ASSESSMENT OF DAM SAFETY OF COAL COMBUSTION SURFACE IMPOUNDMENTS FINAL REPORT

Gainesville Regional Utilities
Deerhaven Plant
Gainesville, Florida

Prepared for
U.S. Environmental Protection Agency
Washington, D.C.

May, 2014

CDM Smith Project No.:
93083.1801.044.SIT. DEERH

CDM Smith

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1.1 Introduction

Following the December 22, 2008 dike failure at the Tennessee Valley Authority's Kingston, Tennessee coal combustion waste (CCW) ash pond dredging cell that resulted in a spill of over 1 billion gallons of coal ash slurry, covering more than 300 acres that impacted residences and infrastructure, the United States Environmental Protection Agency (USEPA) is embarking on an initiative to prevent the catastrophic failure from occurring at other facilities located at electrical utilities in an effort to protect lives and property from the consequences of a dam failure or the improper release of impounded slurry.

This assessment of the stability and functionality of the Gainesville Regional Utilities (GRU) Deerhaven Plant CCW impoundments is based on a review of limited available documents, site assessments conducted by CDM Smith on August 28 and 29, 2012, and technical information provided by GRU subsequent to the site visit. In summary, GRU Deerhaven Plant ash impoundment embankments are rated as poor for continued safe and reliable operation, because static and seismic engineering studies following the best professional engineering practice to support acceptable safety factors have not been presented. However, a fair classification and acceptable performance is expected with minor remedial actions and providing that analyses documenting structural stability under all required loading conditions are conducted.

It is critical to note that the condition of the embankment(s) depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the embankments will continue to represent the condition of the embankments at some point in the future. Only through continued care and inspection can there be a chance that unsafe conditions will be detected.

1.2 Purpose and Scope

CDM Smith was contracted by the USEPA to perform site assessments of selected surface impoundments. As part of this contract, CDM Smith conducted site assessments of the following CCW impoundments at the Deerhaven Plant: Ash Cell #1, Ash Cell #2, Pump Back Cell #1, and Pump Back Cell #2. These impoundments, referred to as the Process Water Ponds, are located northwest of the generation plant. The purpose of this report is to provide the results of the assessments and evaluations of the conditions and potential for waste release from the CCW impoundments. One additional impoundment, the Coal Stockpile Runoff Collection Pond was observed during CDM Smith's site assessment. The Coal Stockpile Runoff Collection Pond is not used to store/process CCW and therefore does not fall within EPA's assessment scope criteria.

Site visits were conducted by CDM Smith representatives on August 28 and 29, 2012 to collect relevant information, inventory the CCW impoundments, and perform visual assessments of the CCW impoundments.

1.3 Conclusions and Recommendations

1.3.1 Conclusions

The following conclusions are based on our visual observations during site assessments on August 28 and 29, 2012 and a review of the limited documentation provided by GRU.

1.3.1.1 Conclusions Regarding Structural Soundness of the CCW impoundments

CCW impoundments appear to be structurally sound based on visual observations of the structural element components (i.e. inlet structures, earth embankments, and outlet structures). No documentation to evaluate and assess structural stability and soundness of the impoundments was provided.

1.3.1.2 Conclusions Regarding the Hydrologic/Hydraulic Safety of CCW impoundments

Supporting technical documentation was not provided regarding the hydrologic/hydraulic safety for the CCW impoundments as recommended in Federal Emergency Management Agency (FEMA) guidelines. FEMA guidelines address management practices and procedures but do not attempt to establish technical standards. They do, however, provide the most complete and authoritative statement available of the desired management practices for promoting dam safety and the welfare of the public. The guidelines encourage strict safety standards in the practices and procedures employed by federal agencies or required of dam owners regulated by the federal agencies. Current practice in the design of dams is to use the Inflow Design Flood (IDF), based on a percent of the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10 square-mile area in the vicinity of the site. The percent of the PMP used to calculate the IDF is based on the evaluated hazard potential of the dam and reservoir such that the spillways and outlet works can be designed to safely accommodate the flood flow without risking the loss of the dam or endangering downstream areas. FEMA guidelines recommend that dams with a High Hazard rating be designed to accommodate 100% PMP; dams with a Significant Hazard rating be designed to accommodate 50% PMP; and dams with a Low Hazard rating be designed to accommodate a storm with an average return frequency of no less than 100 years.

Visual examination of the impoundment earth structures did not show evidence of previous overtopping of the embankments.

1.3.1.3 Conclusions Regarding Adequacy of Supporting Technical Documentation

Supporting data and documentation have not been provided. Liquefaction potential analyses for embankment foundations have not been performed, and original record drawings available for the Process Water Ponds are incomplete. Therefore, supporting documentation was not sufficient with regard to a complete analysis of impoundment safety.

1.3.1.4 Conclusions Regarding Description of the CCW impoundments

The description of the CCW impoundments provided by a GRU representative was generally consistent with the visual observations by CDM Smith during our site assessment. However, only four (4) sheets of the record drawings were provided, making it difficult to assess potential discrepancies against the intended design of the CCW impoundments. Drawings provided are included in Appendix A-1.

1.3.1.5 Conclusions Regarding Field Observations

During visual observations and site assessments, minor signs of areas of erosion, erosion rills, and scarps were observed on the exterior and interior slopes of the embankments. No apparent unsafe conditions or conditions in need of immediate remedial action were observed.

1.3.1.6 Conclusions Regarding Adequacy of Maintenance and Methods of Operation

Current maintenance and operation procedures appear to be adequate. There was no evidence of previous spills and release of impounded coal ash slurry outside of the impoundments.

1.3.1.7 Conclusions Regarding Adequacy of Surveillance and Monitoring Program

The impoundments at the Deerhaven plant function as a zero-discharge facility; wastewater is treated on-site and is reused in the plant process. Therefore, there is no National Pollutant Discharge Elimination System (NPDES) Permit from the Florida Department of Environmental Protection (FDEP) that requires a continuing surveillance and monitoring program. Saturated areas at the toe of slope of the embankments were observed, indicating potential seepage may be occurring. The GRU representative indicated several monitoring wells are installed around the site to monitor for water levels and water quality. One monitoring well was observed southeast of the Pump Back Cell #1. At CDM's request, GRU provided the 2012 and 2013 quarterly Groundwater Monitoring Reports for thirteen on-site wells. The quarterly reports submitted provided data for a single day each quarter. While the data provided include a groundwater elevation reading, this limited information is insufficient for monitoring and/or evaluating potential seepage conditions.

The limited amount of data available documenting the maintenance and operation procedures for the management unit is not sufficient to allow CDM Smith to make an evaluation of the adequacy of the maintenance and operations for the impoundment. The lack of regular documentation for current maintenance and methods of operation of this management unit makes these practices inadequate.

1.3.1.8 Conclusions Regarding Suitability for Continued Safe and Reliable Operation

The primary embankments do not show evidence of unsafe conditions requiring immediate remedial efforts, although maintenance to correct deficiencies noted above is required.

1.3.2 Recommendations

Based on CDM Smith visual assessment of the Process Water Ponds and a review of documentation provided by GRU, the following recommendations are provided.

1.3.2.1 Recommendations Regarding the Hydrologic/Hydraulic Safety

It is recommended that a qualified professional engineer assist GRU in evaluating the hydrologic and hydraulic capacity of the CCW impoundments to withstand design storm events, without overtopping.

1.3.2.2 Recommendations Regarding the Technical Documentation for Structural Stability

A complete set of record drawings and/or as-built drawings should be developed or made readily available for future reference. It is recommended that a qualified professional engineer assist GRU in the evaluation of the Process Water Ponds embankment stability, including liquefaction analyses.

1.3.2.3 Recommendations Regarding Field Observations

Erosion rills and scarps were observed on the interior and exterior slopes of the Ash Cell #1 and Ash Cell #2 embankments, primarily on the northwest embankment. These areas should be repaired with

compacted structural fill and regraded to match adjacent existing contours. After slope restoration, it is recommended that the exposed surface of the interior embankment slopes be stabilized with riprap consisting of a heterogeneous mixture of irregular-shaped rocks placed over the compacted fill and a geotextile fabric to match existing riprap stabilization.

Animal burrows were observed on the southeast and northwest embankments exterior slopes. Although not seen in other areas, high vegetation cover on the embankments may have hidden other animal burrows. CDM Smith recommends documenting areas disturbed by animal activity, removing the animals and backfilling the burrows with compacted structural fill to protect the integrity of the embankments. Vegetation should be maintained at a height that potential animal burrows can be readily observed.

1.3.2.4 Recommendations Regarding Surveillance and Monitoring Program

CDM Smith recommends an instrumentation monitoring program to monitor potential areas of seepage along the southeast, southwest, and northwest embankments of Ash Cell #1 and Ash Cell #2 and Pump Back Cell #1.

1.3.2.5 Recommendations Regarding Continued Safe and Reliable Operation

Inspections should be made following periods of heavy and/or prolonged rainfall, and the occurrence of these events should be documented. Inspection records should be retained at the facility for a minimum of three years.

Major repairs and slope restoration should be designed by a registered professional engineer experienced with earthen dam design.

None of the conditions observed requires immediate attention or remediation. However, the above recommendations should be implemented during a reasonable time frame to maintain continued safe and reliable operation of the CCW impoundments.

1.4 Participants and Acknowledgment

1.4.1 List of Participants

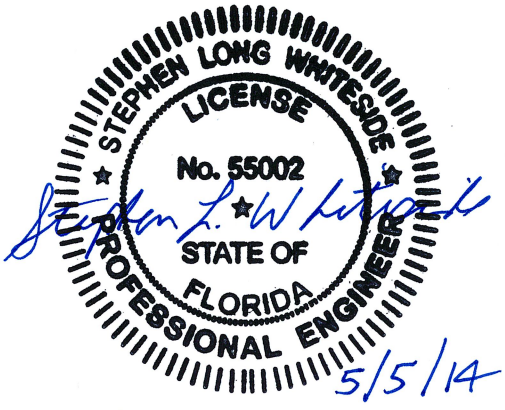
CDM Smith representatives William L. Fox, P.E. and Eduardo Gutiérrez-Pacheco, P.E. were accompanied during the visual assessment by Regina Embry, Principal Engineer, representative from GRU.

1.4.2 Acknowledgement and Signature

CDM Smith acknowledges that the Process Water Ponds referenced herein were assessed by William L. Fox, P.E. and Eduardo Gutiérrez-Pacheco, P.E. Based on the limited documentation provided, the Process Water Ponds are rated poor. The facility lacks static, hydrologic and seismic engineering studies following best professional engineering practice to support safety factors under normal loading conditions (static, hydrologic, seismic) in accordance with the applicable safety regulatory criteria. Minor deficiencies exist that require remedial measures.

We certify that the CCW impoundments referenced herein were assessed on August 28 and 29, 2012.

Stephen L. Whiteside, P.E.
Vice President
Florida Registration No. 55002



Section 2
Description of the Coal Combustion Waste Impoundments

2.1 Location and General Description

The Deerhaven Plant is located in Alachua County, Florida, northwest of the City of Gainesville. The site is on the east side of U.S. Route 441/SR20, as shown on **Figure 2-1.** Critical infrastructure located within approximately five miles downgradient of the Deerhaven Plant is shown on **Figure 2-2.**

Deerhaven Plant's coal combustion waste (CCW) impoundments consist of the Process Water Ponds (formerly known as Ash Ponds) that are divided into four hydraulically connected cells: Ash Cell #1, Ash Cell #2, Pump Back Cell #1, and Pump Back Cell #2. Ash Cells #1 and #2 outlets discharge decant water to Pump Back Cells #1 and #2, respectively. Decant water is pumped from Pump Back Cells #1 and #2 to the plant for reuse in plant operations. As described in Section 1, there is one additional impoundment that is not classified as a CCW impoundment: the Coal Stockpile Runoff Collection Pond.

An aerial view of the Deerhaven Plant including the Process Water Ponds is shown on **Figure 2-3.** The total perimeter of the embankments for the Process Water Ponds is approximately 1,950 feet. These ponds have an approximate surface area of 6.7 acres. **Table 2-1** provides a summary of the approximate size and dimensions of the Process Water Ponds.

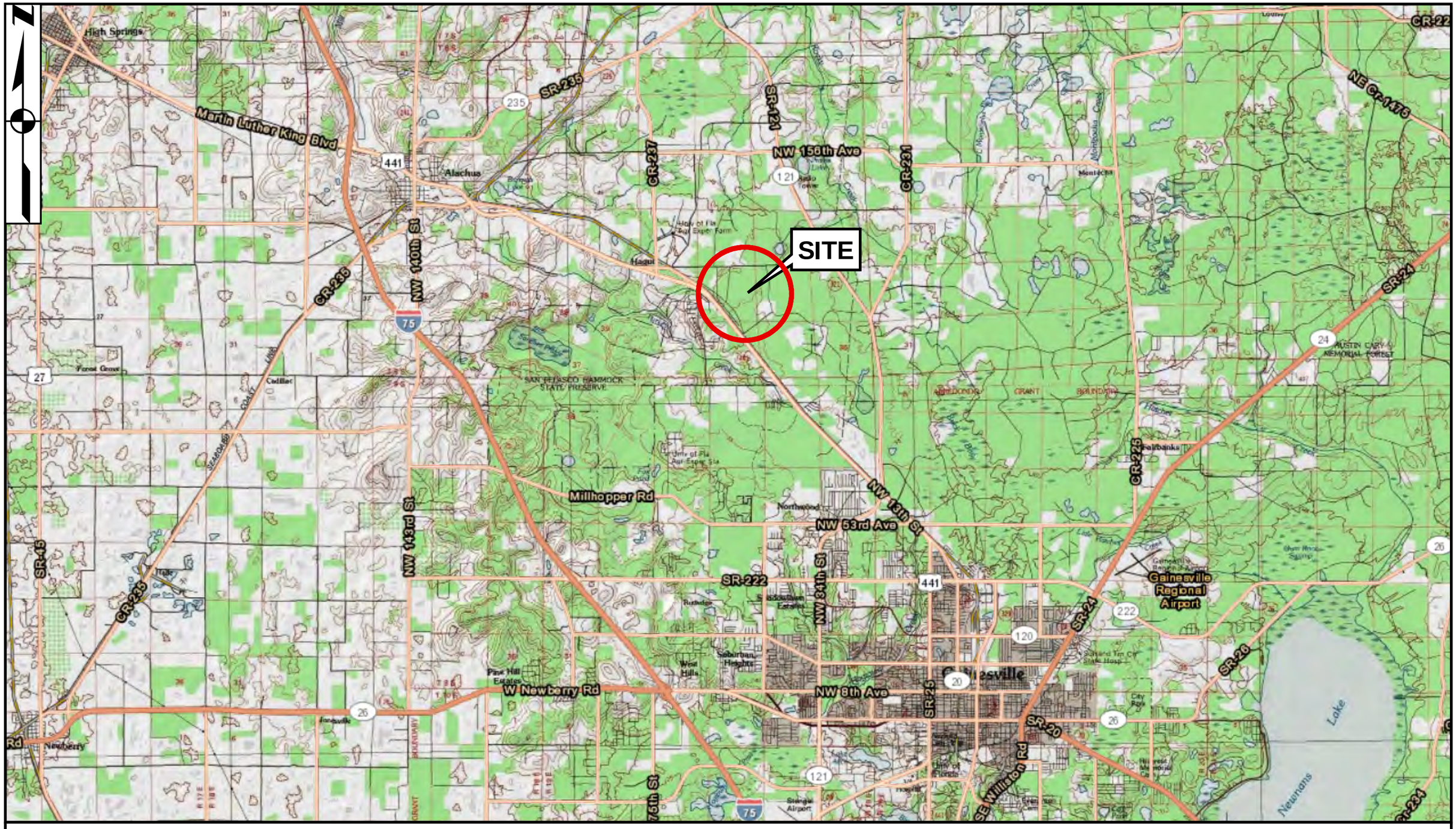
Table 2-1 – Summary of Process Water Ponds Cells Approximate Dimensions and Size

	Process Water Ponds			
	Ash Cell #1	Ash Cell #2	Pump Back Cell #1	Pump Back Cell #2
Embankment Height (ft)	14	14	9	9
Typical Crest Width (ft)	25	25	25	25
Length (ft)	730	360	500	360
Interior Slopes H:V	3:1	3:1	3:1	3:1
Exterior Slopes H:V	4:1	4:1	4:1	4:1

Divider embankments between the four cells of the Process Water Ponds are about 1,200 feet long.

2.1.1 Horizontal and Vertical Datum

Site survey provided by GRU to CDM Smith used the horizontal and vertical control network established by the National Geodetic Survey (NGS). Horizontal survey data in this study reference the North Zone of the Florida State Plane Coordinate System based on North American Datum (NAD) of 1983, 2007 adjustment. Elevations noted herein are in feet and are referenced to North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.



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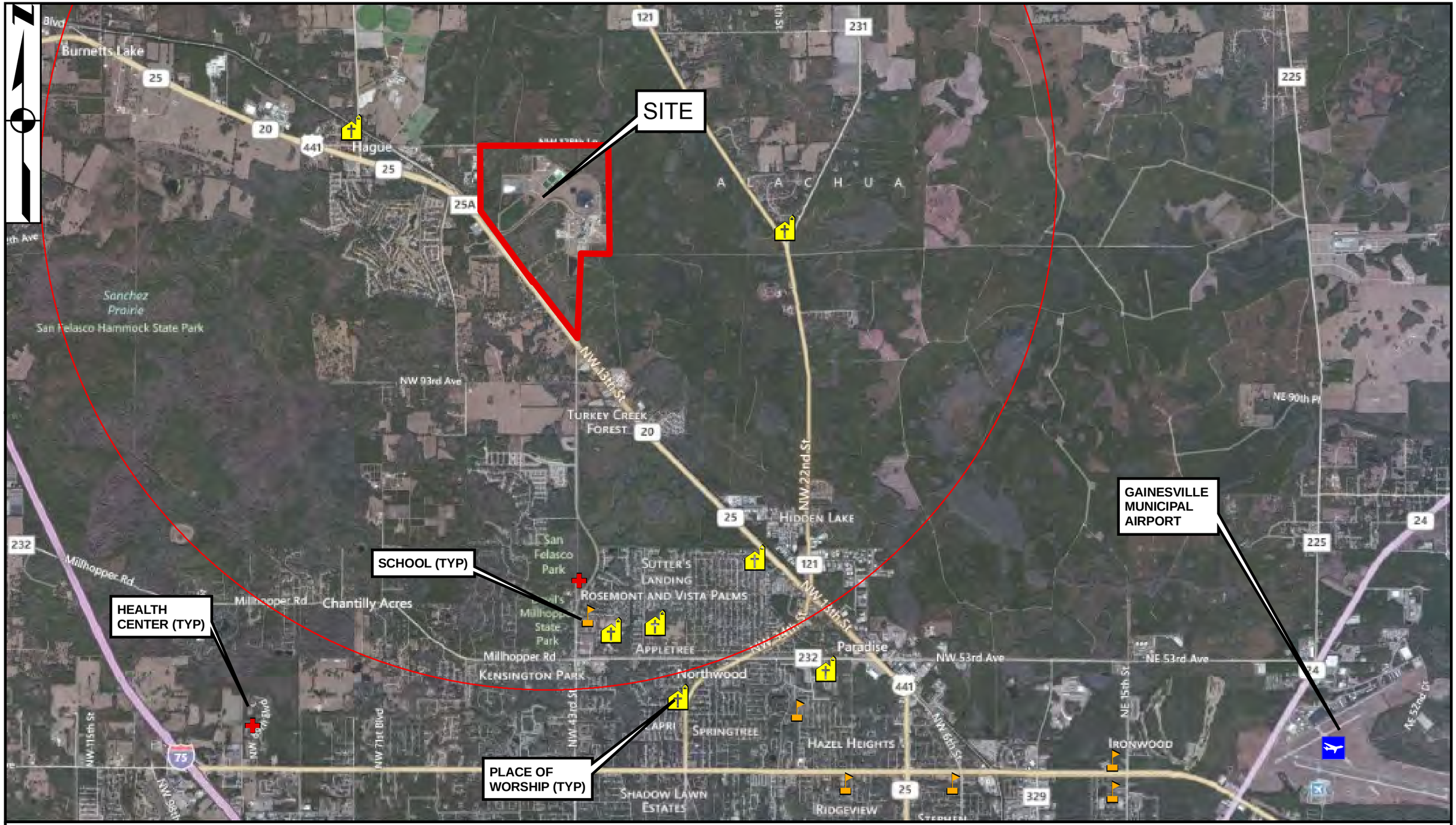
0 5,000 10,000 20,000 30,000 40,000 Feet

FIGURE 2-1
LOCUS PLAN
GAINESVILLE REGIONAL UTILITIES - DEERHAVEN POWER PLANT
GAINESVILLE, FLORIDA



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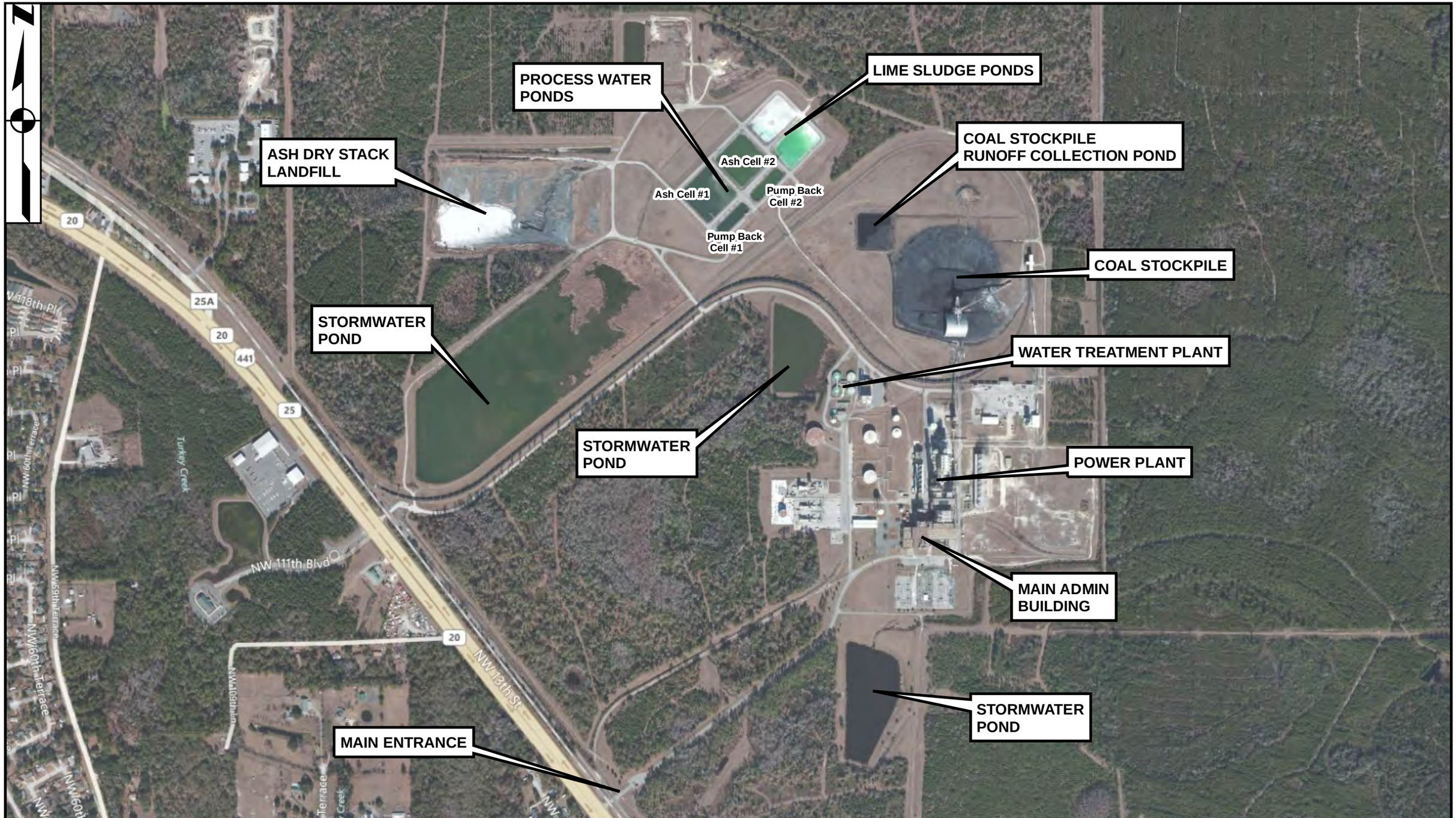
LEGEND

5 Miles Radius from Ash Impoundment

0 2,500 5,000 10,000 15,000 20,000 Feet

FIGURE 2-2
CRITICAL INFRASTRUCTURE PLAN
GAINESVILLE REGIONAL UTILITIES - DEERHAVEN POWER PLANT
GAINESVILLE, FLORIDA



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0 400 800 1,600 2,400 3,200 Feet

FIGURE 2-3
AERIAL PLAN
GAINESVILLE REGIONAL UTILITIES - DEERHAVEN POWER PLANT
GAINESVILLE, FLORIDA

2.1.2 Site Geology

The Deerhaven Plant is located east of U.S. 441/SR 20 in Alachua County, Florida. Based on review of the Alachua 7.5-Minute USGS Topographic Quadrangle Map, ground surface elevations in the area of the CCW impoundments range from about El. 180 to El. 185. According to the Geologic Map of the Eastern Portion of the USGS, 1:100,000 Scale Gainesville Quadrangle, Northern Florida, the Deerhaven Plant is located in the Coosawhatchie Formation of the Hawthorn Group that consists of soils deposited in ancient marine and fluvio-deltaic depositional environments. The Deerhaven Plant is located in an area composed of a complex sequence of Tertiary-aged carbonate and siliclastic sediments. The overlying surficial deposits are lithologically variable, pinching out and inter-fingering both laterally and vertically. They consist of gray to bluish-gray sandy clay or clayey sand with phosphate grains, and limestone to dolostone. Lenses of relatively pure quartz sands, clays, or carbonate are uncommon. Numerous karst features are present in the area, which include springs and sinkholes.

Boring logs available provided by GRU indicate that existing soils present within the area of the embankments consist of loose to medium dense silty and clayey sand, underlain by soft to stiff clay and sandy clay. Subsurface information, boring location and boring logs that were provided by GRU are included in **Appendix A.**

2.2 Coal Combustion Residue Handling

The Process Water Ponds receive residual sluiced ash and waste water from the plant process before being treated in the on-site water treatment plant for re-use in the plant process. The Process Water Ponds are part of the zero-discharge water treatment plant, which treats water effluent from the coal-fired unit.

2.2.1 Fly Ash

Limited amounts of fly ash are conveyed to the Process Water Ponds during annual maintenance outage activities and transported by pipeline to Ash Cells #1 and #2.

2.2.2 Bottom Ash

Bottom ash is transported by pipeline to the Ash Cells in slurry form. The CCW impoundments are used as settling ponds for CCW. GRU periodically dredges the CCW from the Ash Cells and disposes of it in the on-site Ash Landfill.

2.2.3 Boiler Slag

The GRU Deerhaven plant is not a slag-production type furnace, however a small amount of Boiler Slag is typically found in bottom ash.

2.2.4 Flue Gas Desulfurization Gypsum

The GRU plant has not produced flue gas desulfurization gypsum.

2.3 Size and Hazard Classification

According to the United States Army Corps of Engineers (USACE) Guidelines for Safety Inspection of Dams (1979), the impoundments may be placed in the size classification per **Table 2-2.**

Table 2-2 – USACE ER 1110-2-106 Size Classification

Category	Impoundment	
	Storage (Ac-ft)	Embankment Height (Ft)
Small	50 to < 1000	25 to < 40
Intermediate	1000 to < 50,000	40 to < 100
Large	> 50,000	> 100

Based on storage capacity and embankments height, the Deerhaven Plant impoundments are considered SMALL impoundments.

It is not known if the Deerhaven Plant impoundments currently have a Hazard Potential Classification. Based on the USEPA classification system as presented on Page 2 of the USEPA checklist (**Appendix B**) and our review of the site and downstream areas, recommended hazard ratings have been assigned to the impoundments as summarized in **Table 2-3**:

Table 2-3 – Recommended Impoundment Hazard Classification Rating

Impoundment	Recommended Hazard Rating	Basis
Process Water Ponds	Low Hazard	▪ Failure or misoperation could result in economic loss and environmental damage to plant infrastructure, operations, and utilities. ▪ Loss of human life as a result of failure is not anticipated.

2.4 Amount and Type of Residuals Currently Contained in the Unit(s) and Maximum Capacity

At the time of the assessments, CDM Smith did not have information on the amounts of residuals currently stored in the units. The pool area of the Process Water Ponds is approximately 6.7 acres. These cells receive process water from plant operations, including cooling tower blow down, plant drains, industrial process water, and sluiced bottom ash. Limited amounts of fly ash are conveyed to the process ponds during annual maintenance outage activities by pipeline to Ash Cells #1 and #2. Limited amounts of fly ash are conveyed to the process ponds during annual maintenance outage activities and transported by pipeline to Ash Cells #1 and #2.

2.5 Principal Project Structures

The primary components of the Process Water Ponds include the following:

- A set of two, 15-inch-diameter steel inlet pipes located near the east corner of Ash Cell #1 and near the south corner of Ash Cell #2.
- Earthen perimeter embankments composed of compacted soil.
- Two concrete outlet riser-type structures with stop logs, one at each ash cell. The outlet structures are located near the southeast corner of Ash Cell #1 and the northeast corner of Ash Cell #2.
- 12-inch-diameter ductile iron pipes located at each stop log structure, controlled by a 12-inch-diameter butterfly valve. The reported elevation of the 12-inch-diameter butterfly valve is 178' Above Mean Sea Level (AMLS).

- A pump house located near the east corner of Pump Back Cell #1.

2.6 Critical Infrastructure within Five Miles Downgradient

Based on available topographic maps, surface drainage in the vicinity of the Deerhaven Plant does not appear to have a preferred drainage direction, since the surrounding topography is relatively uniform. Critical infrastructure, including schools, hospitals, waterways, roadways and bridges, and other major facilities, identified within five miles downgradient of the Deerhaven Plant includes the following:

- U.S. Highway 441/SR 20/25 (southwest)
- William S. Talbot Elementary School
- Trinity United Methodist Church
- Dove World Outreach Center
- Country Crossroads Baptist Church
- Hague Baptist Church
- Pleasant Hill Baptist Church

The Gainesville Municipal Airport is located approximately 8 miles from the Deerhaven Plant.

A breach of the impoundment embankments would most likely impact GRU property only and is not expected to result in loss of human life.

Section 3

Summary of Relevant Reports, Permits and Incidents

3.1 Summary of Reports on the Safety of the CCW Impoundments

At the time of CDM Smith's on-site assessment, no safety reports on the CCW impoundments were available.

3.2 Summary of Local, State, and Federal Environment Permits

Currently, the CCW impoundments are regulated by Florida Department of Environmental Protection (FDEP).

The Deerhaven Plant has not been issued a permit under the National Pollutant Discharge Elimination System (NPDES) authorizing discharge to the surrounding streams because it is a zero-discharge facility that reuses all process water.

3.3 Summary of Spill/Release Incidents

According to plant representatives, there have been no known spills or releases related to the impoundments.

Section 4
Summary of History of Construction and Operation

4.1 Summary of Construction History

4.1.1 Impoundment Construction and Historical Information

The Deerhaven Plant began operation in 1972 with one oil-fired unit (Unit One). A coal-fired unit (Unit Two) was constructed in 1981. The coal-fired generating unit can produce up to 251 megawatts of power.

Historical information on the Process Water Ponds was not readily available in the documentation provided by GRU. Based on our understanding and the limited available data, it appears that the Process Water Ponds were constructed in 1981 with the addition of the coal-fired unit to the Deerhaven Plant. The Process Water Ponds were constructed by the placement of dikes around the perimeter to form the impoundments. The dike perimeter crest elevation of the Process Water Ponds (Ash Cell #1 and Ash Cell#2) is about 195 feet NGVD 29.

The Deerhaven Plant's (CCW) impoundments consist of the Process Water Ponds (formerly known as Ash Ponds) that are divided into four hydraulically connected cells: Ash Cell #1, Ash Cell #2, Pump Back Cell #1, and Pump Back Cell #2. Ash Cells #1 and #2 outlets discharge decant water to Pump Back Cells #1 and #2, respectively. Water flows from ash ponds to the pump back ponds via a 12" butterfly valve located in the stop log structures in the ponds through a 12" ductile iron line to the outfall in the pump back pond.

Based on the limited drawings that were provided, the interior embankment slopes of each cell were constructed at 3 horizontal to 1 vertical (3H:1V), and exterior embankment slopes were constructed at 4H:1V. Design drawings for the Process Water Ponds were developed by Burns & McDonnell. A complete set of drawings was not available. Based on information provided by GRU and CDM Smith visual observations, the Process Water Ponds perimeter embankments have a crest width of 25 feet.

Information regarding the soils that were used for the embankment construction was not available. A cutoff slurry wall was shown on Burns & McDonald Drawing "Y82, Rev3, "Grading Sections 3", dated February 18, 1980 furnished by GRU. The slurry walls are shown constructed within the perimeter embankments and keyed into the existing natural clay layer. The top of the slurry wall was shown to be at approximately El. 184 feet NGVD 29. A compacted clay cut-off blanket was placed on the interior slopes of the perimeter embankments and it intersects the top of the slurry wall. Details regarding the design, materials used, and methods of constructing the slurry walls were not provided.

Drawings provided by GRU showing typical cross sections of the embankments are presented in **Appendix A-1.**

4.1.2 Significant Changes/Modifications in Design since Original Construction

The GRU representative indicated that there have not been significant changes or modifications to the design.

4.1.3 Significant Repairs/Rehabilitation since Original Construction

No evidence of prior releases, failures or remedial work was observed on the embankments during the CDM Smith visual assessment. There was no documentation provided that indicates any repairs or rehabilitation has occurred since the original construction.

4.2 Summary of Operational Procedures

4.2.1 Original Operating Procedures

The Process Water Ponds at the Deerhaven Plant have historically been used as settling ponds for plant wastes including:

- Industrial process water including sluiced bottom ash
- Limited amounts of fly ash conveyed to the process ponds during annual maintenance outage activities
- Limited amounts of boiler slag generated with bottom ash.
- Cooling tower blow down water
- Plant drains
- Plant runoff

4.2.2 Significant Changes in Operational Procedures and Original Startup

No significant changes in the operational procedures appear to have been made to the Process Water Ponds. There was no documentation provided that indicates there have been any changes in operation procedures since start-up.

4.2.3 Current CCW Impoundment Configuration

Current operational procedures of the Process Water Ponds are consistent with the original operating procedures. The Process Water Ponds are currently divided into four cells as previously described and as shown on **Figure 2-3.** The approximate crest elevations of the embankments and impoundment areas are shown in **Table 4-1.**

During normal plant operations, most of the residual ash sedimentation occurs in Ash Cell #1. Ash sluice water is conveyed to Ash Cell #1. Ash Cell #1 and Ash Cell #2 are hydraulically connected by a corrugated HDPE pipe, approximately 12 inches in diameter. The outlet structures for Ash Cells #1 and #2 consist of concrete drop structures with stop logs. Ash Cells #1 and #2 outlets discharge decant water to Pump Back Cells #1 and #2, respectively. Decant water is pumped from Pump Back Cells #1 and #2 to the plant for reuse in plant operations.

Table 4-1 – Approximate Embankment Crest Elevations and Pond Surface Areas

Ash Pond	Approximate Embankment Crest Elevation (Feet)	Approximate Pond Surface Area (Acres)
Ash Cell # 1	195	2.75
Ash Cell #2	195	2.75
Pump Back Cell #1	188	0.6
Pump Back Cell #2	188	0.6

Water flows from the Ash Ponds to the Pump Back Cells through a 12-inch-diameter ductile iron pipe. Flow is controlled with 12-inch-diameter butterfly valves located in the stop log structures. The reported elevation of the 12-inch-diameter butterfly valve is 178' AMLS.

4.2.4 Other Notable Events since Original Startup

No additional information was provided to CDM Smith regarding other notable events that have impacted operations and /or regular maintenance and inspection of the Process Water Ponds.

Section 5
Field Observations

5.1 Project Overview and Significant Findings (Visual Observations)

CDM Smith performed visual assessments of the CCW impoundments at the GRU Deerhaven Plant. The CCW impoundments assessed included the Process Water Ponds. The Process Water Ponds are comprised of Ash Cell #1, Ash Cell #2, Pump Back Cell #1, and Pump Back Cell #2. The assessments were completed following the general procedures and considerations contained in the Federal Emergency Management Agency (FEMA) Federal Guidelines for Dam Safety (April 2004). These guidelines apply to management practices for dam safety of all Federal agencies responsible for planning, design, construction, operation, or regulation of dams and have been used throughout EPA's CCW Dam Assessment as a consistent and conservative approach to dam safety. A Coal Combustion Dam Inspection Checklist and Coal Combustion Waste (CCW) Impoundment Inspection Form, developed by the USEPA, were completed for the impoundments. Copies of the completed forms are included in **Appendix B**. The locations of photographs that were taken during our field assessments are shown on **Figures 5-1A and 5-1B**, and these photographs are included in **Appendix C**. The locations of the photographs were logged using a handheld GPS device, and the coordinates are also listed in Appendix C.

CDM Smith visited the plant on August 28 and 29, 2012, to conduct visual assessments of the CCW impoundments. The weather was generally cloudy with daytime high temperatures up to 80 degrees Fahrenheit. The daily precipitation for one week and total precipitation for one month immediately prior to our site visit are shown in **Table 5-1**. These data were recorded at the St. Johns River Water Management District, Station 00260033, at the Alachua County Fairgrounds in Gainesville, Florida, which is approximately 8.25 miles southeast of the Deerhaven Plant.

Table 5-1 – Approximate Precipitation Prior to Site Visit

Dates of Site Visit – August 28 and 29, 2012		
Day	**Date**	**Precipitation (inches)**
Monday	August 27	0.82
Sunday	August 26	0.22
Saturday	August 25	0.00
Friday	August 24	0.01
Thursday	August 23	0.03
Wednesday	August 22	0.00
Tuesday	August 21	1.65
Total	**Month Prior to Site Visit (July 28 to August 27, 2012)**	**10.91**

Note: Precipitation data from www.webapub.sjrwmd.com. Station Location: Alachua County Fairgrounds (00260033) at Gainesville, Florida. Lat. 29.682856; Lon.-82.284769; EL. 158 feet

CDM Smith

FIGURE 5-1A
PHOTOGRAPHIC LOCATION PLAN
GAINESVILLE REGIONAL UTILITIES - DEERHAVEN POWER PLANT
DEERHAVEN, FLORIDA

CDM Smith

0 100 200 400 600 800 Feet

FIGURE 5-1B
PHOTOGRAPHIC LOCATION PLAN
GAINESVILLE REGIONAL UTILITIES - DEERHAVEN POWER PLANT
DEERHAVEN, FLORIDA

5.2 Process Water Ponds

At the time of the assessment, Ash Cell #1 and Ash Cell #2 contained residual ash and water with approximately 1 foot and 4 feet of freeboard, respectively. It was indicated by plant personnel that Ash Cell #1 had been dredged once or twice to remove accumulated ash. It is not currently known if the other cell had been dredged. It was not readily visible if Pump Back Cell #1 and Pump Back Cell #2 contain residual ash. Each of these cells had approximately 3 feet of freeboard.

5.2.1 Crest

The crest of the perimeter embankments and divider embankments appeared to be in fair condition (Photographs 13-15, 22-25 and 38). Signs of previously repaired scarps and erosion areas were observed at the crest of the northwest embankment of the Ash Cell #2. The crests were typically 25 feet wide. The crest of the embankments has paved surfaces with exposure to limited vehicle traffic during normal operations. In general, no major cracks or evidence of settlement were observed on the crests of any of the embankments. Minor depressions and areas of erosion were observed near Ash Cell #2 on the northwest embankment (Photographs 26 and 27).

A concrete u-shaped channel structure and metal grates located on the northeast side of the divider embankment between Ash Cell #1 and Ash Cell #2 protect the inlet pipes that extend from the plant (Photographs 41 and 42). A small cave-in of the pavement behind Ash Cell #2 inlet pipe concrete structure (Photographs 34 and 35) was observed. A pump house and pump system is located near the east corner of the southeast embankment of Pump Back Cell #1 (Photographs 8 and 9). Inlet pipes are located at the divider embankment between Ash Cells #1 and #2 (Photographs 40 and 43).

5.2.2 Interior Slopes

The interior slopes of the cells appear to be in fair condition with riprap armoring (Photographs 38, 42, 46 and 47) and sparse vegetative cover. The interior slopes appeared to have a slope of approximately 3H: 1V. Discontinuities and eroded areas (Photographs 28, 29, and 31) were observed along the interior slopes of the northwest embankment at Ash Cell #2.

5.2.3 Exterior Slopes

The exterior slopes appear to be in satisfactory condition. The exterior slopes of the embankments are approximately 4H:1V. They have a grass cover that was approximately 6 to 8 inches high at the time of the visual assessment (Photographs 1, 3, 7, 76, 77, and 79). At some areas on the northwest embankment, the grass cover was somewhat higher (Photographs 83, 84 and 86). Some saturated areas were observed along the toe of the slope of the southwest embankment (Photograph 2 and 78) and the northwest embankment (Photographs 82 and 85). A runoff swale is located at the toe of slope of the southeast embankment of Pump Back Cells #1 and #2 (Photographs 3, 10 and 11). It was difficult to determine if these wet areas were caused by seepage or the relatively heavy rainfall prior to our assessments as described in Section 5.1. Based on the embankment height, embankment geometry and surface water elevation, these areas could potentially be due to seepage. Based on review of drawings the perimeter embankments were constructed with a cutoff slurry wall, keyed into the existing natural clay layer (as discussed in Section 4). It is noted however that the top of slurry wall was shown to be at elevation 184 and the observed water level in Ash Cell #1 was about elevation 194 during the condition assessment.

Minor erosion rills were observed on the exterior slope of the southeast embankment of Pump Back Cell #1 (Photographs 5 and 6). An animal burrow was observed on the northwest embankment of Ash Cell #1 (Photograph 80).

5.2.4 Outlet Structures

The outlet structures for the Ash Cells #1 and #2 consist of concrete drop structures with stop logs (Photographs 30, 32 and 33). We understand that these cells are hydraulically connected to Pump Back Cells #1 and #2 and the decant water is pumped back to the plant for reuse. Other details about the outlet structures are not known. The Process Water Ponds are part of a zero-discharge facility; therefore, there is not a general outlet/discharge structure.

5.3 Additional Unit Observations

An additional unit, the Coal Stockpile Runoff Collection Pond, was identified during our visual assessments at the plant. The GRU representative indicated this unit was not part of the CCW impoundments and is not used to store CCW.

Another unit observed was the Ash Dry Stack Landfill Area that receives and stores the ash that results from the plant operation. Reportedly, the landfill receives boiler ash, bottom ash, and fly ash.

5.3.1 Coal Stockpile Runoff Collection Pond

The Coal Stockpile Runoff Collection Pond receives all runoff collected in a swale located north of the coal stockpile and from ditches that extend along the east, south and west sides of the coal stockpile (Photographs 50, 53 and 55). The crest of the perimeter embankments appears to be in fair condition, and they are grass covered with some tire ruts (Photographs 49, 56, 57, 63 and 64).

The interior slopes are riprap armored and appear to have 3H:1V slopes (Photograph 51 and 52). A pump station is located near the southwest corner of the impoundment (Photograph 58).

Exterior slopes appear to be approximately 4H:1V and are covered with grass that is about 6 to 12 inches high. No signs of depressions, cracks, bulging or discontinuities were observed. Animal burrows were not observed along the embankments.

Two, 24-inch-diameter corrugated metal outlet pipes (Photographs 59, 61 and 62) are located on the west embankment. Water was not flowing from these outlet pipes at the time of our visual assessment and they appeared to be blocked.

Surrounding areas to the west and southwest of the Coal Stockpile Runoff Collection Pond had relatively low and standing water (Photograph 66).

5.3.2 Ash Dry Stack Landfill Area

The Ash Dry Stack Landfill Area, located west of the Process Water Ponds, receives the ash produced by the Deerhaven Plant operations. At the time of the assessment the Ash Dry Stack Landfill Area was undergoing improvements. Based on visual observations, the landfill area appears to be in fair condition. The south embankment of the landfill appears to have a 4H:1V slope (Photograph 72). Small ash stockpiles were observed within the landfill area (Photographs 73 to 74).

Section 6
Hydrologic/Hydraulic Safety

6.1 Impoundment Hydraulic Analysis

The State of Florida does not currently have requirements related to the hydrologic or hydraulic design of CCW impoundments. FEMA standards require impoundments to have the capacity to store some percentage of the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10-square-mile area in the vicinity of the site. Low hazard structures are required to store precipitation of a 100-year storm event. The 100-year storm event in the vicinity of the site over a 6 -hour period is approximately 8.6 inches. The drainage area contributing to the impoundments at this site appears to be limited to the storage area within the impoundments. Preliminary evaluations by CDM Smith indicate that there is enough storage capacity and freeboard in the impoundments at the current operating pools to safely store a 100-year storm event without being overtopped. CDM Smith did not observe emergency overflow spillways at the impoundments.

6.2 Adequacy of Supporting Technical Documentation

Hydrologic and hydraulic documentation and/or PMP analyses were not provided by GRU for CDM Smith to review.

6.3 Assessment of Hydrologic/Hydraulic Safety

Hydrologic and hydraulic safety of the management units appears to be fair based on the following:

- Reportedly, overtopping of the embankments has never occurred. During our visual observations and site assessments, no signs of plugged, collapsed or blocked pipes, or other detrimental hydrologic/hydraulic conditions were observed at the Process Water Ponds.
- No signs of recent cracks, major scarps, and erosion were observed on the perimeter embankments, or the divider embankments. Signs of previously repaired scarps and erosion areas were observed at the crest of the northwest embankment of the Ash Cell #2.
- At least 1 foot of freeboard at Ash Cell #1, 4 feet at Ash Cell #2, and 3 feet at the Pump Back Cells were observed at the time of the assessments.

Hydrologic/hydraulic documentation or PMP analyses were not provided therefore the Process Water Ponds are rated as poor. EPA requirements state that "if a facility has not conducted hydrologic, static and seismic engineering studies following best professional engineering practice to support factors of safety, the facility must be rated poor".

Section 7
Structural Stability

7.1 Supporting Technical Documentation

The Gainesville Regional Utilities did not provide CDM Smith with slope stability analyses or technical documentation to support the embankments' structural stability. Following the issuance for comment of the draft report to GRU by EPA, EPA allowed 8 weeks for GRU to provide slope stability analyses or technical documentation to support the embankments' structural stability. EPA feels that quantitative slope analyses are essential in determining the condition of an above-ground CCW surface impoundment. EPA was not provided with this documentation.

7.1.1 Stability Analyses and Load Cases Analyzed

Currently the State of Florida does not have regulations regarding CCW impoundments. Procedures established by the United States Army Corps of Engineers (USACE), the United States Bureau of Reclamation, the Federal Energy Regulatory Commission, and the Natural Resources Conservation Service are generally accepted engineering practice. Minimum required factors of safety outlined by the USACE in EM 1110-2-1902, Table 3-1 and seismic factors of safety by FEMA Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams (pgs. 31, 32 and 38, May 2005) are provided in **Table 7-1**.

Table 7-1 - Minimum Safety Factors

Load Case	Minimum Required Factor of Safety
Steady-State Condition at Normal Pool or Maximum Storage Pool Elevation	1.5
Rapid Drawdown Condition from Normal Pool Elevation	1.3
Maximum Surcharge Pool (Flood) Condition	1.4
Seismic Condition at Normal Pool Elevation	1.1
Liquefaction	1.3

Notes: Above safety factors are based on requirements established by the USACE. Required safety factors have not been established by the State of Florida for CCW impoundments.

7.1.2 Design Parameters and Dam Materials

General soil properties and soil parameters used for the slope stability or design of the embankments were not provided to CDM Smith for review.

7.1.3 Uplift and/or Phreatic Surface Assumptions

Since no stability analyses were provided, uplift and/or phreatic surface assumptions were not available.

7.1.4 Factors of Safety and Base Stresses

Factors of safety and base stresses were not available for review.

7.1.5 Liquefaction Potential

Documentation provided by GRU did not include evaluation of liquefaction potential.

7.1.6 Critical Geological Conditions

Based on the U. S. Geological Survey Map, *Sinkhole Type, Development, and Distribution in Florida,* 1985, prepared in cooperation with the Florida Department of Environmental Regulation, Bureau of Water Resources Management and the Florida Department of Natural Resources, Bureau of Geology, there are four generalized areas of different types of sinkhole occurrence in Florida. The Deerhaven Plant is located near the boundary of two of these types of sinkholes. Area I has a bare or thinly covered limestone formation. Sinkholes in these areas are few, generally shallow and broad, and develop gradually. In these areas solution sinkholes dominate. Area III has a cover over the limestone that is generally between 30 to 200 feet thick and it consists mainly of cohesive clayey sediments of low permeability. Sinkholes are most numerous; they vary in size, and can develop abruptly. Cover collapse sinkholes are predominant in the area.

Based on the 2008 USGS National Seismic Hazard Map, a Peak Ground Acceleration (PGA) of 2% probability of exceedance in 50 years indicates that Florida is in the lowest hazard potential area for seismic activity.

7.2 Adequacy of Supporting Technical Documentation

Structural stability and liquefaction documentation has not been provided.

7.3 Assessment of Structural Stability

Existing conditions and visual observations yield a poor rating for structural stability of Process Water Ponds based on the following:

- It is not known if critical studies or investigations have been performed to confirm that potential safety deficiencies do not exist.

Stability analyses on different cross sections representing the typical embankments and liquefaction analyses are required in order to obtain a FAIR rating for structural stability. These types of analyses were not provided.

Because of the lack of documentation and analyses the assessed rating is poor. A poor rating is assigned when a dam safety deficiency is recognized for loading conditions that may realistically occur and remedial action is necessary. Also, if a facility has not conducted static and seismic engineering studies following the best professional engineering practice to support factors of safety, the facility must be rated as poor.

Section 8

Adequacy of Maintenance and Methods of Operation

8.1 Operating Procedures

As described in Section 2, the Process Water Ponds (formerly known as the Ash Ponds) are divided into four cells: Ash Cell #1, Ash Cell #2, Pump Back Cell #1 and Pump Back Cell #2. Wastewater enters Ash Cell #1 and #2 through 15-inch-diameter steel pipes. Decant water then flows to the Pump Back cells and is then pumped back to the plant for reuse. GRU provided and CDM Smith reviewed a copy of the Deerhaven Generating Station Emergency Facility Response Plan 1.1(**Appendix A-2**). Based on CDM Smith's review, the plan does not address potential emergency conditions that may arise due to failure or misoperation of the CCW impoundments. Surface flow diagrams of the Plant, indicating the likely flow direction of spills or discharges associated with equipment failure do not include the CCW impoundments.

8.2 Maintenance of the Dam and Project Facilities

GRU provided no documentation on procedures or records of maintenance operations for the Process Water Ponds. According to a plant representative, inspections occur on a daily basis during the regular plant operation walk–around. Records of these daily inspections were not provided. A copy of the Process Plant Ponds Level Log, for the week of June 9, 2013, was provided to CDM Smith. The log included documentation of pond levels, time the readings were taken, and operator remarks and were initialed by the operator that recorded the information. Records of daily inspections were not provided.

8.3 Assessment of Maintenance and Methods of Operations

8.3.1 Adequacy of Operating Procedures

GRU provided an undated copy of Gainesville Regional Utilities, Deerhaven Generating Station, "Standard Operating Procedure: Pond Best Practices" (SOP). The SOP **(Appendix A-2)** discusses frequency of pond level checks; states that one pond is designated to be a bottom ash impoundment only and one is to be the destination for plant drains, blowdown, filter backwash waste, process plant building sump, and landfill runoff and coal pile runoff; but does not identify individual ponds by name, does not include site plans or flow diagrams, and does not assign individual or department responsibility for pond level checks. Maximum and minimum pond levels are defined in the SOP. The SOP requires the individual checking the pond levels to report overflows, high level conditions, or out-of-ordinary flows to the shift supervisor for investigation. Based on CDM Smith's visual observations and the verbal information provided by GRU, the operating procedures are considered to be inadequate because written documentation is lacking details including assignment of responsibilities and does not address maintenance of the impoundments.

8.3.2 Adequacy of Maintenance

No major maintenance issues that compromise the structural stability and operation of the Process Water Ponds were identified. However, based on the minor deficiencies described in Section 4, maintenance procedures are rated as inadequate.

Section 9

Adequacy of Surveillance and Monitoring Program

9.1 Surveillance Procedures

According to a plant representative, inspections occur on a daily basis during the regular plant operation walk–around. CDM Smith was not provided with inspection logs or inspection reports that that support this statement. GRU provided an undated copy of Gainesville Regional Utilities, Deerhaven Generating Station, "Standard Operating Procedure: Pond Best Practices" (SOP). The SOP discusses frequency of pond level checks; states that one pond is designated to be a bottom ash impoundment only and one is to be the destination for plant drains, blowdown, filter backwash waste, process plant building sump, and landfill runoff and coal pile runoff; but does not identify individual ponds by name, does not include site plans or flow diagrams, and does not assign individual or department responsibility for pond level checks. Maximum and minimum pond levels are defined in the SOP. The SOP requires the individual checking the pond levels to report overflows, high level conditions or out of ordinary flows to the shift supervisor for investigation.

9.2 Instrumentation Monitoring

According to Regina Embry, representative of GRU, several monitoring wells are installed around the site and groundwater monitoring is recorded on a regular basis. CDM Smith observed one monitoring well on the southeast embankment of the Process Water Ponds. At CDM's request, GRU provided 2012 and 2013 quarterly Groundwater Monitoring Reports for thirteen on-site wells. A copy of a representative report (First Quarter of 2013) is included in **Appendix A-2**. The quarterly reports submitted provided data for a single day each quarter. While the data provided include a groundwater elevation reading, this limited information is insufficient for monitoring and/or evaluating potential seepage conditions.

The Process Water Pond embankments do not have an instrumentation monitoring system to monitor structural stability, seepage, or ground displacement.

9.3 Assessment of Surveillance and Monitoring Program

9.3.1 Adequacy of Inspection Programs

Based on our visual observations and verbal information provided by GRU during the site assessment, the inspection program appears to be inadequate due to the lack of written documentation on regular maintenance issues and surveillance of the Process Water Ponds. No condition that needs immediate remedial action was observed. Based on CDM Smith's visual observations and the verbal information provided by GRU, the operating procedures are considered to be inadequate because written documentation is lacking details including assignment of responsibilities and does not address maintenance of the impoundments.

9.3.2 Adequacy of Instrumentation Monitoring Program

Saturated areas at the toe of Ash Cell #1's northwest and southwest embankments were observed. This condition indicates potential seepage may be occurring, however conditions or indications of potential failure of the embankments were not observed during CDM Smith's visual assessment.

An earth embankment that is safe under current conditions may not be safe in the future if conditions change. Conditions that may change include changes in the phreatic surface, embankment deformation, or changes in seepage patterns. Therefore, an instrumentation monitoring program to monitor structural stability, seepage, or ground movement is recommended. The current instrumentation monitoring program is inadequate.

Section 10
Reports and References

The following is a list of reports and drawings that were provided by GRU that were used during the preparation of this report and the development of the conclusions and recommendations presented herein.

1. Subsurface Information for Deerhaven Generation Station Site, prepared by Burns & McDonnell, 1978

2. Deerhaven Generation Station Topography (CAD File 331F2-5.DWG), prepared by Applied Technology & Management, October 06, 1993

3. Deerhaven Generation Station, Unit 2, Construction Drawings, Yard Utilities, Drawing No. U9-4, by Burns & McDonnell, February 18, 1980

4. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Plan 7, Drawing No. Y70 - 3, by Burns & McDonnell, July 1, 1981

5. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Sections 1, Drawing No. Y80, by Burns & McDonnell, July 1, 1981

6. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Sections 2, Drawing No. Y81, by Burns & McDonnell, July 1, 1981

7. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Sections 3, Drawing No. Y82 -3, by Burns & McDonnell, February 15, 1980

8. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Sections 3, Drawing No. Y82, by Burns & McDonnell, July 1, 1981

9. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Sections 4, Drawing No. Y83, by Burns & McDonnell, July 1, 1981

10. Deerhaven Generation Station, Unit 2, Construction Drawings, Grading Details 3, Drawing No. Y87 - 1, by Burns & McDonnell, February 18, 1980

11. GRU Quarterly Groundwater Monitoring Results, 2012 and 2013

12. Site Certification Application Deerhaven Station Unit 2 Volume 1

13. Chapter 4 Environmental Effects of Construction

14. Chapter 5 Environmental Effects of Plant Operation

15. Chapter 6 Environmental Measurements and Monitoring Programs

16. Chapter 7 Economic and Social Effects of Construction and Operation

17. Chapter 8 Alternate Energy Sources and Sites

18. Chapter 9 Plant Design and Discharge Alternatives

19. Burns & McDonnell GRU-Deerhaven-Pond Design Notes

20. Contract Package 29C - Yard Structures

21. Deerhaven Generating Station, Emergency Response Plan, July 2007

22. Deerhaven Generating Station Process Plant Ponds Level Log (6/9/13 to 6/18/13)

23. Deerhaven Generating Station, Standard Operating Procedure: Pond Best Practices

24. Deerhaven Generating Station, Emergency Response Procedure (Facility Response Plan 1.1)

Appendix A

Geotechnical Data

Subsurface Information

for the

Deerhaven Generating Station Site

Near

Hague, Florida

for the

City of Gainesville, Florida

Deerhaven Unit 2

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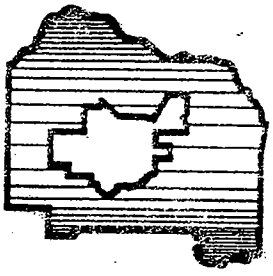
1978

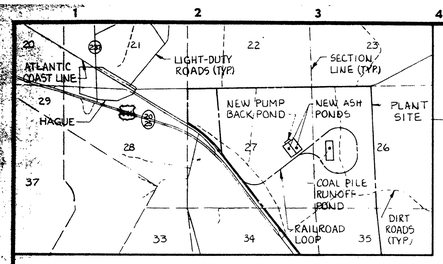
76-077-1

10



Gainesville
Alachua County
Regional Electric
Water & Sewer
Utilities Board

904-374-2910



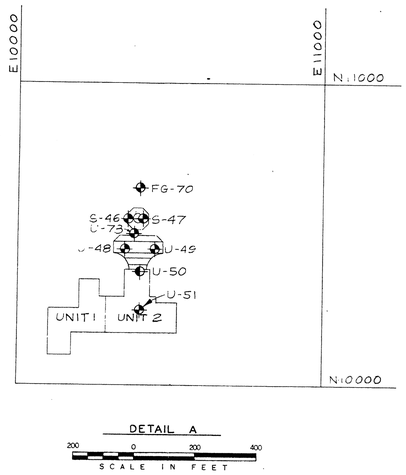
VICINITY MAP

LEGEND

EXISTING		THIS CONTRACT
180	CONTOURS	
	ROADS	
	STRUCTURES	
	FENCES	
	PROPERTY LINE	
	TRAIL	
	RAILROAD	
	SAMPLE BORING	
	SAMPLE BORING WITH PIEZOMETER	

BORING COORDINATES			
BORING NO.	N. COORD.	E. COORD.	ELEV.
L-1	N14000	E 6425	179
L-2	N13100	E6440	180
L-3	N12100	E6430	180
L-4	N14100	E7380	182
L-5	N13100	E 7400	183
L-6	N14050	E8350	185
L-7	N13150	E8380	185
AP-8	N12725	E8400	183
AP-9	N12550	E8800	182
AP-10	N12300	E8830	181
AP-11	N12000	E8450	182
AP-12	N12350	E8200	182
AP-13	N12380	E8500	183
RR-14	N10550	E6900	177
RR-15	N10950	E7730	177
RR-16	N11320	E7800	178
RR-17	N11700	E8200	180
RR-18	N12060	E8700	181
RR-19	N12460	E9200	182
RR-20	N12900	E9750	182
RR-21	N13180	E10375	187
RR-22	N12770	E10980	188
RR-23	N11620	E10900	187
RR-24	N11340	E10420	186
RR-25	N12050	E9100	178
TH-26	N12160	E11040	189
TH-27	N12220	E11080	189
TH-28	N12340	E11080	189
TH-29	N12280	E11065	189
SH-30	N12000	E10700	187
CS-31	N12220	E10470	187
CS-32	N12000	E10500	187
CS-33	N11800	E10500	187
CS-34	N11600	E10500	187
CH-35	N11200	E10500	186
CC-36	N11000	E10500	184
CC-37	N10800	E10500	184
CC-38	N10600	E10500	184
CC-39	N10400	E10500	184
CT-40	N11080	E10590	185
CT-41	N11000	E10650	185
CT-42	N10920	E10590	185
CT-43	N10840	E10650	185
CT-44	N10760	E10590	185
CT-45	N10680	E10650	185
S-46	N10550	E10360	184
S-47	N10550	E10410	184
U-48	N10450	E10350	184
U-49	N10450	E10450	184
U-50	N10375	E10400	184
U-51	N10250	E10400	184
U-52	N10100	E10450	184
U-53	N10100	E10350	184
CP-54	NOT	DRILLED	
CP-55	N12600	E10100	188
CP-56	N12400	E10020	187
CP-57	N12400	E9800	185
CP-58	N12150	E10000	186

CP-59	N12150	E9800	185
CP-60	N11900	E9850	185
CP-61	N11900	E10000	186
RP-62	NOT	DRILLED	
RP-63	NOT	DRILLED	
RP-64	N11680	E8930	176
RP-65	N11150	E9100	178
FS-66	N11350	E9670	186
LH-67	N11150	E9680	182
C-68	N11140	E10250	184
WW-69	N11140	E10400	184
FG-70	N10650	E10400	184
FG-71	N10800	E10400	184
FG-72	N10950	E10400	184
U-73	N10500	E10380	184



DETAIL A

SCALE IN FEET

NO.	DATE	BY	REVISION
1			

DEERHAVEN GENERATING STATION UNIT 2

CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

BORING LOCATION PLAN

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DATE	1-31-78	DRAWING NO.	REV.
DESIGNED	J.J.Z.	1	—
DETAILED	S.M.K.	PROJECT	
CHECKED		SHEET OF	SHEETS

Subsurface Information

for the

Deerhaven Generating Station Site

Near

Hague, Florida

for the

City of Gainesville, Florida

Deerhaven Unit 2

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1978

76-077-1

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

LOG OF BORING NO. L-5 SHEET 1 OF 2

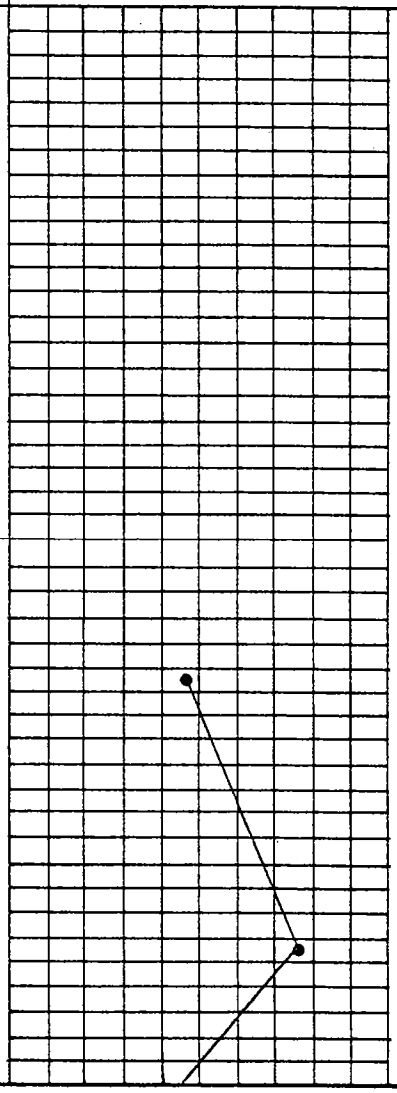
CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 13100, E 7400
GROUND ELEVATION: 183 MSL
DEPTH TO WATER IN BORING: 3.2 Ft.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/3/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Brown silty sand, very loose, fine grained, poorly graded, wet	2/2/2	
5		SS-2	-becomes medium dense below 7'	1/1/2	
		SS-3		5/7/9	
10					
		ST-4	Gray sandy clay with interbedded green silty clay, soft, friable, moist, some caliche fragments		
15			-with thin sand lenses throughout		
		ST-5	-with thin seams of very stiff clay below 18'		
20					

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



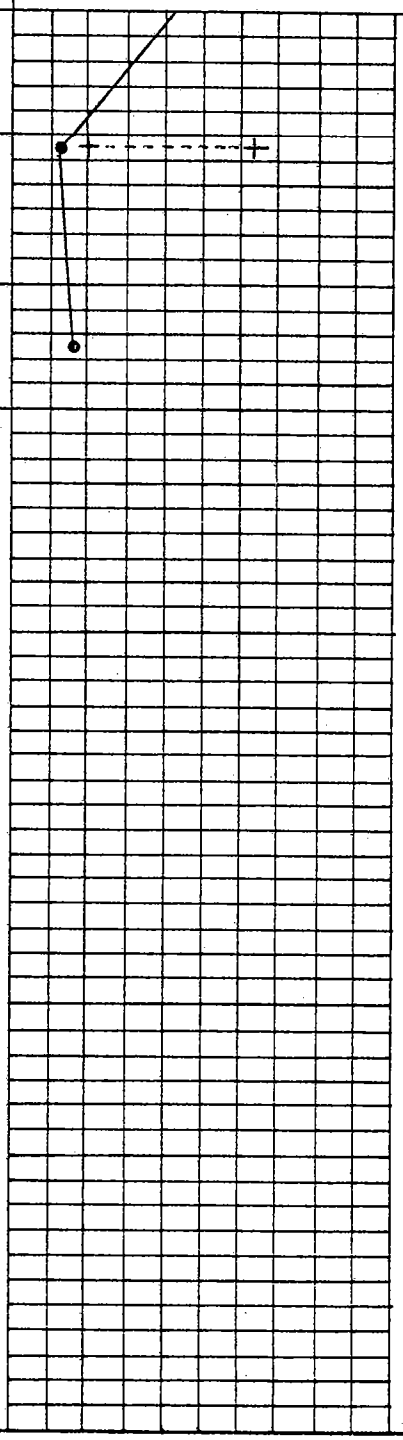
Burns & McDonnell
Engineers-Architects-Consultants

LOG OF BORING NO. L-5 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		ST-6			
25			Gray green silty clay, hard, damp, trace of sand		
		ST-7	Lt. gray and tan sandy clay, hard, damp, medium plasticity		113
30		TD			

COHESION. KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. L-7 SHEET 1 OF 2

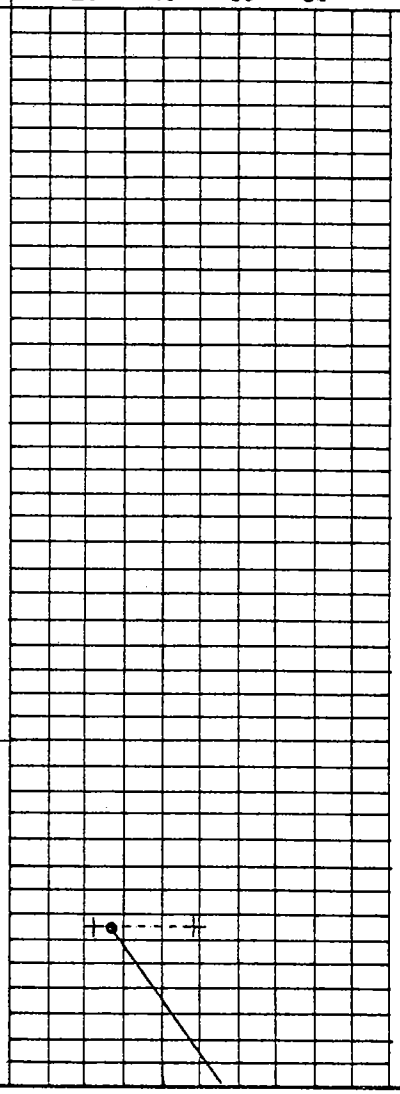
CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 13150, E 8380
GROUND ELEVATION: 185 MSL
DEPTH TO WATER IN BORING: 2.5 Ft.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/4/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Brown silty sand, loose, fine to medium grained, poorly graded, wet	3/2/3	
5		SS-2		2/1/3	
		SS-3	-becomes dark brown and med. dense below 8.5'	3/5/7	
10					
		SS-4	-dense with lower silt content below 13'	14/21/22	
15			Blue gray sandy clay, stiff, moist, friable some caliche nodules		
		ST-5			100
20					

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. L-7 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
25		ST-6			55
			-hard cemented seams ½' to 1' thick 25' to 26'		
		ST-7	Lt. gray sandy silt, damp, chalky, friable		79
30	TD				

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

LOG OF BORING NO. AP-8 SHEET 1 OF 2

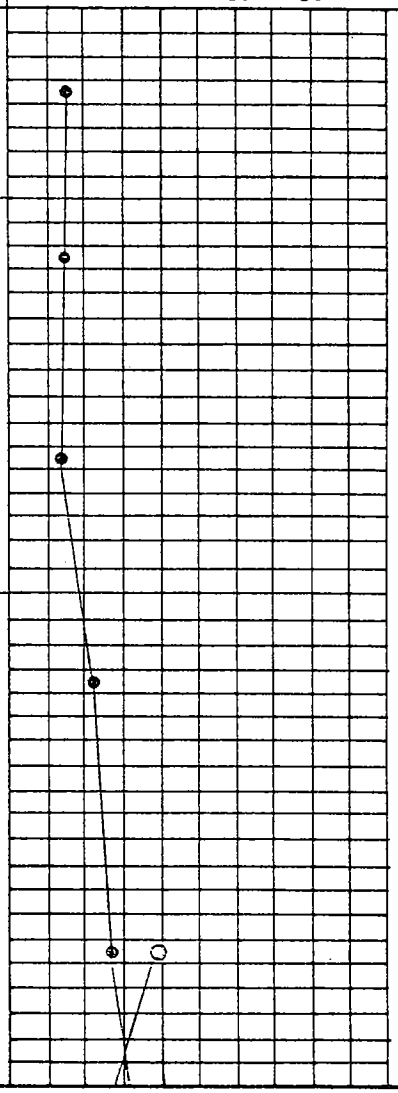
CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12725 , E 8400
GROUND ELEVATION: 183 MSL
DEPTH TO WATER IN BORING: N.D.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 1500
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/13/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: Not Measured
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		ST-1	Brown silty sand, loose fine grained, poorly graded, wet		98
5		SS-2	Lt. tan clayey sand, medium dense, fine to medium grained, poorly graded, moist	3/4/7	
		ST-3	-with lower clay content below 8.5'		115
10					
		ST-4	Blue green silty clay, some sand, very stiff, moist, medium plasticity		102
15			-with sand seams throughout		
		ST-5	-with some caliche nodules below 18'		97
20					

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. AP-8 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
25		ST-6	White clayey silt with caliche nodules, soft, moist, trace plasticity		82
		ST-7			85
30	TD				

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

LOG OF BORING NO. AP-9 SHEET 1 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12550, E 8800
GROUND ELEVATION: 182 MSL
DEPTH TO WATER IN BORING: 0.6 Ft.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/8/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/12/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Brown silty sand, loose, poorly graded, fine grained, wet	2/4/1	
5		SS-2		1/3/7	
		SS-3	-becomes dark brown with trace of medium sand below 8.5'	1/1/6	
10					
		SS-4	-Lt. tan and medium dense with increasing clay content below 13'	6/7/11	
15					
		SS-5	-gray below 15'	8/9/10	
20					

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

LOG OF BORING NO. AP-9 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT	COHESION, KIP/SQ FT (1 2 3 4) / PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT (20 40 60 80)
25		ST-6	Olive green and tan silty clay very stiff, damp, blocky structure, friable		51	
		ST-7	-with blue green silty clay seams and caliche nodules below 28'		74	
30						
	TD					

LOG OF BORING NO. AP-10 SHEET 1 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12300 , E 8830
GROUND ELEVATION: 181 MSL
DEPTH TO WATER IN BORING: Surface
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/8/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Lt. Gray silty sand, very loose, fine grained, poorly graded, wet	1/1/1	
5		SS-2	-medium dense with some clay 5' to 8'	2/4/7	
		SS-3	-dense with clay seams below 8'	8/14/17	
10					
		SS-4		8/17/24	
15					
		SS-5		14/12/14	
20			Blue green silty clay, very stiff, damp, trace of sand		

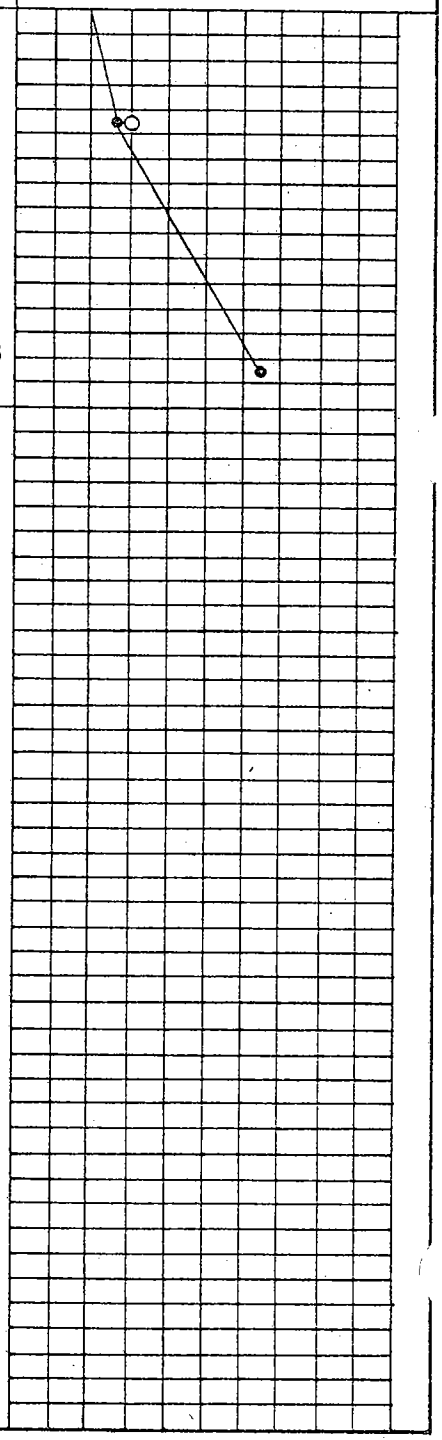
COHESION. KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

LOG OF BORING NO. AP-10 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
25		ST-6	Lt. Brown silty clay, hard, damp, with caliche nodules		95
		ST-7	-with 6" dark brown organic seam 29' - 29.5'		63
30	TD				

COHESION. KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. AP-11 SHEET 1 OF 2

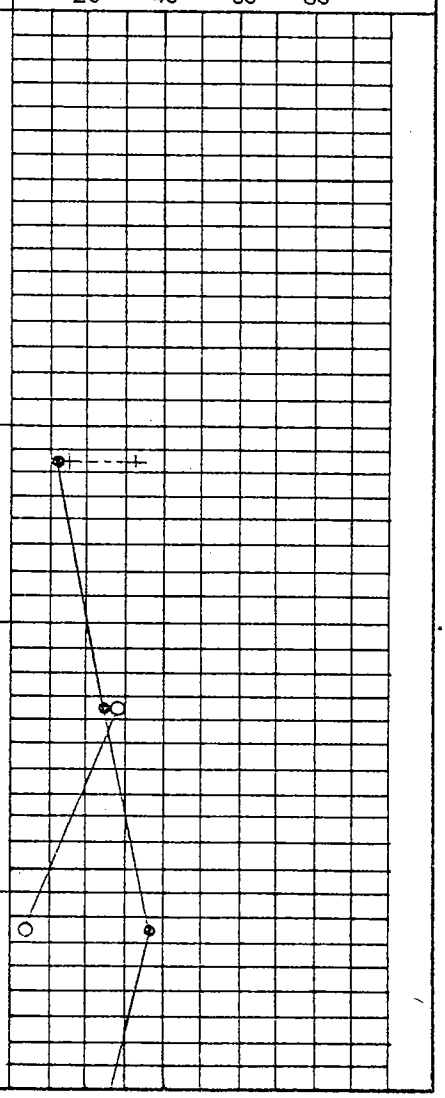
CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12000, E 8450
GROUND ELEVATION: 182 MSL
DEPTH TO WATER IN BORING: 2.7 Ft.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/6/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Brown silty sand, loose, poorly graded, fine grained, wet	2/3/2	
5		SS-2	-medium dense and gray with a trace of clay below 4.5'	3/5/8	
10		SS-3	Gray clayey sand, medium dense, moist trace plasticity	6/9/11	
15		ST-4	Blue gray sandy clay, very stiff, moist, with caliche nodules and ½" - 1" sand seams		101
20		ST-5	Gray green clayey silt, soft, wet, with fine sand and caliche, some marine shells and chert gravel		88

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. AP-11 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT	COHESION, KIP/SQ FT (1 2 3 4) / PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT (20 40 60 80)
25		SS-6	Badly weathered limestone, with interbedded soft caliche, moderately hard with well cemented seams, trace of gravel and marine shells	13/28/25 (3)		
		SS-7		8/16/37		
30	TD					

LOG OF BORING NO. AP-12 SHEET 1 OF 2

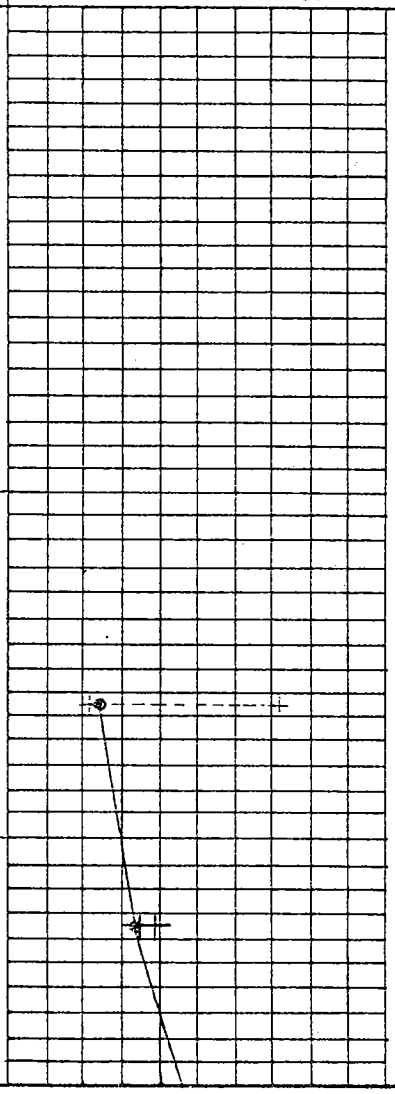
CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12350, E 8200
GROUND ELEVATION: 182 MSL
DEPTH TO WATER IN BORING: 2.6 Ft.
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/4 TO 12/5/77
COMPLETION DEPTH: 30.5 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Gray silty sand, very loose, poorly graded, fine grained, wet	1/1/1	
5		SS-2		2/2/3	
		SS-3	-becomes dense with trace of clay below 8'	6/10/15	
10					
		ST-4	Lt. gray silty clay, stiff, moist, with caliche nodules		103
15					
		ST-5	Lt. gray sandy silt, soft, damp, with some caliche and gravel		90
20					

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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LOG OF BORING NO. AP-12 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
25		ST-6	-hard cemented seam 26' to 27'		77
		ST-7	Blue gray silty clay, stiff, moist, medium plasticity		
30		SS-8	Badly weathered limestone, hard friable, chalky	9/50(11)	

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

LOG OF BORING NO. AP-13 SHEET 1 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

LOCATION: N 12380, E 8500
GROUND ELEVATION: 183 MSL
DEPTH TO WATER IN BORING: Surface
DRILLING COMPANY: WARE LIND ENGRS.
DRILLING RIG: FAILING - 750
DRILLING TYPE: WASH BORE

DRILLING DATE: 12/6/77 TO
COMPLETION DEPTH: 30 FT.
DATE WATER MEASURED: 12/10/77
DRILLERS: POWELL, BREWER
ENGINEERS: DURYEE, ZEY
HOLE SIZE: 4-INCH

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		SS-1	Brown and gray silty sand, med. dense, poorly graded, fine to medium grained, wet	4/5/10	
5		SS-2		7/9/20	
		SS-3	-with thin green silty clay seams below 8.5'	3/6/10	
10					
		SS-4	-dense below 13'	7/12/22	
15					
		SS-5	-with increasing number of clay seams below 18.5'	11/11/11	
20			Gray green silty clay, some sand, very stiff, moist, some sand seams		

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80

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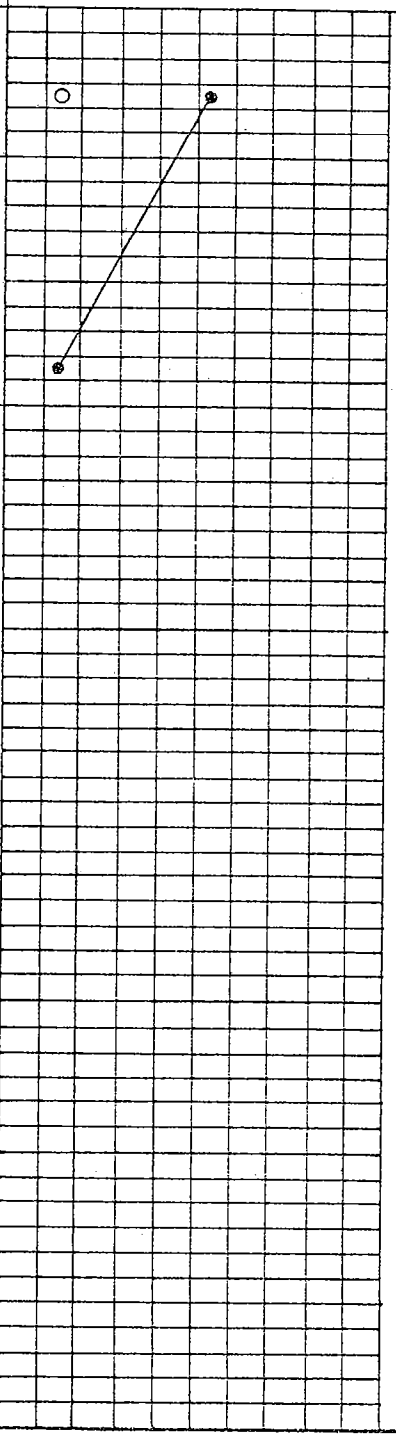
LOG OF BORING NO. AP-13 SHEET 2 OF 2

CITY OF GAINESVILLE, FLORIDA
DEERHAVEN UNIT NO. 2
PROJECT NO. 76-077-1

DEPTH, FT.	SYMBOL	SAMPLE NO.	DESCRIPTION OF MATERIAL	BLOW COUNT	UNIT DRY WEIGHT LB/CU FT
		ST-6	-brown and gray 23 - 25'		70
25		ST-7	Badly weathered limestone, broken hard seams interbedded with soft limey silt seams, some marine fossils		
30	T.D.				

COHESION, KIP/SQ FT
1 2 3 4
PLASTIC LIMIT — WATER CONTENT, % — LIQUID LIMIT
20 40 60 80



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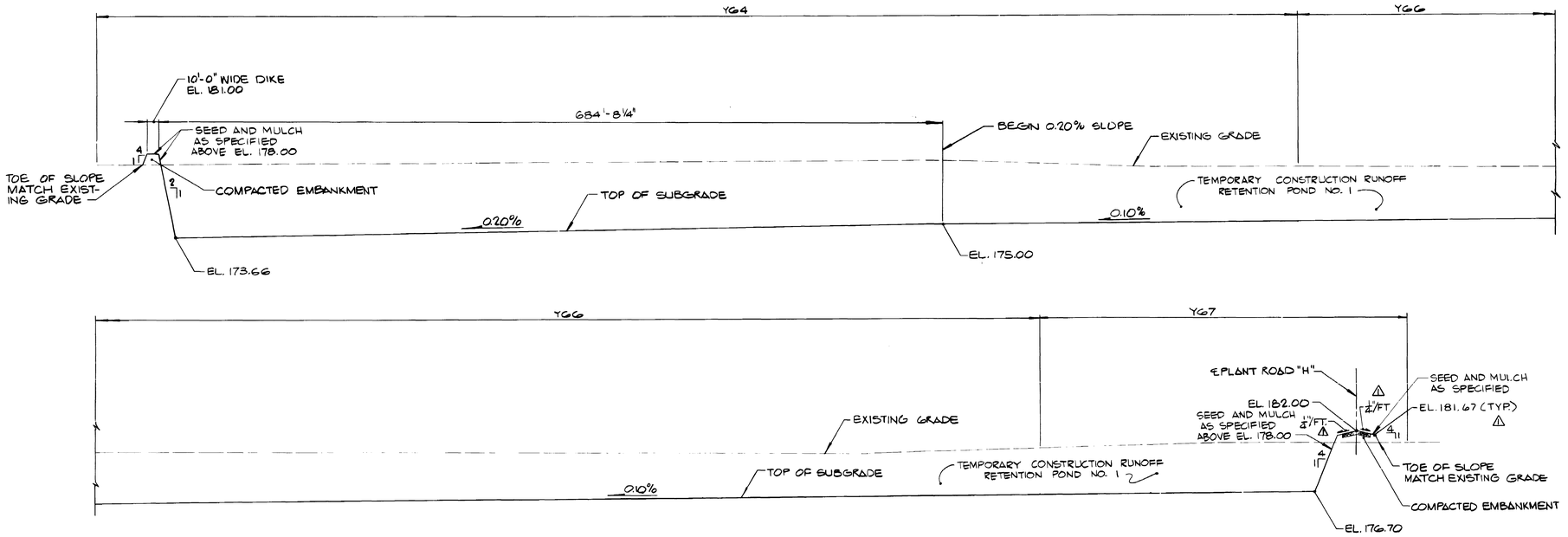
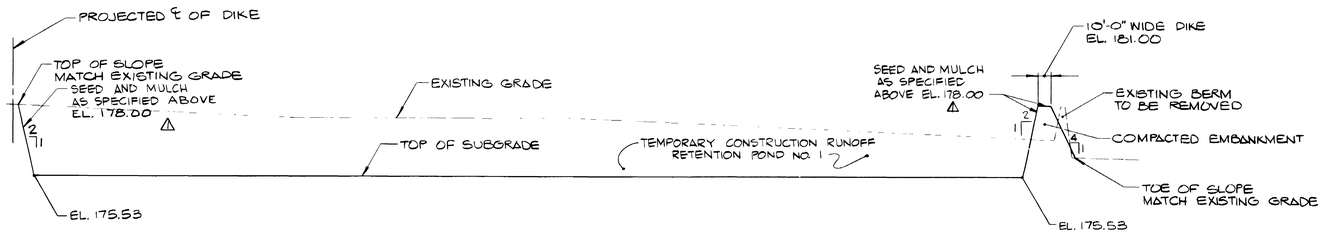
Appendix A-1

Drawings



SECTION 64-A-80
NOT TO SCALE



SECTION 66-B-80
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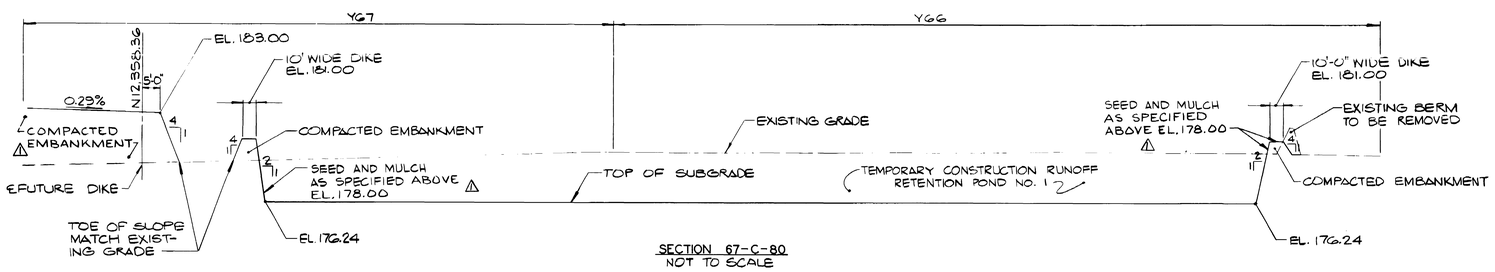

SECTION 67-C-80
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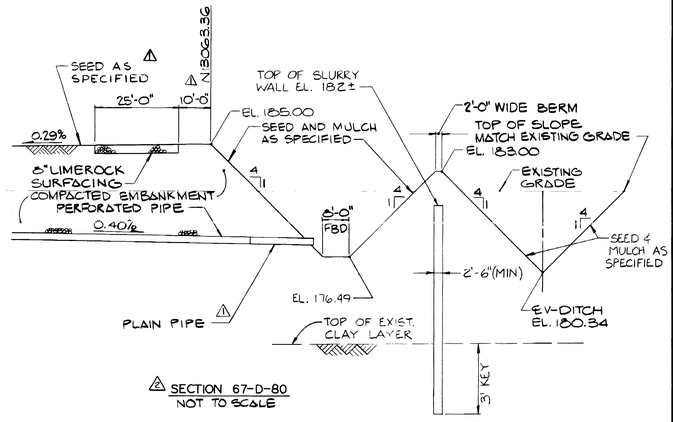
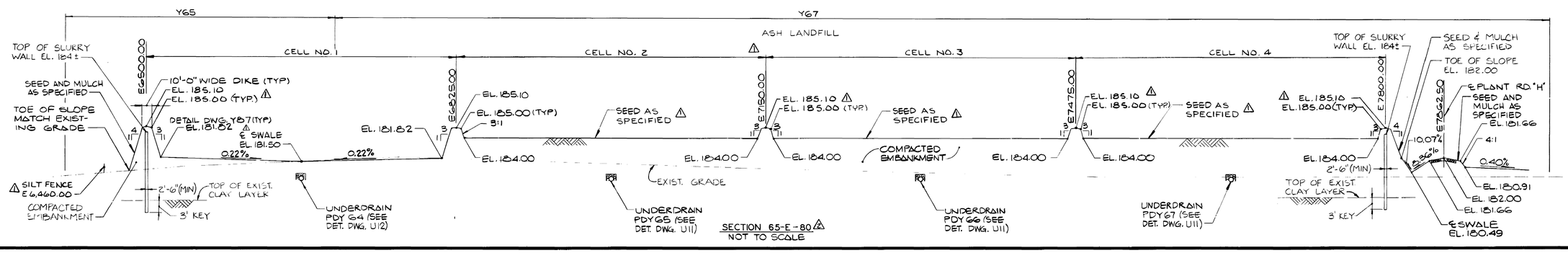


SECTION 67-D-80
NOT TO SCALE



SECTION 65-E-80
NOT TO SCALE

NO.	DATE	BY	REVISION
1	4-3-80	MBB	REVISED PER ADDENDUM NO. 2 & 3
	4-7-80	MBB	REVISED FOR CLARIFICATION COORD. LINE.
	4-22-80	DMZ	ISSUED AS BID
2	6-13-80	GWB	REVISED PER ALTERNATE BIDS NO. 3 & NO. 4
	6-24-80	DMZ	ISSUED
	7-1-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

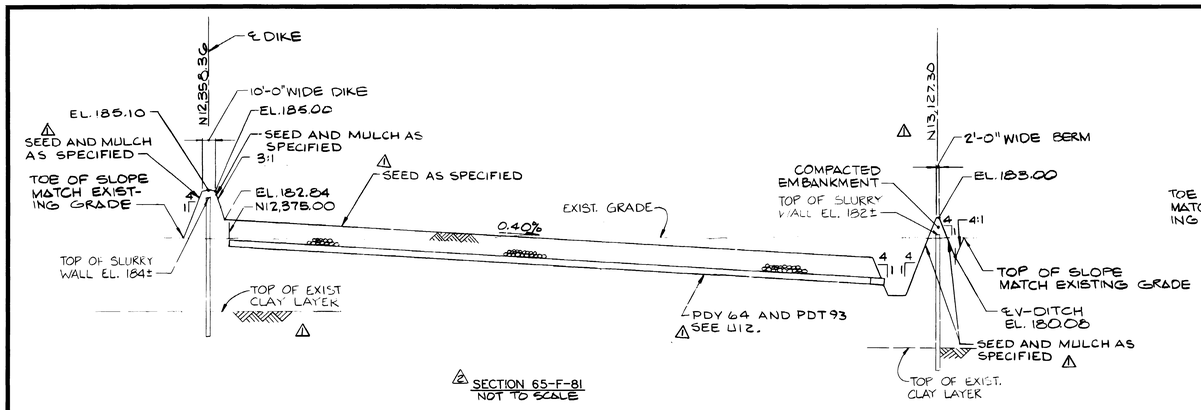
CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

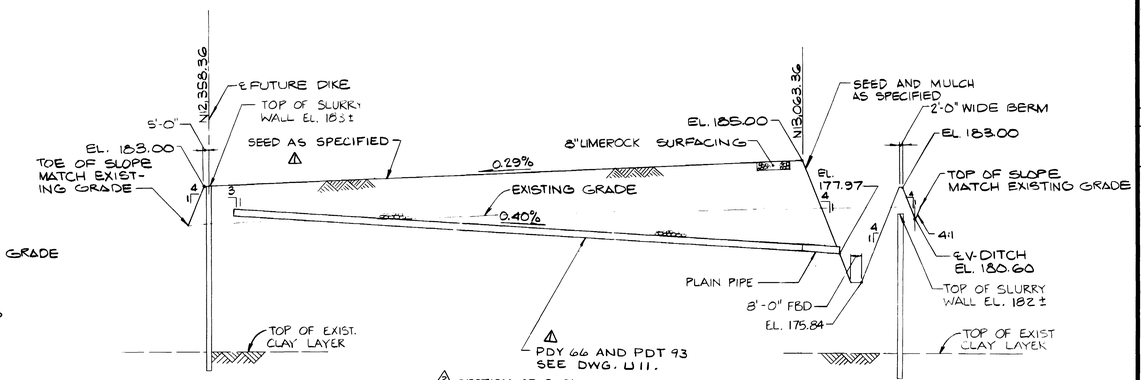
GRADING SECTIONS 1

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

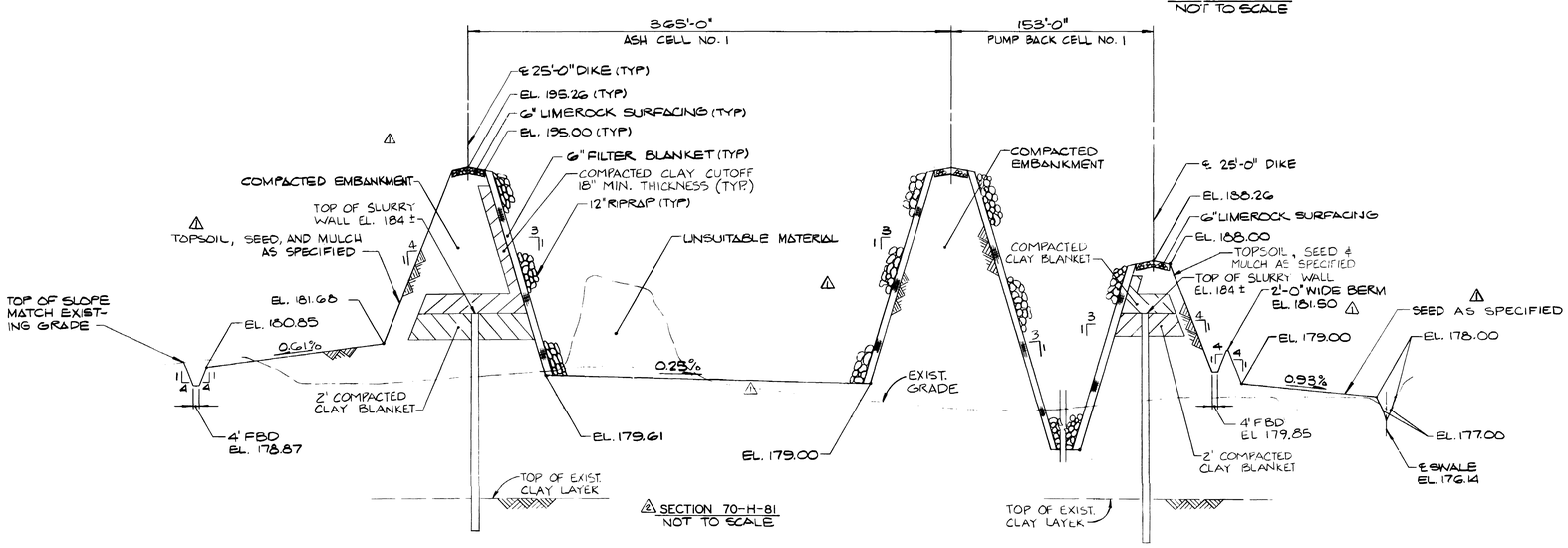
DATE FEB. 18, 1980	DRAWING NO. Y80 — 2 REV.
DESIGNED HUTCHESON	
DETAILED MADDOCK	PROJECT 76-077-1
CHECKED DJMZ	SHEET OF SHEETS



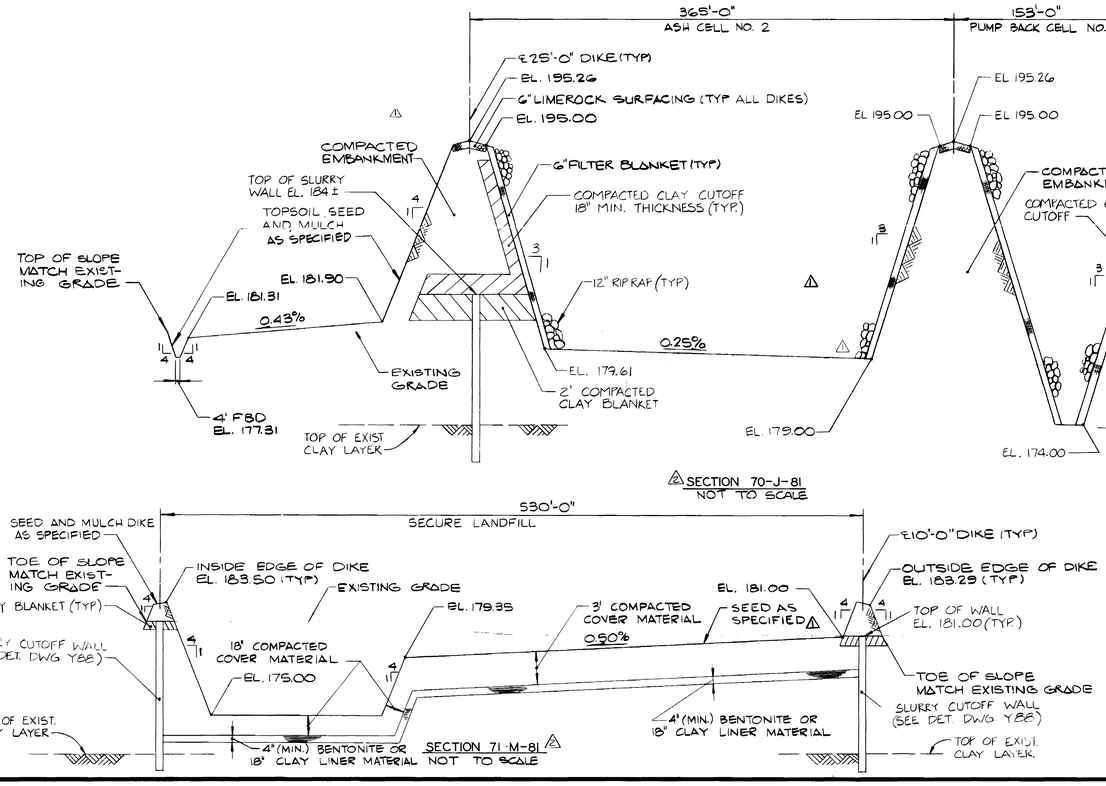
SECTION 65-F-81
NOT TO SCALE



SECTION 67-G-81
NOT TO SCALE

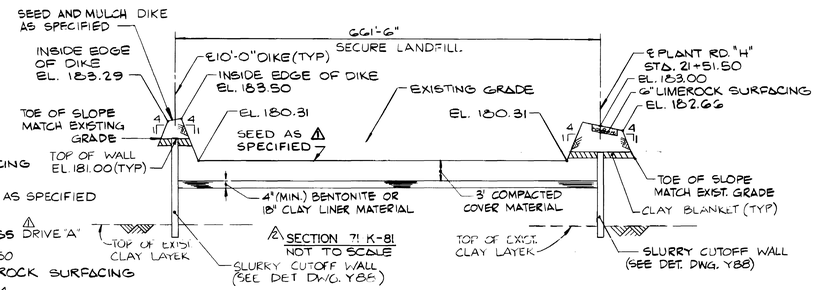


SECTION 70-H-81
NOT TO SCALE

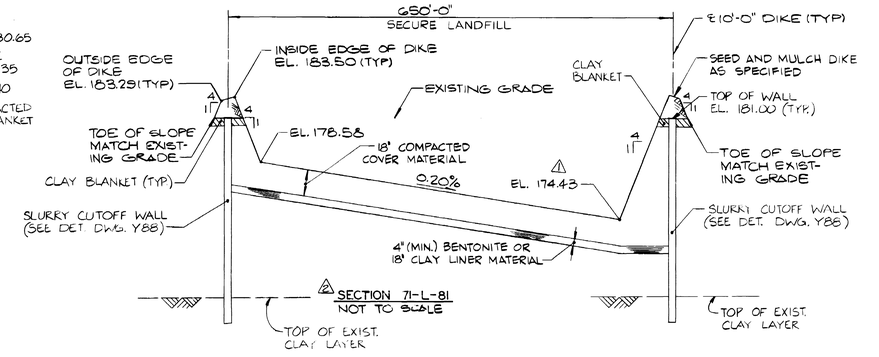


SECTION 70-J-81
NOT TO SCALE

SECTION 71-M-81
NOT TO SCALE



SECTION 71-K-81
NOT TO SCALE



SECTION 71-L-81
NOT TO SCALE

NO.	DATE	BY	REVISION
1	3-10-80	DJB	REVISED & ADDED NOTES FOR CLARIFI-CATION.
	3-12-80	TDW	(F-9, J-6) REVISED TIMBER POLE LINER PROTECTION
	3-21-80	DMZ	ISSUED WITH ADDENDUM NO. 3
	4-22-80	DMZ	ISSUED AS BID
2	6-13-80	GWB	REVISED PER ALTERNATE BIDS NO. 3 & NO. 4
	6-24-80	DMZ	ISSUED
	7-1-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

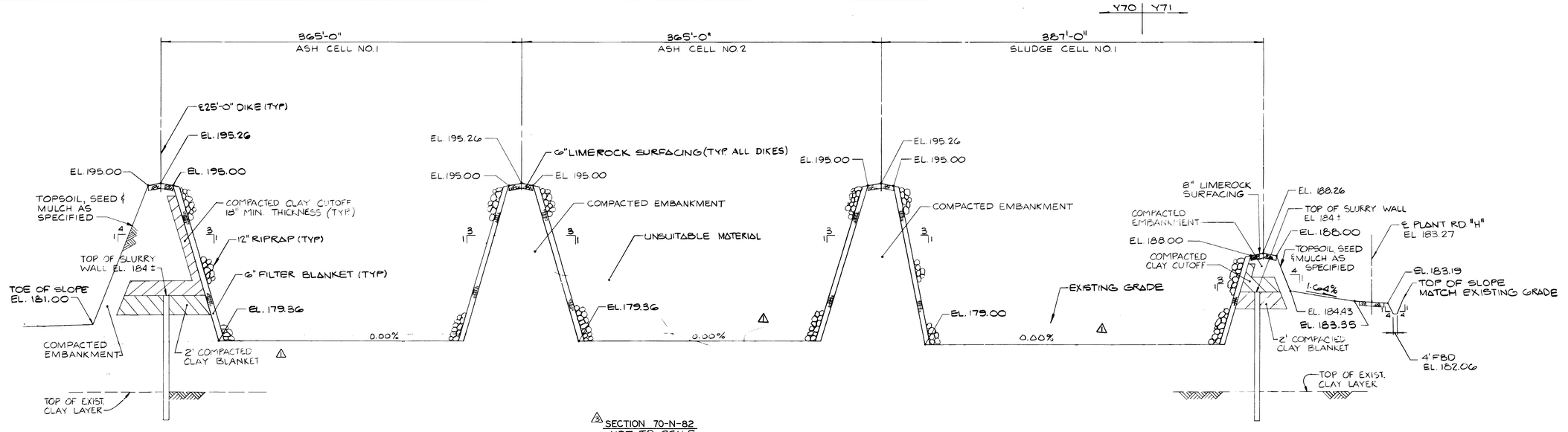
CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

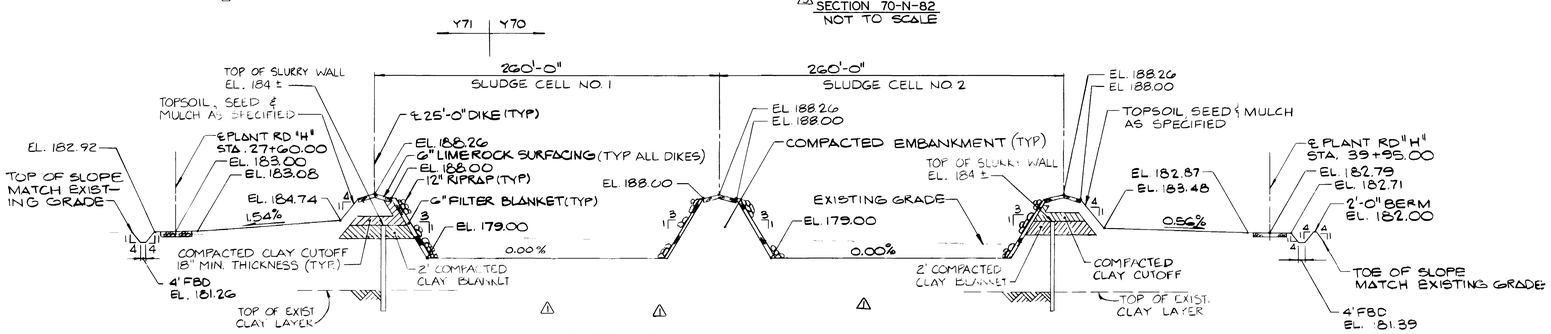
GRADING SECTIONS 2

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

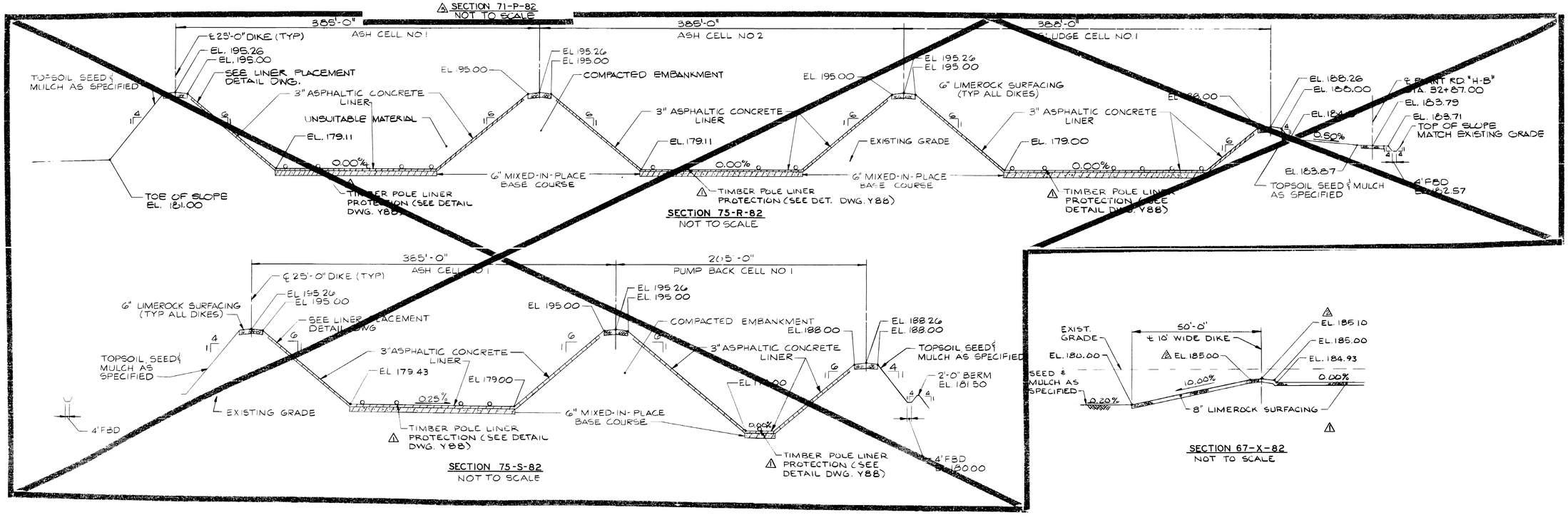
DATE FEB. 8, 1980	DRAWING NO. Y81 — 2 REV.
DESIGNED HUTCHESON	
DETAILED MADDOCK	PROJECT 76-077-1
CHECKED DMZ	SHEET OF SHEETS



⚠2 SECTION 70-N-82
NOT TO SCALE



⚠2 SECTION 71-P-82
NOT TO SCALE



⚠2 SECTION 75-R-82
NOT TO SCALE

⚠2 SECTION 75-S-82
NOT TO SCALE

⚠2 SECTION 67-X-82
NOT TO SCALE

NO.	DATE	BY	REVISION
⚠1	3-11-80	DJB	ADDED TIMBER POLE LINER PROTECTION & NOTE TO SECTIONS 70-N-82, 70-P-82, 75-R-82, & 75-S-82, (K-14) ADDED SECTION 67-X-82
	3-21-80	DMZ	ISSUED WITH ADDENDUM NO.3
⚠2	4-7-80	MBB	REVISED EL. FOR CLARIFICATION
	4-22-80	DMZ	ISSUED AS BID
⚠3	6-12-80	GWB	REVISED PER ALTERNATE BIDS NO 3 & NO.4
	6-24-80	DMZ	ISSUED
	7-1-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

GRADING SECTIONS 3

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DATE FEB. 18, 1980	DRAWING NO. Y82 – 3 REV.
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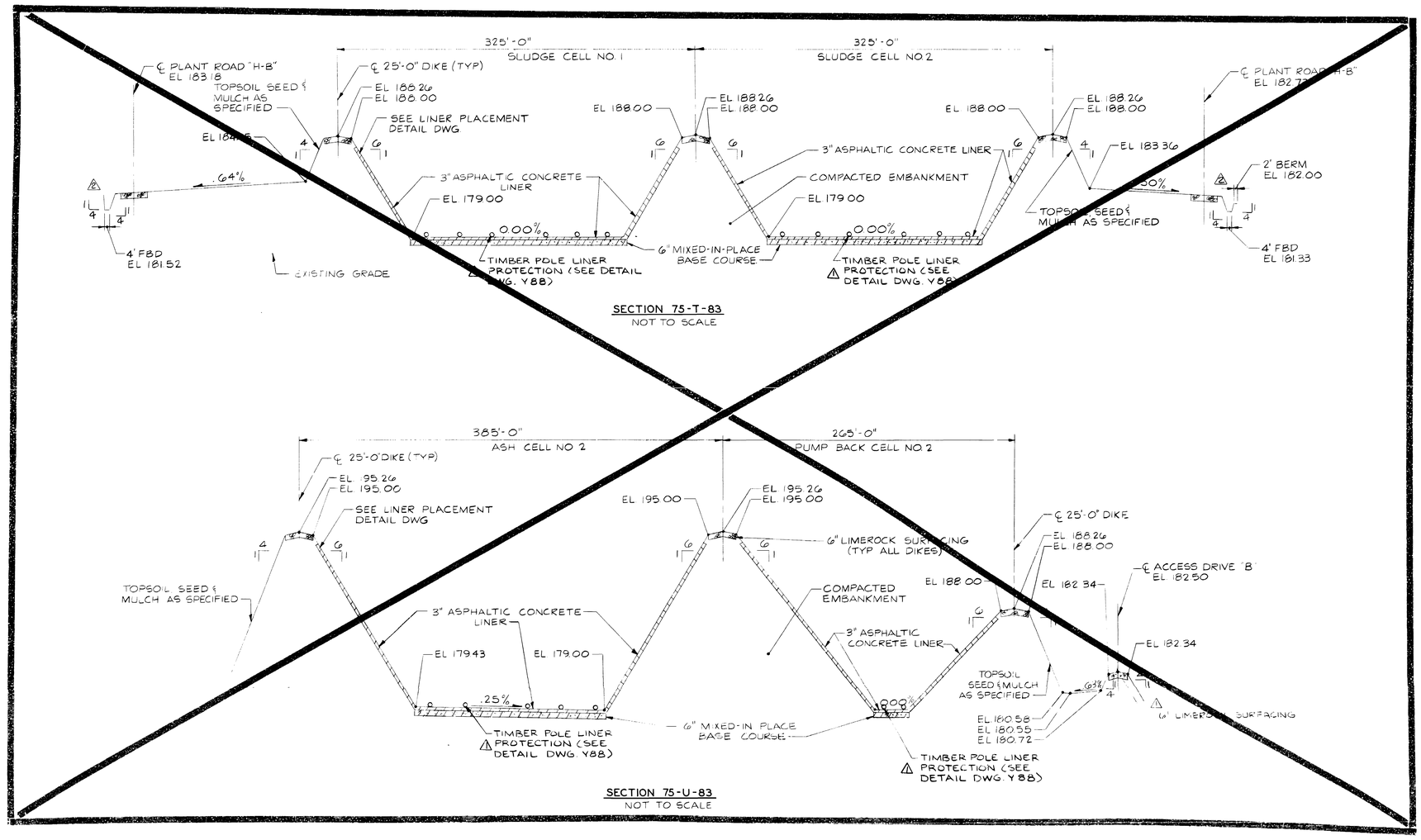
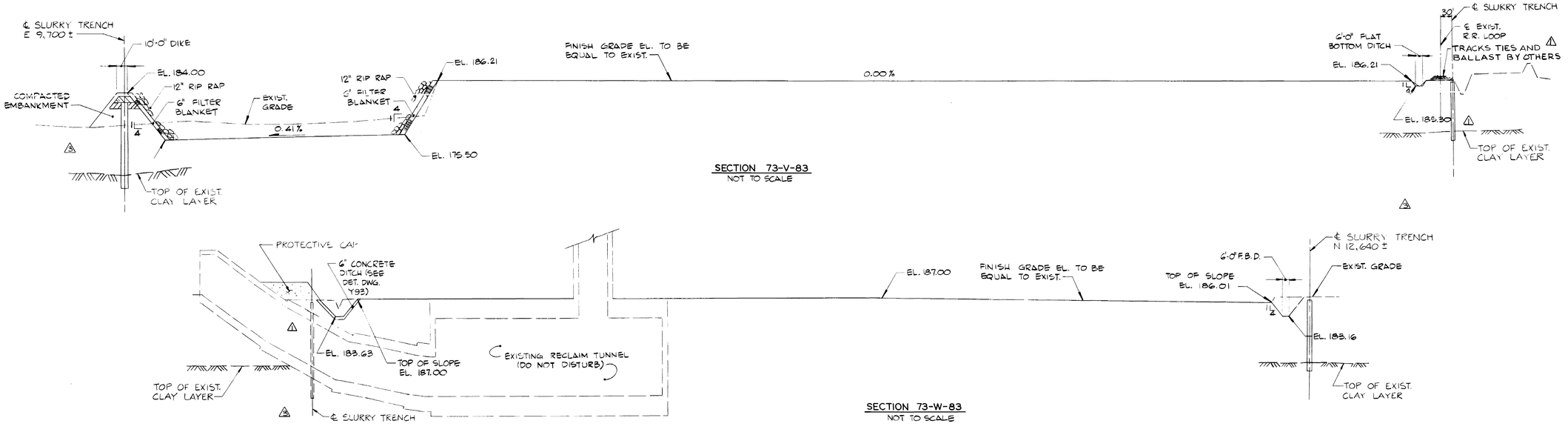
DETAILED MADDOCK	PROJECT 76-077-1
CHECKED DMZ	SHEET OF SHEETS





NO.	DATE	BY	REVISION
1	3-10-80	DJB	(C-7, C-10, G-7, G-11) ADDED TIMBER POLE LINER PROTECTION. (L-5) REVISED LINER MATERIAL LOCATION. (I-17, J-17) ADDED NOTES FOR CLARIFICATION.
	3-12-80	TDW	(G-13) ADD 6" LIMEROCK SURFACING
	3-21-80	DMZ	ISSUED WITH ADDENDUM NO.3
2	4-7-80	MBB	REVISED NOTES FOR CLARIFICATION
	4-22-80	DMZ	ISSUED AS BID
3	5-28-80	GWB	REVISED SECTIONS 73-V-83 AND 73-W-83
	5-30-80	DMZ	ISSUED
	7-1-81	DJB	

CONFORMING TO CONSTRUCTION RECORDS

CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

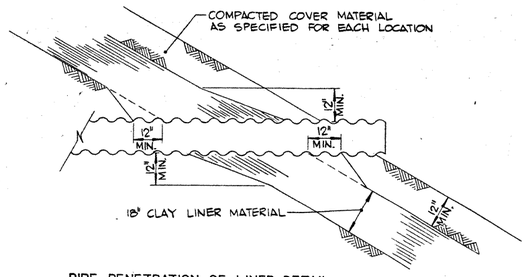
CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

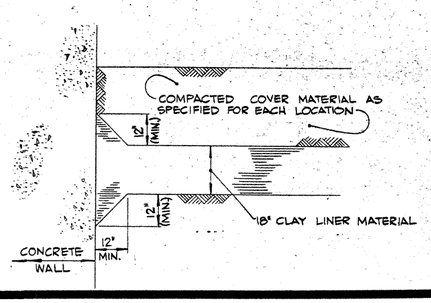
GRADING SECTIONS 4

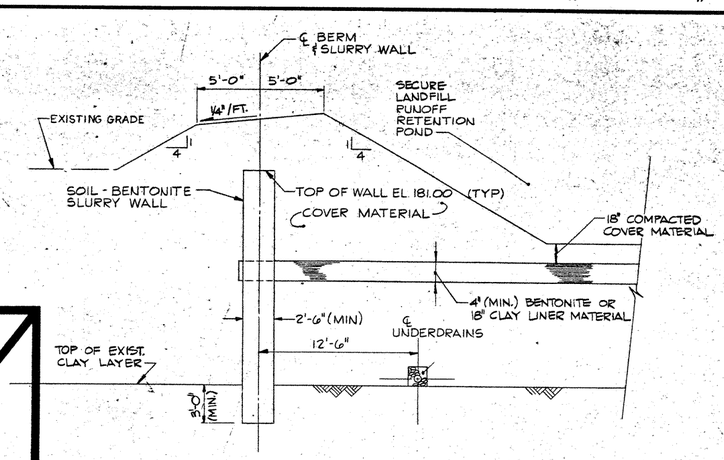
Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

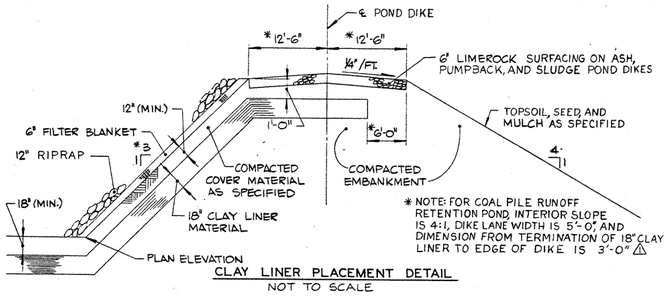
DATE FEB. 18, 1980	DRAWING NO. Y83 — 3 REV.
DESIGNED HUTCHESON	
DETAILED BAKER	PROJECT 76-077-1
CHECKED DMZ	SHEET OF SHEETS



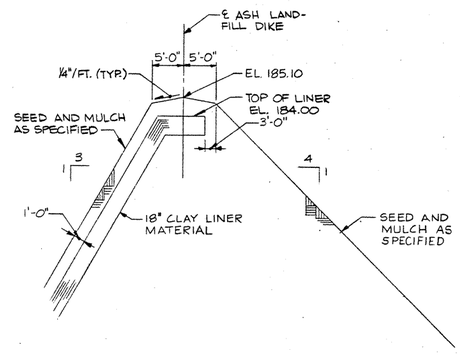
PIPE PENETRATION OF LINER DETAIL
NOT TO SCALE







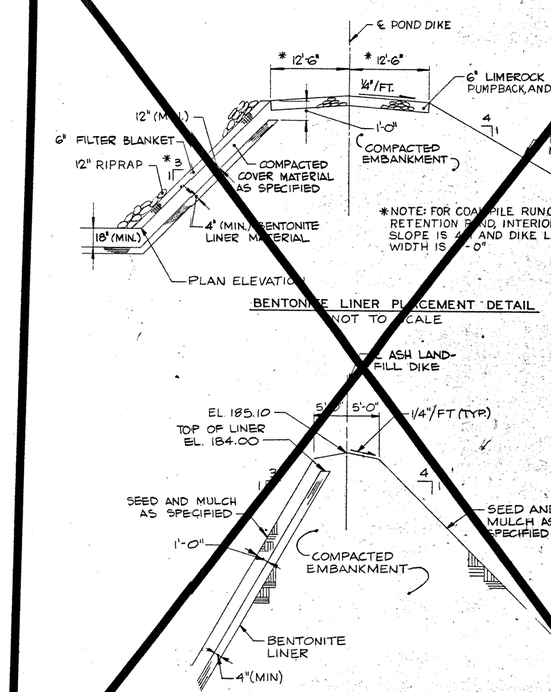
CLAY LINER PLACEMENT DETAIL
NOT TO SCALE



CLAY LINER ANCHORAGE DETAIL
NOT TO SCALE

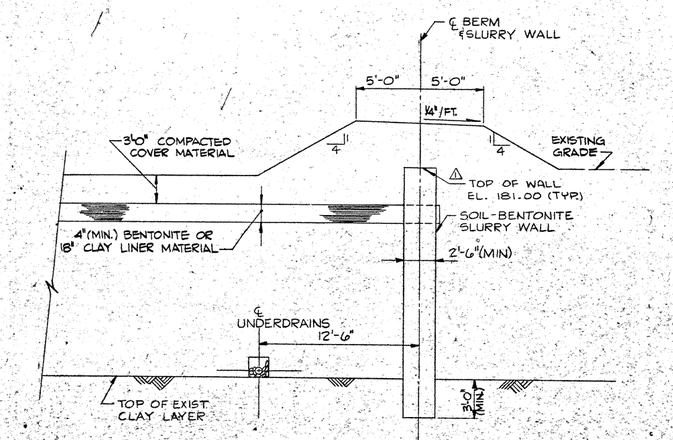
WALL PENETRATION OF LINER DETAIL
NOT TO SCALE

BENTONITE LINER PLACEMENT DETAIL
NOT TO SCALE



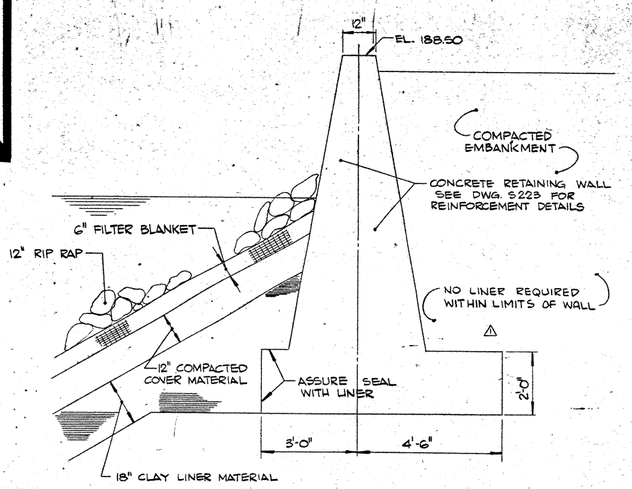
BENTONITE LINER ANCHORAGE DETAIL
NOT TO SCALE

CLAY CUTOFF WALL DETAIL
NOT TO SCALE



SLURRY WALL INSTALLATION
NOT TO SCALE

NOTES:
1. INSTALL PORTIONS OF INTERIOR LINER AND COVER MATERIAL AROUND CUT-OFF WALL PRIOR TO SLURRY WALL CONSTRUCTION TO INSURE TIE BETWEEN LINER AND WALL. EXTEND LINER TO OUTER EDGE OF WALL AND EXCAVATE THROUGH LINER TO INSURE ADEQUATE TIE-IN.
2. SEED AND MULCH BERM AS SPECIFIED.



LINER PENETRATION AT RETAINING WALL DETAIL
NOT TO SCALE

NO.	DATE	BY	REVISION
⚠	3-12-80	TDW	ADDED & REVISED NOTES FOR CLARIFICATION. REVISED CLAY CUTOFF WALL DETAIL. (K-15) REVISED LINER PENETRATION AT RETAINING WALL DETAIL.
	3-21-80	DMZ	ISSUED WITH ADDENDUM NO. 3
	4-22-80	DMZ	ISSUED AS BID
	7-1-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

CITY OF GAINESVILLE/
GAINESVILLE-ALACHUA COUNTY
REGIONAL UTILITIES BOARD

FLORIDA

GRADING DETAILS 3

Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

DATE FEB. 18, 1980	DRAWING NO. Y87 - 4 REV.
DESIGNED HUTCHESON	
DETAILED LANGHAMMER	PROJECT 76-077-1
CHECKED DMZ	SHEET OF SHEETS

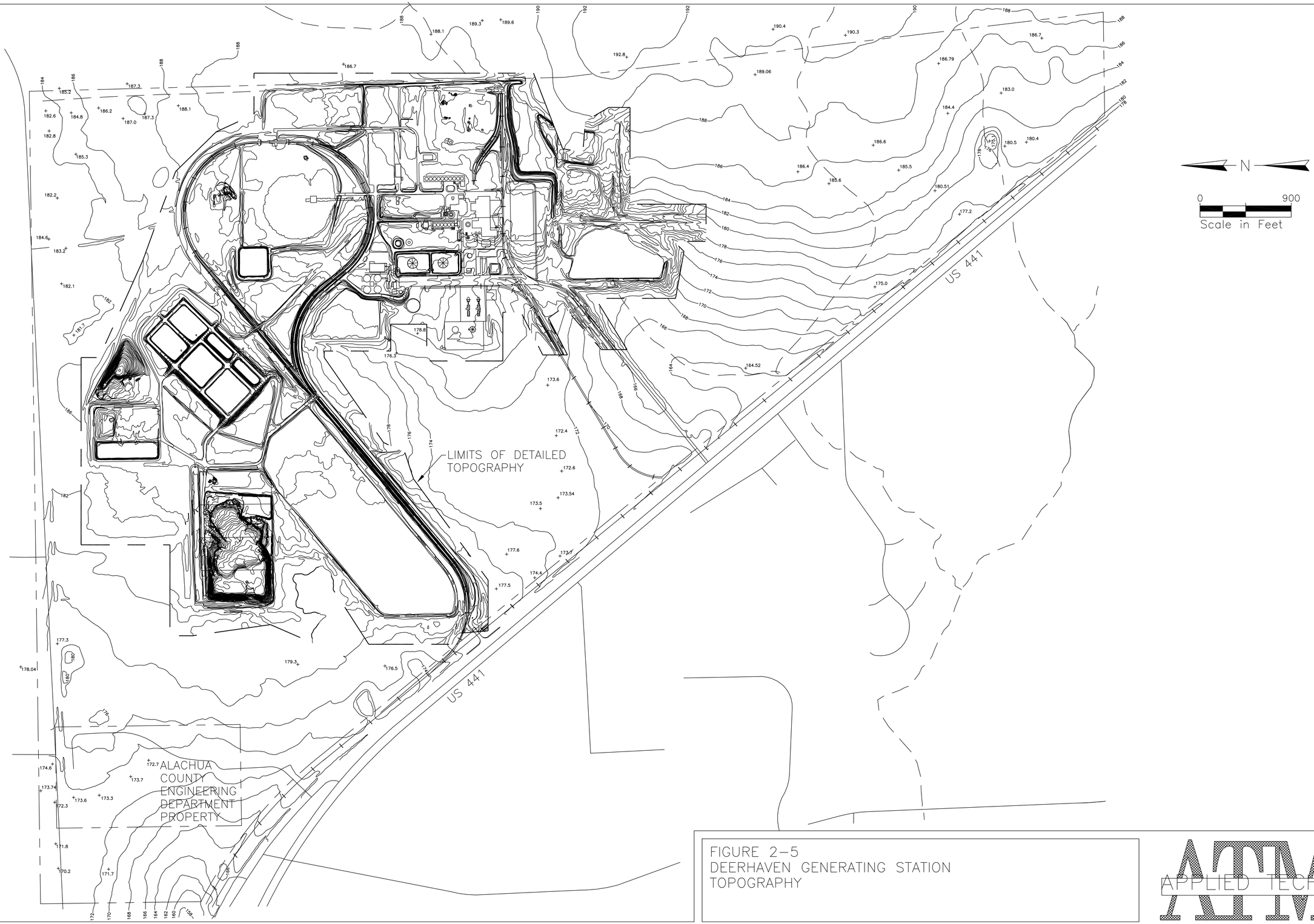


FIGURE 2-5
DEERHAVEN GENERATING STATION
TOPOGRAPHY

ATM
APPLIED TECHNOLOGY

331F2-5.DWG 10/06/93

Appendix A-2

Reference Documents

Book No. __

Gainesville Regional Utilities

Deerhaven Generating Station Emergency Response Action Plan (Facility Response Plan 1.1)

10001 NW 13th Street
U. S. Highway 441 North
Gainesville, Florida 32653

ACRONYMS

This section contains a listing of acronyms which are used in the Facility Response Plan or which may be useful for the user of this manual in response subject related discussions.

CFR:	Code of Federal Regulations
CWA:	Clean Water Act
DOT:	Department of Transportation
EPA:	Environmental Protection Agency
FDEP:	Florida Department of Environmental Protection
FEMA:	Federal Emergency Management Agency
FRP:	Facility Response Plan
GPM:	Gallons Per Minute
GRU:	Gainesville Regional Utilities
HAZMAT:	Hazardous Materials
LEPC:	Local Emergency Planning Committee
MSDS:	Material Safety Data Sheet
NRC:	National Response Center
OPA:	Oil Pollution Act of 1990
PCB:	Polychlorinated Biphenyl
PREP:	National Preparedness for Response Exercise Program
SCBA:	Self Contained Breathing Apparatus
SDWA:	Safe Drinking Water Act of 1986
SERC:	State Emergency Response Commission
SIC:	Standard Industrial Classification
SPCC:	Spill Prevention, Control, and Countermeasures
USGS:	United States Geological Survey

TABLE OF CONTENTS

1.0 FACILITY RESPONSE PLAN

The Deerhaven Generating Station is an electric power generating facility located on 3,463.59 acres, approximately seven miles north of downtown Gainesville on U.S. Highway 441, near Hague, Florida. The facility is owned by the City of Gainesville and operated by Gainesville Regional Utilities (GRU). The facility began operations in 1972. The facility operates around the clock in two 12-hour shifts, seven days a week.

Two steam electric generating units and three combustion turbines comprise the power generating capabilities of the Deerhaven Generating Station. Unit 1 is an 81 megawatt (MW) natural gas or oil-fired (Number 2 or Number 6 fuel oil) unit. Unit 2 is a 235 MW coal-fired unit, ignited either by natural gas or Number 2 fuel oil. The three combustion turbines, two at 20 MW and 74 MW nominal capacities, are fired on natural gas or Number 2 fuel oil. A site plan with locations of storage tanks is provided in the Site Plan Diagram, Section 1.1.9.

The Deerhaven Generating Station is a "zero discharge" facility. Process wastewater onsite is collected, treated, and reused. This is made possible by a water treatment system which utilizes a brine concentrator as the primary component. Process wastewater is collected in clay lined process ponds and pumped to the brine concentrator after solids separation. A Front End Water Treatment System, which provides lime softening of pumped groundwater, augments the brine concentrator condensate for process makeup water.

The purpose of a Facility Response Plan is to provide a facility which handles significant quantities of oil with structured guidance for addressing a spill event. Discussions range from measures for spill prevention to appropriate response actions and resources available in the event of a spill.

The Environmental Protection Agency (EPA) has provided a specific format in Appendix F of 40 CFR 112 after which this Facility Response Plan has been modeled for ease in assuring compliance.

The first section of this plan, 1.1 *Emergency Response Action Plan (ERAP)*, is a compilation of information found in subsequent sections of the plan for immediate access in the event of spill. A copy of the ERAP is distributed to GRU response personnel for reference in case of an oil spill. The remaining sections 1.2 through 1.9 comprise the complete *Facility Response Plan (FRP)*.

1.1 EMERGENCY RESPONSE ACTION PLAN

The Emergency Response Action Plan, Section 1.1, provides a condensed compilation of selected portions of the full Facility Response Plan (Sections 1.2 through 1.9) for quick reference in an oil spill emergency situation. Included components are listed below with the respective source sections of the full plan:

Emergency Response Plan Section Number	Subject	Facility Response Plan Reference Section
1.1.1	Response Personnel Duties and Responsibilities	1.2
1.1.2	Emergency Notification Phone List	1.3.1
1.1.3	Spill Response Notification Form	1.3.1
1.1.4	Response Equipment List and Location	1.3.2
1.1.5	Response Equipment Testing and Deployment	1.3.3
1.1.6	Facility Response Team	1.3.4
1.1.7	Evacuation Plan	1.3.5
1.1.8	Immediate Actions	1.7.1
1.1.9	Facility Diagram	1.9

In some cases, only a portion of the referenced FRP section is utilized in the ERAP. For more detailed and complete information, refer to the appropriate reference section as listed in the above table.

1.1.1 RESPONSE PERSONNEL DUTIES AND RESPONSIBILITIES

1.1.1.1 Qualified Individual Duties and Responsibilities

As specified in Section 1.2 of this Facility Response Plan, the Plant Manager is the Qualified Individual for the Deerhaven Generating Station. The Maintenance Manager is the Alternate Qualified. This section defines the duties specific to these roles as set forth in 40 CFR 112.20(h)(3)(ix). All of the duties specified for the Qualified Individual in this and other sections of this FRP apply to the Alternate Qualified Individual identified in Section 1.2.

Facility Awareness

The Qualified Individual is responsible for activating internal alarms and hazard communication systems to notify all facility personnel. This includes notifying facility response personnel if appropriate.

Spill Characterization

As detailed in Section 1.3.1 of this plan, event specific information is required for the notification process. The Qualified Individual must be able to identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.

Notification

The Qualified Individual must be able to notify and provide necessary information to the appropriate federal, state, and local authorities with designated response roles, including the National Response Center, State Emergency Response Commission, and Local Emergency Planning Committee.

Situation Assessment

Assessment of the spill event is essential to determining the order and extent of necessary response actions. The Qualified Individual must have the ability to perform each of the following duties:

- Assess the interaction of the spilled substance with water and/or other substances stored at the facility and notify response personnel at the scene of that assessment.
- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (*i.e.*, the effects of any toxic, irritating, or asphyxiating gases that may be generated or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosion).

- Assess and implement prompt actions to contain and remove the substance released.

Coordination of Activities

The Qualified Individual is expected to coordinate rescue and response actions as previously arranged with all response personnel. This includes directing cleanup activities until properly relieved of this responsibility.

Authority

The Qualified Individual has authority to immediately access funding to initiate cleanup activities.

1.1.1.2 Spill Coordinator's Duties and Responsibilities

The Spill Coordinator will be responsible for performing the following duties.

- Notify all facility personnel potentially impacted by the emergency.
- Immediately identify the material, source, amount, and the extent of any released materials through observation, review of facility records, or chemical analysis.
- If necessary, initiate evacuation of the affected areas.
- Assess possible hazards to human health or the environment including impacts to surface water bodies and fire/explosion potential. The assessment will consider both the direct and indirect effects of the release such as: fire, generation and/or release of any toxic, irritating or asphyxiating gases, or the run off resulting from water or chemical agents used to control the emergency. Incompatibilities with other materials must be assessed by consulting Material Safety Data Sheets, Chemtrec (9-1-800-424-9300), or the Gainesville Fire Rescue Hazardous Materials (HazMat) Team (9-911). Chemtrec can be contacted to provide hazard information and guidance when given the identification number, name of the product, and nature of the problem.
- Request assistance from the fire department or police, as appropriate.

- Stabilize the situation and implement control measures. Initiate, coordinate, and supervise countermeasure activities which will stop or prevent the progression of the release.

- Notify GRU Environmental Personnel.

- If Environmental Personnel are not available, make all required notifications. Otherwise, the Environmental Personnel will make the appropriate notifications.

- Begin cleanup operations.

- Take all reasonable measures necessary to insure that releases, fires, and explosions do not occur, reoccur, or spread to other portions of the facility. These measures will include, where applicable, stopping processes and operations, collecting and containing spilled material, and removing and/or isolating containers.

- In the event facility operation is shut down, monitor the entire facility for leaks, pressure buildup, gas generation, *etc.* in tanks, pipes, or other equipment as appropriate.

- Provide for the safe storage of recovered spilled material, contaminated soil, contaminated water, or any other material that results from a release, fire, or explosion at the facility. GRU Environmental Personnel will provide guidance on appropriate storage and disposal methods, in accordance with local, state, and federal laws.

- After the spill event, ensure that all emergency equipment is cleaned and operational for future use.

The shift supervisor on duty will act as a Spill Coordinator until another one of the designated Spill Coordinators in Table 1.1-2 has been notified and has assumed responsibilities.

1.1.2 EMERGENCY NOTIFICATION PHONE LIST

This section provides the person making the spill notification with the necessary telephone numbers for an emergency response event. Responsibilities of Spill Coordinators and Environmental Personnel are defined and appropriate individuals designated.

Figure 1.1-1 provides an important flowchart sequence of initial notification protocol. This flowchart prompts the caller to make the required notifications and provides guidance for:

- Fire/Rescue (911)
- Spill Coordinators (referenced to Table 1.1-2)
- Deerhaven Radiation Safety Officer
- Environmental Staff
- City of Gainesville Risk Management
- City of Gainesville Corporate Communications
- GRU Gas.

A more complete list of internal and external numbers to possibly use during an emergency is provided in Tables 1.1-1 through 1.1-3. The order in which notifications and contacts are made largely depends on the severity of the spill and other mitigating factors. Judgment must be used in making this decision. Depending on available personnel, the acting Spill Coordinator may assign different notification responsibilities to several people, thereby providing simultaneous notifications. Certainly, if employee and/or public safety are endangered, the Fire/Rescue and Police Departments must be contacted and obviously should be the first notifications made.

Contact of a designated Spill Coordinator (Table 1.1-2) should follow a spill. If the situation warrants, the Emergency Response Contractor should be the next notification in order to mobilize the response effort. Environmental Personnel (Table 1.1-3) would next be contacted and Environmental Notifications initiated immediately thereafter.

Figure 1.1-1, Table 1.1-2, and Table 1.1-3 should be posted at locations in the plant where it is anticipated that notifications may be initiated, including the Control Room, Laboratory, Coal/Ash Facility, and Process Plant. This provides immediate access to the notification telephone numbers.

Fire/Rescue (Hazmat Team) and Police

If fire or other immediate employee and/or public danger exists then the caller should immediately dial 9-911 to contact the Gainesville Fire/Rescue and Police Departments.

The caller must provide very *specific* information about the location and nature of the emergency. The caller should then proceed to notify designated Spill Coordinators and Environmental Personnel.

In the event a spill migrates off-site, it will be necessary to involve the Fire/Rescue and Police Departments which have the authority to access private property without prior permission.

Environmental Personnel

Environmental Personnel are responsible for making all required environmental notifications. Attempt contact in the order listed in Table 1.1-3. If neither environmental engineer can be reached, the Spill Coordinator must make the required environmental notifications (Figure 1.1-1).

Emergency Response Contractors

A variety of response capabilities are referenced in the Figure 1.1-1 flowchart. The spill category, as assessed by the Spill Coordinator, will determine the proper selection of response resources. Spill emergencies are broken out into two main categories—minor and major spills:

- Minor Spills — Spills that can be controlled at the time of release in the immediate release area with booms/sorbent pads and do not require specialized response personnel or equipment.
- Major Spills — Spills that cannot be contained at the time of release in the immediate release area or that require specialized response personnel, or equipment.

The primary contractor to be used in the event of major spills is listed on Table 1.1-3.

Available resources for minor spills are listed and will be selected to provide assistance at the discretion of the Spill Coordinator. Additionally, the primary response contractor for major spills can also be contacted to provide specific cleanup equipment (vacuum trucks, *etc.*) and technicians for minor spill events.

Environmental Notifications

As previously stated, Environmental Personnel are primarily responsible for making required environmental notifications. However, if Environmental Personnel are unavailable, the Spill Coordinator will be responsible for these notifications.

Reportable spills might involve notification to the National Response Center, State Division of Emergency Management, and/or the Alachua County Environmental Protection Department. If materials with a polychlorinated biphenyl (PCB) concentration in excess of 50 parts-per-million (ppm) enter a surface water body, drinking water resource, grazing lands, or a human consumption agricultural area, EPA Region IV Office of Pesticides and Toxic Substances must also be notified.

City of Gainesville Risk Management

The Spill Coordinator should contact the City of Gainesville Risk Management Department in the event of fire, fatalities, injuries, evacuation, or damage to property as indicated in Figure 1.1-1 and apprise the appropriate representative (Risk Manager) of the situation.

1.1.3 SPILL RESPONSE NOTIFICATION FORM

During an emergency response event, pieces of information required by various agencies may not necessarily be available to the person making the immediate notification calls. Due to the potentially critical nature of the situation, this could result in confusion and the impediment of the notification process.

The *Spill Response Notification Form*, Figure 1.1-2, has been prepared to provide structured guidance for information gathering. Facility specific information such as address, longitude, latitude, *etc.* has been included for the reporter's reference. Underlined blanks indicate information to be provided specific to the response event.

Note that one of the items on this form questions whether the facility is meeting environmental obligations to report. In the event environmental personnel cannot be reached, the answer to this question can be found in Figure 1.1-3, *Oil Release Notification Form.* Figure 1.1-3 provides a step by step procedure to determine if a petroleum spill is reportable.

Notification will be accomplished immediately upon discovery of a spill. Although the Spill Response Notification Form is a checklist of information to be provided when making notifications, *the notification process should not be delayed in order to obtain all of the listed information.* However, the pursuit of this information should continue beyond notification until the form is completed.

1.1.4 RESPONSE EQUIPMENT LIST AND LOCATION

Table 1.1-4, 1.1-5 and 1.1-6 provide a compilation of response equipment available at the Deerhaven Generating Station or through the GRU Water and Wastewater Department.

The tables contain information specific to equipment stored at the generating plant. Equipment description, quantity, and location as well as inspector assignment and inspection frequency are listed. Contents of the listed Spill Containment Kits are detailed and quantified in Table 1.1-5.

Deerhaven frequently utilizes heavy earth moving equipment as listed in Table 1.1-6. In the event of a response situation, this equipment could be made available to response personnel. The Water and Wastewater Department can provide additional resources, so their phone number is included in Table 1.1-3. Still more equipment if needed may be available through the City's Public Works Department.

Deerhaven equipment is intended for use principally in minor spill incidents. Minor spills are those that can be controlled at the time of release in the immediate release area with booms/sorbent pads and do not require specialized response personnel or equipment. As further described in Section 1.3.4, emergency contractors have been identified for services in the event a spill exceeds the capacity of the plant's resources.

1.1.5 RESPONSE EQUIPMENT TESTING AND DEPLOYMENT

Equipment Testing

Table 1.1-4 contains inspection assignments and frequencies for Emergency Response Equipment at the Deerhaven Generating Station. Inspection logs are utilized for documentation and include the following information:

- Date of Inspection
- Name of the Inspector (where applicable)
- Inspection Activities (where applicable)
- Quantities (where applicable)
- Comments/Observations

Deficiencies are noted by the Inspector and corrective actions initiated.

Deployment

Petrotech Southeast, Inc. currently provides Gainesville Regional Utilities with emergency response services for the Deerhaven Generating Station. Petrotech Southeast, Inc. is located in Ocoee, Florida and has a three hour response time for the Gainesville area. Appendix A contains information pertaining to the services provided by Petrotech Southeast, Inc.

Appropriate internal drills involving emergency response notification are detailed in Section 1.8.2 of this plan.

1.1.6 FACILITY RESPONSE TEAM

Table 1.1-7 identifies members of the Deerhaven Facility Response Team. The Facility Response Team is a subset of the Emergency Response Personnel listing provided in Table 1.1.2.

In a spill situation which requires an emergency response effort, Qualified Individuals and Spill Coordinators will assume the essential role of organizing the response effort. The Emergency Response Contractor will be contacted and provided an analysis specific to the situation at hand. This will enable the contractor to determine specific equipment and manpower needs.

Depending on the situation, involvement of Fire/Rescue and Police may be requested. Decisions necessary to ensure the safety of on-site plant personnel will be made.

Attempts will be made to notify Environmental Personnel who are responsible for making all required environmental agency notifications. If none are available, the Spill Coordinator will make the notifications. Throughout the response, the Qualified Individual and Spill Coordinator will utilize their knowledge of the plant site and materials stored therein to advise and assist in the effort.

1.1.7 EVACUATION PLAN

Evacuation initiation is to be at the discretion of the Spill Coordinator. The potential for spilled materials to jeopardize life or threaten serious injury is the primary factor in the decision to evacuate. The following procedure is to be followed in the event of an evacuation:

1. Selection of evacuation route to assembly area
2. Announce evacuation message over intercom system
3. Evacuate to assembly area
4. Perform post evacuation evaluation

If (and only if) time allows, active equipment should be placed in emergency shutdown mode prior to evacuation.

Selection of Evacuation Routes to Assembly Area

Figure 1.1-4 illustrates the main evacuation routes and assembly areas. The assembly areas, which are located at the flagpole and the guard station, have been established to provide accountancy for each employee. Depending on the emergency condition, the guard station assembly area can be reached from more than one direction, should the situation require alternate routes. When selecting the proper assembly area and route, the Spill Coordinator should consider the following event specific factors:

- Location of stored fuels, chemicals, and combustible materials near spill
- Type of hazard related to spilled material (explosion, toxicity, etc.)
- Spill flow direction
- Prevailing wind direction and speed
- Arrival route of emergency response personnel and response equipment
- Potential evacuation routes
- Transportation of injured personnel to nearest emergency medical facility.

Depending on the location of the hazard and the location of various personnel on the site, it may be necessary to designate more than one evacuation route to provide safe access for all personnel.

Announcement of Evacuation

To facilitate organized removal of personnel from the site, the Spill Coordinator will make an announcement of the evacuation over the intercom. This message will inform plant personnel of the following information:

- Area(s) to be evacuated
- Hazard necessitating the evacuation
- Location of the hazard
- Blocked exits
- Proper evacuation route
- Location of the assembly area.

If possible, this message should be repeated several times during the evacuation.

Post Evacuation Evaluation

Upon reaching the assembly area, each supervisor will begin a head count of each individual under his/her supervision. The final count as well as any injuries will be provided to the Spill Coordinator. Depending on the situation, emergency personnel may choose to coordinate a search effort to locate any missing individuals.

Entry back into the evacuated facility areas will only be permitted after inspection by fire and safety officials and with the authorization of the Spill Coordinator.

Evacuations of Surrounding Communities

Any necessary evacuations of the public will be the responsibility of local authorities such as police department, fire department, and Local Emergency Planning Commission. The Spill Coordinator will assist the authorities in providing appropriate information concerning the spill event and associated hazards.

1.1.8 IMMEDIATE ACTIONS

Spills that cannot be contained at the time of release in the immediate release area or that require specialized personnel, materials, and/or equipment will be referred to the Primary Emergency Response Contractor. In the interim, immediate actions can be taken upon discovery of a spill to position for a successful response effort. In a generalized form, the following actions are included:

- Stop the product flow: Act quickly to secure pumps, close valves, *etc.*
- Warn personnel: Enforce safety and security measures.
- Shut off ignition sources: Motors, electrical circuits, open flames, etc.
- Initiate containment: Around the tank, around drainage structures, and/or in the water with oil boom.
- Start required notifications: As provided in the *Oil Release Notification Form.*

Section 1.5 of this plan identifies three spill magnitudes for planning purposes. The Worst Case Discharge, calculated to be 2,350,000 gallons, assumes: 1) complete loss of volume from the largest aboveground petroleum tank (No. 6 fuel oil) and 2) release of oil without taking into account the secondary containment structure. A medium discharge was determined to be 36,000 gallons and a small discharge, 2,100 gallons.

The Worst Case Discharge Scenario would require immediate contact and subsequent involvement of the Primary Emergency Response Contractor. In the interim, the Qualified Individual and/or Spill Coordinator would assume the notification and coordination responsibilities detailed above in Section 1.1.1 of this plan.

Several immediate actions can be taken to abate the progression of the spill. Flow paths and destinations of spills from each source identify potential locations for the placement of booms, construction of dams, or excavation of collection pits. See Figure 1.1-6 for a graphical display of flow pathways.

Boom Placement

Booms should be placed at the entrance and exit of Ponds #3 and #4. If on-site water drainage through culverts is sufficient to act as a carrier medium for the petroleum product, booms could potentially be an effective means of skimming and absorbing product from the water surface.

See Figure 1.4-3 in Section 1.4 of this plan for culvert locations. Booms may be placed at the entrance and exit of the two sets of 24-inch culverts located on the southwest portion of the site, under the railroad and under the plant entrance road. Another strategic set of culverts is the 48-inch culverts located on the southwest edge of the property which conveys drainage off-site.

Construction of Dams

Earthen dams may be constructed at numerous points along the estimated flow path illustrated in Figure 1.4-4 of Section 1.4 of this plan.

When constructing dams, the effects of rerouting the drainage must be considered to prevent averting the flow to a less manageable flow path. If considerable on-site water drainage is occurring, such as during a stormwater event, underflow dams may be constructed. This is accomplished by placing a pipe at the bottom of the dam during construction.

Since diesel, gasoline, and lubricating oils have a specific gravity less than water the underflow pipe will allow relief of water buildup while maintaining the petroleum behind the dam. The specific gravity of Number 6 fuel oil is close to that of water (0.99 compared to 1 for water) so discretion is required in deciding whether to provide an underflow pipe for Number 6 fuel oil spills. Observation will be required to verify if Number 6 fuel oil is indeed floating on the surface to prevent constructing an underflow device that would actually aid the progression of the petroleum.

A key location for a dam would be at the discharge point at the south edge of Pond #4. By raising the elevation of this point to slightly below the pond perimeter, full utilization of pond freeboard may be realized. Note that the gate on the west side of the pond should be raised to the highest elevation possible to ensure full benefit of this action. In a similar manner, increasing the elevation of the overflow weir gate of Pond #3 would have the effect of increasing storage capacity.

If little on-site drainage is encountered and the effectiveness of booms at the entrance and discharge of key culverts is reduced, construction of a dam to prevent flow through the culverts might be necessary to avoid off-site discharge.

Note that the construction of earthen dams can be accomplished concurrently with the excavation of collection pits. The low point of the dam could be located to discharge to a collection pit in the event of overtopping.

Excavation of Pits

Excavation pits may be utilized to provide temporary storage of petroleum product until equipment such as a vacuum truck can be employed to remove the product.

The relatively high groundwater table on-site will aid in retaining petroleum products that are lighter than water (diesel, lube oil, and gasoline). These products will float on the surface and the water will act to help prevent downward migration through the bottom into the underlying soil. However, loss will still occur laterally through the sides of the soil pit. In the case of Number 6 fuel oil, which might be denser than water, migration will be hindered somewhat by the viscosity of the fluid.

Before excavating a pit, care must be taken to avoid underground pipes. For example, excavating areas close to the combustion turbine are to be avoided due to the gas lines in the vicinity.

Excavation pits can be very useful when used in conjunction with earthen dams. Therefore, the locations described for constructing dams should also be evaluated for locating excavation pits.

Response to medium and small spills will depend on the situation. If the spill is not contained, the response may be executed as described for the worst case discharge scenario, but on a smaller scale. Conversely, a contained spill allows more flexibility in deciding the appropriate level of response.

Plant procedures are in place to address spills that can be controlled at the time of release in the immediate release area with booms/sorbent pads and do not require specialized response personnel or equipment. Procedures for the cleanup of Number 2 oil, Number 6 oil, lubricating oil, and non-PCB contaminated transformer oil are provided in Section 1.7.1 of the Facility Response Plan.

1.1.9 FACILITY DIAGRAMS

In order to facilitate the response effort, it is important to provide location information pertaining to materials and structures which have an impact on how the situation is approached. Figures 1.1-4, 1.1-5, and 1.1-6 serve to alert and orient the employee or responder to these considerations.

Site Evacuation Plan Diagram

Reference Section 1.1.7, for information related to evacuation procedures. As provided in this section, Figure 1.1-4 locates the main evacuation route and assembly area.

Site Plan Diagram

Aside from providing general site orientation, the following information is provided in Figure 1.1-5:

- Facility building identification and location
- Aboveground bulk oil storage tank content, location, and capacity
- Secondary containment location and capacity
- Identification of chemical storage areas
- Location of oil unloading station
- Location of switchyard (contains transformers)

A full size drawing of the Site Plan Diagram is found as Figure 1.9-1 in Section 1.9. This larger version of the Site Plan Diagram will be kept at the Guard House and made available to emergency personnel, should the need ever arise.

Site Drainage Information

Figure 1.1-6 provides the plant area drainage directions and adjacent surface water bodies. Section 1.4.2 of the Facility Response Plan provides a discussion of drainage directions from petroleum storage areas.

ATTACHMENT TO SECTION 1.1: ERAP TABLES

TABLE I.D.	NAME
Table 1.1-1	DEERHAVEN GENERATING STATION QUALIFIED INDIVIDUAL
Table 1.1-2	GRU SPILL COORDINATORS
Table 1.1-3	GRU ENVIRONMENTAL PERSONNEL AND OUTSIDE ASSISTANCE
Table 1.1-4	DEERHAVEN GENERATING STATION RESPONSE EQUIPMENT
Table 1.1-5	DEERHAVEN GENERATING STATION SPILL CONTAINMENT KITS
Table 1.1-6	HEAVY EARTH MOVING EQUIPMENT
Table 1.1-7	FACILITY RESPONSE TEAM

TABLE 1.1-1

DEERHAVEN QUALIFIED INDIVIDUALS

NAME[1]	PHONE[2]	RESPONSE TIME	ASSIGNMENTS DURING RESPONSE[3, 4]	RESPONSE TRAINING TYPE/DATE
Dan Moffett	Work: 393-6240 Home: 505-0257 Cell: 562-1724	1 hour	Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Dino DeLeo	Work: 393-6244 Home: 418-0386	1 hour	Alternate Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training

TABLE 1.1-2

EMERGENCY PHONE LIST
DEERHAVEN SPILL COORDINATORS

NAME[1]	PHONE[2]	RESPONSE TIME	ASSIGNMENTS DURING RESPONSE[3, 4]	RESPONSE TRAINING TYPE/DATE
Dan Moffett	Work: 393-6240 Home: 505-0257 Cell: 562-1724	1 hour	Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Dino DeLeo	Work: 393-6244 Home: 418-0386	1 hour	Alternate Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Jeff Lightsey	Work: 393-6123 Home: 418-0386 Cell: 317-5762	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Mark Procopio	Work: 393-6345 Home: 335-7635	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Dan Ominski	Work: 393-6336 Cell: 222-2075	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Tony Waters	Work: 393-6101 Home: 473-7123	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Abe Chandler	Work: 393-6101 Home: 377-8779	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Paul Wright	Work: 393-3101 Home: (386) 454-3071	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Bill Wheeler	Work: 393-6101 Home: (386) 454-3072	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Syed Hassan	Work: 393-3201 Home: 331-6791 Cell: 222-5996	1 hour	Spill Coordinator	Position Related Work Experience; Facility Response Plan Training

See Next table for Spill Contractors.

TABLE 1.1-3

GRU ENVIRONMENTAL STAFF AND OUTSIDE RESOURCES

Name	Position	Work Telephone	Home Telephone
ENVIRONMENTAL PERSONNEL			
Regina Embry	Utility Engineer	393-1299 538-7143 (cell)	377-2789
Robert Klemans	Utility Engineer	393-1283	(386) 454-7575
ELECTRIC UTILITY SAFETY STAFF			
Rick Lavery	Safety Training	393-6245	371-1801
EMERGENCY/OIL SPILL RESPONSE CONTRACTORS			
Petrotech Southeast (Primary)		1-800-293-1743 (24-hour)	
Environmental Remediation Services (Secondary)		1-904-791-9992	
Gainesville Fire/Rescue		9-911	
Potash Corporation Regional Response Team		1-386-397-8101	
GRU WATER/WASTEWATER ASSISTANCE			
GRU Dispatch		334-2892/2893	
GRU Water/Wastewater		334-3400 x1616	
GRU Gas		334-2550 (24 hour)	
CITY OF GAINESVILLE PUBLIC WORKS			
Public Works		334-5801	
ENVIRONMENTAL NOTIFICATIONS (See Oil Release Notification Form)			
National Response Center		1-800-424-8802	
Florida State Warning Point		1-800-320-0519	
FDEP NE District		1-904-807-3300	
Alachua County Warning Point		264-6800	

TABLE 1.1-4
DEERHAVEN GENERATING STATION
EMERGENCY RESPONSE EQUIPMENT

EQUIPMENT TYPE	QTY	LOCATION	INSPECT BY	FREQUENCY
Chemical Burn First Aid Station	1	Process Plant, Laboratory Sink	Process Plant	Monthly
Eyewash/Shower Station	1	Unit 1/Aux Tower Chem Tanks	Lab	Monthly
Eyewash/Shower Station	1	Unit 2 Tower Chem Tanks	Lab	Monthly
Eyewash/Shower Station	1	Unit 2 Chemical Feed Tanks	Lab	Monthly
Eyewash/Shower Station	1	Lab	Lab	Monthly
Eyewash/Shower Station	1	Unit 2 10th Floor - planned	Lab	Monthly
Eyewash/Shower Station	1	Demineralizer Room	Lab	Monthly
Eyewash/Shower Station	1	Process Plant, Brine Concentrator	Process Plant	Monthly
Eyewash	1	Process Plant, Ferric Hoppers	Process Plant	Monthly
Eyewash/Shower Station	1	Process Plant, Lime Feeders	Process Plant	Monthly
Eyewash/Shower Station	1	Process Plant, Acid Tank	Process Plant	Monthly
Eyewash/Shower Station	1	Process Plant, Lab	Process Plant	Monthly
Fire Axe	2	Process Plant	Process Plant	Monthly
Fire Extinguisher		Throughout the Facility	All Depts.	*2, Monthly
Fire Hose Station		Throughout the Facility	Maintenance	*3, Monthly
First Aid Kit	1	Administrative Office	Contracted	Monthly
First Aid Kit	1	Coal Area	Contracted	Monthly
First Aid Kit	1	Coal/Ash Building	Contracted	Monthly
First Aid Kit	1	Control Room, #1 & #2	Contracted	Monthly
First Aid Kit	1	Lab	Contracted	Monthly
First Aid Kit	1	Process Plant, Control Room	Contracted	Monthly
First Aid Kit	1	Maintenance Shop	Contracted	Monthly
SCBA	2	Process Plant	Warehouse	*1
SCBA	1	Process Plant, Control Room	Warehouse	*1
SCBA	2	Unit 1, Condenser, 1st Floor	Warehouse	*1
Shovels	12	Throughout Plant	n/a	Prior to Use

*1 Tanks hydrostatically tested every five (5) years. Mask and hoses must be visually inspected monthly.
*2 Extinguishers are inspected annually and hydrostatically tested every five (5) years by an outside contractor.
*3 Hoses are inspected annually by an outside contractor.

TABLE 1.1-5
DEERHAVEN GENERATING STATION
SPILL CONTAINMENT KITS

EQUIPMENT TYPE	QTY	LOCATION	INSPECT BY	FREQUENCY
Spill Kit (HazMat)	1	Process Plant	Lab	Monthly
Spill Kit (HazMat)	1	Navco Building - large	Lab	Monthly
Spill Kit (HazMat)	1	Demineralizer Room	Lab	Monthly
Spill Kit-oil Petrochem	1	Demineralizer Room	Lab	Monthly
Spill Kit-oil Petrochem	1	Unit 2 WAS	Lab	Monthly
Spill Kit-oil Petrochem	1	Navco - large	Lab	Monthly
Spill Kit-oil Petrochem	1	Process Plant	Lab	Monthly
Spill Kit-oil Petrochem	1	Vehicle Maintenance - small	Lab	Monthly
Spill Kit-oil Petrochem	1	Warehouse - small	Lab	Monthly
Spill Kit (Mercury)	1	Instrumentation Shop	Instr. Shop	Monthly
Spill Kit (Skimmer)	1	Navco Building - large	Lab	Monthly
Spill Kit (Skimmer)	1	North fuel unloading station - bulk	Lab	Monthly
Spill Kit (Skimmer)	1	Coal Pile Diesel Tank	Lab	Monthly
Spill Kit (Skimmer)	1	South fuel unloading station - bulk	Lab	Monthly
Portable Kit	1	Lab	Lab	Monthly
Drum Leak Repair Kit	1	Demineralizer Room	Lab	Monthly
Bulk Spill Material Storage	1	Pump House	Lab	Monthly
Telephones	215	Throughout Plant	n/a	n/a
Walkie Talkies	5	Coal Ash Facility	n/a	n/a
Walkie Talkies	5	Control Room	n/a	n/a
Walkie Talkies	4	Process Plant	n/a	n/a

TABLE 1.1-6

DEERHAVEN GENERATING STATION
ONSITE HEAVY EQUIPMENT AVAILABLE

EQUIPMENT TYPE	QTY	LOCATION
Bat Wing Mower	1	Coal Ash Facility
Bobcat	1	Coal Ash Facility
Carry Deck	1	Maintenance Shop
Coal Dozer	2	Coal Ash Facility
Ford Tractor	1	Coal Ash Facility
Forklift	2	Warehouse
7210 John Deere tractor U1247	1	Coal Ash Facility
Payloader	2	Coal Ash Facility
Pump, 1" Air Driven	1	Process Plant
Pump, 6" Diesel High volume	2	Coal Ash Facility
Pump, 3" Mug Hog	2	Coal Ash Facility
Pump, ½" Air Driven	1	Lab
Truck, 4-Wheel Drive	2	Coal Ash Facility
Truck, Pickup	1	Operations
Truck, Pickup/4-Wheel Drive	1	Process Plant
Truck, Pickup	1	Coal Ash Facility

TABLE 1.1-6 (continued)

DEERHAVEN GENERATING STATION
EMERGENCY RESPONSE EQUIPMENT
HEAVY EARTH MOVING EQUIPMENT
(AVAILABLE FROM WATER/WASTEWATER SYSTEMS)

EQUIPMENT TYPE	QTY
Front End Loaders	2
Backhoes	1

Contact Water/Wastewater Systems at (352) 334-3400 x1616 (24 hours a day) or Dispatch at 334-2892 or 334-2893.

TABLE 1.1-7

DEERHAVEN FACILITY RESPONSE TEAM

NAME[1]	PHONE[2]	RESPONSE TIME	ASSIGNMENTS DURING RESPONSE[3, 4]	RESPONSE TRAINING TYPE/DATE
Dan Moffett	Work: 393-6240 Home: 505-0257 Cell: 562-1724	1 hour	Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Dino DeLeo	Work: 393-6244 Home: 418-0386	1 hour	Alternate Qualified Individual and Spill Coordinator	Position Related Work Experience; Facility Response Plan Training
Tony Waters	Work: 393-6101 Home: 473-7123	1 hour	Spill Coordinator/ Shift Supervisor	Position Related Work Experience; Facility Response Plan Training
Abe Chandler	Work: 393-6101 Home: 377-8779	1 hour	Spill Coordinator/ Shift Supervisor	Position Related Work Experience; Facility Response Plan Training
Paul Wright	Work: 393-3101 Home: (386) 454-3071	1 hour	Spill Coordinator/ Shift Supervisor	Position Related Work Experience; Facility Response Plan Training
Bill Wheeler	Work: 393-6101 Home: (386) 454-3072	1 hour	Spill Coordinator/ Shift Supervisor	Position Related Work Experience; Facility Response Plan Training
Syed Hassan	Work: 393-3201 Home: 331-6791 Cell: 222-5996	1 hour	Spill Coordinator/ Shift Supervisor	Position Related Work Experience; Facility Response Plan Training

ATTACHMENT TO SECTION 1.1: ERAP FIGURES

FIGURE I.D.	NAME
Figure 1.1-1	EMERGENCY RESPONSE FLOWCHART
Figure 1.1-2	SPILL RESPONSE NOTIFICATION FORM
Figure 1.1-3	OIL RELEASE NOTIFICATION FORM
Figure 1.1-4	DEERHAVEN GENERATING STATION SITE EVACUATION PLAN
Figure 1.1-5	DEERHAVEN GENERATING STATION SITE PLAN DIAGRAM
Figure 1.1-6	DEERHAVEN GENERATING STATION DRAINAGE PATHWAYS

Figure 1.1-1	EMERGENCY RESPONSE FLOWCHART

FIGURE 1.1-1. EMERGENCY RESPONSE FLOWCHART

EMERGENCY RESPONSE FLOWCHART
(Refer to Facility Response Plans for Details)

Actual or Potential Conditions Observed:	
• Oil or chemical spill	• Gas release
• Employee of Contractor injury	• Fire
• Health-related emergency	• Explosion

EMPLOYEE OBSERVES EMERGENCY CONDITIONS

→ Report to immediate Supervisor the location and nature of emergency, including any injuries or potential threats to property, GRU employees or the community.

SUPERVISOR OR CONTROL ROOM RECEIVING NOTIFICATION CONTACTS THE FIRST RESPONDERS AND OTHER RESOURCES BASED ON EMERGENCY

→ Take reasonable measures to prevent oil or chemical spills from entering storm drains, wetlands or other sensitive areas. Do not contact spilled material or perform any response actions beyond your level of training or otherwise puts you or others in harms way.

ACTUAL OR POTENTIAL FIRE OR EXPLOSION, SERIOUS INJURIES OR HEALTH-RELATED EMERGENCY

RADIATION EMERGENCY

LINE BREAKS OR OTHER GAS RELEASE

OIL OR HAZARDOUS CHEMICAL RELEASE

→ **911**

- City of Gainesville Risk Management: 334-5000 Ext. 5045 or 5898
- GRU Corporate Communications: 334-3400 Ext. 1035, 214-8251 (cell)
- Deerhaven Radiation Safety Officer: 334-2660, 454-5090 (home)
- GRU Gas 334-2550 (24 hours)

First Response (Containment Measures) to Oil/Chemical Release

→
- GRU Spill Coordinators (as listed in Facility's Spill Response Plan)

Agency Notifications/Compliance Assistance
(Note: Reportable spills can require <u>immediate</u> notification)

→
- Environmental Staff: R. Embry 393-1299, 538-7143 (c) 377-2789 (home)
- Environmental Staff: R. Klemans 393-1283, 386-454-7575 (home)

Assistance Beyond Facility Resources:
HAZWOPER-trained workers, environmental cleanup equipment

→
- Emergency Response Contractor (as listed in Spill Response Plan)
- Gainesville Public Works (equipment): 334-5801, 317-6581 (cell)
- Gainesville Fire-Rescue Hazardous Materials Team (HAZWOPER): 911

Figure 1.1-2	SPILL RESPONSE NOTIFICATION FORM

SPILL RESPONSE NOTIFICATION FORM (FIGURE 1.1-2)

Reporter's Last Name: _____ **First:** _____ **M.I.:**
Position:
Phone Number: (352) 334-2666
Company: Gainesville Regional Utilities
Organization Type: Municipal Power Generating Station
Address: Deerhaven Generating Station, 10001 NW 13th Street (Highway 441 North)
Gainesville, Florida **Zip:** 32653
Were Materials Discharged? ____ (Y/N)
Meeting Environmental Obligations to Report? ____ (Y/N) As determined by FIGURE 1.3-3 Oil Release Form
Are you a spill coordinator? _____ (Y/N) **Did a spill coordinator direct you to make this call?** (Y/N)
Date Called: _____ **Time Called:**
Incident Description
Source and/or Cause of Incident:

Date of Incident: _____ **Time of Incident:** _____ AM/PM
Incident Address/Location:
_____

Container Type: _____ **Tank Storage Capacity:** _____ **Units of Measure:**
Nearest City: Gainesville **State:** Florida **County:** Alachua **Zip:** 32653
Distance from City: 8 Miles **Direction from City:** Northwest of Downtown
Section: 26 **Township:** 8S **Range:** 19E
Facility Latitude: N 29 Degrees 45 Minutes 30 Seconds
Facility Longitude: W 82 Degrees 23 Minutes 15 Seconds

Material

Spilled Material	Discharged Quantity	Unit of Measure	Material Discharged in Water (Y/N)	Quantity

Response Action

Actions Taken to Correct, Control or Mitigate Incident:

Impact

Number of Injuries: _____ **Number of Deaths:** _____ **Were There Evacuations?** _____(Y/N)
Was There Any Damage? _____ (Y/N) **Damage in Dollars (approximate):**

Medium Affected: (i.e., surface water, ground surface/water, etc.)
Description:
More Information About Medium:

Additional Information

Any information about the incident not recorded elsewhere in the report:

Caller Notifications

EPA? _____ (Y/N) **State?** _____ (Y/N) **Other?** (Y/N)

Figure 1.1-3	OIL RELEASE NOTIFICATION FORM

FIGURE 1.1-3

OIL* RELEASE NOTIFICATION FORM

Date:

1. Plant: _____ 2. Location:

3. Date of Release: _____ 4. Time of Release:

5. Type of Oil: _____ 6. Amount Released:

7. Duration of Release:

8. Cause of Release:

9. Action taken to contain the release:

10. Did the released material contain PCBs ≥50 ppm?
    Yes ____ Stop and complete Form 4 (Hazardous Substance Release Notification Form)
    No ____ Continue

11. Did the release enter into a waterbody?
    Yes ____ Specify waterbody: _____ Go to 12
    No ____ Go to 13

12. Did the release cause a visible sheen?
    Yes ____ Notify agencies below
    No ____ Go to 13

Agency	Date	Time (AM/PM)	Contact Person	Caller's Name	Comments
GRU Environmental Department (Ext. 1299, 1283), 538-7143 (cell)					
National Response Center (1-800-424-8802)					
State Division of Emergency Management (850-413-9911 or 800-320-0519)					

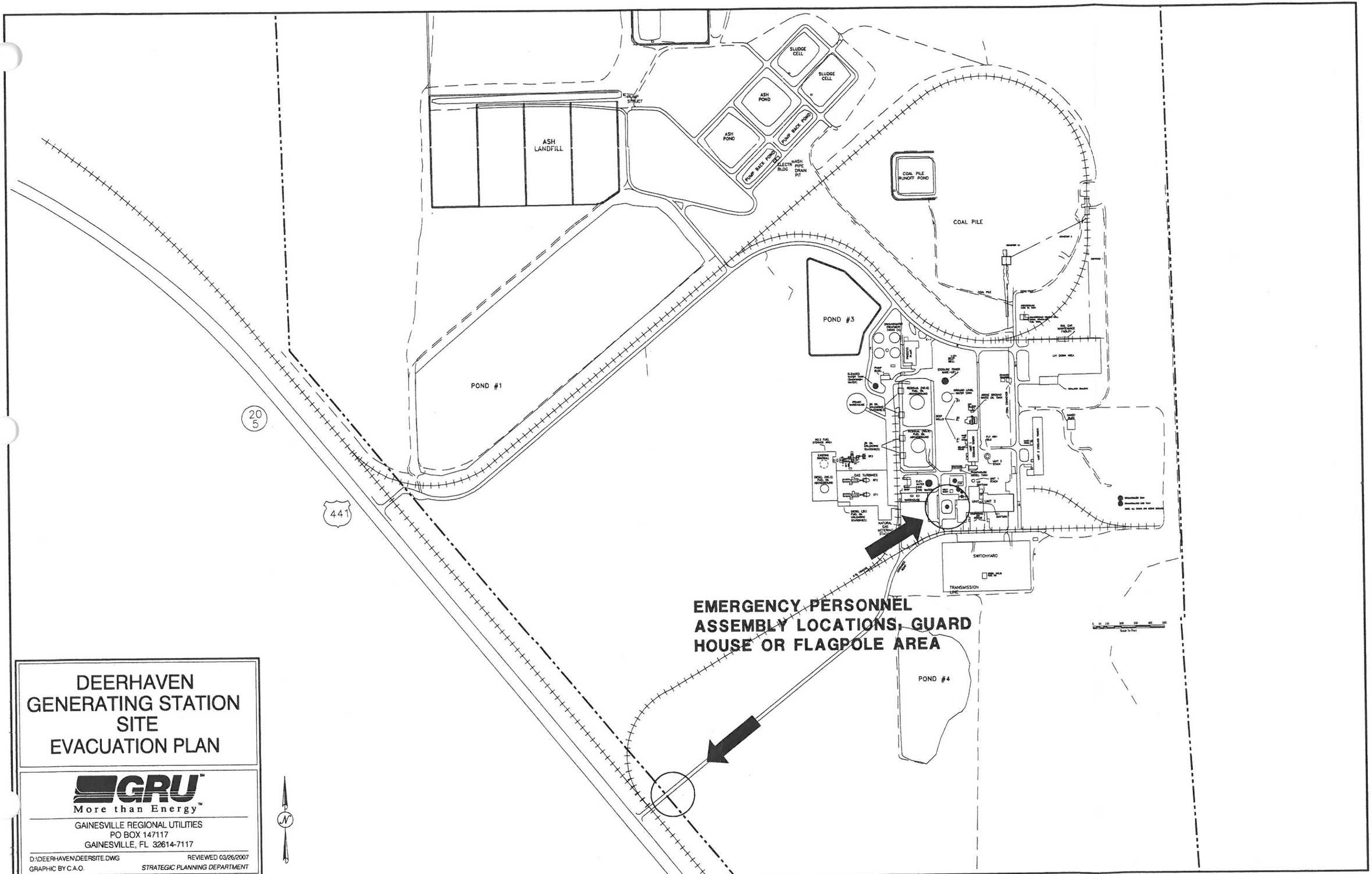
13. Did the amount released exceed 10 pounds and enter the soil, groundwater, or surface water?
    Yes ____ Notify Alachua County Environmental Protection Department (352-264-6800). Go to 15
    No ____ Go to 14

14. The release does not have to be reported to the regulatory agencies. Notify Environmental Personnel immediately. Continue to 15

15. Did the release involve fire, fatalities, injuries, or evacuation?
    Yes ____ Notify City of Gainesville Risk Management at 334-5000 x5045 or 334-5000 x5891 or Utility Dispatch (on weekends, holidays) at 334-2892 or 334-2893.
    No
    STOP

* Including petroleum, fuel oil, oil refuse and oil mixed with wastes other than dredged spoil.

Figure 1.1-4	DEERHAVEN GENERATING STATION SITE EVACUATION PLAN



DEERHAVEN GENERATING STATION SITE EVACUATION PLAN

GRU™
More than Energy™

GAINESVILLE REGIONAL UTILITIES
PO BOX 147117
GAINESVILLE, FL 32614-7117

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GRAPHIC BY C.A.O. — *STRATEGIC PLANNING DEPARTMENT*

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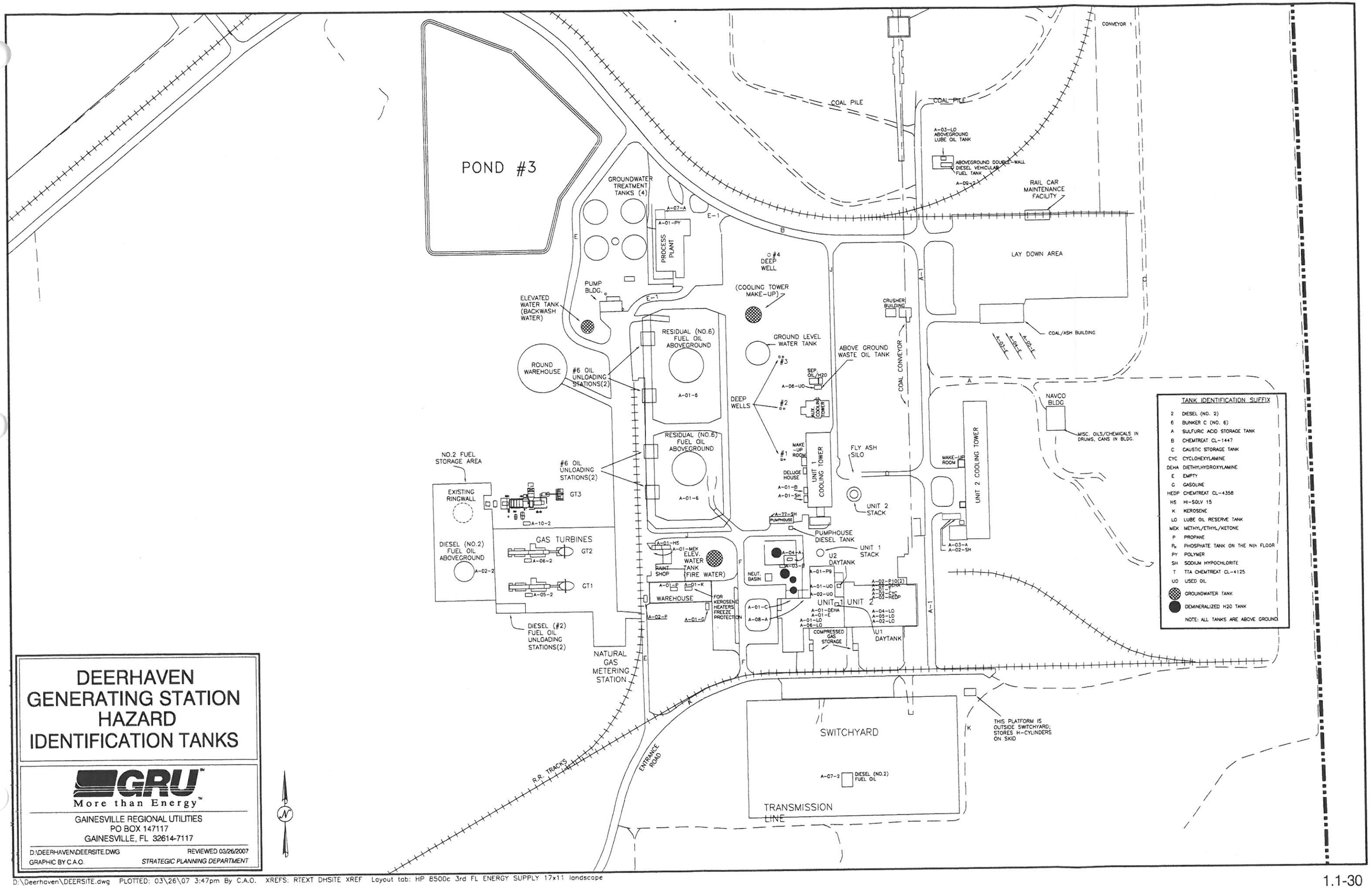
Figure 1.1-5	DEERHAVEN GENERATING STATION SITE PLAN DIAGRAM



DEERHAVEN GENERATING STATION HAZARD IDENTIFICATION TANKS

GRU More than Energy™

GAINESVILLE REGIONAL UTILITIES
PO BOX 147117
GAINESVILLE, FL 32614-7117

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GRAPHIC BY C.A.O. — *STRATEGIC PLANNING DEPARTMENT*

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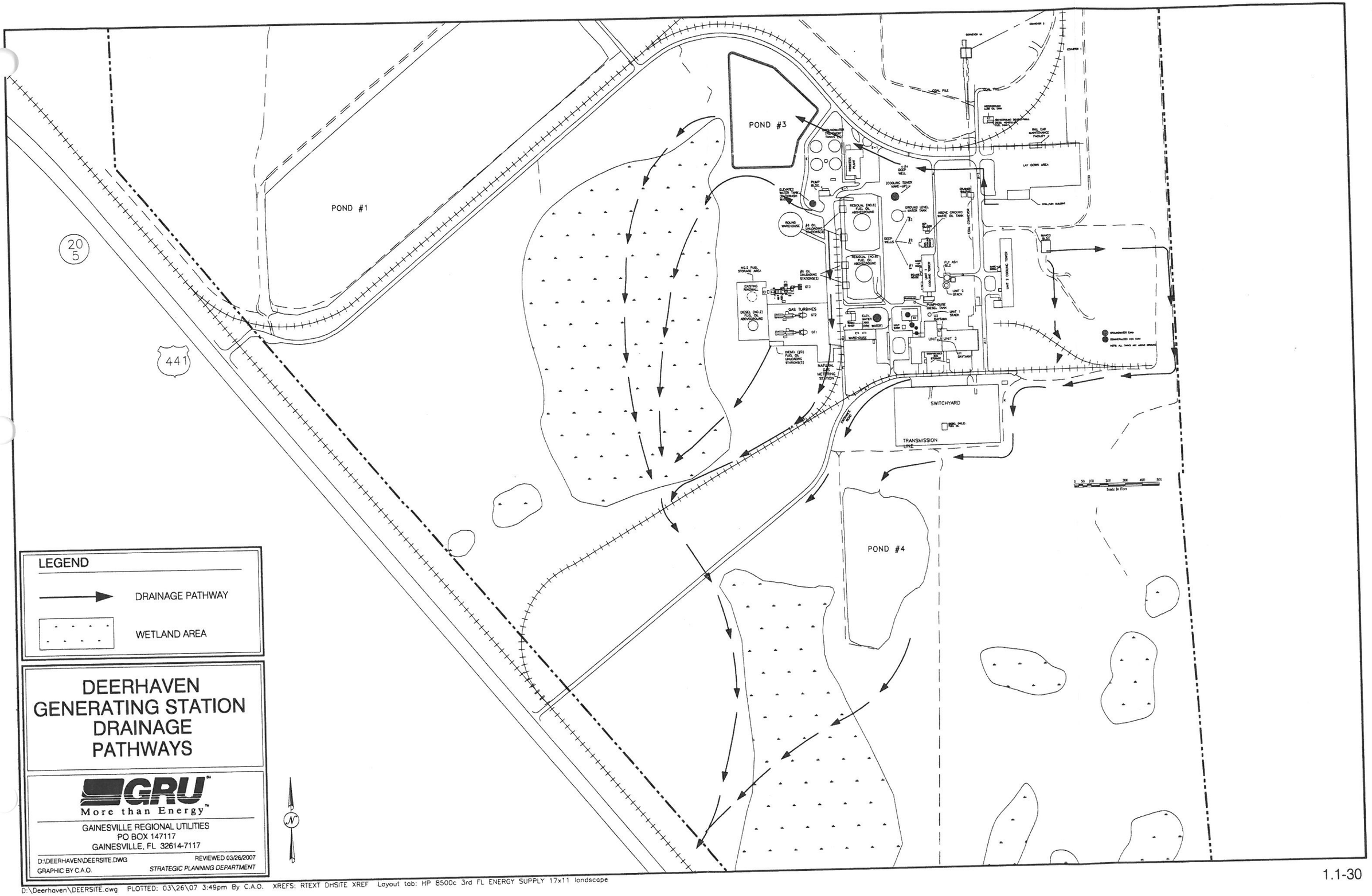
Figure 1.1-6	DEERHAVEN GENERATING STATION DRAINAGE PATHWAYS



LEGEND

DRAINAGE PATHWAY

WETLAND AREA

DEERHAVEN GENERATING STATION DRAINAGE PATHWAYS

GRU More than Energy

GAINESVILLE REGIONAL UTILITIES
PO BOX 147117
GAINESVILLE, FL 32614-7117

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GRAPHIC BY C.A.O.

REVIEWED 03/26/2007
STRATEGIC PLANNING DEPARTMENT

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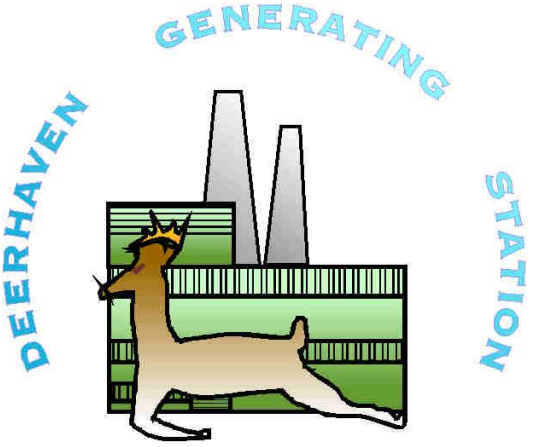
Gainesville Regional Utilities
Deerhaven Generating Station



Standard Operating Procedure:

Pond Best Practices

Prepared By:	Dan Ominski, Deerhaven Environmental Compliance Group		
Signature:		Date:	
Reviewed By:	Chris Brew, Environmental Compliance Manager		
Signature:		Date:	
Approved By:	Melissa Jones, Deerhaven Production Manager		
Signature:		Date:	

Periodic Review:

Signature	Title	Date

Contents

1. SCOPE AND APPLICATION

1.1. This SOP is intended as guidance for Process Plant operators in maintaining the Deerhaven Power Plant ash pond system, runoff ponds and construction ponds.

2. SYSTEM SUMMARY

2.1. The Deerhaven Generating Station is operated as a "zero liquid discharge" plant. The plant staff is responsible for preventing the discharge of industrial waste water and runoff water that comes in contact with plant processes from being discharged to either waters of the United States or subsurface waters. To facilitate this operation waste water impoundments (ash, sludge ponds and pump back ponds) have been constructed on site. These ponds store the total cooling tower blowdown, boiler blowdown, demineralizer regeneration products, process plant products, seal trough water, bottom ash product and carrier water generated from these plant processes. This waste water is processed and reused in three ways: 1) Process Plant Brine Concentrator and Spray Dryer system for demineralizer makeup, 2) Deerhaven Air Quality Control System dry scrubber attemperator water and as 3) offset water in the groundwater Front End Treatment cold lime softening system for cooling tower makeup.

2.2. Runoff water from the coal pile, ash landfill and brine (secure) landfill is sequestered in (respectively) the coal pile runoff pond, landfill runoff pond, and secure landfill runoff pond. The ultimate fate of coal pile runoff and landfill runoff is impoundment in the ash ponds for future processing and reuse or processing directly through the FET system. The ultimate fate of the secure landfill runoff is processing offsite through the Kanapaha waste water facility via the sewer system or impoundment for processing in the ash ponds. Secure landfill runoff is primarily processed offsite due to the adverse affect the solids in this water have on the Brine Concentrator system. This is not considered a discharge as the secure landfill runoff is contained throughout the system and is treated appropriately at the Kanapaha treatment facility.

2.3. Rainfall runoff from undeveloped areas of the plant is collected in the three construction ponds on the site. These ponds are equipped with overflow weirs/pipes and natural flow from these ponds is not considered a reportable discharge.

2.4. No sewage is treated on the Deerhaven site. All sewage from the buildings is treated via the sewer system in the Kanapaha treatment facility.

3. DEFINITIONS

3.1. **Conveyances**-in this usage a means of transferring water from one area to another. Conveyances may be streams or man made trenches. Typically, conveyances on the Deerhaven site (with the exception of the wetlands areas) are considered to be man made and are maintained by the Facilities staff.

3.2. Impoundments-in this usage natural or man made ponds or canals for the storage of water. All impoundments on the Deerhaven site are man made and maintained by the Facilities staff.

3.3. Blowdown-in this usage any waste water stream from a plant process (cooling towers, clarifiers, backwash waste, etc.).

3.4. Ash Ponds-in this usage impoundments where principally cooling tower blowdown and ash slurry are deposited.

3.5. Sludge Ponds-in this usage impoundments where principally clarifier waste water slurry is deposited.

3.6. Runoff-in this usage any water stream that has as its watershed any area of the plant. Runoff water at the Deerhaven plant is produced by rainfall only. Typically runoff water from the plant structures is conveyed and impounded in the Ash Pond System. Runoff water from the parking lots and grass is conveyed to the Construction Ponds. Runoff water from the landfills or coal pile area is conveyed and impounded in either the landfill runoff ponds or the Coal Pile Runoff Pond.

3.7. Construction Ponds-in this usage impoundments where rainfall runoff is stored. Typically this water is not contaminated by plant processes. Construction Ponds are numbered 1 through 4. Construction Pond #2 was filled in at the completion of Unit #2 in 1980.

4. ASH POND OPERATION

4.1. The ash ponds are typically filled from the plant drain sump, the LP ash sump, the backwash waste tank at the process plant and the process plant building sump. These flows (with the exception of the LP ash sump) discharge out of the south crooknecks (PDY 32-1 and PDY 32-2) on each pond.

4.2. Subsequent flows from the landfill runoff pond, coal pile runoff pond and secure landfill runoff pond enter only Ash Pond #1 via the north crookneck. These flows do not enter Ash Pond #2 as this crookneck has been blanked off to facilitate pumping the secure landfill runoff pond to Kanapaha via the sewer system at the Deerhaven plant. (PDY 31-1 and 31-2)

4.3. The LP ash sump discharges midway between both ponds via a floating line in the ponds. The flow is directed to only one pond at a time.

4.4. Ash ponds and sludge cells both flow to a common wetwell via the pump back ponds and located adjacent to pump back pond #1.

4.5. Pumping of water from the pumpback wetwell to the process plant and main plant is facilitated by three submersible ash recycle pumps (Flygt # CP 3152; nominal output 1200 gpm) and two ash pond blowdown pumps (Flygt # CP 3127; nominal output 300 gpm).

4.6. Water flows from ash ponds to the pump back ponds via a 12" butterfly valve located in the stop log structures in the ponds through a 12" ductile iron line to

the outfall in the pump back pond. The elevation of the 12" butterfly valve is 178' AMSL and the outfall elevation is 176' AMSL. Each ash pond flows to its respective pump back pond (ash pond #1 flows to pump back pond #1, etc.).

4.7. Plant flows may be directed to either ash pond. It is advantageous to isolate the bottom ash flow to one ash pond to collect the bottom ash solids and utilize the other as a heavy solids free water pond. Both ash ponds have a stop log structure to prevent the flow of settled ash into the pond valve and pipe discharge.

4.8. The dewatering elevation of a pump back pond to dewater an ash pond is 179' AMSL.

4.9. NORMAL ASH POND OPERATING PARAMETERS:

1) Ash Pond level(s) not to exceed 193' AMSL.
2) One Ash Pond designated to be bottom ash impoundment only.
3) One Ash Pond designated to be destination of plant drains, blowdown, filter backwash waste, process plant building sump, and landfill runoff and coal pile runoff.
4) Ash pond discharge valves to be kept in good working order.
5) Ash pond discharge valves to be exercised on a (min.) weekly basis.
6) Ash pond influent valves (crooknecks and bottom ash line) to be kept in good working order.
7) Ash pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts). ***If high level or,if high rainfall, radical valve changes or high blowdown conditions, several times (beginning of shift, middle of shift, end of shift) a shift.***
8) Stop logs to be checked yearly for rotting or misalignment.
9) Any notice of color change, foaming, or obvious fuming to be reported to the shift supervisor immediately.
10) Overflows, high level conditions, or out of the ordinary (bottom ash line running all shift, constant flow of crooknecks, etc.) flows to be reported immediately to shift supervisor for investigation.
11) One south crookneck must always be in the open position to accommodate blowdowns from the steam plant and process plant. Closing both crooknecks will cause backflow and flooding initially starting at the Process Plant.

5.0 SLUDGE POND OPERATION

5.1. The Sludge Ponds are filled from the Sludge Holding Tank at the Process Plant. This flow is facilitated by two 300 gpm Sludge Waste Pumps at the Process Plant Sludge Pump Station.

5.2. The source waters and slurries for the Sludge Holding Tank are clarifier blowdown (primarily $CaCO_3$ and $Mg(OH)_2$ slurry), demineralizer

regeneration waste, Process Waste Treatment Plate Separator blowdown (via the Sludge Pump Station Sump), the FET electrical bank sump and the Sludge Pump Station Sump.

5.3. Flow to the Sludge Ponds is exclusively from the Sludge Waste Pumps. The Sludge Waste Pumps pump through one of two Sludge Waste Lines. Presently the East Sludge Waste Line (a 4" HDPE line) is used exclusively with the West Sludge Waste Line (4" DIP) in last run status due to the inclusion of temporary flexible rubber hose in the line.

5.4. The influent valve structure at the east end of the sludge ponds allows both sludge ponds to be filled by either sludge waste line. These are 4" stainless steel knife gate carbon steel body type valves with wheel actuators.

5.5. The sludge slurry flows into the sludge ponds through a floating line which is used to control the deposition of the sludge in each pond.

5.6. Water flows from the sludge cells through 6" butterfly valves located in the stop log structures in these ponds. The stoplog structure as in the ash ponds prevents the fouling of the discharge valve and subsequent contamination of the Pump Back Pond water with solids. The elevation of these valves is 178' AMSL. These valves discharge to a common pipe which has an outfall on the NE corner of Pump Back Pond #2 at an elevation of 176' AMSL.

5.7. The dewatering level for the Pump Back Pond to drain the sludge ponds is 179' AMSL.

5.8. NORMAL SLUDGE POND OPERATING PARAMETERS

1) Sludge Pond level(s) not to exceed 187' AMSL.
2) One Sludge Pond designated to be sludge impoundment.
3) One Sludge Pond designated to be out of service and in reserve.
4) Sludge pond discharge valves to be kept in good working order.
5) Sludge pond discharge valves to be exercised on a (min.) weekly basis.
6) Sludge pond influent valves to be kept in good working order.
7) Sludge pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts). ***If high level or, if high rainfall, radical valve changes or high blowdown conditions, several times (beginning of shift, middle of shift, end of shift) a shift.***
8) Stop logs to be checked yearly for rotting or misalignment.
9) ***Any notice of color change, foaming, or obvious fuming to be reported to the shift supervisor immediately.***
10) Overflows, high level conditions, or out of the ordinary flows (i.e. continuous sludge flow or clear water flow) to be reported immediately to shift supervisor for investigation.

6. PUMPBACK POND OPERATION

6.1. The Pump Back Ponds are filled from their associated Ash Ponds via the 12" butterfly valve and pipe to the outfall. In addition Pump Back Pond #2 is filled from the 6" line from the common sludge cell discharge pipe via the outfall in the NE corner.

6.2. The Pump Back Ponds are emptied via the pump well adjacent to Pump Back Pond #1. Both Pump Back Ponds have their outfalls in this pump well.

6.3. The pump well at Pump Back Pond #1 is equipped with 5 Flygt pumps (see **Section 4.5.**). The pump well depth is 19.4 ft.

6.4. The Center and West Ash Recycle pumps provide makeup water for the bottom ash system via ASW 25 and the bottom ash makeup valve ASW 25-7. ASW 25 is also the source for the AQCS attemperator water.

6.5. The East Ash Recycle pump is designated for the Process Plant. When in service it supplies water to the Gainesville Pipeline (FET offset water) and the Process Plant Brine Concentrator.

6.6. The Ash Pond Blowdown pumps supply water to the Brine Concentrator and can be used to supply the Gainesville Pipeline at low flows. Typically the Ash Pond Blowdown pumps are in a standby status.

6.7. The Pump Back Pond level is impacted by makeup from the Ash Ponds and Sludge Ponds and the demand on the pond by the Ash Recycle and Ash Pond Blowdown pumps.

6.8. At high high level a designated Ash Recycle Pump is energized along with valve ASW26-1 which allows Pump Back Pond water to recirculate back to the Ash Ponds via ASW 26 and the south crooknecks. This is a fail safe feature which is designed to prevent the Pump Back Ponds from overflowing.

6.9. The dewatering level for the Pump Back Ponds is 174' AMSL or "14 steps" (by Process Plant operator reckoning); this can only be achieved by closing all influent from Ash and Sludge Ponds and either "hotwiring" out the low level trips on the Ash Recycle or Ash Pond Blowdown Pumps or using a portable pump. Total dewatering is only achieved by using a portable pump; to facilitate this the bottom ash system and AQCS must use service water makeup. Care must be taken at low level that the Ash Recycle and Ash Pond Blowdown pumps stay continuously submerged. To uncover the outfalls of the ash cells and the sludge cells in the pump back pond the level must me 12 "steps" in operator reckoning or 7.0 ft indication on the Miltronics depth indicator in the pond MCC room.

6.10. NORMAL PUMP BACK POND OPERATING PARAMETERS

1) Maintain pond level at 3 steps (185 ft AMSL).
2) Always have ASW 26-1 and at least one Ash Recycle Pump available (in auto) for auto recycling to the Ash Ponds for high level conditions.
3) Pump Back Pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts); ***if high level or, if high rainfall, radical valve changes or high blowdown conditions, check pond levels several times (beginning of shift, middle of shift, end of shift) a shift.***
4) Pump Back Pond level not to exceed 187' AMSL ("one step").
5) Pump Back Pond overflow is an immediate danger of contamination to Construction Pond #1. If the Pump Back Pond is overflowing immediately close all Ash and Sludge Pond valves. Contact the shift supervisor for containment of pond water without contamination of Construction Pond #1.
6) Pump Back Pond overflows are almost always due to failure of the pumps at the Pump Back Pumping Structure. During outages which cause the failure of MCC 18 (which is the source of electrical power to the Pump Back Pond Pumping Structure) the Pump Back Pond is at risk of overflow. Close all Ash Pond and Sludge Pond effluent valves to stabilize the level in the pond.
7) Any work on the bottom ash PLC at the precipitator house should be a red flag for the Process Plant operators and operations in general. Communication failures from the bottom ash PLC will result in a pump failure at the pump back pond structure. The immediate remedy for this is to place the Ash Pond Blowdown pumps or the East Ash Recycle pump in hand out at the ponds. Please note that while this will keep the pumps running the Process Plant will not have remote capability for start/stop of these pumps.

7. COAL PILE, LANDFILL AND SECURE LANDFILL RUNOFF POND OPERATION

COAL PILE RUNOFF POND

7.1. The Coal Pile Runoff Pond is filled from runoff ditches which are fed from rain runoff from the coal pile, runoff from the covered roof area of the coal pile and the coal tunnel pumps.

7.2. Water from the Coal Pile Runoff Pond is discharged one of two ways: via a Flygt Pump (Flygt # CP 3127; nominal 300 gpm) to the #1 Ash Pond or through an HDPE line to the FET untreated wetwell.

7.3. ***The Coal Pile Runoff Pond is extremely susceptible to overflow during intense rainfall events due to an increase in runoff from the covered area of the coal pile.***

7.4. NORMAL COAL PILE RUNOFF POND OPERATING PARAMETERS:

1) Pond level not to exceed three feet below top of pump structure (181 ft AMSL).
2) Pond discharge valves to be in good working order.
3) Pond discharge pump to be replaced immediately upon failure.
4) Pond to be pumped weekly to Ash Pond #1.
5) In case of high Ash Pond levels the Coal Pile Runoff Pond may be pumped to the FET untreated wetwell via the HEDP pipe and valve system.

LANDFILL RUNOFF POND (FLYASH CANAL)

7.5. The Landfill Runoff Pond is filled solely from the under drain system of the Fly Ash and AQCS Product Landfill.

7.6. Water from the Landfill Runoff Pond is discharged one of two ways: via the Flygt Pump (Flygt # CP 3152; nominal 1200 gpm) to the #1 Ash Pond or via the Coal Pile/Secure Landfill cross connect station to the FET untreated wetwell.

7.7. The Landfill Runoff Pond level should be kept low to facilitate draining of the landfill via the under drain system. The Landfill Runoff Pond should be pumped weekly to maintain a low level.

7.8. NORMAL LANDFILL RUNOFF POND OPERATING PARAMETERS

1) Pond level not to exceed three feet below the top of the pump structure (180 ft AMSL).
2) Pond discharge valves to be kept in good working order.
3) Pond discharge pump to be repaired or replaced in timely fashion.
4) Pond to be pumped weekly to Ash Cell #1.
5) In case of high levels in Ash Cells; pump the Landfill Runoff Pond to the FET untreated wetwell via the Coal Pile/Secure Landfill cross connect station.

SECURE LANDFILL RUNOFF POND

7.9. The Secure Landfill Runoff Pond is filled from runoff from the Secure Landfill and pumping from the French Drain system under the Secure Landfill. Typically, water from the Secure Landfill Runoff Pond is the most contaminated water on the Deerhaven site.

7.10. Water from the Secure Landfill Runoff Pond is discharged via the the Flygt pumps in the pump structure to either Ash Pond #1 or the Kanapaha treatment POTW via the lift station system discharge line system at the Deerhaven plant.

7.11. The Secure Landfill Runoff Pond pumps (Flygt # CP 3085; nominal flow is 15 gpm due to the tremendous head the pump has to overcome) are to be pumped every day from just after midnight to approximately 0700.

7.12. The HDPE piping from the Secure Landfill Runoff Pond (the piping enters the lift station system just downstream of the Process Plant lift station; however this piping bypasses the Process Plant lift station and the main plan lift station and directly enters the discharge main) must be checked periodically for leaks. Typically water from the Secure Landfill Runoff Pond is the most contaminated water on the Deerhaven site, therefore, leakage or overflow from the Secure Landfill Runoff Pond is a reportable event.

7.13. The Secure Landfill Runoff Pond must be checked daily to ensure no runoff is escaping the conveyances around landfill; all Secure Landfill runoff is to be impounded in the Secure Landfill Runoff Pond.

7.14. NORMAL SECURE LANDFILL RUNOFF POND OPERATING PARAMETERS

1) The pond level is not to exceed 2 feet below the top of the pumping structure (180 ft AMSL).
2) Pond discharge valves to be kept in good working order.
3) Pond discharge pump(s) to be replaced in a timely fashion; one pump needs to be ready for service at all times.
4) Pond is to be pumped daily from 0001 to 0700 to Kanapaha via the sewer system. Totalizer reading before and after pumping, time pump on and time pump off, and total gallons pumped to be recorded in a consistent and legible fashion on the Secure Landfill Pumping log. Log is to be initialed daily and filled out daily whether the pump is in service or not.
5) Conveyances around the pond to be inspected daily for overflow; if signs of overflow report immediately to the shift supervisor. (This is particularly important during periods of heavy rainfall).
6) In emergencies the pond may be discharged to Ash Cell #1 through the North crookneck; the limit on conductivity on Ash Cell #1 for this procedure is 3000 umhos. Higher than 3000 umhos

compromises the BC and our ability to pump Ash Pond water to the FET.

7) Pond discharge pipe (metal and HDPE) to be inspected regularly to ensure no leaks.

8. CONSTRUCTION POND OPERATION

8.1. The Construction Ponds are solely natural source**/** rainwater runoff impoundments. The outfalls of these ponds are constructed with weir gates (Construction Ponds #1 and #4) or stoplog structures (Construction Pond #3). Each pond has an overflow weir or pipe which allows the pond to discharge naturally during high rainfall events. Typically Construction Pond #4 discharges continuously through an overflow pipe while Construction Ponds #1 and #3 discharge during high rainfall events.

8.2. If for any reason Deerhaven staff decide that the Construction Pond levels need to lowered Regina Embry (x1299) must be consulted.

8.3. The outfalls of the Construction Ponds are to be sampled in accordance with the "Site Runoff SOP (W:\U0330\Process Plant\PP environmental records\SWPPP\site runoff sop v.2.)".

8.4. Any change in color, fish kills or obvious drops in levels in these ponds are to be reported to the shift supervisor at once.

8.5. The construction ponds should be checked weekly to look for berm leaks or damage to the outfall structures.

Appendix A

Normal Ash Pond Operating Parameters

1) Ash Pond level(s) not to exceed 193' AMSL.

2) One Ash Pond designated to be bottom ash impoundment only.

3) One Ash Pond designated to be destination of plant drains, blowdown, filter backwash waste, process plant building sump, and landfill runoff and coal pile runoff.

4) Ash pond discharge valves to be kept in good working order.

5) Ash pond discharge valves to be exercised on a (min.) weekly basis.

6) Ash pond influent valves (crooknecks and bottom ash line) to be kept in good working order.

7) Ash pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts). ***If high level or, if high rainfall, radical valve changes or high blowdown conditions, several times (beginning of shift, middle of shift, end of shift) a shift.***

8) Stop logs to be checked yearly for rotting or misalignment.

9) Any notice of color change, foaming, or obvious fuming to be reported to the shift supervisor immediately.

10) Overflows, high level conditions, or out of the ordinary (bottom ash line running all shift, constant flow of crooknecks, etc.) flows to be reported immediately to shift supervisor for investigation.

11) One south crookneck must always be in the open position to accommodate blowdowns from the steam plant and process plant. Closing both crooknecks will cause backflow and flooding initially starting at the Process Plant.

Appendix B

Normal Sludge Pond Operating Parameters

1) Sludge Pond level(s) not to exceed 187' AMSL.

2) One Sludge Pond designated to be sludge impoundment.

3) One Sludge Pond designated to be out of service and in reserve.

4) Sludge pond discharge valves to be kept in good working order.

5) Sludge pond discharge valves to be exercised on a (min.) weekly basis.

6) Sludge pond influent valves to be kept in good working order.

7) Sludge pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts). ***If high level or, if high rainfall, radical valve changes or high blowdown conditions, several times (beginning of shift, middle of shift, end of shift) a shift.***

8) Stop logs to be checked yearly for rotting or misalignment.

9) Any notice of color change, foaming, or obvious fuming to be reported to the shift supervisor immediately.

11) Overflows, high level conditions, or out of the ordinary flows (i.e. continuous sludge flow or clear water flow) to be reported immediately to shift supervisor for investigation.

Appendix C

Normal Pump Back Pond Operating Parameters

1) Maintain pond level at 3 steps (185 ft AMSL).

2) Always have ASW 26-1 and at least one Ash Recycle Pump available (in auto) for auto recycling to the Ash Ponds for high level conditions.

3) Pump Back Pond levels to be checked, recorded and initialed at least once a shift (12 hour shifts); ***if high level or, if high rainfall, radical valve changes or high blowdown conditions, check pond levels several times (beginning of shift, middle of shift, end of shift) a shift.***

4) Pump Back Pond level not to exceed 187' AMSL ("one step").

5) Pump Back Pond overflow is an immediate danger of contamination to Construction Pond #1. ***If the Pump Back Pond is overflowing immediately close all Ash and Sludge Pond valves***. Contact the shift supervisor for containment of pond water without contamination of Construction Pond #1.

6) Pump Back Pond overflows are almost always due to failure of the pumps at the Pump Back Pumping Structure. ***During outages which cause the failure of MCC 18 or Power Center #4 (which is the source of electrical power to the Pump Back Pond Pumping Structure) the Pump Back Pond is at risk of overflow***. Close all Ash Pond and Sludge Pond effluent valves to stabilize the level in the Pump Back Pond.

7) Outages which cause the failure of the Bottom Ash PLC (in the Precipitator House) or the loss of MCC 16, MCC 18 or Power Center #4 will cause loss of communication between the Process Plant and the Pump Back Pond Pump PLC controller. Pumps may be returned to service in manual until the communications problem is troubleshot (if MCC 18 or Power Center #4 is out then see **6)** above for countermeasures).

Appendix D

Normal Runoff Pond Operating Parameters

NORMAL COAL PILE RUNOFF POND OPERATING PARAMETERS

1) Pond level not to exceed three feet below top of pump structure (181 ft AMSL).

2) Pond discharge valves to be in good working order.

3) Pond discharge pump to be replaced immediately upon failure.

4) Pond to be pumped weekly to Ash Pond #1.

5) In case of high Ash Pond levels the Coal Pile Runoff Pond may be pumped to the FET untreated wetwell via the HDPE pipe and valve system.

NORMAL LANDFILL RUNOFF POND OPERATING PARAMETERS

1) Pond level not to exceed three feet below the top of the pump structure (180 ft AMSL).

2) Pond discharge valves to be kept in good working order.

3) Pond discharge pump to be repaired or replaced in timely fashion.

4) Pond to be pumped weekly to Ash Cell #1.

5) In case of high levels in Ash Cells; pump the Landfill Runoff Pond to the FET untreated wetwell via the Coal Pile/Secure Landfill cross connect station.

NORMAL SECURE LANDFILL RUNOFF POND OPERATING PARAMETERS

1) The pond level is not to exceed 2 feet below the top of the pumping structure (180 ft AMSL).

2) Pond discharge valves to be kept in good working order.

3) Pond discharge pump(s) to be replaced in a timely fashion; one pump needs to be ready for service at all times.

4) Pond is to be pumped daily from 0001 to 0700 to Kanapaha via the sewer system. Totalizer reading before and after pumping, time pump on and time pump off, and total gallons pumped to be recorded in a consistent and legible fashion on the Secure Landfill Pumping log. Log is to be initialed daily and filled out daily whether the pump is in service or not.

5) Conveyances around the pond to be inspected daily for overflow; if signs of overflow report immediately to the shift supervisor. (This is particularly important during periods of heavy rainfall).

6) In emergencies the pond may be discharged to Ash Cell #1 through the North crookneck; the limit on conductivity on Ash Cell #1 for this procedure is 3000 umhos. Higher than 3000 umhos compromises the BC and our ability to pump Ash Pond water to the FET.

7) Pond discharge pipe (metal and HDPE) to be inspected regularly to ensure no leaks.

Appendix E

Construction Pond Operation

1) Any change in color, fish kills or obvious drops in levels in these ponds are to be reported to the shift supervisor at once.

2) The construction ponds should be checked weekly to look for berm leaks or damage to the outfall structures.

3) Level management of the construction ponds due to weather or plant needs is to be done with the consultation of the Environmental Engineering staff.

Appendix F

Pond Strategies and Tribal Knowledge

Keep one ash pond for bottom ash and one for the plant drains. This allows the segregation of waters when we have strong thunderstorms or tropical storm activity. If we reduce or eliminate the blowdown during these high rainfall times it may be possible to have one pond with all the excess rainwater which will allow us to process it through the FET at a very high rate.

Utilize pond source and chemistry if the suspended solids in the BC get low (<10000 ppm). Select the ponds for processing through the BC that have the highest Ca fraction. Have the lions share of the pump back ponds having the high Ca ponds as the source water.

Use a slipstream of $Ca(OH)_2$ from the process plant drain to mitigate any large low pH or high transition metal flows to the ash ponds. This helps in two ways, 1) it adds to the Ca fraction in the ponds and 2) pH's of 11+ actively precipitate out metals with high charge densities. This strategy may also be employed if the pond water suspended solids become a problem.

Urea has proven to be a lingering issue for BC product water impacting the demineralizers and Cooling tower alkalinities if dumped in large quantities (1000 gallons or greater) to the pond system. In the event of a large urea dump segregate the urea in the ash pond with the least impact on the pump back cells (usually the bottom ash pond) so it may be introduced at a small flow to the system. Any hydrolyzer flushing or cleaning must be treated as a large urea dump.

If the ponds are low level and we are in danger of losing bottom ash makeup or AQCS attemperator water makeup begin selectively deleting the following process streams: 1) gradually lower the "Gainesville Pipeline" flow rate, 2) begin to lower the BC processing rate. As the BC has a poor turndown (we don't want to go below 150 gpm on makeup) we can also employ lowering the Soda Ash feed to the secondary clarifiers on the FET; this will increase cooling tower blow down (with a higher Ca fraction) that will replenish the pond supply. Work closely with the lab as this may be hazardous with poor alkalinity control in Unit #1 tower.

Landfill runoff and coal pile runoff may be processed through the FET by use of the secure landfill coal pile runoff cross connect station.

Try to have one sludge pond empty to accommodate unusual pond flows.

Leave the construction ponds alone unless there is a danger to the plant roads or railways. Natural outflow from these ponds is not an issue however fish and wildlife kills due to low levels may be if these are caused by poor water management.

Replace valves and pumps when they break down.

Monitor the piping to and from the ponds by walking them down not riding in the truck. Its difficult to spot leaks from the truck.

Keep the level in the Coal Pile Runoff Pond to a minimum by constantly pumping. This pond is easily susceptible to overflow due to inclement weather.

Keep the level in the Landfill Runoff Pond to a minimum as this will keep the ash landfill dry.

Keep pumping the level in the Secure Landfill at a constant rate. Make sure to fill out the landfill pumping records whether the pumps are in service or not.

When a pond gets full of sediment make arrangements to have it dredged as quickly as possible.

Get pond valves back in service as soon as possible. This saves on having to use pumps to move pond water.

Make sure to always have a high volume pump available during times of high rainfall.

Back pumping from the landfill runoff ponds or coal pile runoff pond to the ash ponds is not a viable strategy unless the use of overland flex hoses is employed. The backflow preventors on the lines from the landfill runoffs and the coal pile runoff to the ash ponds are still viable.

Bottom ash PLC failures and or maintenance is a red flag for the Process Plant; the shift supervisor needs to notify the PP in the event of a failure of this system. If a failure happens the Ash Pond Blowdown or the East Ash Recycle pump needs to be started in hand locally. This will enable the pump to keep running however the Process Plant will lose remote start/stop capability.

To expose the outfalls of the ash cells and sludge cells in the pump back cell jumper out the low level trip for the ash recycle pumps and ash pond blowdown pumps and allow the pond level to drop to 12 "steps" or 7.0 ft on the Miltronics indicator in the pump back pond MCC house. This will be 176' AMSL.

GRU More than Energy℠

GAINESVILLE REGIONAL UTILITIES

STRATEGIC PLANNING

April 18, 2013

Mr. Robert L. Martin, P.G.
Florida Department of Environmental Protection
8800 Baymeadows Way, Suite 100
Jacksonville, FL 32256-7590

Re: Gainesville Regional Utilities Deerhaven Generating Station
Quarterly Groundwater Monitoring Results
Quarter 1, 2013

Dear Mr. Martin,

Enclosed is the Deerhaven Generating Station groundwater monitoring report for Quarter 1 of 2013 monitoring period.

If you have any questions or require further information, please do not hesitate to contact me at (352) 393-1304.

Sincerely,

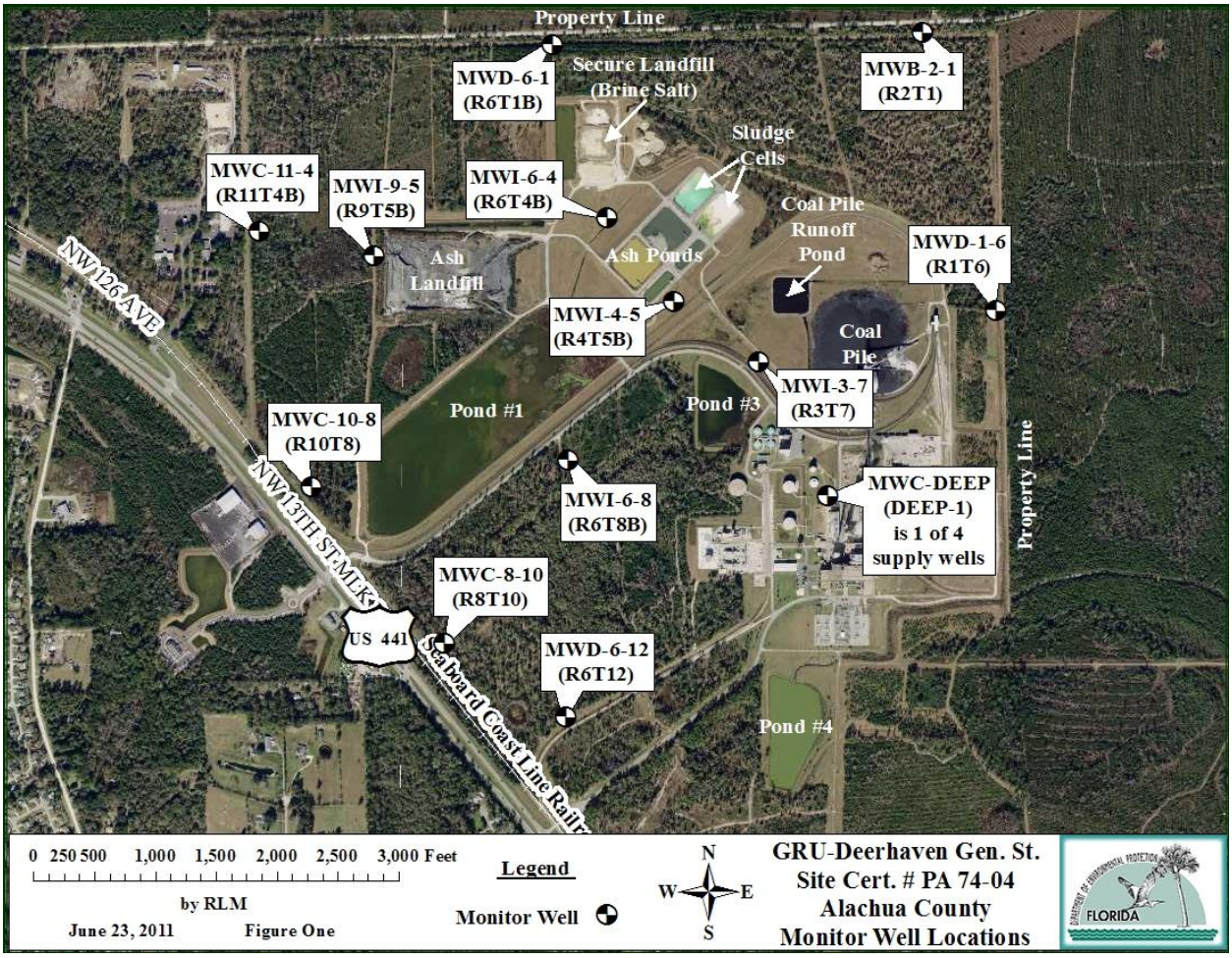
Boi Hoang
Utility Engineer

Enclosures

cc: file: WDH2.2

Electronically: K. Klemans
J. Shaw
C. Lewis
S. Phillips

P.O. Box 147117, Station A136, Gainesville, Florida 32614-7117, Telephone: (352) 334-3400 ext. 1260 Fax: (352) 334-3151



State of Florida
Department of Environmental Protection

GROUNDWATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station County: Alachua
Address: Post Office Box 147117 Station D38
City: Gainesville State: Florida ZIP: 32614-7117
Telephone No: (352) 393-6240
Facility ID (DEP Permit No): FLA017161 (PA 74-04)
Authorized Representative: Joe W. Shaw Title: Production Manager
Address: Same
City: Same State: Same ZIP: Same
Telephone No: Same
Type of Discharge: Industrial Wastewater
Method of Discharge: Ponds/Basins

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature of Owner or Authorized Representative Date: 4/16/13

GRU Deerhaven DOH Certification # E52876
GRU Kannapaha Laboratory DOH Certification # E52099 — 3901 SW 63rd Blvd. Gainesville, FL 32608 (352) 393-6777
KNL Laboratory Services DOH Certification # E84025 — 2742 N Florida Ave. P.O. Box 1833 Tampa, FL 33601 (813) 229-2879
Pace Analytical Services, Inc. DOH Certification # E83079 — 8 East Tower Circle Ormond Beach, FL 32174 (386) 672-5668

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/7/2013 2
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27662
Testsite Name: MWD-1-6 (R1T6)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	3.8	I	ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	14.6		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.7	I	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	49.8		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	14.5		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	4.6		ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	170		PCU	20
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.52		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	4.2		pCi/L	1.2
Iron	01045	No	Nitric Acid	EPA 200.7	4930		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	28.6		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	196		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	3.3	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.032	I	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	6.48		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.48		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	11.9		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	509		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	44.9		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	2.5	U	mg/L	2.5
Temperature	00010	No	none	FDEP	19.7		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	265		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	5.2		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/7/2013 2
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27662
Testsite Name: MWD-1-6 (R1T6)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	7.4		mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.54		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	183.2		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-97.7	D	mV	1

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/8/2013 4
Report Date: Tuesday, April 16, 2013

Well Type: Background
WAFR Testsite ID: 27663
Testsite Name: MWB-2-1 (R2T1)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	186		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	2.0		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	11.1		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	9.6		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	7	I	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	3.02		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	1.9		pCi/L	0.9
Iron	01045	No	Nitric Acid	EPA 200.7	21.0		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	0.59		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	4.6		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	2.4		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.70		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.25		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	4.1		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	102.9		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	47.6		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	3.9	I	mg/L	2.5
Temperature	00010	No	none	FDEP	19.8		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	55		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	2.2		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/8/2013 4
Report Date: Tuesday, April 16, 2013

Well Type: Background
WAFR Testsite ID: 27663
Testsite Name: MWB-2-1 (R2T1)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.73		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	5.3		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	181.84		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1.3	I	ug/L	1
Redox Potential	00090	No	None	FDEP	-21.7	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27664
Testsite Name: MWI-3-7 (R3T7)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	24.7		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	1.3		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	24.6		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	14.2		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	2.4	I	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	8	I	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1.7	I	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	1.66		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	0.6		pCi/L	1.2
Iron	01045	No	Nitric Acid	EPA 200.7	975		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	5.50		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	18.7		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	5.6		ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	3.9	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.10		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	6.26		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	1.09		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	57.3		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	440.6		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	97.3		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	80.3		mg/L	2.5
Temperature	00010	No	none	FDEP	19.4		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	220		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	3.0		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27664
Testsite Name: MWI-3-7 (R3T7)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	1.24		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	5.7		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	179.63		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-70.8	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/7/2013 4
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27665
Testsite Name: MWI-4-5 (R4T5B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	101		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	14.0		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	3.3		ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	121		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	5.8		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	900		PCU	100
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.33		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	2.5		pCi/L	1.3
Iron	01045	No	Nitric Acid	EPA 200.7	30,700		ug/L	10
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	40.0		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	167		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1.5	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.052		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	6.20		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.70		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	13.8		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	906		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	108		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	12.1		mg/L	2.5
Temperature	00010	No	none	FDEP	20.0		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	475		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	23.2		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/7/2013 4
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27665
Testsite Name: MWI-4-5 (R4T5B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	50		mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.26	I	NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	178.77		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1.7	I	ug/L	1
Redox Potential	00090	No	None	FDEP	-216.5	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 3
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27671
Testsite Name: MWD-6-1 (R6T1B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	219		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	7.8		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	3.42		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	46.0		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	2.8	I	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	5	U	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.51		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	2.6		pCi/L	0.9
Iron	01045	No	Nitric Acid	EPA 200.7	221		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	1.78		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	3.0	I	ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA:200.7	2.8	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.025	U	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.02		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.10		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	22.3		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	175.1		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	6.5		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	2.5	U	mg/L	2.5
Temperature	00010	No	none	FDEP	21.3		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	74		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	1.3		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 3
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27671
Testsite Name: MWD-6-1 (R6T1B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.23	I	NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	180.52		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-163.3	D	mV	1

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27672
Testsite Name: MWI-6-4 (R6T4B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	1190		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	29.6		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	1.0	I	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	64.8		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	114		mg/L	12.5
Chromium	01034	No	Nitric Acid	EPA 200.7	2.4	I	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	3.0	I	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	13	I	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.29		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	8.5		pCi/L	4.0
Iron	01045	No	Nitric Acid	EPA 200.7	7,700		ug/L	2
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	23.8		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	77.9		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	21.8		ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.031	I	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.64		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	4.66		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	313		mg/L	0.05
Specific Conductance(field)	00094	No	None	SM2510B	1858		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	190		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	697		mg/L	25.0
Temperature	00010	No	none	FDEP	20.0		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	1290		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	12.8		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27672
Testsite Name: MWI-6-4 (R6T4B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	3.6	I	mg/L	1.0
Turbidity	82079	No	None	SM2130B	1.16		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	64.5		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	180.89		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	10.2		ug/L	1
Redox Potential	00090	NO	None	FIELD	-255.0	D	mV	1

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/8/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27673
Testsite Name: MWI-6-8 (R6T8B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	1530		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	11.4		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	28.8		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	7.3		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1.1	I	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	50		PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1.6	I	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	1.97		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	3.9		pCi/L	1.0
Iron	01045	No	Nitric Acid	EPA 200.7	866		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	16.3		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	9.1		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.18		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	6.37		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	5.36		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	10.4		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	316.2		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	48.1		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	12.7		mg/L	2.5
Temperature	00010	No	none	FDEP	17.5		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	171		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	12.6		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/8/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27673
Testsite Name: MWI-6-8 (R6T8B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	4.2		mg/L	1.0
Turbidity	82079	No	None	SM2130B	7.54		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	2.4	I	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	174.94		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-111.9	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27674
Testsite Name: MWD-6-12 (R6T12)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	1580		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	9.5		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.7	I	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	13.1		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	5.3		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	4.6		ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	140		PCU	20
Copper	01042	No	Nitric Acid	EPA 200.7	106		ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	7.63		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	4.8		pCi/L	0.8
Iron	01045	No	Nitric Acid	EPA 200.7	693		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	1.62		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	8.8		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	4.9		ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.41		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	6.40		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.50		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	7.28		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	117.4		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	46.8		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	10.0		mg/L	2.5
Temperature	00010	No	none	FDEP	21.2		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	66		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	19.9		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Site Boundary
WAFR Testsite ID: 27674
Testsite Name: MWD-6-12 (R6T12)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	10.5		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	17.5		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	170.57		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	4.6		ug/L	1
Redox Potential	00090	No	None	FDEP	-29.7	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27676
Testsite Name: MWC-8-10 (R8T10)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	897		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	9.4		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.9		ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	25.7		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	108		mg/L	5.0
Chromium	01034	No	Nitric Acid	EPA 200.7	15.1		ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	2.0	I	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	90		PCU	10
Copper	01042	No	Nitric Acid	EPA 200.7	1.6	I	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.98		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	12.2		pCi/L	1.3
Iron	01045	No	Nitric Acid	EPA 200.7	8010		ug/L	2
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	7.04		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	8.3		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	9.4		ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.11		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.12		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.06		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	62.5		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	599		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	26.0		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	69.0		mg/L	2.5
Temperature	00010	No	none	FDEP	20.5		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	377		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	38.3		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 1
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27676
Testsite Name: MWC-8-10 (R8T10)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	1.89		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	34.4		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	173.57		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	2.5	I	ug/L	1
Redox Potential	00090	No	None	FDEP	-115.8	D	mV	1

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27677
Testsite Name: MWI-9-5 (R9T5B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	8.3		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	12.2		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	15.1		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	4.9	I	mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1.1	I	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	5	U	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	2.7	I	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	1.03		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	2.4		pCi/L	0.8
Iron	01045	No	Nitric Acid	EPA 200.7	6.9		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	2.34		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	32.2		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1.5	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	1.3		mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.68		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	1.89		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	3.85		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	127.8		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	93.0		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	6.0		mg/L	2.5
Temperature	00010	No	none	FDEP	20.2		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	10	U	mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	2.9		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Intermediate
WAFR Testsite ID: 27677
Testsite Name: MWI-9-5 (R9T5B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.13	I	NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	5.8		ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	180.01		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-101.3	D	mV	1

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27678
Testsite Name: MWC-10-8 (R10T8)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	31.7		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	3.0		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	11.8		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	4.3	I	mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	5	U	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.41		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	0.7		pCi/L	0.9
Iron	01045	No	Nitric Acid	EPA 200.7	315		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	2.45		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	12.8		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1.6	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.025	U	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.36		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.14		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	2.25		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	104.7		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	13.2		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	17.3		mg/L	2.5
Temperature	00010	No	none	FDEP	22.0		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	10	U	mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	2.3		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: SRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27678
Testsite Name: MWC-10-8 (R10T8)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.37	I	NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	176.88		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-267.5	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 5
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27679
Testsite Name: MWC-11-4 (R11T4B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	96.2		ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	4.0		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	6.75		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	40.2		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	4.1		ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	5	I	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.38		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	10.4		pCi/L	1.0
Iron	01045	No	Nitric Acid	EPA 200.7	426		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	3.48		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	12.4		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	3.4	I	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.025	U	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	5.38		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.32		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	60.4		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	393.0		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	4.9		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	91.9		mg/L	2.5
Temperature	00010	No	none	FDEP	19.8		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	228		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	16.8		mg/L	0.50

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/9/2013 5
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27679
Testsite Name: MWC-11-4 (R11T4B)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: Peristaltic Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.56		NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	3.0	I	ug/L	1
Water Level(NGVD)	82545	No	None	FDEP	175.82		Ft	.01
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-244.8	D	mV	1

GROUND WATER MONITORING REPORT — Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27681
Testsite Name: MWC-DEEP (DEEP-1)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: In Situ Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Aluminum	01105	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Arsenic	01002	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Barium	01007	No	Nitric Acid	EPA 200.7	11.5		ug/L	0.1
Beryllium	01012	No	Nitric Acid	EPA 200.7	0.06	U	ug/L	0.06
Cadmium	01027	No	Nitric Acid	EPA 200.7	0.3	U	ug/L	0.3
Calcium	00916	No	Nitric Acid	EPA 200.7	59.6		mg/L	0.01
Chloride	00940	No	Chill 4 deg C	EPA 300	9.4		mg/L	2.5
Chromium	01034	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Cobalt	01037	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Color	00080	No	Chill 4 deg C	SM 2120B	5	U	PCU	5
Copper	01042	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Dissolved Oxygen	00300	No	None	FDEP	0.25		mg/L	0.01
Gross Alpha	80045	No	Nitric Acid	EPA 900.0	0.8		pCi/L	1.1
Iron	01045	No	Nitric Acid	EPA 200.7	12.3		ug/L	1
Lead	01051	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Magnesium	00927	No	Nitric Acid	EPA 200.7	20.8		mg/L	0.01
Manganese	01055	No	Nitric Acid	EPA 200.7	9.6		ug/L	1
Mercury	71900	No	Nitric Acid	EPA 245.1	0.1	U	ug/L	0.1
Molybdenum	01062	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nickel	01067	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Nitrite+Nitrate(N)	00630	No	Sulfuric Acid-Chill	EPA 353.2	0.025	U	mg/L	0.025
pH(field)	00406	No	None	SM4500H+B	7.42		SU	0.01
Potassium	00937	No	Nitric Acid	EPA 200.7	0.84		mg/L	0.01
Selenium	01147	No	Nitric Acid	EPA 200.7	4	U	ug/L	4
Silver	01077	No	Nitric Acid	EPA 200.7	0.4	U	ug/L	0.4
Sodium	00929	No	Nitric Acid	EPA 200.7	8.67		mg/L	0.01
Specific Conductance(field)	00094	No	None	SM2510B	477.3		uS/cm	1
Strontium	01082	No	Nitric Acid	EPA 200.7	1050		ug/L	0.1
Sulfate	00945	No	Chill 4 deg C	EPA 300	39.6		mg/L	2.5
Temperature	00010	No	none	FDEP	23.3		deg C	0.1
Total Dissolved Solids	70304	No	Chill 4 deg C	SM2540C	259		mg/L	10
Total Organic Carbon	00680	No	Sulfuric Acid-Chill	SM 5310B	2.0		mg/L	0.50

GROUND WATER MONITORING REPORT

Facility Name: GRU-Deerhaven Generating Station

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27681
Testsite Name: MWC-DEEP (DEEP-1)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: In Situ Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL
Total Suspended Solids	00530	No	Chill 4 deg C	SM2540D	1.0	U	mg/L	1.0
Turbidity	82079	No	None	SM2130B	0.1	U	NTU	0.1
Vanadium	01087	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Zinc	01092	No	Nitric Acid	EPA 200.7	1	U	ug/L	1
Redox Potential	00090	No	None	FDEP	-327.1	D	mV	1

Facility ID: FLA017161
Report Period: **1Q13**
Sample Date: 1/10/2013
Report Date: Tuesday, April 16, 2013

Well Type: Compliance
WAFR Testsite ID: 27681
Testsite Name: MWC-DEEP (DEEP-1)

Was Well Purged Before sample collection: YES
Ground Water Classification: GII
Sample Method: In Situ Pump

Parameter	STORET CODE	Samples Filtered?	Preservative added?	Analysis Method	Analytical Results	Qualifier	Units	MDL

I certify that all of the analytical results comply with NELAC Standards and/or were generated by NELAC laboratories certified by the Florida Department of Health

Report Date: **4/16/2013--10:14 AM**

Quality Assurance Officer: Shelley Phillips

Technical Director: C. C. [illegible]

Remarks

Appendix B

USEPA Checklists

Coal Combustion Dam Inspection Checklist Form

US Environmental Protection Agency

Site Name:	Gainesville Regional Utilities (GRU)- Deerhaven Plant	Date:	August 29, 2012
Unit Name:	Process Water Ponds	Operator's Name:	GRU
Unit I.D.:		Hazard Potential Classification:	High Significant (Low)
Inspector's Name:	William Fox/ Eduardo Gutierrez		

Check the appropriate box below. Provide comments when appropriate. If not applicable or not available, record "N/A". Any unusual conditions or construction practices that should be noted in the comments section. For large diked embankments, separate checklists may be used for different embankment areas. If separate forms are used, identify approximate area that the form applies to in comments.

	Yes	No		Yes	No
1. Frequency of Company's Dam Inspections?	Daily		18. Sloughing or bulging on slopes?		X
2. Pool elevation (operator records)?	190;193		19. Major erosion or slope deterioration?		X
3. Decant inlet elevation (operator records)?	DNA		20. Decant Pipes:		
4. Open channel spillway elevation (operator records)?	DNA		Is water entering inlet, but not exiting outlet?	X	
5. Lowest dam crest elevation (operator records)?	195.0		Is water exiting outlet, but not entering inlet?		X
6. If instrumentation is present, are readings recorded (operator records)?		X	Is water exiting outlet flowing clear?		DNA
7. Is the embankment currently under construction?		X	21. Seepage (specify location, if seepage carries fines, and approximate seepage rate below):		
8. Foundation preparation (remove vegetation,stumps, topsoil in area where embankment fill will be placed)?		N/A	From underdrain?		DNA
9. Trees growing on embankment? (If so, indicate largest diameter below)		X	At isolated points on embankment slopes?	X	
10. Cracks or scarps on crest?		X	At natural hillside in the embankment area?		X
11. Is there significant settlement along the crest?		X	Over widespread areas?		X
12. Are decant trashracks clear and in place?	DNA		From downstream foundation area?		X
13. Depressions or sinkholes in tailings surface or whirlpool in the pool area?		X	"Boils" beneath stream or ponded water?		X
14. Clogged spillways, groin or diversion ditches?	DNA		Around the outside of the decant pipe?		DNA
15. Are spillway or ditch linings deteriorated?	DNA		22. Surface movements in valley bottom or on hillside?		X
16. Are outlets of decant or underdrains blocked?	DNA		23. Water against downstream toe?		X
17. Cracks or scarps on slopes?		X	24. Were Photos taken during the dam inspection?	X	

Major adverse changes in these items could cause instability and should be reported for further evaluation. Adverse conditions noted in these items should normally be described (extent, location, volume, etc.) in the space below and on the back of this sheet.

Inspection Issue #	Comments
1.	Daily by plant personnel during regular operation walk-arounds.
2.	Pool elevation for cell 1= 193.0 and Pool elevation for cell 2= 190.0; Elevation varies on demand of plant operations. Water levels are adjusted by pumping depending on operation.
21.	Wet areas and areas of standing water were observed along the embankment toes of slope.

N/A = Not Available
DNA = Does Not Apply

Coal Combustion Waste (CCW)
Impoundment Inspection

Impoundment NPDES Permit # Not Applicable (Deerhaven Plant is a Zero-discharge Facility) INSPECTOR William Fox and Eduardo Gutierrez

Date August 29, 2012

Impoundment Name Process Water Ponds

Impoundment Company Gainesville Regional Utilities

EPA Region 4

State Agency (Field Office) Addresss 61 Forsyth Street, SW
Atlanta, Ga 30303-8960

Name of Impoundment Process Water Ponds

(Report each impoundment on a separate form under the same Impoundment NPDES Permit number)

New X Update _____

	Yes	No
Is impoundment currently under construction?	_____	X
Is water or ccw currently being pumped into the impoundment?	X	_____

IMPOUNDMENT FUNCTION: Receive process water (cooling tower blow down, plant drains, industrial process water including sluiced bottom ash, etc.) from generating station for reuse to generating station

Nearest Downstream Town : Name Gainesville, Florida

Distance from the impoundment 3 miles

Impoundment Location:
Longitude 82 Degrees 23 Minutes 32.72W Seconds
Latitude 29 Degrees 45 Minutes 55.03N Seconds
State Florida County Alachua County

Does a state agency regulate this impoundment? YES X NO _____

If So Which State Agency? Florida Department of Environmental Protection

HAZARD POTENTIAL (In the event the impoundment should fail, the following would occur):

_____ **LESS THAN LOW HAZARD POTENTIAL:** Failure or misoperation of the dam results in no probable loss of human life or economic or environmental losses.

__X__ **LOW HAZARD POTENTIAL:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

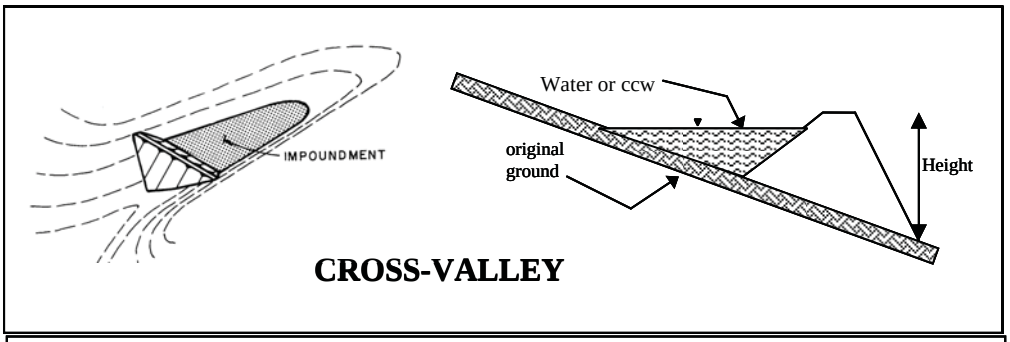
_____ **SIGNIFICANT HAZARD POTENTIAL:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

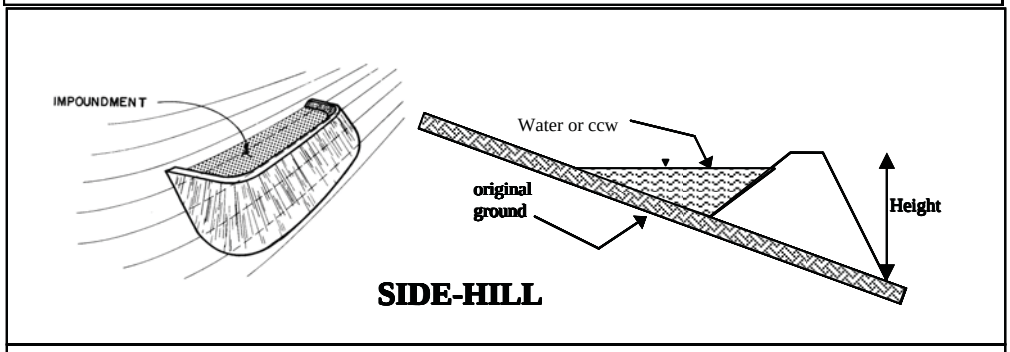
_____ **HIGH HAZARD POTENTIAL:** Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

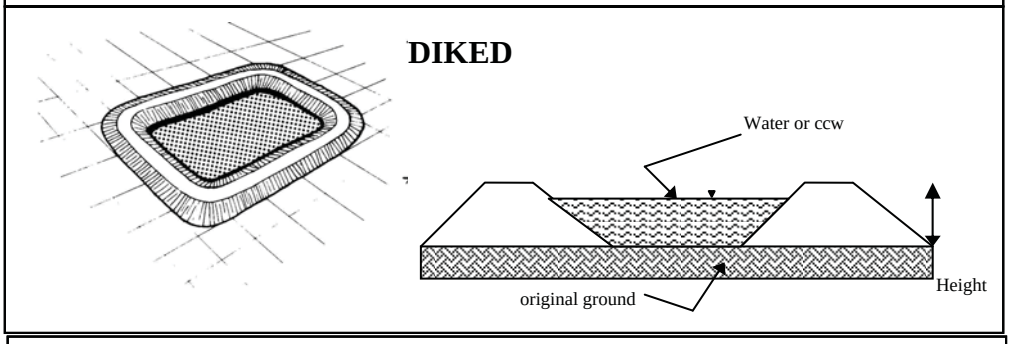
DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

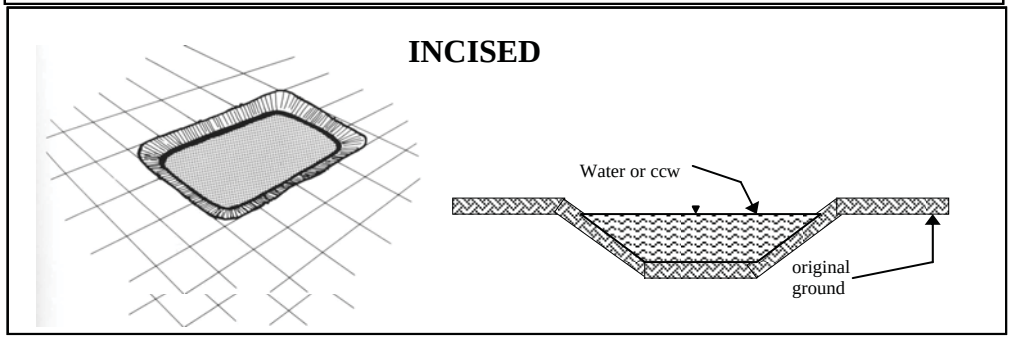
Failure or misoperation could result in environmental damage and economic loss and damage to plant infrastructure, operations and utilities. Loss of human life as a result of failure or misoperation is not anticipated.

CONFIGURATION:









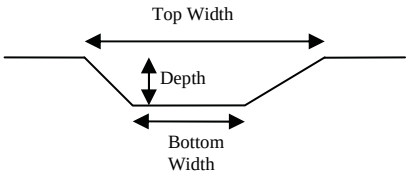
_____ Cross-Valley
_____ Side-Hill
__X__ Diked
_____ Incised (form completion optional)
_____ Combination Incised/Diked

Embankment Height ___14___ feet Embankment Material ___Soil___
Pool Area ___6.7___ acres Liner ___No Liner___
Current Freeboard ___2___ feet Liner Permeability ___Not Applicable___

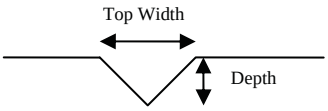
TYPE OF OUTLET (Mark all that apply)

_____ **Open Channel Spillway**
_____ Trapezoidal
_____ Triangular
_____ Rectangular
_____ Irregular

TRAPEZOIDAL

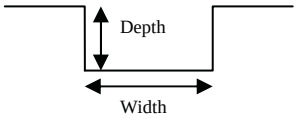


TRIANGULAR

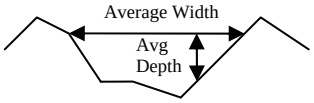


_____ depth
_____ bottom (or average) width
_____ top width
_____

RECTANGULAR

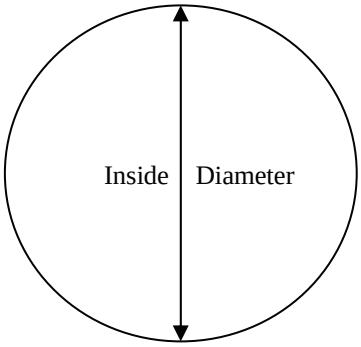


IRREGULAR



_____ **Outlet**

_____ inside diameter



Material
_____ corrugated metal
_____ welded steel
_____ concrete
_____ plastic (hdpe, pvc, etc.)
_____ other (specify) _____

_____

Is water flowing through the outlet? YES _____ NO _____

X
_____ **No Outlet**

_____

_____ **Other Type of Outlet** (specify) _____

The Impoundment was Designed By Burns and McDonnell
_____

Has there ever been a failure at this site? YES _____ NO ____X_____

If So When? _____

If So Please Describe : _____

Has there ever been significant seepages at this site? YES _____ NO X

If So When? _____

IF So Please Describe: _____

Has there ever been any measures undertaken to monitor/lower Phreatic water table levels based on past seepages or breaches at this site? YES _____ NO X

If so, which method (e.g., piezometers, gw pumping,...)? _____

If so Please Describe : _____

ADDITIONAL INSPECTION QUESTIONS

Concerning the embankment foundation, was the embankment construction built over wet ash, slag, or other unsuitable materials? If there is no information just note that.

Based on review Burns & McDonnell report titled "Subsurface Information for the Deerhaven Generation Station Site Near Hague, Florida", dated 1978 and Burns & McDonnell Drawings Y80, Y81, Y82 and Y-83, titled Grading Sections, dated February 18, 1980, all provided by GRU during CDM Smith's site assessment, it appears the embankment foundations were not constructed over wet ash, slag, or other unsuitable materials.

Did the dam assessor meet with, or have documentation from, the design Engineer-of-Record concerning the foundation preparation?

The assessor did not meet with, or have documentation from the design Engineer of Record concerning foundation preparation.

From the site visit or from photographic documentation, was there evidence of prior releases, failures, or patchwork on the dikes?

There was no indication of prior releases, failures or patchwork on the embankments.

Appendix C

Photographs

Appendix C
Photographs GPS Locations

Site: Gainesville Regional Utilities - Deerhaven Plant
Datum: NAD83
Coordinate Units: Decimal Degrees

Photograph No.	Latitude	Longitude
1	29.764210	-82.393005
2	29.764076	-82.392968
3	29.764219	-82.392763
4	29.764518	-82.392581
5	29.764699	-82.392218
6	29.764812	-82.392206
7	29.764661	-82.392305
8	29.764837	-82.392278
9	29.764892	-82.392189
10	29.764887	-82.392037
11	29.765395	-82.391435
12	29.765446	-82.391360
13	29.765647	-82.391329
14	29.765744	-82.391314
15	29.765725	-82.391224
16	29.765733	-82.391102
17	29.766402	-82.390441
18	29.766451	-82.390487
19	29.766491	-82.390420
20	29.766680	-82.390698
21	29.764705	-82.393349
22	29.764608	-82.393214
23	29.765269	-82.393935
24	29.765315	-82.394045
25	29.765361	-82.393990
26	29.766289	-82.392950
27	29.766214	-82.392961
28	29.766341	-82.392838
29	29.766242	-82.392868
30	29.766538	-82.392627
31	29.766682	-82.392350
32	29.766158	-82.391814
33	29.766091	-82.391733
34	29.765335	-82.392289
35	29.765411	-82.392386
36	29.765388	-82.392471
37	29.765334	-82.392515
38	29.765265	-82.392514
39	29.765425	-82.392567
40	29.765249	-82.392406
41	29.765306	-82.392377
42	29.765481	-82.392314
43,44	29.765777	-82.392948
46	29.765732	-82.391800
47	29.765822	-82.391891
48	29.764079	-82.388891
49	29.764089	-82.388976
50	29.764036	-82.388799
51	29.764145	-82.388680

Appendix C
Photographs GPS Locations

Site: Gainesville Regional Utilities - Deerhaven Plant
Datum: NAD83
Coordinate Units: Decimal Degrees

Photograph No.	Latitude	Longitude
52	29.764102	-82.388814
53	29.764212	-82.388598
54	29.764796	-82.388617
55	29.764799	-82.388532
56	29.764081	-82.389677
57	29.764192	-82.389771
58	29.764168	-82.389681
59	29.764635	-82.389690
60	29.764635	-82.389768
61	29.764704	-82.389767
62	29.764704	-82.389690
63	29.764899	-82.389720
64	29.764965	-82.389641
65	29.764904	-82.389642
66	29.763995	-82.389664
67	29.759175	-82.400006
68	29.759197	-82.400079
69	29.759215	-82.400166
70	29.763282	-82.397423
71	29.763233	-82.397486
72	29.764272	-82.397535
73	29.764341	-82.397467
74	29.764328	-82.397238
75	29.764312	-82.397368
76	29.764769	-82.393614
77	29.764689	-82.393542
78	29.764839	-82.393757
79	29.765310	-82.394221
80	29.765485	-82.393949
81	29.765537	-82.393887
82	29.766072	-82.393494
83	29.765964	-82.393467
84	29.766074	-82.393360
85	29.766266	-82.393185
86	29.766735	-82.392532
87	29.766800	-82.392438
88	29.767162	-82.392011
89	29.767221	-82.391947
90	29.767502	-82.391589
91	29.767513	-82.391477
92	29.767414	-82.391479
93	29.767435	-82.391566
94	29.766999	-82.391014
95	29.766951	-82.390962
96	29.766675	-82.390517
97	29.766625	-82.390471
98	29.763166	-82.393699

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Photo 1: Pump Back Cell No. 1 – Southwest embankment exterior slope, looking northwest.

Photo 2: Pump Back Cell No. 1 – Southwest embankment exterior slope, runoff swale culvert pipe under road, looking northeast.

Photo 3: Pump Back Cell No. 1 – Southeast embankment exterior slope, runoff swale looking northeast.

Photo 4: Pump Back Cell No. 1 - Southeast embankment exterior slope, monitoring well, looking southeast.

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Photo 5: Pump Back Cell No. 1 – Southeast embankment exterior slope, minor surficial erosion rills looking northeast.

Photo 6: Pump Back Cell No. 1 – Southeast embankment exterior slope, minor erosion rills looking southeast.

Photo 7: Pump Back Cell No. 1 – Southeast embankment exterior slope, general view looking southwest.

Photo 8: Pump Back Cell No. 1 – Crest of southeast embankment, general view of pump house, looking northwest.

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Photo 9: Pump Back Cell No. 1 – Crest of southeast embankment, general view of pump house looking north.

Photo 10: Pump Back Cell No. 1 – Southeast embankment exterior slope, runoff swale looking south.

Photo 11: Pump Back Cell No. 2 – Southeast embankment exterior slope, runoff swale located along toe of slope, looking southwest.

Photo 12: Pump Back Cell No. 2 – Southeast embankment exterior slope, 24-inch dia. corrugated culvert pipe below access road between Pump Back Cell No. 2 and Lime Sludge Cell No. 2, looking northeast. Note lime sludge pipes.

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Photo 13: Pump Back Cell No. 2 – Paved crest of southeast embankment, looking southwest.

Photo 14: Paved crest of divider embankment between Pump Back Cell No. 2 and Lime Sludge Cell No.2, looking northwest.

Photo 15: Lime Sludge Cell No. 2 – Paved crest of southeast embankment, looking northeast.

Photo 16: Lime Sludge Cell No. 2 – Animal burrow, southeast embankment exterior slope, looking northwest.

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Photo 17: Lime Sludge Cell No. 2 – Paved crest of southeast embankment Near east corner, looking southwest.

Photo 18: Lime Sludge Cell No. 2 – Southeast embankment east corner, view of pond surface looking west.

Photo 19: Lime Sludge Cell No. 2 – Paved crest of northeast embankment near east corner, looking northwest.

Photo 20: Lime Sludge Cell No. 2 – Northeast embankment interior slope, Concrete box for inlet pipe and view of pond surface, looking southwest.

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Photo 21: Ash Cell No. 1 – Southwest embankment interior slope, view of pond surface showing 1-foot of freeboard looking northeast.

Photo 22: Paved crest of divider embankment between Ash Cell No. 1 and Pump Back Cell No. 1, looking northeast.

Photo 23: Ash Cell No. 1 – Southwest embankment west corner, view of pond surface looking east. Note access for dredging.

Photo 24: Ash Cell No. 1 – Paved crest of southwest embankment interior slope, looking southeast.

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Photo 25: Ash Cell No. 1 – Paved crest of northwest embankment interior slope, looking northeast.

Photo 26: Ash Cell No. 2 – Northwest embankment exterior slope, erosion along top of slope, looking north. Note pavement distress.

Photo 27: Ash Cell No. 2 – Northwest embankment interior slope, erosion along top of slope looking southeast. Note pavement distress.

Photo 28: Ash Cell No. 2 – Northwest embankment interior slope, erosion rill looking southeast. (typical of several)

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Photo 29: Ash Cell No. 2 – Northwest embankment interior slope, erosion rills looking southeast. (typical of several)

Photo 30: Ash Cell No. 2 – Northwest embankment, outlet structure with stop logs southeast divider embankment interior slope, looking southeast.

Photo 31: Ash Cell No. 2 – Northwest embankment interior slope, erosion along edge of crest looking south.

Photo 32: Ash Cell No. 2 – Outlet structure/stop logs and staff gage, looking southwest.

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Photo 33: Ash Cell No. 2 – Outlet structure/stop logs looking southwest.

Photo 34: Ash Cell No. 2 – Southwest divider embankment interior slope, metal inlet pipe (15-inch diameter) and splash pad, looking northwest.

Photo 35: Ash Cell No. 2 – Erosion of slope pavement behind inlet pipe shown in previous photo.

Photo 36: Ash Cell No. 2 – Close up of splash pad looking north. Note rusted end of inlet pipe and eroded concrete.

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Photo 37: Ash Cell No. 1 – Metal inlet pipe (15-inch diameter) & submerged Splash pad, looking west.

Photo 38: Ash Cell No. 1 – Paved crest of southeast divider embankment interior slope between Ash Cell No. 1 and Pump Back Cell No. 1, looking southwest.

Photo 39: Ash Cell No. 1 – General view of pond surface looking west.

Photo 40: Ash Cell No. 1 – Crest of divider embankment between Ash Cell No. 1 and Ash Cell No. 2, looking northwest.

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Photo 41: Ash Cell No. 2 – General view of pond looking north. Note concrete U-shaped channel and metal grate to protect sluice ash pipelines.

Photo 42: Ash Cell No. 2 - Paved crest and interior slope of southeast divider embankment, between Ash Cell No. 2 and Pump Back Cell No. 2, looking northeast.

Photo 43: Ash Cell No. 1 – Inlet pipe and northeast divider embankment Interior slope, looking southeast. Note abandoned HDPE pipe.

Photo 44: Ash Cell No. 1 – Ash delta, northeast divider embankment interior slope, looking southwest.

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Photo 45: Ash Cell No. 1 – Inlet metal pipe (15-inch diameter), looking northwest. Note discharge water turbidity.

Photo 46: Pump Back Cell No. 2 – Northwest divider embankment interior slope, riprap armoring looking southwest.

Photo 47: Ash Cell No. 2 – Northwest divider embankment interior slope, rip-rap slope treatment looking southwest.

Photo 48: Coal Stockpile Runoff Collection Pond – south embankment interior slope, rusted corrugated inlet metal pipe looking north.

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Photo 49: Coal Stockpile Runoff Collection Pond – Crest of south embankment, looking west.

Photo 50: Coal Stockpile Runoff Collection Pond – Runoff ditch west of coal stockpile near southeast corner of pond, looking south.

Photo 51: Coal Stockpile Runoff Collection Pond – General view of surface looking northwest.

Photo 52: Coal Stockpile Runoff Collection Pond – East embankment interior slope, looking northeast.

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Photo 53: Coal Stockpile Runoff Collection Pond – East embankment runoff swale, looking west.

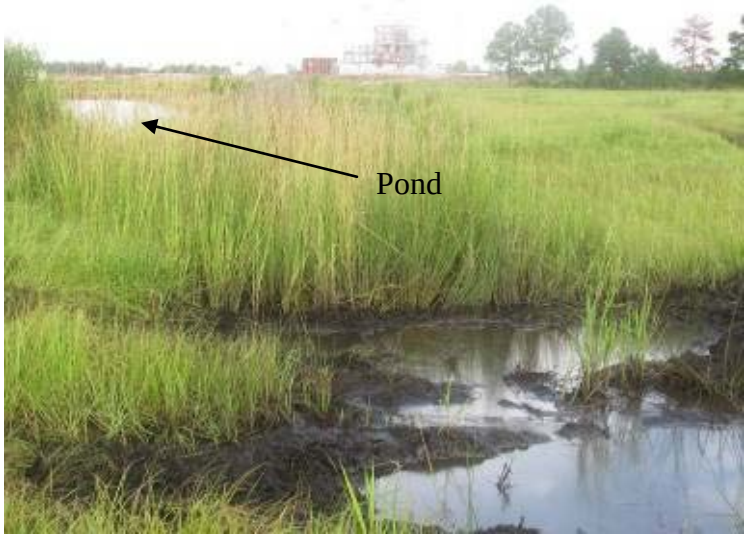

Photo 54: Coal Stockpile Runoff Collection Pond – Runoff swale at toe of north embankment, looking west.

Photo 55: Coal Stockpile Collection Pond – Runoff swale north of coal stockpile, looking east.

Photo 56: Coal Stockpile Runoff Collection Pond – Crest and exterior slope of south embankment, looking east.

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Photo 57: Coal Stockpile Runoff Collection Pond – Crest and exterior slope of west embankment, looking north.

Photo 58: Coal Stockpile Runoff Collection Pond – West embankment Interior slope, pump station located at southwest corner looking north.

Photo 59: Coal Stockpile Collection Pond – West embankment interior slope upstream side of 24-inch diameter metal outlet pipe, looking east. Pipes are partially crushed and blocked. No flow was observed.

Photo 60: Coal Stockpile Collection Pond – West embankment exterior slope, downstream side of 24-inch diameter metal outlet pipes, looking west. Pipes are partially crushed and blocked. No flow was observed.

CDM Smith

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Photo 61: Coal Stockpile Runoff Collection Pond – West embankment exterior slope, downstream side of 24-inch diameter metal outlet pipes, looking west. Pipes are partially crushed and blocked. No flow was observed.

Photo 62: Coal Stockpile Runoff Collection Pond – West embankment interior slope, upstream side of 24-inch diameter metal outlet pipes, looking east. Pipes are partially crushed and blocked. No flow was observed.

Photo 63: Coal Stockpile Runoff Collection Pond – Crest of west embankment, looking south.

Photo 64: Coal Stockpile Runoff Collection Pond – Crest of north embankment, looking east. Note tire ruts.

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Photo 65: Coal Stockpile Runoff Collection Pond – General view of pond surface looking southeast.

Photo 66: Coal Stockpile Runoff Collection Pond – General view of standing water in surrounding low areas to the west and southwest of pond, looking west.

Photo 67: Stormwater Pond – General view of pond from south embankment, looking northeast.

Photo 68: Stormwater Pond – Crest of southeast embankment, looking northeast.

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Photo 69: Stormwater Pond – Southwest embankment interior slope, general view of pond looking north.

Photo 70: Stormwater Pond – General view of pond from northwest embankment, looking east.

Photo 71: Stormwater Pond – Northwest embankment interior slope, looking southwest.

Photo 72: Ash Dry Stack Landfill Area – Crest of south embankment showing landfill area currently under construction, looking west.

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Photo 73: Ash Dry Stack Landfill Area – General view of landfill area currently under construction, looking north.

Photo 74: Ash Dry Stack Landfill Area – General view of landfill area currently under construction, looking northwest.

Photo 75: Ash Dry Stack Landfill Area – General view of landfill area currently under construction, looking north.

Photo 76: Ash Cell No. 1 – Southwest embankment exterior slope, looking northwest.

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Photo 77: Ash Cell No. 1 – Southwest embankment exterior slope, looking southeast.

Photo 78: Ash Cell No. 1 – Southwest embankment exterior slope, saturated area along exterior toe of slope (typical), looking northeast.

Photo 79: Ash Cell No. 1 – Southwest embankment exterior slope, looking southeast.

Photo 80: Ash Cell No. 1 – Animal burrow, northwest embankment exterior slope, looking southeast.

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Photo 81: Ash Cell No. 1 – Northwest embankment exterior slope, edge of temporary parking lot for construction workers looking northeast.

Photo 82: Ash Cell No. 1 – Northwest embankment exterior slope, ponded water and saturation along toe of slope, looking northwest.

Photo 83: Ash Cell No. 1 – Northwest embankment exterior slope, edge of temporary parking lot for construction workers looking southwest.

Photo 84: Ash Cell No. 2 – Northwest embankment exterior slope, looking northeast.

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Photo 85: Ash Cell No. 2 – Northwest embankment exterior slope, saturated area along toe of slope, looking southeast.

Photo 86: Ash Cell No. 2 – Northwest embankment exterior slope, looking southwest.

Photo 87: Lime Sludge Pond No. 1 – Northwest embankment exterior slope, looking northeast.

Photo 88: Lime Sludge Pond No. 1 – Northwest embankment exterior slope, looking southwest.

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Photo 89: Lime Sludge Pond No. 1 – Northwest embankment exterior slope, looking northeast.

Photo 90: Lime Sludge Pond No. 1 – Northwest embankment exterior slope, looking southwest.

Photo 91: Lime Sludge Pond No. 1 – Northeast embankment exterior slope, looking southeast.

Photo 92: Lime Sludge Pond No. 1 – Paved crest of northeast embankment, looking southeast.

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Photo 93: Lime Sludge Cell No. 1 – Paved crest of northwest embankment, looking southwest.

Photo 94: Lime Sludge Pond No. 1 – Southeast divider embankment interior slope, view of dry lime sludge piles and pond surface, looking southwest.

Photo 95: Lime Sludge Pond No. 2 – General view of pond, looking south.

Photo 96: Lime Sludge Pond No. 2 – Northeast embankment exterior slope, looking northwest. Note lime sludge pipes on ground.

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Photo 97: Lime Sludge Pond No. 2 – Northeast embankment exterior slope, looking southeast. Note lime sludge pipes.

Photo 98: Stormwater Pond – Northeast embankment interior slope, looking west. Note areas of dense vegetation (i.e. – cattails).