENTION SUMP PHOTO LOG



20171114 – IMG_1913
The upstream slope along the east side of the Upper Retention Sump, facing south.



20171114 – IMG_1915
The north side of the Upper Retention Sump, facing west.



20171114 – IMG_5478
The upstream slope along the east side of the Upper Retention Sump, facing north.



20171114 – IMG_5479
The upstream slope along the west side of the Upper Retention Sump, facing north.



20171114 – IMG_5488

The concrete ramp in the northwest corner of the Upper Retention Sump, facing north.



20171114 – IMG_5497

A guardrail and solids dumped on and around the gas connection near the access ramp.



20171114 – IMG_5504
The north side of the Upper Retention Sump, facing east.



20171114 – IMG_5509
The west side of the Upper Retention Sump, facing southwest.



20171114 – IMG_5511
Erosion on the north side of the Upper Retention Sump, facing east.



20171114 – IMG_5513
Undermined cement along the north side of the Upper Retention Sump, facing east.



20171114 – IMG_5519
Broken cement along the north side of the Upper Retention Sump, facing east.



20171114 – IMG_5550
The new discharge pipe along the north side of the Upper Retention Sump, facing northwest.



20171114 – IMG_5552
The south side of the Upper Retention Sump, facing west.

APPENDIX E

DRY FLY ASH DISPOSAL AREA (DFADA) PHOTO LOG



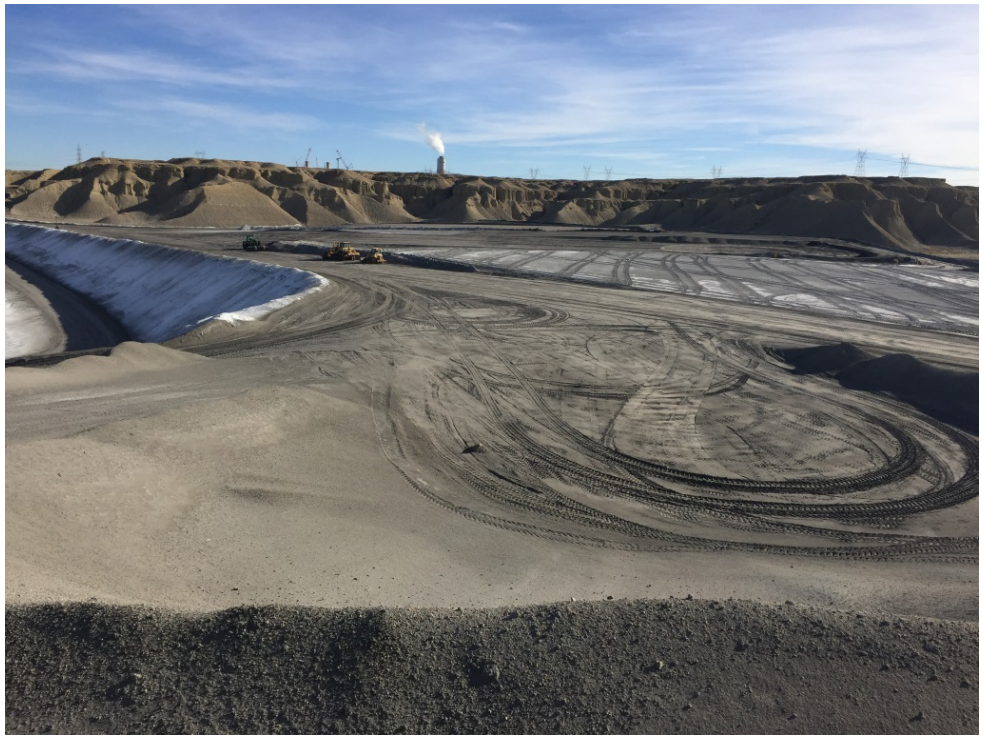
20171113 – DSCF8381
Inlet to the Storm Water Diversion Channel, facing east from the ash haul road.



20171113 – IMG_1856
The top of Cell 1, facing west.



20171113 – IMG_1857
The top of Cell 1, facing north toward the LAI.



20171113 – IMG_1858
The top of Cell 2, facing east from the top of Cell 1.



20171113 – IMG_5075
The top of Cell 3, facing west from the east side of Cell 3.



20171113 – IMG_5103
Cell 3 (left) and the north slope of Cell 2, facing east from the top of Cell 1.



20171113 – IMG_5121
The southeastern toe of Cell 2, facing southwest.



20171113 – IMG_5131
Erosion at the Stormwater Diversion Channel outlet, facing west.



20171113 – IMG_5138
The south slope of Cell 1, facing northwest.



20171113 – IMG_5141
The south slope of Cells 1 and 2, facing north.



20171113 – IMG_5143
Sediment in the Stormwater Diversion Channel.



20171113 – IMG_5152
Woody vegetation growing through the Pyramat in the southwest corner of Cell 1.



20171113 – IMG_5177
Erosion along the western toe of Cell 3, facing north.



20171113 – IMG_5179
A tear in the geomembrane liner of the Cell 1 collection pond.



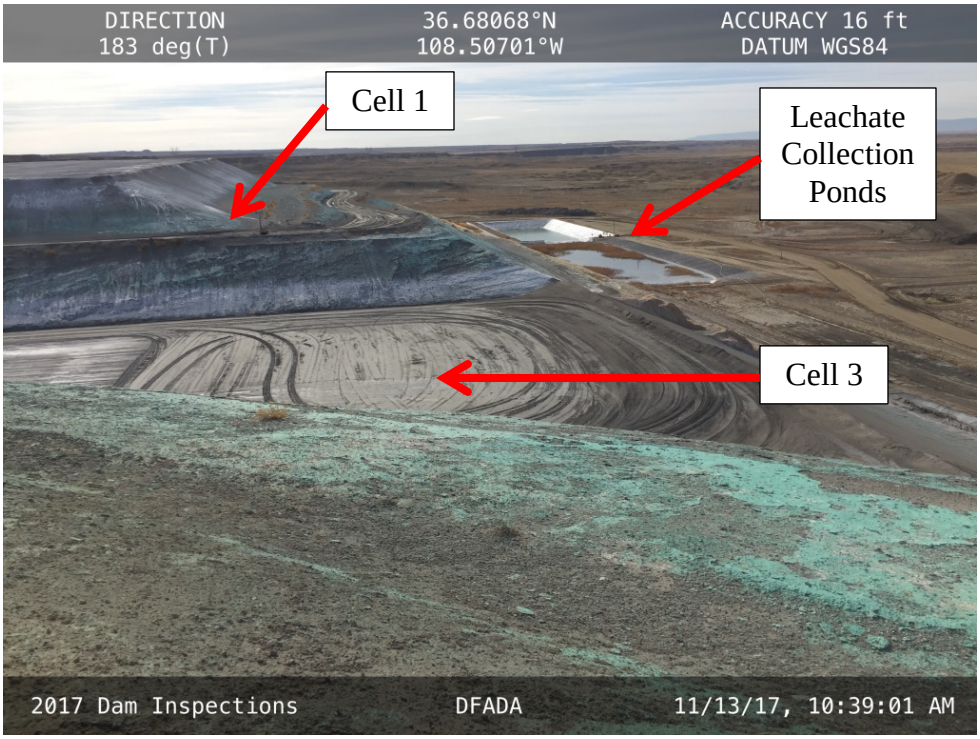
20171113 – IMG_5187
Overview of the eastern half of Cell 3 from the LAI South Embankment, facing southwest.



20171113 – IMG_5207
Overview of the western half of Cell 3 from the LAI South Embankment, facing southwest.



20171113 – IMG_5208
Overview of the eastern half of Cell 3 from the LAI South Embankment, facing southwest.



20171113 – IMG_5230
The leachate collection ponds and the western portions of Cells 1 and 3, facing south.