UNIVERSAL
ENGINEERING SCIENCES

GEOTECHNICAL CONSULTING SERVICES

COAL COMBUSTION RESIDUALS (CCR) SURFACE IMPOUNDMENT SYSTEM PERIODIC HAZARD POTENTIAL CLASSIFICATION

DEERHAVEN GENERATING STATION (DGS)
10001 NW 13th STREET
GAINESVILLE, ALACHUA COUNTY, FLORIDA

PROJECT NO. 0230.1500077
REPORT NO. 1892162

Prepared For:
Gainesville Regional Utilities
Deerhaven Generating Station (DGS)
10001 NW 13th Street
Gainesville, Florida 32653
(352) 393-6200

Prepared By:

Universal Engineering Sciences
4475 SW 35th Terrace
Gainesville, Florida 32608
(352) 372-3392

September 29, 2021

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September 29, 2021

Gainesville Regional Utilities-Deerhaven Generating Station (DGS)
10001 NW 13th Street
Gainesville, Florida 32653

Attention: Ms. Regina Embry

Reference: **Report of Geotechnical Consulting Services –**
Deerhaven Generating Station – CCR Impoundment
Periodic Hazard Potential Classification
10001 NW 13th Street
Gainesville, Alachua County, Florida
UES Project No. 0230.1500077 UES Report No. 1892162

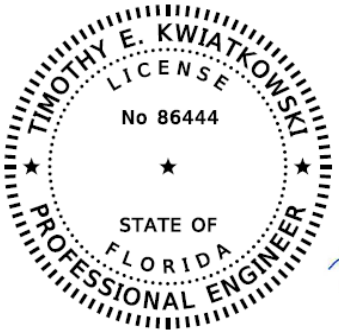
Dear Ms. Embry:

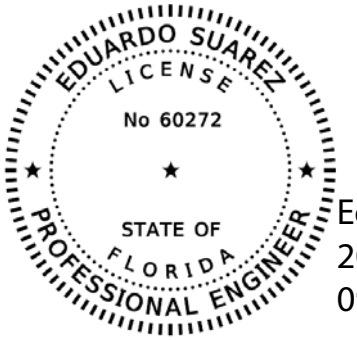
Universal Engineering Sciences, LLC (UES) has completed the geotechnical engineering services for the subject project in Gainesville, Alachua County, Florida. This geotechnical Report is submitted in satisfaction of the contracted scope of services as summarized in UES Proposal No. 1705572, dated August 27, 2019.

The following report presents the results of our periodic Hazard Potential Classification Assessment of the surface impoundment system at the Deerhaven Generating Station (DGS). This plan was prepared under the supervision, direction and control of the undersigned registered professional engineer (PE). The hazard potential classification assessment presented in this report was conducted in accordance with the requirements of 40 CFR 257.73(a)(2). The undersigned PE is familiar with the requirements of 40 CFR 257.73(a)(2).

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please contact us if you have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,
UNIVERSAL ENGINEERING SCIENCES, LLC
Certificate of Authorization Number 549





Eduardo Suarez
2021.09.29
09:35:54 -04'00'

Timothy E. Kwiatkowski, P.E.
Project Geotechnical Engineer
Florida P.E. No. 86444

Eduardo Suarez, P.E.
Senior Geotechnical Engineer
Florida P.E. No. 60272

This item has been electronically signed and sealed by Eduardo Suarez, PE on the date adjacent to the seal using Digital Signature.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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LIST OF APPENDICES

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) issued the Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule to regulate the management of coal combustion residuals and surface impoundments. Section 257.73 (a)(2) of the CCR rules requires owners or operators to conduct initial and periodic hazard potential classification assessment in accordance with section 257.53. The owner or operator of the CCR unit must conduct and complete the assessments every five years.

CDM Smith had initially conducted a site assessment of the Coal Combustion Waste impoundments at the DGS plant. Contracted by U.S. Environmental Protection Agency (USEPA), CDM Smith prepared an "Assessment of Dam Safety of Coal Combustion Surface Impoundments Final Report; Dated May 2014. Based on the CDM Smith report, an Impoundment Hazard classification of "Low Hazard" rating was assigned to the impoundments (CDM Smith, 2014).

Universal Engineering Sciences, LLC (UES) had completed a periodic hazard potential classification in October 2016, for the Coal Combustion Residuals (CCR) surface impoundment system (i.e., Ash Cell #1, Ash Cell #2) at the Deerhaven Generating Station (DGS) in Gainesville, Alachua County, Florida. A low Hazard Potential classification was assigned to the Surface impoundments.

The subject site is located within Sections 26 and 27, Township 8 South, Range 19 East in Gainesville, Alachua County, Florida. DGS is located approximately 1.25 miles north of NW 43rd Street along the north side of US HWY 441, in Gainesville, Alachua County, Florida. More specifically, the property is an approximately 930-acre parcel of land located at 10001 NW 13th Street in Gainesville, Alachua County, Florida.

The CCR surface impoundment system is part of a larger group of six process ponds: the two impoundment system ash ponds, two pump-back ponds, and two front-end treatment lime sludge ponds. The surface impoundment system is situated just northwest of the generating facility. The surface impoundment system is connected to the main plant by asphalt roads. The surface impoundment system area is approximately 5.2 acres and is adjacent to wooded areas. The maximum elevation of the ash pond embankments is 195 feet according to the National Geodetic Vertical Datum of 1929 (NGVD 29), which is nearly 150 feet above the potentiometric surface level. The slopes vary in steepness from 3H: 1V to 4H: 1V throughout the sides of the ash pond area. The slopes are vegetated with grass along the exterior, and covered with rock/boulders along the interior slopes. Moderately dense wooded areas surround much of DGS. There are some water management areas/swales at the south side of the process pond area.

2.0 PURPOSE AND SCOPE OF SERVICES

2.1 Purpose

The purpose of this report is to provide the results of the periodic CCR surface impoundment system hazard potential classification assessment. This report provides the quinquennial periodic hazard potential classification for the CCR surface impoundment system at the Deerhaven Generating Station (DGS) in Gainesville, Alachua County, Florida.

The scope of services included a visual assessment of the site and each pond unit, interviews with facility personnel, a review of geotechnical reports and studies conducted related to the design and construction of the ash ponds, and a review of a previous hazard potential assessment report.

This report analyzes the possible adverse incremental consequences that result from the release of water or stored contents due to failure or mis-operation of the surface impoundment system or its appurtenances. This report follows the rating system recommended by EPA in the assessment reports of structural stability of Dams as modeled after the New Jersey Department of Environmental Protection's Dam Safety Guidelines. The Hazard Potential Classification is based on the National Inventory of Dams Criteria as used by EPA.

3.0 CONCLUSIONS

Mis-operation or failure of the surface impoundment system embankment would release a small volume of water and would likely result in no probable loss of human life and low economic and/or environmental losses. Thus, according to the hazard potential classification used by EPA, the impoundment system is classified as "Low Hazard Potential".

4.0 DESCRIPTION OF THE COAL COMBUSTION WASTE RESIDUALS SURFACE IMPOUNDMENT SYSTEM

4.1 Location and General Description

The CCR surface impoundment system is located at 10001 US 441 in Gainesville, Alachua County, Florida. The impoundment system is located to the northwest of the main plant at DGS. The surface impoundment system is comprised of two ponds (i.e., Ash Cell #1, Ash Cell #2) which are located in the vicinity of four additional, non-CCR process water ponds. An overall site layout map plan of the plant is included in **Appendix A-1**.

The top elevation of the dike surrounding the impoundment system is at about +195 NGVD 29, and the bottom the embankments are at an approximate elevation of +180 feet NGVD 29. The bottom of the ash cell ponds is at an elevation of roughly +179 feet NGVD 29. A topographic survey of the pond is included in **Appendix A.**

Table 4.1: Impoundment Pond Summary

	Ash Cells #1 and #2
Embankment Height (ft)	14
Crest Width (ft)	25
Length (ft)	365
Interior Slopes H:V	3:1
Exterior Slopes H:V	4:1

4.2 Coal Combustion Residuals Handling

The CCR surface impoundment system receives ash sluice water and a variety of additional plant process water streams (e.g., cooling water blowdown, water collected from plant drains). While the impoundment system acts as a settling basin to allow the precipitation of bottom ash,

it also serves to temporarily retain other process waters prior to onsite treatment and reuse. DGS is operated as a “zero liquid discharge” facility.

4.2.1 Ash Pond Operation and Bottom Ash

Bottom ash is conveyed by pipeline to Ash Cells #1 and #2, as a slurry. The bottom ash settles, and the ash ponds are occasionally excavated to remove and relocate ash to the on-site CCR landfill for disposal.

4.3 Size and Hazard Classification

The U.S. Army Corps of Engineers (USACE) Guidelines for Safety Inspection of Dams (1979) has been organized by size, as seen below in Table 4.2 (USACE, 1979).

Table 4.2: USACE ER 1110-2-106 Size Classification		
Category	Storage (Ac-ft)	Height (ft)
Small	50 to < 1,000	25 to < 40
Intermediate	1,000 to < 50,000	40 to < 100
Large	> 50,000	> 100

Due to the height of the impoundment system and its storage capacity, the impoundment system is considered small.

EPA has established a hazard potential rating based on the National Inventory of Dams criteria as seen below in Table 4.3 (EPA, 2015):

Table 4.3: EPA Hazard Potential Rating	
Category	Description
High Hazard Potential	Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.
Significant Hazard Potential	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environment damage, disruption of lifeline facilities, or 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.
Low Hazard Potential	Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner’s property
Less than Low Hazard Potential	Dams which do not pose high, significant, or low hazard potential. Failure or misoperation of the dams result in no probable loss of human life or economic or environmental losses.

Mis-operation or failure of the embankment at the plant would release a small volume of water and likely result in small erosion. The failure would not likely cause loss of human life, as there are no occupied buildings or residences located in the immediate vicinity of the CCR surface impoundment. A release from the surface impoundment would principally be limited to the facility property, and would likely be low economic losses and/or environmental losses within the

plant boundary. Thus, **according to the hazard potential classification used by EPA, the impoundment system would be classified as "Low Hazard Potential".**

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

The amount of residuals in the impoundment ponds was unknown at the time of UES' exploration. The surface impoundment system studied in this analysis has an approximate surface area of 5.2 acres, and receives a number of plant process waters including cooling tower blow down, plant drain discharges and sluiced ash water. The ash ponds also receive small quantities of fly ash during maintenance outage periods.

4.5 Principal Project Structures

GRU's DGS surface impoundment system consists of the following components:

- Two 15-inch steel pipes at the northeastern corner of Ash Cell #1, and the southwestern corner of Ash Cell #2.
- Embankments made from compacted soil.
- Two concrete riser structures with stop logs, one in each ash pond. The riser within Ash Cell #1 is located near the southern corner, and the riser within Ash Cell #2 is located near the eastern corner.
- Two 12-inch diameter filament-wound, glass-fiber reinforced pipes with inlets located within the stop log structures. The flow into each pipe is controlled by a 12-inch butterfly valve. The inlet and outlet of these pipes are located at an elevation of 177 and 175 feet NGVD 29, respectively.
- A pump house located at the eastern corner of Pump Back Cell #1.

Plans for these structures can be found in the B&M 1981 drawings, located in **Appendix B**.

4.6 Critical Infrastructure within five miles down gradient

Based on topographic and potentiometric information **(Appendix C-1/Appendix C-2)**, the site is relatively flat and does not appear to have a clearly-defined drainage direction. Critical infrastructure within 5 miles of the impoundment ponds includes schools, churches, hospitals, waterways, roads and bridges. Some of the critical infrastructure identified includes:

- U.S. Highway 441
- Hague Baptist Church
- Country Crossroads Baptist Church
- William S. Talbot Elementary School
- Dove World Outreach Center
- Trinity United Methodist Church
- Pleasant Hill Baptist Church

The closest of the aforementioned infrastructure, U.S. Highway 441, is approximately ¾ miles from the DGS surface impoundment system.

A breach in the impoundment pond embankments is likely to be confined to the DGS property, and is unlikely to result in the loss of human life.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of Innovative Waste Consulting Services, LLC, and Gainesville Regional Utilities (GRU). The scope is limited to the specific project and locations described herein. Our description of the project's design parameters represents our understanding of the significant aspects relevant to its hazard potential classification. In the event that any changes in the design of the CCR surface impoundment system as outlined in this report are planned, we should be informed so the changes can be reviewed and the conclusions of this report modified, if required, and approved in writing by UES.

For a further description of the scope and limitations of this report please review the document attached within **Appendix D**, "Important Information About Your Geotechnical Engineering Report" prepared by the Geoprofessional Business Association (GBA).

6.0 REFERENCES

CDM Smith. (2014). *Assessment of Dam Safety of Coal Combustion Surface Impoundments Final Report*. FL.

UES, 2016- Universal Engineering Sciences. (2016). Coal Combustion Residuals (CCR) Surface Impoundment System- Hazard Potential Classification. Deerhaven Generating Station, Gainesville, FL.

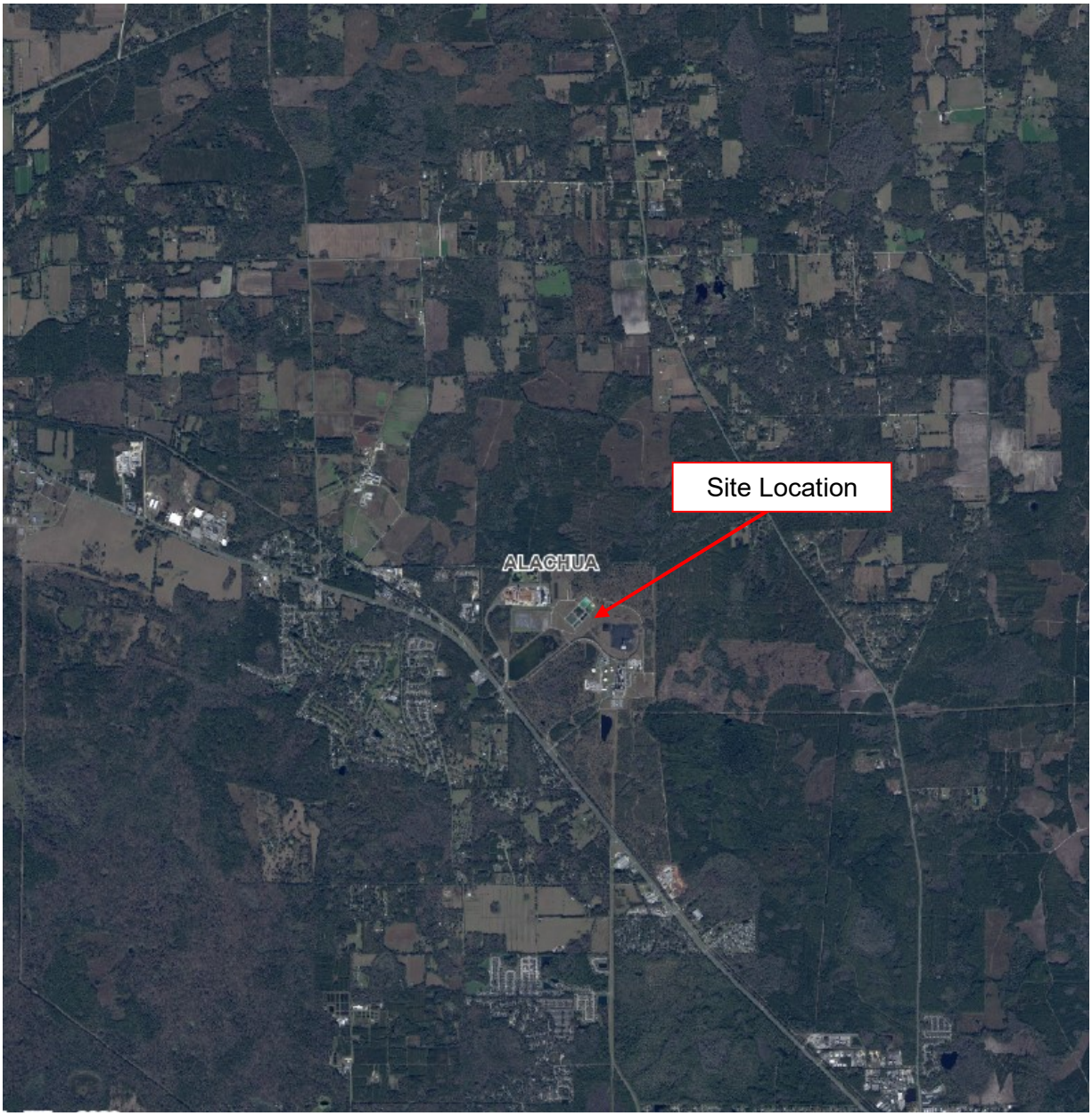
U. S. Army Corps of Engineers. (1979). Table 1: Size Classification. *Recommended Guidelines for Safety Inspection of Dams*. Washington, D.C.: USACE

Environmental Protection Agency (EPA). “40 CFR Parts 257 and 261: Hazard Potential Ratings.” *Federal Register 80*.74, (2015): 21318. Print.

APPENDIX A

OVERALL SITE PLAN

TOPOGRAPHIC SURVEY OF PONDS



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GRU Deerhaven Generating Station
Gainesville, Alachua County, Florida

Site Location Map

DATE: 08-19-21	UES PROJECT NO.: 0230.1500077	APPENDIX NO.: A
SCALE: N.T.S.	REPORT NO.: 1892162	FIGURE NO.:A 1

MAP SHOWING TOPOGRAPHIC SURVEY OF

A Part of Sections 26 and 27, Township 8 South, Range 19 East
Alachua County, Florida

VICINITY MAP

(NOT TO SCALE)

SURVEYOR'S NOTES

1) THIS IS A TOPOGRAPHIC SURVEY, CERTIFIED TO INNOVATIVE WASTE CONSULTING SERVICES, LLC,. IT WAS PERFORMED IN COMPLIANCE WITH PROJECT-SPECIFIC SCOPES OF WORK AND IS LIMITED TO THE INFORMATION SHOWN HEREON.

2) ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) AND ARE BASED ON RTK/GPS CORRECTIONS FROM THE FLORIDA DEPARTMENT OF TRANSPORTATION'S FLORIDA PERMANENT REFERENCE NETWORK. GPS OBSERVATIONS AND RTK CORRECTIONS WERE VERIFIED TO NATIONAL GEODETIC BENCHMARK N 733 (PID#DL6491). NGVD 29 ELEVATION VALUES WERE OBTAINED USING THE VERTCON VERTICAL ADJUSTMENT UTILITY (CORPSCON VERSION 6.0.1). THE DATUM SHIFT CONVERSION APPLIED TO CONVERT NAVD 88 OBTAINED ELEVATIONS TO NGVD 29 WAS +0.78'.

3) SURVEY DATA WAS OBTAINED USING A COMBINATION METHODOLOGY OF RTK/GPS OBSERVATIONS, CONVENTIONAL GROUND SURVEYING PRACTICES AND DIFFERENTIAL LEVELING.

4) THIS SURVEY IN ITS DIGITAL FORMAT IS INTENDED TO BE DISPLAYED AT A SCALE OF 1"=20' OR SMALLER.

LEGEND & ABBREVIATIONS

- DENOTES PROJECT BENCHMARK
- ×131.3 DENOTES ELEVATION AT "X"
- (133.59) DENOTES ELEVATION AT END OF LEADER
- DENOTES WOOD LIGHT POLE
- DENOTES WOOD LIGHT POLE WITH ELECTRIC HAND HOLE
- DENOTES METAL SIGN
- DENOTES MONITORING WELL
- DENOTES ASPHALT
- DENOTES CONCRETE
- DENOTES METAL GRATING

NORTH

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

POND
NOT SURVEYED EXCEPT AS SHOWN.
TOP OF WATER ELEVATION = 191.2'
8/13/2015

SHEET 1 OF 4

SURVEY DATE: APRIL 13, 2015	DRAWING DATE: SEPTEMBER 8, 2015
FIELD BOOK G-157, PAGE(S) 13-21	DRAWING SCALE: 1" = 20'
DRAFTED BY: TPT	REVISION DATE:
CHECKED BY: GRN	
COMPUTER FILE: 2015328_Deerhaven Topo.DWG	
JOB FILE No. 2015328	

605 NORTHWEST 53RD AVENUE - SUITE A11A
GAINESVILLE, FL 32609
352-338-9667
FAX 352-338-9677
LICENSED BUSINESS NUMBER L.B.4603

DEGROVE
SURVEYORS, INC.

THIS SURVEY MEETS THE STANDARDS OF PRACTICE FOR PROFESSIONAL SURVEYORS AND MAPPERS IN THE STATE OF FLORIDA PURSUANT TO CHAPTER 5J-17.051 & 5J-17.052, F.A.C.

THOMAS P. TRACZ, P.S.M., FLORIDA CERTIFICATION NO. 6039

NOTICE:
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

CERTIFIED TO:

IWCS
innovative waste consulting services, llc

MONITORING WELL
TOP OF CASING EL=198.85'

MONITORING WELL
TOP OF CASING EL=198.67'

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

AREA OF SEDIMENT
NOT SURVEYED

BENCHMARK #2
SET NAIL & DISK
(DSI BENCHMARK)
ELEVATION = 194.70' (NGVD 29)

18" METAL OUTFALL PIPE

18" METAL OUTFALL PIPE

AREA OF SEDIMENT
NOT SURVEYED

AREA OF SEDIMENT
NOT SURVEYED

AREA OF SEDIMENT
NOT SURVEYED

AREA OF SEDIMENT
NOT SURVEYED

TOP OF 8" PIPE
ELEVATION = 196.7'

TOP OF 8" PIPE
ELEVATION = 196.8'

CONCRETE PIPE SUPPORTS
(TYPICAL)

8" METAL PIPE

CONCRETE PIPE SUPPORTS
(TYPICAL)

18" METAL OUTFALL PIPE

18" METAL OUTFALL PIPE

AREA OF SEDIMENT
NOT SURVEYED

MATCH LINE SEE PAGE 2
MATCH LINE SEE PAGE 1

POND
NOT SURVEYED EXCEPT AS SHOWN
TOP OF WATER ELEVATION = 191.2'
8/13/2015

POND
NOT SURVEYED EXCEPT AS SHOWN
TOP OF WATER ELEVATION = 192.9'
8/13/2015

SECTION 27
SECTION 26

MATCH LINE SEE PAGE 2
MATCH LINE SEE PAGE 4

TOP ELEVATION = 195.20'

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

RIP RAP ROCK
SIDE SLOPES
(TYPICAL)

MATCH LINE SEE PAGE 1
MATCH LINE SEE PAGE 3

MATCH LINE SEE PAGE 4
MATCH LINE SEE PAGE 3

AREA OF SEDIMENT NOT SURVEYED

AREA OF SEDIMENT NOT SURVEYED

TOP ELEVATION = 195.30'

MONITORING WELL
TOP OF CASING EL=197.90'

RIP RAP ROCK SIDE SLOPES (TYPICAL)

18" METAL OUTFALL PIPE

18" METAL OUTFALL PIPE

8" METAL PIPE

CONCRETE PIPE SUPPORTS (TYPICAL)

POND
NOT SURVEYED EXCEPT AS SHOWN
TOP OF WATER ELEVATION = 186.5'
8/13/2015

ABOVE GROUND PIPE SYSTEM NOT SURVEYED

CONCRETE BLOCK BUILDING

CONCRETE VAULT METAL COVER

CONCRETE VAULT METAL COVER

MONITORING WELL
TOP OF CASING EL=191.41'

ELECTRIC BOX

INVERT ELEVATION = 179.40'

INVERT ELEVATION = 179.46'

24" CORRUGATED METAL PIPE

BENCHMARK #1
SET NAIL & DISK
(NO BENCHMARK)
ELEVATION = 191.05' (NGVD-29)

TOP OF 8" PIPE
ELEVATION = 189.8'

TOP OF 8" PIPE
ELEVATION = 188.5'

TOP OF 8" PIPE
ELEVATION = 186.9'

TOP OF 8" PIPE
ELEVATION = 180.1'

MONITORING WELL
TOP OF CASING EL=191.70'

CONCRETE PIPE SUPPORT

CONCRETE PIPE SUPPORTS (TYPICAL)

5" METAL PIPE

8" METAL PIPE

6" METAL PIPE

5" METAL PIPE

8" METAL PIPE

CONCRETE PIPE SUPPORTS (TYPICAL)

SECTION 27
SECTION 26

NORTH

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft

SHEET 3 OF 4

MATCH LINE SEE PAGE 2
MATCH LINE SEE PAGE 4

MATCH LINE SEE PAGE 4
MATCH LINE SEE PAGE 3

AREA OF SEDIMENT NOT SURVEYED

AREA OF SEDIMENT NOT SURVEYED

8" METAL PIPE

CONCRETE PIPE SUPPORTS (TYPICAL)

18" METAL OUTFALL PIPE

18" METAL OUTFALL PIPE

TOP ELEVATION = 195.20'

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

RIP RAP ROCK SIDE SLOPES (TYPICAL)

CONCRETE VAULT METAL COVER

SECTION 27
SECTION 26

POND
NOT SURVEYED EXCEPT AS SHOWN
TOP OF WATER ELEVATION = 186.5'
8/13/2015

ABOVE GROUND PIPE SYSTEM NOT SURVEYED

CONCRETE BLOCK BUILDING

CONCRETE VAULT METAL COVER

ELECTRIC BOX

BENCHMARK #1
SET NAIL & DISK
(9SI BENCHMARK)
ELEVATION = 191.05' (NGVD-29)

TOP OF 8" PIPE ELEVATION = 185.5'

TOP OF 8" PIPE ELEVATION = 189.8'

MONITORING WELL
TOP OF CASING El.=191.70'

CONCRETE PIPE SUPPORT
TOP OF 8" PIPE ELEVATION = 186.9'

CONCRETE PIPE SUPPORTS (TYPICAL)

TOP OF 8" PIPE ELEVATION = 180.1'

6" METAL PIPE

5" METAL PIPE

8" METAL PIPE

CONCRETE PIPE SUPPORTS (TYPICAL)

5" METAL PIPE

CONCRETE PIPE SUPPORTS (TYPICAL)

CONCRETE PIPE SUPPORT
TOP ELEVATION 182.3'

CONCRETE PIPE SUPPORT
TOP ELEVATION 182.6'

TOP OF 5" PIPE ELEVATION = 183.4'

5" METAL PIPE

TOP OF 5" PIPE ELEVATION = 183.1'

5" METAL PIPE

TOP OF PIPE ELEVATION = 184.52'

ELECTRIC BOX

TOP OF PIPE ELEVATION = 184.69'

30" CORRUGATED METAL PIPE

TOP OF 5" PIPE ELEVATION = 183.7'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

APPENDIX B

B & M (1981) DRAWINGS

CITY OF GAINESVILLE, FLORIDA
GAINESVILLE — ALACHUA COUNTY
REGIONAL UTILITIES BOARD

DEERHAVEN GENERATING STATION - UNIT 2

CONTRACT 29C - YARD STRUCTURES III

1980

YARD

YO	GENERAL SITE PLAN
Y62	SITE PLAN
Y63	CLEARING & GRUBBING LIMITS
Y64	GRADING PLAN 1
Y65	GRADING PLAN 2
Y66	GRADING PLAN 3
Y67	GRADING PLAN 4
Y68	GRADING PLAN 5
Y69	GRADING PLAN 6
Y70	GRADING PLAN 7
Y71	GRADING PLAN 8
Y72	GRADING PLAN 9
Y73	GRADING PLAN 10
Y74	GRADING PLAN 11
Y75	DELETED FROM CONTRACT - NOT APPLICABLE
Y76	ROAD PROFILES 1
Y77	ROAD PROFILES 2
Y78	RAMP PROFILES
Y79	UNASSIGNED
Y80	GRADING SECTIONS 1
Y81	GRADING SECTIONS 2
Y82	GRADING SECTIONS 3
Y83	GRADING SECTIONS 4
Y84	UNASSIGNED
Y85	GRADING DETAILS 1
Y86	GRADING DETAILS 2
Y87	GRADING DETAILS 3
Y88	GRADING DETAILS 4
Y89	GRADING DETAILS 5
Y90	UNASSIGNED
Y91	STORM DRAINAGE DETAILS 1
Y92	STORM DRAINAGE DETAILS 2
Y93	STORM DRAINAGE DETAILS 3
Y94	UNASSIGNED
Y95	UNASSIGNED

ARCHITECTURAL

A86	ASH POND ELECTRICAL BUILDING PLAN AND DETAILS
A87	ASH POND ELECTRICAL BUILDING DETAILS

STRUCTURAL

S1	STANDARD DETAILS
S2	STANDARD DETAILS
S3	STANDARD DETAILS
S4	STANDARD DETAILS
S5	STANDARD DETAILS
S222	RECYCLE PUMP STRUCTURE
S223	ASH POND ELEC EQUIP. BLDG RETAINING WALL
S224	ASH POND STOPLOG STRUCTURE NO. 1 & 2
S225	SLUDGE POND STOPLOG STRUCTURE NO. 1 & 2
S226	HEADWALLS & BRIDGE ABUTMENTS
S227	STOPLOG STRUCTURE BRIDGES
S228	CROSSING STRUCTURE NO. 6
S229	CROSSING STRUCTURE NO. 7
S230	CROSSING STRUCTURE NO. 8 & SLURRY WALL CROSSINGS NO. 1 & 2
S231	ASH PIPE DRAIN PIT STRUCTURE & ASH POND ELECTRICAL EQUIPMENT BUILDING
S232	PIPE SUPPORTS
S233	UNASSIGNED
S234	CONC SLAB ON STOCKOUT TOWER & STAIR TOWER GUARD POSTS
S235	C.P.R. POND PUMP STRUCTURE & HEADWALL TEMP CONSTR RUNOFF POND NO. 1 OUTLET
S236	SECURE LANDFILL RUNOFF RETENTION POND PUMP STRUCTURE & INTAKE STRUCTURE
S237	ASH LANDFILL PUMP STRUCTURE
S238	UNASSIGNED
S239	UNASSIGNED
S240	UNASSIGNED

MECHANICAL

M35	HVAC & PLUMBING ASH POND ELECTRICAL EQUIPMENT BUILDING

MECHANICAL - YARD PIPING

U7	DRAWING REFERENCE & LEGEND
U8	DELETED FROM CONTRACT - NOT APPLICABLE
U9	YARD UTILITIES - ASH & SLUDGE PONDS (3:1)
U10	YARD UTILITIES - SECURE LANDFILL
U11	ASH LANDFILL
U12	ASH LANDFILL II
U13	UNASSIGNED
UP43	ISOMETRIC DETAILS I
UP44	ISOMETRIC DETAILS II
UP45	UNASSIGNED
UP46	MISCELLANEOUS PIPING DETAILS I
UP47	MISCELLANEOUS PIPING DETAILS II
UP48	MISCELLANEOUS PIPING DETAILS III
UP49	UNASSIGNED
UP50	YARD ENLARGEMENT DETAILS I
UP51	YARD ENLARGEMENT DETAILS II
UP52	YARD ENLARGEMENT DETAILS III
UP53	YARD ENLARGEMENT DETAILS IV
UP54	VALVE LIST AND CONNECTIONS SCHEDULE
UP55	PIPING DESIGN TABLES
UP56	PIPE SUPPORT SCHEDULES

REFERENCE DRAWING

L-114	FLOOR PLANS STRUCTURAL STEEL DESIGN LAYOUT

CONFORMING TO CONSTRUCTION RECORDS

Burns & McDonnell
Engineers - Architects - Consultants
Kansas City, Missouri

76-077-1

MATCH LINE DWG.U10

MATCH LINE DWG.U11

MATCH LINE DWG. U7

N13 000

N12500

E8500

E9000

E9500

N13,082.80
E 8,546.19
℄ 11¼° V.P.I.
℄ EL. 176.00

N 13,100.28
E 8,518.61
℄ 45° H.P.I
℄ EL. 176.00

N13,079.34
E 8539.55
℄ 11¼° V.P.I.
℄ EL. 176.00

N13033.03
E 8995.96
℄ 11¼° V.P.I. DN
℄ EL. 190.00

N13029.57
E 8599.52
℄ 11¼° V.P.I.
℄ EL. 190.00

ANCHOR STAKE, SEE DET. 4, DWG. UP48 (TYP.)

SEE DETAIL 4 DWG. UP50

SEE DETAIL 2 DWG. UP52

SEE DETAIL 4 DWG. UP50

SEE DETAIL 1 DWG. UP50

SEE DET. 5 DWG. UP48

OPEN END

N12755.80
E 8986.07
℄ EL. 172.90
℄ 45° H.P.I

SEE DETAIL 1 DWG. UP51

PDY30-1

ASH STOPLOG STRUCTURE

N12625.27
E 8610.70
℄ EL. 177.00
SEE DETAIL 8, DWG. UP48

HEADWALL #1
N12535.12
E 8570.56
℄ EL. 175.00
SEE DETAIL, DWG. UP46 (TYP.)

RECYCLE INTAKE HEADWALL #1
N12545.13
E 8862.30
℄ EL. 173.00
℄ 450 H.P.I
N12639.06
E 8562.45
℄ EL. 172.45

PDY34-1

ASH STOPLOG STRUCTURE

N13226.43
E 8993.25
℄ EL. 176.70
℄ 45° H.P.I.

PDY35-1

SLUDGE-STOPLOG STRUCTURE
N13226.32
E 8997.14
℄ EL. 176.75
SEE DET. 3, DWG. UP48 (TYP.)

3'-0" SEE DETAIL 4 DWG. UP52

N13329.46
E 8993.25
℄ EL. 176.34
℄ 45° H.P.I.

SLUDGE-STOPLOG STRUCTURE
N13076.41
E 9147.05
℄ EL. 196.75

PDY48-1

3'-0" SEE DETAIL 4 DWG. UP52

N13313.48
E 8998.92
℄ EL. 177.00

N13041.64
E 9112.48
℄ EL. 175.80

N13010.25
E 9112.48
℄ EL. 175.96

HEADWALL #2

HEADWALL NO. 3
N12943.86
E 9111.52
℄ EL. 175.00
SEE DET. 7, DWG. UP46

N12983.33
E 9089.07
℄ EL. 175.00

℄ CMP, CP2A FOR LOCATION SEE DWG. Y91 AND DETAIL 5 DWG. UP97

℄ 450 H.P.I.
N12860.03
E 9209.62
℄ EL. 183.11

RECYCLE INTAKE HEADWALL #2
N12761.81
E 8979.00
℄ EL. 175.00

℄ 450 H.P.I.
N12733.92
E 8935.01
℄ EL. 172.93

℄ 450 H.P.I.
N12831.39
E 9209.62
℄ EL. 183.01

℄ 450 H.P.I.
N12859.93
E 9211.12
℄ EL. 183.11
STA 31+80.01

℄ 450 H.P.I.
N12830.77
E 9211.12
℄ EL. 183.01
STA 31+51.35

SLUDGE DISCHARGE STRUCTURE

SEE DETAIL 1 DWG. UP50

℄ CMP, CP2A FOR LOCATION SEE DWG. Y91, AND DETAIL 1 DWG. UP97

N13278.29
E 9382.17
℄ EL. 186.50
SEE DETAIL 1 DWG. UP98

N13190.62
E 9540.19
℄ 900 H.P.I.
℄ EL. 184.75

N13190.62
E 9562.51
℄ 900 H.P.I.
℄ EL. 184.75
STA. 36+48.98

6"V2 PDT 79
6"V3 PDT 79

TOE OF SLOPE MATCH EXISTING GRADE

N12,025.0
℄ 2,744.1
EL. 174.80

N12,025.0
E 3,958.10
EL. 179.50

PLACE 12" RIPRAP

COAL PILE RUNOFF POND

N 12,406.50
E 9,708.00
COAL PILE RUNOFF POND PUMP STRUCTURE
SEE DWG. S 235.

TOP OF 10' WIDE DIKE EL. 184.00

NOTE:
WORK AT COAL PILE RUNOFF POND REQUIRED REGARDLESS OF 3:1 OR 6:1 CONCEPT.

N 12,402.75
E 9,732.50
℄ EL. 175.50
SEE DETAIL 3, DWG. UP48

12" PDY 43 PDT 75

N12408.75
E 9718.50
SEE DETAIL 1, DWG. UP48
℄ EL. 174.50

TOE OF SLOPE MATCH EXISTING GRADES

FOR IRRIGATION THIS AREA SEE DWG.

GRID NORTH

NORTH

1"	CA15	PDT 80
12"	ASW25	PDT 75
6"	ASW27	PDT 75
16"	SW3	PDT 79
10"	PDY17	PDT 75
16"	PDY18	PDT 79
2½"	FDY15	PDT 76

CONTRACT 29C

CONTRACT 28B

NOTES:
1. ⚠
2. ⚠
3. FOR PIPE SUPPORT LOCATIONS LINES ASW15, SW2, SW3 SEE THE FOLLOWING SCHEDULES DWG. UP50.
   A. LINES ASW15, SW2, SW3 TOGETHER – SCHED. "A"
   B. LINES SW2, SW3 TOGETHER – SCHED. "B"
      LINES SW3 ALONE – SCHED. "B"
   C. LINE ASW15 ALONE – SCHED. "C"
4. LOCATE SAMPLE (CLEANOUT) VALVES ON LINE SW2, SW3 PER DETAIL 7, DWG. UP47

NO.	DATE	BY	REVISION
⚠	3-4-80	CLA	REVISED & REISSUED PER ADDENDUM NO.1
	3-5-80	DMB	ISSUED
⚠	3-12-80	CLA	REVISED & REISSUED PER ADDENDUM NO. 3
	3-21-80	DMB	ISSUED
	4-22-80	DMZ	ISSUED AS BID
⚠	6-18-80	REC	DELETE NOTES 14 2, LINES PDY52 THRU 63. MOVED LINE PDY 35 & ADD 6" SIZE
	6-24-80	DMZ	ISSUED
⚠	1-3-82	SBM	CONFORMING TO CONSTRUCTION RECORDS

CONTRACT 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2

CITY OF GAINESVILLE/ GAINESVILLE-ALACHUA COUNTY REGIONAL UTILITIES BOARD

FLORIDA

YARD UTILITIES - ASH & SLUDGE PONDS (3:1)

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

DATE	FEB. 18, 1980	DRAWING NO.	REV.
DESIGNED	DOMBROSKI	U9 – 4	
DETAILED	C. ALLEN	PROJECT	75-077-1
CHECKED	Burnett	SHEET	OF SHEETS

NO.	DATE	BY	REVISION
1	3-11-80	DJB	REVISED PER ADDENDUM NO. 2
	4-3-80	MBB	ADDED NOTE PER ADDENDUM NO. 3
	4-7-80	MBB	REVISED NOTE FOR CLARIFICATION
	4-22-80	DMZ	ISSUED AS BID
2	5-29-80	GWB	ADDED SLURRY WALL & SLURRY TRENCH. (E-16) REVISED NOTE 1 (L-10) DELETED NOTE.
	5-30-80	DMZ	ISSUED
3	6-30-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

MATCH LINE DWG. Y 71

MATCH LINE DWG. Y 74

MATCH LINE DWG. Y 67

MATCH LINE DWG. Y 73

MATCH LINE DWG. Y 69

SLUDGE CELL NO. 1

SLUDGE CELL NO. 2

ASH CELL NO. 1

ASH CELL NO. 2

PUMP BACK CELL NO. 1

PUMP BACK CELL NO. 2

€ RAMP NO. 3A

€ RAMP NO. 1A

€ PLANT ROAD "H"

€ EXISTING RAILROAD LOOP

BEGIN RAMP NO. 3A STA. 0+00.00 N 13,292.97 E 8,897.41

BEGIN 5.0% SLOPE EL. 195.26 N 13,301.80 E 8,856.25

END 5.0% SLOPE EL. 188.26 N 13,109.83 E 9,030.55

BEGIN 4.58% SLOPE EL. 195.26 N 12,518.68 E 8,589.32

BEGIN 4.58% SLOPE EL. 195.26 N 13,034.87 E 8,589.22

BEGIN 5.00% SLOPE EL. 195.26 N 13,118.06 E 9,039.39

END RAMP NO. 1A STA. 7+43.10 N 12,410.50 E 8,697.51

END PLANT RD. "H" STA. 43+17.50 N 12,926.68 E 9,215.69

END ACCESS DRIVE A STA. 6+37.87 PT. CURVE NO. 204A STA. 42+24.50 € PLANT ROAD "H" N 12,800.92 E 9,279.45

ACCESS DRIVE A STA. 1+77.94 = € ROAD CROSSING BY OTHERS (SEE TYPICAL ROAD CROSSING DETAIL DWG. Y 86).

BEGIN CONSTRUCTION ACCESS DRIVE A STA. 0+81.00 N 12,401.19 E 9,269.86

HIGH POINT EL. 182.58 N 13,306.79 E 9,574.83

P.C. CURVE NO. 203A STA. 35+86.89 N 13,246.85 E 9,587.58

P.I. CURVE NO. 203A STA. 36+82.14 AHD. STA. 37+08.92 BK. N 13,216.85 E 9,639.39

P.T. CURVE NO. 203A STA. 37+54.17 N 13,160.09 E 9,595.04

P.C. CURVE NO. 204A STA. 41+27.15 N 12,866.18 E 9,365.41

P.I. CURVE NO. 204A STA. 41+89.51 AHD. STA. 41+92.14 BK. N 12,824.97 E 9,325.40

P.T. CURVE NO. 701A STA. 4+55.06 N 12,729.62 E 9,149.34

P.C. CURVE NO. 701A STA. 4+32.48 AHD. STA. 4+34.40 BK. N 12,749.00 E 9,154.84

P.I. CURVE NO. 700A STA. 3+24.74 AHD. STA. 3+25.60 BK. N 12,605.14 E 9,150.04

P.C. CURVE NO. 700A STA. 3+10.55 N 12,592.59 E 9,143.15

P.T. CURVE NO. 700A STA. 3+39.78 N 12,620.19 E 9,134.84

P.C. CURVE NO. 300A STA. 5+42.86 N 12,268.78 E 8,676.29

P.I. CURVE NO. 300A STA. 5+68.34 AHD. STA. 7+70.17 BK. N 12,268.75 E 8,599.07

P.T. CURVE NO. 300A STA. 7+82.95 N 12,288.14 E 8,524.33

P.I. CURVE NO. 301A STA. 5+42.68 AHD. STA. 7+09.53 BK. N 12,268.75 E 8,838.26

P.T. CURVE NO. 301A STA. 7+05.60 N 12,383.98 E 8,724.02

CURVE NO. 203A (ARC. DEF.) Δ = 83°59'56" D = 71°37'11" R = 80.05' T = 72.03' L = 117.28'

CURVE NO. 204A (ARC. DEF.) Δ = 97°00'00" D = 99°58'41" R = 57.50' T = 66.98' L = 97.35'

CURVE NO. 701A (ARC. DEF.) Δ = 44°44'30" D = 114°35'30" R = 50.00' T = 20.58' L = 39.04'

CURVE NO. 700A (ARC. DEF.) Δ = 33°30'25" D = 114°35'30" R = 50.00' T = 15.05' L = 29.24'

CURVE NO. 300A (ARC. DEF.) Δ = 14°33'19" D = 9°28'32" R = 604.64' T = 77.22' L = 153.61'

CURVE NO. 301A (ARC. DEF.) Δ = 135°00'00" D = 84°52'57" R = 67.50' T = 162.97' L = 159.04'

4' FLAT BOTTOM DITCH, SLOPE = 0.15%

4' FLAT BOTTOM DITCH SLOPE = 0.28 %

4' FLAT BOTTOM DITCH SLOPE = 0.29%

4' FLAT BOTTOM DITCH, SLOPE = 0.15%

TOP OF SLOPE MATCH EXISTING GRADE

TOE OF SLOPE MATCH EXISTING GRADE

TOE OF SLOPE MATCH EXISTING GRADE

TOE OF SLOPE MATCH EXIST-ING GRADE

TOP OF 10' WIDE DIKE, EL. 184.00

BEGIN 2'-0" BERM MATCH EXISTING EL. 182.00 N 12,995 ± E 9,503 ±

2'-0" BERM EL. 182.00

2'-0" BERM EL. 181.50

2" CROSSING EL. 181.00

2" CROSSING EL. 180.00

2" CROSSING EL. 184.00

PLACE RIPRAP FROM TOP TO TOE OF SLOPE (SEE DET. DWG. Y 86)

PLACE RIPRAP FROM EL. 181.86 TO TOE OF SLOPE (SEE DET. DWG. Y 86)

PLACE RIPRAP FROM TOP TO TOE OF SLOPE (SEE DET. DWG. Y 86)

PLACE RIPRAP FROM TOP TO TOE OF SLOPE (SEE DET. DWG. Y 86)

SLUDGE POND STOPLOG STRUCTURE (SEE DWG. S 225)

SLUDGE LINE DISCHARGE STRUCTURE (SEE DWG. S 224)

ASH POND STOPLOG STRUCTURE (SEE DWG. S 224)

RECYCLE PMP. STRUCT. (SEE DWG. S 222)

RECYCLE INTAKE HEADWALL (SEE DWG. S 226)

RECYCLE INTAKE HEADWALL (SEE DWG. S 226)

ASH POND ELEC. EQPT. BLDG. (SEE DWG S 231)

ASH POND ELEC. EQPT. BLDG. (SEE DWG. S 231)

ASH PIPE DRAIN PIT (SEE DWG. S 231)

STOPLOG BRIDGE ABUTMENT (SEE DWG. S 226)

HEADWALL (SEE DWG. S 226)

SPLASHBLOCK (SEE DWG. UP 46)

SPLASHBLOCK (SEE DWG. UP 46)

SLUDGE LINE DISCHARGE STRUCTURE (SEE DWG. S 224)

€ SLURRY TRENCH (SEE NOTE 1)

€ SLURRY TRENCH (SEE NOTE 1)

€ SLURRY TRENCH (SEE NOTE 1)

€ CLAY PLUG N 12,665 ±

€ CLAY PLUG N 12,340 ±

€ CLAY PLUG E 9,700 ±

€ SLURRY WALL ALONG OUTER EDGE OF DITCH

CLAY PLUG

COAL PILE RUNOFF RETENTION POND

COAL PILE RUNOFF RETENTION POND PUMP STRUCTURE (SEE DWG. S 235)

COAL PILE RUNOFF RETENTION POND HEADWALL NO. (SEE DWG. S 235)

EXISTING TEMPORARY CONSTRUCTION RUNOFF RETENTION POND NO. 5

ASH LINE CORRIDOR BY OTHERS

FOR GRADING IN THIS AREA SEE DWG. Y 89

FOR GRADING IN THIS AREA SEE DWG. Y 89

FOR GRADING IN THIS AREA SEE DWG. Y 85

N 12,625.00 E 8,744.10 EL. 174.50

N 12,625.00 E 9,988.00 EL. 175.50

N 12,383.00 E 9,744.10 EL. 174.50

N 13,000

N 12,500

E 8,500

E 9,000

E 9,500

INV. EL. 180.50

INV. EL. 180.62

INV. EL. 180.68

INV. EL. 182.50

INV. EL. 180.80

INV. EL. 181.00

INV. EL. 179.38

INV. EL. 179.82

INV. EL. 176.51

INV. EL. 179.30

INV. EL. 179.00

SS-56A

SS-57A

SS-70

SS-71

SS-65

SS-67

73-V-83

70-N-82

70-H-81

70-J-81

71-P-82

70-N-82

0.25%

0.41%

GRID NORTH

NORTH

SCALE IN FEET

NOTES:

1. € OF SLURRY TRENCH IS APPROX.
2. HALFWAY BETWEEN € & INSIDE EDGE OF TOP OF DIKE.

CONTRACT NO. 29C
YARD STRUCTURES 1(1)

DEERHAVEN GENERATING STATION UNIT 2

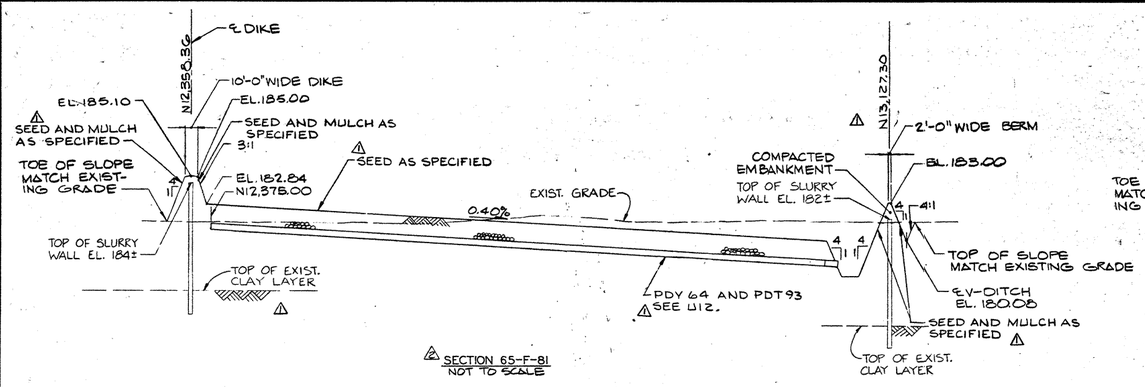
CITY OF GAINESVILLE/
GAINESVILLE-ALACHUA COUNTY
REGIONAL UTILITIES BOARD

FLORIDA

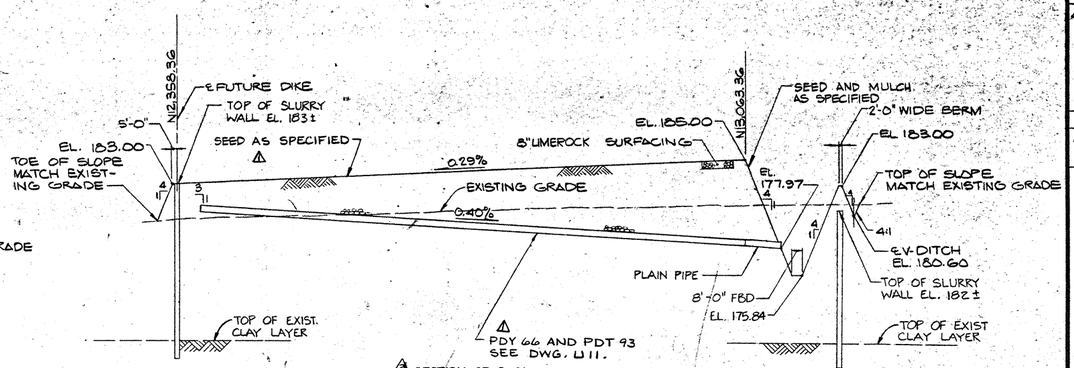
GRADING PLAN 7

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

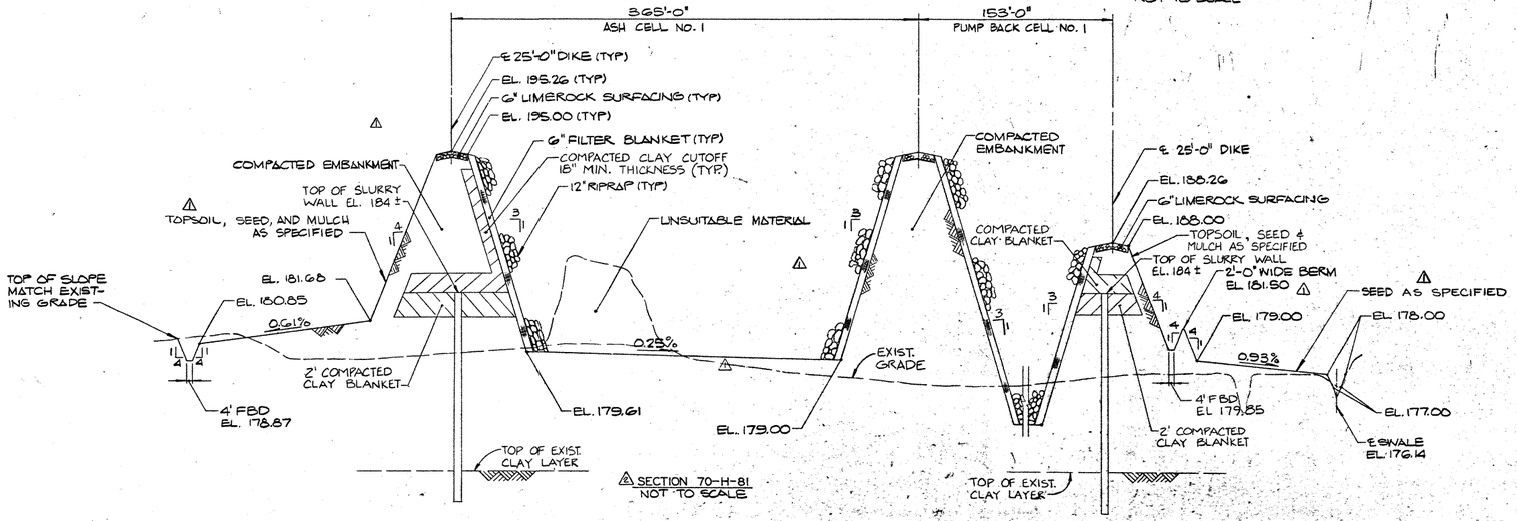
DATE	FEB. 18, 1980	DRAWING NO.	Y 70 — 3
DESIGNED	HITCHESON	REV.	
DETAILED	WISEMAN	PROJECT	76-077-1
CHECKED	DMZ	SHEET	OF SHEETS



△ SECTION 65-F-81
NOT TO SCALE



△ SECTION 67-G-81
NOT TO SCALE



△ SECTION 70-H-81
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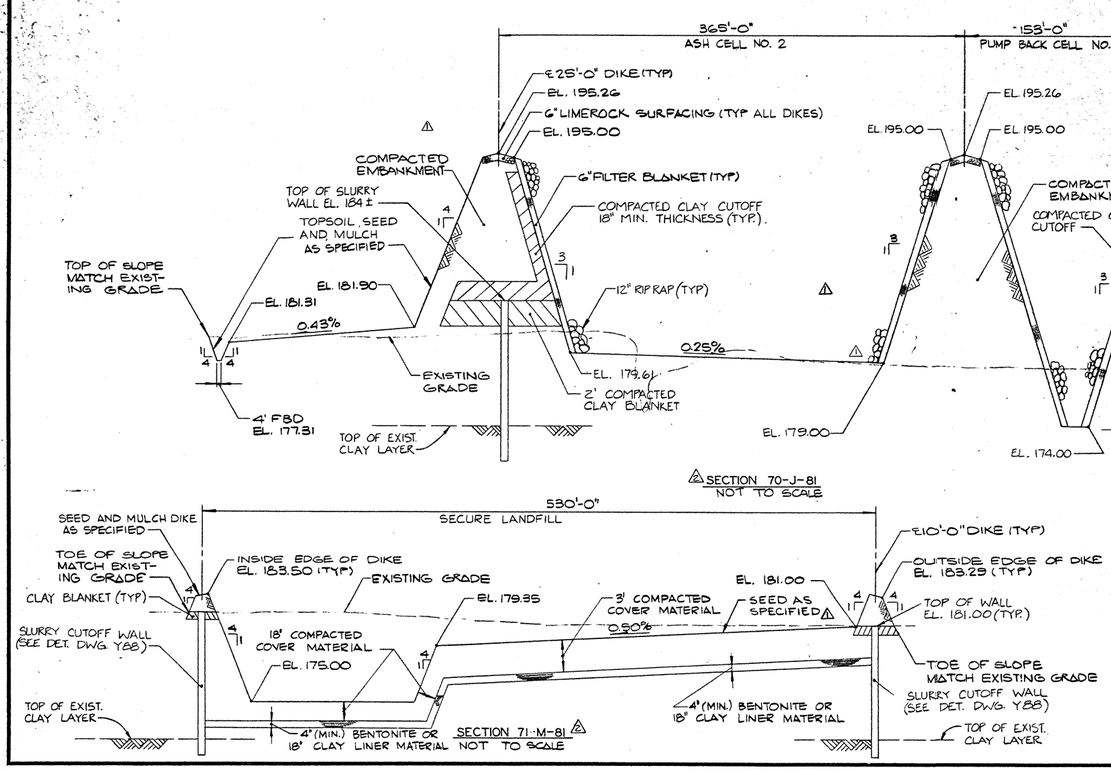

△ SECTION 70-J-81
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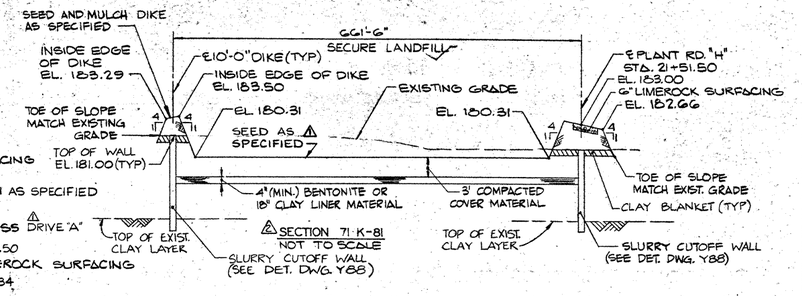
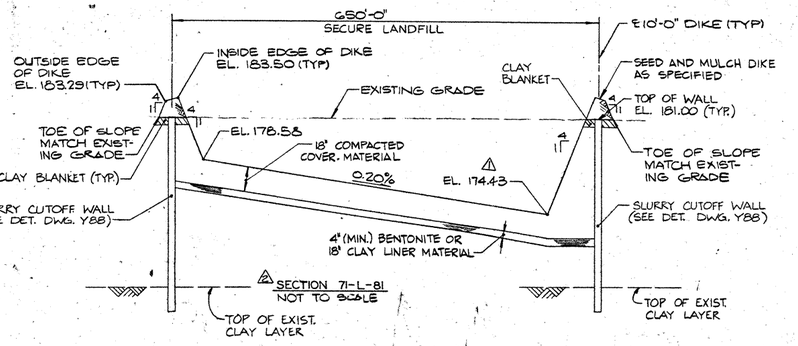


△ SECTION 71-K-81
NOT TO SCALE



△ SECTION 71-L-81
NOT TO SCALE

△ SECTION 71-M-81
NOT TO SCALE

NO.	DATE	BY	REVISION
1	3-10-80	DJB	REVISED & ADDED NOTES FOR CLARIFI-CATION.
	3-12-80	TDW	(F-8, 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

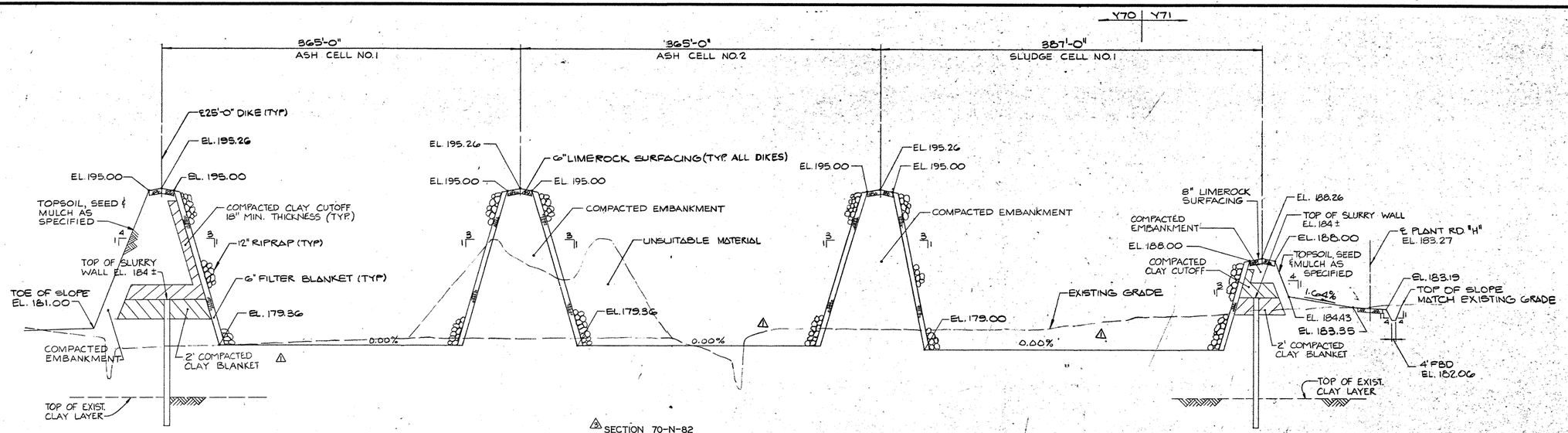
CITY OF GAINESVILLE/
GAINESVILLE-ALACHUA COUNTY
REGIONAL UTILITIES BOARD

FLORIDA

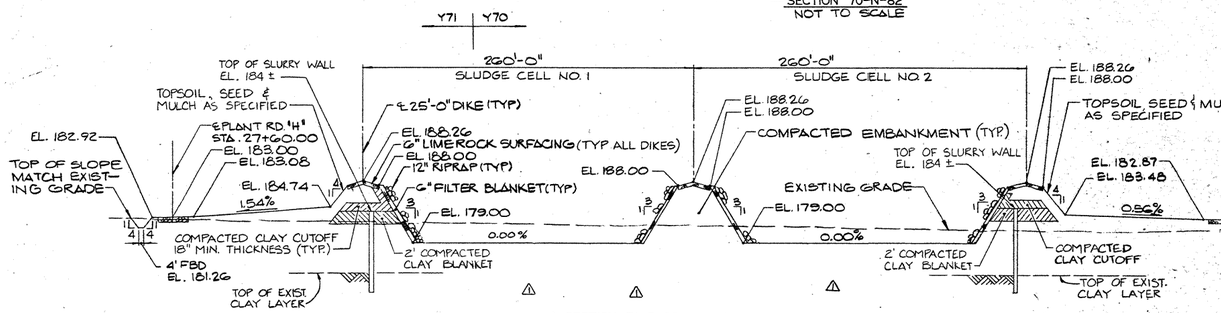
GRADING SECTIONS 2

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

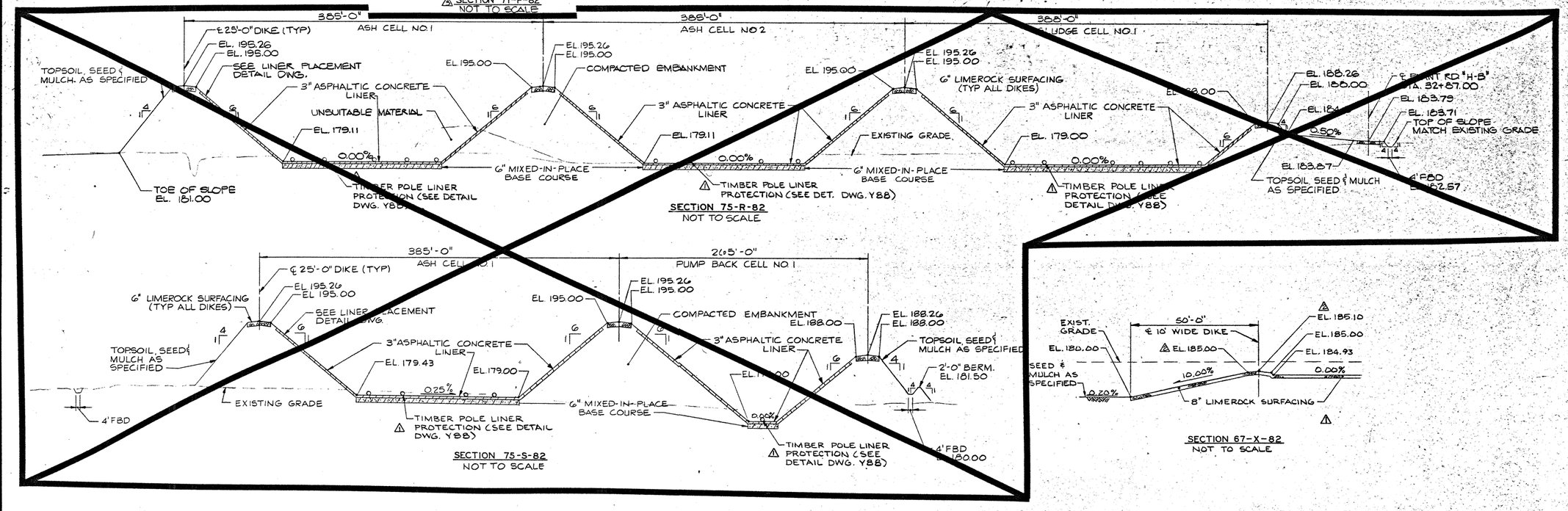
DATE FEB. 18, 1980	DRAWING NO.	REV.
DESIGNED HUTCHESON	Y81	– 2
DETAILED MADDOCK	PROJECT	76-077-1
CHECKED DMZ	SHEET	OF SHEETS



⚠ SECTION 70-N-82
NOT TO SCALE



⚠ SECTION 71-P-82
NOT TO SCALE



SECTION 75-R-82
NOT TO SCALE

SECTION 75-S-82
NOT TO SCALE

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

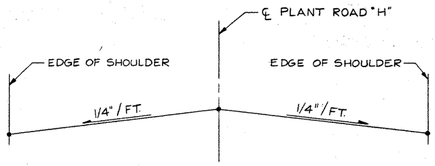
FLORIDA

GRADING SECTIONS 3

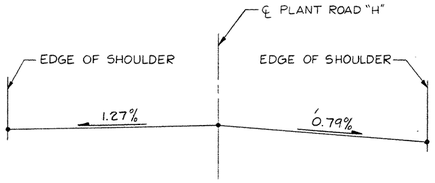
Burns & McDonnell
Engineers-Architects-Consultants
KANSAS CITY, MISSOURI

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

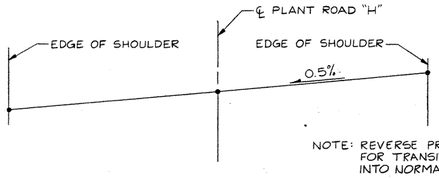
SUPERELEVATION TRANSITIONS



BEGIN TRANSITION
NORMAL CROWN
NOT TO SCALE

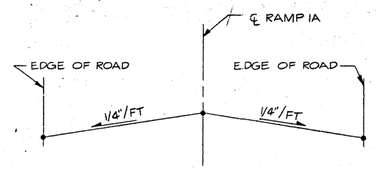


TRANSITION MIDPOINT
NOT TO SCALE

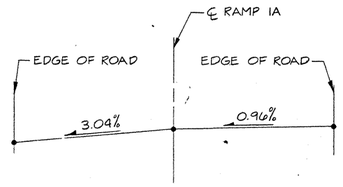


NOTE: REVERSE PROCESS FOR TRANSITIONING INTO NORMAL CROWN

END TRANSITION
NOT TO SCALE



BEGIN TRANSITION
NORMAL CROWN
NOT TO SCALE



TRANSITION MIDPOINT
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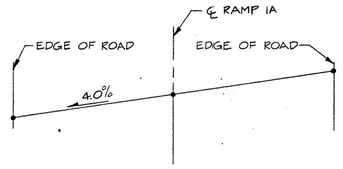

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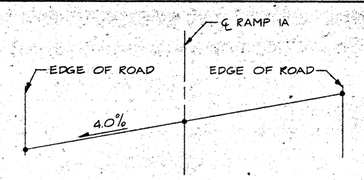

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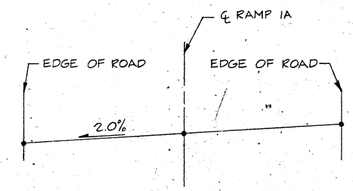
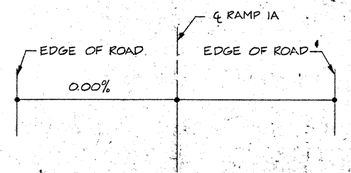


TRANSITION MIDPOINT



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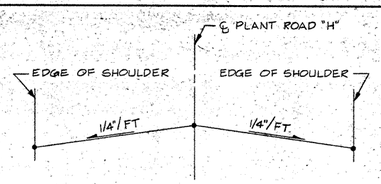

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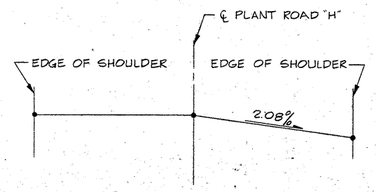
NOT TO SCALE



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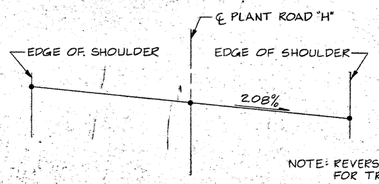
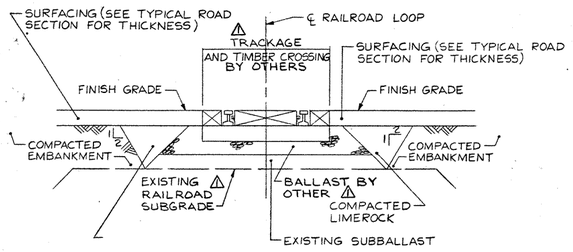
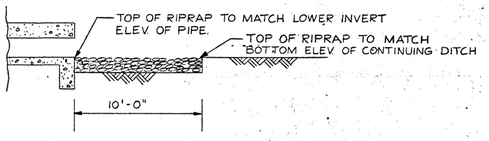


NOTE: REVERSE PROCESS FOR TRANSITIONING INTO NORMAL CROWN.

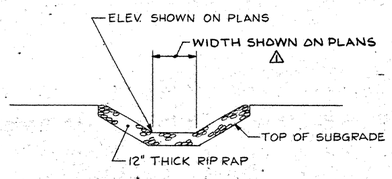
END TRANSITION
NOT TO SCALE



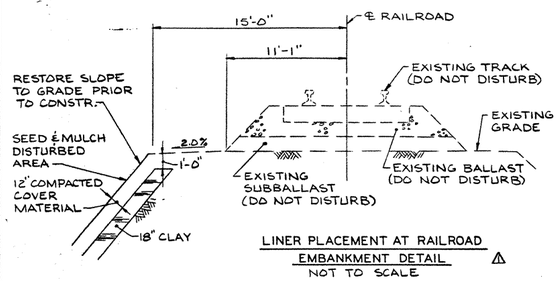
TYPICAL ROAD CROSSING DETAIL
NOT TO SCALE



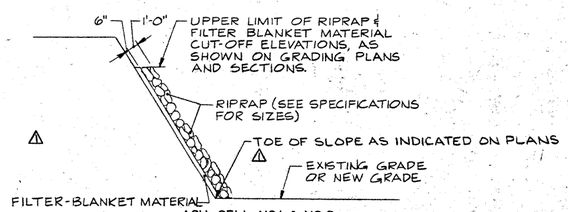
TRANSITION FROM RIPRAPPED TO
NON RIPRAPPED DITCH
NOT TO SCALE



TYPICAL SECTION
RIP RAPPED FLAT BOTTOM DITCH
NOT TO SCALE



LINER PLACEMENT AT RAILROAD
EMBANKMENT DETAIL
NOT TO SCALE



ASH CELL NO.1 & NO.2
SLUDGE CELL NO.1 & NO.2
PUMP BACK CELL NO.1 & NO.2
COAL PILE RUNOFF RETENTION POND
TYPICAL RIPRAP PLACEMENT DETAIL
NOT TO SCALE

NO.	DATE	BY	REVISION
1	5-12-80	DJB	(I-3) (I-15) (L-14) ADDED NOTES FOR CLARIFICATION. (L-14) DELETED NOTE. (M-3) ADDED DETAIL.
	5-21-80	DMZ	ISSUED WITH ADDENDUM NO.3
	4-27-80	DMZ	ISSUED AS BID
	7-1-81	DJB	CONFORMING TO CONSTRUCTION RECORDS

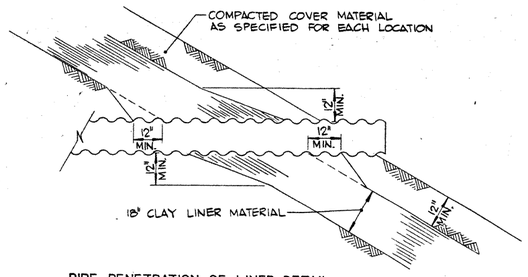
CONTRACT NO. 29C
YARD STRUCTURES III

DEERHAVEN GENERATING STATION UNIT 2
CITY OF GAINESVILLE/
GAINESVILLE-ALACHUA COUNTY
REGIONAL UTILITIES BOARD
FLORIDA

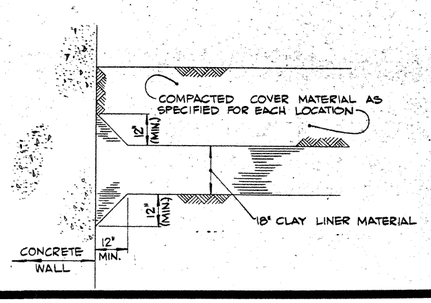
GRADING DETAILS 2

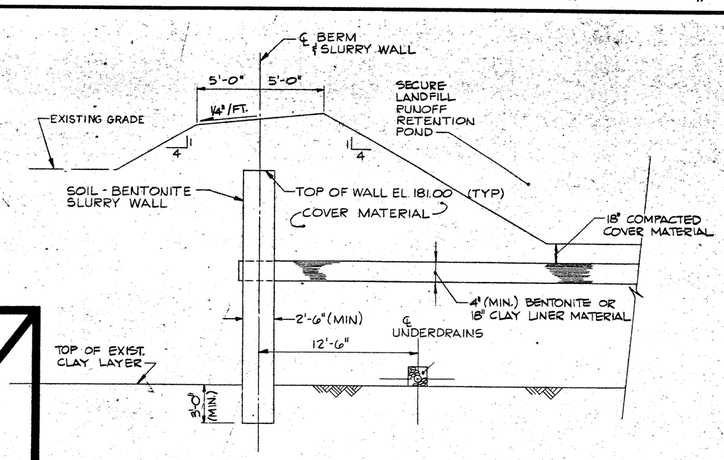
Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

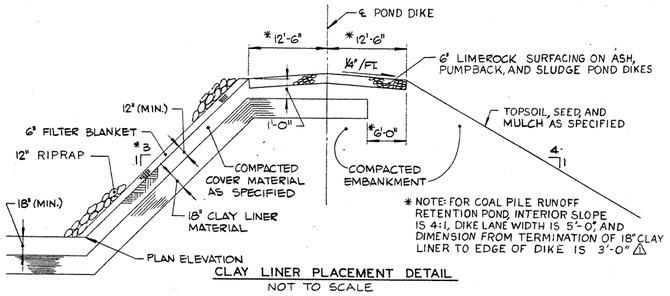
DATE	FEB. 18, 1980	DRAWING NO.	Y86 — 1
DESIGNED	MEYERS	REV.	
DETAILED	BAKER	PROJECT	76-077-1
CHECKED	DMZ	SHEET	OF SHEETS



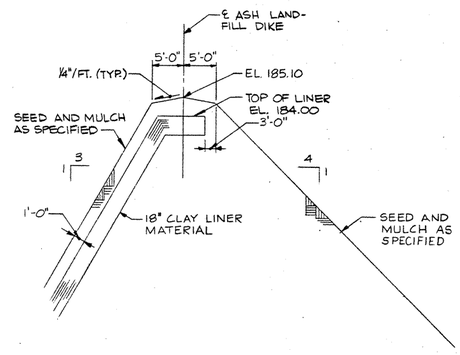
PIPE PENETRATION OF LINER DETAIL
NOT TO SCALE







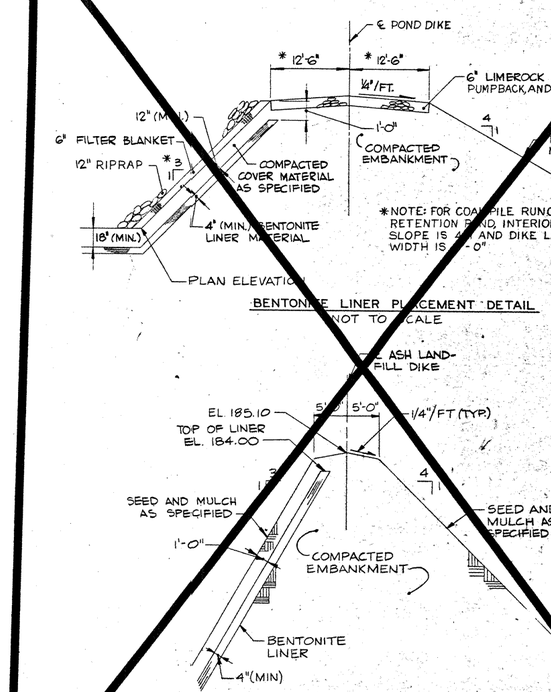
CLAY LINER PLACEMENT DETAIL
NOT TO SCALE



CLAY LINER ANCHORAGE DETAIL
NOT TO SCALE

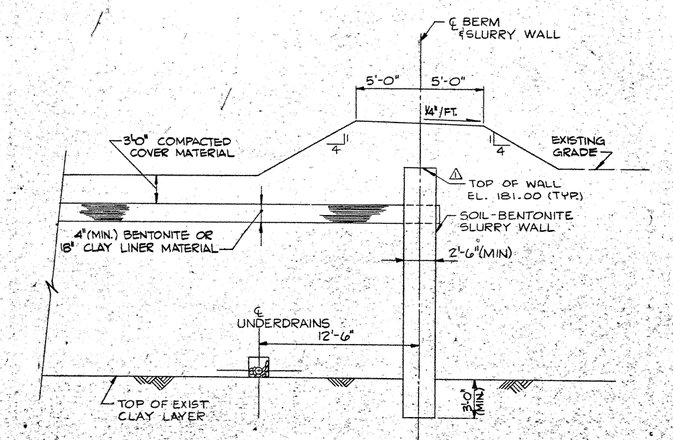
WALL PENETRATION OF LINER DETAIL
NOT TO SCALE

BENTONITE LINER PLACEMENT DETAIL
NOT TO SCALE



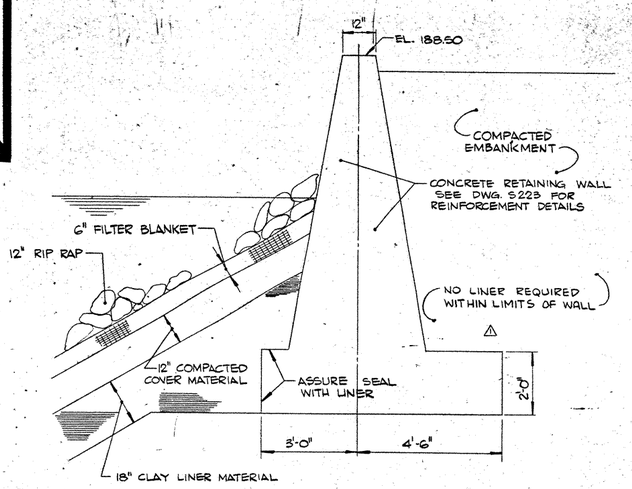
BENTONITE LINER ANCHORAGE DETAIL
NOT TO SCALE

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

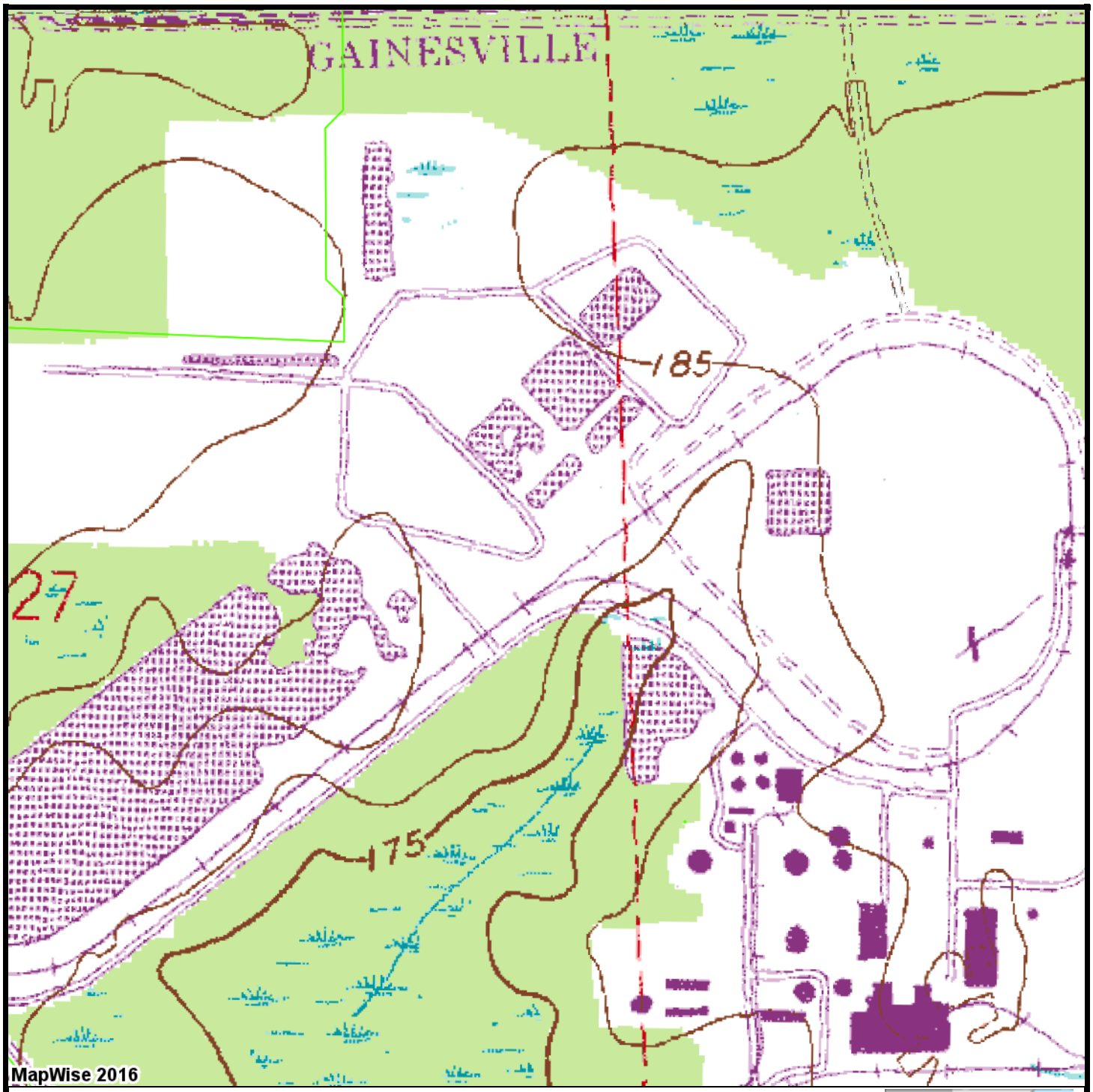
Burns & McDonnell
Engineers - Architects - Consultants
KANSAS CITY, MISSOURI

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

APPENDIX C

TOPOGRAPHIC MAP

POTENTIOMETRIC MAP



Selected Custom Parcels
County Boundaries
Parcel Outlines

N

0 360 720 1080 ft

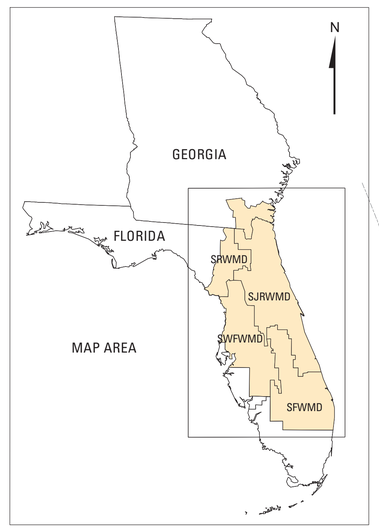
USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

SCIENTIFIC INVESTIGATIONS MAP 3091

Sandra L. Kinnaman and Joann F. Dixon, 2009, Potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida, May 2009



INTRODUCTION

This map depicts the potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity for May 2009. Potentiometric contours are based on water-level measurements collected at 625 wells during the period May 14 – May 29, near the end of the dry season. Some contours are inferred from previous potentiometric-surface maps with larger well networks. The potentiometric surface of the carbonate Upper Floridan aquifer responds mainly to rainfall, and more locally, to ground-water withdrawals and spring flow. Potentiometric-surface highs generally correspond to topographic highs where the aquifer is recharged. Springs and areas of diffuse upward leakage naturally discharge water from the aquifer and are most prevalent along the St. Johns River. Areas of discharge are reflected by depressions in the potentiometric surface. Ground-water withdrawals locally have lowered the potentiometric surface. Ground water in the Upper Floridan aquifer generally flows from potentiometric highs to potentiometric lows in a direction perpendicular to the contours.

SUMMARY OF HYDROLOGIC CONDITIONS

Measured values of the potentiometric surface ranged from 8 feet below NGVD29 near Fernandina Beach, Florida, to 124 feet above NGVD29 in Polk County, Florida. The average water level of the network in May 2009 was about 4 feet lower than the average in September 2008 following below-average rainfall during the dry season of 2008-09. Seasonal differences in network average water levels generally range from 4 to 6 feet. For 575 wells with previous measurements, May 2009 levels ranged from about 19 feet below to about 10 feet above September 2008 water levels.

The observed near-average seasonal difference following such an extreme dry season could be the result of reduced pumping, and subsequent rebounding of the potentiometric surface, in response to a widespread and record setting rainfall event (May 18 – 22, 2009). During the time that the majority of water levels were measured, most of the study area received at least 4 inches of rainfall with 8-12 inches of rain falling across most of east-central and northeast Florida. Nearly 20 inches of rain was recorded at Daytona Beach. Prior to that event, rainfall deficits across the study area ranged from 20-80% below the 30-year average.

The average water level of the network in May 2009 was less than 1 foot higher than the average in May 2008. Water-levels in east-central and northeast Florida were about the same or higher than those measured in May 2008, whereas the water levels in west-central Florida tended to be lower (Figure 1). For 480 wells with previous measurements, May 2008 levels ranged from about 8 feet below to about 17 feet above May 2008 water levels.

ADDITIONAL REFERENCE

Long-term hydrographs of ground-water levels for continuous and periodic wells are available at internet site: http://waterdata.usgs.gov/fl/nwis/gw

EXPLANATION

- 50 ---- POTENTIOMETRIC CONTOUR -- Shows altitude at which water level would have stood in tightly cased wells. Hatchures indicate depressions. Contour intervals 10 feet. Vertical datum is NGVD29. Dashed where inferred
- STATE WATER MANAGEMENT DISTRICT BOUNDARY
  - SJRWMD -- St. Johns River Water Management District
  - SRWMD -- Suwannee River Water Management District
  - SFWMD -- South Florida Water Management District
  - SWFWMD -- Southwest Florida Water Management District
- 37 SURVEYED WELL WITH KNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is referenced to benchmark datum. Number is altitude of water level in feet above or below NGVD29
- 31 SURVEYED WELL WITH UNKNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is referenced to benchmark datum. Number is altitude of water level in feet above or below NGVD29
- 40 UNSURVEYED WELL WITH KNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is estimated from topographic map. Number is altitude of water level in feet above or below NGVD29
- 38 UNSURVEYED WELL WITH UNKNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is estimated from topographic map. Number is altitude of water level in feet above or below NGVD29
- SPRING -- Line indicates direction of spring outflow
- FLOWING BOREHOLE
- 42 SINKHOLE -- Surface collapse feature exposing the Upper Floridan aquifer. Where measured, number is altitude of water level in feet above NGVD29

NOTE: The potentiometric contours are generalized on a regional scale to portray water levels in a dynamic hydrolgic system taking due account of the variations in hydrogeologic conditions such as well-depth differences, non-simultaneous measurements of water levels, variable effects of pumping, and changing climatic infulence. The potentiometric contours, thus, may not conform exactly with individual measurements of water level.

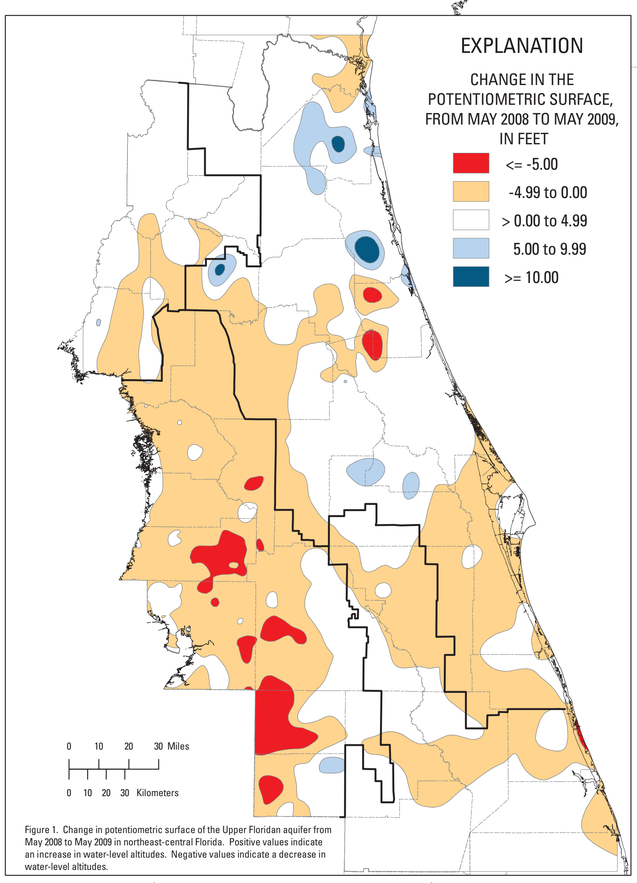


Figure 1. Change in potentiometric surface of the Upper Floridan aquifer from May 2008 to May 2009 in northeast-central Florida. Positive values indicate an increase in water-level altitudes. Negative values indicate a decrease in water-level altitudes.

Base from U.S. Geological Survey digital data, 1:100,000, 1983
State Plane Florida East projection, NAD 1983

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER IN THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND VICINITY, FLORIDA, MAY 2009

By
Sandra L. Kinnaman and Joann F. Dixon
2009

This report is available online at http://infotrek.er.usgs.gov/pubs/

APPENDIX D

GBA DOCUMENT

CONSTRAINTS AND RESTRICTIONS

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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