MUNDY LANDFILL

MANSFIELD, LOUISIANA
FACILITY NO. D-031-1827
PERMIT NO. P-0035R1
AI #19803

PERMIT MODIFICATION NO. 1
CELL VIII EXPANSION
(FINAL COPIES)

Submitted to

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
BATON ROUGE, LOUISIANA

By

DESOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA
JUNE, 2008

VOLUME II

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PERMIT MODIFICATION NO. 1
(CELL VIII EXPANSION)
TO PERMIT RENEWED 2005

VOLUME II

MUNDY LANDFILL
MANSFIELD, LOUISIANA
FACILITY NO. D-031-1827
PERMIT NO. P-0035R1
AGENCY INTEREST NO. 19803

SUBMITTED TO:
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
BATON ROUGE, LOUISIANA

SUBMITTED BY:
DESOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

June 2, 2008

PREPARED BY:

JONES ENVIRONMENTAL, INC.
708 MILAM STREET, SUITE 100
SHREVEPORT, LA 71101

ARDAMAN & ASSOCIATES, INC.
(FORMERLY SOIL TESTING ENGINEERS, INC.)
316 HIGHLANDIA DRIVE
BATON ROUGE, LA 70810

ATTACHMENT C

NEW APPENDICES TO THE PERMIT RENEWAL APPLICATION

Index

S-1 Site Information and Correspondence
S-2 2005 Geologic Investigation
S-3 Engineering Calculations
S-4 2006 Permit Drawings

Appendix S

DESIGN AND PERMITTING OF CELL VIII

INDEX

S-1 Cell VIII Site Information and Correspondence
- S-1a Wetlands Determination
- S-1b Department of Wildlife & Fisheries Response
- S-1c Department of Culture, Recreation, and Tourism Response
- S-1d Phase I Cultural Resources Survey
- S-1e LDOTD List of Registered Water Wells

S-2 2005 Geologic Investigation
- S-2a 2005 Soil Boring Logs
- S-2b 2005 Monitoring and Piezometer Well Construction Diagrams
- S-2c 2005 Monitoring and Piezometer Well Registrations
- S-2d Tables
  - 1 Summary of Soil Boring Logs
  - 2 Monitoring and Piezometer Well Data
    - 2A - Zone C
    - 2B - Zone G1
    - 2C - Zone G2
  - 3 Summary of Groundwater Elevation Data
    - 3A - Zone C Monitoring & Piezometer Wells
    - 3B - Zone G1 Monitoring & Piezometer Wells
    - 3C - Zone G2 Monitoring & Piezometer Wells
  - 4 Gauging and Elevation Data, Sedimentation, Oxidation, & Polishing Ponds
  - 5 Preliminary Installation Data for New Monitoring Wells
  - 6 Oil and Gas Wells

S-3 Engineering Calculations
- S-3a Slope Stability Calculations
- S-3b Bottom Heave Calculations
- S-3c Storm Water Management Plan Calculations
- S-3d Soil Loss Calculations
- S-3e Settlement Calculations
- S-3f Leachate Collection System Evaluation

S-4 2006 Permit Drawings
- STE-S1 Location Plan
- STE-S2 Flood Plain Location Map
- STE-S3 Boring and Well Location Map

Appendix S

DESIGN AND PERMITTING OF CELL VIII

INDEX

S-4 2006 Permit Drawings (continued)

STE-S4	Cell VIII Existing Conditions
STE-S5	Cell VIII Conceptual Bottom of Excavation Plan
STE-S6	Cell VIII Conceptual Top of Liner (Base Grades)
STE-S7	Cell VIII Conceptual Cross-Sections
STE-S8	Cell VIII Final Contour Plan
STE-S9	Cell VIII Conceptual Drainage Plan
STE-S10	Cell VIII Details
STE-S11	Seismic Lines
STE-S12	Location of Oil and Gas Wells
JEI-S1	Location Map for North-South Geologic Cross-Sections
JEI-S2	Location Map for East-West Geologic Cross-Sections
JEI-S3	North-South Cross-Section E-E'
JEI-S4	North-South Cross-Section M-M'
JEI-S5	North-South Cross-Section N-N'
JEI-S6	North-South Cross-Section O-O'
JEI-S7	East-West Cross-Section G-G'
JEI-S8	East-West Cross-Section I-I'
JEI-S9	East-West Cross-Section J-J'
JEI-S10	East-West Cross-Section K-K'
JEI-S11	Isopach Map of Zone C
JEI-S12	Isopach Map of Zone G1
JEI-S13	Isopach Map of Zone G2
JEI-S14	Isometric Profile for Cell VIII Area
JEI-S15	Potentiometric Map, Zone C: 10/19/05
JEI-S16	Potentiometric Map, Zone C: 11/14/05
JEI-S17	Potentiometric Map, Zone C: 12/9/05
JEI-S18	Potentiometric Map, Zone C: 01/25/06
JEI-S19	Potentiometric Map, Zone C: 02/27/06
JEI-S20	Potentiometric Map, Zone C: 03/29/06
JEI-S21	Potentiometric Map, Zone C: 04/26/06
JEI-S22	Potentiometric Map, Zone C: 06/01/06
JEI-S23	Potentiometric Map, Zone C: 06/28/06
JEI-S24	Potentiometric Map, Zone C: 07/26/06
JEI-S25	Potentiometric Map, Zone C: 08/25/06
JEI-S26	Potentiometric Map, Zone C: 09/28/06
JEI-S27	Potentiometric Map, Zone G1: 10/19/05
JEI-S28	Potentiometric Map, Zone G1: 11/14/05

Appendix S

DESIGN AND PERMITTING OF CELL VIII

INDEX

S-4 2006 Permit Drawings (continued)

JEI-S29	Potentiometric Map, Zone G1: 12/09/05
JEI-S30	Potentiometric Map, Zone G1: 01/25/06
JEI-S31	Potentiometric Map, Zone G1: 02/27/06
JEI-S32	Potentiometric Map, Zone G1: 03/29/06
JEI-S33	Potentiometric Map, Zone G1: 04/26/06
JEI-S34	Potentiometric Map, Zone G1: 06/01/06
JEI-S35	Potentiometric Map, Zone G1: 06/28/06
JEI-S36	Potentiometric Map, Zone G1: 07/26/06
JEI-S37	Potentiometric Map, Zone G1: 08/25/06
JEI-S38	Potentiometric Map, Zone G1: 09/28/06
JEI-S39	Potentiometric Map, Zone G2: 10/19/05
JEI-S40	Potentiometric Map, Zone G2: 11/14/05
JEI-S41	Potentiometric Map, Zone G2: 12/09/05
JEI-S42	Potentiometric Map, Zone G2: 01/25/06
JEI-S43	Potentiometric Map, Zone G2: 02/27/06
JEI-S44	Potentiometric Map, Zone G2: 03/29/06
JEI-S45	Potentiometric Map, Zone G2: 04/26/06
JEI-S46	Potentiometric Map, Zone G2: 06/01/06
JEI-S47	Potentiometric Map, Zone G2: 06/28/06
JEI-S48	Potentiometric Map, Zone G2: 07/26/06
JEI-S49	Potentiometric Map, Zone G2: 08/25/06
JEI-S50	Potentiometric Map, Zone G2: 09/28/06
JEI-S51	Point of Compliance: Zone C
JEI-S52	Point of Compliance: Zone G1
JEI-S53	Point of Compliance: Zone G2

Appendix S-1

Site Information and Correspondence

- **S-1a** Wetlands Determination
- **S-1b** Department of Wildlife & Fisheries Response
- **S-1c** Department of Culture, Recreation, and Tourism Response
- **S-1d** Phase I Cultural Resources Survey
- **S-1e** LDOTD List of Registered Water Wells

Appendix S-1a

Wetlands Determination

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

REPLY TO
ATTENTION OF:

February 7, 2006

Operations Division
Regulatory

SUBJECT: Jurisdictional Determination – Proposed Mundy Landfill Expansion Site, DeSoto Parish, Louisiana

Ms. Kellie T. McNamara
Soil Testing Engineers, Incorporated
Post Office Box 83710
Baton Rouge, Louisiana 70884

Dear Ms. McNamara:

I refer to your letter requesting a wetland determination for the subject property located in section 4, T12N-R12W, DeSoto Parish, Louisiana. The location of the site is depicted on the enclosed map (enclosure 1).

Based upon the information provided, we concur with the delineation report conducted by Tom Bourland and Associates, L.L.C., for the subject expansion site. We have determined that a Department of the Army Section 10/404 permit will not be required for the proposed work, since the location is not considered a jurisdictional wetland or other waters of the United States. For your information, I have enclosed a copy of the basis of our determination (enclosure 2) and appeals form (enclosure 3).

This approved jurisdictional determination is applicable for a period not to exceed 5 years from the date of this letter unless superseded by law or regulation. If the proposed work is not completed by this time, you should contact this office for a reevaluation of permit requirements and refer to identification No. MVK-2006-224 when submitting the information.

This determination of Department of the Army regulatory requirements does not convey any property rights, either in real estate or material or any exclusive privileges, and does not authorize any injury to property or invasion of rights or local laws or regulations, or obviate the requirement to obtain State or local assent required by law for the activity discussed herein.

The decision regarding this action is based on information found in the administrative record, which documents the District's decision-making process, the basis for the decision, and the final decision.

If we may be of any further assistance in this matter, please contact Mr. Charles R. Allred, Jr. of this office, telephone (601) 631-5546, fax (601) 631-5459 or e-mail address: regulatory@mvk02.usace.army.mil.

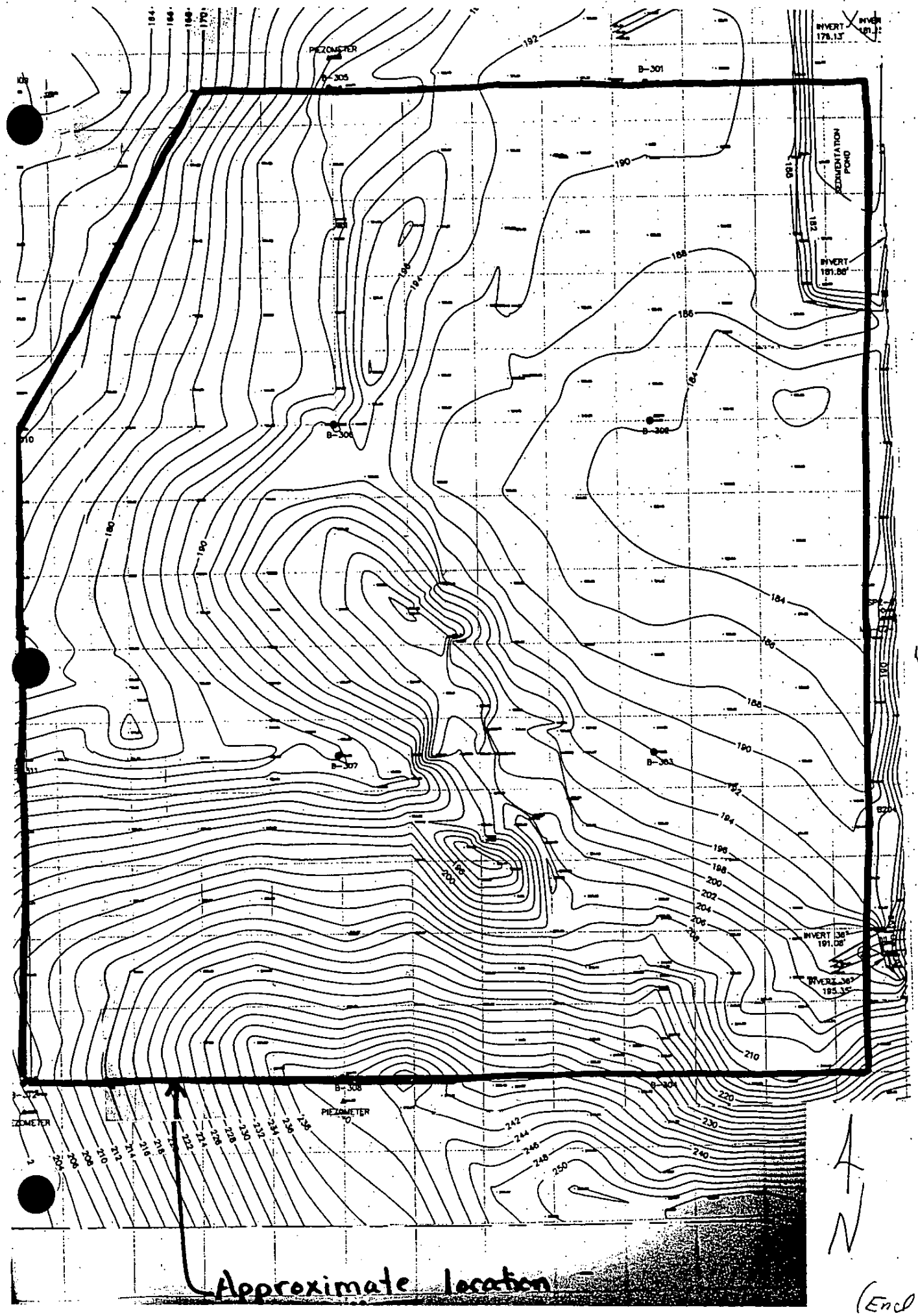
I am forwarding a copy of this letter to Mr. Tom Bourland, Tom Bourland and Associates, L.L.C., 9847 Neesonwood Drive, Shreveport, Louisiana 71106.

Sincerely,

Charles R. Allred, Jr.

for Kenneth P. Mosley
Chief, Enforcement Section
Regulatory Branch

Enclosures


PIEZOMETER
B-305
B-301
INVERT 178.13'
SEDIMENTATION POND
INVERT 191.86'
B-306
B-302
B-307
B-303
INVERT 38' 191.08'
INVERT 36' 195.35'
B-308
PIEZOMETER
B-304
Existing Landfill
N
Approximate location

(Encl 1)

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers

Revised 8/13/04

DISTRICT OFFICE: Vicksburg
FILE NUMBER: 2006-224

PROJECT LOCATION INFORMATION:

State: Louisiana
County: DeSoto
Center coordinates of site (latitude/longitude): N 32.0585 degrees, W -93.5970 degrees
Approximate size of area (parcel) reviewed, including uplands: acres.
Name of nearest waterway: Unnamed tributary to Buffalo Bayou
Name of watershed: Bayou Pierre

JURISDICTIONAL DETERMINATION

Completed: Desktop determination ☒ Date: 2/7/2006
Site visit(s) ☐ Date(s):

Jurisdictional Determination (JD):

☐ Preliminary JD - Based on available information, ☐ *there appear to be* (or) ☐ *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).

☒ Approved JD – An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:

☐ *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area:

☐ *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area:

☐ *There are "isolated, non-navigable, intra-state* waters or wetlands" within the reviewed area.
☐ Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
☐ The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
☐ (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
☐ (2) The presence of interstate waters including interstate wetlands[1].
☐ (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
☐ (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ (iii) which are or could be used for industrial purposes by industries in interstate commerce.
☐ (4) Impoundments of waters otherwise defined as waters of the US.
☐ (5) The presence of a tributary to a water identified in (1) – (4) above.
☐ (6) The presence of territorial seas.
☐ (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:*

(Encl 2)

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

☒ Ordinary High Water Mark indicated by:
- ☐ clear, natural line impressed on the bank
- ☐ the presence of litter and debris
- ☐ changes in the character of soil
- ☐ destruction of terrestrial vegetation
- ☐ shelving
- ☐ other:

☒ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gages
- ☐ other:

☒ Mean High Water Mark indicated by:
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetation types.

☒ Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by: .

Basis For Not Asserting Jurisdiction:

☒ The reviewed area consists entirely of uplands.
☒ Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
☒ Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
☒ The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- ☐ Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
- ☐ Artificially irrigated areas, which would revert to upland if the irrigation ceased.
- ☐ Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- ☐ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- ☐ Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
- ☐ Isolated, intrastate wetland with no nexus to interstate commerce.
- ☐ Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:
- ☐ Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
- ☐ Other (explain):

DATA REVIEWED FOR JURSIDICTIONAL DETERMINATION (mark all that apply):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant.
☒ Data sheets prepared/submitted by or on behalf of the applicant.
- ☒ This office concurs with the delineation report, dated 11/22/2005, prepared by (company): Tom Bourland and Assoc., L.L.C.
- ☐ This office does not concur with the delineation report, dated , prepared by (company):

☒ Data sheets prepared by the Corps.
☒ Corps' navigable waters' studies:
☒ U.S. Geological Survey Hydrologic Atlas:
☒ U.S. Geological Survey 7.5 Minute Topographic maps: Bayou Pierre Lake, LA 1:24000
☒ U.S. Geological Survey 7.5 Minute Historic quadrangles:
☒ U.S. Geological Survey 15 Minute Historic quadrangles:
☒ USDA Natural Resources Conservation Service Soil Survey: DeSoto Parish, LA
☒ National wetlands inventory maps:
☒ State/Local wetland inventory maps:
☒ FEMA/FIRM maps (Map Name & Date):
☒ 100-year Floodplain Elevation is: (NGVD)
☒ Aerial Photographs (Name & Date):
☒ Other photographs (Date):
☒ Advanced Identification Wetland maps:
☒ Site visit/determination conducted on:
☒ Applicable/supporting case law:
☒ Other information (please specify):

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: De Soto Parish Police Jury		File Number: 2006-224	Date: February 7, 2006
Attached is:			See Section Below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)		B
	PERMIT DENIAL		C
X	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I: The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

• OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

• APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

• ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

• APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD..

(Encl 3)

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Charles R. Allred, Jr.
U.S. Army Corps of Engineers
Regulatory Branch
4155 Clay Street
Vicksburg, MS 39183-3435
(601) 631-5546

If you only have questions regarding the appeal process you may also contact:

Division Engineer
Attn: Appeals Review Officer
Mississippi Valley Division
Post Office Box 80
Vicksburg, MS 39181-0080
(601)634-5820

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
Signature of appellant or agent.		

REC'D NOV 2-8 2005

TOM BOURLAND & ASSOCIATES, LLC
Forestry, Wildlife and Environmental Consulting
9847 Neesonwood Drive
Shreveport, LA 71106

November 22, 2005

Ms. Sarah Moore, Staff Geologist
Jones Environmental, Inc.
708 Milam Street, Suite 100
Shreveport, LA 71101

RE: Wetlands Due Diligence - Proposed Mundy Landfill Expansion, Section 4, T12N, R12W, DeSoto Parish, Louisiana

Dear Ms. Moore:

Per your request, I have examined the site of the proposed expansion for the presence of jurisdictional wetlands or other regulated "waters of the United States". The topography of the site is gently rolling hills with slopes from <1->5%. According to the DeSoto Parish Soil Survey (1991), soils at the site include Eastwood fine sandy loam (Ec), Kirvin fine sandy loam (Kh), Iuka (Iu) and Guyton (Gy). With the exception of Guyton soils, the others are non-hydric soils in uplands.

The soil map indicates Iuka and Guyton soils along a small, unnamed tributary flowing south to north and extending off the site. Iuka soils are described as moderately well drained, moderately permeable soils that formed in stratified, loamy and sandy alluvium. Slopes are less than one percent. Soil colors in the upper profile are dark brown (0-6", 10YR 4/3) and dark yellowish brown (6-14", 10YR 4/4). The texture is fine sandy loam. Iuka is non-hydric soil. Guyton soils are poorly drained, slowly permeable soils that formed in alluvial sediments. These soils are on broad flats on low stream terraces and in the uplands. Soil colors in the upper profile are dark grayish brown (0-8", 10YR 4/2) and light brownish gray (8-14", 10 YR 6/2). Soil texture is silty loam. Guyton is a hydric soil.

Based on our soil examinations, the soils along the unnamed tributary are Iuka and extend beyond the northern property limits (contrary to the published soil survey). The differences between Iuka and Guyton are dramatic and not easily confused.

The unnamed tributary has a distinct bed and bank character and thus qualifies as a regulated "water of the United States". If the proposed expansion avoids this stream with no changes in grade, contours or alignment, there would be no regulated impacts and no permits required from the U. S. Army Corps of Engineers. Please advise if you have any questions.

Sincerely,

Tom Bourland

Tom Bourland, RF, ACF, CWB
Wetlands Consultant

BUS: (318) 798-9821 FAX: (318) 798-0699 CELL: (318) 426-2657 EMAIL: bourlandtlc@aol.com

Appendix S-1b

Department of Wildlife & Fisheries Response

State of Louisiana
Department of Wildlife & Fisheries
Post Office Box 98000
Baton Rouge, LA 70898-9000
(225) 765-2800

Dwight Landreneau
Secretary

Kathleen Babineaux Blanco
Governor

Date	November 17, 2005
Name	Mrs. Kellie T. McNamara
Company	Soil Testing Engineers, Inc.
Street Address	P.O. Box 83710
City, State, Zip	Baton Rouge, LA 70884
Project	Mundy Landfill Expansion DeSoto Parish
Invoice Number	05111701

Personnel of the Habitat Section of the Fur and Refuge Division have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site within Louisiana's boundaries.

The Louisiana Natural Heritage Program has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the LNHP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. Heritage reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The Louisiana Natural Heritage Program requires that this office be acknowledged in all reports as the source of all data provided here. If you have any questions or need additional information, please call Louisiana Natural Heritage Program Assistant Data Manager Steve Carpenedo at 225-765-2357.

Sincerely,

Gary Lester, Coordinator
Natural Heritage Program

Appendix S-1c

Department of Culture, Recreation, and Tourism Response

MITCHELL J. LANDRIEU
LIEUTENANT GOVERNOR

State of Louisiana

OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

ANGÈLE DAVIS
SECRETARY

PAM BREAUX
ASSISTANT SECRETARY

July 6, 2006

Dr. Jon Gibson
Carved Trowel Archaeology, Ltd.
355 Coleman Loop
Homer, Louisiana 71040

Re: Draft Phase I Cultural Resources Survey Report
Division of Archaeology Report # 22-2803
Cultural Resources Investigation of Mundy Landfill
Cell VIII Expansion Area, Buffalo Bayou,
DeSoto Parish, Northwestern Louisiana

1) need sink
2) also placement
ahead of time
3) coordinate
w/ rock inst.

Dear Dr. Gibson:

This is in response to your letter dated February 24, 2006, concerning the above-referenced report. Overall, we found the report organized and well written. Furthermore, we agree with the recommendations that no further investigations are warranted.

Please make the few minor corrections that are noted on the included photocopied pages and forward two final copies of the report, along with final copies of the site record form for site 16DS400. In addition, please include a statement as to the curation of artifacts. If we can be of further assistance, please do not hesitate to contact Shannon Ascher in the Division of Archaeology at (225) 342-8170.

Sincerely,

Pam Breaux

Pam Breaux
State Historic Preservation Officer

PB:SA:s

Encl: as stated

Appendix S-1d

Phase I Cultural Resources Survey

CARVED TROWEL ARCHAEOLOGY, LTD. 355 Coleman Loop Homer, LA 71040

July 19, 2006

Division of Archaeology
P.O. Box 44247
Baton Rouge, LA 70804-4247

Dear Ms. Breaux:

Enclosed are two copies of final CRM report on Mundy Landfill Expansion Area (DOA Report # 22-2803). All matters indicated in your letter of 7-6-06 were emended. One copy of emended site record form is also included.

Sincerely,

Jon L. Gibson, Ph.D. JLG 8-3-06

STATE OF LOUISIANA
SITE RECORD FORM

Site Name Mundy Landfill Overlook **State Survey No.** 16DS400
Other Site Designations None
Instructions for Reaching Site 1.5 mi on US 84 w. of I-49 intersection; R. into landfill entrance; proceed .7 mi on landfill road always keeping left-hand turns. Site at road's end on top of big hill
Parish DeSoto

USGS Quad: Bayou Pierre Lake, 7.5 min
SW1/4 of SE1/4 of NE1/4 **Section** 4 **Township** 12N **Range** 12W
UTM Coordinates: **Zone** 15 **Easting** [illegible] 43 762 **Northing** [illegible]
Geographical Coordinates: **Latitude** 32°03'31.2" **Longitude** 93° 35'47.3"

Physical Setting

Land form ridge crest
Geological Processes Pleistocene terrestrial deposition overlying Tertiary terrestrial, near-shore deposition; subsequent tilting by Logansport anticline; erosion during Pleistocene/Holocene
Elevation 250-255' amsl
Slope 0-3 percent, increasing to 25 percent+ down adjacent escarpment slope
Site Position with Respect to Terrain on edge of escarpment overlooking stream bottom
Nearest Water arm of Buffalo Bayou (Clifton Bayou)
Flooding not on site area but frequent during heavy rains in adjoining bottom
Soil Characteristics Kirvin fine sandy loam
Faunal Communities upland terrestrial
Floral Communities mixed pine/hardwood w/ adjacent bottomland hardwood
Other Potential Resources chunks of petrified wood, chippable orthoquartzite, gray and yellow sandstone tabular boulders, gray mudstone
Nearest Known Site None known within 1.5 mi

Site Description

Site Size about 3000-3200 m^2
Site Plan linear, winding
Site Orientation conforms to lip of ridge crest
Site Stratigraphy A_p =12 cm, 10YR3/4 fine sandy loam; E=12-20 cm mottled 7.5YR4/6 and 7.5YR3/4 heavy sand loam with Fe streaks and nodules; B_1 =20-25+cm 2.5YR4/6 sandy clay with laminar pieces of ironstone; ironstone closer to surface in some spots; stratigraphy is natural for a Kirvin fine sandy loam
Artifact Density very light, 1 per every 60 m^2
Artifact Distribution no concentrations or particular associations observed, although later material does seem to get a bit heavier as the active landfill is neared (to the southeast)
Cultural Features none observed
Cultural Affiliation multiple component, unknown Archaic?, historic, possibly early nineteenth century, later nineteenth/early twentieth century
Presumed Function Archaic=unknown; historic=predominantly kitchenware, so probably farmstead

Collections

Survey Method Surface collection under excellent conditions (bulldozed and rained on), plus shovel testing where intact surfaces remained next to bare areas where artifacts were collected
Assessment of Collecting Conditions As above, excellent, couldn't ask for better; but the disturbance that made surface collecting unparalleled also removed site integrity
Description of Material dart point frag.; scraper/denticulate chipped out of bottle glass; ceramics—whiteware (plain), ironstone (plain), stoneware (embossed blue floral), marble; glass, bottle, brown, clear, blue-green, olive green; other glass, milkglass, window glass, 2 mm thick; fork, plastic handle

Conditions

Present Use To be dug away to cover garbage in Mundy landfill
Erosion or Disturbance Almost completely dozed—planed off; 2 small areas of intact surface (less than 100 m^2 each) remain; I shovel tested them but found no artifacts **Probable Future Destruction** assurred

Site Evaluation

Research Potential None left
State or National Register Eligibility None, effectively destroyed and probably not ever a candidate, even under pristine conditions
Recommendations No further work necessary

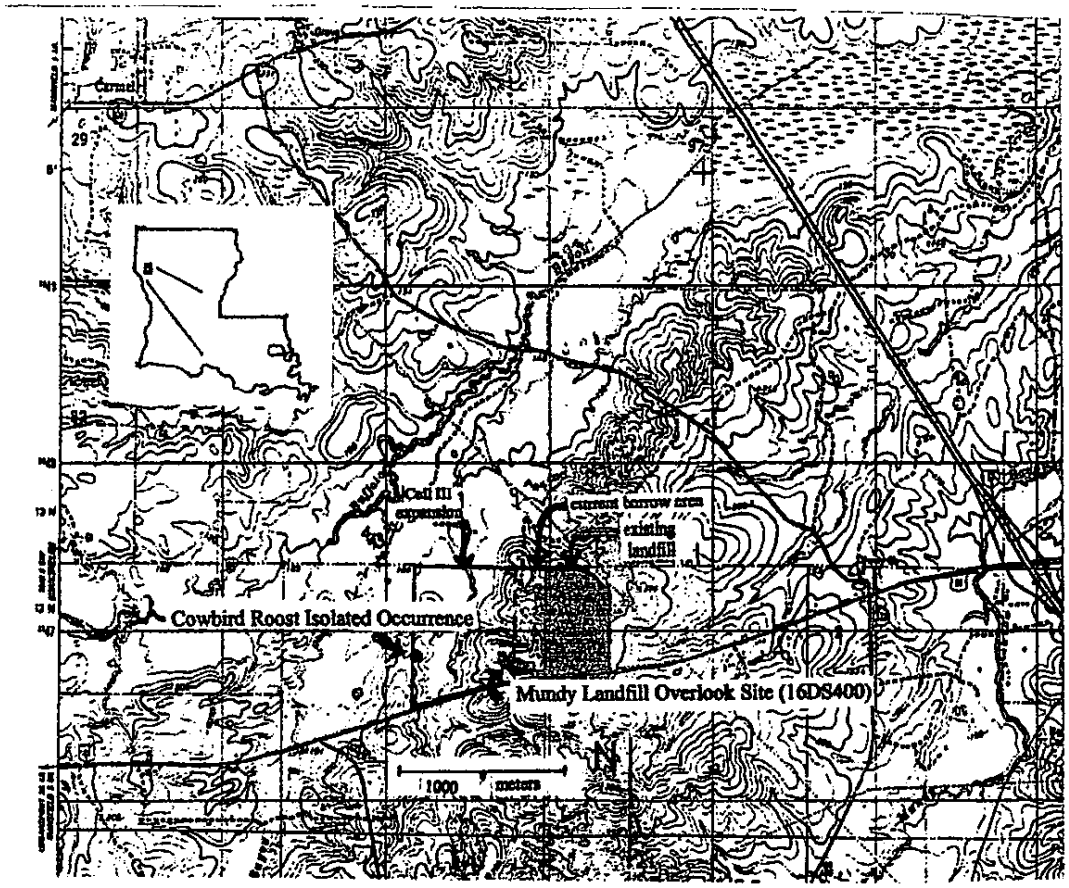
Records

Owner and Address DeSoto Parish Police Jury
Tenant and Address Mundy Landfill, DeSoto Parish Police Jury, 2712 Highway 84 East, Mansfield, Louisiana
Informants Nobody
Previous Investigations None, but Heartfield, Price, and Greene, Inc. (1984) did survey of the initial phase of landfill construction, immediately adjoining to east
Previous Collections and Availability None known: HPG's report describes only modern trash
References Gibson, J., 2006, Cultural Resource Investigation of Mundy Landfill Cell III Expansion Area, Near Buffalo Bayou, DeSoto Parish, Northwestern Louisiana. On file with LDOA
Photographs and Maps site sketch included
Remarks area falls within stretch of lands claimed in early 1800s by settlers of the old Bayou Pierre settlement , property claimed by B.S. Carpy (1834 Congressional Survey plat)
Recorded by Jon Gibson **Date** January 17, 2006

State of Louisiana
Site Map Form

Site Name Mundy Landfill Overlook

State Survey Number 16DS400



Scale graphically displayed on map
Drawn by USGS, Bayou Pierre Lake quadrangle, 7.5
Date 1980

CULTURAL RESOURCES INVESTIGATION OF MUNDY LANDFILL CELL VIII EXPANSION AREA, BUFFALO BAYOU, DESOTO PARISH, NORTHWESTERN LOUISIANA

Phase I—Intensive Field Survey

by

Jon L. Gibson, Ph.D.
Principal Investigator

Carved Trowel Archaeology, Ltd.
355 Coleman Loop
Homer, Louisiana 71040
318-927-4915

February 2006

Work Performed For:

Jones Environmental, Inc.
1204 Stubbs Avenue, Suite B
Monroe, Louisiana 71201
Att: Sarah E. Moore

On behalf of:

DeSoto Parish Police Jury
c/o: Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana

In Fullfillment of Applicable Regulation:

Section 106 of the National Historic Preservation Act, as amended (16U.S.C. 470 et seq.)

ABSTRACT

During January-February 2006, cultural resources investigations (Phase I, Intensive Field Survey) transpired at the proposed Cell VIII expansion area, Mundy Landfill, located at 2712 Highway 84 East, Mansfield, DeSoto Parish, northwestern Louisiana. The survey was requested by Jones Environmental, Inc. on behalf of the DeSoto Parish Police Jury pursuant to Section 106 of the National Historic Preservation Act. The Area of Potential Effect (APE) encompasses an area of about 160 acres adjoining the western side of the active Mundy Landfill.

Two archaeological sites (Mundy Landfill Overlook [16DS400] and Cowbird Roost [no state site number assigned]), both historic artifact scatters, were found. Neither site, in my opinion, meets National Register eligibility standards. No unmarked human remains were found. In my opinion, no further management action is needed unless unanticipated cultural resources or human remains are encountered. In such an event, the construction field supervisor should immediately notify the Louisiana Division of Archaeology.

TABLE OF CONTENTS

Abstract..... 3
List of Figures..... 5
List of Tables.....5

INTRODUCTION.....6

LOCATION AND ENVIRONMENTAL SETTING.....6

CULTURE HISTORICAL PERSPECTIVES.....9
Native Culture History.....10
Smithport Landing (16DS4), Window to the Past.....13
Later Culture History..... 18

PREVIOUS ARCHAEOLOGICAL RESEARCH
IN THE IMMEDIATE VICINITY..... 19

ARCHAEOLOGICAL FIELD INVESTIGATIONS..... 20
Research Design..... 20
Field Methods/Research Strategy..... 20
Field Work.....22
Mundy Landfill Overlook (16DS400).....22
Cowbird Roost 26

DISCUSSION AND RECOMMENDATIONS.....28

REFERENCES CITED.....30

LIST OF FIGURES

Figure Page

1 Location of Proposed Cell VIII Expansion Area..... 7

2 Mundy Landfill Overlook Showing Shovel Test Locations.....23

3 Denticulate/Scraper Chipped on Piece of Brown Bottle Glass.....25

4 Cowbird Roost Showing Shovel Test Locations.....27

LIST OF TABLES

Table Page

1 Native Culture Chronology for Buffalo Bayou Locality..... 11

2 Cultural Materials from Mundy Landfill Overlook.....24

INTRODUCTION

Investigations were conducted during the period between January 2 and February 13, 2006. Research entailed review of pertinent literature on geology, environment, history, and archaeology (see References Cited). State archaeological and historic site files maintained by the Louisiana Division of Archaeology and the Office of Historic Preservation, as well as National Register of Historic Places listings, were consulted on January 25, 2006. Field work was conducted on December 21, 2005, and January 13 and February 9, 2006. Review of pertinent historical and archaeological literature and file holdings proceeded coterminously with report preparation.

Although review of state historical and archaeological site files disclosed no sites, Pam Breaux, State Historic Preservation Officer, requested that a Phase I Cultural Resources Survey of the proposed expansion area (Area of Potential Effect, or APE), be conducted because of the potential of unrecorded archaeological sites being present (Pam Breaux, letter to Ricardo de Abreu, dated December 12, 2005). A cultural resources survey had been performed at the adjoining landfill site (Heartfield, Price, and Greene 1984), but the proposed Cell VIII expansion had not been previously searched and was considered favorable terrain for archaeological sites—an escarpment rim above a stream bottom. The ensuing field work, documentary research, and this report detail the results of the requested survey. Original field notes are filed at the office of Carved Trowel Archaeology, Ltd. at Lake Claiborne, Louisiana.

LOCATION AND ENVIRONMENTAL SETTING

The APE is located about 35 miles (56 km) south of Shreveport and 1.6 km north of Naborton in eastern DeSoto Parish, northwestern Louisiana (Figure 1). It lies about 14 km west of the Red River and 4.5 km downstream (along Buffalo Bayou) from Bayou Pierre Lake, now a swampy brake but once a lateral lake formed by aggradation in the Red River floodplain, often claimed to be a consequence of the Red River raft. It is about 2.5 km west of U.S. Interstate 49. The physical address is 2712 Highway 84 East, Mansfield, Louisiana. The property is owned by the DeSoto Parish Police Jury. The eastern part of the property (outside this purview) is presently an active landfill. The eastern third of the APE drapes across a hilly scarp overlooking the Buffalo Bayou floodplain, and the western section spans an arm of the floodplain and connects with hills on the far side.

The proposed Cell VIII expansion area abuts the active landfill on the west. It covers about 160 acres (64 ha) and measures approximately 1230 east-west by 1190 m north-south (Figure 1). The eastern third of the area, the highest section, is currently being mined for fill dirt, and the western section has recently been logged.

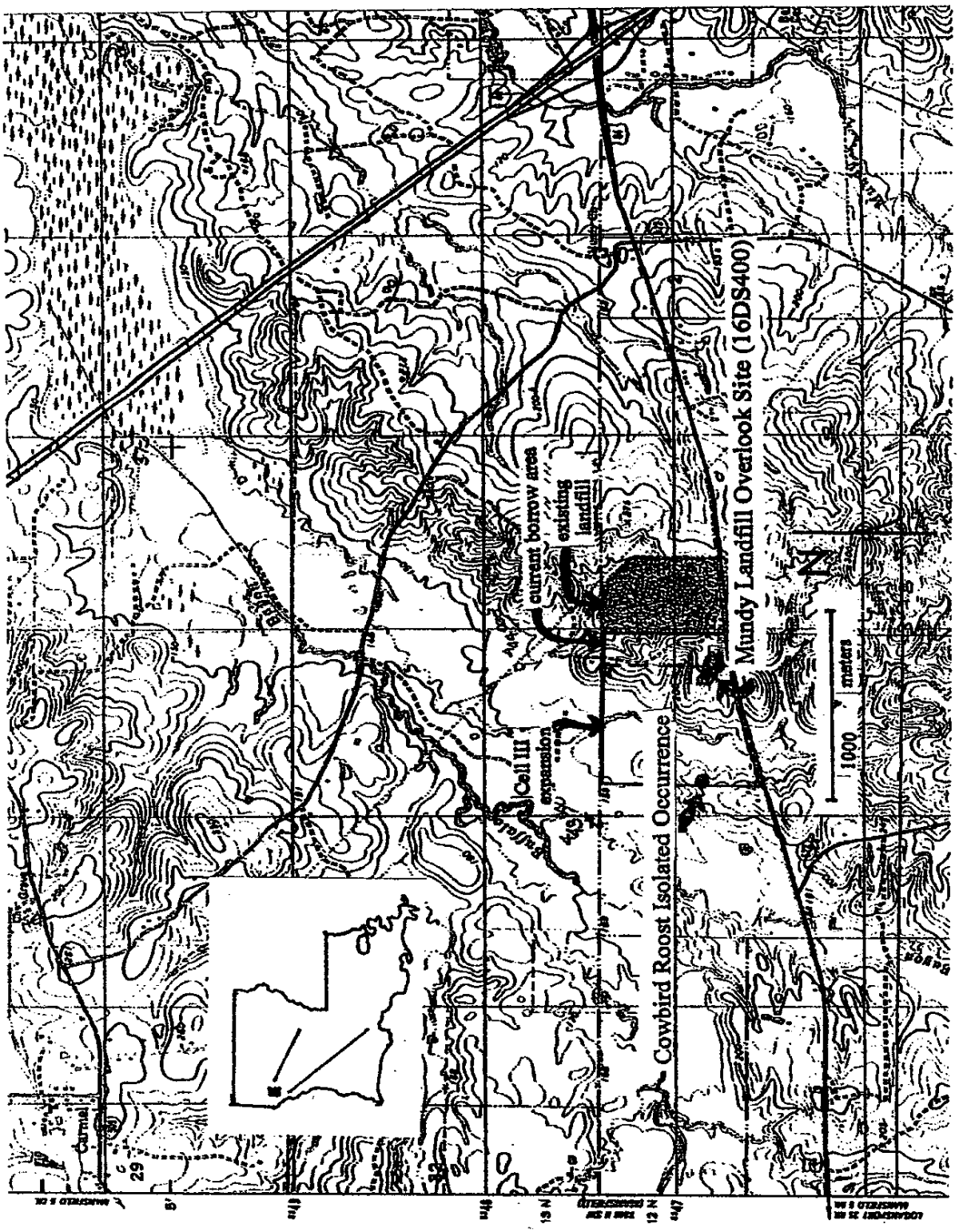


Figure 1. Location of Proposed Cell VIII Expansion Area

The APE extends across an arm of the Buffalo Bayou floodplain. It stretches from hilly rim to hilly rim. Four narrow promontories project from the escarpment along both rims; they have flat or gently rounded arêtes less than 60 m wide. Otherwise, scarps are steep, ranging between 8 and 25 percent with ridge side-slopes reaching more than 30 percent. Local relief is nearly a hundred feet (32 m) above mean sea level, and absolute elevations range from 164 to 255 feet (50 to 77 m) above sea level. The steep slopes flatten out in the bottom but still tilt between 3 and 5 percent immediately adjacent to the stream. The bottom and escarpment were covered with hardwood, and the summits supported pine with occasional oak groves. Logging has now claimed the woods leaving the area deeply crisscrossed by bulldozer swaths and tree-shearer and skidder tracks. Geologically, the location is mapped as the Paleocene-age Naborton formation (Murry 1948:DeSoto Parish geological map), laid down fifty to fifty-eight million years ago as fluviatile and deltaic deposits—ancient floodplain and marsh sediments, which were subsequently tilted upward by warping of the Logansport anticline (Murry 1948:94-101).

Soils in the APE reflect their parentage and landscape positions (Edwards et al. 1991: sheet 39; Hudnall and Edwards 1991:107-110). Iuka-Ochlockonee soils, frequently flooded (IU), occur in the bottomland at the foot of the scarp. Above the flood zone and forming an apron around the lower slope of the escarpment is Metcalf silt loam (Mc), which formed in Pleistocene sediments overlying Tertiary-age materials (Edwards et al. 1991:97). Eastwood fine-sandy loam, 5-12 percent slopes (Ec), dominates the escarpment slope. It formed in Tertiary-age materials (Edwards et al. 1991:88). Along the arêtes and dissected prominences on the hill summits are Kirvin fine sandy loam, 1-5 percent slopes (Kh), and Kirvin fine sandy loam, 5-12 percent slopes (Kn), which likewise formed in Tertiary materials (Edwards et al. 1991:94).

Today, climate in the APE vicinity is officially classified as humid subtropical, but this assignment often obscures the inherent variability from season to season and year to year (National Climatic Data Center 1991:2). Rainfall averages nearly 49 inches per year and comes fairly regularly throughout the year. Temperature averages between lows of 47 degrees and highs of 91 degrees. Snow is a rare sight and rarely exceeds an inch at a time. Growing season runs from about the first of March to about the first of November, about 210 days.

Such a climatic pattern has been more or less in place for the last 4000 years or so, but between 4000 and 8000 years ago, the Hypsithermal episode of hotter, drier climate probably expanded grassland at the expense of pine and scrub oak. A cold snap following the final full retreat of the continental ice sheet (ca. 10,000-9000 years ago) may have ushered in coniferous forest with spruce, fir, and other cold-adapted species. Minor climatic events, precipitated by the volcanic-winter effects of the Santorina supervolcanic eruption of c. 1530 B.C. and the cataclysmic eruption of A.D. 536, brought cool, cloudy conditions that would have disrupted local ecologies for decades. Each of these swings probably affected local human populations in ways presently undetermined.

Archaeological interest in the biotic character of the terrain also comes from the adaptational angle—how natives secured foods and other resources (see Webb 1979). Today's biotic environment cannot tell us about land tenure at any given time in the past but can be upheld as a model for previous conditions and possible land use in the forest primeval. Dominant woody vegetation includes: shortleaf and loblolly pine, sweetgum, American beautyberry, southern red oak, greenbrier, white oak, mockernut hickory,

flowering dogwood, eastern red cedar, rusty blackhaw, and poison ivy (Gibson 2004:9, field identifications by Wayne Kilpatrick). The faunal character of the terrain is upland terrestrial.

Other environmental qualities, which would have affected prehistoric native land tenure were: a) wooded terrain well suited for upland hunting and gathering, b) underfoot lithic resources including chunks of petrified wood, ironstone, ochre, sandstone, and shale, and c) fertile soil with favorable tilth (capable of being cultivated with hoe or plow and suitable for growing cotton and other crops)(see Webb 1979).

CULTURE HISTORICAL PERSPECTIVES

As I see it, there are three overarching question marks about native culture history in this section of Northwest Louisiana (see also Smith et al. 1983). One has to do with the nature of sociality and land tenure in broad river floodplains as distinguished from that of the flanking pineywood hills with their smaller rivers and creeks. Clarence Webb (1963:186) posed the same question four decades ago. On the surface, pineywood cultural material is dominated by projectile points and small lithic scatters, suggesting Spartan resident hunter-gatherers, highly mobile lifeways, or fleeting use of the hills by floodplain natives—or likely a combination of these and other land use options. Wide floodplain-oriented residents, on the other hand, look to be more structured, more settled, more material-rich, and more ceremonially demonstrative. Just how do hill and floodplain culture histories jibe and what occasioned the differences?

A second question mark concerns the timing and nature of Caddo emergence, a long-standing dilemma (Ford 1951; Newell and Krieger 1949). Frank Schambach (1998:63-67) proclaimed: "These days I place the emergence of the Red River chiefdoms—the most obvious, if not the crucial, event in the transition of Fourche Maline culture to what we think of as Caddo culture—in the A.D. 800 to 900 range" (see also Pertulla 1995:336; Story 1990:323). Jeffery Girard (2001) agrees proclaiming A.D. 1000 as the moment when much of the Red River Valley in Northwest Louisiana fell under sway of Caddoan materiality and ostensibly Caddo tribes as well, a material and ethnic-socio-political makeover that spread down the floodplain and its margins from somewhere north of the mouth of Sodo Bayou (Shreveport) downstream to Grand Ecore bluff (Natchitoches) and below a short time later. Lately, Girard (2003) has tacked on a formative or developmental era to this Caddoanization and now accedes that elements of Caddoan materiality, particularly pottery styles and vessel forms, appeared in local Fourche Maline-, or Bellevue-, traditional contexts, as well as in traditional Lower Mississippi-based contexts, as early as A.D. 800. But the obvious questions are: Was flanking hill country Caddoanized at the same time and what manner of existing sociality was transformed? Were defining aspects of Caddoan tradition already present among local populations or were they imported as an ethnicity-defining complex from some lost Caddoan Garden of Eden further up the Red River? Clarence Webb wondered about the same thing more than four decades ago when he opined that research was needed:

> to trace the extent of Coles Creek and Alto contacts and the process of amalgamation of these two strong cultures over the wide area of central Louisiana into Arkansas, Oklahoma, and eastern Texas (this must have been friendly, as it is

> inconceivable that Caddoan peoples would have supplanted Coles Creek almost overnight in hundreds of villages. (Webb 1963:186)

A third question mark has to do with the coalescence, tribal and intertribal relationships, and identifiable materiality of the Yatasi people, one of the subtribes or tribelets of the southern Caddo, who occupied this general region during the span of textual history (Swanton 1942; Webb and Gregory 1978; Williams 1964). Webb posed a similar question four decades ago when he proposed researching "the development out of this amalgamation [Coles Creek/Alto] of Bossier, Plaquemine, and other later cultures." Specifically, I ask: Were the Yatasi and Natchitoches close kinsmen or were Yatasi affiliations more cosmopolitan, reflecting perhaps their intermediate location between Caddoan groups living farther up the Red River Valley and those to their south, a geographic position, which may have empowered them as middlemen in interregional exchange? Did the Red River raft shift north-south exchange to the Yatasi, as long residents of Bayou Pierre, or were the Yatasi newcomers who moved into the land paralleling the blocked-off Red River to take advantage of the situation?

The need for history is strong.

The APE lies within dissected pine-dominated uplands roughly encircled by Rambin Bayou on the north, San Patricio Bayou on the west, West Branch of Dolet Bayou on the south, and the western wall of the Red River Valley on the east, an area known primarily from low intensity, informant-based archaeological investigations (Gregory 1980; Webb 1963), as well as spotty CRM surveys (Heartfield et al. 1978; Heartfield, Price, and Greene Inc.1984). There are few local archaeological details, and suspected historical trends are as opaque as milk glass. Though everyday events and agents within this area were undoubtedly local, I suspect local prehistory closely followed cultural progression in the Red River Valley located a dozen kilometers to the east at the nearest (Fulton and Webb 1953; Gregory 1980; Gibson 2005; Gregory and Curry 1978; Jeter and Williams 1989a,b; Webb 1948, 1959, 1963, 1983, 1984; Webb and Dodd 1939; Webb and Gregory 1978; Webb and McKinney 1975). The long-occupied Smithport Landing site(s)(Webb 1963), a few kilometers upstream from the APE, vouches for the sort of localized upland land tenure I imagine for this 400^2 km inter-creek tract of land along the western wall of Red River. Ancient natives of the tract certainly did not live in a social vacuum; they expressed their traditions, practices, and identities to the extent allowed by history and serendipity. Smithport Landing gives us clues about local sociality and history.

Native Culture History

The referential background for discussion is the depended culture sequence cobbled together from reported sites on and along paralleling segments of Red and Sabine rivers and intervening upland (Table 1). Dates in the time column are given as A.D./B.C and reflect estimated ages for the onset of cultural conditions that culminated in the named culture or period. Locality to locality and region to region variability and isolated culture changes make this summary of only general applicability to individual sites and particular historical moments.

Table 1. Native Culture Chronology for Buffalo Bayou Locality.

TIME (AD/BC)	PERIOD/CULTURE	CHARACTERIZATION
1700	Historic Tribes	Post-white contact; Yatasi and Ades tribes; assimilation of white culture; trade with Euro-American colonists; tribal movements and vacillating intertribal affiliations.
1500	Lacane, Nissohone Hais	Scattered tribelets living beyond reach of Titus and Belcher chiefdoms on Red River and Big Cypress Bayou; adnate ceramic assemblages; small isolated farmsteads on ridge noses jutting into floodplains; private village cemeteries with modest grave goods.
1200	Whelan, Bossier	Dispersed, autonomous tribelets similar socially to later groups; lived primarily deep in the pineywoods and carried on little truck with neighbors except as marital and friendship ties dictated; shared some ceramic styles with Plaqueminized Red River groups living below Natchitoches.
900	Hill Alto/Angelina	Beginnings of Caddoan ceramic tradition and other uniquely Caddoan materials; drew on preceding Red River Coles Creek ceramic styles but added local flavor, such as engraving and carinated-bowl and long-neck bottle vessel forms to create unique Caddoan assemblages; upland villages and isolated farms along edges of pineywoods; noncentralized, simple polities and/or dispersed factions of bigger, more complex polities, which independently engaged traditional practices and ritual on smaller, less involved scales than the large, contemporary mound centers in the Red River Valley,
200 BC	Hill Woodland	Long period spanning the time from the onset of serviceable pottery to the beginnings of recognizable Caddoan ceramics, usually divided into early, middle, and late subperiods by dint of the minor occurrence of pottery designs resembling Lower Mississippi Tchefuncte, Marksville, Troyville, Sicily Island, and Coles Creek styles, successively; home technology often incorporated substantial amounts of sand and bone in the fabric (Williams Plain, Bear Creek Plain, etc.) and rarely

		resulted in decorations; hill populations at a nadir unless sampling skewed (villages and camps are far fewer than expected) or period diagnostics unrecognized; few conical burial mounds used during middle Woodland span yet even when designs or forms of grave goods resemble Lower Mississippi materiality, burials practices remain distinctive; burials often cremated and mound tops served as funeral pyres unlike contemporary Lower Mississippi mounds where dried skeletons or in-flesh burials were interred in communal, mass graves when houses of the dead were repeatedly emptied; Lower Mississippi ceremonialism and accompanying, symbolic goods made of exotic exchange materials are rare in Sabine pineywoods, although nearby Marksville-like mounds are more complex than backwoods Bellevue and Fourche Maline burial mounds (McClurkan et al. 1980; Schambach 1982; Webb 1984); many conservative Woodland practices of the middle Sabine and surrounding hill country became the core of the Caddo tradition.
7000 BC	Hill Archaic	Another long time span, normally divided into early (7000-4000 BC), middle (4000-1500 BC), and late (1500-200 BC) subperiods based on changes in artifact styles, assemblage composition, and land-use patterns; a pre-farming, hunting and gathering adaptation incorporating logistical or residential mobility, portable gear, and dependence on local pineywood resources by small, largely autonomous groups; a few groups tethered to highly productive locations where repeated visitations produced trashed-out campgrounds and burial grounds (Girard 2000), which resemble sedentary villages; large, broad-stemmed Hardin and Scottsbluff and side-notched Cache River point styles mark the early period; broad, corner-notched Evans, Yarbrough, Marcos, Birds Creek, and Williams, the middle; and Dooley Branch, Ellis, Gary, Kent, and related contracting-stem types, the latest (but see Anderson and Smith 2003:tab. 5.1 for slightly different chronological placement of some point types, primarily due to different sorting nuances).
<11,000 BC	Paleoindian	Long historical span coinciding with final

continental glaciation, subsequent ice sheet melt, and onset of ameliorating Holocene climatic conditions; can be subdivided into four eras: early (<11,000-9200 BC), middle (9200-8500 BC), late (8500-8200 BC), and epipaleoindian (8200-7800 BC); first people appear in Sabine Valley and adjoining pineywoods and undergo shift from free-wandering nomads to logistical hunter-gatherers accompanied by commensurate changes in tool kits from those dominated by projectile points made of Edwards chert from Central Texas to those characterized by multiple, small tools made from locally available gravels—both highly portable, curated assemblages geared to lessening mobility and increasing territoriality; early era, not known to be represented in Sabine Valley, nor in most parts of America—represents the initial peopling of the continent; middle era, dominated by Clovis and unfluted lanceolate points; late era, characterized by Dalton and probably Pelican points and small-tool assemblages; and epipaleoindian era, typified by San Patrice Hope and St. John point varieties, Keithville points, and continued use of small tools of gravel; logistical adaptational patterns of late and epipaleoindian eras, especially the San Patrice era, resulted in many small campsites and possibly the first really significant population increases.

Smithport Landing (16DS4), Window to the Past

Clarence Webb and Monroe Dodd , Jr., excavated the Smithport Landing site between 1934-1940 (Webb 1963), one of the first upland Alto Caddoan villages ever excavated. Cultural materials are scattered across four separate but interconnected promontories overlooking the northern wall of the Buffalo Bayou valley at the point where the bayou exits Smithport Lake, an old raft lake, now a swampy brake (Webb 1963:fig.2). Smithport Landing lies 30 km northwest of Gahagan (16RR1; Webb and Dodd 1939), a major Alto ceremonial center along this stretch of Red River, and 35 km upstream from nearby Hanna (16RR4; Thomas et al. 1980), one of the few Alto villages down in the Red River floodplain. These three nearby spots—an upland village, a lowland village, and a major ceremonial center—open a window on ninth to thirteenth century A.D. Caddoan occupation along this stretch of the Red River.

At Smithport Landing, Webb (1983:197) identifies pottery of three distinctive cultural traditions—Coles Creek, the earliest; Alto Caddoan, a possibly coeval to slightly later tradition, and Bossier Caddoan, the latest expression, a time span reflecting four to five hundred years and at least two major geographically based cultural patterns, one from the Lower Mississippi Valley and the other from the Red River Valley. Pottery assemblages from Gahagan and Hanna were alike, both places revealing predominantly

Alto ceramics with a smattering of Bossier types. Prentice Thomas and associates maintain that Hanna ceramics were strikingly similar to Smithport Landing (Thomas et al. 1980; Webb 1983:197). All three places seem to be on the cusp of the Coles Creek to Alto transformation, and all three places seem to have been occupied continually from Alto into early Bossier times or else were resettled by Bossier groups after a hiatus.

Webb and Dodd excavated Smithport Landing before digging in levels was common-place and thereby produced no stratigraphic data, which leaves the issue of the nature of the Alto-Bossier transition unresolved, whether evolution or replacement or both. They did not recognize house patterns either, but the artifact assemblage was unquestionably domestic leaving no doubt that Smithport Landing was a place of residence, a village, but a dispersed one. Domestic debris capped four separate but interconnected upland prominences jutting into the Buffalo Bayou bottom and was spread over some 16 to 20 ha (Webb 1963:144, 147-148, fig. 2). This pattern is congruent with historic accounts, which describe some Caddoan villages as having separate neighborhoods linked by paths (Wyckoff and Baugh 1980). People were buried in a small cemetery located on the southwestern edge of the ridge with the heaviest accumulation of trash. Not only does the cemetery proclaim residence—probably permanent residence at that—but mortuary details offer insight into probable sources of cultural differences among nearby Caddoan villages, Smithport Landing, Gahagan Mounds, and Hanna.

Smithport Landing burials seem to reflect the residential composition, men, women, and children. Five to eight separate burials, involving 14 individuals, were shallowly made in a 25 m^2 area (Webb 1963:fig. 3). Three and possibly four of the burials contained two bodies each—a man and a woman. One was an isolated bundle, another was a woman laid across the top of an earlier burial, a third was a solitary male, and the other, a burial of either three or five individuals. The northernmost burial contained a woman and a child. Except for the bundle, inhumations were extended and supine, although their body orientation and head positions differed—some placed with heads to the southwest, others to the northwest, south, north, and west—suggesting different times of interment. Heads were turned to the right and left, but two faced upward. Groups of plain and decorated Alto pottery vessels were interred with burials (or individuals), usually around the head and shoulders. The vessels placed near the woman-child burial included, among others, three small vessels and a toy bottle. Half of the grave vessels were plain, and nine of the 19 vessels were placed with a man-woman burial on the southwestern margin of the cemetery, which may indicate the couple's social prominence in life or perhaps a large number of feasting mourners at their funeral. Two Alba arrowheads or Alba-tipped arrows were placed near the arm of one of the men. Grave accompaniments all seem to be personal items and not status goods for personages. There are no detectable signs of hierarchy or inherited privilege.

Although Webb and Dodd did not recognize individual grave pit outlines, it is likely based on the spacing of individuals that most burials entailed simultaneous interment of more than one person, usually two, and perhaps as many as five. This possibility is intriguing, for it brings up matters of corpse curation (mortuaries, crypts, and charnel houses), retainer sacrifice (spousal in the case of man-woman burials), and other possibilities that could account for simultaneous death or burial.

The evidently coeval Hanna village, located in the Red River floodplain, 35 km downstream from Smithport Landing, was excavated by Prentice Thomas and associates

(Thomas et al. 1980). Like Smithport Landing, it was a place of residence, but unlike Smithport Landing, it was a compact village having at least six circular pole-and-thatch houses, associated out-buildings, and arbors. Burials were placed in shallow graves underneath house floors or just outside the walls. Interment was along the northwestern or southeastern walls, and when there was more than one burial in a house, they were placed along opposite walls. Of the eight burials, six contained one body, fully laid out on the back (Giardino 1980:299). The other two were a grave of a woman and child and a flexed corpse in a circular pit. No grave goods were placed with the bodies. Graves were merely shallow pits without log or mat coverings.

Except for three children, all of the burials were women (Giardino 1980:299, tab. 27); one died between 39-44 years of age and another between 25-35 of age. The child interred with the oldest woman was between 2 and 4 years old. The two other childen were between 3-5 years old and 8-10 years old. All individuals, even the kids, had bad teeth, and gum disease was prevalent among the older women. Fronto-occipital cranial deformation was ubiquitous. The misshaping began as infants probably as a result of cradleboard restraints. Women averaged 159.26 cm tall, or 5 feet 4 inches (Giardino 1980:tab. 31).

Interestingly, the one multiple burial probably was a mother and her child. Both she and the toddler had cleft palates, an inherited abnormality (Giardino 1980:297). A second, slightly younger woman was buried in the floor on the opposite side of the house (Thomas et al. 1980:146-148) implying that both women either lived in that house or were returned there for burial. Since there is only a few years difference in age, they cannot have been mother and daughter but were probably sisters, who shared a common matrilineal residence.

Hanna residents were farmers (Shea 1980), though just how much of their food came from corn and squash is not known. Bad teeth suggest it was a sizeable amount. Hickory nuts and acorns were important (Shea 1980:tab. 24). So were fish, turtles, and deer (Byrd 1980).

Hanna and Smithport Landing lacked mounds—Hanna, a compact, riverside village where the dead were interred in the floors of sturdy, occupied houses, and Smithport Landing, a dispersed neighborhood on the hilly rim of a raft lake where the dead were placed in a communal cemetery. Houses probably were present, but we can't say for sure. The burial of only women and children at Hanna raises the question of where the men were buried; Smithport Landing's cemetery contains men, women, and kids. These distinctive burial programs suggest nuclear family inhumation at Smithport Landing and (matri)lineage/clan inhumation at Hanna, which is rather surprising considering how geographically close the two villages are and the similarities in their ceramics. Though impossible to confirm without radiocarbon dates, Hanna and Smithport Landing probably are contemporaneous or very nearly so. The other curiosity about these villages is their settlement structure—Smithport Landing, a dispersed neighborhood on a hilly rim overlooking a lateral lake/stream bottom, and Hanna, a compact cluster of houses along the bank of the Red River. These arrangements are distinctive approaches to settled life, arrangements that suggest they represented autonomous groups with distinctive backgrounds and histories, not a corporate tribe (see Webb and Gregory's [1978] characterization of Yatasi social structure below).

Giardino (1980:299) suggests that, in the absence of mounds, Hanna epitomizes simplicity, "a backwash area of poor Alto folk or a population socially distinctive from richly adorned groups buried at mound sites." I agree with his appraisal and think Smithport Landing can be characterized similarly.

On the other hand, Gahagan (16RR1) is a decidedly different kind of place. It was home to some people but also seems to have been a civic and ceremonial center for a larger constituency. The burial mound was excavated first by Clarence Moore and later by Clarence Webb and Monroe Dodd, Jr. before the site caved into the Red River (Moore 1912; Webb and Dodd 1939). Gahagan consisted of a habitation area (village?) of unknown extent, a conical burial mound about 25 m in diameter and 3.3 m high, and a small platform mound surrounding a large plaza. Another small mound lay a quarter mile away, but whether or not it was part of the Gahagan complex is unknown. The mounds, the plaza, and the richly appointed shaft burials set Gahagan apart from the moundless villages. Unlike contemporary (rival?) centers further upriver, Gahagan's mounds cannot be called monumental, but its elaborate mortuary and rich materiality, which includes exotic substances and wondrous objects, bespeak of social practices and structures not encountered at rank-and-file villages like Smithport Landing and Hanna.

Three deep shaft tombs were lowered from the top of the conical mound, which had been put up previously. One was in the approximate center of the mound, the other two side-by-side on its eastern slope. All three reached the original ground surface at the base of the mound. Five bodies had been placed on the bottom of the central rectangular shaft tomb (Moore 1912:fig. 12). Two adults (gender undetermined) and an adolescent lay on their backs at full length in a row across the middle of the tomb. Another youth lay at their feet, and a third adult lay at their heads. These last two bodies had been placed perpendicular to the others. Another deep shaft held six skeletons—three women, two men, and a teenager (Webb and Dodd 1939). The remaining tomb had three skeletons: one man, one adolescent, and the third of undetermined gender (Webb and Dodd 1939).

Some offerings were placed near individual bodies, but the lion's share lay in neat piles along one end of the shaft. These included: copper-plated ear ornaments; sheet copper plaques; copper hand effigies, copper long-nosed god masks (ear ornaments); copper-covered ferrules (staffs); copper-covered, wooden animal claw representations; a leather-encased copper object; bone hairpins; greenstone celts, including some spade-shaped; a boatstone; a plummet; a slate chisel; sandstone hones; stone disks; deposits of exquisitely flaked "Gahagan knives;" piles of fragile arrowheads; flakes from knife and point making; pebbles (from rattles); shell beads and ornaments; a mass of pulverized galena (white paint?); red ochre (pigment), long-stemmed and human- and frog-effigy pipes of clay and stone; and finely wrought and delicately engraved ceramic vessels; and fragments of cane baskets (Neuman 1984:219-229; Webb and Gregory 1978:7).

Several conclusions can be drawn from these materials. Many of these objects are made from exotic substances, probably acquired through long-distance exchange (Webb and Gregory 1978:7). The inclusion of chipping residue from the making of some of the "Gahagan knives" suggests that the ability to acquire exotic stone and the extralocal alliance-building that inheres contributed to objects' importance just as much as their use and symbolic meaning. The objects were the work of exceptionally gifted artisans, perhaps specialized crafters. Most materials were ornaments—prestige symbols worn or carried at civic or religious functions—which explains their mint condition. Most objects

were not buried with individuals but lined one of the short walls of the grave. They were found on the pit floor and as much as half a meter higher indicating emplacement while the grave was being filled (Webb and Dodd 1939:96), a sure sign of their votive nature.

Each shaft grave contained men, women, and adolescents, all buried at once. The graves were not crypts, nor did the remains indicate dry-bone storage in a charnel house. The bodies were buried as in-flesh corpses, and this brings up the specter of family/retainer sacrifice reminiscent of the historic Natchez Indians. If this were the case, it suggests that Gahagan society (or at least the social segment of the multiethnic populace represented among the burials, if the populace was not a corporate group), practiced heredity inequality. It is a practical certainty that not everyone was buried in the mound; mound burials are far too few. That privilege undoubtedly was reserved for important ritual/civic families/lineages. The burial population is too small to say whether people who were accorded mound burial were better nourished or genetically predisposed for greater height than the average person in the village cemetery. Nonetheless, mound skeletons were tall; women averaging between 5 feet 4 inches to 5 feet 7 inches, and men, 5 feet 7 inches to 6 feet.

Smithport Landing, Hanna, and Gahagan mounds are nearby manifestations of Alto culture. They may not have been contemporary but neither can they have been separated by much time. Their domestic pottery, arrowheads, and other everyday equipment are just too stylistically similar. Their differences are due to history and function. Smithport Landing and Hanna were simple villages. Gahagan was a village and a ceremonial center. At Smithport Landing, the deceased were buried in family plots in a communal cemetery. At Hanna, the dead were buried underneath the floors of the family home. At Gahagan, civic and religious leaders and their families/attendants were given mound burial in deep elaborately appointed shaft graves. Graves of commoners have yet to be found, and it has been suggested that mound burial was reserved for the elites (Wyckoff and Baugh 1980), who lived at the centers, while commoners were buried back home in the villages and hamlets where they lived.

There can be little doubt that Gahagan's upper social echelon was entombed in the shaft graves. Grave goods represent the best of Alto manufactures, and they are ornamental and representative—ostensibly symbolizing rank and office. The shaft tombs were single-event funerals, the vaults opened only once before being sealed, and that implies other family members/retainers were sacrificed upon the death of the main personage in the grave—social inequality personified!

Social ranking does not seem to be manifest out in the outlying villages. Instead, egalitarian principles and practices were entrenched. There were no elaborate tombs, and no fancy grave goods. Yet, burial practices differed even among simple villagers, Smithport's communal cemetery, Hanna's under-the-house-floor graves.

Such differences in a small population probably linked by mutual participation in center events, shared history, and common ethnicity reflects a loose social amalgamation, a tribe, perhaps, but one with a bare minimum of integration. The underlying structure was theocratic, and the religious/civil social elites who ran the show were accorded due recognition in death, as they would have been in life. The arrangement sounds very much like that historically recorded for the Hasinai and other Caddoan chiefdoms/tribes—a small cadre of pan-tribal religious/civil leaders, village heads and elders, and the commoner majority (Swanton 1942; Wyckoff and Baugh 1980). Yet, only on special

occasions would the simple backwoods folk have been involved in the inter-village goings-on, which gave their elite brothers and sisters title and privilege. Most of their lives were spent in sublime obscurity, as unobtrusive as a wind whispering in the pines.

Later Culture History

Documentary evidence of the Yatasi is skimpy and consists primarily of a few brief notes by colonial passers-through during the early eighteen century (Bolton 1914; Carter 1995; Darby 1816; Smith 1995; Swanton 1942; Webb and Gregory 1978). Only three of their historic villages are recorded, two somewhere near Mansfield and the other on a prairie along Bayou Pierre, near LaPointe (Webb and Gregory 1978:34). Webb and Gregory (1978:34-35) speculate that the historic Yatasi comprised a series of small autonomous bands, rather than a corporate tribe, but they did share a common identity, territory, language, and, on occasion, even acted corporately (Swanton 1942). Tribes have the inherent capacity to fragment into individual families or lineages under stress or by choice (see Anderson 2002), and I suspect this was the situation first encountered by the Europeans. It seem likely that blustery belligerence, raids, and murder, attributed in historic times to the Osage and Chickasaw (Smith 1995:40), actually began centuries earlier and contributed to Yatasi segmentation and dispersal, a tribal stratagem minimizing devastation and ensuring survival. Continued contact with European colonists, increasingly after the founding of the French settlement of Natchitoches and the Spanish post at Los Adaes, a few miles west of Natchitoches, further marginalized and decimated the Yatasi, and they eventually merged with the Kadohadocho, who themselves had been successively shifting downriver from their homeland around the Great Bend to the vicinity of Caddo Lake (Sodo Bayou) as a consequence of Osage depredations. The fate of merger soon befell all the Red River Caddo—sometimes via real tribal incorporation, sometimes via White Man's paper only—and in June 1835, remnants of the amalgamated Caddo met with United States government officials at the Caddo Agency about seven or eight miles south of Shreveport on Bayou Pierre (location presently unknown) and sold one million acres of their homeland from the Great Bend above Texarkana south to DeSoto parish (Swanton 1942). They received $80,000, of which $30,000-worth was in goods and the remainder, in annual installments of $10,000 each (Webb and Gregory 1978:25). The few Caddo remaining on Red River were forced out shortly by their less-than-hospitable White neighbors and relocated to the Kiamichi River in Oklahoma, ending more than a millennium of Caddo tenure on the Red River.

Although the Red River Valley had seen activity and settlement for decades following the colonial incursions, white settlers of French and Spanish descent first started moving into the region during the early eighteenth century (Bridges and Reames 1970; Girard et al. 2006; Murray 1948:6; Stokes 1995). For decades, the region was contested territory—the infamous "Neutral Strip," claimed by both Spain and the United States until 1820 when the Sabine River was finally declared the western boundary of the Louisiana Territory (Murray 1948:6). The extended settlement of Bayou Pierre, a dispersed collection of families, some of whom made their living via contraband trade and other illicit activities, flourished outside the borders of civility at Natchitoches and Shreveport (Bridges and Reames 1970).

A few of those families claimed lands near the APE (Girard et al. 2006). The Congressional Survey Plat of Township 12 North Range 12 East, Northwest District of

Louisiana, dated 1836, shows lands assigned to Louis Procello and Marcel DeSoto on Mundy Bayou in Sections 1 and 2, more than 3 km due east of the APE. Elizabeth LaFitte claimed the north halves of Sections 5 and 6 due west of the APE bordering the Buffalo Bayou bottom across from the APE. The eastern side of the APE actually falls in a tract claimed by B.S. Carpy in 1820, but the surveyor's map shows no improvements on the property. Despite the lack of cartographic validation of a residence, I discovered a light scatter of artifacts, some of which may date to the time period, if not to the claimant, in the disturbed southeastern corner of the APE (Mundy Landfill Overlook). A second historic scatter (Cowbird Roost) was discovered on the ridge bordering the western side of the bottom, almost directly across the bottom from the first scatter.

After the United States gained possession of the Louisiana Territory, Bayou Pierre no longer profited from contraband trade between French and Spanish adversaries. Law came to the land. The 1835 treaty with Caddo Indians (including the Yatasi) brought a million acres under U.S. dominion, including the area later (1843) designated as DeSoto Parish (Murray 1948:7). Almost immediately, Scotch-Irish-English settlers from the Atlantic and Gulf states, especially South Carolina, began trickling into the area joining the mixed French-Spanish-Indian families already there. They brought with them their Upland South ethic, protestant religion, and way of life, an ethnic stamp which endures to this day (see Cook 1984; Gibson 1999).

Small subsistence farms and larger plantations were the rule throughout the nineteenth and early twentieth centuries. Naborton, the community nearest the APE, was named for John Nabors, who owned one of the plantations. East-west and north-south railroads were completed in the late 1880s, opening the area to commercial loggers. Cut-and-run tactics soon depleted the magnificent forests, and many locals moved or turned to ranching. Oil was discovered at Naborton in 1914 and, together with timber, rallied the economy, until crude began to suffer its inevitable depletion. Of late, lignite ventures have reignited the local economy, but they too will experience depletion. The completion of I-49, a few kilometers east of the APE, has prompted trickle-down growth from the larger municipal areas of Shreveport to the north and Natchitoches to the south. Many residents of Naborton and nearby Mansfield work in these larger neighboring towns and cities.

PREVIOUS ARCHAEOLOGICAL RESEARCH IN THE IMMEDIATE VICINITY

Except for the Heartfield, Price, and Greene, Inc.'s (1984) previous cultural resource survey on the existing Mundy landfill site, no archaeological investigations have transpired within a 1.5 km of the APE. The Heartfield team found a modern trash dump but no relevant archaeological or historical materials. As previously noted, Clarence Webb and Monroe Dodd, Jr., excavated Smithport Landing located on Buffalo Bayou, but it lies more than 3 km upstream (Webb 1963). Jeffery Girard (personal communication 2006) pointed out several nearby land claims (personal communication, 2006) on the early congressional survey plats (1843), but they too are more than 1.5 km from the APE, and, in any case, there has been no on-the-ground confirmation that remnants of early eighteenth century habitations exist at these locations. Review of state files and maps disclosed no archaeological or historic sites within 1.5 km of the APE

(January 26, 2006). A letter from Pam Breaux (SHPO), requesting the cultural resources survey of the APE, indicates that the affected property has never been subjected to CRM survey (Pam Breaux to Ricardo de Abreau, December 12, 2005).

Several CRM surveys have been conducted in the vicinity: Heartfield's (1983), survey of the Dolet Hills lignite prospect, Espey, Huston, & Associates'(1983) survey of a power line corridor to the proposed Dolet Hills power plant, and Heartfield and associates' survey of the I-49 highway corridor, all more than 3 km east of the APE (Heartfield et al. 1978). No relevant sites were discovered. Published archaeological and historical research in the general vicinity has been summarized above.

ARCHAEOLOGICAL FIELD INVESTIGATIONS

Research Design

The present investigation was authorized in order to determine whether or not cultural resources existed within the APE and, if present, to ascertain their nature and significance and make management recommendations. Applicable federal laws and guidelines, as well as standards of the Antiquities Code of the State of Louisiana, promote a widely acceptable, basic level of performance, which regardless of investigator interests or biases, can be applied to many research domains and aims. My personal interests have already been set out: a) land tenure variability between hills and broad floodplains, b) the origin of Caddo tradition and the nature of preexisting sociality, and c) the emergence of the Yatasi "tribe." Louisiana's Comprehensive Archaeological Plan offers several general areas, which can also serve as domains for fruitful inquiries into regional culture history including: Paleoindian and Archaic culture; post-Pleistocene transition; prehistoric adaptations to uplands and alluvial valleys, including agriculture, quarrying, and mound building; Caddoan tradition; European-Indian contact and acculturation; colonial and military history; and upland southern American subsistence and settlement, including frontier expansion, lumbering, and oil and gas exploration (Smith et al. 1983:25). No matter what topics guide interest, the bottom line for Cultural Resources Management (CRM) investigations lies in systematically covering the APE to maximize the likelihood of finding cultural resources. The results, negative or positive, can then be plugged into a host of interesting questions about human tenure.

Field Methods/Research Strategy

The APE encompasses about 64 ha (160 acres). Of this area, approximately 25 ha (60 acres) is an active borrow area where dirt is being excavated for use as daily and interim cover material in the active landfill cell. The borrow area forms a deep rectangular pit more than 10 to 12 m lower than the original surface, thereby, eliminating the need for survey in this area.

Original terrain remains along the southern and western rims of the borrow area, as well as in the narrow bottom and along the dissected escarpment along the western boundary of the property. Slope descends steeply into the Buffalo Bayou bottom with inclines running from about 8 to 25 percent, even steeper along the side-slopes of small finger ridges. Topography is ragged, cut into small, narrow ridges and low hummocks by gullies and larger rills, which drain into the creek bottom. This steeply sloping escarpment and bottom cover about 35 ha (85-90 acres). In addition, it had been logged

back in September and was extensively chewed up by bulldozer swaths, tree-shearer tracks, and log-truck ruts. On the eastern side of the bottom and slope, some of the swaths formed a grid across the area, a grid consisting of four east-west and three north-south lines spaced 180-m apart. A drilling rig had put down holes at grid intersections to check on engineering properties of the subsurface. I walked the cleared grid lines, as well as other irregularly spaced and interconnecting dozer paths, which reaffirmed the decision to forego systematic shovel testing on the steep slopes and in the wet bottom (J. Gibson, conversation with P. Rivet, December 21, 2005). The steepness and wetness (poor drainage) rendered this area unsuitable for inhabitation, native or Euroamerican. Although visibility was excellent, I did not find a single chip or a piece of whiteware washed down the scarp from above.

This only left a little over 4 ha (10 to 15 acres), which warranted systematic survey and shovel testing. This "high probability" area actually consisted of remnants of four separate, east-west ridges running perpendicular to the edge of the borrow pit on the eastern side of APE and four similar promontories along the hilly rim on the western side of the APE. Elevations on these ridge remnants decreased rapidly from 255 feet (77 m) above mean sea level on the southernmost crest to 189 feet (57 m) on the northernmost. Seams of lignite were exposed in the side of the highest ridge where cut into by the borrow pit; in the successive ridge to the north, the immediate subsurface revealed layers of gray sandstone (having a chippable quality when freshly broken); the next ridge, large tabular boulders of a yellow coarse-grained sandstone; the third ridge, a soft laminar mudstone; and the last ridge on the northern end of the property, a calcareous clay with polygonal fractures. The subsurface was not exposed along the western property boundary. Logging activities had also disturbed these ridge remnants, and it appears that the Deere 2000 dragline used to dig the adjoining borrow pit had already been at work on these areas, clearing the edge for the advancing borrow.

The field strategy was adapted to these conditions.

1. The active borrow area was not surveyed or shovel tested.

2. The steep escarpment and creek bottom was not shovel tested, but I did walk the cleared drilling rig and dozer/skidder tracks that crisscrossed the area. The drilling rig paths were laid out on a 180-m grid, and I followed them, as well as the irregular web of dozer cuts, in order to gain access to isolated ridge toes and hummocks along the upper slope of the escarpment.

3. The "high probability" area along the lips of both escarpments was subjected to extensive pedestrian coverage and shovel testing. Bulldozers, skidder/tree shearers, and a dragline had cut up the surface as extensively as down slope, and I doubt that there was a spot larger than a 600 m^2, which had not been disturbed. More often than not, these disturbances had removed the topsoil revealing the argillic horizon. Because these swaths and graded areas extended in all directions, shovel testing was not done on a normal 30-m grid but was conducted selectively on a) intact surfaces, which adjoined artifact-bearing disturbances and systematically b) on the tops of the four ridge arêtes extending into the APE along its western boundary, where disturbance from logging was not as severe.

Field Work

The lateral and vertical extent of dozer disturbances greatly facilitated ground inspection, eliminating, in most areas (except along the western boundary), the need for

shovel testing for the purpose of artifact discovery. Shovel testing was used primarily to check on the existence and extent of intact artifact-bearing surfaces. Shovel tests consisted of holes approximately 30 by 30 cm wide dug down to the argillic horizon. Dirt was screened through one-quarter inch mesh, and stratigraphy recorded.

Mundy Landfill Overlook (16DS400). An archaeological site, Mundy Landfill Overlook (16DS400) was discovered along the eastern escarpment near the active landfill. It consisted of a light scatter of historic materials following the winding crest of the highest ridge overlooking the Buffalo Bayou bottom (Figure 2). A total of 51 artifacts was picked up from several interconnected dozer swaths and planed spots over a 3000-3200 m^2 area, which equates to a density of around an artifact for every 80 m^2. No artifact concentrations were observed, although density increases slightly at the southeastern end of the site where truncated by fill-dirt mining. Pieces of plastic bottles (not collected) and cellophane were seen among widely strewn ceramic sherds suggesting contemporary littering. Despite the excellent visibility and removal of most of the topsoil, I did not find any architectural features or materials, such as a fireplace floor, chimney daub, brick, postmolds for buildings or fences, or nails. I found no cultural features whatsoever.

Clear-cutting eliminated the trees, but originally natural vegetation on the escarpment edge was pine-oak-mixed hardwood. Native fauna was originally upland terrestrial, but upland aquatic species lived in the bayou bottom at the foot of the escarpment. Heavy machinery churned the topstratum and pushed the loosened dirt, tree stumps, and skinned limbs into piles alongside dozer tracks. Dozing exposed argillic red clay throughout, leaving only two small patches of relatively intact Kirvin fine sandy loam, each about 300-400 m^2 in extent. These intact areas were shovel tested, but elsewhere the exposed bare ground was only surface collected.

A total of 6 shovel tests (ST) were dug, 30 m apart, in these intact areas (Figure 2).

ST1 Ap—0-12 cm, 10YR3/4 fine sandy loam, crumb, no artifacts; E—12-20 cm, mottled 7.5YR4/6-7.5YR3/4 fine sandy loam, weak subangular blocky, no artifacts; Bt—20-25 cm+, 2.5YR4/6 sandy clay, fine to medium subangular blocky, no artifacts.

ST2 Ap—0-8 cm, 10YR4/4 fine sandy loam, crumb, no artifacts; E—7.5YR4/4 fine sandy loam, medium subangular blocky, common FeMn streaks and soft masses, lower boundary very abrupt, no artifacts; Bt—5Y6/6 sandy clay, firm, medium to coarse subangular blocky, no artifacts.

ST3 Ap—0-5 cm, 5YR4/4 fine sandy loam, weak subangular blocky, common medium to coarse ironstone scree, no artifacts; C—ironstone bedrock, impenetrable with shovel.

ST4 Ap—0-10 cm, 10YR4/4 fine sandy loam, crumb, no artifacts; Bt—10-14 cm+, 5YR4/3 sandy clay, firm, no artifacts. E horizon missing or incorporated in Ap, may have been previously disturbed.

ST5 Ap—0-10 cm, description as in ST1; E—10-30 cm, description as in ST1; Bt—30-34 cm +, description as in ST1.

ST6 Description as in ST1.

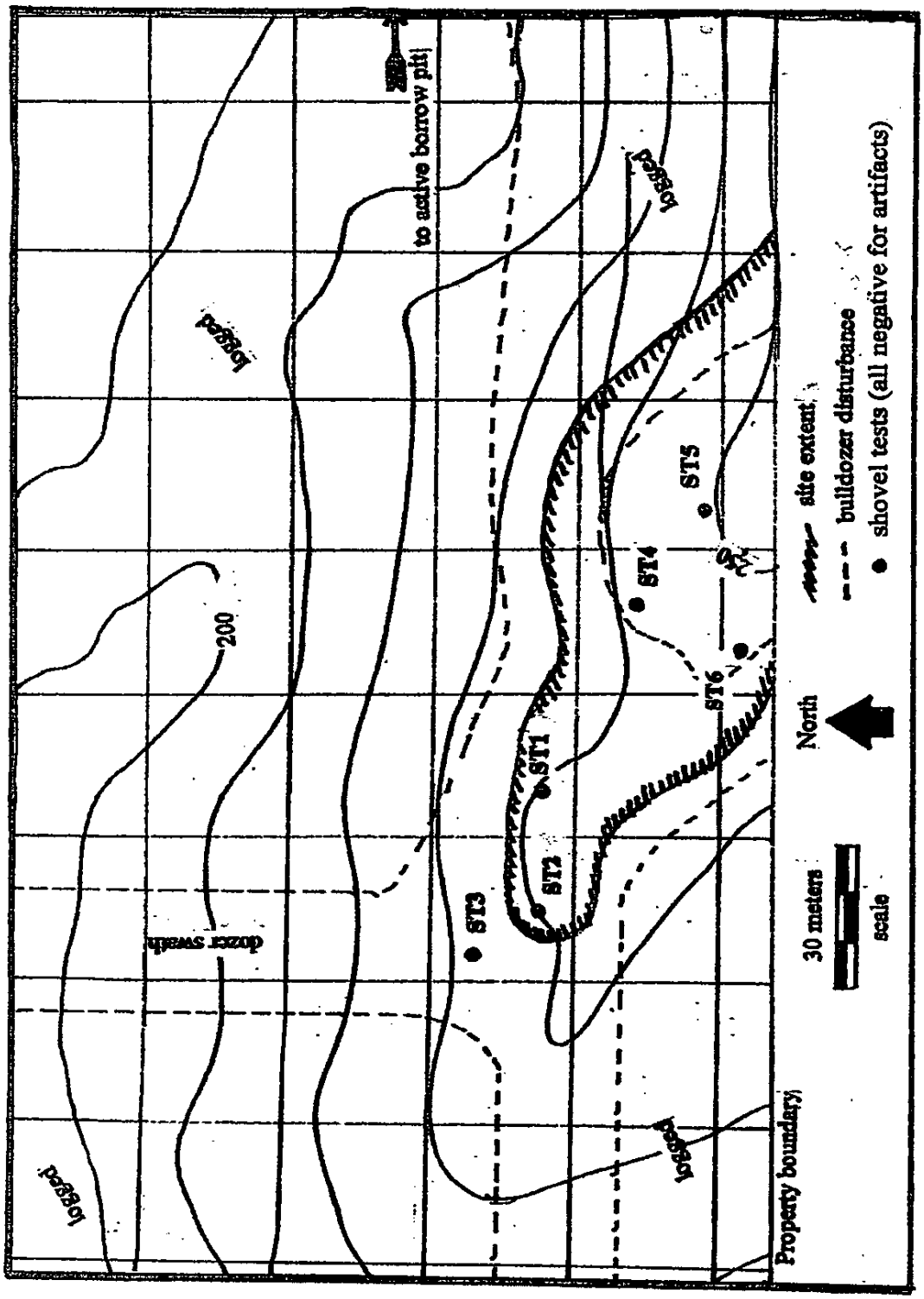


Figure 2. Mundy Landfill Overlook Site (16DS400) Showing Shovel Test Locations

No artifacts were discovered in the shovel tests, which indicates that artifacts collected from surrounding disturbed areas were confined to the surface and were sparce.

Artifacts reveal at least two, more likely three, components, an unknown Archaic (Native American) presence and one or two periods of historic activities (Table 2).

Table 2 Cultural Materials from Mundy Landfill Overlook

Prehistoric	
Dart point, body fragment, lateral margin	1
Historic	
Ceramics, plain:	
Whiteware (coffecup):	
Rim	2
Rim/body with broken handle	1
Handle	1
body (cup thickness)	6
Base (annular)	3
Whiteware (plate)	1
Whiteware (saucer)	1
Whiteware (bowl)	6
Whiteware (bowl), green letters ENG (remainder missing), base	1
Porcelain, dark blue/light blue/green geometric design	1
Stoneware, glazed, dark blue embossed floral, exterior	1
Marble	1
Glass	
Bottle:	
Brown, body	7
Brown, base, embossed 2 or cursive Q in center, CC, followed by infinity sign (remainder missing) around edge, flaked completely around the periphery, possibly forming a scraper/denticulate	1
Clear, body	4
Olive green (wine), body	3
Olive green (wine), kickup bottom	1
Blue-green, body	1
Green, emerald (bottle), white painted letters LATRC (remainder missing), body	1
Green, light (bottle), laid-on lip strap, rim	1
Blue-green (bottle), body	1
Milkglass	2
Flat:	
Windowpane, clear, 2.0 mm thick	1
Metal/plastic:	
Fork with pink plastic handle	1

A fragment of a dart point (a spear tip) confirms that prehistoric Native Americans utilized the spot sometime before A.D. 1, probably thousands of years earlier. The fragment is from the lateral margin of the body of the point. Flaking was shallow and the point's cross section appears to be symmetrical. The point was made from a piece of local chert gravel. It was thermally altered during manufacture and appears to have been broken by fire.

All of the other collected artifacts are historic—one group of materials probably indicative of the pre-1880 period, possibly as early as 1820 or so; the other materials are later, probably late nineteenth to mid-twentieth century. Most of the whiteware sherds are extensively crazed, and the broken edges are stained reddish-orange, the color of the soil they are resting on, indicating a long period of weathering. Paste, however, is fairly hard and off-white when freshly broken, and glaze can be removed with a fingernail only with difficulty. I have classified them as whiteware, but that assignment is a timid one. The presence of whiteware, instead of pearlware and creamware, does not invalidate the early 1800s-age claim, as whitewares were replacing those earlier wares by 1820 (Hume 1969:130). Many bottle fragments are patinated. The wine and rum (?) bottle fragments are from hand-blown bottles, not machined bottles, and the only rim shows a laid-on lip strap—features that also suggest an early 1820 or so date. The thin flat glass fragment is also early. Some materials are certainly later—the plastic-handled fork, milk glass, and possibly some of the whiteware.

The most unusual artifact is the chipped piece of brown bottle glass (Figure 3). A thick bottle bottom was selected. A continuous series of flakes was removed around the entire periphery and generally extend across the entire thickness of the piece. They are unidirectional and originated from the inner surface of the fragment. Chipping is uniform except along the wide end where the margin is noticeably denticulated. The altered shape resembles a fat letter T. The flake scars are heavily patinated and are clearly distinguishable from fresh breaks. The object is 3.4 cm wide, 3.9 cm long, and 0.5 cm thick. It resembles Native-made end scrapers made of stone.

I hasten to point out, however, that similar chipped-glass tools have been recovered at several locations on Bayou Teche between Arnaudville and Breaux Bridge in St. Martin parish, Louisiana. Who made them is likewise a mystery, but it may not be coincidental that this stretch along the Teche was part of the dispersed eighteenth-century Attakapa Indian village under chief Kinemo (a.k.a. Sunnemoke)(Gibson 1990:111, 113, fig. 8). This does not necessarily implicate a native origin for the chipped-glass object from Mundy, but the APE does fall in old Yatasi territory and is near the farms of several mixed Spanish-Indian families, the DeSotos, the Lafittes, and the Procellos.

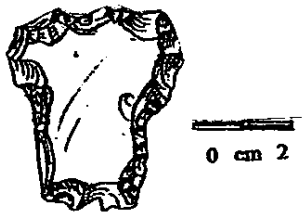


Figure 3. Denticulate/Scraper Chipped on Piece of Brown Bottle Glass

No structural features/architectural remains were discovered, which does not mean that a permanent house was never built on site, but considering the excellent ground-surface visibility makes one suspect that was the case. The 1836 Congressional Survey plat does not show a building or any other improvements on this tract of land claimed by B.S. Carpy. On the other hand, recovered artifacts are domestic, fragments of ceramic utensils, bottles of spirits, a windowpane, and a playing marble, which suggests that there had been a nearby house place (probably destroyed).

There is little else to be gleaned from the artifacts, except to mention that they represent an inexpensive set of dishes and almost certainly identify their owners as poor, backwoods folk. The presence of wine and rum bottle fragments suggests that the consumers were of Spanish/French/Indian? ancestry.

Cowbird Roost. A second historic artifact scatter was found on the crest of an upland promontory above the junction of the small tributary bottom and the main Buffalo Bayou floodplain (Figure 1). Scatter is really a misleading description; isolated occurrence is more appropriate. Only four historic artifacts, two whiteware sherds and two fragments of bottle glass, were retrieved from an area only slightly larger than the span of my outstretched arms, about 4-6 m^2 (Figure 4). No other materials were found despite intensive search and subsurface testing. No architectural remains were observed in the 5 to7 m-wide bulldozer track, which bisects the top of the knoll or in any of the transecting skidder swaths. A state site number was not assigned (Rachel Watson, personal communication 2006)

Logging activities had impacted the knoll and afforded excellent surface visibility. A bulldozer had skimmed off the topsoil and redeposited it along its path, along with pushed-over brush, limbs, and small saplings. Rain had washed the lines of dirt, winnowing out nodules and tabular fragments of ironstone, as well as bits of petrified wood. Bare ground surfaces were extensive—I estimate that 90 percent of the knoll crest (within the APE) was denuded and disturbed.

Eight shovel tests (ST) were excavated, although ST7-ST10 were placed in the tops of the three arêtes before reaching Cowbird Roost promontory; one shovel test in the ridge nearest US Highway 84, two in the next ridge to the north; and one in the third ridge to the north (Figure 4). They are described for sake of record. No artifacts were recovered in any of these tests.

ST7 Ap—0-10 cm, 5YR5/6 fine sandy loam, crumb, common Fe nodules/angular bits; E—10-14 cm, sandy loam, weak subangular blocky, common Fe nodules; Bt—14 cm+, heavy clay, 2.5YR6/8.

ST8 Ap—0-2 cm, (slope wash); Bt—2-10 cm, 5YR5/6 clay, common Fe nodules.

ST9 Bt—shovel divot only, argillic on surface.

ST10 Ap/A1—0-3 cm, 5YR4/3 fine sandy loam; 3-17 cm—mottled 2.5YR4/6-2.5YR5/8 sandy clay; 17-24 cm+ 2.5YR4/8 clay.

The remaining four shovel tests were dug in the promontory where the historic artifacts were recovered. ST11 was 30 m north of ST10, north determined by the fence line along the property. ST11 was in a swag separating higher parts of the ridge. The artifacts were found approximately 30 m north of ST11, and at that point, the interval

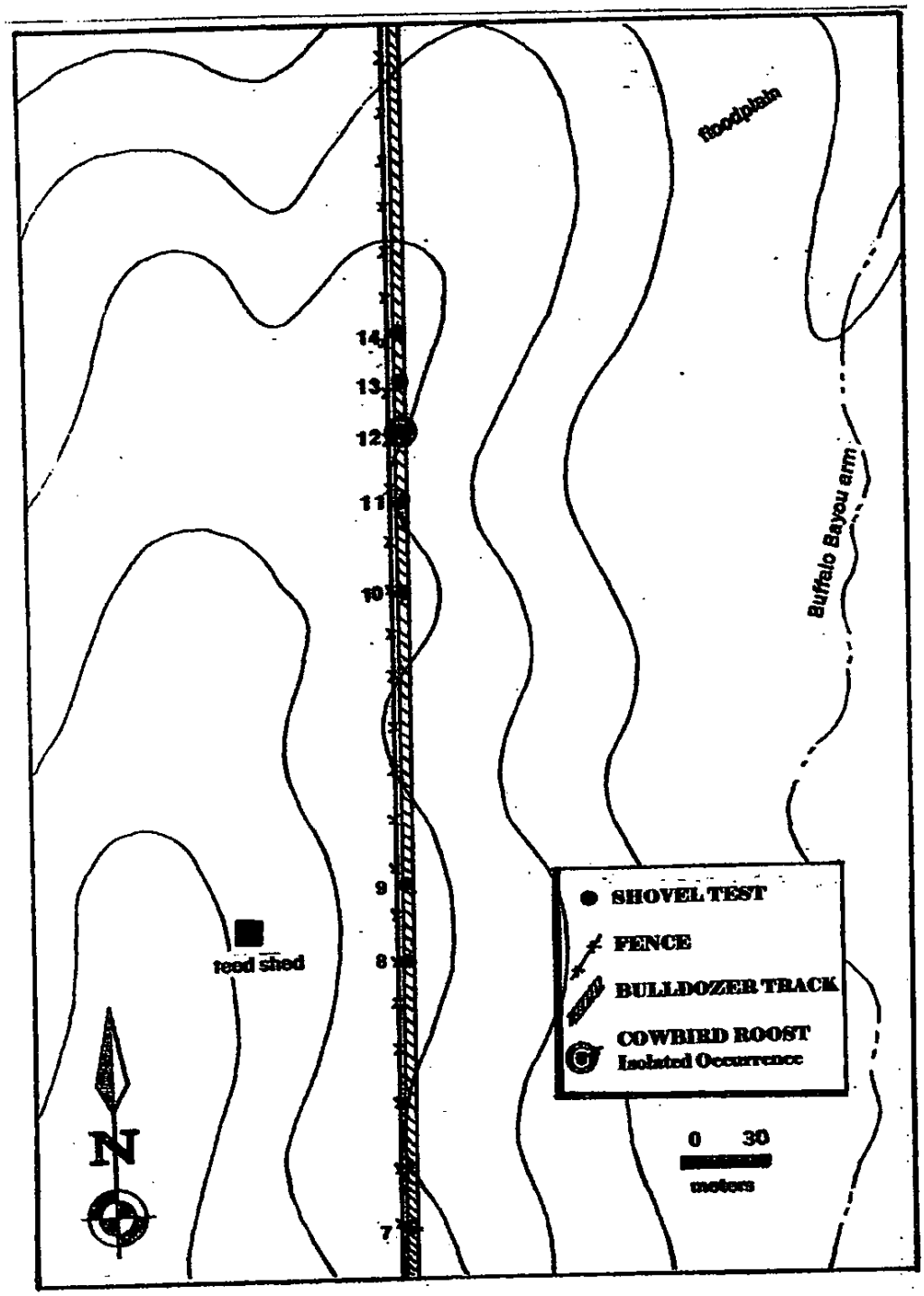


Figure 4. Cowbird Roost Isolated Occurrence Showing Shovel Test Locations

between shovel tests was shortened to 10 m, in hopes of disclosing subsurface indications of a dwelling or other features. Hopes were dashed by the tests.

ST11 Ap—0-20 cm+, 7.5YR4/6 coarse sand colluvium washed into low place from above, no horizonation.

ST12 Ap—just a thin, 0-2 cm-thick line of humus/organic staining; A1/A2 or incorporated E, 5YR6/8 sandy loam, Fe masses/nodules. The ST was dug in the artifact-bearing spot, but no additional cultural materials were disclosed.

ST13 Ap/A1—0-8 cm, 5YR3/4 sandy loam; E—8-32 cm, mottled 5YR4/4 and 5YR5/6 sandy loam with higher clay content than A1; Bt—32-35 cm+, red clay.

ST14 Ap/A1—0-8 cm; E—8-30 cm; Bt—30 cm+. Description as ST13.

Within the next 10 m interval, ridge slope dramatically plunges into the floodplain obviating the utility of any further shovel testing.

Artifacts consisted of two whiteware sherds and two pieces of bottle glass. The whiteware included a piece of the annular base of a small bowl and a section of rim, possibly from the same bowl. The glass fragments included a small fragment from the neck of an olive green wine bottle and a quarter-inch in diameter fragment of a light blue rum (?) bottle. All pieces are patinated, and the broken edges of the whiteware sherds are stained from long exposure on the red clay hilltop. I expect these historic pieces are the same vintage as the materials recovered at Mundy Landfill Overlook, ca. early 1800s.

The expected age of the materials prompted close scrutiny of the hill crest, which had a gently rounded top about 35 m in diameter. No other artifacts or features were seen despite excellent visibility. The nature of the artifacts and the lack of building materials/features may indicate a short-term activity or a dump or perhaps domestic residues from an undisclosed but nearby house site. The short-term activity could be questioned because of the variable materials, a soup bowl, a wine bottle, and a rum bottle. On the other hand, I am confident that no piered or post-in-ground structure stood on the spot where the artifacts were recovered. The property line fence (and the extent of the APE) runs 5 m west of the artifact concentration, and the larger half of the ridge crest extends onto private property. Remains of a house, if ever present, might lie there. The fence is a modern metal-posted barbed wire affair but it follows an old fence line. Hardwood trees over two feet in diameter (and having more than 80 annular rings) have recently been sheared along the line, indicating that the pastureland west of the APE has been a farm for a long time.

Whatever their origin, the artifacts alone are insufficient to prompt further management action.

DISCUSSION AND RECOMMENDATIONS

Investigations in the Mundy Landfill Cell VIII Expansion area found that about 150 of the 160 acres was either too steep and flood-prone for human occupancy (about 85-90 acres) or was already in use as a borrow pit (60acres). The remaining 10-15 acres lay on the crest of winding escarpments overlooking the Buffalo Bayou floodplain and were considered a "high probability area" for human activity, especially in light of the 1836 Congressional Survey plat, which showed that the LaFitte, DeSoto, and Procello families claimed nearby tracts of land. In fact, the APE fell within the B.S. Carpy claim (1820), but the plat does not show any improvements on the property. These families

were descendants of early Spanish-Indian settlers, who had settled in the area (known as the Bayou Pierre settlement) to engage in the thriving contraband trade between Spanish Texas and the United States (Bridges and Reams 1970; Girard et al. 2006).

Bulldozing had laid bare the argillic across most of the "high probability area" providing excellent ground visibility but compromising the integrity of the topsoil, which contained two locations with a few historic artifacts. Small remaining intact surfaces were shovel tested, but no artifacts were discovered. A double-handful of ceramic sherds, bottle glass, and a few other items were collected from dozer-planed areas (Table 2). In the case of the Mundy Landfill Overlook, they were lightly scattered over an area of about 3000-3200 m^2, which conformed to the winding crest of the escarpment; in the case of Cowbird Roost, they were concentrated in an area 4-6 m^2.

Cultural materials from Mundy Landfill Overlook are from kitchen items—cheap plain whiteware (pieces of cups, saucers, and bowls), earthenware (probably a piece of bowl), and bottles (sherds of wine and rum bottles). A piece of light blue flat glass, ostensibly from a windowpane, measures only 2.0 mm thick, indicating an age prior to 1880 (Hume 1969), as do most of the other artifacts. The plastic-handled fork probably dates to the early part of the twentieth century, and a few whiteware sherds may also date to that period or the late nineteenth century. A thick bottom from a brown bottle was chipped into a denticulate/scraper (Figure 3), which suggests.that its crafter was acquainted with Native American stone-tool technology. These materials, as well as the ceramic marble, are from a domestic assemblage, probably related to a farmstead, but no building remains or architectural materials were discovered. These absences could mean that building remains have been destroyed or were located outside the APE, in which case, they too would have been destroyed by the encroaching landfill borrow area.

Cultural materials from Cowbird Roost included whiteware and wine and rum bottle glass, but no architectural objects or features. These materials probably date to the same period as those from Mundy Landfill Overlook.

In my opinion, neither site is eligible for listing on the National Register of Historic Places. Although the sites are old enough and may date to an intriguing era in Red River history—the settling of Bayou Pierre—there is nothing intrinsic in the recovered artifacts that makes them historically exceptional. They are not known to be associated with an event, person, design, or a construction type considered to be locally, regionally, or nationally important (36 CFR 60.4). There are no standing structures or surviving remains of buildings to be considered representative of a style, period, or work of a master. Recovered materials are commonplace. Underlying all other considerations (36 CFR 60.4) is the fact that both site areas lack integrity—they have been bulldozed and overturned. Small remnants of intact surface were shovel tested with negative results. As rain and erosion affect the area, additional artifacts will probably be washed from lines of dirt pushed up along dozer tracks, but simply more of the same is an inadequate warrant for consideration for the National Register.

Cultural materials are temporarily curated at Carved Trowel Archaeology, Ltd. (355 Coleman Loop, Homer, Louisiana 71040), until such time as a permanent custodian is named.

I do not think additional CRM investigations are necessary as long as construction activities are confined to the presently delimited APE. However, should changes in the APE be made, additional investigations ought to be conducted. If cultural

resources or human burials are encountered during construction phases, I recommend that project supervisors notify the Louisiana Division of Archaeology and observe existing protocols for unanticipated discovery of cultural and human remains (Louisiana Unmarked Human Burial Sites Preservation Act, 1991, No. 704).

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Appendix S-1e

LDOTD List of Registered Water Wells

Select Wells

Registered Water Wells

Public Works & Water Resources Division
Water Resources Section

Wells located within 1.25 mile radius of Latitude 32°03'37" and Longitude 93°35'22"

Parish	Section	Owner Name	DOTD Well #	Owner Well #	Driller's Name	Well Depth (ft)	Well Use	Casing Size (in)	Drill Date	Water Level (ft)	W.L. Date Measured	Geologic Unit	Latitude	Longitude	Avail Info	Distance in Miles
De Soto	003	WASHINGTON, AL	- 161		WASHINGTON, AL	14	DOMESTIC	30	1950	10.93	02/25/55	124WLCX	320326	933500	W	0.41
De Soto	003	MUNDY LANDFILL	- 5048Z	4 UP	UNKNOWN	25	PLUGGED	3	.			124CRWL	320328	933526		0.18
De Soto	003	MUNDY LANDFILL	- 5367Z	1 DOWN	UNKNOWN	36	MONITOR	3	.			124CRWL	320335	933535		0.21
De Soto	003	DS POLICE JURY	- 5368Z	2 DOWN	UNKNOWN	26	PLUGGED	3	.			124CRWL	320346	933528		0.20
De Soto	003	MUNDY LANDFILL	- 5369Z	3 DOWN	UNKNOWN	26	PLUGGED	3	.			124CRWL	320340	933535		0.22
De Soto	003	MUNDY LANDFILL	- 5370Z	4A UP	UNKNOWN	43	MONITOR	3	.			124CRWL	320328	933526		0.18
De Soto	003	DS POLICE JURY	- 6341Z	LSPZ102	SOUTHWESTERN	79	PIEZOMETER	2	01/97	32	06/18/97	124WLCX	320321	933532	D W	0.35
De Soto	003	DS POLICE JURY	- 6342Z	USPZ102	SOUTHWESTERN	43	PIEZOMETER	2	01/97	31	06/18/97	124CRWL	320321	933532	D W	0.35
De Soto	003	DS POLICE JURY	- 6343Z	LSPZ103	SOUTHWESTERN	101	PIEZOMETER	2	02/97	36	06/18/97	124WLCX	320321	933537	D W	0.39

De Soto	003	DS POLICE JURY	-6344Z	USPZ103	SOUTHWESTERN	43	PIEZOMETER	2	09/96	36	06/18/97	124CRWL	320321	933537	D W	0.39
De Soto	003	DS POLICE JURY	-6345Z	LSPZ104	SOUTHWESTERN	61	PLUGGED	2	03/97	16	06/18/97	124WLCX	320325	933537	D W	0.33
De Soto	003	DS POLICE JURY	-6346Z	USPZ104B	SOUTHWESTERN	31	PIEZOMETER	2	03/97	6	06/18/97	124CRWL	320327	933535	D W	0.28
De Soto	003	DS POLICE JURY	-6347Z	LSPZ106B	SOUTHWESTERN	28	PLUGGED	2	03/97	8	06/18/97	124CRWL	320337	933538	D W	0.26
De Soto	003	DS POLICE JURY	-6348Z	LSPZ110B	SOUTHWESTERN	30	PIEZOMETER	2	03/97	18	06/18/97	124CRWL	320342	933529	D W	0.15
De Soto	003	DS POLICE JURY	-6349Z	USPZ111	SOUTHWESTERN	21	PLUGGED	2	03/97	16	06/18/97	124CRWL	320340	933525	D W	0.08
De Soto	003	DS POLICE JURY	-6350Z	USPZ113	SOUTHWESTERN	40	PIEZOMETER	2	09/96	26	06/18/97	124CRWL	320330	933522	D W	0.13
De Soto	003	DS POLICE JURY	-6351Z	LSPZ100B	SOUTHWESTERN	93	PLUGGED	2	01/97	33	06/18/97	124WLCX	320323	933537	D W	0.36
De Soto	003	DS POLICE JURY	-7143Z	LSPZ-208	SOIL TESTING	17	PIEZOMETER	2	06/02	9	06/27/02	124CRWLC	320340	933535	D W	0.22
De Soto	003	DS POLICE JURY	-7144Z	USPZ-209	SOIL TESTING	22	PIEZOMETER	2	06/02	14	07/03/02	124CRWLC	320332	933529	D W	0.15
De Soto	003	DS POLICE JURY	-7145Z	LSPZ-209	SOIL TESTING	66	PIEZOMETER	2	06/02	28	06/27/02	124CRWLC	320332	933529	D W	0.15
De Soto	003	DS POLICE JURY	-7146Z	LSPZ210G1	SOIL TESTING	19	PIEZOMETER	2	06/02	5	06/27/02	124CRWLC	320338	933538	D W	0.26
De Soto	003	DS POLICE JURY	-7147Z	LSPZ210G2	SOIL TESTING	36	PLUGGED	2	06/02	30	06/27/02	124CRWLC	320338	933538	D W	0.26
De Soto	003	DS POLICE JURY	-7148Z	LSPZ-219	SOIL TESTING	20	PIEZOMETER	2	06/02	12	06/27/02	124CRWLC	320347	933533	D W	0.26
De Soto	003	DS POLICE JURY	-7548Z	MW-C-5	WALKER-HILL (LA)	12	MONITOR	2	02/05	7.0	03/21/05	00000000	320332	933531	D W	0.17
De Soto	003	DS POLICE JURY	-7549Z	MW-C-6	WALKER-HILL (LA)	22	MONITOR	2	03/05	13	03/21/05	00000000	320331	933537	D W	0.27
De Soto	003	DS POLICE JURY	-7550Z	MW-G1-7	WALKER-HILL (LA)	80	MONITOR	2	03/05	32	03/21/05	00000000	320328	933523	D W	0.17

De Soto	003	DS POLICE JURY	- 7551Z	MW-G1-8	WALKER-HILL (LA)	15	MONITOR	2	03/05	13	03/21/05	00000000	320344	933525	D W	0.14
De Soto	003	DS POLICE JURY	- 7552Z	MW-G1-9	WALKER-HILL (LA)	10	MONITOR	2	02/05	3	03/21/05	00000000	320346	933535	D W	0.27
De Soto	003	DS POLICE JURY	- 7553Z	MW-G1-10	WALKER-HILL (LA)	8	MONITOR	2	03/05	2	03/21/05	00000000	320344	933537	D W	0.28
De Soto	003	DS POLICE JURY	- 7554Z	MW-G2-12	WALKER-HILL (LA)	58	MONITOR	2	03/05	22	03/21/05	00000000	320331	933537	D W	0.27
De Soto	003	DS POLICE JURY	- 7555Z	MW-G2-13	WALKER-HILL (LA)	20	MONITOR	2	03/05	3	03/21/05	00000000	320344	933537	D W	0.28
De Soto	004	DS POLICE JURY	- 7663Z	PZ-G-1-305	SOIL TESTING	16	PIEZOMETER	2	09/05	14	10/19/05	00000000	320345	933547	D W	0.43
De Soto	004	DS POLICE JURY	- 7664Z	PZ-C-308	SOIL TESTING	14	PIEZOMETER	2	09/05	13	10/19/05	00000000	320331	933547	D W	0.42
De Soto	004	DS POLICE JURY	- 7665Z	PZ-G2-309	SOIL TESTING	22	PIEZOMETER	2	09/05	5	10/19/05	00000000	320345	933553	D W	0.53
De Soto	004	DS POLICE JURY	- 7666Z	PZ-G1-312	SOIL TESTING	19	PIEZOMETER	2	09/05	18	10/19/05	00000000	320331	933553	D W	0.52

Available Information:
E - Geophysical Log
D - Driller's Log
M - Mechanical Analysis
Q - Quality of Water
P - Pumping Test
W - Water Level
B - Bacteriological Analysis

[Parish Codes] [Well Use Sub-Use Codes] [Explanation of Terms]

Appendix S-2

2005 Geologic Investigation

- **S-2a** 2005 Soil Boring Logs
- **S-2b** 2005 Monitoring and Piezometer Well Construction Diagrams
- **S-2c** 2005 Monitoring and Piezometer Well Registrations
- **S-2d** Tables
  1. Summary of Soil Boring Logs
  2. Monitoring and Piezometer Well Data
     - 2A - Zone C
     - 2B - Zone G1
     - 2C - Zone G2
  3. Summary of Groundwater Elevation Data
     - 3A - Zone C Monitoring & Piezometer Wells
     - 3B - Zone G1 Monitoring & Piezometer Wells
     - 3C - Zone G2 Monitoring & Piezometer Wells
  4. Gauging and Elevation Data, Sedimentation, Oxidation, & Polishing Ponds
  5. Preliminary Installation Data for New Monitoring Wells
  6. Oil and Gas Wells

Appendix S-2a

2005 Soil Boring Logs

LOG OF SOIL BORING – MW-C-5

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 02/25/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: TODD GREER (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 239.7'
TIME: 8:50–10:10

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well with screen from 6–10.7' bgs.

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
1											Surface: 8–12" Gray gravel with black filter fabric below. 2.0
2–4										CH	Clay, gray–brown to orange–tan, moist, firm, plastic (may be road bed material). 4.0
5–6										NA	No recovery. Rock plugged end of the split spoon. 7.0
7–9										SP	Sand, fine grain, lt. brown/tan, slightly moist, non–plastic, soft, loose, some laminations. 9.0
10										ML	Silt, orange, tan and gray, moist, firm, nonplastic, some thin (1mm) dark gray clay laminations, some iron layers and nodules. 10.3
11–12										CL	
13											Silty Clay, light to dark gray, finely laminated, low plasticity, firm. 13.0
14–32											Boring terminated 13' bgs.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
SPLIT SPOON SHELBY TUBE HAND AUGER DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-C-6

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/02/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 229.5'
TIME: 10:15–11:05

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well with screen from 12–21.6' bgs

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA						
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS
1										
2										ML
3										
4										CL
5										
6										
7										
8										
9										CL
10										CL
11										CL
12										
13										ML
14										
15										ML
16										
17										
18										
19										
20										CL
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
32										

DESCRIPTION OF STRATA

Surface: Dirt.

Sandy Clay, orange/tan/gray, medium soft, disturbed material. 0.2

Clay, brown, firm, dry, some silt. 0.

Clayey Silt, gray to orange, laminated, dry, firm low plasticity, fissile. 2.

Clay, gray to orange, laminated, some silt and sandy silt laminations, dry, stiff, compact to fissile. Some slickensides. 7.

Lignite, dark brown to black, laminated, dry, nonplastic, fissile, crumbly. 8.

Clay, gray to dark brown, lignitic, some laminations, some silt, dry, firm, fissile. 9.

Clay, gray–brown, laminated to compact, dry, firm, some black organics. 10.

Clay, med gray, silty, compact to fissile, very stiff, some black organics. 12.

Silt and Clayey Silt, gray to tan, some orange, dry, stiff, low to no plasticity, fissile. 14.

Clayey Sandy Silt, dark to light gray & orange, laminated, light gray to orange silt & very fine silt laminae with dark gray clay laminae, dry, very stiff. 16.75

Silty Clay, dark to light gray, laminated, fissile, stiff. 24.

Boring terminated 24' bgs.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ⧅ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-7

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/03/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 2
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 264.5'
TIME: 10:10–15:45

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well w/screen from 70–79.55' bgs.

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA							DESCRIPTION OF STRATA
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	
											Surface: Grass. Drilled to 60' before sampling.
5											
10											
15											
20											
25											
30											
35											
40											
45											
50											
55											60.0
60										CL	Silty Clay, dark gray/brown, dry, stiff, laminated with light gray silt laminae, fissile. 61.2
										CL/ML	
65										CL	Clayey Silt, dark to light gray/brown, dry, stiff, laminated. 62.0

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
SPLIT SPOON SHELBY TUBE HAND AUGER DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-7

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/03/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 2 OF 2
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 264.5'
TIME: 10:10–15:45

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well w/screen from 70–79.55' bgs.

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
										CL	Silty Clay, dk to light gray, laminated, dry, stiff, fissile, occasional siltier layer (<1" thick) 68.0
70										CL/ML	Clayey Silt, light gray to brown, laminated, dry, fissile, very stiff, some silty clay, trace fine brown organics. 74.6
75										ML	
										ML	Silt, light gray, laminated, slightly moist, nonplastic, some very fine sand, some v. thin (<1mm) brown/tan laminations. 76.0
80										CL/ML	Silt, med. gray, slightly moist, firm, occasional brown laminations of clay or fine organics. 80.0
85											Clayey Silt, gray with dk gray/brown clay laminations, dry, stiff. 82.0
90											Boring terminated 82' bgs.
95											
100											
105											
110											
115											
120											
125											
130											

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ⧅ SHELBY TUBE [H] HAND AUGER

LOG OF SOIL BORING – MW-G1-8

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/01/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 212.1'
TIME: 10:00–11:25

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well w/screen from 5.2–14.75' bgs.

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
1										CL	Surface: Dirt. Silty Clay, tan to light gray, slightly moist, firm, mod to low plasticity, some laminations, somewhat fissile, becomes siltier with depth. 2.0
2–6										CL/ML	Clayey Silt, tan/orange & lt gray, laminated, dry, low to no plasticity, somewhat fissile, some very fine sand, some rootlets from 4–6'. 6.0
7–8										ML	Silt, light brown to gray, laminated, very stiff, low to no plasticity, some clay. 8.0
9										ML	Sandy Silt, lt brown to gray, v. fine grain sand, laminated, slightly moist, some clay laminations, stiff, low to no plasticity, somewhat fissile. 10.0
10										ML	Clayey Sandy Silt, lt brown/tan, moist, med soft, plastic. 11.0
12–14										ML	Silt, tan/orange, laminated, stiff, some clay, low plasticity. 14.0
15–18										CL	Silty Clay, tan/gray, laminated, stiff, somewhat fissile. 18.0
19–32											Boring terminated 18' bgs.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ⧅ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-9

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 02/25/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: TODD GREER (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 193.3'
TIME: 14:05–15:25

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well with screen from 5–9.7' bgs.

GROUNDWATER INFORMATION:
Augers were very moist below 5' when pulled from borehole.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
1										CL	Surface: Grass. Silty Clay, gray with tan, moist, soft, plastic, soil clasts, clasts with laminations. Appears to be fill material. 2.(
2										CL	
3	× × ×									ROCK	Silty Clay, gray with tan, somewhat fissile. 2.:
4	× × ×										
5	× × ×										Rock, light tan siltstone. 5.(
6										CL	
7										ML	Silty Clay, lt brown/gray, slightly moist, plastic. 7.(
8											
9										ML/CL	Silt, gray/tan with orange iron staining, laminated, moist, nonplastic, firm, slightly clayey. 8.(
10											
11											
12											Clayey Silt, light gray to orange/tan, fine, laminations, dry, stiff, siltier from 11–12'. 12.(
13											
14											Boring terminated 12' bgs.
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
32											

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ▧ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-10

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/04/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 185.1'
TIME: 9:20–9:50

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well with screen from 3–7.8' bgs.

GROUNDWATER INFORMATION:
Free groundwater not present in samples. Augers wet when removed from borehole.

FIELD DATA				LABORATORY DATA						
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS
1										
2										SC
3										
4										CH
5										SC
6										ML
7										
8										CL
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
32										

DESCRIPTION OF STRATA

Surface: Grass.
Silty Clay, brown, very moist, soft plastic. 0.2

Clayey Sand, orange, tan & gray, mottled, slightly moist, low plasticity, some clay clasts. Gray, firm, plastic clay layer about 0.25' thick @ 2.25'. Appears to be fill. 3.

Clay, lt gray to orange, mottled, moist, plastic, cohesive, compact, some very fine sand. 4.

Clayey Sand, orange, tan and gray, mottled, similar to 0.25–3.2'. Some ironstone, gray gravel. 5.2

Clayey Silt, gray, slightly moist, low plasticity, some rootlets. 6.4

Sandy Clay, orange to gray, slightly moist, plastic, cohesive, compact. Dark woody organics at 9.4'. 10.0

Boring terminated 10' bgs.

Soil samples from this borehole did not exhibit the characteristic laminations and fissility that are typical of the subsurface at this site.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ⧅ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-10A

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/01/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 185.6'
TIME: 13:20–13:45

DRILLING METHOD(S): Hollow-stem auger.

GROUNDWATER INFORMATION:
Groundwater 1' bgs on 03/02/05.

FIELD DATA				LABORATORY DATA						
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS
1										CL, SP
2										CL
3										SP
4										ML
5										CL
6										CL
7										CL
8										
9										CL
10										
11										SP
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
32										

DESCRIPTION OF STRATA

Surface: Grass.

Silty Clay, brown, moist, plastic, soft, rootlets. 0.5

Sand, orange/tan, mottled, fine grain, nonplastic, root mat at bottom of sand. Appears to be fill. 1.0

Silty Clay, brown, some orange, mottled, plastic, soft. 2.2

Sand, orange/tan, fine grain, nonplatic. 2.4

Clayey Silt, gray, moist, low plasticity, laminated soil clasts, not fissile (fill). 4.25

Silty Clay, gray/brown, moist, soft, plastic. 4.9

Silty Clay, dark orange, tan, and gray, mottled, very stiff, cohesive. 6.0

Sandy Clay, gray, moist, plastic, moderately soft, some organics & rootlets, especially from 7–8'. Thin layer (<1/4") of cinders or granular black organics @ 7.5'. 8.0

Silty Clay, dark gray, mottled, moist, soft, some organics, grass & rootlets. 10.5

Sand, gray/tan, fine grain, moist, some coarse sand/fine gravel from 11–12', some clay clasts. 12.0

Boring terminated 12' bgs.

Soil samples from this borehole did not exhibit the characteristic laminations and fissility that are typical of the subsurface at this site.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ⧅ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-11A

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 02/25/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: TODD GREER (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 209.7'
TIME: 10:25–11:35

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Borehole grouted w/tremie pipe from TD to ground surface on 3/4/05

GROUNDWATER INFORMATION:
Free groundwater not encountered.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
1–7											Surface: Gravel road bed – Cell VII levee/ perimeter road. Drilled to 8' before sampling. 8.0
8–10										CL	Silty Clay, gray w/orange & tan, mottled, dry, firm, plastic (fill). 10.3
11–12										CL/ML	Clayey Silt, dk gray w/orange & tan, dry, firm to stiff, some clay clasts and laminated clay clasts. 12.0
13–16										CL	Silty Clay, gray to tan, mottled, some laminations, moist, firm, low to mod. plasticity, tan siltier layers, esp. from 12–12.5'. 16.0
17–18										CH	Clay, gray, orange, & tan, mottled, moist, firm, some soil clasts. 18.0
19–20										CL	Silty Clay, orange, tan, & gray, mottled, some very fine sand. 20.0
21–22										CL/ML	Clayey Silt, dk gray, soil clasts & laminated soil clasts, black rootlets & grass @ 20.75', thin root mats below 21', pieces of black filter fabric. 22.0
23–24										CL	Silty Clay, dk to lt gray, finely laminated, dry, very stiff. 24.0
25–32											Boring terminated 24' bgs.

Note: Fill material used to construct the Cell VII levee/perimeter road appears present to a depth of 22' (187.7' MSL)

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
SPLIT SPOON SHELBY TUBE HAND AUGER DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G1-11B

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 02/25/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: TODD GREER (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 210.4'
TIME: 12:50–13:35

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Borehole grouted with tremie pipe from TD to ground surface on 3/4/05.

GROUNDWATER INFORMATION:
Free groundwater not encountered.

FIELD DATA				LABORATORY DATA						
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										CL
12										
13										CL/ML
14										
15										CL
16										
17										CH
18										
19										CL
20										
21										CL/ML
22										
23										CL
24										
25										
26										
27										
28										
29										
30										
31										
32										

DESCRIPTION OF STRATA

Surface: Gravel road bed – Cell VII levee/ perimeter road.
Drilled to 10' before sampling. 10.0

Silty Clay, dk gray, broken, fragmented laminations, soil clasts, orange/tan fine sand @ 10.5'. 12.0

Clayey Silt, tan w/some gray, some grass/blk organics @ 12.9', trc v. fine sand, some clasts, low plasticity, mottled. 14.0

Silty Clay, gray/tan, mottled, slightly moist, plastic, trc gravel, soil clasts. 16.0

Clay, red/brown, tan, & gray, mottled, some clasts, v. fine sand, trc gravel, rare rootlet. 18.0

Clayey Silt, gray/tan, mottled, dry, some v. fine sand, clasts w/gray laminae, trc gray gravel, fibrous black filter fabric @ bottom of sample. 20.0

Silt, gray, some lt tan, dry, firm to loose, some grass, laminae clay clasts, trc gravel, fibrous black filter fabric @ bottom of sample. 22.0

Silty Clay, dk to lt gray, laminated, dry, stiff. fissile. 24.0

Boring terminated 24' bgs.

Note: Fill material used to construct the Cell VII levee/perimeter road appears present to a depth of 22' (188.4' MSL)

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
☒ SPLIT SPOON ▧ SHELBY TUBE [H] HAND AUGER ▽ DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G2-12

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/02/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 229.9'
TIME: 13:40–16:30

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well w/screen from 48–57.56' bgs.

GROUNDWATER INFORMATION:
No free groundwater detected in samples.

FIELD DATA				LABORATORY DATA							
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	DESCRIPTION OF STRATA
											Surface: Dirt. Drilled to 40' before sampling.
40											40.0
45										CL	Silty Clay, dk to lt gray, finely laminated, dry, very stiff, fissile, some siltier intervals.
50											50.0
55										CL/ML	Clayey Silt with Silty Clay, dk to lt gray, laminated, dry, v. stiff, fissile, some v. fine sand laminations from 51–52' and 56–58'. 58.0
60										CL	Silty Clay, dk gray/brown with lt gray silt laminations, dry, v. stiff, fissile. 60.0
65											Boring terminated 60' bgs.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
SPLIT SPOON SHELBY TUBE HAND AUGER DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – MW-G2-13

PROJECT NAME: MUNDY LANDFILL
CLIENT: DESOTO PARISH POLICE JURY
DATE: 03/01/05
GEOLOGIST: S. MOORE (JEI)
DRILLER: GREG SLADE (WHE)

SHEET # 1 OF 1
LOCATION: DESOTO PARISH, LOUISIANA
SURFACE ELEVATION: 185.7'
TIME: 13:55–15:30

DRILLING METHOD(S): Hollow-stem auger. Borehole diameter 9". Installed 2" dia. PVC well w/screen from 10–14.65' bgs.

GROUNDWATER INFORMATION:
Groundwater encountered @ 12' bgs. Free groundwater came up from borehole when augers were removed.

FIELD DATA				LABORATORY DATA						
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS
1										CL
										SP
2										
3										SC
4										
5										CL
6										
7										CL
8										
9										CL
10										CL/SC
11										SC
12										
13										SC
14										
15										
16										CL
17										
18										
19										
20										CL
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										

DESCRIPTION OF STRATA

Surface: Grass.

Silty Clay, brown, some gray, mottled, moist, plastic. 0.75

Sand, orange/tan, mottled, fine grain, low plasticity, slightly clayey. Appears to be fill. 2.0

Clayey Sand, gray to orange, mottled, some ironstone. 4.0

Sandy Clay, orange to gray, plastic, occ laminations, some dark woody organics. 6.0

Sandy Silty Clay, gray to orange, slightly moist, firm, plastic, some dark woody organics. 8.0

Silty Clay, gray to orange/tan, moist, firm, plastic, some indistinct laminations. 9.0

Sandy Clay & Clayey Sand, gray to orange, mottled, plastic, firm to soft. 10.5

Clayey Sand, tan to orange, mottled, moist, some dark organics, iron mineralization. 12.0

Clayey Sand, dark orange to light gray, fine grain, very moist, loose, firm to soft, some dark woody organics. 14.25

Silty Clay, gray to orange, some very fine sand, some woody organics, some iron mineralization at 17'. 18.0

Silty Sandy Clay, gray to orange, mottled, very fine sand, moist, firm, plastic, some dark organics, some iron nodules, esp. from 18–18.5' and 22'. 22.0

Boring terminated 22' bgs.

Soil samples from this borehole did not exhibit the characteristic laminations and fissility that are typical of the subsurface at this site.

LEGEND
UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD
SPLIT SPOON SHELBY TUBE HAND AUGER DEPTH AT WHICH FIRST WATER ENCOUNTERED

LOG OF SOIL BORING – B301

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE (TRI)

SHEET # 1 OF 2
SURFACE ELEVATION: +191.08' MSL
DATE STARTED: 9/12/05 12:00
DATE COMPLETED: 9/14/05 12:25

DRILLING METHOD(S): DRY AUGER TO 18' bgs, WET ROTARY BELOW 18' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
					15		46	20	26		CL	Clayey Silt, brown to tan, mottled, dry, stiff, some soil clasts (3–5mm), some rootlets. 2.0'
2											CH	Silty Clay, medium brown, mottled, slighty moist, slighty plastic, stiff, some dark wood fragments. Bottom of sample is laminated brown to tan Clayey Silt. 4.0'
4				4.01	28	90	56	22	34		CH	Silt with clay, tan and light gray, dry, hard, fissile, some thin (≤1mm) clay laminations. Kh = 3.1E-05 (4'–6') 6.0'
6												Clayey Silt, light gray/tan to dark gray/brown, laminated, dry, fissile, stiff, some ripple laminations, some approximately 1" siltier and clayier intervals.
8												
10					24		66	26	40		CH	
12												
14					26		62	24	38	99	CH	15.0'
16			N:26/6"									Silty Clay, dark gray/brown with light gray silt, laminated, dry, fissile, very stiff to hard.
18				3.65	25	97	61	25	36		CH	
20												
22												
24												
26			N:24/6"		25		54	22	32		CH	
28					23		61	24	37		CH	
30					24	100	55	25	30		CH	– Kv = 2.7E-07 (28'–30').
32			N:30/6"									
34												
36			N:32/6"									
38			P=4.5									– Some burrows (36'–38').
40			N:30/6"		21		65	25	40		CH	
42			P=4.5+									– Siltier (41'–42').
44			N:35/6"									
46			P=4.5+									– Small burrows (≤1mm diameter) (44'–46').
48			N:32/6"		22		69	22	47		CH	– Some approximately 1" thick siltier intervals, burrows 1–5mm across (48'–50').
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B301

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE (TRI)

SHEET # 2 OF 2
SURFACE ELEVATION: +191.08' MSL
DATE STARTED: 9/12/05 12:00
DATE COMPLETED: 9/14/05 12:25

DRILLING METHOD(S): DRY AUGER TO 18' bgs, WET ROTARY BELOW 18' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+								CH	Silty Clay, dark brown with some light brown silt, dry, hard. 52.0'
52												Boring terminated at 52' bgs, elevation = +139.08' MSL.
54												
56												
58												
60												
62												
64												
66												
68												
70												
72												
74												
76												
78												
80												
82												
84												
86												
88												
90												
92												
94												
96												
98												
100												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B302

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE) (0'–44'), SARAH MOORE (JEI) (44'–48')
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 1
SURFACE ELEVATION: +184.85' MSL
DATE STARTED: 9/26/05 15:00
DATE COMPLETED: 9/28/05 12:15

DRILLING METHOD(S): DRY AUGER TO 18' bgs, WET ROTARY BELOW 18' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
2			P=3.5 P=0.75		21	45	18	27		72	CL w/Sand	Sandy Silty Clay, brown and gray, medium–hard to 2', soft from 2'–2.5', very fine–grained sand, rootlets near surface, moist. 2.5'
4			P=4.5+ P=4.5+ P=4.5+	0.82	29	88	53	23	30		CH	Silty Clay, medium to dark gray, dry, medium to hard, fissile, fine hairline light gray silt laminations. 8.0'
8			P=4.5+		23		61	24	37		CH	Silty to very Silty Clay, medium to dark gray, dry, hard, very fissile at 8', silt increases with depth. 10.0'
10			P=3.5	2.55	22	91	61	25	36	100	CH	Clayey Silt, gray, dry, medium to very stiff. 12.0'
12			P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+		23		67	24	43		CH	Clay, medium to dark gray, dry, hard, some silt, some fissility, round oxidized stains (≤1mm) along fine silt laminations from 14'–15'. 26.0'
26			P=4.5+								CH	Silty Clay, gray, lighter shade than above, dry, hard, silt layers, fissile. 28.0'
28			P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ P=4.5+ N:50 P=4.5+ N:50/4"		21 17		64 60	18 22	46 38		CH CH	Clay, medium to dark gray, dry, hard, hairline silt laminations, somewhat fissile. – Slightly more fissile (34'–36') – Dark greenish glauconite mineralization (36'–48'). 48.0'
48												Boring terminated 48' bgs, elevation = +136.85' MSL.
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B303

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE)
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 2
SURFACE ELEVATION: +191.67' MSL
DATE STARTED: 9/21/05 9:15
DATE COMPLETED: 9/21/05 15:15

DRILLING METHOD(S): DRY AUGER TO 18' bgs, WET ROTARY BELOW 18' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+									Very Silty Clay, gray, dry, hard, very fissile, very fine light gray to white silt laminations.
2			P=4.5+									
4			P=4.5+		20	99	49	22	27		CL	6.0'
6			P=4.5+									Clay, medium to dark gray, dry, very stiff to hard, fissile, very fine hairline silt laminations.
8			P=4.5									
10			P=4.5+	3.89	22	95	62	24	38		CH	
12			P=4.5+									
14			P=4.5									
16			P=4.5+	3.69	20	95	60	23	37		CH	
18			P=4.5+									
20			P=4.5+									
22			P=4.0									
24			P=4.5+	2.89	20	95	61	22	39		CH	– Kv = 2.1E–06 (22'–24').
26			P=4.5+									
28			P=4.5+									
30			P=4.5+									
32			P=4.5+									
34			P=4.25		22	92	62	24	38		CH	34.0' Silty Clay, dark gray, dry, very stiff, trace very fine sand. 36.0'
36			P=4.5+								CH	Silty Clay, dark gray, dry, hard, fissile, thin hairline very silty laminations. 38.0'
38			P=4.5+									Clay, dark gray, dry, hard, fissile, trace hairline silt laminations, small pockets of green glauconite mineralization from 42'–44'.
40			P=4.5+		21		62	24	38		CH	
42			P=4.5+									44.0'
44			P=4.0									Silty Clay, dark gray, dry, stiff to hard, fissile, trace very fine sand from 44'–46', green glauconite mieralization.
46			P=4.5+		20		56	23	33		CH	48.0'
48			P=4.5+		20	99	52	21	31		CH	Clay, dark gray, dry, hard, trace hairline silt laminations. 50.0'
50												

LEGEND

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Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B303

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE)
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 2 OF 2
SURFACE ELEVATION: +191.67' MSL
DATE STARTED: 9/21/05 9:15
DATE COMPLETED: 9/21/05 15:15

DRILLING METHOD(S): DRY AUGER TO 18' bgs, WET ROTARY BELOW 18' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52			P=4.5+								CH	Clay – Same as above. 52.0'
												Boring terminated at 52' bgs, elevation = +139.67' MSL.
54												
56												
58												
60												
62												
64												
66												
68												
70												
72												
74												
76												
78												
80												
82												
84												
86												
88												
90												
92												
94												
96												
98												
100												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B304

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: JERRY MELTON & SCOTT MARTI (TRI), LARRY TEEL (IRONHORSE)

SHEET # 1 OF 2
SURFACE ELEVATION: +229.42' MSL
DATE STARTED: 9/21/05 10:35
DATE COMPLETED: 9/30/05 8:05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs. TRI DRILLED 0'–60', IRONHORSE DRILLED 60'–90'.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED. LEFT BOREHOLE OPEN TO 20' FOR 2 HOURS PRIOR TO SWITCHING TO WET ROTARY. NO GROUNDWATER ACCUMULATED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
											CL	Silty Clay, light brown/tan, some orange laminations, mottled at top with laminations below, dry, fissile, occasional light gray silt lamination, trace black organics, leaf and stem imprints. 1.1'
2			P=4.5								CH	
			P=4.5+		28	94	58	28	30		CH	Clay, light brown, tan to orange, some laminations, dry, very stiff, non-fissile, trace silt, trace black organics. 2.25'
4												
			P=4.5+									Silty Clay, light brown, tan, some orange, dry, hard, some laminations, some orange iron nodules. 4.0'
6												
			P=4.5+								CH	
8												
			P=4.0	2.17	27	93	51	24	27		CH	Silty Clay, dark gray/brown to light brown with orange, mottled to laminated, dry, hard, fissile, some white carbonate nodules, carbonate seams at 5' and 5.25'. 8.0'
10												
			P=4.5+									
12												Clayey Silt, alternating laminations of dark gray/brown clayey silt and light gray, tan and orange silt and sandy silt, dry, fissile, very stiff to hard. 12.0'
			P=4.5+								CH	
14												
			P=4.0									Silty Clay, brown to tan with light gray silt laminations, dry, hard. 14.0'
16												
			P=4.0		25		55	24	31		CH	Clayey Silt, brown to gray, laminated with dark gray clayey and light gray silt laminations, dry, very stiff, fissile. 18.0'
18												
			P=3.5								CH	Silty Clay, dark brown to gray/tan, laminated, stiff, fissile. 20.0'
20												
			P=3.5	4.89	27	95	46	23	23		CL	Silt with some clay, light brown to gray, laminated, low plasticity, fissile, very stiff to hard. 22.0'
22												
	XXX XX XXX		REFUSAL									Rock – no penetration with split spoon. Changed to roller bit to drill through. 25.0'
24												
			NA		28		49	26	23	96	CL	Silt with some clay, gray, laminated, slightly moist, some thin (<1mm) black laminations (pushed split spoon). 28.0'
26												
28												
			P=4.5+								CH	Clayey Silt, gray to brown, laminated, fissile, hard, some dark gray clay laminations. 30.0'
30												
			P=4.5+		27		61	24	37		CH	Silty Clay, gray/brown, laminated, dry, fissile, hard, light gray silt laminations.
32												
			P=4.5									
34												
			NA									
36												
			N:50/6"		33		59	25	34		CH	
38												
			P=4.5+									
40												
			N:50/5"									
42												
			P=4.5+		25		60	23	37		CH	
44												
			N:50/6"									46.0'
46												
			P=4.5+								CH	Clay, dark brown, laminated, dry, hard, some light gray hairline silt laminations, small pockets and burrows.
48												
			N:50/4"									50.0'
50												

LEGEND

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Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B304

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: JERRY MELTON & SCOTT MARTI (TRI), LARRY TEEL (IRONHORSE)

SHEET # 2 OF 2
SURFACE ELEVATION: +229.42' MSL
DATE STARTED: 9/21/05 10:35
DATE COMPLETED: 9/30/05 8:05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs. TRI DRILLED 0'–60', IRONHORSE DRILLED 60'–90'.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED. LEFT BOREHOLE OPEN TO 20' FOR 2 HOURS PRIOR TO SWITCHING TO WET ROTARY. NO GROUNDWATER ACCUMULATED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52			P=4.5+									Silty Clay, dark brown with light gray silty laminations, dry, hard.
			P=4.5+									
54			P=4.5+									
56			P=4.5+		20	102	60	23	37		CH	– Kv = 6.8E–08 (54'–56')
58			P=4.5+									
60		⊠	N:50/4"									
62			P=4.5+									
64			P=4.5+									64.0'
66			P=4.5+									Clay, dark brown, dry, hard, non–fissile, some hairline silt laminae, small silt pockets, silty clay seams.
68			P=4.5+									
70			P=4.5+		21		95	24	71		CH	70.0'
72			P=4.5+								CH	Silty Clay, dark to medium brown, dry, hard, some laminations, non–fissile. 72.0'
74			P=4.5+								CH	Clay, dark brown, dry, hard, non–fissile, some hairline silt laminae, small silt pockets and burrows.
76			P=4.5+									
78			P=4.5+									
80			P=4.5+									
82			P=4.5+									
84			P=4.5+									
86			NA									– Sample crumpled upon extrusion (84'–86'). 86.0'
88	××× ××	C	REFUSAL N:50/0"									Rock – recovered a few fragments of brown shale. 88.0'
90			NA		21		60	24	36		CH	Silty Clay, gray/brown, dry, hard, some laminations, sample crumpled upon extrusion. 90.0'
92												Boring terminated 90' bgs, elevation = 139.4' MSL.
94												
96												
98												
100												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

⊠ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B305

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: JERRY MELTON (TRI)

SHEET # 1 OF 2
SURFACE ELEVATION: +191.22' MSL
DATE STARTED: 9/20/05 8:30
DATE COMPLETED: 9/21/05 10:05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs. INSTALLED PIEZOMETER PZ-G1-305 40' NORTH OF B305 ON 9/30/05 USING DRY AUGER.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+								CH	Clayey Silt, orange/tan, mottled, dry, very stiff, roots up to 0.25" diameter in upper part of sample. 2.0'
2			P=4.5+		15		55	22	33		CH	Silty Clay, very silty, brown, tan and orange, mottled, dry, stiff.
4			P=4.5+									6.0'
6			P=4.0									Silt with clay, tan, dry, very stiff, mottled at 6' and laminated below, some small ripple laminations, white carbonate from 8'-8.5', trace black organics, gray clay laminations (1-2mm) at 11'. -Kh = 3.5E-06 (8'-10').
8			P=3.75	3.38	24	96	47	28	19	99	ML	
10			P=4.5+									12.0'
12			P=4.5+									Clayey Silt, tan and brown to gray below 15', laminated, dry, hard, fissile, some orange iron mineralization from 14'-14.25', some ripple laminations, alternating laminations of silt, clayey silt and silty clay.
14			P=4.5+		28		51	25	26		CH	
16			P=4.5+									
18			P=4.5+									
20			P=4.5+									
22			P=4.5+									24.0'
24			P=4.5+		24	105	54	23	31		CH	Silty Clay, dark gray/brown with light gray silt laminations, some ripple laminations, some fissility, some small burrows from 28'-30', dry, hard. -Kv = 1.1E-08 (24'-26')
26			P=4.5+									
28			P=4.5+									
30			P=4.5+									
32			P=4.5+		24	101	60	24	36		CH	
34			P=4.5+		21		78	22	56		CH	36.0'
36			P=4.5+									Clay, dark brown, some light gray silt pockets, burrows, occasional silt lamination, dry, hard.
38			P=4.5+									
40			P=4.5+		24		69	21	48		CH	
42			P=4.5+									
44			P=4.5+		23		67	21	46		CH	
46			P=4.5+									
48			P=4.5+									
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B305

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: JERRY MELTON (TRI)

SHEET # 2 OF 2
SURFACE ELEVATION: +191.22' MSL
DATE STARTED: 9/20/05 8:30
DATE COMPLETED: 9/21/05 10:05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs. INSTALLED PIEZOMETER PZ-G1-305 40' NORTH OF B305 ON 9/30/05 USING DRY AUGER.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52			P=4.5+								CH	Clay – Same as above.
54			P=4.5+									
56												
58			P=4.5+									
60												
62												
64			P=4.5+		23	102	74	24	50		CH	– Green glauconite mineralization along planes of fissility (63.5'–64').
66												
68			P=4.5+									– Green granular glauconite mineralization at bottom of sample (68'–70').
70												
72												73.0'
74	XXX											Rock – no recovery. Bent Shelby tube. 74.0'
76			N:50/3"		24		56	24	32		CH	Clay, dark brown with greenish, granular glauconite mineralization, very hard, trace silt.
78												78.0'
80			P=4.5								CH	Silty Clay, dark brown to light gray, dry, very stiff to hard, irregular laminations.
82												
84			P=4.5		21		60	21	39		CH	– Green glauconite mineralization (83'–85').
86												
88			P=4.5+									
90												
92												
94			P=4.5+									
96												
98			P=4.5+									100.0'
100												Boring terminated 100' bgs, elevation = +91.22' MSL.

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B306

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE & JERRY MELTON (TRI)

SHEET # 1 OF 2
SURFACE ELEVATION: +191.81' MSL
DATE STARTED: 9/15/05 15:20
DATE COMPLETED: 9/19/05 16:50

DRILLING METHOD(S): DRY AUGER TO 14' bgs, WET ROTARY BELOW 14' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED. LEFT BOREHOLE OPEN TO 14' bgs OVERNIGHT. NO GROUNDWATER ACCUMULATED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+								CH	Silty Clay, light brown/tan, dry, hard, some laminations, rootlets and woody roots near surface. 2.0'
2			P=4.5+		13		64	16	48		CH	Silty Clay, tan to orange, mottled, dry, hard, trace black organics, trace iron nodules up to 7mm. 4.0'
4			P=1.5									
6			P=1.75	2.10	27	100	81	18	63		CH	Clay, brown, orange, and tan, mottled, moist, plastic, stiff, some silt, some iron nodules, some white carbonate nodules from 4'–6'. 8.0'
8			P=4.5									
10											CH	Silty Clay, gray, tan and orange, dry, very stiff, laminated, some fissility, some light gray silt seams. 11.0'
12			P=4.5+ P=4.5+		26		70	24	46		CH	Silty Clay, dark brown/black, dry, hard, laminated, some light gray silt laminations, some black organics, carbonized leaf imprints in laminations. 14.0'
14			P=4.5+		25		61	23	38	100	CH	
16			P=4.5+								CH	Clayey Silt, light to dark gray/brown, laminated, fissile, hard, some dark organics between laminae. 15.0'
18			P=4.5+								CH	Silty Clay, dark brown/black with thin (<1mm) light gray silt laminations, dry, hard. 18.0'
20			P=4.5+									Clayey Silt, gray with dark gray/brown clay laminations, dry, fissile, hard. 20.0'
22			P=4.5+	4.79	20	102	63	23	40		CH	Silty Clay, dark to medium gray/brown, dry, hard, laminated, some silty seams.
24			P=4.5+									
26			P=4.5+									
28												28.0'
30			P=4.5+		23		64	23	41		CH	Clay, dark brown/gray, dry, hard, indistinct laminations, some light gray silt, some thin light gray silt laminations from 32'–34'.
32			P=4.5+									
34			P=4.5+									
36			P=4.5+									
38			P=4.5+									
40			P=4.5+									
42			P=4.5+									
44			P=4.5+									
46			P=4.5+		24		88	24	64		CH	
48			P=4.5+									
50			P=4.5+									

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B306

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE & JERRY MELTON (TRI)

SHEET # 2 OF 2
SURFACE ELEVATION: +191.81' MSL
DATE STARTED: 9/15/05 15:20
DATE COMPLETED: 9/19/05 16:50

DRILLING METHOD(S): DRY AUGER TO 14' bgs, WET ROTARY BELOW 14' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED. LEFT BOREHOLE OPEN TO 14' bgs OVERNIGHT. NO GROUNDWATER ACCUMULATED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THO. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52			P=4.5+								CH	Clay – Same as above. 52.0'
54												Boring terminated at 52' bgs, elevation = +139.81' MSL.
56												
58												
60												
62												
64												
66												
68												
70												
72												
74												
76												
78												
80												
82												
84												
86												
88												
90												
92												
94												
96												
98												
100												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B307

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE)
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 1
SURFACE ELEVATION: +185.42 MSL
DATE STARTED: 9/20/05
DATE COMPLETED: 9/21/05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								FIELD DESCRIPTION OF STRATA	
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS		
2			P=4.5+		14					84	CL w/Sand	Sandy Clay, tan, dry, hard, very fine grain sand, some silt, roots.	2.0'
4			P=4.5+		15					76	CL w/Sand	Sandy Silty Clay, with very fine sand, tan and light gray, dry, hard, trace organics.	4.0'
6			P=1.5	0.92	23	100	45	15	30	55	Sandy CL	Sandy Clay, light gray and brown, mottled, moist, medium to soft, oxidized, some rootlets.	6.0'
8			P=3.0								CH	Silty Clay, gray and light brown, slightly moist, medium to stiff, orange oxidized silt laminations, trace organics.	8.0'
10			P=4.5	1.58	28	93	53	21	32		CH	Clay, light tan/gray, dry, very stiff, light gray to white silt laminations at 9.5', fissile.	10.0'
12			P=4.5+		25	98	56	23	33	99	CH	Clayey Silt, tan to brown, hard, very fissile, laminated, silt layer with 1/8" silt nodules near 10'.	12.0'
14			P=4.5+								CH	Silty Clay, dark gray, dry, fissile, hard, alternating silt and clay seams.	14.0'
16			P=3.0		22		52	18	34		CH	Silty Clay, very silty, dark gray, stiff to very stiff, slightly moist to dry, laminated, fissile, alternating silt and clay seams, ripple laminations from 16'–17'.	18.0'
18			P=4.5										
20			P=4.5									Clay, dark gray, stiff to hard, slightly moist, fine light gray silt laminations. Dry and fissile below 22'.	
22			P=3.5	3.85	23	98	57	24	33		CH		
24			P=4.5+										
26			P=4.5+										
28			P=4.5+										
30			P=4.5+		20	101	61	22	39		CH		
32			P=4.5+										
34			P=4.5+									– Very fissile and very dry (32'–34').	
36			P=4.5+										
38			P=4.5+										
40			P=4.5+										
42			P=4.5+										
44			P=4.5+										
46			P=4.5+										46.0'
48												Boring terminated 46' bgs, elevation = +139.42' MSL.	
50													

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B308

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE) (0'–20'), SARAH MOORE (JEI) (20'–100')
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 2
SURFACE ELEVATION: +239.32' MSL
DATE STARTED: 9/21/05 15:35
DATE COMPLETED: 9/23/05 9:25

DRILLING METHOD(S): DRY AUGER TO 6' bgs, WET ROTARY BELOW 6' bgs. INSTALLED PIEZOMETER PZ-C-308 39' SOUTH OF B308 ON 10/4/05 USING DRY AUGER.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5									Silty Sand, tan to orange, dry, stiff to hard, some mottling, moderately clayey, fine roots from 0'–1'.
2			P=4.5+									
4					10	105	37	14	23	36	SM	
6			P=4.5+									
8			NA		9					30	SM	8.0'
10			NA									Sandy Silt, tan and gray, some orange mottling, dry, moderately clayey.
12			NA		25					66	Sandy ML	12.0'
14			N=34								CH	Silty Clay, dark gray with orange and tan, laminated, dry, hard, trace fine sand. 14.0'
16			P=4.5									Silty Clay, dark gray and brown, dry, very stiff to hard, laminated, fissile.
18			P=4.5+		26	94	53	20	33		CH	18.0'
20			P=4.5+									Silty Clay, dark gray, orange, and tan, dry, hard, laminated, fissile, alternating clay and silt laminations.
22			P=4.5+								CH	22.0'
24			P=4.5+		24		78	24	54		CH	Clay, dark brown, dry, hard, laminated, not fissile, some silt. 24.0'
26			P=4.5									Silty Clay, dark brown/gray to light gray, dry, very stiff, fissile along silty laminations, trace very fine sand. 26.0'
28			P=4.5		24		51	23	28	97	CH	Silt with clay, medium to dark gray, slightly moist, very stiff, laminated, fissile, some dark gray laminations, trace very fine sand. 28.0'
30			P=3.5									
32			P=4.5+		22		50	22	28		CH/CL	Silty Clay, dark gray/brown to light gray, dry, very stiff to hard, laminated, fissile, light gray silty laminations.
34			P=4.0									
36			P=4.5									36.0'
38			P=4.0		25		46	26	20		CL	Clayey Silt, gray with dark brown clay intervals, dry, laminated, fissile, very stiff. 38.0'
40			P=4.5									Silt, gray, slightly moist from 38'–40', very stiff to hard, laminated, occasional clay/silty clay lamination, trace very fine sand from 42'–44'.
42			P=3.5	4.78	30	96	40	26	14		ML	
44			P=4.5									44.0'
46			P=4.5+		27		46	26	22		CL	Clayey Silt, gray, dry, hard, fissile, silty laminations with brown silty clay laminations. 46.0'
48			P=4.5+									Silt with clay, gray, dry, hard, laminated, some silty clay laminations and very thin brown clay laminations.
50			NA		29		58	24	34		CH	50.0'

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B308

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE) (0'–20'), SARAH MOORE (JEI) (20'–100')
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 2 OF 2
SURFACE ELEVATION: +239.32' MSL
DATE STARTED: 9/21/05 15:35
DATE COMPLETED: 9/23/05 9:25

DRILLING METHOD(S): DRY AUGER TO 6' bgs, WET ROTARY BELOW 6' bgs. INSTALLED PIEZOMETER PZ-C-308 39' SOUTH OF B308 ON 10/4/05 USING DRY AUGER.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52			P=4.5+								CH	Clayey silt, dark brown to gray, dry, hard, fissile, some brown clay lamiations.
			P=4.5+									
54			P=4.5+									
56			P=4.5+									
58			P=4.5+									
60			P=4.5+									60.0'
62			P=4.5+		24		55	23	32		CH	Silty Clay, dark brown to gray, dry, hard, some laminations, somewhat fissile.
			P=4.5+									
64			P=4.5+									
66			P=4.5+									
68			P=4.5+									
70			P=4.5+									
72			P=4.5+		24		67	22	45		CH	
			P=4.5+									
74												74.0'
76			P=4.5+									Silty Clay, dark brown/gray, some light gray silt, dry, hard, more clay than above.
			P=4.5+									
78			P=4.5+									
80			P=4.5+									
82			P=4.5+		21		68	23	45		CH	
			P=4.5+									
84			P=4.5+									
86			P=4.5+									
88			P=4.5+									88.0'
90			P=4.5+								CH	Clay, dark brown, dry, hard, laminated, some light gray silt pockets.
			P=4.5+									
92			P=4.5+									
94			P=4.5+									
96			P=4.5+									
98			P=4.5+									100.0'
100			P=4.5+									Boring terminated 100' bgs, elevation = +139.32' MSL.

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B309

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE (TRI)

SHEET # 1 OF 1
SURFACE ELEVATION: +162.62' MSL
DATE STARTED: 9/14/05 14:10
DATE COMPLETED: 9/14/05 16:30

DRILLING METHOD(S): DRY AUGER TO 3' bgs, WET ROTARY BELOW 3 bgs. INSTALLED PIEZOMETER PZ-G2-309 ABOUT 15' SOUTH-SOUTHWEST OF B309 USING WET ROTARY ON 10/4/05.

GROUNDWATER INFORMATION: GROUNDWATER ENCOUNTERED IN CLAYEY SAND AT 16.75' bgs.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
2			P=4.5+									Silty Clay, tan, gray, orange, mottled, dry, very hard, some iron nodules, black organics.
4			P=4.5+	10.49	10	116	45	14	31		CL	
6			P=4.5+									6.0'
8			P=2.5									Clay, gray, brown, and orange, mottled, moist, plastic, firm, slightly to moderately silty, some black organics.
10			P=2.0		24	102	51	18	33		CH	– Kh = 3.7E-09 (8'-10').
12			P=2.0									
14			P=2.25									
16 ▽			P=2.75									16.75'
18			P=1.0	1.75	22	104	34	14	20		Sandy CL	Clayey Sand, gray to orange, wet, soft to stiff. 18.75'
20			P=0.5		25	106	30	14	16	50	Sandy CL	Clayey Sand, fine grain, orange/brown, wet, soft, some silt and clay. – Kh = 1.2E-07 (18'-20'). 20.1'
22			P=4.5+									Clay, light gray to orange from 20.1'-21' with dark gray/brown below, slightly moist to dry, hard, some light gray silt laminations, iron stone lamination at 22.2'
24			P=4.5+		27		87	26	61		CH	24.0'
26			P=4.5+									Clay, dark gray, dry, hard, not fissile, moderately silty, some light gray silt laminations. 26.0'
28			P=4.5+									Silty Clay, gray/brown, fine laminations (<1mm), some light gray silt laminations, dry, hard.
30			P=4.5+									30.0'
32												Boring terminated 30' bgs, elevation = +132.62' MSL.
34												
36												
38												
40												
42												
44												
46												
48												
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B310

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE (TRI)

SHEET # 1 OF 1
SURFACE ELEVATION: +169.00' MSL
DATE STARTED: 9/15/05 8:05
DATE COMPLETED: 9/15/05 15:05

DRILLING METHOD(S): DRY AUGER TO 21' bgs, WET ROTARY BELOW 21 bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED. CHECKED BOREHOLE AT 21'. NO WATER OR MUD ON TAPE OR DRILL PIPE.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
2			P=4.5+								CH	Silty Clay, brown, dry, hard, rootlets at surface, woody root (8mm diameter) at 0.25'. 2.0'
4			P=3.5									Clay, gray, tan and orange, mottled, moist, very plastic, cohesive, stiff, slightly silty, trace black organics, trace white carbonate nodules. – Kv = 2.4E-08 (4'-6'). 6.0'
6			P=3.25		28	95	59	23	36		CH	
8			P=1.25		21					56	Sandy CL	Sandy Clay, orange to tan, mottled, moist, plastic, soft, some clayey sand, fine grain sand, trace black organics. 8.0'
10			P=1.75	1.92	30	93	56	22	34	94	CH	Silty Clay, gray, orange, and tan, mottled, moist, medium, plastic, some laminations, some 1-2mm iron nodules, trace sand clay appears to increase with depth. 10.0'
12			P=1.0 P=2.25		27	93	50	19	31	86	CH	
14			P=3.5 P=4.5+		34	79	67	25	42		CH	Silty Sandy Clay, gray, tan, and orange, mottled, moist, soft to medium, plastic, some fine sand, trace black organics. – Kv = 2.9E-08 (10'-12'). 13.0'
16			P=4.25									Clay, medium to dark brown/black, some orange, dry, very stiff, some orange silt laminations at 1"-2" intervals. – Kh = 1.2E-07 (12'-14') 18.0'
18												
20			P=4.5+ P=4.5+	6.51	25	100	70	24	46		CH	Clay, dark brown/black, dry, hard, some thin (≤1mm) light gray silt laminations. 22.0'
22												
24			P=4.5+									Silty Clay, dark brown, some gray silt, dry, hard, some laminations, some mottling, trace green glauconite mineralization in burrow 5mm wide by 10mm long between 8'-9'.
26			P=4.5+									
28			P=4.5+		22	104	56	21	35		CH	
30			P=4.5+									
32			P=4.5+									32.0'
34												Boring terminated 32' bgs, elevation = +137.0' MSL.
36												
38												
40												
42												
44												
46												
48												
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B311

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE)
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 1
SURFACE ELEVATION: +183.80' MSL
DATE STARTED: 9/20/05
DATE COMPLETED: 9/20/05

DRILLING METHOD(S): DRY AUGER TO 20' bgs, WET ROTARY BELOW 20' bgs.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								FIELD DESCRIPTION OF STRATA
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	
			P=4.5+									Silty Clay, tan and light gray, orange mottling, dry, very stiff to hard, roots.
2			P=4.0		19	94	51	25	26		CH	4.0'
4			P=4.5+								CH	Clayey Silt, light tan to dark brown, dry, hard, dark brown silt seams 2"–3", orange oxidized seams, some fissility. 6.0'
6			P=4.5+		23	98	50	24	26		CH	Silt with some clay seams, tan/light gray, dry, hard, fissile, some orange silt laminations. Kh = 5.8E-07. 8.0'
8			P=4.5+								CH	Silty Clay, very silty, brown and tan to light gray, dry, hard, laminated, some fissility. 10.0'
10			P=3.5	3.44	23	92	48	26	22	94	CL	Silt, tan/gray, dry, very stiff, laminated, some clay, trace sand. 11.0'
12			P=3.0		22	95	50	23	27		CH	Silty Clay, gray and gray/brown, light gray alternating silt laminations, dry, stiff, some vertical ironstone seams and white carbonate. 14.0'
14			P=4.5+		26	91	52	28	24		CH	Clayey Silt, light gray/tan to dark brown, dry, hard, laminated, some fissility, rare orange silt lamination. 16.0'
16			P=4.5+									Silty Clay, dark gray, dry, stiff to hard, light gray to white fine silt laminations, fissile. 20.0'
18			P=3.5	3.95	24	94	65	24	41		CH	Silty Clay, dark gray, dry, hard, alternating 1/32"–1/8" silt and very fine sand seams, fissile, occasional yellow/brown silt lamination. 22.0'
20			P=4.5+								CH	Silty Clay, dark gray, dry, hard, very fissile, alternating dark gray clay and gray/white silt laminations. Siltier than above with some 2" light gray silt layers (26'–28'). 28.0'
22			P=4.5+									Clay, dark gray, dry, hard, some silt laminations, trace orange mottling at 29.5'. 30.0'
24			P=4.5+								CH	Silty Clay, dark gray, dry, hard, alternating clay and silt laminations, very silty from 30'–30.4', fissile. 34.0'
26			P=4.5+		23		65	25	40		CH	Clay, dark gray, dry, hard, light gray to white silt laminations, fissile. 36.0'
28			P=4.5+		23		52	22	30		CH	Silty Clay, dark gray, dry, hard, very fissile, alternating silt and clay laminations. 38.0'
30			P=4.5+									Clay, dark gray, dry, hard, light gray fine silt laminations, fissile, jointed from 38'–40'.
32			P=4.5+									
34			P=4.5+									
36			P=4.5+									
38			P=4.5+									
40			P=4.5+		22		69	24	45		CH	
42			P=4.5+									
44			P=4.5+									
46			P=4.5+									48.0'
48												Boring terminated 48' bgs, elevation = +135.80' MSL.
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B312

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI) (0'–48'), MIKE MACHEN (STE) (48'–68')
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 1 OF 2
SURFACE ELEVATION: +204.47' MSL
DATE STARTED: 9/23/05 10:00
DATE COMPLETED: 9/26/05

DRILLING METHOD(S): DRY AUGER TO 10' bgs, WET ROTARY BELOW 10' bgs. INSTALLED PIEZOMETER PZ-G1-312 40' SOUTH OF B312 ON 9/30/05 USING WET ROTARY.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+								ML	Silt, lt. tan to white w/orange, very dry, loose to dense. 0.25'
2			P=4.5+								CH	Clay, orange, dry, hard, cohesive, some rootlets, some white carbonate. 4.0'
4			P=4.5+		18		52	24	28		CH	Clayey Silt, lt. tan to orange, dry, hard, laminated, fissile. 6.0'
6			P=4.5+									Silt, light tan with some brown, orange, dry, hard to very stiff, low/no plasticity, some thin orange clay laminations, diagonal seam of white carbonate at about 6.5', trace black organics.
8			P=4.5									
10			P=3.75		19		43	28	15		ML	11.5'
12	XXX	C	NA									Rock – light gray cuttings. Drilled with roller bit.
14	XXX											14.6'
16			P=4.25		21		45	25	20		CL	Silt with clay, light tan to gray with orange, dry, very stiff, laminated, fissile, some orange clay laminations, some burrows.
			P=4.5									18.0'
18			P=4.5+		28		61	25	36		CH	Clayey Silt, light tan/gray to orange and brown, changes to light to dark gray below 20', laminated, some ripple laminations from 18'–20', dry, fissile, hard, alternating silt and clayey laminations.
20			P=4.5+									
22			P=4.5+									
24			P=4.5+									
26			P=4.5+		25		60	26	34		CH	
28			P=4.5+									
30			P=4.5+									30.0'
			P=4.5+		25		65	26	39		CH	Clay, dark brown with some light gray silt, dry, hard, laminated, some organics (plant material) between laminations. 32.0'
32			P=4.5+									Silty Clay, dark gray/brown with light gray, dry, hard, laminated, very fissile, some siltier seams, trace organics, carbonized leaf impressions at 37'.
34			P=4.5+									
36			P=4.5+									
38			P=4.5+									
40			P=4.5+									
42			P=4.5+		25		70	24	46		CH	
44			P=4.5+									
46			P=4.5+									
48			P=4.5+									
50			P=4.5+									

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B312

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI) (0'–48'), MIKE MACHEN (STE) (48'–68')
DRILLER: BILLY WILLOUGHBY (IRONHORSE)

SHEET # 2 OF 2
SURFACE ELEVATION: +204.47' MSL
DATE STARTED: 9/23/05 10:00
DATE COMPLETED: 9/26/05

DRILLING METHOD(S): DRY AUGER TO 10' bgs, WET ROTARY BELOW 10' bgs. INSTALLED PIEZOMETER PZ-G1-312 40' SOUTH OF B312 ON 9/30/05 USING WET ROTARY.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/5/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
			P=4.5+									Silty Clay – Same as above. 52.0'
52			P=4.5+									Clay, dark gray, hard, some fissility, some light gray hairline silt laminations.
54			P=4.5+									
56			P=4.5+									
58			P=4.5+									
60			P=4.5+									
62			P=4.5+									
64			P=4.5+									
66			P=4.5+									
68			P=4.5+									68.0'
70												Boring terminated at 68' bgs, elevation = +136.47' MSL.
72												
74												
76												
78												
80												
82												
84												
86												
88												
90												
92												
94												
96												
98												
100												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B217A

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: LARRY TEEL (IRONHORSE)

SHEET # 1 OF 2
SURFACE ELEVATION: +204.1' MSL
DATE STARTED: 9/30/05 8:45
DATE COMPLETED: 9/30/05 10:25

DRILLING METHOD(S): WET ROTARY.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								FIELD DESCRIPTION OF STRATA
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	Drilled in Cell VII levee/perimeter road approximately 10' north of location of B217 and plugged and abandoned piezometer LSPZ106B. Drilled to 60' bgs with no sampling. See log for B217 dated 6/19/02 for descriptions of shallower sediments.
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												
30												
32												
34												
36												
38												
40												
42												
44												
46												
48												
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B217A

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: LARRY TEEL (IRONHORSE)

SHEET # 2 OF 2
SURFACE ELEVATION: +204.1' MSL
DATE STARTED: 9/30/05 8:45
DATE COMPLETED: 9/30/05 10:25

DRILLING METHOD(S): WET ROTARY.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT–BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
52, 54, 56, 58												Drilled to 60' bgs with no sampling. See log for B217 dated 6/19/02 for descriptions of shallower sediments. 60.0'
60, 62, 64, 66			P=4.5+ P=4.5+ NA		22		63	24	39		CH	Silty Clay, dark gray/brown, dry, hard, fissile, silt in light gray hairline laminations and pockets. 66.0'
68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100												Boring terminated at 66' bgs, elevation = +138.1' MSL.

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED

LOG OF SOIL BORING – B218A

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: MIKE MACHEN (STE)
DRILLER: LARRY TEEL (IRONHORSE)

SHEET # 1 OF 1
SURFACE ELEVATION: +185.5' MSL
DATE STARTED: 9/27/05 9:30
DATE COMPLETED: 9/27/05 10:05

DRILLING METHOD(S): WET ROTARY.

GROUNDWATER INFORMATION: NO FREE GROUNDWATER ENCOUNTERED.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD. BLOWS/FT P: HAND PEN. TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38												Drilled adjacent to location of B218 and MW-G2-13, 10' east of MW-G2-13. Drilled to 40' bgs with no sampling. See logs for B218 dated 6/13-14/02 and MW-G2-13 dated 3/1/05 for descriptions of shallower sediments. 40.0'
40			P=4.5+									Clay, dark gray, dry, hard, light gray hairline silt laminations, slight dark greenish tint of glauconite mineralization from 42'-46'.
42			P=4.5+									
44			P=4.5+									
46			P=4.5+	5.21	22	100	68	23	45		CH	
48			P=4.5+									48.0'
50												Boring terminated at 48' bgs, elevation = +137.5' MSL.

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

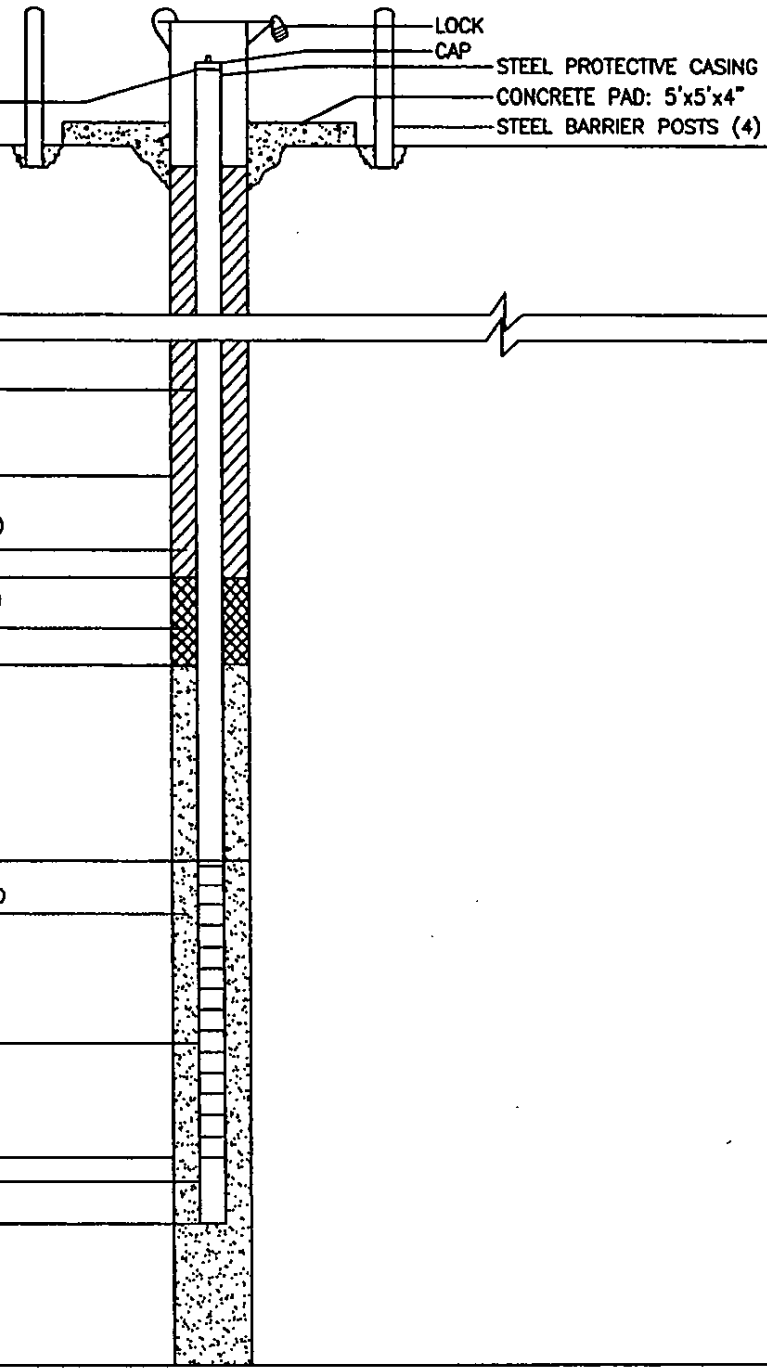
SAMPLE METHOD

☒ SPLIT SPOON ■ SHELBY TUBE [C] CUTTINGS ▽ DEPTH AT WHICH 1st WATER ENCOUNTERED

Appendix S-2b

2005 Monitoring & Piezometer Well Construction Diagrams

Depth (ft)	Elevation (Ft. MSL)	
	243.11	TOP OF CASING
00	239.7	Ground Surface
[2.0]	237.7	2" Diameter Schedule 40 PVC Riser (flush-threaded joints); 9" Diameter Borehole; Cement/Bentonite[1] Grout
[4.0]	235.7	Bentonite Pellet[2] Seal
[6.0]	233.7	
[10.67]	229.03	Sand Pack[3]; 2" Diameter Schedule 40 PVC Slotted Wellscreen (Slot Size 0.01")
[11.14]	228.56	2" Diameter PVC Sump
[13.0]	226.7	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 2.5 cubic feet

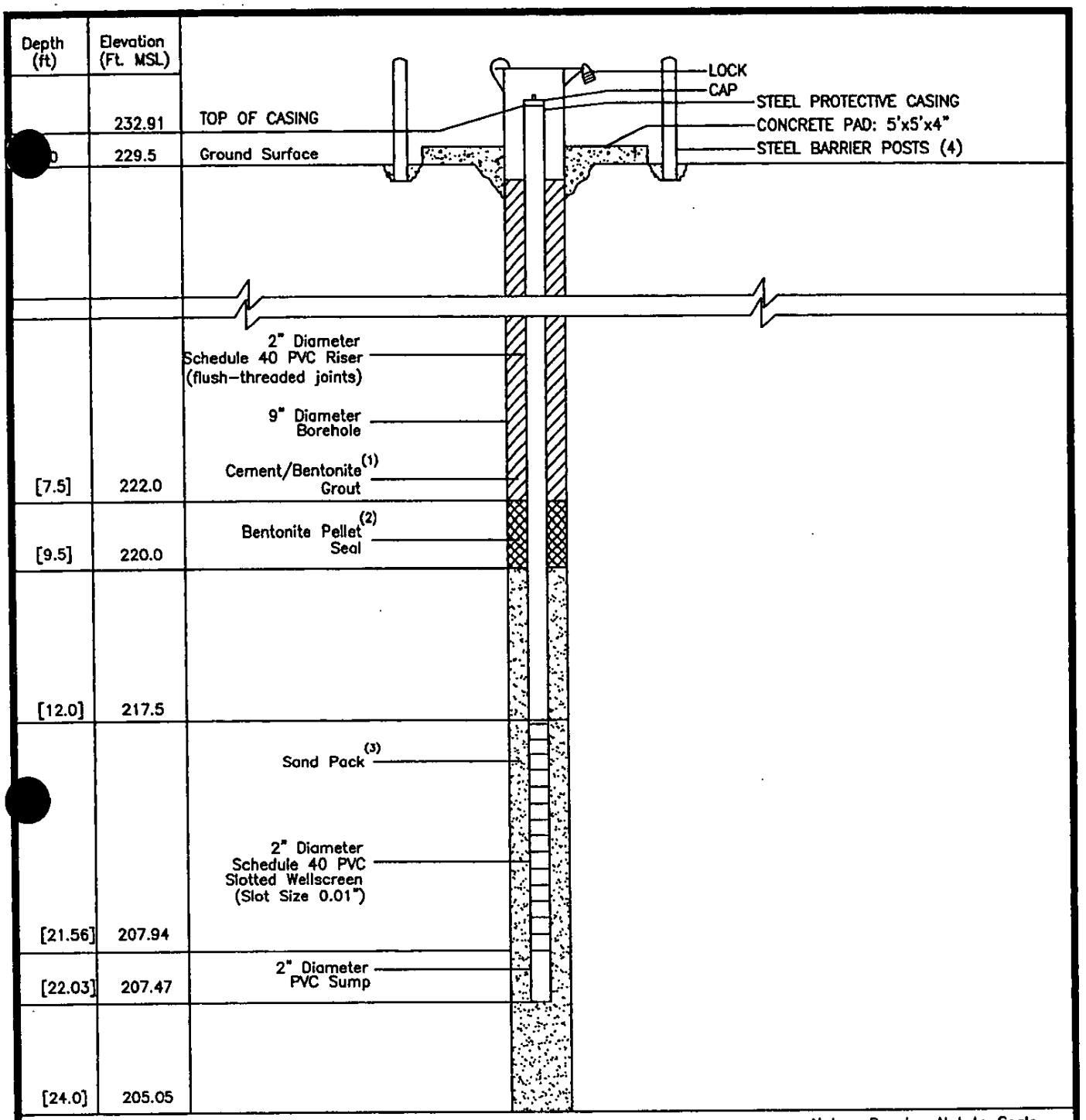
Well Developed by S. Moore (JEI) Date: 3/1/05 & 3/9/05 Method: HPDE bailer Gallons removed: 10.5

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-C-5 | DATE: 2/25/05



Note: Drawing Not to Scale

(1) Grout Placement: Pump Down Method
Grout Mixture: Cement/Bentonite

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: 20 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 5 cubic feet

Well Developed by J. Jackson (JEI) Date: 3/9/05 Method: PVC bailer Gallons removed: 7

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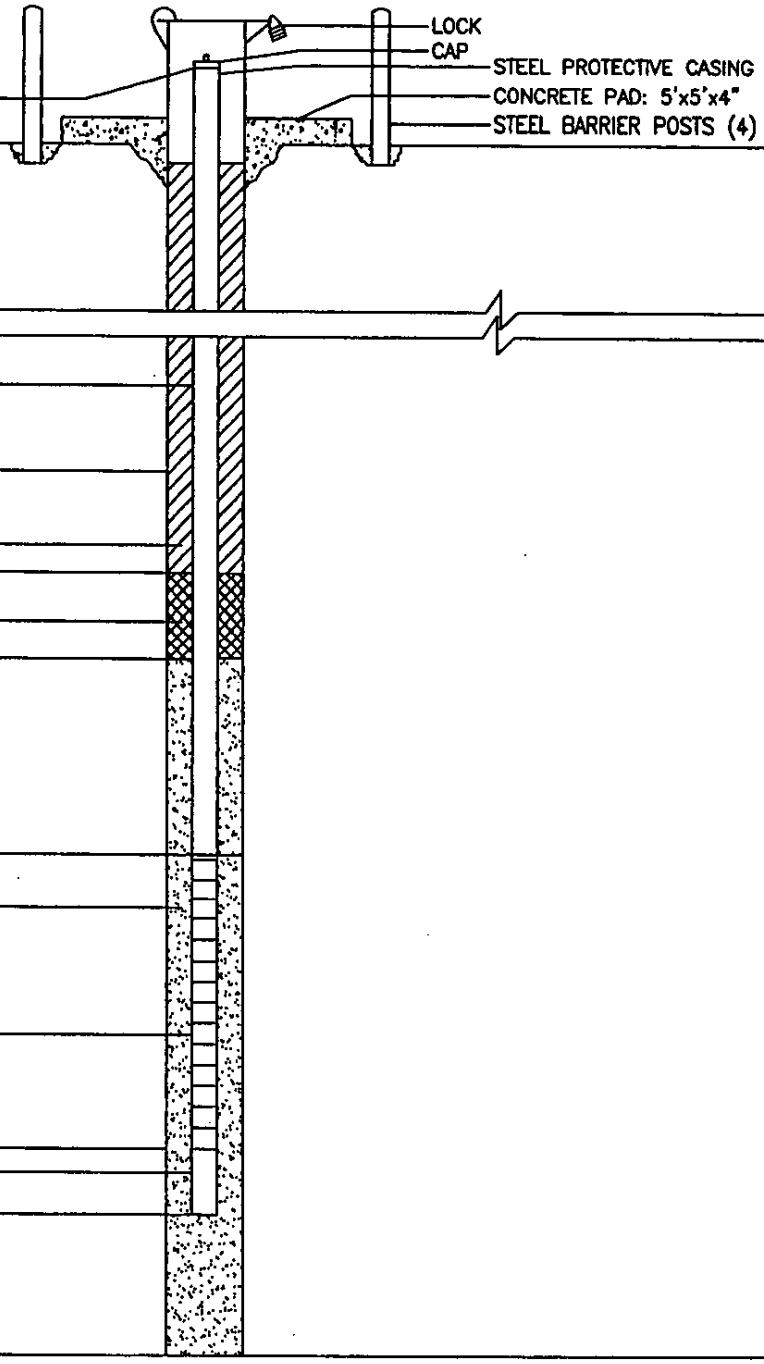
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-C-6 | DATE: 3/2/05

Depth (ft)	Elevation (Ft. MSL)	
	267.37	TOP OF CASING
00	264.5	Ground Surface
[66.0]	198.5	Cement/Bentonite[1] Grout
[68.0]	196.5	Bentonite Pellet[2] Seal
[70.0]	194.5	
[79.55]	184.95	
[80.05]	184.45	
[82.0]	182.5	



Note: Drawing Not to Scale

(1) Grout Placement: Pump Down Method
Grout Mixture: Cement/Bentonite

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 5 cubic feet

Well Developed by J. Jackson (JEI) Date: 3/9/05 Method: PVC bailer Gallons removed: 17

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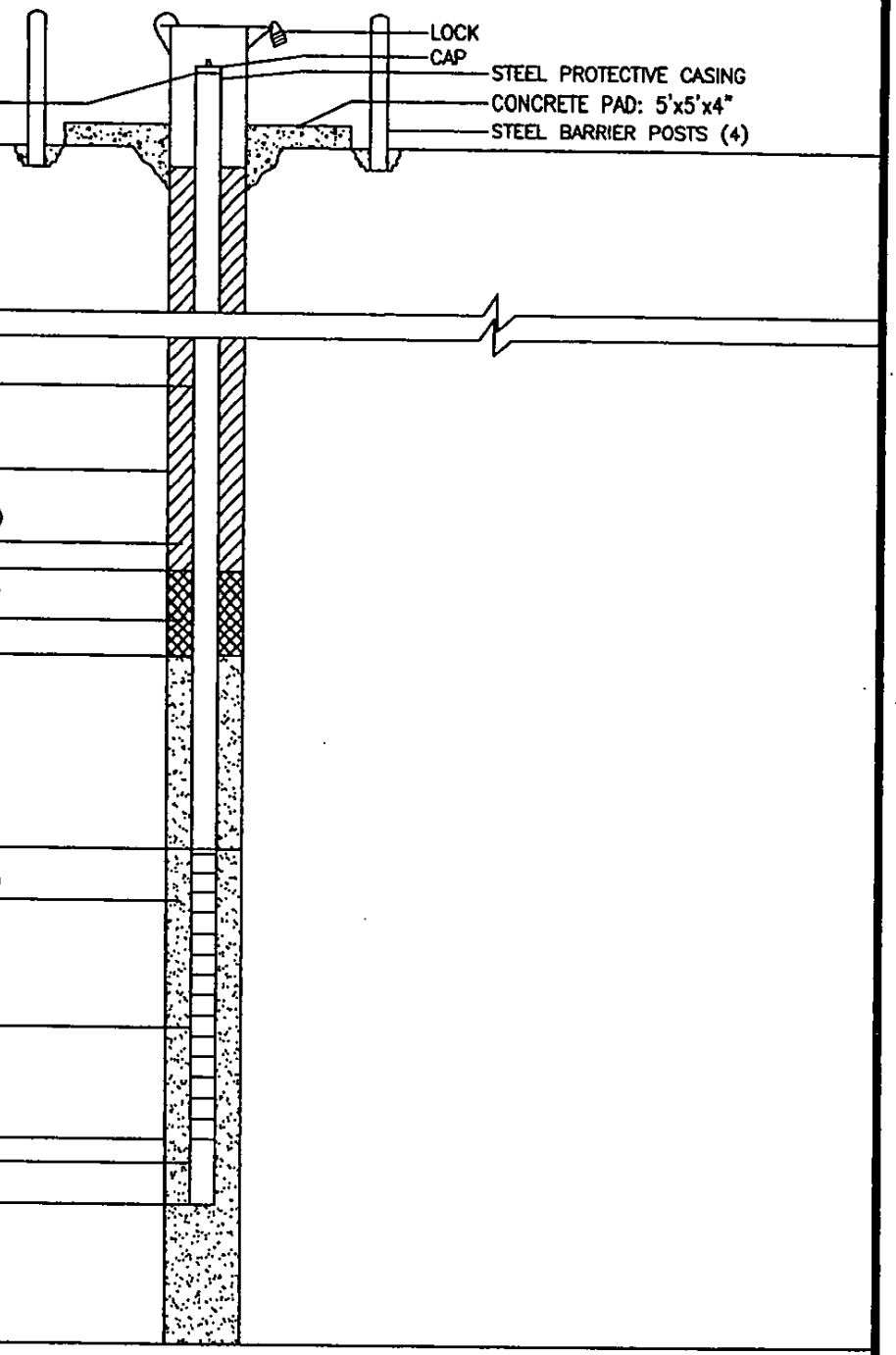
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G1-7 | DATE: 3/3/05

Depth (ft)	Elevation (Ft. MSL)	
	215.81	TOP OF CASING
00	212.1	Ground Surface
[2.4]	209.7	2" Diameter Schedule 40 PVC Riser (flush-threaded joints); 9" Diameter Borehole; Cement/Bentonite[1] Grout
[4.0]	208.1	Bentonite Pellet[2] Seal
[5.2]	206.9	
[14.75]	197.35	Sand Pack[3]; 2" Diameter Schedule 40 PVC Slotted Wellscreen (Slot Size 0.01")
[15.20]	196.90	2" Diameter PVC Sump
[18.0]	194.1	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 5 cubic feet

Well Developed by J. Jackson (JEI) Date: 3/9/05 Method: PVC bailer Gallons removed: 3

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(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
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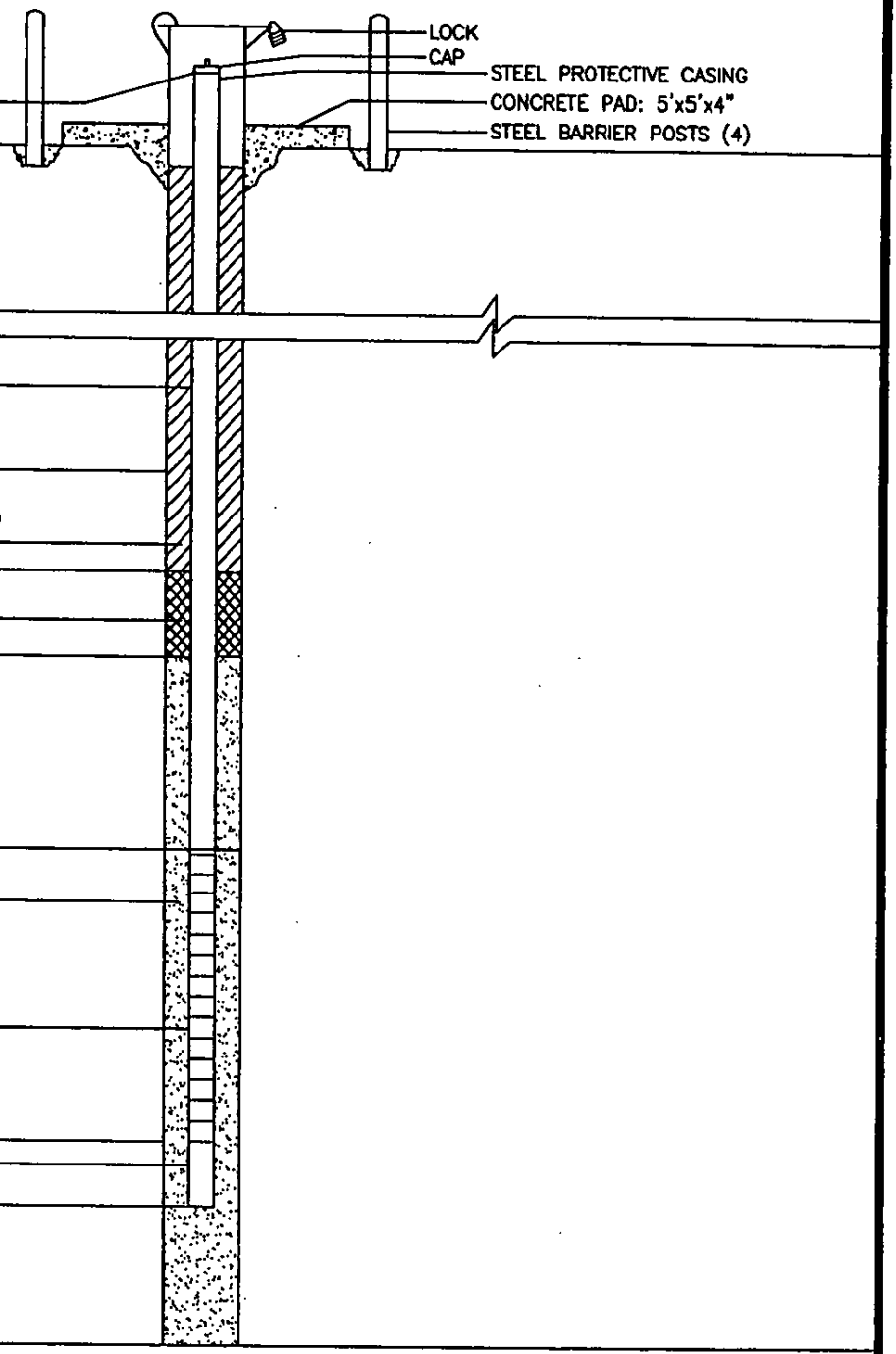
MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G1-8 | DATE: 3/1/05

Depth (ft)	Elevation (Ft. MSL)	
	196.94	TOP OF CASING
00	193.3	Ground Surface
[0.5]	192.8	Cement/Bentonite[1] Grout
[3.0]	190.3	Bentonite Pellet[2] Seal
[5.0]	188.3	
[9.66]	183.64	
[10.04]	183.26	2" Diameter PVC Sump
[12.0]	181.3	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 2.75 cubic feet

Well Developed by S. Moore (JEI) Date: 3/1/05 & 3/9/05 Method: HPDE bailer Gallons removed: 11

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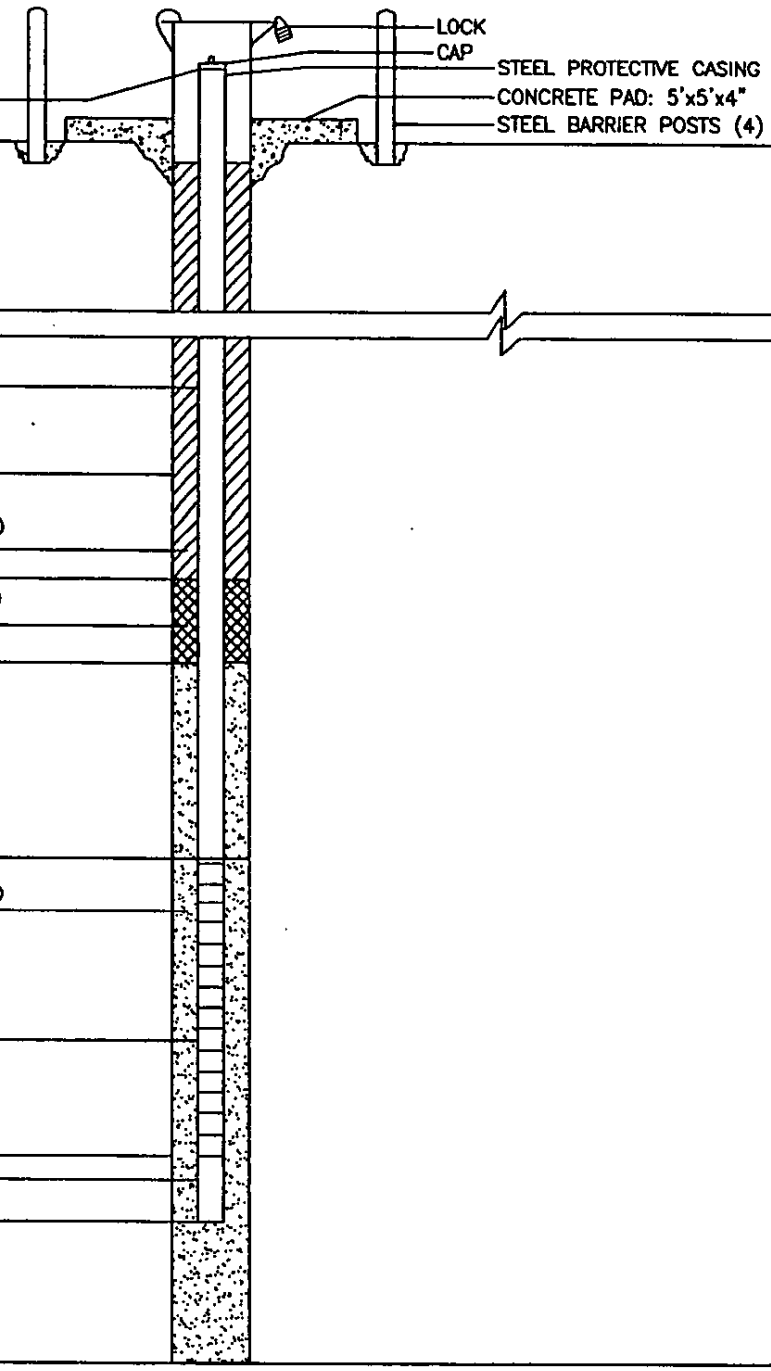
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G1-9 | DATE: 2/25/05

Depth (ft)	Elevation (Ft. MSL)	
	188.19	TOP OF CASING
.00	185.1	Ground Surface
[1.75]	183.35	2" Diameter Schedule 40 PVC Riser (flush-threaded joints) 9" Diameter Borehole Cement/Bentonite[1] Grout
[2.5]	182.6	Bentonite Pellet[2] Seal
[3.0]	182.1	
[7.77]	177.33	Sand Pack[3] 2" Diameter Schedule 40 PVC Slotted Wellscreen (Slot Size 0.01")
[8.14]	176.96	2" Diameter PVC Sump
[10.0]	175.1	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 3 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 2.3 cubic feet

Well Developed by S. Moore (JEI) Date: 3/9/05 Method: HPDE bailer Gallons removed: 11.5

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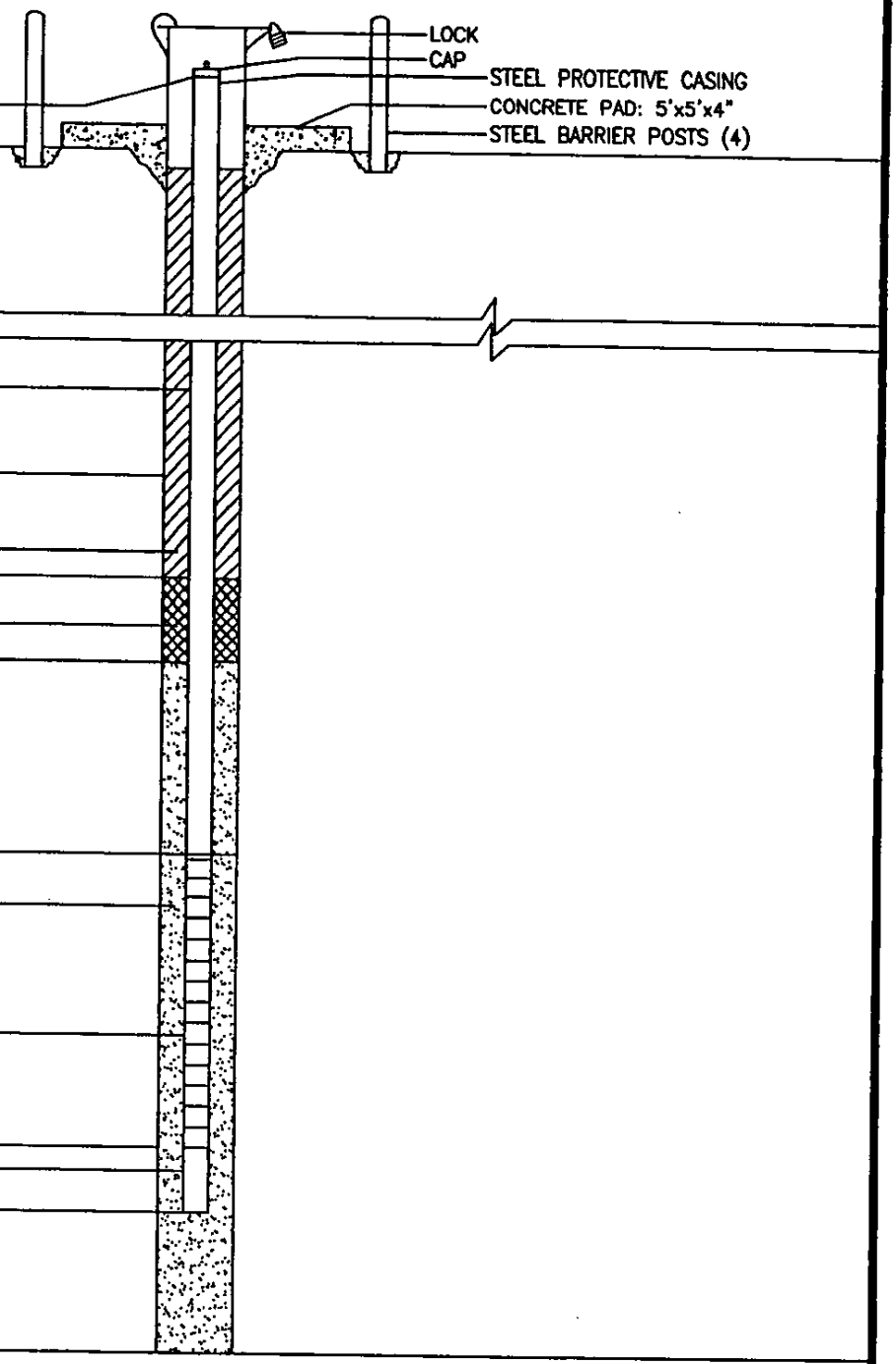
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G1-10 | DATE: 3/4/05

Depth (ft)	Elevation (Ft. MSL)	
	232.20	TOP OF CASING
0	229.9	Ground Surface
[44.0]	185.9	2" Diameter Schedule 40 PVC Riser (flush-threaded joints); 9" Diameter Borehole; Cement/Bentonite[1] Grout
[46.0]	183.9	Bentonite Pellet[2] Seal
[48.0]	181.9	
[57.56]	172.34	Sand Pack[3]; 2" Diameter Schedule 40 PVC Slotted Wellscreen (Slot Size 0.01")
[58.01]	171.89	2" Diameter PVC Sump
[60.0]	169.9	



Note: Drawing Not to Scale

(1) Grout Placement: Pump Down Method
Grout Mixture: Cement/Bentonite

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: 15.5 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 5 cubic feet

Well Developed by J. Jackson (JEI) Date: 3/9/05 Method: PVC bailer Gallons removed: 15

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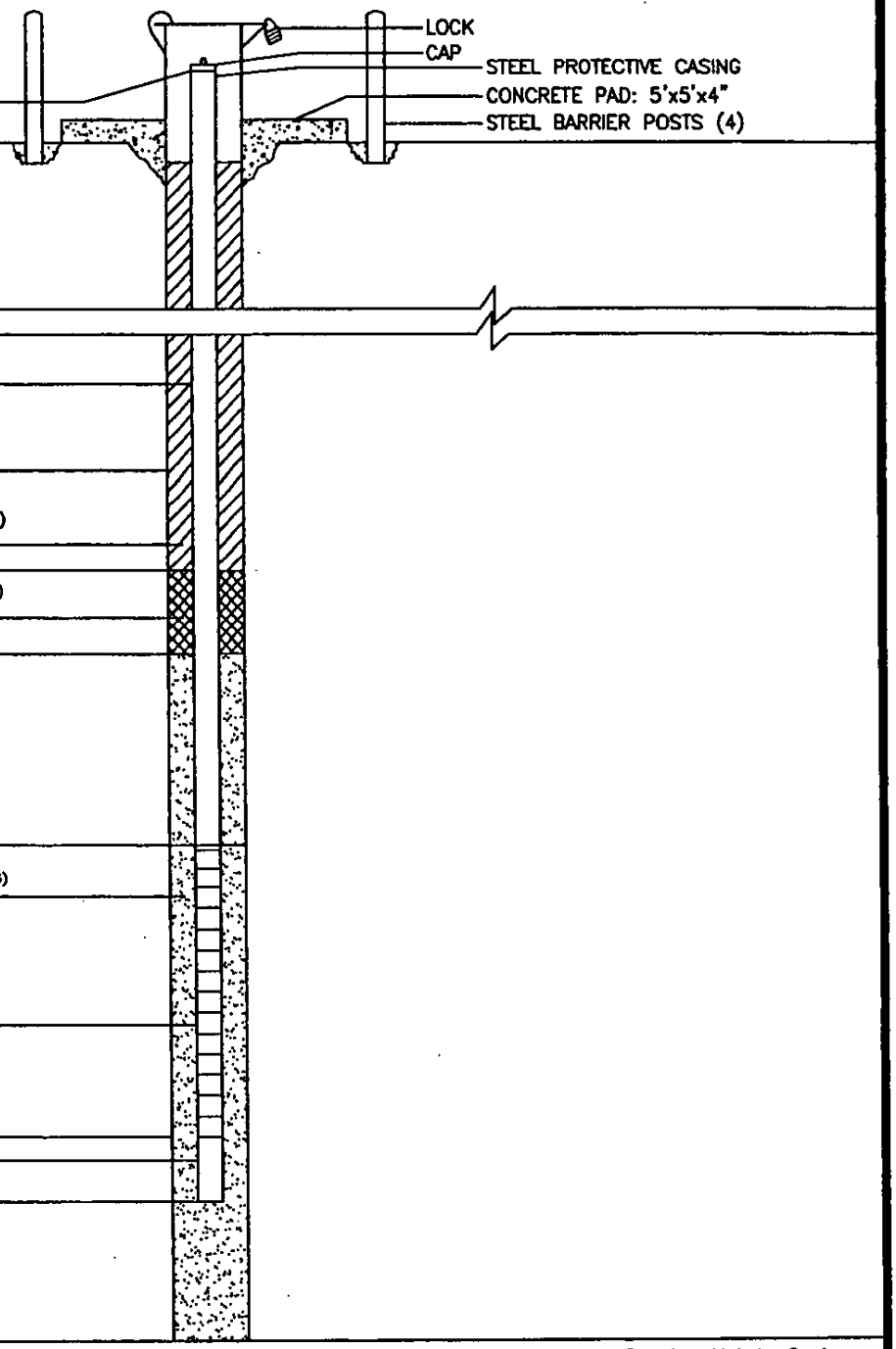
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G2-12 | DATE: 3/2/05

Depth (ft)	Elevation (Ft. MSL)	
	189.23	TOP OF CASING
00	185.7	Ground Surface
[6.0]	179.7	2" Diameter Schedule 40 PVC Riser (flush-threaded joints); 9" Diameter Borehole; Cement/Bentonite[1] Grout
[8.0]	177.7	Bentonite Pellet[2] Seal
[10.0]	175.7	
[14.65]	171.05	Sand Pack[3]; 2" Diameter Schedule 40 PVC Slotted Wellscreen (Slot Size 0.01")
[15.04]	170.66	2" Diameter PVC Sump
[22.0]	163.7	



Note: Drawing Not to Scale

(1) Grout Placement: Pump Down Method
Grout Mixture: Cement/Bentonite

(2) Bentonite Pellets: Size: 3/8 inch Volume: 5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 5 cubic feet

Well Developed by J. Jackson (JEI) Date: 3/9/05 Method: PVC bailer Gallons removed: 31

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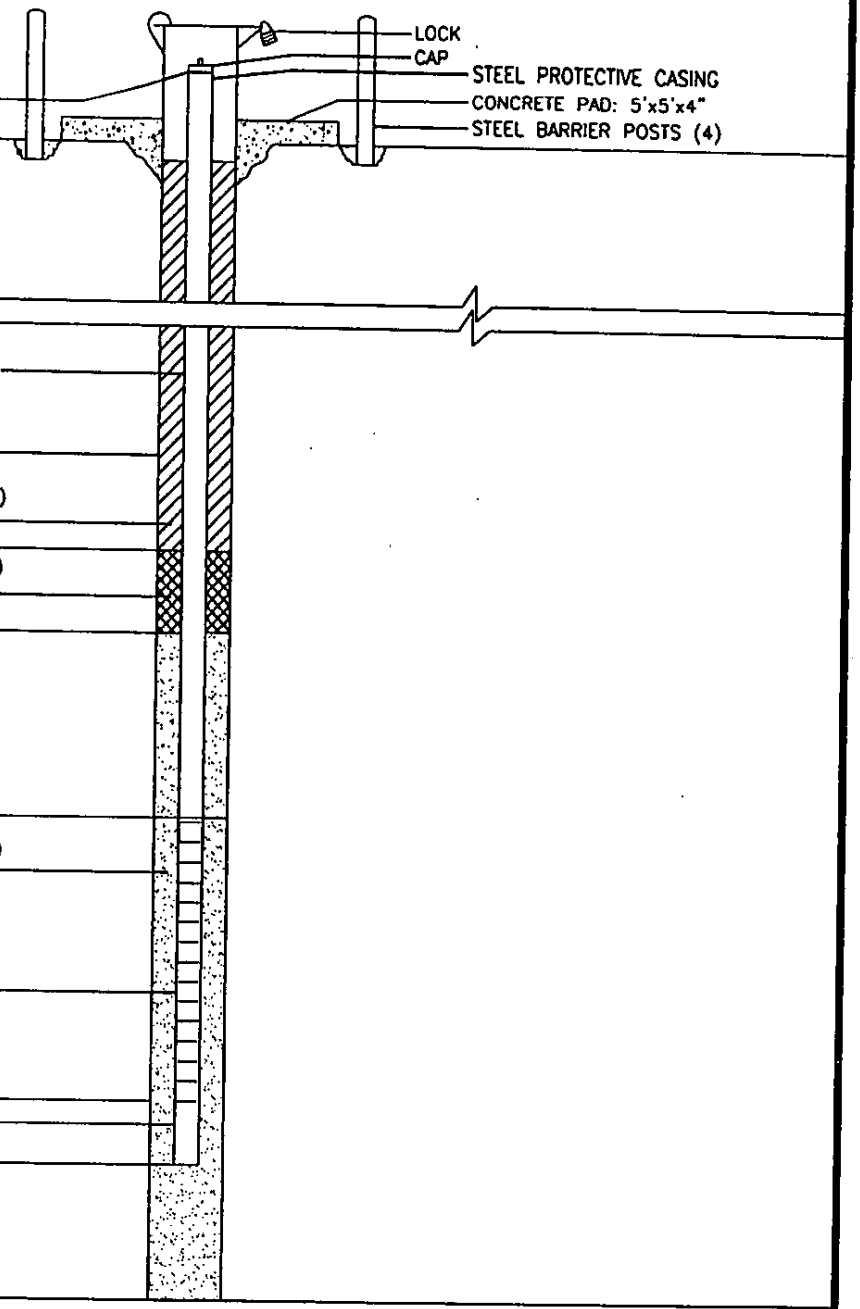
MONITOR WELL
CONSTRUCTION DIAGRAM

WELL # MW-G2-13 | DATE: 3/1/05

Depth (ft)	Elevation (Ft. MSL)	
+3.02	+189.74	TOP OF CASING
0.00	+186.72	Ground Surface
-1.1	+185.62	Grout (1)
-2.7	+184.02	Bentonite Pellet Seal (2)
-5.0	+181.72	
-14.45	+172.27	Sand Pack (3)
-15.15	+171.57	2" Diameter PVC Sump
-15.15	+171.57	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 2.5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 3 cubic feet

Well Developed by S. Moore (JEI) Date: 10/03/05 - 10/04/05 Method: HPDE bailer Gallons removed: 1

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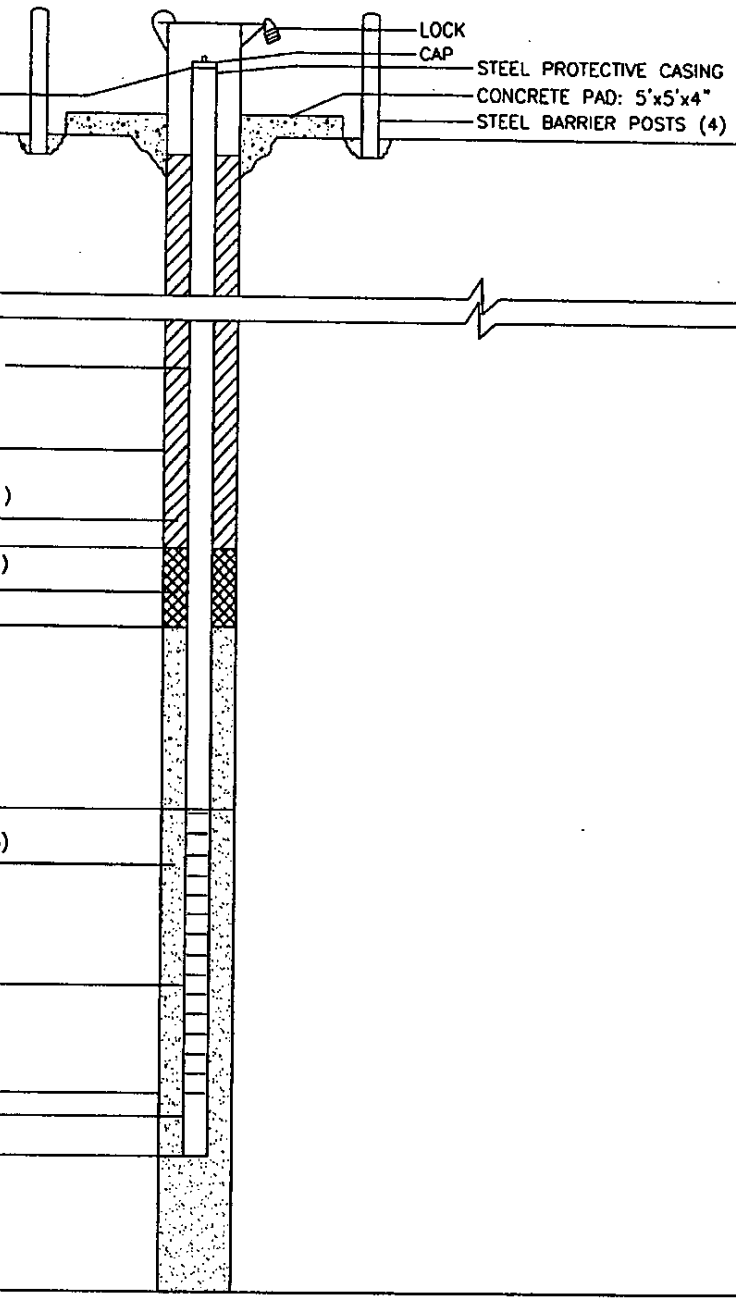
PIEZOMETER WELL
CONSTRUCTION DIAGRAM

WELL #PZ-G1-305 | DATE: 09/30/05

Depth (ft)	Elevation (Ft. MSL)	
+3.10	+244.76	TOP OF CASING
0.00	+241.66	Ground Surface
-3.0	+238.66	
-6.5	+235.16	
-8.55	+233.11	
-13.0	+228.66	
-13.7	+227.96	
-14.0	+227.66	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 2.5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 2 cubic feet

Well Developed by S. Moore (JEI) Date: 10/18/05 Method: HPDE bailer Gallons removed: 0.2 (dry)

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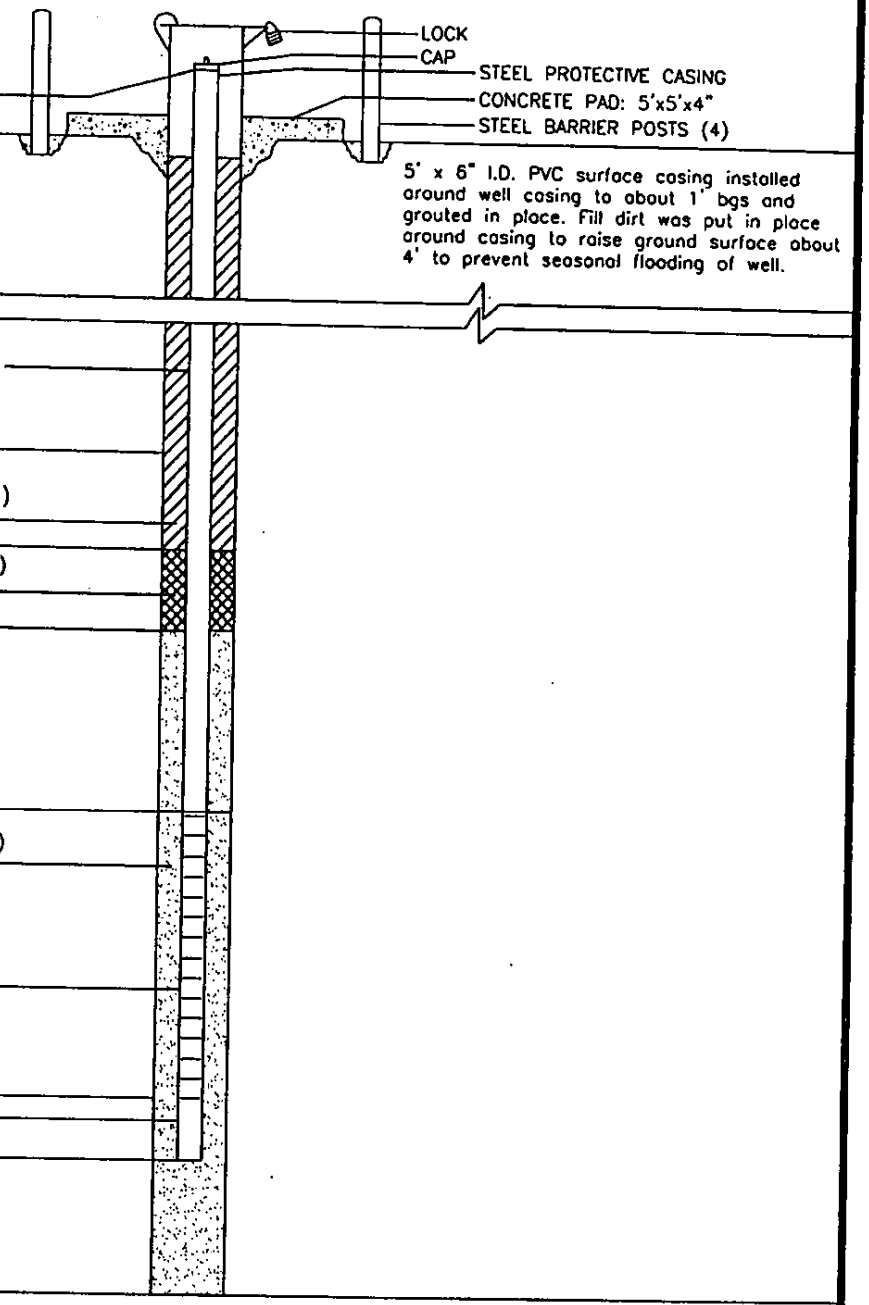
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

PIEZOMETER WELL
CONSTRUCTION DIAGRAM

WELL #PZ-C-308 | DATE: 10/04/05

Depth (ft)	Elevation (Ft. MSL)	
+6.10	+168.10	TOP OF CASING
0.00	+162.0	Ground Surface
-11.5	+150.5	
-12.5	+149.5	
-16.35	+145.65	
-20.8	+141.2	
-21.5	+140.5	
-21.5	+140.5	



Note: Drawing Not to Scale

(1) Grout Placement: Pump down
Grout Mixture: Cement-bentonite (5%)

(2) Bentonite Pellets: Size: 3/8 inch Volume: 3.5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 1.5 cubic feet

Well Developed by S. Moore (JEI) Date: 10/04/05 Method: HPDE bailer Gallons removed: 13

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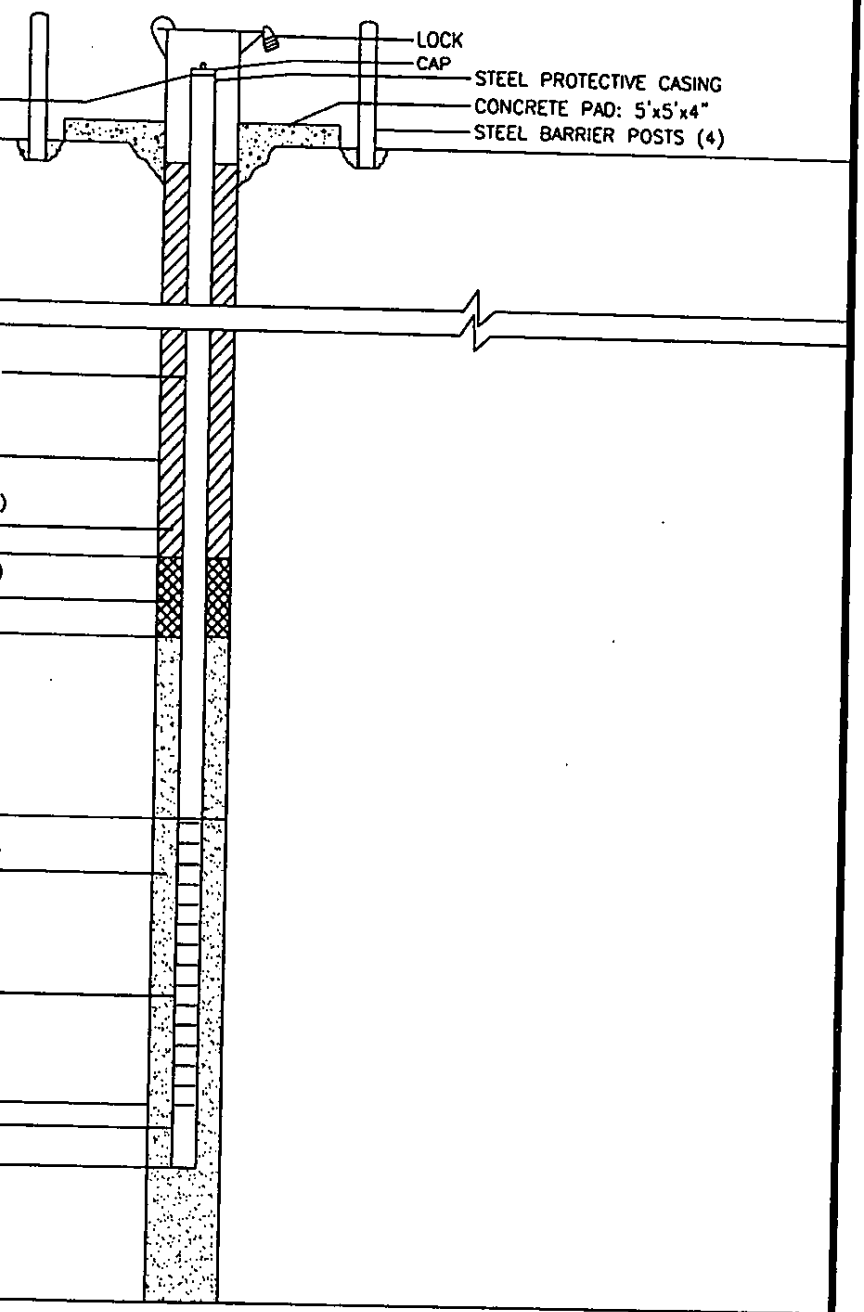
(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

PIEZOMETER WELL CONSTRUCTION DIAGRAM

WELL #PZ-G2-309 | DATE: 10/04/05

Depth (ft)	Elevation (Ft. MSL)	
+4.68	+206.68	TOP OF CASING
0.00	+202.00	Ground Surface
-2.0	+200.00	Grout (1)
-3.5	+198.50	Bentonite Pellet Seal (2)
-8.55	+193.45	
-18.00	+184.00	Sand Pack (3)
-18.70	+183.30	2" Diameter PVC Sump
-19.0	+183.0	



Note: Drawing Not to Scale

(1) Grout Placement: Gravity Method
Grout Mixture: Sakrete

(2) Bentonite Pellets: Size: 3/8 inch Volume: 2.5 gallons Hydration Time: >24 hour

(3) Sand Placement: Gravity Method Type: 20/40 Silica Sand Volume: 3 cubic feet

Well Developed by C. Branton & S. Moore (JEI) Date: 10/05/05 & 10/18/05 Method: HPDE bailer Gallons removed: 4.5*

* Well was dry. Approx. 5.75 gal. potable water was added to well & bailed to remove sediment.

Jones Environmental, Inc.
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(318) 226-8444

Site: Mundy Landfill
Address: 2712 Hwy 84 East
Mansfield, LA 71052

PIEZOMETER WELL CONSTRUCTION DIAGRAM

WELL #PZ-G1-312 | DATE: 09/30/05

Appendix S-2c

2005 Monitoring and Piezometer Well Registrations

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-C-5
5. DATE COMPLETED 2/25/05 DEPTH OF HOLE 13 FT. DEPTH OF WELL 12 FT.
6. STATIC WATER LEVEL 6.5 FT. BELOW GROUND SURFACE MEASURED ON 3/21-05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 6 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 5 FT.
9. CEMENTED FROM _____ FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of U.S. I-49 + Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Gray gravel (Road)			
		to Clay No Recovery			
5	10	Sand, fine grain			
		to Silt, Orange, Tan			
10	13	Silty clay, gray			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: Todd Green

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Environmental, Inc.
Name of Water Well Contractor
LICENSE NUMBER WWC-638
Authorized Signature [signature] Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH ____ WELL NO. ____
IDENTIFICATION NUMBER ____ 0 ____
REVISED COORDINATES ____
Geologic Unit ____ Use of Well ____
SECTION ____ TOWNSHIP ____ RANGE ____
ELEV. ____ QUAD. NO. ____
INPUT BY: ____ DATE: ____
INSPECTED BY: ____ DATE: ____
REMARKS: ____

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320332 LONGITUDE 933531
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 2397 QUAD. NO. 58C
SITE ADDRESS: 2712 Hwy 84 East
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-C-6
5. DATE COMPLETED 3/2/05 DEPTH OF HOLE 24 FT. DEPTH OF WELL 22 FT.
6. STATIC WATER LEVEL 13 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 12 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 10 FT.
9. CEMENTED FROM _____ FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 and Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS: _____
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Sandy Silty Clay gray			
5	10	Laminated clay, lignite			
		dk brown			
10	15	clay, silt, gray Tan			
15	24	clayey Sandy silt			
		gray clay			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: Greg Slade

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Env.
Name of Water Well Contractor
LICENSE NUMBER WWC-638
Authorized Signature Jeffrey T. Hill Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER 0
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: _____ DATE: _____
INSPECTED BY: _____ DATE: _____
REMARKS: _____

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320331 LONGITUDE 933537
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 2295 QUAD. NO. 58C
SITE ADDRESS: 2712 Hwy 84 Mansfield Rd

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (if any) MW-61-7
5. DATE COMPLETED 3/7/05 DEPTH OF HOLE 82 FT. DEPTH OF WELL 80 FT.
6. STATIC WATER LEVEL 32 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 70 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 10 FT.
9. CEMENTED FROM 50 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 + Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	60	not sampled			
60	70	Silty clay, gray			
70	82	Silty, gray clayey Sand			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☒ NO ☐
15. NAME OF PERSON WHO DRILLED THE WELL: Greg Slade

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Env
Name of Water Well Contractor
LICENSE NUMBER WWC- 638
Authorized Signature [signature] Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 32 03 28 LONGITUDE 93 35 23
SECTION 03 TOWNSHIP 12N RANGE 12W
ELEV. 264.5 QUAD. NO. 58C
SITE ADDRESS: 2712 Hwy 84 E.
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (if any) MW-G1-8
5. DATE COMPLETED 3/1/05 DEPTH OF HOLE 18 FT. DEPTH OF WELL 15 FT.
6. STATIC WATER LEVEL 13 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 5 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 10 FT.
9. CEMENTED FROM 2 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 and Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Silty Clay, gray to Tan			
5	10	Silty Clay			
10	15	Clayey Silt tan			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☒ NO ☐
15. NAME OF PERSON WHO DRILLED THE WELL: Greg Slade

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Env.
Name of Water Well Contractor

LICENSE NUMBER WWC-638

Authorized Signature [signature] Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320344 LONGITUDE 933525
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 2121 QUAD. NO. 584
SITE ADDRESS: 2712 Hwy 84E
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-G1-9
5. DATE COMPLETED 2/25/05 DEPTH OF HOLE 12 FT. DEPTH OF WELL 10 FT.
6. STATIC WATER LEVEL 3 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 5 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 5 FT.
9. CEMENTED FROM 1.0 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH DeSoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 and Hw 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Silt, clay, gray + Tan			
5	10	Rock - Siltstone			
10	12	clay silt, gray/Tan			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: Todd Greer

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Environmental
Name of Water Well Contractor
LICENSE NUMBER WWC-638
Authorized Signature Jeffry T. Green Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320346 LONGITUDE 933535
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 1933 QUAD. NO. 584
SITE ADDRESS: 2012 Hwy 84 E
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-G1-10
5. DATE COMPLETED 3/4/05 DEPTH OF HOLE 10 FT. DEPTH OF WELL 8 FT.
6. STATIC WATER LEVEL 2 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 3 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 5 FT.
9. CEMENTED FROM 1.5 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 and Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Silty Clay Brown			
5	10	Clay silt, gray			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: Greg Slade

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Env.
Name of Water Well Contractor

LICENSE NUMBER WWC-638

Authorized Signature [signature] Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320344 LONGITUDE 933537
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. QUAD. NO. 5916
SITE ADDRESS: 2712 Hwy 84 E.
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   ☐ DOMESTIC ☐ RIG SUPPLY ☒ MONITORING ☐ PIEZOMETER ☐ RECOVERY
   ☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-G2-12
5. DATE COMPLETED 3/3/05 DEPTH OF HOLE 60 FT. DEPTH OF WELL 58 FT.
6. STATIC WATER LEVEL 22 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 48 FT.
8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE 0.010 LENGTH 10 FT.
9. CEMENTED FROM 44 FT. TO GROUND SURFACE, USING ☒ PUMP DOWN METHOD OR ☐ GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-20 and Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS: _____
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	40	No Samples			
40	50	Silt clay, gray			
50	60	Silty Clay, gray			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES ☒ NO ☐
15. NAME OF PERSON WHO DRILLED THE WELL: Greg Slade

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Env.
Name of Water Well Contractor
LICENSE NUMBER WWC- 638
Authorized Signature [signature] Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: _____ DATE: _____
INSPECTED BY: _____ DATE: _____
REMARKS: _____

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320331 LONGITUDE 933537
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 2299 QUAD. NO. 58C
SITE ADDRESS: 2712 Hwy 84 E.
Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION SHORT FORM (DOTD-GW-1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (Check Appropriate Box)
   [ ] DOMESTIC [ ] RIG SUPPLY [X] MONITORING [ ] PIEZOMETER [ ] RECOVERY
   [ ] HEAT PUMP HOLE [ ] HEAT PUMP SUPPLY [ ] ABANDONED PILOT HOLE [ ] OTHER _____ (Please Specify)
2. WELL OWNER Desoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS P.O. Box 898, Mansfield, LA 71052
4. OWNER'S WELL NUMBER OR NAME (If any) MW-62-13
5. DATE COMPLETED 3/1/05 DEPTH OF HOLE 22 FT. DEPTH OF WELL 20 FT.
6. STATIC WATER LEVEL 3 FT. BELOW GROUND SURFACE MEASURED ON 3/21/05 (Date)
7. CASING 2 IN. [ ] METAL [X] PLASTIC [ ] OTHER LENGTH 10 FT.
8. SCREEN 2 IN. [ ] METAL [X] PLASTIC [ ] OTHER SLOT SIZE 0.010 LENGTH 10 FT.
9. CEMENTED FROM 5 FT. TO GROUND SURFACE, USING [X] PUMP DOWN METHOD OR [ ] GRAVITY METHOD
10. LOCATION OF WELL: PARISH Desoto WELL IS NEAR, Mansfield (Town or City)
    APPROXIMATELY 1.5 MILES FROM Intersection of US I-49 + Hwy 84 (Crossroads, Railroad, Any Landmark, etc.)
    (Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO	DESCRIPTION	FROM	TO	DESCRIPTION
0	5	Silty clay gray to			
5	10	Sand orange to			
		Tan Silty Sand			
10	15	clayey Sand			
15	22	Silty Sandy Clay			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____
14. ABANDONMENT INFORMATION: DOES THE NEW WELL REPLACE AN EXISTING WELL? YES [ ] NO [ ]
15. NAME OF PERSON WHO DRILLED THE WELL:

(REV. 7/93)

CONTRACTOR'S COPY

Walker-Hill Environmental
Name of Water Well Contractor
LICENSE NUMBER WWC-638
Authorized Signature Jeffrey T. Hill Date 3-17-05

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P.O. BOX 94245
BATON ROUGE, LA 70804-9245
(225) 379-1434

FOR OFFICE USE ONLY
PARISH WELL NO.
IDENTIFICATION NUMBER
REVISED COORDINATES
Geologic Unit
Use of Well
SECTION TOWNSHIP RANGE
ELEV. QUAD. NO.
INPUT BY: DATE:
INSPECTED BY: DATE:
REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY
LATITUDE 320344 LONGITUDE 933537
SECTION 003 TOWNSHIP 12N RANGE 12W
ELEV. 1857 QUAD. NO. 586
SITE ADDRESS: 2712 Hwy 84 E, Mansfield, LA 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION REPORT FORM (DOTD - GW - 1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (CHECK APPROPRIATE BOX)

☐ DOMESTIC ☐ RIG SUPPLY ☐ MONITORING ☒ PIEZOMETER ☐ RECOVERY

☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER

2. WELL OWNER: DeSoto Parish Police Jury PHONE (318) 872-0738

3. WELL OWNER'S ADDRESS: P.O. Box 898 Mansfield, La 71052

4. OWNER'S WELL NUMBER OR NAME (if any): PZ-G-1-305

5. DATE COMPLETED: 9/21/2005 DEPTH OF HOLE: 16 FT. DEPTH OF WELL: 16 FT.

6. STATIC WATER LEVEL: 14 FT. BELOW GROUND SURFACE MEASURED ON: 10/19/2005

7. CASING: 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH: 6 FT.

8. SCREEN: 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE: .010 LENGTH: 10 FT.

9. CEMENTED FROM: 1 FT. BELOW GROUND SURFACE, USING ☐ PUMP DOWN METHOD ☒ GRAVITY METHOD

10. LOCATION OF WELL: PARISH: DeSoto WELL IS NEAR, Mansfield, La (Town or city)

APPROXIMATELY 2 MILES FROM I-49 east on Hwy 84 then approx. 2000 ft north into Landfill (Crossroads, railroad, any landmark, etc.)

(Please draw sketch on back of Original)

11. REMARKS:

12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO		FROM	TO	
0	2	Orange & Tan clayey silt			
2	5	Brown silty clay			
5	12	Tan silt with clay			
12	16	Tan & Brown clayey silt			

13. FOR HEAT PUMP ONLY: AVG. DEPTH FT. NUMBER OF HOLES

14. ABANDONMENT INFORMATION: DOES THE WELL REPLACE AN EXISTING WELL ? YES ☐ NO ☒

15. NAME OF PERSON WHO DRILLED THE WELL: J. Melton

DOTD'S COPY

Soil Testing Engineers, Inc.
Name of Water Well Contractor

LICENSE NUMBER WWC-212

Authorized Signature 12/20/05 Date

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPEMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P. O. BOX 94245
BATON ROUGE LA. 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY

PARISH WELL NO.

IDENTIFICATION NUMBER 0

REVISED COORDINATES

Geologic Unit Use of well

SECTION TOWNSHIP RANGE

ELEV. QUAD NO.

INPUT BY: DATE:

INSPECTED BY: DATE:

REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

LATITUDE 32 03 45 LONGITUDE 93 35 47

SECTION 004 TOWNSHIP 12 N RANGE 12 W

ELEV. 0185 QUAD NO. 057D

SITE ADDRESS: 2712 Hwy 84
Mansfield La. 71052

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION REPORT FORM (DOTD - GW - 1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (CHECK APPROPRIATE BOX)

☐ DOMESTIC ☐ RIG SUPPLY ☐ MONITORING ☒ PIEZOMETER ☐ RECOVERY

☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____

2. WELL OWNER DeSoto Parish Police Jury PHONE (318) 872-0738

3. WELL OWNER'S ADDRESS P.O. Box 898 Mansfield, La 71052

4. OWNER'S WELL NUMBER OR NAME (if any) PZ-C-308

5. DATE COMPLETED 9/21/2005 DEPTH OF HOLE 14 FT. DEPTH OF WELL 14 FT.

6. STATIC WATER LEVEL 13 FT. BELOW GROUND SURFACE MEASURED ON 10/19/2005

7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 9 FT.

8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE .010 LENGTH 5 FT.

9. CEMENTED FROM 3 FT. BELOW GROUND SURFACE, USING ☐ PUMP DOWN METHOD ☒ GRAVITY METHOD

10. LOCATION OF WELL: PARISH DeSoto WELL IS NEAR, Mansfield, La (Town or city)

APPROXIMATELY 2 MILES FROM I-49 east on Hwy 84 then approx. 2000 ft north into Landfill (Crossroads, railroad, any landmark, etc.)

(Please draw sketch on back of Original)

11. REMARKS:

12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO		FROM	TO	
0	8	Tan silty sand			
8	12	Tan sandy silt			
12	14	Gray silty clay			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____

14. ABANDONMENT INFORMATION: DOES THE WELL REPLACE AN EXISTING WELL ? YES ☐ NO ☒

15. NAME OF PERSON WHO DRILLED THE WELL: B. Willoughby

Soil Testing Engineers, Inc.
Name of Water Well Contractor

LICENSE NUMBER WWC-212

Authorized Signature 12/20/05 Date

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPEMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P. O. BOX 94245
BATON ROUGE LA. 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY

PARISH WELL NO.

IDENTIFICATION NUMBER 0

REVISED COORDINATES

Geologic Unit Use of well

SECTION TOWNSHIP RANGE

ELEV. QUAD NO.

INPUT BY: DATE:

INSPECTED BY: DATE:

REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

LATITUDE 3 2 0 3 3 1 LONGITUDE 9 3 3 5 4 7

SECTION 0 0 4 TOWNSHIP 1 2 N RANGE 1 2 W

ELEV. 0 2 3 9 QUAD NO. 0 5 7 D

SITE ADDRESS: 2712 Hwy 84
Mansfield La. 71052

DOTD'S COPY

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION REPORT FORM (DOTD - GW - 1S)

PLEASE PRINT IN INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (CHECK APPROPRIATE BOX)

☐ DOMESTIC ☐ RIG SUPPLY ☐ MONITORING ☒ PIEZOMETER ☐ RECOVERY

☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER _____

2. WELL OWNER DeSoto Parish Police Jury PHONE (318) 872-0738

3. WELL OWNER'S ADDRESS P.O. Box 898 Mansfield, La 71052

4. OWNER'S WELL NUMBER OR NAME (if any) PZ-G2-309

5. DATE COMPLETED 9/21/2005 DEPTH OF HOLE 22 FT. DEPTH OF WELL 22 FT.

6. STATIC WATER LEVEL 5 FT. BELOW GROUND SURFACE MEASURED ON 10/19/2005

7. CASING 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH 17 FT.

8. SCREEN 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE .010 LENGTH 5 FT.

9. CEMENTED FROM 12 FT. BELOW GROUND SURFACE, USING ☒ PUMP DOWN METHOD ☐ GRAVITY METHOD

10. LOCATION OF WELL: PARISH DeSoto WELL IS NEAR, Mansfield, La (Town or city)

APPROXIMATELY 2 MILES FROM I-49 east on Hwy 84 then approx. 2000 ft north into Landfill (Crossroads, railroad, any landmark, etc.)

(Please draw sketch on back of Original)

11. REMARKS:

12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO		FROM	TO	
0	6	Tan silty clay			
6	16	Gray Brown clay			
16	19	Gray clayey sand			
19	20	Orange Brown sand			
20	22	Light gray clay			

13. FOR HEAT PUMP ONLY: AVG. DEPTH _____ FT. NUMBER OF HOLES _____

14. ABANDONMENT INFORMATION: DOES THE WELL REPLACE AN EXISTING WELL ? YES ☐ NO ☒

15. NAME OF PERSON WHO DRILLED THE WELL: C. Cruse

Soil Testing Engineers, Inc.
Name of Water Well Contractor

LICENSE NUMBER WWC-212

Authorized Signature 12/20/05 Date

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPEMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P. O. BOX 94245
BATON ROUGE LA. 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY

PARISH WELL NO.

IDENTIFICATION NUMBER 0

REVISED COORDINATES

Geologic Unit Use of well

SECTION TOWNSHIP RANGE

ELEV. QUAD NO.

INPUT BY: DATE:

INSPECTED BY: DATE:

REMARKS:

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

LATITUDE 3 2 0 3 4 5 LONGITUDE 9 3 3 5 5 3

SECTION 0 0 4 TOWNSHIP 1 2 N RANGE 1 2 W

ELEV. 0 1 6 3 QUAD NO. 0 5 7 D

SITE ADDRESS: 2712 Hwy 84
Mansfield La. 71052

DOTD'S COPY

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WATER RESOURCES SECTION
WATER WELL REGISTRATION REPORT FORM (DOTD - GW - 1S)

PLEASE PRINT INK OR TYPE WHEN COMPLETING THIS FORM

1. USE OF WELL (CHECK APPROPRIATE BOX)

☐ DOMESTIC ☐ RIG SUPPLY ☐ MONITORING ☒ PIEZOMETER ☐ RECOVERY
☐ HEAT PUMP HOLE ☐ HEAT PUMP SUPPLY ☐ ABANDONED PILOT HOLE ☐ OTHER

2. WELL OWNER: DeSoto Parish Police Jury PHONE (318) 872-0738
3. WELL OWNER'S ADDRESS: P.O. Box 898 Mansfield, La 71052
4. OWNER'S WELL NUMBER OR NAME (if any): PZ-G1-312
5. DATE COMPLETED: 9/21/2005 DEPTH OF HOLE: 19 FT. DEPTH OF WELL: 19 FT.
6. STATIC WATER LEVEL: 18 FT. BELOW GROUND SURFACE MEASURED ON: 10/19/2005
7. CASING: 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER LENGTH: 9 FT.
8. SCREEN: 2 IN. ☐ METAL ☒ PLASTIC ☐ OTHER SLOT SIZE: .010 LENGTH: 10 FT.
9. CEMENTED FROM: 2 FT. BELOW GROUND SURFACE, USING ☐ PUMP DOWN METHOD ☒ GRAVITY METHOD
10. LOCATION OF WELL: PARISH: DeSoto WELL IS NEAR, Mansfield, La (Town or city)
APPROXIMATELY 2 MILES FROM I-49 east on Hwy 84 then approx. 2000 ft north into Landfill (Crossroads, railroad, any landmark, etc.)
(Please draw sketch on back of Original)
11. REMARKS:
12. DRILLER'S LOG (Description and color of cuttings, such as shale, sand, etc. in feet)

FROM	TO		FROM	TO	
0	4	Orange clay	18	19	Light tan clayey silt
4	6	Tan clayey silt			
6	11	Light tan silt			
11	14	Rock			
14	18	Light Tan silt			

13. FOR HEAT PUMP ONLY: AVG. DEPTH ____ FT. NUMBER OF HOLES ____
14. ABANDONMENT INFORMATION: DOES THE WELL REPLACE AN EXISTING WELL? YES ☐ NO ☒
15. NAME OF PERSON WHO DRILLED THE WELL: B. Willoughby

Soil Testing Engineers, Inc.
Name of Water Well Contractor
LICENSE NUMBER WWC-212
Authorized Signature 12/20/05 Date

MAIL ORIGINAL TO:
LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPEMENT
ATTN.: CHIEF - WATER RESOURCES SECTION
P. O. BOX 94245
BATON ROUGE LA. 70804-9245
(504) 379-1434

FOR OFFICE USE ONLY

PARISH ____ WELL NO. ____
IDENTIFICATION NUMBER ____ 0 ____
REVISED COORDINATES ____
Geologic Unit ____ Use of well ____
SECTION ____ TOWNSHIP ____ RANGE ____
ELEV. ____ QUAD NO. ____
INPUT BY: ____ DATE: ____
INSPECTED BY: ____ DATE: ____
REMARKS: ____

FOR MONITOR/PIEZO/RECOVERY WELLS ONLY

LATITUDE 3 2 0 3 3 1 LONGITUDE 9 3 3 5 5 3
SECTION 0 0 4 TOWNSHIP 1 2 N RANGE 1 2 W
ELEV. 0 2 0 4 QUAD NO. 0 5 7 D
SITE ADDRESS: 2712 Hwy 84
Mansfield La. 71052

DOTD'S COPY

Appendix S-2d

Tables

1 Summary of Soil Boring Logs
2 Monitoring and Piezometer Well Data
3 Summary of Groundwater elevation Data
3A - Zone C Monitoring & Piezometer Wells
3B - Zone G1 Monitoring & Piezometer Wells
3C - Zone G2 Monitoring & Piezometer Wells
4 Gauging and Elevation Data, Sedimentation, Oxidation, & Polishing Ponds
5 Preliminary Installation Data for New Monitoring Wells
6 Oil and Gas Wells

TABLE 1
SUMMARY OF SOIL BORINGS
MUNDY LANDFILL
DESOTO PARISH, LOUISIANA

Visually Logged Boring	Year Completed	E-Log	Monitoring Well/ Piezometer	Cross-Section Sheet No.	Remarks
MW-1	1984	--	MW-C-1	JEI-7, 14, S3	
MW-2	1984	--	MW-2	JEI-5, 14	P&A 2005
MW-3	1984	--	MW-3	JEI-12, S9	P&A 2/22/02
MW-4	1984	--	MW-4	JEI-4, 8	P&A 1991
--	1991	--	MW-C-4A	JEI-4, 8	Formerly MW-4A No boring log
B1	1984	--		JEI-6	
B2	1984	--		JEI-13, S10	
B3	1984	--		JEI-4, 13, S10	
B4	1984	--		JEI-6, 12, S9	
B5	1984	--		JEI-12, S9	
B6	1984	--		JEI-4, 12, S9	
B7	1984	--		JEI-6, 11, S8	
B8	1984	--		JEI-5, 11, S8	
B9	1984	--		JEI-4, 11, S8	
B10	1984	--		JEI-6, 10	
B11	1984	--		JEI-5, 10	
B12	1984	--		JEI-4, 10	
B13	1984	--		JEI-6, 9, S7	
B14	1984	--		JEI-5, 9, S7	
B15	1984	--		JEI-4, 9, S7	
B16	1991	--		JEI-7, 8, S3	
B17	1992	--		JEI-4, 12, S9	
B18	1992	--		JEI-3	
B19	1992	--		JEI-4, 11, S8	
B100	1996	E100		JEI-3, 8	
--	1996	E100B	LSPZ100B	JEI-3, 8	No visual boring log P&A 2005
B101	1996	E101		JEI-5, 8	
B102	1996	E102	PZ-C-102, MW-G1-102	JEI-6, 8	Formerly USPZ102, LSPZ102
B103	1996	E103	PZ-C-103, MW-G2-103	JEI-7, 8, S3	Formerly USPZ103, LSPZ103
B104	1996	E104	LSPZ104	JEI-7, 9, S3, S7	P&A 2005
--	1996	E104B	MW-G1-104B	JEI-7, 10, S3	No visual boring log Formerly USPZ104B
B105	1996	E105		JEI-7, 11, S3, S8	
B106	1996	--		JEI-7, 12 S3, S9	
--	1996	E106B	LSPZ106B	JEI-7, S3	No visual boring log P&A 2005

TABLE 1
SUMMARY OF SOIL BORINGS
MUNDY LANDFILL
DESOTO PARISH, LOUISIANA

Visually Logged Boring	Year Completed	E-Log	Monitoring Well/ Piezometer	Illustrated on Cross-Section Sheet No.	Remarks
B107	1996	--		JEI-7, 13, S3, S10	
B108B	1996	--		JEI-7, 14, S3	
B109	1996	--		JEI-6, 14	
B110	1996	--		JEI-5	
--	1996	E110B	MW-G2-110B	JEI-14	No visual boring log Formerly LSPZ110B
B111	1996	--	LSPZ111	JEI-3, 4, 13, 14, S10	P&A 2005
B112	1996	E112		JEI-12, S9	
B113	1996	E113	MW-C-113	JEI-3, 10, 11, S8	Formerly USPZ113
B114	1996	E114		JEI-9, S7	
B115	1996	E115		JEI-4, 11, S8	
B116	1996	E116		JEI-3, 12, S9	
B117	1996	E117		JEI-5, 12, S9	
B118	1996	E118		JEI-5, 13, S10	
B119	1996	--		JEI-13, S10	
B200	2002	E200		JEI-7, 14, S3	
B201	2002	E201		JEI-6, 11, S8	
B202	2002	E202		JEI-6, 10	
B203	2002	E203		JEI-7, 10, S3	
B204	2002	E204		JEI-7, 11, S3, S8	
B205	2002	--		JEI-7, 8, S3	
B206	2002	--		JEI-3, 4, 13, 14, S10	
B207	2002	--		JEI-3, 9, S7	
B208	2002	--	LSPZ208	JEI-6, 12, S9	P&A 8/1/02
B209	2002	--	PZ-C-209, PZ-G1-209	JEI-5, 9, S7	Formerly USPZ209, LSPZ209
B210	2002	--	MW-G2-210A, LSPZ210B	JEI-7, S3	Formerly LSPZ210A, LSPZ210B P&A 2005
B212	2002	--		JEI-3, 8	
B213	2002	--		JEI-7, 10, S3	
B214	2002	--		JEI-5, 14	
B215	2002	--		JEI-5, 8	
B216	2002	--		JEI-6, 8	
B217	2002	--		JEI-7, S3	
B218	2002	--		JEI-7, 13, S3, S10	
B219	2002	--	PZ-G1-219	JEI-6, 14	Formerly LSPZ219
B220	2002	--		JEI-3, 10, 11, S8	

TABLE 1
SUMMARY OF SOIL BORINGS
MUNDY LANDFILL
DESOTO PARISH, LOUISIANA

Visually Logged Boring	Year Completed	E-Log	Monitoring Well/ Piezometer	Illustrated on Cross-Section Sheet No.	Remarks
B221	2002	--		JEI-3, 12, S9	
B222	2002	--		JEI-6, 13, S10	
B223	2002	--		JEI-6	
MW-C-5	2005	--	MW-C-5	JEI-9, S7	
MW-C-6	2005	--	MW-C-6	JEI-7, JEI-9, S3, S7	
MW-G1-7	2005	--	MW-G1-7	JEI-8	
MW-G1-8	2005	--	MW-G1-8	JEI-13, S10	
MW-G1-9	2005	--	MW-G1-9	JEI-14	
MW-G1-10	2005	--	MW-G1-10	JEI-7, 13, S3, S10	
MW-G1-10A	2005	--		JEI-7, 13, S3, S10	No well installed
MW-G1-11A	2005	--		JEI-7, 11, S3, S8	No well installed
MW-G1-11B	2005	--		JEI-7, 11, S3, S8	No well installed
MW-G2-12	2005	--	MW-G2-12	JEI-7, 9, S3, S7	
MW-G2-13	2005	--	MW-G2-13	JEI-7, 13, S3, S10	
B217A	2005	--		JEI-7, S3	
B218A	2005	--		JEI-7, 13, S3, S10	
B301	2005	--		JEI-13, S4, S10	
B302	2005	--		JEI-12, S4, S9	
B303	2005	--		JEI-11, S4, S8	
B304	2005	--		JEI-9, S4, S7	
B305	2005	--	PZ-G1-305	JEI-13, S5, S10	Well 40' north of boring
B306	2005	--		JEI-12, S5, S9	
B307	2005	--		JEI-11, S5, S8	
B308	2005	--	PZ-C-308	JEI-9, S5, S7	Well 39' south of boring
B309	2005	--	PZ-G2-309	JEI-13, S6, S10	Well 15' SW of boring
B310	2005	--		JEI-12, S6, S9	
B311	2005	--		JEI-11, S6, S8	
B312	2005	--	PZ-G1-312	JEI-9, S6, S7	Well 40' south of boring

NOTES:
1. No boring B211 was completed.
2. E-log data not shown on cross-sections, except for Zone G1, Zone G2, and rock layers in E100, E100B, E103, E104B, E106B, and E110B.
3. Sheets JEI-3 through 14 are included in Appendix Q, 2002 Permit Drawings.
4. Sheets JEI-S3 through S10 are included in Appendix S, Section S-3, 2006 Permit Drawings.

TABLE 2A
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE C
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	MW-C-4A	MW-C-5	MW-C-6	MW-C-113	PZ-C-102	PZ-C-103	PZ-C-209
ORIGINAL WELL NAME	MW-4A	NA	NA	USPZ113	USPZ102	USPZ103	USPZ209
PERMIT/AUTHORIZATION NO.	P-0035R1						
DOTD I.D.	5370Z	7548Z	7549Z	6350Z	6342Z	6344Z	7144Z
LATITUDE (deg min sec)	32 03 28.060	32 03 31.8	32 03 31.4	32 03 35.340	32 03 27.015	32 03 26.578	32 03 31.850
LONGITUDE (deg min sec)	93 35 26.616	93 35 30.5	93 35 37.3	93 35 22.517	93 35 31.532	93 35 36.932	93 35 28.654
UNIT/AREA MONITORED	Cells I-IV, VI	Cells I-IV, VI	Cells I-IV, VI	Cells I-IV, VI	Cell V	Cell V	Cells I-IV, VI
GRADIENT	Up	Down	Down	Down	Down	Down	Up
WELL STATUS	Active	Active	Active	Active	Active	Active	Active
WELL DIAMETER (inches)	3	2	2	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC	PVC
DATE COMPLETED	1991	2/25/05	3/2/05	9/25/96	11/23/96	9/25/96	6/20/02
TOP OF CASING ELEV. (ft MSL)	281.98	243.11	232.91	264.42	266.67	267.13	252.35
GROUND SURFACE ELEV. (ft MSL)	278.98	239.7	229.5	261.42	263.67	264.13	248.95
WELL DEPTH INSTALLED (ft bgs)	62.7	11.14	22.03	40	47	41.8	22.1
TOP OF SCREEN ELEV. (ft MSL)	226.30	233.7	217.5	231.52	236.67	232.33	236.95
BOTTOM OF SCREEN ELEV. (ft MSL)	216.30	229.03	207.94	221.52	221.67	222.33	227.95
SUMP LENGTH (feet)	NA	0.47	0.47	NA	NA	NA	0.6

NOTES: 1. NA - Not Applicable/Available.

TABLE 2A
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE C
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	PZ-C-308	MW-4
ORIGINAL WELL NAME	NA	NA
PERMIT/AUTHORIZATION NO.	NA	P-0035
DOTD I.D.	7664Z	5048Z
LATITUDE (deg min sec)	32 03 31.117	32 03 28
LONGITUDE (deg min sec)	93 35 47.286	93 35 27
UNIT/AREA MONITORED	Cells VII	Cells I-IV
GRADIENT	Up	Up
WELL STATUS	Active	P&A-11/6/91
WELL DIAMETER (inches)	2	3
CASING MATERIAL	PVC	PVC
DATE COMPLETED	10/4/05	9/11/84
TOP OF CASING ELEV. (ft MSL)	189.74	280.95
GROUND SURFACE ELEV. (ft MSL)	186.72	279.2
WELL DEPTH INSTALLED (ft bgs)	15.15	25
TOP OF SCREEN ELEV. (ft MSL)	181.72	264.2
BOTTOM OF SCREEN ELEV. (ft MSL)	172.27	254.2
SUMP LENGTH (feet)	0.70	NA

NOTES: 1. NA - Not Applicable/Available.

TABLE 2B
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE G1
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	MW-G1-7	MW-G1-102	MW-G1-8	MW-G1-9	MW-G1-10	MW-G1-104B
ORIGINAL WELL NAME	LSPZ100B[r]	LSPZ102	LSPZ111[r]	NA	NA	LSPZ104B
PERMIT/AUTHORIZATION NO.	P-0035R1					
DOTD I.D.	7550Z	6341Z	7551Z	7552Z	7553Z	6346Z
LATITUDE (deg min sec)	32 03 28.3	32 03 27.007	32 03 44.3	32 03 46.1	32 03 43.8	32 03 32.545
LONGITUDE (deg min sec)	93 35 22.8	93 35 31.477	93 35 25.1	93 35 35.2	93 35 36.9	93 35 35.979
UNIT/AREA MONITORED	Cells I-VII	Cell V	Cells I-IV, VI	Cells I-IV, VI, VII, Water Treatment Plant	Cells I-IV, VI, VII, Water Treatment Plant	Cell V
GRADIENT	Up	Up	Down	Down	Down	Down
WELL STATUS	Active	Active	Active	Active	Active	Active
WELL DIAMETER (inches)	2	2	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC
DATE COMPLETED	3/7/05	1/17/97	3/1/05	2/25/05	3/4/05	3/21/97
MEASURING POINT ELEV. (ft MSL)	267.37	266.56	215.81	196.94	188.19	217.79
GROUND SURFACE ELEV. (ft MSL)	264.5	263.56	212.1	193.3	185.1	214.79
WELL DEPTH INSTALLED (ft bgs)	80.05	78	15.20	10.04	8.14	30
TOP OF SCREEN ELEV. (ft MSL)	194.5	195.66	206.7	188.3	182.1	194.79
BOTTOM OF SCREEN ELEV. (ft MSL)	184.95	185.60	197.35	183.64	177.33	184.79
SUMP LENGTH (feet)	0.50	NA	0.45	0.38	0.37	NA

NOTES: 1. NA - Not Applicable/Available.
2. r - MW-G1-7 replaced LSPZ100B. MW-G1-8 replaced LSPZ111.

TABLE 2B
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE G1
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	MW-G1-219	PZ-G1-209	PZ-G1-305	PZ-G1-312	LSPZ100B	LSPZ111
ORIGINAL WELL NAME	LSPZ219	LSPZ209	NA	NA	NA	NA
PERMIT/AUTHORIZATION NO.	P-0035R1		NA	NA	NA	NA
DOTD I.D.	7148Z	7145Z	7663Z	7666Z	6351Z	6349Z
LATITUDE (deg min sec)	32 03 46.855	32 03 31.840	32 03 45.211	32 03 31.000	32 03 28.336	32 03 44.203
LONGITUDE (deg min sec)	93 35 33.262	93 35 28.787	93 35 47.451	93 35 52.525	93 35 22.943	93 35 25.002
UNIT/AREA MONITORED	Cells I-IV, VI	Cells I-IV, VI	Cell VIII	Cell VIII	Cells I-IV, VI	Cell I-IV, VI
GRADIENT	Down	Up	Down	Down	Up	Down
WELL STATUS	Active	Active	Active	Active	P&A 2005	P&A 2005
WELL DIAMETER (inches)	2	2	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC
DATE COMPLETED	6/20/2002	6/21/02	9/30/2005	9/30/2005	1/21/97	3/28/97
MEASURING POINT ELEV. (ft MSL)	208.47	252.94	189.74	206.68	268.44	214.81
GROUND SURFACE ELEV. (ft MSL)	203.25	248.74	186.72	202.00	265.44	211.81
WELL DEPTH INSTALLED (ft bgs)	20.25	66.2	15.15	18.70	97	20
TOP OF SCREEN ELEV. (ft MSL)	193.25	192.74	181.72	193.45	193.44	206.81
BOTTOM OF SCREEN ELEV. (ft MSL)	183.7	183.34	172.27	184.00	173.44	191.81
SUMP LENGTH (feet)	0.71	0.8	0.70	0.70	NA	NA

NOTES: 1. NA - Not Applicable/Available.

TABLE 2C
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE G2
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	MW-G2-103	MW-G2-1	MW-G2-12	MW-G2-13	MW-G2-110B	MW-G2-210A
ORIGINAL WELL NAME	LSPZ103	MW-1	NA	NA	LSPZ110B	LSPZ210A
PERMIT/AUTHORIZATION NO.	P-0035R1					
DOTD I.D.	6343Z	5367Z	7554Z	7555Z	6348Z	7146Z
LATITUDE (deg min sec)	32 03 26.581	32 03 46.276	32 03 31.3	32 03 44.1	32 03 46.769	32 03 37.723
LONGITUDE (deg min sec)	93 35 36.850	93 35 35.736	93 35 37.3	93 35 37.1	93 35 30.196	93 35 38.327
UNIT/AREA MONITORED	Cell V, VII	Cells I-VII, Water Treatment Plant	Cell V	Cells I-VII, Water Treatment Plant	Cell VI	Cell VII
GRADIENT	Up	Down	Down	Down	Down	Down
WELL STATUS	Active	Active	Active	Active	Active	Active
WELL DIAMETER (inches)	2	3	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC
DATE COMPLETED	2/7/97	09/11/84	3/3/05	3/1/05	3/28/97	6/20/02
MEASURING POINT ELEV. (ft MSL)	267.27	192.60	232.20	189.23	203.02	186.87
GROUND SURFACE ELEV. (ft MSL)	264.27	190.8	229.9	185.7	200.8	185.27
WELL DEPTH INSTALLED (ft bgs)	100	35	58.01	15.04	29	19
TOP OF SCREEN ELEV. (ft MSL)	179.30	165.8	181.9	175.7	181.02	177.3
BOTTOM OF SCREEN ELEV. (ft MSL)	164.30	155.8	172.34	171.05	171.02	167.3
SUMP LENGTH (feet)	NA	NA	0.45	0.39	NA	1.0

NOTES: 1. NA - Not Applicable/Available.

TABLE 2C
MONITORING AND PIEZOMETER WELL CHARACTERISTICS
ZONE G2
Mundy Landfill
DeSoto Parish, Louisiana

WELL NAME	PZ-G2-309	MW-2	MW-3	LSPZ104	LSPZ106B	LSPZ208	LSPZ210B
PERMIT/AUTHORIZATION NO.	NA	P-0035		NA	NA	NA	NA
DOTD I.D.	7665Z	5368Z	5369Z	6345Z	6347Z	7143Z	7147Z
LATITUDE (deg min sec)	32 03 44.635	32 30 45.915	32 03 40	32 03 31.418	32 03 41.346	32 03 41	32 03 37.836
LONGITUDE (deg min sec)	93 35 52.786	93 35 28.307	93 35 35	93 35 37.221	93 35 37.343	93 35 33	93 35 38.324
UNIT/AREA MONITORED	Cell VIII	Cells I-IV, VI	Cells I-IV, VII	Cell V	Cells I-IV, VII	Cell VII	Cell VII
GRADIENT	Down	Down	Down	Down	Down	Cell VII Interior	Down
WELL STATUS	Active	P&A 2005	P&A-2/22/02	P&A 2005	P&A 2005	P&A-8/1/02	P&A 2005
WELL DIAMETER (inches)	2	3	3	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC	PVC	PVC	PVC
DATE COMPLETED	10/4/05	9/11/84	9/11/84	3/19/97	3/10/97	6/20/02	6/20/02
MEASURING POINT ELEV. (ft MSL)	168.10	205.80	195.65	233.08	est. 204.0*	192.43	186.98
GROUND SURFACE ELEV. (ft MSL)	162.00	204.1	193.8	230.08	204.19*	188.33	185.08
WELL DEPTH INSTALLED (ft bgs)	21.5	25	25	60	26.4	17.3	36
TOP OF SCREEN ELEV. (ft MSL)	145.65	189.1	178.8	185.08	163.7	181.3	160.1
BOTTOM OF SCREEN ELEV. (ft MSL)	141.20	179.1	168.8	170.08	153.7	171.8	150.1
SUMP LENGTH (feet)	0.70	NA	NA	NA	NA	0.8	1.0

NOTES: 1. NA - Not Applicable/Available.

TABLE 3A
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE C MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-4	05/13/88	280.95	30	18.7	262.25	9.54
	11/15/88	280.95	27.0	18.02	262.93	10
	06/05/89	280.95	27.5	17.33	263.62	12
	12/04/89	280.95	29.0	17.50	263.45	12.77
	03/23/90	280.95	30	17.42	263.53	10.25
	10/29/90	280.95	NA	18.31	262.64	NA
	04/21/91	280.95	NA	17.20	263.75	NA
	10/15/91	280.95	NA	17.10	263.85	NA
	11/06/91	MW-4 plugged & abandoned.				
MW-4A	05/13/88	281.98	53	47.8	234.18	5.14
	11/15/88	281.98	65.45	45.30	236.68	23
	06/05/89	281.98	68.0	29.00	252.98	16.2-dry
	12/04/89	281.98	68.0	45.00	236.98	25.53
	03/23/90	281.98	53	45.42	236.56	21.4
	10/29/90	281.98	NA	45.10	236.88	NA
	04/23/91	281.98	NA	44.60	237.38	NA
	10/15/91	281.98	NA	44.12	237.86	NA
	04/14/92	281.98	NA	44.50	237.48	NA
	04/20/93	281.98	NA	44.73	237.25	NA
	10/19/93	281.98	NA	44.39	237.59	NA
	04/15/94	281.98	NA	44.46	237.52	NA
	10/03/94	281.98	NA	44.69	237.29	NA
	04/24/95	281.98	NA	44.68	237.30	NA
	10/30/95	281.98	NA	44.48	237.50	NA
	04/29/96	281.98	NA	44.90	237.08	NA
	10/29/96	281.98	NA	45.09	236.89	NA
	11/14/96	281.98	NA	46.18	235.80	NA
	01/16/97	281.98	NA	45.54	236.44	NA
	01/97	281.98	NA	45.98	236.00	NA
	04/97	281.98	NA	45.10	236.88	NA
	05/97	281.98	NA	44.68	237.30	NA
	06/97	281.98	NA	45.38	236.60	NA
	07/97	281.98	NA	45.88	236.10	NA
	08/97	281.98	NA	44.48	237.50	NA
	09/97	281.98	NA	43.58	238.40	NA
	10/97	281.98	NA	43.58	238.40	NA
	10/21/97	281.98	NA	44.59	237.39	NA
	04/08/98	281.98	NA	44.15	237.83	NA
	10/22/98	281.98	66.09	44.70	237.28	23.7
	03/23/99	281.98	66.09	44.04	237.94	24.5
	10/21/99	281.98	66.07	44.50	237.48	23.9
	04/19/00	281.98	66.07	44.86	237.12	23.6
	01/10/01	281.98	66.07	45.50	236.48	22.8
	08/20/01	281.98	66.07	44.87	237.11	23.5
	01/15/02	281.98	66.07	45.29	236.69	23.1
	05/13/02	281.98	66.05	43.68	238.30	0
	06/27/02	281.98	66.15	44.49	237.49	0
	07/01/02	281.98	66.19	44.62	237.36	0
	07/09/02	281.98	66.21	44.53	237.45	0
	07/12/02	281.98	66.07	44.50	237.48	23.9
	10/08/02	281.98	66.20	44.96	237.02	0
	01/20/03	281.98	66.07	45.05	236.93	23.3
	03/31/03	281.98	66.50	45.32	236.66	0

TABLE 3A
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE C MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-4A (continued)	06/09/03	281.98	66.07	44.76	237.22	23.6
	06/30/03	281.98	66.40	44.75	237.23	0
	09/29/03	281.98	66.25	45.29	236.69	0
	12/22/03	281.98	66.21	45.23	236.75	0
	01/15/04	281.98	66.28	45.26	236.72	25
	07/15/04	281.98	66.48	44.25	237.73	25
	01/27/05	281.98	66.52	44.11	237.87	25
MW-C-4A	07/27/05	281.98	66.52	43.67	238.31	25.5
	10/19/05	281.98	66.58	44.04	237.94	25
	11/17/05	281.98	NR	44.58	237.40	0
	12/09/05	281.98	NR	44.62	237.36	0
	01/25/06	281.98	66.53	44.80	237.18	25
	02/27/06	281.98	NR	44.66	237.32	0
	03/29/06	281.98	NR	44.69	237.29	0
	04/26/06	281.98	66.52	44.67	237.31	25
	06/01/06	281.98	NR	44.75	237.23	0
	06/28/06	281.98	NR	44.99	236.99	0
	07/26/06	281.98	66.51	44.88	237.10	25
	08/25/06	281.98	NR	44.86	237.12	0
	09/28/06	281.98	NR	45.10	236.88	0
MW-C-5	07/27/05	243.11	14.62	10.36	232.75	2.1
	10/19/05	243.11	14.62	10.53	232.58	2-dry
	11/17/05	243.11	NR	10.77	232.34	0
	12/09/05	243.11	NR	10.84	232.27	0
	01/25/06	243.11	14.62	10.44	232.67	2.25
	02/27/06	243.11	NR	10.10	233.01	0
	03/29/06	243.11	NR	10.41	232.70	0
	04/26/06	243.11	14.62	10.44	232.67	2.5-dry
	06/01/06	243.11	NR	10.50	232.61	0
	06/28/06	243.11	NR	10.53	232.58	0
	07/26/06	243.11	14.62	10.53	232.58	2.5-dry
	08/25/06	243.11	NR	10.69	232.42	0
	09/28/06	243.11	NR	10.83	232.28	0
MW-C-6	07/27/05	232.91	25.30	17.65	215.26	3-dry
	10/19/05	232.91	25.37	17.86	215.05	3-dry
	11/17/05	232.91	NR	18.34	214.57	0
	12/09/05	232.91	NR	18.56	214.35	0
	01/25/06	232.91	25.30	18.74	214.17	2.5-dry
	02/27/06	232.91	NR	16.14	216.77	0
	03/29/06	232.91	NR	14.89	218.02	0
	04/26/06	232.91	25.30	16.14	216.77	4.5
	06/01/06	232.91	NR	16.90	216.01	0
	06/28/06	232.91	NR	17.33	215.58	0
	07/26/06	232.91	25.31	17.34	215.57	4
	08/25/06	232.91	NR	17.41	215.50	0
	09/28/06	232.91	NR	17.64	215.27	0

TABLE 3A
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE C MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
USPZ113	11/14/96	264.42	NA	29.00	235.42	NA
	01/97	264.42	NA	30.42	234.00	NA
	04/97	264.42	NA	26.30	238.12	NA
	05/97	264.42	NA	25.92	238.50	NA
	06/97	264.42	NA	28.12	236.30	NA
	07/97	264.42	NA	29.52	234.90	NA
	08/97	264.42	NA	28.22	236.20	NA
	09/97	264.42	NA	28.62	235.80	NA
	10/97	264.42	NA	28.42	236.00	NA
	05/13/02	264.42	41.76	29.61	234.81	0
	06/27/02	264.42	41.17	29.79	234.63	0
	07/01/02	264.42	41.25	29.82	234.60	0
	07/09/02	264.42	41.29	29.91	234.51	0
	10/08/02	264.42	41.21	30.05	234.37	0
	03/31/03	264.42	41.78	29.65	234.77	0
	06/30/03	264.42	41.92	29.74	234.68	0
	09/29/03	264.42	41.20	30.35	234.07	0
	12/22/03	264.42	41.17	30.09	234.33	0
	01/15/04	264.42	41.12	30.26	234.16	0
	07/15/04	264.42	41.17	29.71	234.71	0
	01/27/05	264.42	41.16	29.58	234.84	0
MW-C-113	07/27/05	264.42	41.61	29.45	234.97	6
	10/19/05	264.42	42.14	29.78	234.64	6
	11/17/05	264.42	NR	30.09	234.33	0
	12/09/05	264.42	NR	30.08	234.34	0
	01/25/06	264.42	41.91	30.32	234.10	6
	02/27/06	264.42	NR	29.89	234.53	0
	03/29/06	264.42	NR	30.02	234.40	0
	04/26/06	264.42	41.83	30.11	234.31	6
	06/01/06	264.42	NR	30.12	234.30	0
	06/28/06	264.42	NR	30.34	234.08	0
	07/26/06	264.42	41.76	30.24	234.18	7.5
	08/25/06	264.42	NR	30.29	234.13	0
	09/28/06	264.42	NR	30.43	233.99	0

USPZ102	04/97	266.67	NA	32.90	233.77	NA
	05/97	266.67	NA	33.07	233.60	NA
	06/97	266.67	NA	31.97	234.70	NA
	07/97	266.67	NA	28.67	238.00	NA
	08/97	266.67	NA	31.17	235.50	NA
	09/97	266.67	NA	31.27	235.40	NA
	10/97	266.67	NA	31.17	235.50	NA
	05/13/02	266.67	44.07	33.31	233.36	0
	06/27/02	266.67	44.28	33.07	233.60	0
	07/01/02	266.67	44.28	33.94	232.73	0
	07/09/02	266.67	44.28	33.09	233.58	0
	10/08/02	266.67	44.28	33.36	233.31	0
	03/31/03	266.67	44.08	33.35	233.32	0
	06/30/03	266.67	44.34	33.06	233.61	0
	09/29/03	266.67	44.27	33.31	233.36	0
	12/22/03	266.67	44.28	33.21	233.46	0
	01/15/04	266.67	44.29	33.21	233.46	0
	07/15/04	266.67	44.25	32.41	234.26	0
	01/27/05	266.67	44.20	32.18	234.49	0

TABLE 3A
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE C MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
PZ-C-102 (continued)	07/27/05	266.67	44.20	31.95	234.72	0
	10/19/05	266.67	44.25	32.23	234.44	0
	11/17/05	266.67	NR	32.59	234.08	0
	12/09/05	266.67	NR	32.68	233.99	0
	01/25/06	266.67	44.29	32.85	233.82	0
	02/27/06	266.67	NR	32.72	233.95	0
	03/29/06	266.67	NR	32.83	233.84	0
	04/26/06	266.67	44.26	32.94	233.73	0
	06/01/06	266.67	NR	33.08	233.59	0
	06/28/06	266.67	NR	33.13	233.54	0
	07/26/06	266.67	44.23	33.05	233.62	0
	08/25/06	266.67	NR	33.01	233.66	0
	09/28/06	266.67	NR	33.35	233.32	0
USPZ103	11/14/96	267.13	NA	37.80	229.33	NA
	01/97	267.13	NA	38.13	229.00	NA
	04/97	267.13	NA	37.30	229.83	NA
	05/97	267.13	NA	37.23	229.90	NA
	06/97	267.13	NA	38.13	229.00	NA
	07/97	267.13	NA	37.33	229.80	NA
	08/97	267.13	NA	37.13	230.00	NA
	09/97	267.13	NA	37.13	230.00	NA
	10/97	267.13	NA	37.63	229.50	NA
	05/13/02	267.13	45.15	37.56	229.57	0
	06/27/02	267.13	44.35	37.38	229.75	0
	07/01/02	267.13	45.36	37.43	229.70	0
	07/09/02	267.13	45.37	37.34	229.79	0
	10/08/02	267.13	45.37	37.46	229.67	0
	03/31/03	267.13	45.10	37.68	229.45	0
	06/30/03	267.13	45.37	37.39	229.74	0
	09/29/03	267.13	45.35	37.62	229.51	0
	12/22/03	267.13	45.36	37.54	229.59	0
	01/15/04	267.13	45.35	37.58	229.55	0
	07/15/04	267.13	45.36	37.53	229.60	0
	01/27/05	267.13	45.35	37.21	229.92	0
PZ-C-103	07/27/05	267.13	45.34	36.63	230.50	0
	10/19/05	267.13	45.36	36.68	230.45	0
	11/17/05	267.13	NR	36.98	230.15	0
	12/09/05	267.13	NR	37.01	230.12	0
	01/25/06	267.13	45.37	37.08	230.05	0
	02/27/06	267.13	NR	37.03	230.10	0
	03/29/06	267.13	NR	37.12	230.01	0
	04/26/06	267.13	45.38	37.23	229.90	0
	06/01/06	267.13	NR	37.30	229.83	0
	06/28/06	267.13	NR	37.44	229.69	0
	07/26/06	267.13	45.36	37.41	229.72	0
	08/25/06	267.13	NR	37.44	229.69	0
	09/28/06	267.13	NR	37.59	229.54	0

TABLE 3A
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE C MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ209	06/27/02	252.35	25.20	13.79	238.56	0
	07/01/02	252.35	25.19	14.18	238.17	0
	07/09/02	252.35	25.68	14.22	238.13	0
	10/08/02	252.35	25.19	15.24	237.11	0
	03/31/03	252.35	24.92	13.90	238.45	0
	06/30/03	252.35	25.23	14.20	238.15	0
	09/29/03	252.35	25.18	15.15	237.20	0
	12/22/03	252.35	25.16	15.46	236.89	0
	01/15/04	252.35	25.18	15.54	236.81	0
	07/15/04	252.35	25.20	12.87	239.48	0
	01/27/05	252.35	25.18	12.21	240.14	0
PZ-C-209	07/27/05	252.35	25.16	13.07	239.28	0
	10/19/05	252.35	25.19	13.84	238.51	0
	11/17/05	252.35	NR	14.45	237.90	0
	12/09/05	252.35	NR	14.62	237.73	0
	01/25/06	252.35	25.18	14.97	237.38	0
	02/27/06	252.35	NR	14.61	237.74	0
	03/29/06	252.35	NR	14.50	237.85	0
	04/26/06	252.35	25.18	14.32	238.03	0
	06/01/06	252.35	NR	14.11	238.24	0
	06/28/06	252.35	NR	14.29	238.06	0
	07/26/06	252.35	25.17	14.30	238.05	0
	08/25/06	252.35	NR	14.48	237.87	0
	09/28/06	252.35	NR	14.89	237.46	0
PZ-C-308	10/19/05	244.76	16.45	15.80	228.96	0
	11/17/05	244.76	NR	15.99	228.77	0
	12/09/05	244.76	16.46	16.02	228.74	0
	01/25/06	244.76	16.46	16.23	228.53	0
	02/27/06	244.76	16.59	16.26	228.50	0
	03/29/06	244.76	16.46	16.24	228.52	0
	04/26/06	244.76	16.46	16.14	228.62	0
	06/01/06	244.76	NR	16.25	228.51	0
	06/28/06	244.76	16.48	16.27	228.49	0
	07/26/06	244.76	16.46	16.11	228.65	0
	08/25/06	244.76	16.46	16.16	228.60	0
	09/28/06	244.76	16.46	16.20	228.56	0

NOTES:
1. NA - Not Available
2. Name changes for wells became effective with LDEQ approval of permit renewal application and upgrade and implementation of new groundwater monitoring system in 2005.
3. MW-4 was screened from 264.2 to 254.2 ft. MSL in Zone B. Groundwater elevation and gauging data are included here for comparison with MW-4A data.
4. Groundwater elevation data for MW-4 and MW-C-4A dated 5/88 - 1/03 obtained from semiannual groundwater monitoring reports available at Mundy Landfill.
5. Groundwater elevation data dated 4/15/94, 11/14/96, and 01/97-10/97 obtained from *Subsurface Exploration for Mundy Landfill, DeSoto Parish, Louisiana*, Maxim Technologies, Inc., April 11, 1997.
6. MW-4A casing elevation of 281.98 ft. MSL from well construction diagram is used for determination of MW-4A groundwater elevations. Semiannual groundwater monitoring reports for 5/98 - 01/01 sampling events incorrectly reported MW-4A casing elevation as 280.95 or 280.96 ft. MSL. Semiannual reports for 8/20/01 and 1/15/02 sampling events incorrectly report casing elevation of 71.95 ft. MSL. Maxim Technologies, Inc. report dated April 11, 1997 gives MW-4A elevation as 281.0 ft. MSL.
7. Groundwater gauging and elevation data dated 5/13/02 - 9/28/06 obtained by Jones Environmental, Inc.

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-G1-7	7/27/05	267.37	81.43	35.50	231.87	7-dry
	10/19/05	267.37	82.03	35.26	232.11	8.5-dry
	11/17/05	267.37	NR	35.24	232.13	0
	12/09/05	267.37	NR	35.21	232.16	0
	01/25/06	267.37	81.95	35.05	232.32	8.5-dry
	02/27/06	267.37	NR	35.00	232.37	0
	03/29/06	267.37	NR	34.91	232.46	0
	04/26/06	267.37	82.00	35.01	232.36	8.5-dry
	06/01/06	267.37	NR	35.11	232.26	0
	06/28/06	267.37	NR	35.15	232.22	0
	07/26/06	267.37	82.29	35.33	232.04	9-dry
	08/25/06	267.37	NR	35.33	232.04	0
	09/28/06	267.37	NR	35.48	231.89	0
LSPZ102	04/97	266.56	NA	35.00	231.56	NA
	05/97	266.56	NA	34.46	232.10	NA
	06/97	266.56	NA	33.06	233.50	NA
	07/97	266.56	NA	33.46	233.10	NA
	08/97	266.56	NA	33.06	233.50	NA
	09/97	266.56	NA	32.56	234.00	NA
	10/97	266.56	NA	32.86	233.70	NA
	05/13/02	266.56	81.89	34.76	231.80	0
	06/27/02	266.56	82.04	34.74	231.82	0
	07/01/02	266.56	82.07	34.73	231.83	0
	07/09/02	266.56	82.05	34.82	231.74	0
	10/08/02	266.56	82.10	34.83	231.73	0
	03/31/03	266.56	81.81	34.06	232.50	0
	06/30/03	266.56	82.07	33.38	233.18	0
	09/29/03	266.56	82.58	34.00	232.56	0
	12/22/03	266.56	82.04	34.25	232.31	0
	01/15/04	266.56	82.05	34.18	232.38	0
	07/15/04	266.56	82.06	34.92	231.64	0
	01/27/05	266.56	82.03	32.22	234.34	0
MW-G1-102	07/27/05	266.56	82.01	32.81	233.75	10-dry
	10/19/05	266.56	82.11	33.25	233.31	10.5-dry
	11/17/05	266.56	NR	33.51	233.05	0
	12/09/05	266.56	NR	33.62	232.94	0
	01/25/06	266.56	82.08	33.66	232.90	20-dry
	02/27/06	266.56	NR	32.53	234.03	0
	03/29/06	266.56	NR	33.47	233.09	0
	04/26/06	266.56	82.08	33.55	233.01	17-dry
	06/01/06	266.56	NR	33.80	232.76	0
	06/28/06	266.56	NR	33.10	233.46	0
	07/26/06	266.56	82.07	33.77	232.79	17.5-dry
	08/25/06	266.56	NR	33.96	232.60	0
	09/28/06	266.56	NR	34.22	232.34	0

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-G1-8	07/27/05	215.81	18.94	18.59	197.22	0.05-dry
	10/19/05	215.81	18.94	DRY	<196.87	0
	11/17/05	215.81	18.94	DRY	<196.87	0
	12/09/05	215.81	18.95	DRY	<196.86	0
	01/25/06	215.81	18.94	DRY	<196.87	0
	02/27/06	215.81	NR	17.45	198.36	0
	03/29/06	215.81	18.94	17.54	198.27	0
	04/26/06	215.81	18.94	18.49	197.32	0.06-dry
	06/01/06	215.81	NR	18.59	197.22	0
	06/28/06	215.81	18.93	18.61	197.20	0
	07/26/06	215.81	18.92	18.65	197.16	0
	08/25/06	215.81	18.90	18.69	197.12	0
	09/28/06	215.81	18.92	18.69	197.12	0
MW-G1-9	07/27/05	196.94	14.14	10.45	186.49	2-dry
	10/19/05	196.94	14.14	11.58	185.36	2-dry
	11/17/05	196.94	NR	11.66	185.28	0
	12/09/05	196.94	NR	11.60	185.34	0
	01/25/06	196.94	14.14	10.62	186.32	1.5-dry
	02/27/06	196.94	NR	9.54	187.40	0
	03/29/06	196.94	NR	10.19	186.75	0
	04/26/06	196.94	14.14	10.53	186.41	2.25-dry
	06/01/06	196.94	NR	10.91	186.03	0
	06/28/06	196.94	NR	10.89	186.05	0
	07/26/06	196.94	14.14	11.81	185.13	1.5-dry
	08/25/06	196.94	NR	11.92	185.02	0
	09/28/06	196.94	NR	12.38	184.56	0
MW-G1-10	07/27/05	188.19	11.05	6.92	181.27	2-dry
	10/19/05	188.19	11.10	8.17	180.02	1-dry
	11/17/05	188.19	NR	8.21	179.98	0
	12/09/05	188.19	NR	8.18	180.01	0
	01/25/06	188.19	11.15	7.65	180.54	1-dry
	02/27/06	188.19	NR	6.59	181.60	0
	03/29/06	188.19	NR	6.56	181.63	0
	04/26/06	188.19	11.05	7.23	180.96	1.75-dry
	06/01/06	188.19	NR	7.57	180.62	0
	06/28/06	188.19	NR	7.09	181.10	0
	07/26/06	188.19	11.05	8.10	180.09	1-dry
	08/25/06	188.19	NR	8.13	180.06	0
	09/28/06	188.19	NR	8.29	179.90	0

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ104B	04/97	217.79	NA	5.49	212.30	NA
	05/97	217.79	NA	6.99	210.80	NA
	06/97	217.79	NA	7.29	210.50	NA
	07/97	217.79	NA	4.09	213.70	NA
	08/97	217.79	NA	9.99	207.80	NA
	09/97	217.79	NA	9.69	208.10	NA
	10/97	217.79	NA	9.59	208.20	NA
	05/13/02	217.79	29.85	14.61	203.18	0
	06/27/02	217.79	29.52	16.10	201.69	0
	07/01/02	217.79	29.52	16.11	201.68	0
	07/09/02	217.79	29.55	16.24	201.55	0
	10/08/02	217.79	29.50	16.85	200.94	0
	03/31/03	217.79	29.75	14.79	203.00	0
	06/30/03	217.79	29.54	15.84	201.95	0
	09/29/03	217.79	29.55	15.74	202.05	0
	12/22/03	217.79	29.46	14.84	202.95	0
	01/15/04	217.79	29.50	14.39	203.40	0
	07/15/04	217.79	29.52	14.06	203.73	0
	01/27/05	217.79	29.47	13.99	203.80	0
MW-G1-104B	07/27/05	217.79	29.55	15.19	202.60	2.5-dry
	10/19/05	217.79	29.87	15.75	202.04	3.5-dry
	11/17/05	217.79	NR	16.02	201.77	0
	12/09/05	217.79	NR	16.05	201.74	0
	01/25/06	217.79	30.18	15.82	201.97	3-dry
	02/27/06	217.79	NR	14.23	203.56	0
	03/29/06	217.79	NR	14.07	203.72	0
	04/26/06	217.79	31.04	14.66	203.13	3-dry
	06/01/06	217.79	NR	14.80	202.99	0
	06/28/06	217.79	NR	15.01	202.78	0
	07/26/06	217.79	31.16	15.29	202.50	3.5-dry
	08/25/06	217.79	NR	15.51	202.28	0
	09/28/06	217.79	NR	15.78	202.01	0

LSPZ219	06/27/02	208.47	25.32	12.44	196.03	0
	07/01/02	208.47	25.31	12.36	196.11	0
	07/09/02	208.47	25.31	17.21	191.10	0
	10/08/02	208.47	25.31	17.65	190.82	0
	03/31/03	208.47	25.16	14.10	194.37	0
	06/30/03	208.47	25.19	16.21	192.26	0
	09/29/03	208.47	25.31	16.35	192.12	0
	12/22/03	208.47	24.91	15.63	192.84	0
	01/15/04	208.47	24.19	15.51	192.96	0
	07/15/04	208.47	24.92	15.28	193.19	0
	01/27/05	208.47	24.91	13.15	195.32	0
MW-G1-219	07/27/05	208.47	24.92	15.06	193.41	5.5-dry
	10/19/05	208.47	24.92	15.69	192.78	4.5
	11/17/05	208.47	NR	15.56	192.91	0
	12/09/05	208.47	NR	15.28	193.19	0
	01/25/06	208.47	24.93	14.73	193.74	5
	02/27/06	208.47	NR	13.48	194.99	0
	03/29/06	208.47	NR	14.18	194.29	0

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-G1-219 (continued)	04/26/06	208.47	24.92	15.07	193.40	5
	06/01/06	208.47	NR	15.48	192.99	0
	06/28/06	208.47	NR	15.45	193.02	0
	07/26/06	208.47	24.92	16.47	192.00	4.5
	08/25/06	208.47	NR	16.34	192.13	0
	09/28/06	208.47	NR	16.27	192.20	0
LSPZ209	06/27/02	252.94	61.08	27.58	225.36	0
	07/01/02	252.94	61.05	27.33	225.61	0
	07/09/02	252.94	61.05	28.84	224.10	0
	10/08/02	252.94	61.23	27.41	225.53	0
	03/31/03	252.94	61.06	26.98	225.96	0
	06/30/03	252.94	61.20	27.06	225.88	0
	09/29/03	252.94	61.24	27.15	225.79	0
	12/22/03	252.94	61.21	27.32	225.62	0
	01/15/04	252.94	61.19	27.35	225.59	0
	07/15/04	252.94	61.23	26.46	226.48	0
	01/27/05	252.94	61.13	25.64	227.30	0
PZ-G1-209	07/27/05	252.94	61.13	25.22	227.72	0
	10/19/05	252.94	61.14	25.78	227.16	0
	11/17/05	252.94	NR	25.78	227.16	0
	12/09/05	252.94	NR	25.80	227.14	0
	01/25/06	252.94	61.13	25.79	227.15	0
	02/27/06	252.94	NR	25.74	227.20	0
	03/29/06	252.94	NR	25.62	227.32	0
	04/26/06	252.94	61.13	25.50	227.44	0
	06/01/06	252.94	NR	25.40	227.54	0
	06/28/06	252.94	NR	25.35	227.59	0
	07/26/06	252.94	61.13	25.37	227.57	0
	08/25/06	252.94	NR	25.49	227.45	0
	09/28/06	252.94	NR	25.63	227.31	0
PZ-G1-305	10/19/05	189.74	18.69	17.42	172.32	0
	11/17/05	189.74	NR	17.98	171.76	0
	12/09/05	189.74	18.70	18.27	171.47	0
	01/25/06	189.74	18.69	18.43	171.31	0
	02/27/06	189.74	18.81	18.48	171.26	0
	03/29/06	189.74	18.70	18.48	171.26	0
	04/26/06	189.74	18.70	15.81	173.93	0
	06/01/06	189.74	NR	14.40	175.34	0
	06/28/06	189.74	18.71	15.20	174.54	0
	07/26/06	189.74	18.70	16.30	173.44	0
	08/25/06	189.74	18.68	17.33	172.41	0
	09/28/06	189.74	18.70	18.24	171.50	0

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
PZ-G1-312	10/19/05	206.68	23.30	22.62	184.06	0
	11/17/05	206.68	NR	22.93	183.75	0
	12/09/05	206.68	23.30	23.02	183.66	0
	01/25/06	206.68	23.30	23.08	183.60	0
	02/27/06	206.68	23.43	23.12	183.56	0
	03/29/06	206.68	23.30	23.11	183.57	0
	04/26/06	206.68	23.30	23.11	183.57	0
	06/01/06	206.68	NR	23.15	183.53	0
	06/28/06	206.68	23.30	23.14	183.54	0
	07/26/06	206.68	23.30	23.15	183.53	0
	08/25/06	206.68	23.30	23.16	183.52	0
	09/28/06	206.68	23.29	23.16	183.52	0
LSPZ100B	04/97	268.44	NA	37.90	230.54	NA
	05/97	268.44	NA	35.54	232.90	NA
	06/97	268.44	NA	35.44	233.00	NA
	07/97	268.44	NA	36.34	232.10	NA
	08/97	268.44	NA	36.34	232.10	NA
	09/97	268.44	NA	34.94	233.50	NA
	10/97	268.44	NA	34.44	234.00	NA
	05/13/02	268.44	86.29	36.36	232.08	0
	06/27/02	268.44	95.91	36.43	232.01	0
	07/01/02	268.44	95.91	36.35	232.09	0
	07/09/02	268.44	95.92	36.49	231.95	0
	10/08/02	268.44	96.06	36.63	231.81	0
	03/31/03	268.44	95.30	36.18	232.26	0
	06/30/03	268.44	95.95	36.47	231.97	0
	09/29/03	268.44	95.99	36.58	231.86	0
	12/22/03	268.44	96.06	36.63	231.81	0
	01/15/04	268.44	96.09	36.51	231.93	0
	07/15/04	268.44	96.04	36.23	232.21	0
	01/27/05	268.44	95.82	36.02	232.42	0
	02/24/05	LSPZ100B plugged & abandoned				
LSPZ111	04/97	214.81	NA	16.51	198.30	NA
	05/97	214.81	NA	17.01	197.80	NA
	06/97	214.81	NA	18.71	196.10	NA
	07/97	214.81	NA	21.31	193.50	NA
	08/97	214.81	NA	23.21	191.60	NA
	09/97	214.81	NA	23.11	191.70	NA
	10/97	214.81	NA	23.21	191.60	NA
	05/13/02	214.81	22.48	17.25	197.56	0
	06/27/02	214.81	22.70	19.11	195.70	0
	07/01/02	214.81	22.70	19.11	195.70	0
	07/09/02	214.81	22.70	19.13	195.68	0
	10/08/02	214.81	22.71	20.40	194.41	0
	03/31/03	214.81	22.48	14.95	199.86	0
	06/30/03	214.81	22.53	17.43	197.38	0

TABLE 3B
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G1 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ111 (continued)	09/29/03	214.81	22.70	17.17	197.64	0
	12/22/03	214.81	22.70	16.14	198.67	0
	01/15/04	214.81	22.71	15.57	199.24	0
	07/15/04	214.81	22.71	15.58	199.23	0
	01/27/05	214.81	22.71	15.03	199.78	0
	03/01/05	LSPZ111 plugged & abandoned				

NOTES:
1. NA - Not Available
2. Name changes for wells became effective with LDEQ approval of permit renewal application and upgrade and implementation of new groundwater monitoring system in 2005.
3. Groundwater elevation data dated 4/15/94, 11/14/96, and 01/97-10/97 obtained from *Subsurface Exploration for Mundy Landfill, DeSoto Parish, Louisiana*, Maxim Technologies, Inc., April 11, 1997.
4. Groundwater gauging and elevation data dated 5/13/02 - 9/28/06 obtained by Jones Environmental, Inc.

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ103	04/97	267.27	NA	43.80	223.47	NA
	05/97	267.27	NA	43.97	223.30	NA
	06/97	267.27	NA	38.17	229.10	NA
	07/97	267.27	NA	42.37	224.90	NA
	08/97	267.27	NA	43.07	224.20	NA
	09/97	267.27	NA	48.27	219.00	NA
	10/97	267.27	NA	47.77	219.50	NA
	05/13/02	267.27	>101	44.21	223.06	0
	06/27/02	267.27	>100	44.95	222.32	0
	07/01/02	267.27	>100	44.84	222.43	0
	07/09/02	267.27	>100	44.94	222.33	0
	10/08/02	267.27	>100	45.23	222.04	0
	03/31/03	267.27	>100	44.40	222.87	0
	06/30/03	267.27	>100	44.94	222.33	0
	09/29/03	267.27	>100	45.03	222.24	0
	12/22/03	267.27	>100	44.76	222.51	0
	01/15/04	267.27	>100	44.86	222.41	0
	07/15/04	267.27	>100	44.31	222.96	0
	01/27/05	267.27	>100	43.60	223.67	0
MW-G2-103	07/27/05	267.27	102.70	44.14	223.13	11-dry
	10/19/05	267.27	102.25	44.40	222.87	10-dry
	11/17/05	267.27	NR	44.46	222.81	0
	12/09/05	267.27	NR	44.48	222.79	0
	01/25/06	267.27	102.70	44.30	222.97	11.5-dry
	02/27/06	267.27	NR	43.85	223.42	0
	03/29/06	267.27	NR	44.16	223.11	0
	04/26/06	267.27	102.05	44.25	223.02	11.5-dry
	06/01/06	267.27	NR	44.43	222.84	0
	06/28/06	267.27	NR	44.45	222.82	0
	07/26/06	267.27	102.70	44.63	222.64	12-dry
	08/25/06	267.27	NR	44.62	222.65	0
	09/28/06	267.27	NR	44.73	222.54	0

MW-1	05/12/88	192.60	36	21.8	170.8	11.74
	11/15/88	192.60	37.0	18.16	174.44	21
	06/05/89	192.60	35.0	19.0	173.6	18
	12/04/89	192.60	39.0	18.0	174.60	23.31
	03/23/90	192.60	36	17.75	174.85	23.58
	10/29/90	192.60	NA	16.33	176.27	NA
	04/23/91	192.60	NA	15.98	176.62	NA
	10/15/91	192.60	NA	14.85	177.75	NA
	04/14/92	192.60	NA	16.60	176.00	NA
	04/20/93	192.60	NA	16.30	176.30	NA
	10/19/93	192.60	NA	17.26	175.34	NA
	04/15/94	192.60	NA	16.60	176.00	NA
	10/03/94	192.60	NA	17.37	175.23	NA
	04/24/95	192.60	NA	16.90	175.70	NA
	10/30/95	192.60	NA	16.40	176.20	NA
	04/29/96	192.60	NA	17.20	175.40	NA
	10/29/96	192.60	NA	16.13	176.47	NA
	11/14/96	192.60	NA	16.0	176.6	NA
	01/16/97	192.60	NA	15.40	177.20	NA
	01/97	192.60	NA	15.6	177.00	NA

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-1 (continued)	04/97	192.60	NA	16.7	175.90	NA
	05/97	192.60	NA	16.0	176.60	NA
	06/97	192.60	NA	15.9	176.70	NA
	07/97	192.60	NA	16.2	176.40	NA
	08/97	192.60	NA	18.5	174.10	NA
	09/97	192.60	NA	16.1	176.50	NA
	10/97	192.60	NA	16.0	176.60	NA
	10/21/97	192.60	NA	16.80	175.80	NA
	04/08/98	192.60	NA	17.55	175.05	NA
	10/22/98	192.60	38.10	18.35	174.25	15-dry
	03/23/99	192.60	38.10	17.77	174.83	20-dry
	10/21/99	192.60	38.06	18.44	174.16	21.8
	04/19/00	192.60	38.09	18.63	173.97	21.6
	01/10/01	192.60	38.09	18.12	174.48	20-dry
	08/20/01	192.60	38.09	19.20	173.40	21.0
	01/15/02	192.60	38.09	17.05	175.55	12.5-dry
	05/13/02	192.60	38.34	18.81	173.79	0
	06/27/02	192.60	38.30	18.65	173.95	0
	07/01/02	192.60	38.30	18.65	173.95	0
	07/09/02	192.60	38.59	18.49	174.11	0
	07/12/02	192.60	38.09	18.53	174.07	9-dry
	10/08/02	192.60	38.32	17.52	175.08	0
	01/20/03	192.60	38.09	16.27	176.33	11-dry
	03/31/03	192.60	38.17	16.30	176.30	0
	06/09/03	192.60	38.09	17.45	175.15	10-dry
	06/30/03	192.60	38.36	17.59	175.01	0
	09/29/03	192.60	38.31	17.15	175.45	0
	12/22/03	192.60	38.33	16.43	176.17	0
	01/15/04	192.60	38.30	16.33	176.27	10-dry
	07/15/04	192.60	38.32	15.40	177.20	dry
	01/27/05	192.60	38.32	14.29	178.31	9.5-dry
MW-G2-1	07/27/05	192.60	38.32	16.21	176.39	9-dry
	10/19/05	192.60	38.36	16.88	175.72	8.75-dry
	11/17/05	192.60	NR	16.90	175.70	0
	12/09/05	192.60	NR	16.84	175.76	0
	01/25/06	192.60	38.32	16.49	176.11	9-dry
	02/27/06	192.60	NR	16.35	176.25	0
	03/29/06	192.60	NR	16.37	176.23	0
	04/26/06	192.60	38.34	16.62	175.98	9-dry
	06/01/06	192.60	NR	16.95	175.65	0
	06/28/06	192.60	NR	16.99	175.61	0
	07/26/06	192.60	38.32	17.22	175.38	9-dry
	08/25/06	192.60	NR	17.61	174.99	0
	09/28/06	192.60	NR	17.49	175.11	0
MW-G2-12	07/27/05	232.20	60.33	25.02	207.18	9-dry
	10/19/05	232.20	60.34	25.29	206.91	8-dry
	11/17/05	232.20	NR	25.23	206.97	0
	12/09/05	232.20	NR	25.53	206.67	0
	01/25/06	232.20	60.35	25.73	206.47	12-dry
	02/27/06	232.20	NR	25.22	206.98	0
	03/29/06	232.20	NR	24.50	207.70	0
	04/26/06	232.20	60.33	24.46	207.74	12-dry

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-G2-12 (continued)	06/01/06	232.20	NR	24.73	207.47	0
	06/28/06	232.20	NR	24.88	207.32	0
	07/26/06	232.20	60.34	25.08	207.12	11.5-dry
	08/25/06	232.20	NR	25.28	206.92	0
	09/28/06	232.20	NR	25.37	206.83	0
MW-G2-13	07/27/05	189.23	18.46	8.04	181.19	6
	10/19/05	189.23	18.61	9.38	179.85	5
	11/17/05	189.23	NR	9.33	179.90	0
	12/09/05	189.23	NR	9.26	179.97	0
	01/25/06	189.23	18.45	8.78	180.45	6
	02/27/06	189.23	NR	7.85	181.38	0
	03/29/06	189.23	NR	7.51	181.72	0
	04/26/06	189.23	18.46	8.45	180.78	5
	06/01/06	189.23	NR	8.85	180.38	0
	06/28/06	189.23	NR	8.33	180.90	0
	07/26/06	189.23	18.46	9.41	179.82	5
	08/25/06	189.23	NR	9.50	179.73	0
	09/28/06	189.23	NR	9.46	179.77	0
LSPZ110B	04/97	203.02	NA	19.00	184.02	NA
	05/97	203.02	NA	19.52	183.50	NA
	06/97	203.02	NA	30.02	173.00	NA
	07/97	203.02	NA	31.12	171.90	NA
	08/97	203.02	NA	30.82	172.20	NA
	09/97	203.02	NA	31.12	171.90	NA
	10/97	203.02	NA	35.02	168.00	NA
	05/13/02	203.02	32.52	19.89	183.13	0
	06/27/02	203.02	32.68	20.76	182.26	0
	07/01/02	203.02	32.68	20.74	182.28	0
	07/09/02	203.02	32.68	21.76	181.26	0
	10/08/02	203.02	32.70	19.63	183.39	0
	03/31/03	203.02	32.50	19.00	184.02	0
	06/30/03	203.02	32.58	20.84	182.18	0
	09/29/03	203.02	32.67	19.68	183.34	0
	12/22/03	203.02	32.69	19.24	183.78	0
	01/15/04	203.02	32.69	19.44	183.58	0
	07/15/04	203.02	32.69	19.47	183.55	0
	01/27/05	203.02	32.69	17.46	185.56	0
MW-G2-110B	07/27/05	203.02	32.70	20.14	182.88	6-dry
	10/19/05	203.02	32.80	18.30	184.72	6.5-dry
	11/17/05	203.02	NR	19.44	183.58	0
	12/09/05	203.02	NR	19.42	183.60	0
	01/25/06	203.02	32.70	19.94	183.08	6.25
	02/27/06	203.02	NR	19.74	183.28	0
	03/29/06	203.02	NR	19.74	183.28	0
	04/26/06	203.02	32.70	20.41	182.61	5-dry
	06/01/06	203.02	NR	20.73	182.29	0
	06/28/06	203.02	NR	20.70	182.32	0
	07/26/06	203.02	32.70	20.58	182.44	5-dry
	08/25/06	203.02	NR	20.36	182.66	0
	09/28/06	203.02	NR	19.93	183.09	0

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ210A	06/27/02	186.87	20.21	4.71	182.16	0
	07/01/02	186.87	20.23	4.39	182.48	0
	07/09/02	186.87	20.24	4.38	182.49	0
	10/08/02	186.87	20.25	4.46	182.41	0
	03/31/03	186.87	20.18	3.99	182.88	0
	06/30/03	186.87	20.24	3.96	182.91	0
	09/29/03	186.87	20.24	4.34	182.53	0
	12/22/03	186.87	20.23	4.05	182.82	0
	01/15/04	186.87	20.23	4.00	182.87	0
	07/15/04	186.87	20.24	3.92	182.95	0
	01/27/05	186.87	20.23	3.88	182.99	0
MW-G2-210A	07/27/05	186.87	20.24	4.58	182.29	8.5
	10/19/05	186.87	20.30	5.95	180.92	7.5
	11/17/05	186.87	NR	5.20	181.67	0
	12/09/05	186.87	NR	5.51	181.36	0
	01/25/06	186.87	20.19	3.57	183.30	8.25
	02/27/06	186.87	NR	2.93	183.94	0
	03/29/06	186.87	NR	2.82	184.05	0
	04/26/06	186.87	20.23	3.21	183.66	10
	06/01/06	186.87	NR	3.68	183.19	0
	06/28/06	186.87	NR	4.12	182.75	0
	07/26/06	186.87	20.23	5.05	181.82	8.5
	08/25/06	186.87	NR	4.73	182.14	0
	09/28/06	186.87	NR	5.63	181.24	0
PZ-G2-309	10/19/05	168.10	26.44	11.51	156.59	0
	11/17/05	168.10	NR	11.94	156.16	0
	12/09/05	168.10	26.43	11.90	156.20	0
	01/25/06	168.10	26.43	9.93	158.17	0
	02/27/06	168.10	26.56	8.30	159.80	0
	03/29/06	168.10	26.43	8.23	159.87	0
	04/26/06	168.10	26.45	9.34	158.76	0
	06/01/06	168.10	NR	9.85	158.25	0
	06/28/06	168.10	26.44	10.03	158.07	0
	07/26/06	168.10	26.43	11.49	156.61	0
	08/25/06	168.10	26.41	12.04	156.06	0
	09/28/06	168.10	26.42	12.90	155.20	0
MW-2	05/12/88	205.80	26	21.7	184.1	4.40
	11/15/88	205.80	26.50	26.17	179.63	0-dry
	06/05/89	205.80	26.0	18.08	187.72	4.05-dry
	12/04/89	205.80	26.0	21.50	184.30	2.80-dry
	03/23/90	205.80	26	18.98	186.82	3.84-dry
	10/29/90	205.80	NA	24.10	181.70	NA
	04/23/91	205.80	NA	9.65	196.15	NA
	10/15/91	205.80	NA	9.65	196.15	NA
	04/14/92	205.80	NA	17.30	188.50	NA
	04/20/93	205.80	NA	18.52	187.28	NA
	10/19/93	205.80	NA	24.35	181.45	NA
	04/15/94	205.80	NA	22.85	182.95	NA
	10/03/94	205.80	NA	25.16	180.64	NA
	04/24/95	205.80	NA	18.90	186.90	NA
	10/30/95	205.80	NA	Dry	NA	NA

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-2 (continued)	04/29/96	205.80	NA	Dry	NA	NA
	10/29/96	205.80	NA	Dry	NA	NA
	11/14/96	205.80	NA	25.4	180.4	NA
	01/16/97	205.80	NA	Dry	NA	NA
	01/97	205.80	NA	NA	NA	NA
	04/97	205.80	NA	NA	NA	NA
	05/97	205.80	NA	NA	NA	NA
	06/97	205.80	NA	NA	NA	NA
	07/97	205.80	NA	NA	NA	NA
	08/97	205.80	NA	NA	NA	NA
	09/97	205.80	NA	NA	NA	NA
	10/97	205.80	NA	NA	NA	NA
	10/21/97	205.80	NA	21.46	184.34	NA
	04/08/98	205.80	NA	21.46	184.34	NA
	10/22/98	205.80	26.25	24.23	181.57	1-dry
	03/23/99	205.80	26.25	17.98	187.82	3.5-dry
	10/21/99	205.80	26.22	21.36	184.44	3-dry
	04/19/00	205.80	26.24	21.13	184.67	3-dry
	01/10/01	205.80	26.24	19.73	186.07	4-dry
	08/20/01	205.80	26.24	20.25	185.55	3.5-dry
	01/15/02	205.80	26.24	18.73	187.07	4-dry
	05/13/02	205.80	27.79	18.11	187.69	0
	06/27/02	205.80	27.31	19.46	186.34	0
	07/01/02	205.80	27.32	19.44	186.36	0
	07/09/02	205.80	27.31	16.38	189.42	0
	07/12/02	205.80	26.24	19.33	186.47	4-dry
	10/08/02	205.80	27.35	19.12	186.68	0
	01/20/03	205.80	26.24	17.53	188.27	4-dry
	03/31/03	205.80	27.10	20.53	185.27	0
	06/09/03	205.80	26.24	19.40	186.40	3-dry
	06/30/03	205.80	27.30	19.08	186.72	0
	09/29/03	205.80	27.31	17.92	187.88	0
	12/22/03	205.80	27.32	17.76	188.04	0
	01/15/04	205.80	27.32	18.01	187.79	4-dry
	07/15/04	205.80	27.33	16.38	189.42	4.5-dry
	01/27/05	205.80	27.33	15.74	190.06	4.5-dry
	03/01/05	MW-2 plugged & abandoned				
MW-3	05/12/88	195.65	26	13.4	182.3	10.64
	11/15/88	195.65	26.79	14.40	181.25	14
	06/05/89	195.65	26.33	8.33	187.32	20
	12/04/89	195.65	26.33	13.00	184.65	14.79
	03/23/90	195.65	26	9.20	186.45	19.2
	10/29/90	195.65	NA	14.36	181.29	NA
	04/21/91	195.65	NA	8.23	187.42	NA
	10/15/91	195.65	NA	12.03	183.62	NA
	04/14/92	195.65	NA	9.54	186.11	NA
	04/20/93	195.65	NA	10.53	185.12	NA
	10/19/93	195.65	NA	12.30	183.35	NA
	04/15/94	195.65	NA	11.37	184.28	NA
	10/03/94	195.65	NA	12.55	183.10	NA
	04/24/95	195.65	NA	11.55	184.10	NA
	10/30/95	195.65	NA	13.25	182.4	NA

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
MW-3 (continued)	04/29/96	195.65	NA	11.00	184.65	NA
	10/29/96	195.65	NA	12.40	183.25	NA
	11/14/96	195.65	NA	12.3	183.4	NA
	01/16/97	195.65	NA	10.90	184.75	NA
	01/97	195.65	NA	12.7	183.00	NA
	04/97	195.65	NA	11.2	184.45	NA
	05/97	195.65	NA	11.9	183.80	NA
	06/97	195.65	NA	10.1	185.59	NA
	07/97	195.65	NA	10.8	184.90	NA
	08/97	195.65	NA	11.5	184.20	NA
	09/97	195.65	NA	11.1	184.60	NA
	10/97	195.65	NA	11.1	184.60	NA
	10/21/97	195.65	NA	11.70	183.95	NA
	04/08/98	195.65	NA	13.30	182.35	NA
	10/22/98	195.65	26.55	13.61	182.04	14.4
	03/23/99	195.65	26.55	13.38	182.27	14.6
	10/21/99	195.65	26.51	14.01	181.64	13.9
	04/19/00	195.65	26.53	14.23	181.42	13.7
	01/10/01	195.65	26.53	11.65	184.00	16.5
	08/20/01	195.65	26.53	12.95	182.70	15.1
	01/15/02	195.65	26.53	10.42	185.23	17.9
	02/02/02	MW-3 plugged & abandoned				NA
LSPZ104	04/97	233.08	NA	16.50	216.58	NA
	05/97	233.08	NA	11.98	221.10	NA
	06/97	233.08	NA	12.68	220.40	NA
	07/97	233.08	NA	13.38	219.70	NA
	08/97	233.08	NA	18.58	214.50	NA
	09/97	233.08	NA	16.08	217.00	NA
	10/97	233.08	NA	16.58	216.50	NA
	05/13/02	233.08	63.45	25.10	207.98	0
	06/27/02	233.08	62.57	26.31	206.77	0
	07/01/02	233.08	62.56	26.42	206.66	0
	07/09/02	233.08	62.71	26.71	206.37	0
	10/08/02	233.08	62.60	27.86	205.22	0
	03/31/03	233.08	62.41	24.91	208.17	0
	06/30/03	233.08	62.63	32.58	200.50	0
	09/29/03	233.08	62.60	24.66	208.42	0
	12/22/03	233.08	62.57	23.97	209.11	0
	01/15/04	233.08	62.60	23.34	209.74	0
	07/15/04	233.08	62.59	22.40	210.68	0
	01/27/05	233.08	62.58	22.54	210.54	0
	03/02/05	LSPZ104 plugged & abandoned				

TABLE 3C
SUMMARY OF GROUNDWATER ELEVATION DATA
ZONE G2 MONITORING & PIEZOMETER WELLS
MUNDY LANDFILL

Well I.D.	DATE	Casing Elevation (ft MSL)	Total Depth (ft)	Depth to Groundwater (ft)	Groundwater Elev. (ft MSL)	Water Recovered (gal)
LSPZ106B	04/97	183.70	NA	10.90	172.80	NA
	05/97	183.70	NA	10.00	173.70	NA
	06/97	183.70	NA	10.30	173.40	NA
	07/97	183.70	NA	8.50	175.20	NA
	08/97	183.70	NA	7.60	176.10	NA
	09/97	183.70	NA	6.30	177.40	NA
	10/97	183.70	NA	5.30	178.40	NA
	05/13/02	NA	NA	NA	NA	0
	06/27/02	NA	NA	NA	NA	0
	07/01/02*	210.19**	56.56	16.67	193.52	0
	07/09/02*	210.19**	56.60	18.16	192.03	0
	10/08/02*	204.0**	51.35	16.65	187.35	0
	3/31/03*	204.0**	24.10	18.11	185.89	0
	06/30/03*	204.0**	51.37	18.88	185.12	0
	09/29/03	204.0**	51.30	18.95	185.05	0
	12/22/03	204.0**	51.27	19.00	185.00	0
	01/15/04	204.0**	51.30	19.12	184.88	0
	07/15/04	204.0**	51.32	18.22	185.78	0
	01/27/05	204.0**	51.31	17.98	186.02	0
	03/04/05	LSPZ106B plugged & abandoned				
LSPZ208	06/27/02	192.43	20.34	9.13	183.30	0
	7/01/02*	192.43	NA	NA	NA	0
	07/09/02	192.43	20.21	8.54	183.89	0
	08/01/02	LSPZ208 plugged & abandoned				
LSPZ210B	06/27/02	186.98	37.68	30.29	156.69	0
	07/01/02	186.98	37.70	30.23	156.75	0
	07/09/02	186.98	37.71	21.61	165.37	0
	10/08/02	186.98	37.69	13.48	173.50	0
	03/31/03	186.98	37.61	11.04	175.94	0
	06/30/03	186.98	37.73	11.10	175.88	0
	09/29/03	186.98	37.65	11.48	175.50	0
	12/22/03	186.98	37.67	11.55	175.43	0
	01/15/04	186.98	37.68	14.36	172.62	0
	07/15/04	186.98	37.72	10.91	176.07	0
	01/27/05	186.98	37.69	10.48	176.50	0
	03/04/05	LSPZ210B plugged & abandoned				

NOTES:
1. * - Groundwater elevation at LSPZ106B higher that former natural ground elevation of 180.1.
2. NA - Not Available
3. Name changes for wells became effective with LDEQ approval of permit renewal application and upgrade and implementation of new groundwater monitoring system in 2005.
4. Groundwater elevation data for MW-1, MW-2, and MW-3 dated 5/88 - 1/02 and MW-1 and MW-2 dated 7/12/02 and 1/20/03 obtained from semiannual groundwater monitoring reports available at Mundy Landfill.
5. Groundwater elevation data dated 4/15/94, 11/14/96, and 01/97-10/97 obtained from *Subsurface Exploration for Mundy Landfill, DeSoto Parish, Louisiana*, Maxim Technologies, Inc., April 11, 1997.
6. Groundwater gauging and elevation data dated 5/13/02 - 9/28/06 obtained by Jones Environmental, Inc.
7. MW-2 was screened from 189.1 to 179.1 ft. MSL in clay of Zone D1.
8. **Ground surface elevation at LSPZ106B was increased approximately 24 feet with construction of the Cell VII levee/perimeter road. Original top-of-casing elevation was 183.70 ft. MSL. Top-of-casing was extended to 210.19 feet MSL during construction. Upon completion of the roadway, Maxim Technologies, Inc. constructed a concrete well pad with a 12-inch diameter waterproof roadbox. The top-of-casing elevation was at/near ground surface elevation of approx. 204.19 feet MSL.
9. * - LSPZ208 not accessible on 07/01/02. North end of Cell VII was flooded due to rainfall.

TABLE 4
GAUGING AND ELEVATION DATA
SEDIMENTATION, OXIDATION, & POLISHING PONDS
MUNDY LANDFILL

STAFF GAUGE I.D.	DATE	Top of Gauge Elevation (ft MSL)	Depth to Water (ft)	Water Surface Elev. (ft MSL)
A - Polishing Pond	07/27/05	188.40	4.10	184.30
	10/19/05	188.40	3.80	184.60
	11/17/05	188.40	NR	NA
	12/09/05	188.40	NR	NA
	01/25/06	188.40	3.35	185.05
	02/27/06	188.40	2.50	185.90
	03/29/06	188.40	3.42	184.98
	04/26/06	188.40	3.60	184.80
	06/01/06	188.40	3.50	184.90
	06/28/06	188.40	3.50	184.90
	07/26/06	188.40	3.80	184.60
	08/25/06	188.40	3.20	185.20
	09/28/06	188.40	3.45	184.95
B - Oxidation Pond	07/27/05	193.86	3.40	190.46
	10/19/05	193.86	>5*	<188.86
	11/17/05	193.86	NR	NA
	12/09/05	193.86	NR	NA
	01/25/06	193.86	>5*	<188.86
	02/27/06	193.86	>5*	<188.86
	03/29/06	193.86	>5*	<188.86
	04/26/06	193.86	>5*	<188.86
	06/01/06	193.86	>5*	<188.86
	06/28/06	193.86	>5*	<188.86
	07/26/06	193.86	>5*	<188.86
	08/25/06	193.86	>5*	<188.86
	09/28/06	193.86	>5*	<188.86
C - Sedimentation Pond #1	07/27/05	204.33	3.80	200.53
	10/19/05	204.33	4.50	199.83
	11/17/05	204.33	NR	NA
	12/09/05	204.33	NR	NA
	01/25/06	204.33	3.70	200.63
	02/27/06	204.33	>5*	<199.3
	03/29/06	204.33	3.80	200.53
	04/26/06	204.33	4.45	199.88
	06/01/06	204.33	>5*	<199.3
	06/28/06	204.33	4.00	200.33
	07/26/06	204.33	>5*	<199.3
	08/25/06	204.33	3.70	200.63
	09/28/06	204.33	3.80	200.53

NOTES:
1. * Water level in oxidation pond was below bottom of gauge.
2. NR - Not Reported
3. NA - Not Applicable

TABLE 5
PRELIMINARY INSTALLATION DATA FOR NEW MONITORING WELLS
MUNDY LANDFILL
DESOTO PARISH, LOUISIANA

NEW WELL NO.	MW-G1-14	MW-G1-15	MW-G1-16	MW-G2-17
UNIT/AREA MONITORED	CELL VIII			
ZONE MONITORED	G1	G1	G1	G2
ESTIMATED ZONE THICKNESS (FT)	7	9	2	1.5
GRADIENT	Down	Down	Down	Down
WELL DIAMETER (INCHES)	2	2	2	2
CASING MATERIAL	PVC	PVC	PVC	PVC
SCREEN LENGTH (FT.)	10	10	5	5
SCREEN SLOT SIZE (INCH)	0.010	0.010	0.010	0.010
FILTER PACK	20/40 Silica Sand			
GROUT MATERIAL	Type II Portland Cement with 4% Bentonite			
APPROX. GROUND SURFACE ELEV. (FT MSL)	246	200	192	176
PROPOSED WELL DEPTH (FT. BGS)	47	14	13	9
PROPOSED TOP SCREEN ELEV. (FT. MSL)	209	196	184	172
PROPOSED BOTTOM SCREEN ELEV. (FT. MSL	199	186	179	167

NOTE: This is preliminary data for proposed wells. The actual well locations, hydraulic locations (upgradient or downgradient), depths, screened intervals, and thickness of the monitored zones will be finalized in the field during installation.

TABLE 6
Oil and Gas Wells
Mundy Landfill

ON-SITE

Section	Town-ship	Range	Map Ref No.*	Well Name	Well No.	Status	P&A Date	Total Depth (ft)	Longitude 83	Latitude 83
3	12N	12W	1	P.M.	001	P&A - G&C Producer	8/3/1972	2624	-93.5899089542157	32.0585341720805
4	12N	12W	2	Terrell	001	P&A - Dry Hole	NA	2816	-93.5947263804119	32.0594385136647
4	12N	12W	3	Lizzie Terrell	001	P&A Oil Producer	NA	2520	-93.5979532501551	32.0623137744498
4	12N	12W	4	Farmer	B-1	P&A - Dry Hole	11/26/1958	2668	-93.5960916810820	32.0607793238069
4	12N	12W	5	Farmer	B-2	P&A - Dry Hole	10/11/1958	2580	-93.5942907750887	32.0621776257225

OFF-SITE WITHIN 2000 FT.

3	12N	12W	6	Mansfield Hardwood Lbr Co	E-1	P&A - Dry Hole	3/14/1958	2615	-93.5885924546586	32.0596780747007
3	12N	12W	7	Mansfield Hardwood Lbr Co	001	Shut In Productive G&C	NA	2670	-93.5881928686881	32.0561791250625
3	12N	12W	8	Nabors Minerals E	002	P&A - G&C Producer	8/2/1972	2850	-93.5881916120749	32.0601790920155
3	12N	12W	9	Nabors Minerals E	003	Directional - Surf Location, P&A	12/11/1978	2850	-93.5884317266218	32.0619254719565
3	12N	12W	10	Jenkins B	018	Directional - Surf Location, P&A	11/23/1979	2800	-93.5839232856311	32.0543516687387
4	12N	12W	11	Brownfield	002	P&A - Dry Hole	NA	2605	-93.6029825606992	32.0585039970286
4	12N	12W	12	Saunders	A-6	P&A - Dry Hole	NA	3506	-93.5980001981617	32.0524220581102
4	12N	12W	13	Ricks	001	P&A - Dry Hole	12/15/1958	2565	-93.6047936570593	32.0614793219180
4	12N	12W	14	Quinn	001	Directional - Surf Location, P&A	9/9/1979	2725	-93.6008757246926	32.0548109362438
33	13N	12W	15	Saunders	B-4	P&A - Dry Hole	8/21/1958	2600	-93.5940917401412	32.0641779397384
33	13N	12W	16	Clifton	001	P&A - Dry Hole	8/11/1959	2565	-93.6009920967095	32.0653775198018
33	13N	12W	17	Saunders	A-16	P&A Oil Producer	NA	2523	-93.5981288160888	32.0662159957034
34	13N	12W	18	S-T-H	001	P&A - Dry Hole	6/28/1958	2675	-93.5890932241178	32.0662771481111
34	13N	12W	19	Saunders	B-1	P&A - Dry Hole	6/23/1957	2577	-93.5926931379734	32.0654792882216
34	13N	12W	20	Sanders B	002	P&A - Dry Hole	7/17/1957	2575	-93.5932928303195	32.0637779376948
34	13N	12W	21	RRBB NAB PXY RC SU; MSTH	010-1	Producing - Oil	NA	2650	-93.5876918507876	32.0670781266988
34	13N	12W	22	S T H	006	Directional - Surf Location, P&A	8/10/1979	2850	-93.5896989136463	32.0653510123754
34	13N	12W	23	RRBB NAB PXY RC SU; MSTH	005	P&A Producer	10/15/1990	2712	-93.5901411036753	32.0664358715964

NOTES:
1. Well information from La. DNR SONRIS Lite (www.dnr.louisiana.gov).
2. NA - Not Available/Applicable
3. All wells located in the Red River/Bull Bayou Field
4. P&A - Plugged and Abandonned
5. G&C - Gas and Condensate
6. *Map reference number on Drawing STE-S12.

Appendix S-3

Engineering Calculations

- **S-3a** Slope Stability Calculations
- **S-3b** Storm Water Management Plan Calculations
- **S-3c** Soil Loss Calculations
- **S-3d** Settlement Calculations
- **S-3e** Leachate Production Analysis
- **S-3f** Leachate Pipe Structural Stability Analysis

Appendix S-3a

Slope Stability Calculations

Client: DeSoto Parish Police Jury
PROJECT: Mundy Landfill, Cell VIII
Subject: Slope Stability Analyses

FILE NO.: 05-1124C
PREPARED BY: RCA - **DATE:** 03-01-06
CHECKED BY: _____ - **DATE:** _____

OBJECTIVE: To calculate the factor of safety against a slope stability failure for short-term, long-term and block failure conditions for Cell VIII - Waste Mass and Excavation.

APPROACH: Create a model representing the final contour plan and excavation plan, and use this model in conjunction with the computer software XSTABL to calculate the factor of safety.

REFERENCES:

1) "User's Guide: XSTABL Slope Stability Package - Version 5.2: Reference Manual", By Sunil Sharma, 1999.

2) Bowles, Joseph E., Physical & Geotechnical Properties of Soils, 1st Edition, McGraw-Hill, 1979, pp 378, Figure 13.21.

3) Contour map and cross sections of the landfill.

ASSUMPTIONS:

1) Location of the cross sections on attached figure.

2) Soil parameters for the specific sections are listed on figures.

3) Bishop's Method was utilized for short-term and long-term stability circular surface analyses and Janbu's method was used for the non-circular analyses.

CALCULATIONS:

The following cases were investigated:

Case 1: Waste Mass Stability - Section A

This case represents the most critical condition for the waste cell. It considers the cell geometry immediately after closure on a section passing close to highest cell point at one end of the section, having the new sedimentation pond at the bottom of the slope, and ending on natural soil at the end of the section. The top of the waste cell is considered at Elevation +320 feet, NGVD. It descends with 3H:1V slopes with 20-ft wide benches

every 40-ft in height (average cell slope is approximately 3.4H:1V) to meet the toe of the slope at the approximate Elevation +183 feet, NGVD. The bottom of the sedimentation pond (considered empty) is at Elevation +170 ft, NGVD. The minimum calculated safety factor for a circular failure surface is **1.90** for short-term conditions (undrained strength) and **1.97** for long-term conditions (drained strength). The calculated minimum safety factor against sliding block type failure (passing through the geosynthetics interface) is equal to ~~**1.71**~~ **1.55**.

Case 2: **Compacted Soil Fill Stability - Section A**

This case analyzes the stability of the compacted soil fill necessary to construct the west side of the sedimentation pond. The top of the sedimentation pond is considered at Elevation +180 feet. It descends with a 3H:1V slope to meet the toe of the slope at the approximate Elevation +165 feet in natural ground. The minimum calculated safety factor for a circular failure surface is **5.82** for short-term conditions (undrained strength) and **1.57** for long-term conditions (drained strength).

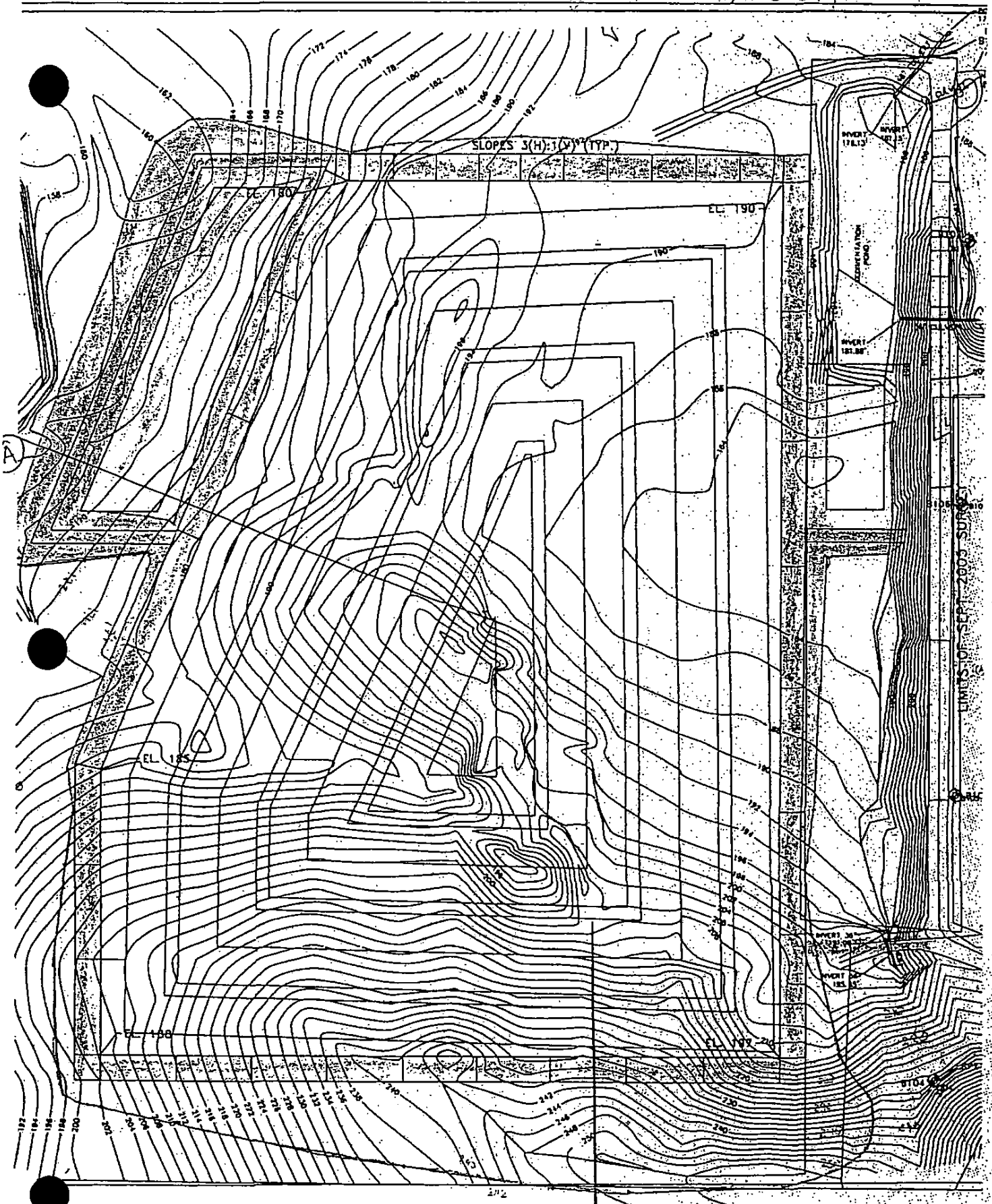
Case 3: **Excavation Stability - Section B**

Excavation for construction of Cell VIII is analyzed in the most critical case, which corresponds to the assumed maximum excavation depth (approximately 73 feet) at the south side of the cell. A 3H:1V excavation slope was utilized in the design and herein analyzed. The minimum calculated safety factor for a circular failure surface is **2.00** for short-term conditions (undrained strength) and **1.98** for long-term conditions (drained strength). An additional analysis considering a hypothetically high groundwater level at the Elevation +230 ft, NGVD was also analyzed. Even under this strongly conservative and unlikely condition the safety factor for a circular failure surface is **1.64**.

CONCLUSIONS:

A minimum safety factor of 1.5 is commonly considered by LDEQ to represent a stable slope. Therefore, all cases and sections analyzed have an adequate safety factor against slope failure.

Figure 2- Cxuernal Fill/Cut Slopes



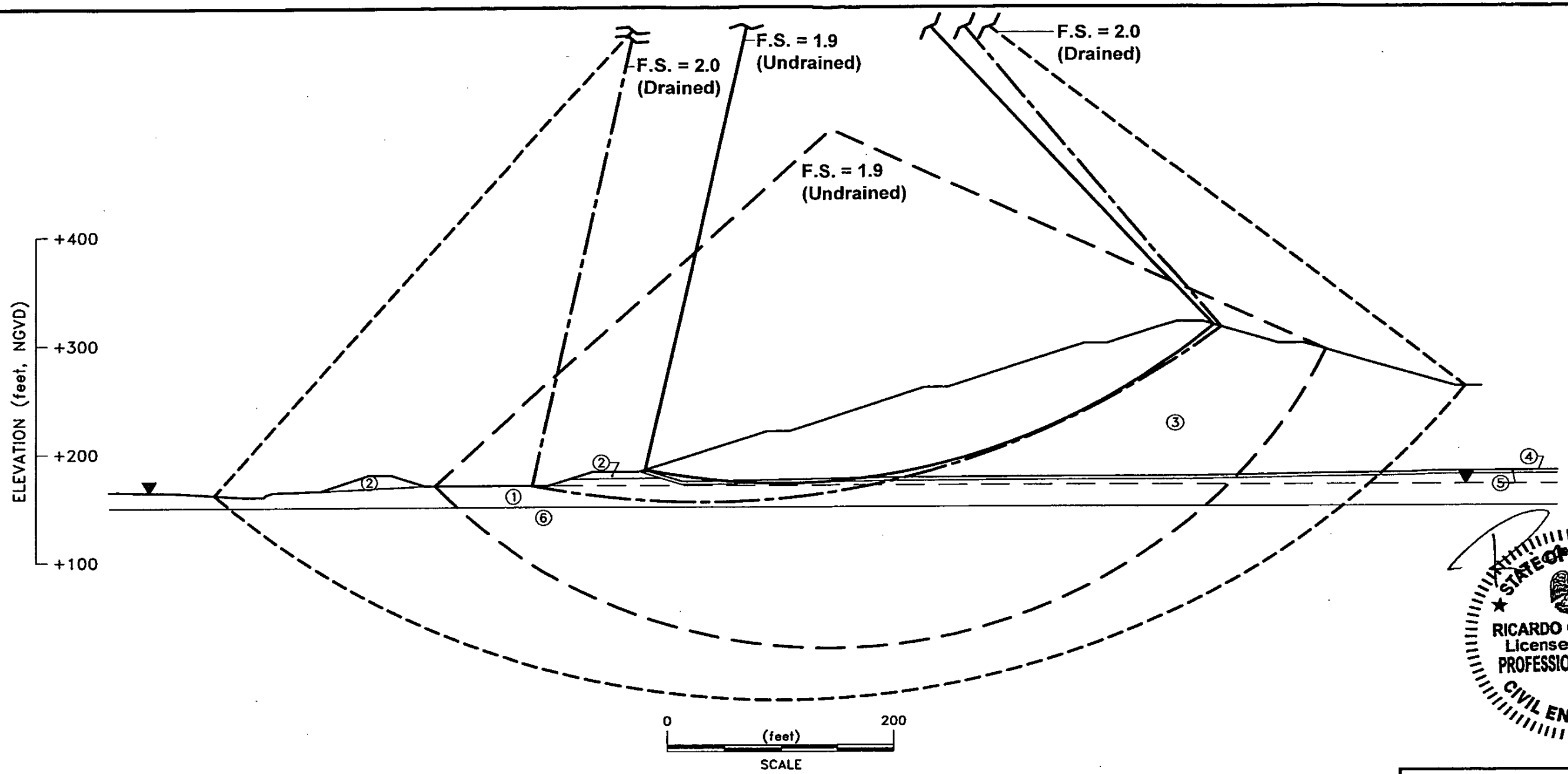
Fill (Slopes 3H:1V)

Cut (Slopes 3H:1V)

Berms/Access Roads

0 50

Scale



SOIL PARAMETERS						
STRATA NO.	MATERIAL DESCRIPTION	UNIT WEIGHT (pcf)	UNDRAINED		DRAINED	
			SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)	SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)
1	Natural Soil (Shallow)	120	1500	0	100	22
2	Recompacted Soil Fill	120	1000	0	0	22
3	MSW	63	300	23	300	23
4	HDPE/GCL	65	0	10	0	10
5	Recompacted Clay Liner	120	1000	0	0	22
6	Natural Soil (Deep)	130	3000	0	300	22

WASTE MASS
CIRCULAR SURFACE ANALYSIS

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	3/07	Added GCL	RDA

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DE SOTO PARISH, LOUISIANA
for
DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-22-06	Figure No.: SL-1

Title: **SECTION A SLOPE STABILITY ANALYSES**

Mar 30, 2007 - 3:02pm
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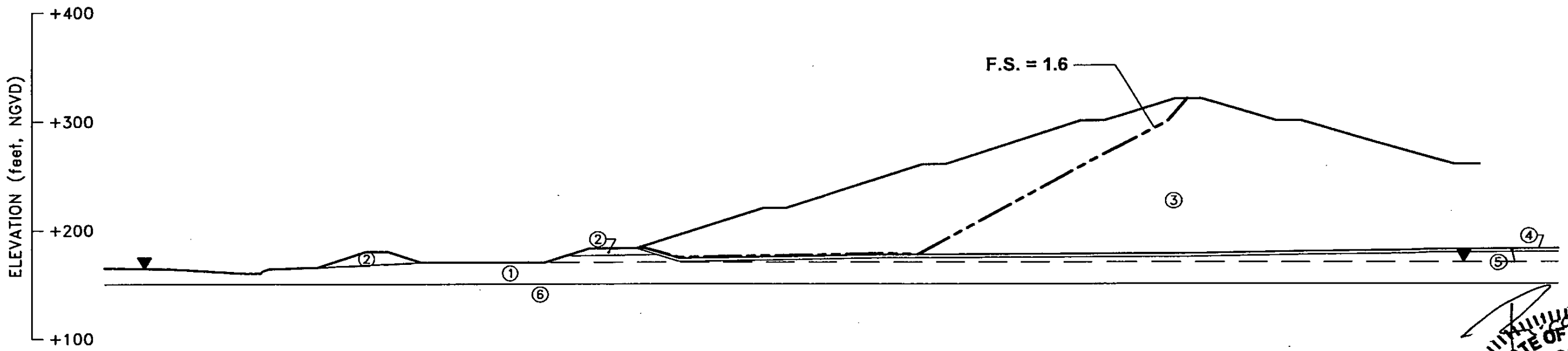
Mar 30, 2007 - 3:04pm



SOIL PARAMETERS						
STRATA NO.	MATERIAL DESCRIPTION	UNIT WEIGHT (pcf)	UNDRAINED		DRAINED	
			SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)	SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)
1	Natural Soil (Shallow)	120	1500	0	100	22
2	Recompacted Soil Fill	120	1000	0	0	22
3	MSW	63	300	23	300	23
4	HDPE/GCL	65	0	10	0	10
5	Recompacted Clay Liner	120	1000	0	0	22
6	Natural Soil (Deep)	130	3000	0	300	22

WASTE MASS
NON-CIRCULAR SURFACE PASSING AT GEOMEMBRANE INTERFACE

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Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-22-06	Figure No.: SL-2

Title: **SECTION A SLOPE STABILITY ANALYSES**

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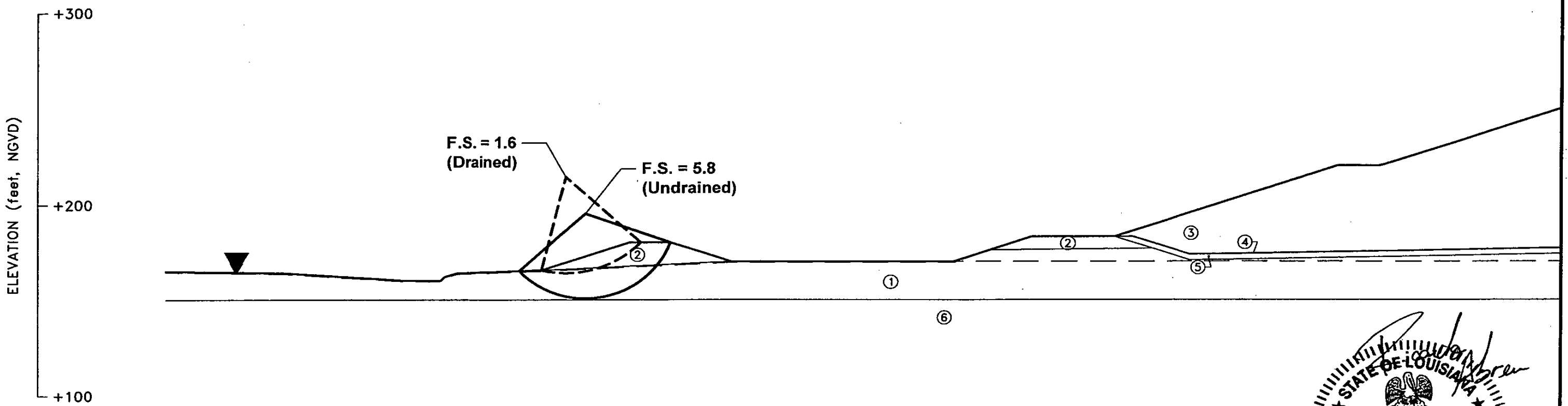

COMPACTED SOIL FILL STABILITY

0 (feet) 100
SCALE

SOIL PARAMETERS						
STRATA NO.	MATERIAL DESCRIPTION	UNIT WEIGHT (pcf)	UNDRAINED		DRAINED	
			SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)	SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)
1	Natural Soil (Shallow)	120	1500	0	100	22
2	Recompacted Soil Fill	120	1000	0	0	22
3	MSW	63	300	23	300	23
4	HDPE/GCL	65	0	10	0	10
5	Recompacted Clay Liner	120	1000	0	0	22
6	Natural Soil (Deep)	130	3000	0	300	22

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1	3/07	Added GCL	RDA

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Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-22-06	Figure No.: SL-3

Title: **SECTION A SLOPE STABILITY ANALYSES**

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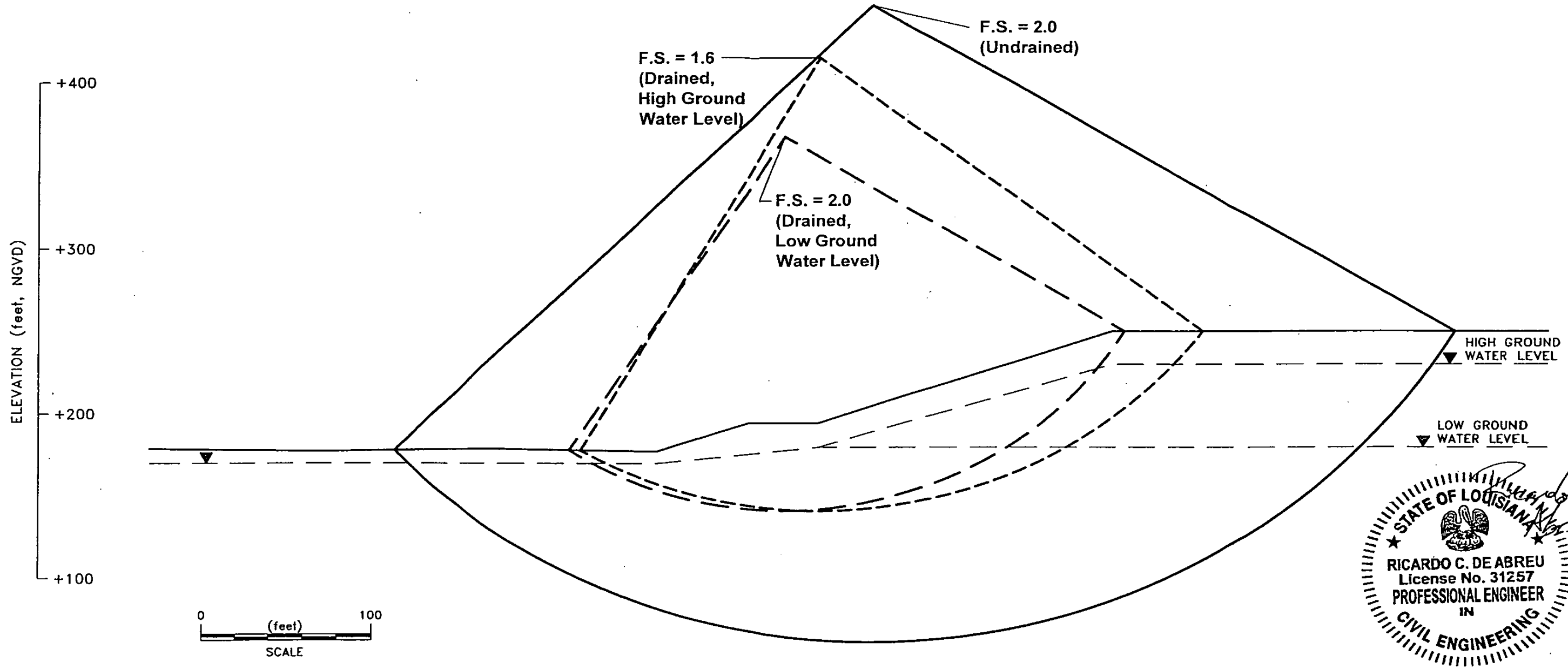

SOIL PARAMETERS						
STRATA NO.	MATERIAL DESCRIPTION	UNIT WEIGHT (pcf)	UNDRAINED		DRAINED	
			SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)	SHEAR STRENGTH (pcf)	FRICTION ANGLE (degrees)
1	Natural Soils	130	3000	0	300	22

EXCAVATION STABILITY

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File No.: 05-1124	Date: 3-22-06	Figure No.: SL-4

Title: **SECTION B SLOPE STABILITY ANALYSES**

Apr 11, 2006 - 8:50am
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Appendix S-3b

Storm Water Management Plan Calculations

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Project: Mundy Landfill - Cell VIII Client: De Soto Parish Job #: 05-1124
By: RCA Checked by: Date: 02/07/06 Sheet 1 of 2

Drainage Calculations - Sedimentation Ponds Sizing

- Computation of Total Runoff (Q)

= P (25 year, 24 hr rainfall) = 9 inches
= Runoff Curve Number (soil group D, Fair Condition grass cover) = 84

Total Runoff (Q) ⇒ $Q = \frac{(P-0.2S)^2}{(P+0.8S)}$

$S = \frac{1000}{CN} - 10 = \frac{1000}{84} - 10 \Rightarrow S = 1.9$

$Q = \frac{(9-0.2\times1.9)^2}{(9+0.8\times1.9)} \Rightarrow Q = 7.1$ inches //

- Areas to be Drained

= Cell VIII (East Side) → A = 445,890 ft² → Existing Sed Pond
= Cell VIII (N, W, S Sides) → A = 990,828 ft² → New Sed Pond
= South/North Cut Slopes → A = 180,288 ft² → New Sed Pond

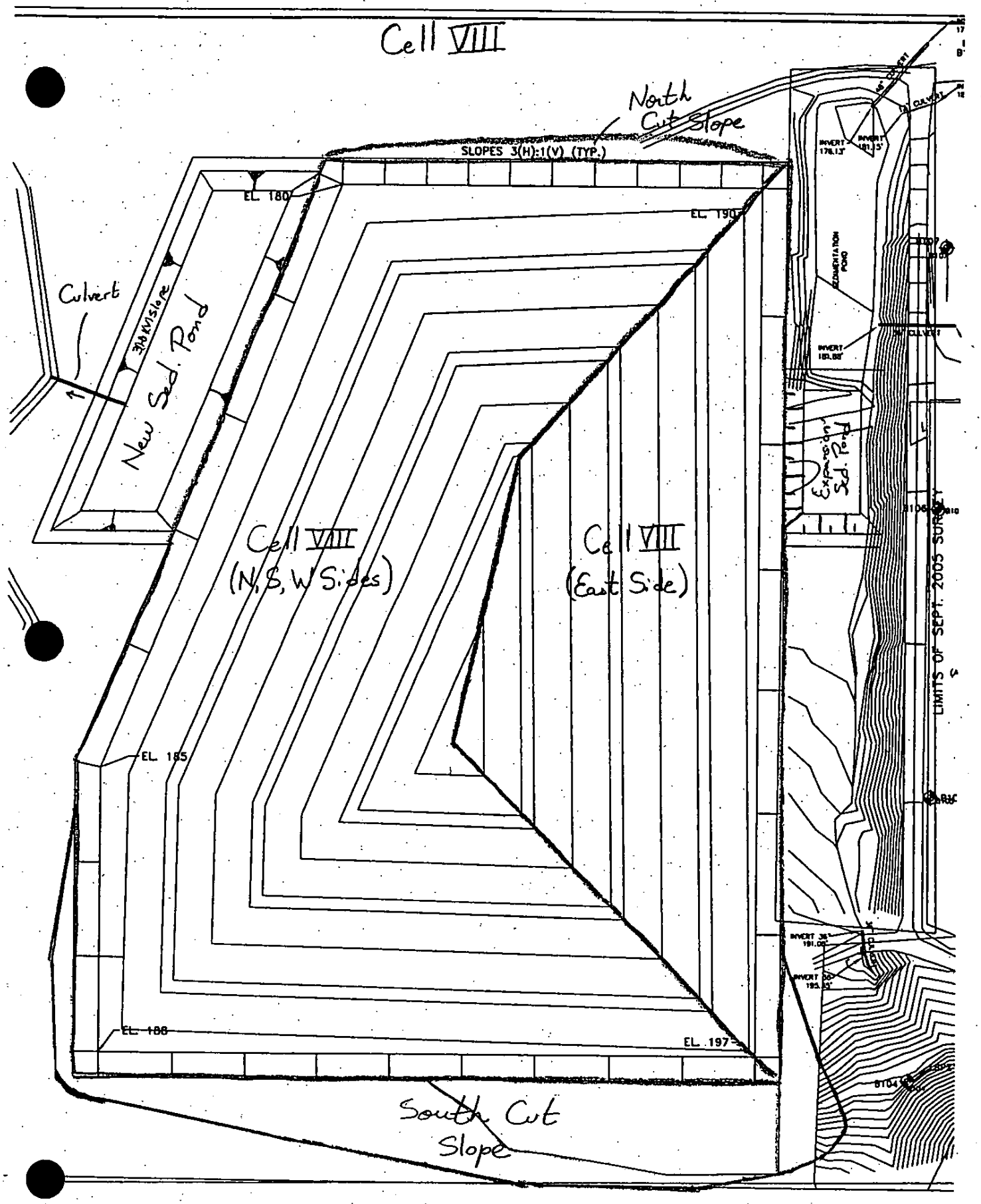
- Necessary Stormwater Storage Volumes

= New Sedimentation Pond (Sed Pond #3)

$V = (990{,}828 + 180{,}288\ ft^2) \times 7.1\ in \times \frac{1\ ft}{12\ in} = 692{,}910\ ft^3$ //

= Existing Sed Pond (Expansion Volume) - Sed Pond #2

$V = 445{,}890\ ft^2 \times 7.1\ in \times \frac{1\ ft}{12\ in} = 263{,}818\ ft^3$ //


Cell VIII
North Cut Slope
SLOPES 3(H):1(V) (TYP.)
EL. 180
EL. 190
Culvert
New Sed. Pond
Cell VIII (N, S, W Sides)
Cell VIII (East Side)
Expansion Sed. Pond
EL. 185
EL. 188
EL. 197
South Cut Slope
LIMITS OF SEPT. 2005 SURVEY

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Project: Mundy Landfill - Cell VIII Client: De Soto Parish Job #: 05-1124
By: RCA Checked by: Date: 02/07/06 Sheet 1 of

Stormwater Drainage - Cell VIII

1) Watersheds - Areas Calculations (see Fig. 1)

*Area A = (420+310)/2 × 120 = 43,800 ft²

*Area B = (715+575)/2 × 125 = 80,625 ft²

*Area C = (490+330)/2 × 140 + (320+290)/2 × 150 = 103,150 ft²

*Area D = (695+595)/2 × 155 = 99,975 ft²

*Area E = (730+500)/2 × 145 = 89,175 ft²

*Area F = (480+350)/2 × 125 = 51,875 ft²

*Area G = 420 × 120 = 50,400 ft²

*Area H = (535+425)/2 × 115 = 55,200 ft²

*Area I = 600 × 400/2 = 120,000 ft²

*Area J = 135 × 120/2 + (290+135)/2 × 280 + 330 × 280/2 =
= 113,800 ft²

*Area K = (585+440)/2 × 280 + 440 × 70/2 + 430 × 100/2 =
= 180,400 ft²

*Area L = 500 × 295/2 + (300+200)/2 × 300 + 200 × 50/2 =
= 153,750 ft²

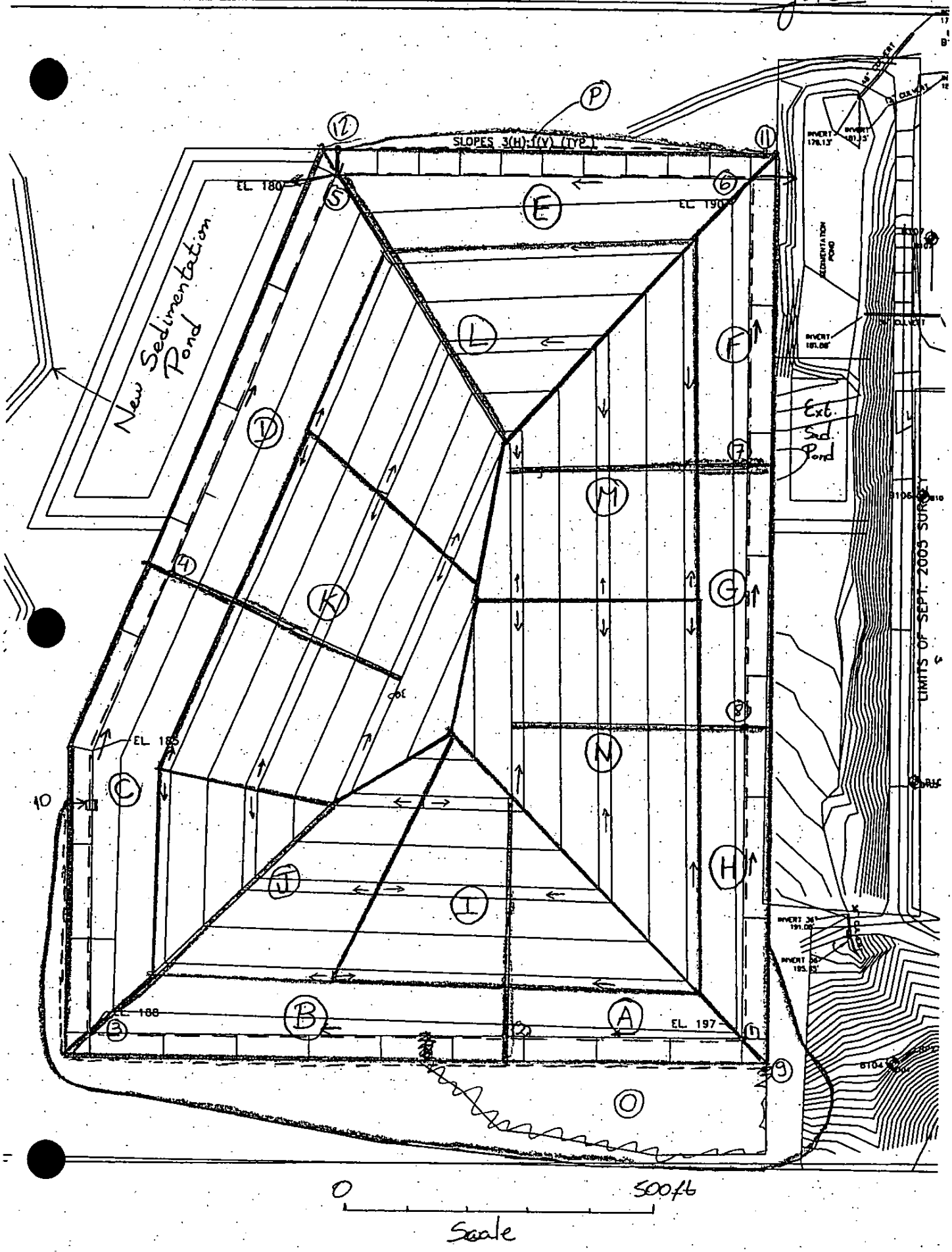
*Area M = (560+250)/2 × 300 + 250 × 60/2 = 129,000 ft²

*Area N = (625+250)/2 × 365 + 250 × 40/2 = 164,688 ft²

*Area O = 169,940 ft²

*Area P = 690 × 30/2 = 10,350 ft²

Figure 1


SLOPES 3(H):1(V) (TYP.)
EL. 180
EL. 190
EL. 188
EL. 197
New Sedimentation Pond
Ext. Sd. Pond
SEDIMENTATION POND
LIMITS OF SEPT. 2005 SURVEY
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
0
500ft
Scale

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Project: _____ Client: _____ Job #: _____

By: _____ Checked by: _____ Date: _____ Sheet 2 of _____

2) Calculating Times of Concentration

2.1) Travel Time - Sheet Flow

$$T_t = \frac{0.007\,(n \cdot L)^{0.8}}{P^{0.5} \cdot S^{0.4}} \quad \text{(Mannings Equation)}$$

$T_t \rightarrow$ Travel time

$n \rightarrow$ Manning's roughness coefficient ($n = 0.15$, short grass prairie)

$P \rightarrow$ Rainfall ($P = 9$ in; 24hr/25yr event)

$L \rightarrow$ Flow length ($L = 120$ ft)

$S \rightarrow$ Slope of hydraulic grade line ($\bar{S} = 0.33$ ft/ft)

Therefore,

$$T_t = \frac{0.007 \times (0.15 \times 120)^{0.8}}{(9)^{0.5} \times (0.33)^{0.4}}$$

$$T_t = 0.037 \text{ hr}$$

2.2) Travel Time - Ditches (on Terraces)

$$T_t = \frac{L}{3600\,v}$$

$T_t \rightarrow$ Travel time (hr)

$L \rightarrow$ Length of flow (max $\rightarrow$ 500 ft; min $\rightarrow$ 120 ft)
avg $\rightarrow$ 250 ft

$v \rightarrow$ velocity (for unpaved; $S = 0.005$ ft/ft) $\rightarrow v = 1.15$ ft/sec

$$T_{t_{min}} = \frac{120}{3600 \times 1.15} = 0.029 \text{ hr}$$

$$T_{t_{avg}} = \frac{250}{3600 \times 1.15} = 0.060 \text{ hr}$$

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Project: _____ Client: _____ Job #: _____

By: _____ Checked by: _____ Date: _____ Sheet 3 of _____

2.3) Travel Time - Chutes

$$T_t = \frac{L}{3600v}$$

$L_{avg} \cong 380\ ft$

v (for unpaved; $S = 0.28\ ft/ft$) $= 8.5\ ft/sec$

$$T_t = \frac{380}{3600 \times 8.5} \cong 0.012\ hr$$

2.4) Travel Times - Perimeter Ditches

$$T_t = \frac{L}{3600v}$$

Please see spreadsheet for Travel times between points on Page 4

2.5) Total Time of Concentration in 1 point

$$T_c = T_{t_{sp}} + T_{t_D} + T_{t_c} + T_{t_{PD}}$$

$$T_c = 0.037 + 0.029 + 0.012 + T_{t_{PD}}$$

$$T_c = 0.078 + T_{t_{PD}}$$

MUNDY LANDFILL - CELL VIII
Surface Water Drainage Plan

Travel Times for Perimeter Ditch Flow

Points	Flow Length (ft)	Elevations Difference (ft)	Grade (ft/ft)	Flow Velocity (ft/sec)	Travel Time (hr)
1-2	385	3.3	0.009	1.5	0.071
2-3	668	5.7	0.009	1.5	0.124
3-4	755	4.6	0.006	1.2	0.175
4-5	672	3.4	0.005	1.1	0.170
1-8	500	2.6	0.005	1.1	0.126
8-7	415	2.1	0.005	1.1	0.105
7-6	435	2.3	0.005	1.1	0.110
6-5	673	10	0.015	2.0	0.093

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Project: Mundy Landfill - Cell VIII Client: DeSoto Parish Job #: 05-1124
By: RCA Checked by: Date: 02/07/06 Sheet 6 of

3) Calculation of Total Peak Discharge for Perimeter Ditches

$q_p = q_u \times A_m \times Q \times F_p$

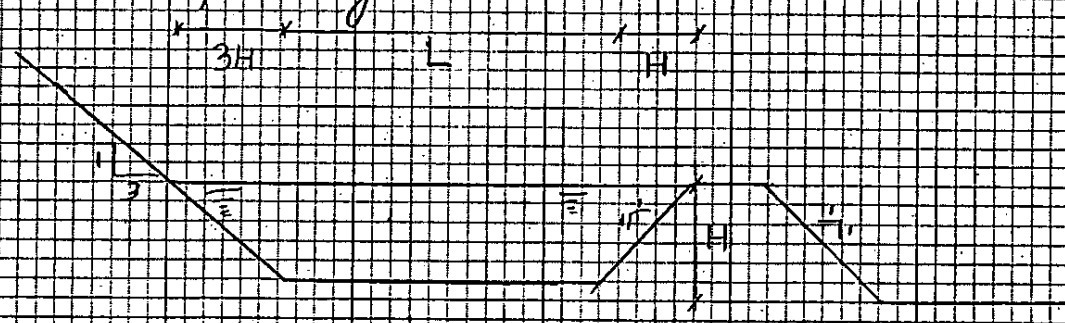
q_p = peak discharge (cfs)
q_u = unit peak discharge (cfs) → dependent on time of concentration
A_m = drainage area (mi^2)
Q = runoff (in) → calculated as 7.1 inches in the calculations for sed. pond sizing
F_p = pond and swamp adjustment factor → $F_p = 1$ (0% of pond/swamp)

See page 7 for peak discharge on perimeter ditches

Sizing Perimeter Ditches

$Q = \frac{1.49}{n} \times A \times R^{2/3} \times S^{1/2}$ (Manning's Eq. for flow in open channel)

$Q = q_p$ = peak discharge (cfs)
n = Manning's roughness coefficient → $n = 0.15$
A = cross-section area of flow (ft^2)
R = hydraulic radius (ft)
S = hydraulic gradient



MUNDY LANDFILL - CELL VIII
Surface Water Drainage Plan

Peak Discharge for Perimeter Ditches

Points	Contributing Watersheds	Tc (hr)	Qu (csm/in)	Area (sq.ft)	Area (sq.mile)	Q (in)	Qp (cfs)
1-2	A	0.149	600	43,800	0.0016	7.1	6.8
2-3	A,B,I	0.273	510	244,425	0.0088	7.1	31.9
3-4	A,B,C,I,J,O	0.448	430	631,315	0.0227	7.1	69.3
4-5	A,B,C,D,I,J,K,O	0.618	370	911,690	0.0327	7.1	85.9
1-8	H	0.204	560	55,200	0.0020	7.1	8.0
8-7	G,H,N	0.309	490	270,288	0.0097	7.1	33.7
7-6	F,G,H,M,N	0.419	440	486,851	0.0175	7.1	54.7
6-5	E	0.171	580	89,175	0.0032	7.1	13.2
5	A,B,C,D,E,I,J,K,L,O,P	0.618	370	1,164,965	0.0418	7.1	109.8
9-10	O	0.395	450	169,940	0.0061	7.1	19.5
11-12	P	0.497	410	10,350	0.0004	7.1	1.2

Assumed: Rainfall (P) = 9 inches
Initial Abstraction (Ia) = 0.381 (for CN=84)
Therefore, Ia/P=0.04. Assumed limited value of Ia/P=0.10

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By: _____ Checked by: _____ Date: _____ Sheet 8 of _____

$\therefore A = (L_2 + 2H) \cdot H$

$R = \dfrac{(L_2 + 2H) \cdot H}{L_2 + 4.57}$

most efficient section $\Rightarrow L_2 = \dfrac{2H}{\sqrt{3}}$

$\therefore A = 3.15H^2$

$R = 0.55H$

$Q = 9.93 \times 3.15H^2 \times 0.67H^{2/3} \times S^{1/2}$

$Q = 20.96 H^{8/3} S^{1/2} \Rightarrow H = \left(\dfrac{Q}{20.96 S^{1/2}}\right)^{3/8}$

See Page 9 for calculations of perimeter ditches-sizing

4) Calculation of Total Peak Discharge for Terrace Ditches

$q_p = q_u \times A_m \times Q \times F_p$

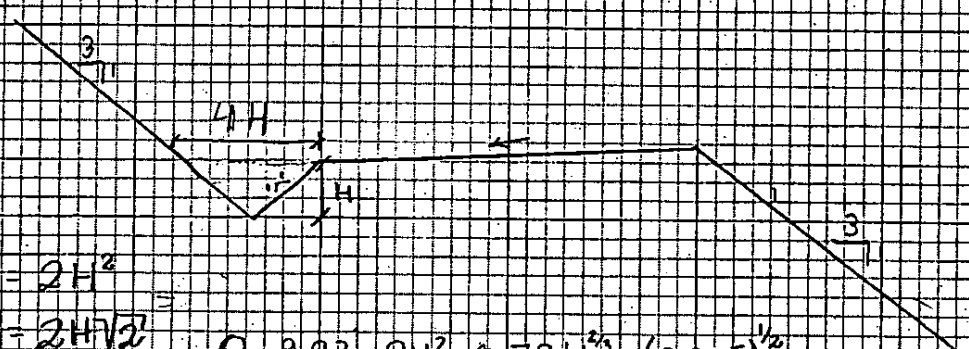
$q_u = 680$ cfs (for $T_c = 0.066$ hr)

$A_m = 53{,}550 ft^2$ (0.0019 sq. mi.) → max Area

$Q = 7.1$ inches

$F_p = 1.0$

$q_p = 680 \times 0.0019 \times 7.1 \times 1.0 = 9.2$ cfs



$A = 2H^2$

$P = 2H\sqrt{2}$

$R = \dfrac{H\sqrt{2}}{2}$

$Q = 3.93 \times 2H^2 \times 0.791^{2/3} \times (0.005)^{1/2}$

$Q = 1.109 H^{8/3} \Rightarrow H = \left(\dfrac{Q}{1.109}\right)^{3/8}$

$H = 2.21$ ft → 2.5 ft

MUNDY LANDFILL - CELL VIII
Surface Water Drainage Plan

Sizing Perimeter Ditches

Drainage Points	Calculated Discharge ** (cfs)	Grade (ft/ft)	H * (ft)	L* (ft)
1-2	6.8	0.009	2.0	3.0
2-3	31.9	0.009	3.0	4.0
3-4	69.3	0.006	5.0	6.0
4-5	85.9	0.005	5.0	6.0
1-8	8.0	0.005	2.0	3.0
8-7	33.7	0.005	4.0	5.0
7-6	54.7	0.005	4.0	5.0
6-5	13.2	0.015	2.0	3.0
9-10	19.5	0.007	3.0	4.0
11-12	1.2	0.014	1.0	2.0

* Satisfy "Most Efficient Section Requirements"
** Calculated using the USDA Method

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By: _____ Checked by: _____ Date: _____ Sheet 10 of _____

5) Calculation of Total Peak Discharge for Chutes

$q_p = q_u \times A_m \times Q \times F_p$

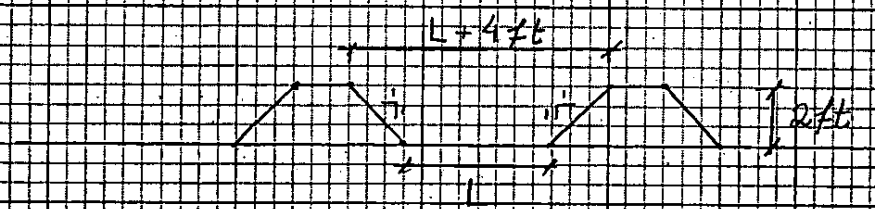
$q_u = 670\ cfs$ (for $T_c = 0.078\ hr$)

$A_m = 180{,}400\ ft^2$ (0.0065 sq. mi) → max. Area

$Q = 7.1$ inches

$F_p = 1.0$

$q_p = 670 \times 0.0065 \times 7.1 \times 1.0 = 30.9\ cfs$



$A = (L+2) \cdot 2 = 2L+4$

$P = L + 4\sqrt{2}$

$R = \dfrac{2L+4}{L+4\sqrt{2}}$

$Q = 9.93 \times (2L+4) \times \left(\dfrac{2L+4}{L+4\sqrt{2}}\right)^{2/3} \times (0.28)^{0.5}$

$Q = 5.25 \cdot \dfrac{(2L+4)^{5/3}}{(L+4\sqrt{2})^{2/3}}$

for $Q = 30.9\ cfs \rightarrow L = 1.11\ ft \rightarrow \boxed{2\ ft}$

6) Calculation of Culverts

- Point 5 → $Q = 110\ cfs$
- Point 6 → $Q = 55\ cfs$
- Point 10 → $Q = 20\ cfs$

see calculations in page 11

MUNDY LANDFILL - CELL VIII
Surface Water Drainage Plan

Culverts

Point	Q (cfs)	n	i (ft/ft)	D (ft)	R(ft)	A(ft2)	Qfull (cfs)
5	110	0.013	0.01	4	1	12.5664	144.0
6	55	0.013	0.01	3	0.75	7.0686	66.9
10	20	0.013	0.01	2	0.5	3.1416	22.7

Appendix S-3c

Soil Loss Calculations

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Project: Mundy Landfill - Cell VIII Client: DeSoto Parish Job #: 05-1124C
By: RCA Checked by: _____ Date: 03/08/06 Sheet 1 of _____

Erosion Control - Universal Soil Loss Equation

Objective: To calculate the average soil loss in tons per acre per year for the final cover design

Approach:

Universal Soil Loss Equation

$A = R \cdot K \cdot L_s \cdot C \cdot P$

where

A = Average Annual Soil Loss (in T/acre/yr)

R = Rainfall / Runoff Erosivity (Figure 2)

R = 350

K = Soil Erodibility Factor (in tons/acre) - (Table 1)

K = 0.23 (Silty Clay; 2% organics)

C = Cover Management Factor (Table 2)

C = 0.003 (95% cover; no appreciable canopy)

L_s = Slope Length Factor (Figure 3)

Design calls for benches every 40 ft in landfill height, individual slopes are 3H:1V

L_s (120 ft; 33%) = 10

P = Conservation Practice Factor (Table 3)

P = 1 (Land Slope > 24%)

Calculations:

$A = 350 \times 0.23 \times 10 \times 0.003 \times 1$

A = 2.45 tons/acre/year

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By: _____ Checked by: _____ Date: _____ Sheet 2 of _____

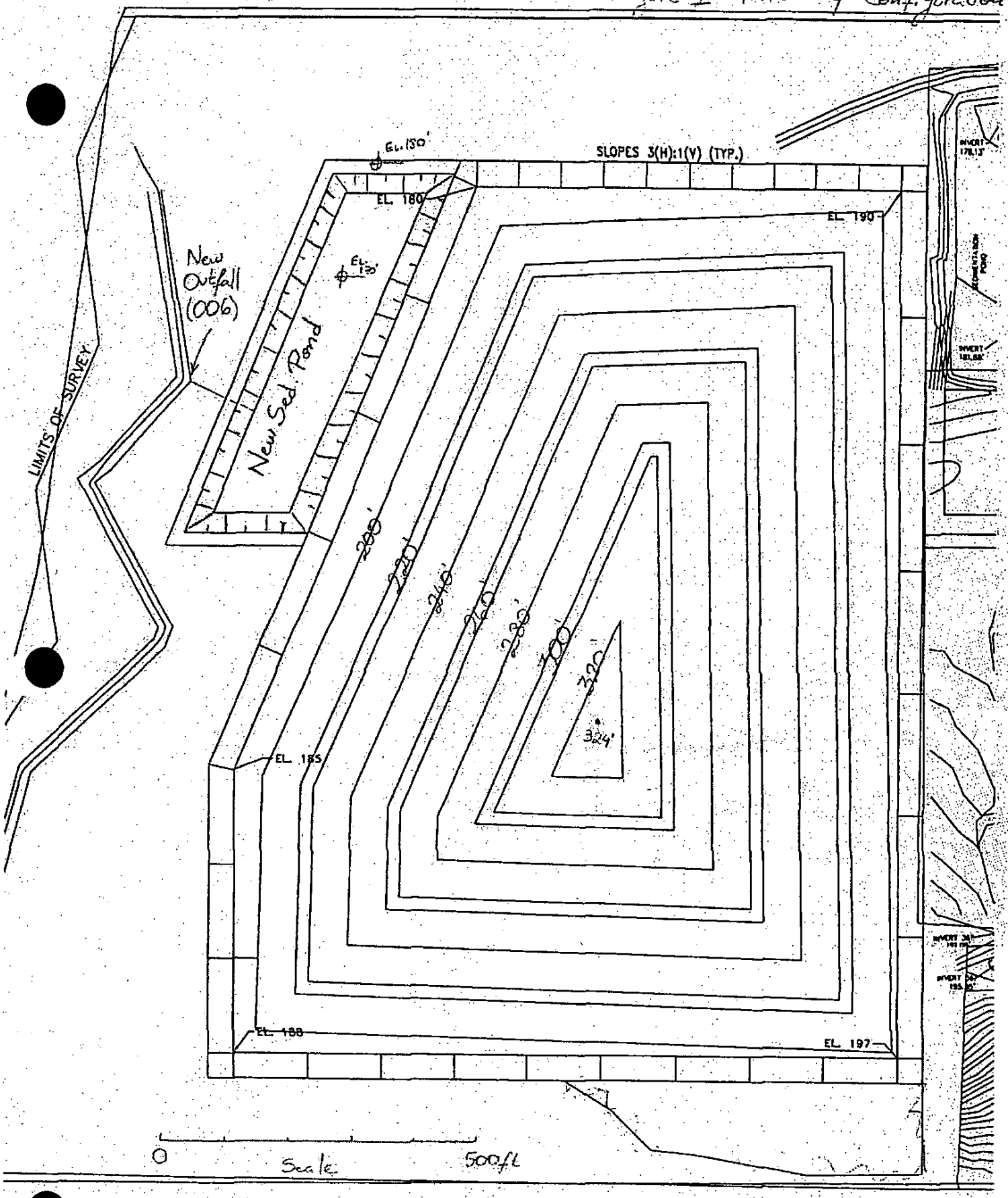
Conclusion:

The average annual soil loss will be approximately 2.4 tons/acre/year. This value is compatible with the maximum tolerance values (between 2 and 5 tons/acre/yr) as presented on Reference 2 (see below).

References:

1) Maidment, David R., Handbook of Hydrology, 1993.
2) TNRCC, Use of the Universal Soil Loss Equation in Final Cover/Configuration Design, 1993.

Figure 1 - Final Cap Configuration



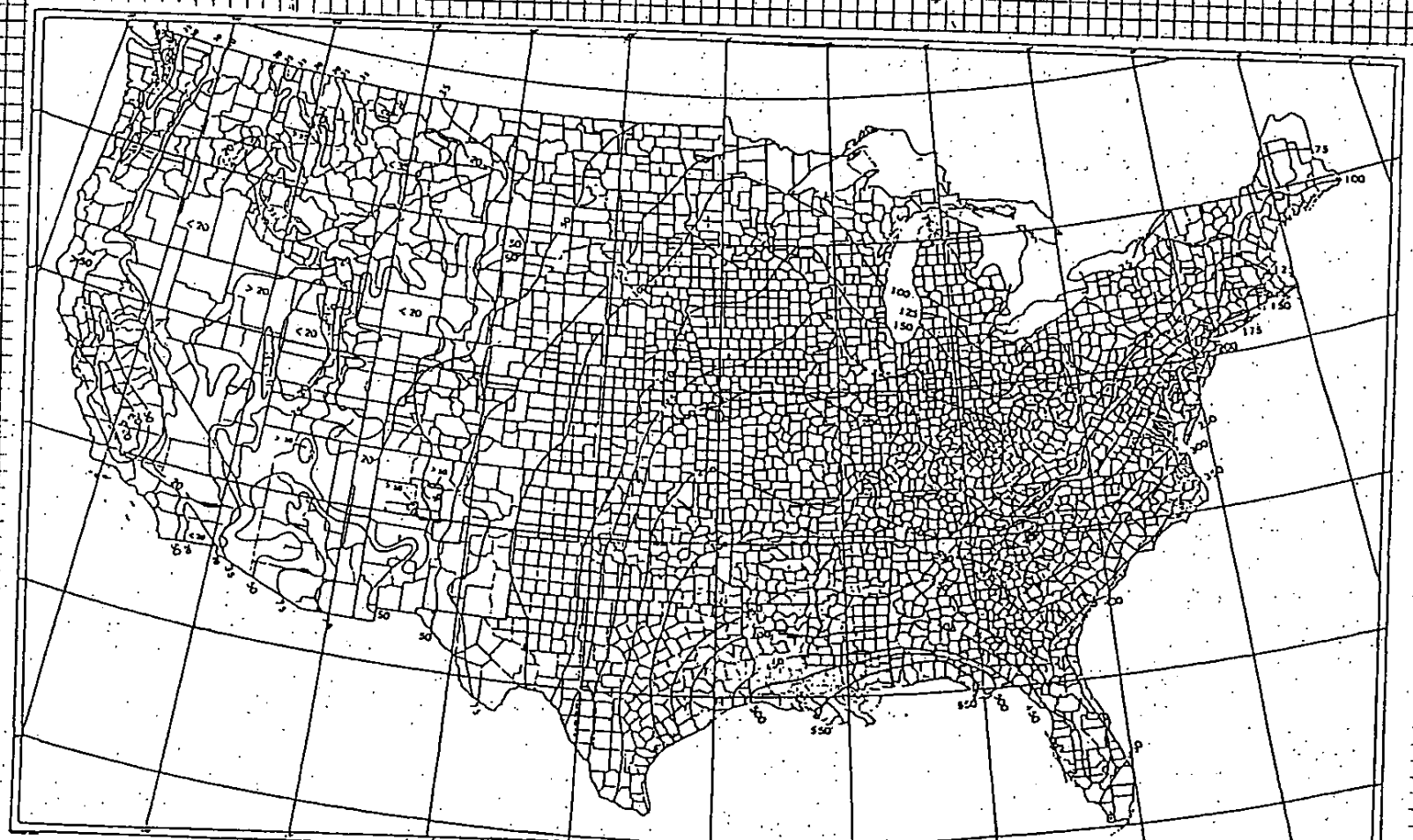


FIGURE 2 Average annual values of the rainfall erosion index R. *(Wischmeier and Smith.*[140]*)*

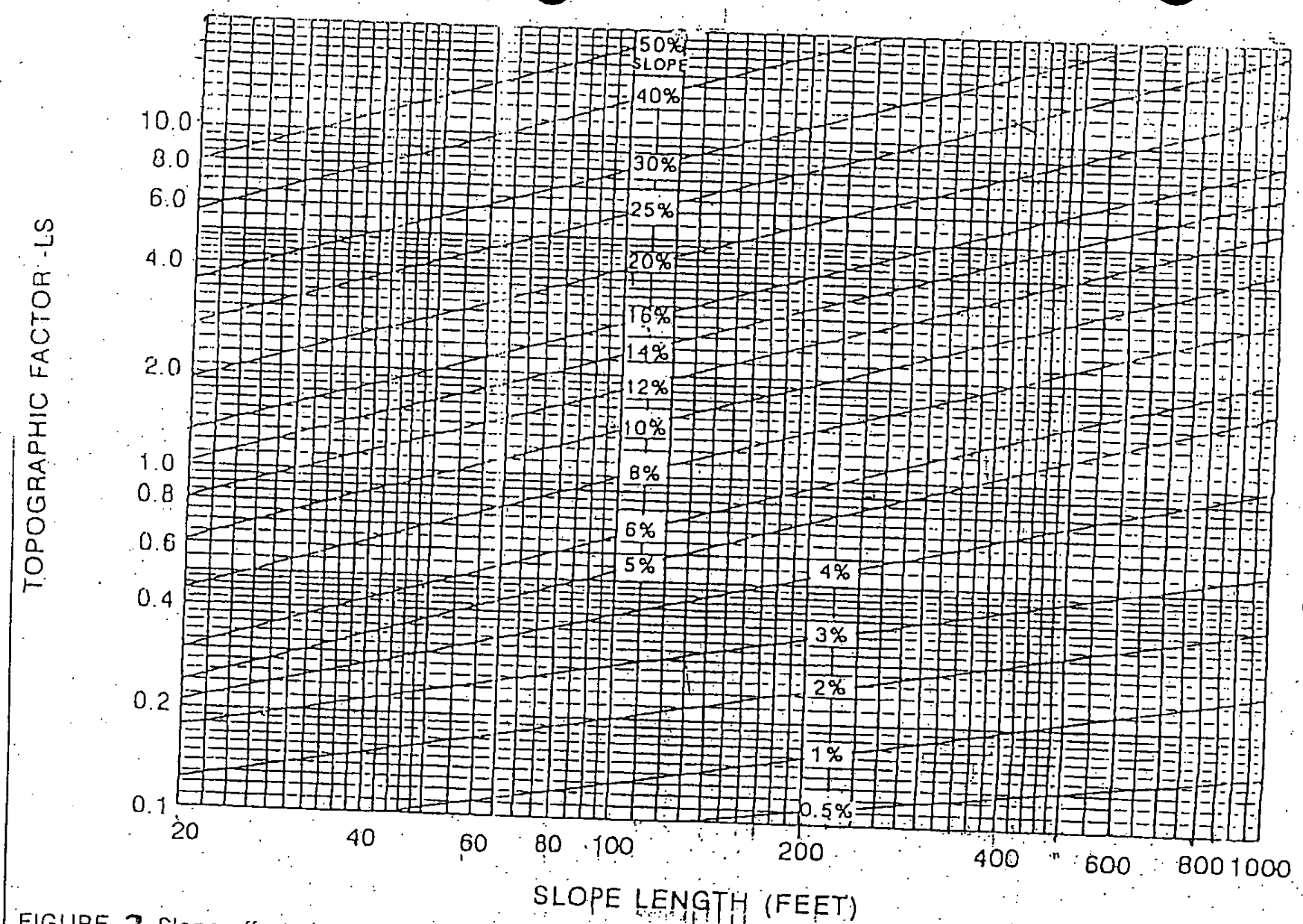


FIGURE 3 Slope effect chart (topographic factor, LS). LS = $(\lambda/72.6)^m$ 65.41 $\sin^2$ ()=4.56 sin ()+ 0.065) whereλ= slope lenght in feet ;()=angle of slope; and m = 0.2 for gradients <1 percent, 0.3 for 1 to 3 slopes; 0.4 for 3.5 to 4.5 percent slopes, and 0.5 for slopes of 5 percent or steeper.

Extracted from U.S.D.A. Handbook No. 537 (Figure 5)

Sheet ___ of ___

Table 1 Approximate Values of Factor K for USDA Textural Classes

Texture Class	Organic Matter Content		
	<0.5%	2%	4%
	K	K	K
Sand	0.05	0.03	0.02
Fine Sand	0.16	0.14	0.10
Very Fine Sand	0.42	0.36	0.28
Loamy Sand	0.12	0.10	0.08
Loamy Fine Sand	0.24	0.20	0.16
Loamy Very Fine Sand	0.44	0.38	0.30
Sandy Loam	0.27	0.24	0.19
Fine Sandy Loam	0.35	0.30	0.24
Very Fine Sandy Loam	0.47	0.41	0.33
Loam	0.38	0.32	0.29
Silt Loam	0.48	0.42	0.33
Silt	0.60	0.52	0.42
Sandy Clay Loam	0.27	0.25	0.21
Clay Loam	0.28	0.25	0.21
Silty Clay Loam	0.37	0.32	0.26
Sandy Clay	0.14	0.13	0.12
Silty Clay	0.25	0.23	0.19
Clay	0.13 - 0.29		

The values shown are estimated averages of broad ranges of specific-soil values. When a texture is near the borderline of two texture classes, use the average of the two K values.

Table 2 Factor C for permanent pasture, range, and idle land[1]

Vegetative Canopy		Cover that contacts the soil surface					
Type and height[2]	Percent cover[3]	Percent ground cover					
		0	20	40	60	80	95+
No Appreciable Canopy		0.45	0.20	0.10	0.042	0.013	0.003
Tall weeds or short brush with average drop fall height of 20 in.	25	0.36	0.17	0.09	0.038	0.013	0.011
	50	0.26	0.13	0.07	0.035	0.012	0.003
	75	0.17	0.10	0.06	0.032	0.011	0.003

Extracted from:
United States Department of Agriculture, AGRICULTURE HANDBOOK NUMBER 537

1 The listed C values assume that the vegetation and mulch are randomly distributed over the entire area.

2 Canopy height is measured as the average fall height of water drops falling from the canopy to the ground. Canopy effect is inversely proportional to drop fall height and is negligible if fall height exceeds 33 ft.

3 Portions of total-area surface that would be hidden from view by canopy in a vertical projection (a bird's-eye view).

Table 3 P Factors for Contouring, Contour Stripcropping and Terracing

Land Slope	P values		
%	Contouring†	Contour Stripcropping	Terracing†
2.0 to 7	0.50	0.25	0.50
8.0 to 12	0.60	0.30	0.60
13.0 to 18	0.80	0.40	0.80
19.0 to 24	0.90	0.45	0.90

(This table appeared in SCS (5), p.9)

† Contouring and terracing columns are suitable for MSWLF cover. Contour stripcropping is not suitable for the type of vegetative cover normally practiced at municipal landfills.

Appendix S-3d

Settlement Calculations

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Project: Mundy Landfill - Cell VIII Client: DeSoto Parish Job #: 05-1124C
By: RCA Checked by: Date: 03/07/06 Sheet 1 of

Compressibility - Underground Soils

- Max. Landfill Height = (324 - ~~180~~ 184) = ~~144~~ 140 ft

- C_c = 0.08 (average of compressibility tests)

- Average Unit Weight → Soils → γ = 120 pcf
  Waste → γ = 65 pcf

- Clays and Silty clays found on the site are hard or very stiff. Medium clays were encountered between elevations 142 ft, MSL and 156 ft, MSL on Boring B-309 and between elevations 156 ft, MSL and 163 ft, MSL on Boring B-310. Samples of these medium clays were tested to determine their compressibility properties. ($C_{c\,max}$ = 0.087 for clay on B-309)

- Maximum settlements, taking into consideration boring B-309 (w/ more compressible and thicker medium clays):

C_c = 0.087

$\sigma_o' = 120 \times 13 = 1560$ psf

$\Delta\sigma_{v\,max} = 144 \times 65 = 9360$ psf (9100)

$H_{o\,max}$ = 14 ft

$$\Delta H = H_{o\,max} \cdot C_c \log\left(\frac{\sigma_o' + \Delta\sigma_v}{\sigma_o'}\right) = 14 \times 0.087 \times \log\left(\frac{1560 + 9360}{1560}\right)$$ (9100)

ΔH_{max} = ~~1.07~~ 1.02 ft ≅ 12 inches (at center)

- Conclusion:

Settlements of Subgrade soil will not affect the positive drainage of the leachate collection system, even under this very conservative approach (maximum load w/ worst soil condition) - (see attached figures)

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Project: Mundy Landfill - Cell VIII Client: _____ Job #: 05-1124C

By: _____ Checked by: _____ Date: _____ Sheet 2 of _____

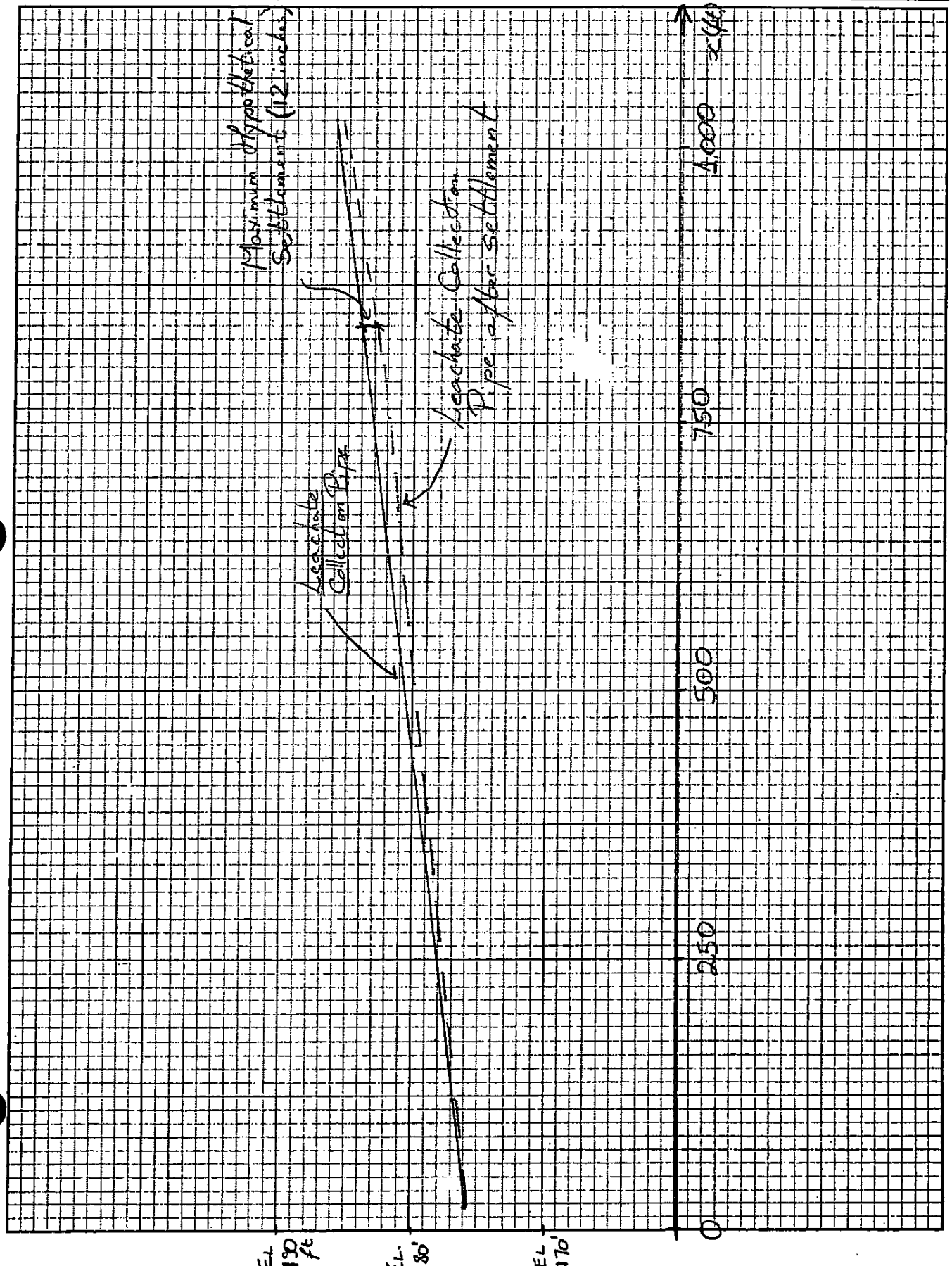
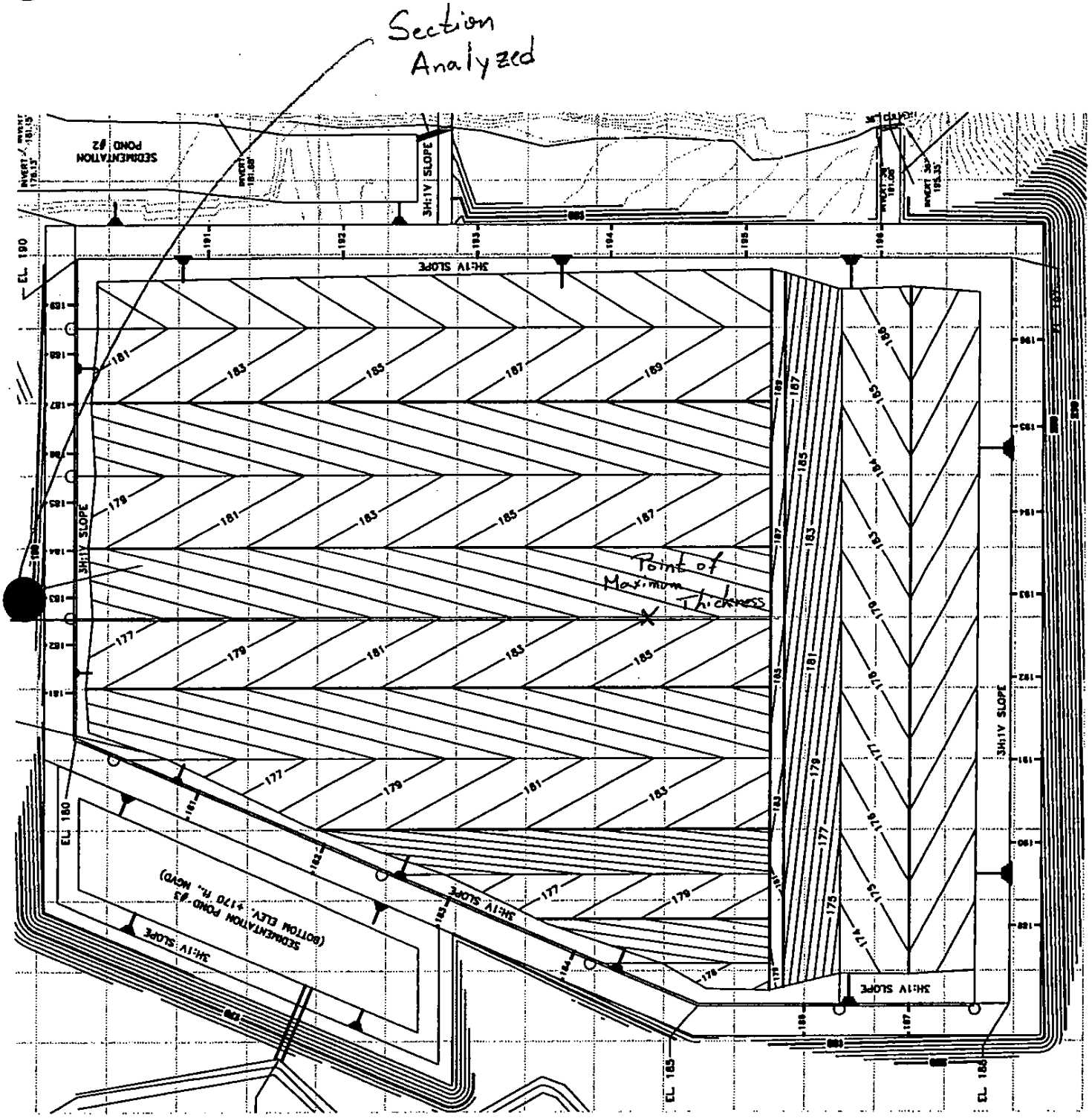


Figure 3 - Top of Liner



LOG OF SOIL BORING – B309

PROJECT NAME: MUNDY LANDFILL – CELL VIII
CLIENT: DESOTO PARISH POLICE JURY
GEOLOGIST: SARAH MOORE (JEI)
DRILLER: CHRIS CRUSE (TRI)

SHEET # 1 OF 1
SURFACE ELEVATION: +162.62' MSL
DATE STARTED: 9/14/05 14:10
DATE COMPLETED: 9/14/05 16:30

DRILLING METHOD(S): DRY AUGER TO 3' bgs, WET ROTARY BELOW 3 bgs. INSTALLED PIEZOMETER PZ-G2-309 ABOUT 15' SOUTH-SOUTHWEST OF B309 USING WET ROTARY ON 10/4/05.

GROUNDWATER INFORMATION: GROUNDWATER ENCOUNTERED IN CLAYEY SAND AT 16.75' bgs.

BOREHOLE ABANDONMENT: PUMPED DOWN CEMENT-BENTONITE GROUT ON 10/4/05.

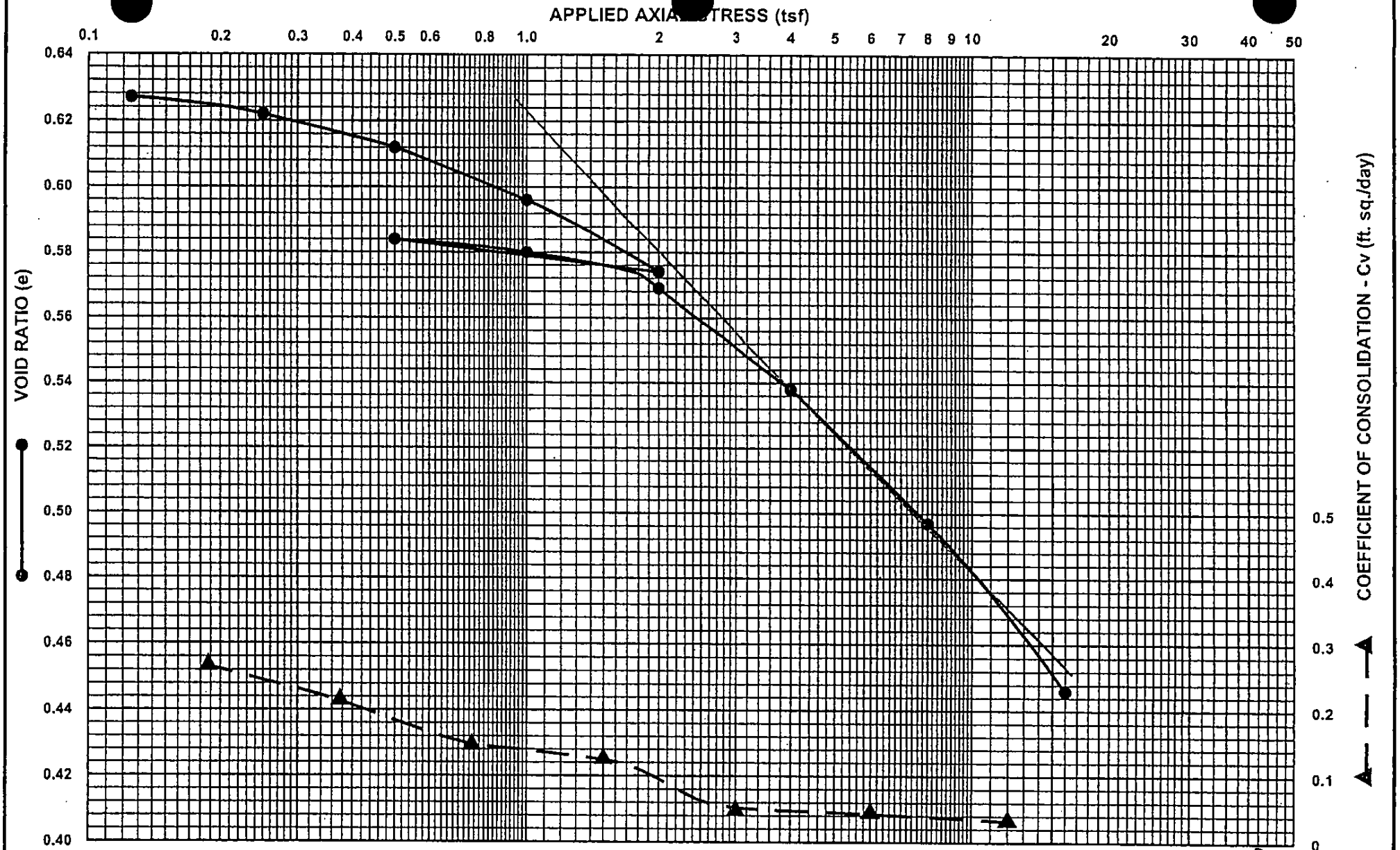
FIELD DATA				LABORATORY DATA								
DEPTH (FT.)	SOIL & ROCK SYMBOL	SAMPLE TYPE	N: SPT BLOWS/FT T: THD, BLOWS/FT P: HAND PEN, TSF	COMPRESSIVE STRENGTH TONS/SQ.FT.	MOISTURE CONTENT	DRY DENSITY POUNDS/CU.FT.	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX, %	MINUS NO. 200 SIEVE, %	USCS	FIELD DESCRIPTION OF STRATA
2			P=4.5+									Silty Clay, tan, gray, orange, mottled, dry, very hard, some iron nodules, black organics.
4			P=4.5+	10.49	10	116	45	14	31		CL	
6			P=4.5+									6.0
8			P=2.5									Clay, gray, brown, and orange, mottled, moist, plastic, firm, slightly to moderately silty, some black organics.
10			P=2.0		24	102	51	18	33		CH	– Kh = 3.7E-09 (8'-10').
12			P=2.0									
14			P=2.25	Compressible Layer								
			P=2.75									16.75
18			P=1.0	1.75	22	104	34	14	20		Sandy CL	Clayey Sand, gray to orange, wet, soft to stiff. 18.75
20			P=0.5		25	106	30	14	16	50	Sandy CL	Sand, fine grain, orange/brown, wet, soft, some silt and clay. – Kh = 1.2E-07 (18'-20'). 20.1
22			P=4.5+									Clay, light gray to orange from 20.1'-21' with dark gray/brown below, slightly moist to dry, hard, some light gray silt laminations, iron stone lamination at 22.2'
24			P=4.5+		27		87	26	61		CH	24.0
26			P=4.5+									Clay, dark gray, dry, hard, not fissile, moderately silty, some light gray silt laminations. 26.0
28			P=4.5+									Silty Clay, gray/brown, fine laminations (<1mm), some light gray silt laminations, dry, hard.
30			P=4.5+									30.0
32												Boring terminated 30' bgs, elevation = +132.62' MSL.
34												
36												
38												
40												
42												
44												
50												

LEGEND

USCS = UNIFIED SOIL CLASSIFICATION SYSTEM
Kh = HORIZONTAL HYDRAULIC CONDUCTIVITY (cm/sec)
Kv = VERTICAL HYDRAULIC CONDUCTIVITY (cm/sec)

SAMPLE METHOD

SPLIT SPOON | SHELBY TUBE | C CUTTINGS | DEPTH AT WHICH 1st WATER ENCOUNTERED



CONSOLIDATION TEST

SAMPLE IDENTIFICATION

BORING NO.: B-309
DEPTH (feet): 16-18
MATERIAL: Gray & light gray SILTY CLAY w/ferrous nodules & organics
FILE NO.: 05-1124

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CLASSIFICATION DATA

$C_c = 0.623 - 0.482$
$= 0.141$
$C_c' = 0.087$

INITIAL MOISTURE CONTENT (%) = 21.7 LL = 34
INITIAL DRY DENSITY (lbs./cu.ft.) = 101.5 PL = 14
FINAL MOISTURE CONTENT (%) = 18.9 PI = 20
Eo = 0.629 Gs = 2.65 Assumed

FIGURE NO.:

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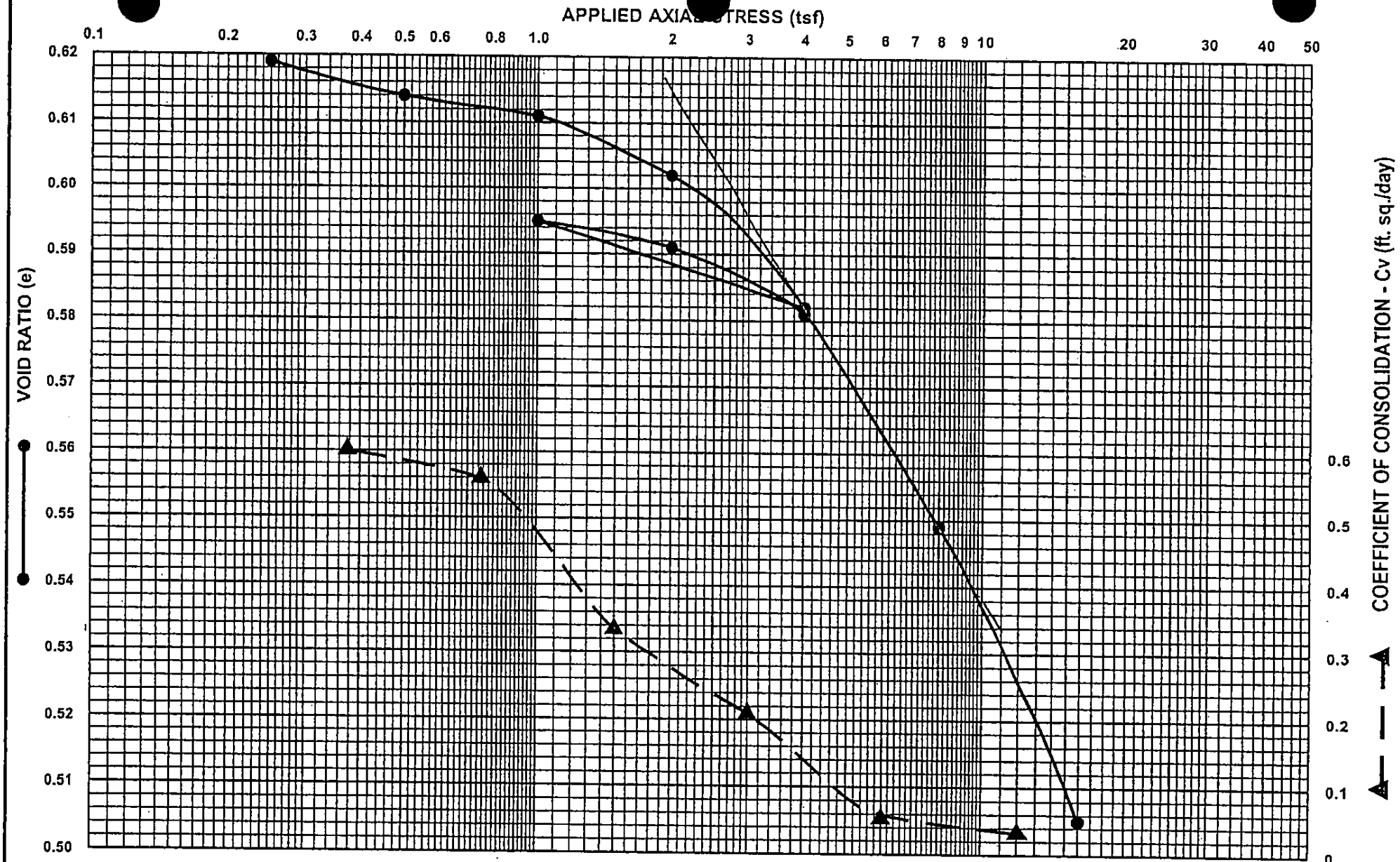

CONSOLIDATION TEST

SAMPLE IDENTIFICATION

BORING NO.: B-310
DEPTH (feet): 26-28
MATERIAL: Dark gray CLAY w/silt pockets
FILE NO.: 05-1124

STE
Soil Testing Engineers, Inc.

CLASSIFICATION DATA

$C_c = \frac{(0.615 - 0.538)}{\log\left(\frac{10}{2}\right)} = 0.110$

$C'_c = 0.068$

INITIAL MOISTURE CONTENT (%) = 21.1 LL = 56
INITIAL DRY DENSITY (lbs./cu.ft.) = 102.1 PL = 21
FINAL MOISTURE CONTENT (%) = 23.3 PI = 35
Eo = 0620 Gs = 2.65 Assumed

FIGURE NO.:

Appendix S-3e

Leachate Production Analysis

HELP MODEL EVALUATION OF LEACHATE COLLECTION SYSTEM

Presented herein are procedures used to estimate leachate production rates for Cell VIII during operation, at the Mundy Landfill located in DeSoto Parish, Louisiana. The leachate collection system (LCS) was designed to limit the maximum hydraulic head on the composite bottom liner to 30 centimeters (cm) or less in accordance with the Louisiana Solid Waste Rules and Regulations (SWRR), Section 711.B.4.b.vii(h). This system was evaluated using the Hydrologic Evaluation of Landfill Performance (HELP) computer program, Version 3.01, October 1994.

The HELP Model was developed by the United States Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi in conjunction with the United States Environmental Protection Agency (USEPA), Risk Reduction Engineering Laboratory in Cincinnati, Ohio. This program was written and tested under the direction of Dr. Paul R. Schroeder.

According to the USEPA (EPA/600/R-94/168) the HELP Model is a quasi-two-dimensional hydrologic model of water movement across, into, through and out of landfills. The program estimates amounts of surface runoff, evapotranspiration, subsurface lateral drainage, leachate production and liner leakage that may be expected to result from a large variety of landfill designs and conditions. The HELP Model uses climatological, soil, and design data to conduct water balance analyses of landfills. The primary purpose of the HELP Model is to assist engineers in the evaluation of landfill designs.

Program default values were used in the model, except where noted. Default evapotranspiration, precipitation, temperature and solar radiation data for Shreveport, Louisiana were used to produce synthetic climatological data.

This study evaluates an open condition and an interim condition. The two conditions are necessary to determine the worst case for leachate production rates for Cell VIII. This worst case condition was modeled the open cell for one year with only daily cover and the interim cell with interim cover. Neither one of these conditions will exist for the length of time analyzed due to regulatory requirements. Therefore, these analyses yield conservative results. The worst case condition considers 5 acres of the landfill under interim cover while 5 more acres are open with an active face of approximately 2 acres. The two acres of active face will not be allowed any run-off.

The worst case, a five-acre open cell with a 10% top slope under daily cover and a five-acre interim cell with a 10% top slope under interim cover, was modeled as follows, from top to bottom:

Open Cell:

- six inches of daily cover;
- 10 feet of solid waste;
- a 12-inch layer of drainage media with a permeability of 1.0×10^{-3} cm/sec;
- a 60-mil HDPE flexible membrane liner; and,
- a three-foot thick recompacted cohesive soil liner.

Interim Cell:

- six inches of additional cover;
- six inches of daily cover;
- 70 feet of solid waste;
- a 12-inch layer of drainage media with a permeability of 1.0×10^{-3} cm/sec;
- a 60-mil HDPE flexible membrane liner; and,
- a three-foot thick recompacted cohesive soil liner.

Estimate of leachate production rates for the worst case condition is 636 gallons per day.

Analysis for the closed cell condition is also presented, although this is known not to be the worst condition regarding leachate production.

Open

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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.01   (14 OCTOBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     J:\MODELS\HELP3\c051124.D4
TEMPERATURE DATA FILE:       J:\MODELS\HELP3\c051124.D7
SOLAR RADIATION DATA FILE:   J:\MODELS\HELP3\c051124.D13
EVAPOTRANSPIRATION DATA:     J:\MODELS\HELP3\c051124.D11
SOIL AND DESIGN DATA FILE:   J:\MODELS\HELP3\p051124.D10
OUTPUT DATA FILE:            J:\MODELS\HELP3\p051124.OUT


TIME:  11:22     DATE:   6/26/2007


******************************************************************************

    TITLE:  Mundy Cell VIII - Open Cell

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    NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
             COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                LAYER  1
                                --------

                   TYPE 1 - VERTICAL PERCOLATION LAYER
                       MATERIAL TEXTURE NUMBER  11
          THICKNESS                  =      1.00   INCHES
          POROSITY                   =      0.4640 VOL/VOL
          FIELD CAPACITY             =      0.3100 VOL/VOL
          WILTING POINT              =      0.1870 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.2522 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.639999998000E-04 CM/SEC


                                LAYER  2
                                --------

                      TYPE 3 - BARRIER SOIL LINER
                      MATERIAL TEXTURE NUMBER  16
          THICKNESS                  =      5.00   INCHES
          POROSITY                   =      0.4270 VOL/VOL
          FIELD CAPACITY             =      0.4180 VOL/VOL
          WILTING POINT              =      0.3670 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.4270 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.100000001000E-06 CM/SEC
```

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	216.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.0830	VOL/VOL
WILTING POINT	=	0.0330	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0830	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC
SLOPE	=	0.00	PERCENT
DRAINAGE LENGTH	=	0.0	FEET

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	2.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	2.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #11 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 10.% AND A SLOPE LENGTH OF 500. FEET.

SCS RUNOFF CURVE NUMBER	=	94.60	
FRACTION OF AREA ALLOWING RUNOFF	=	60.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	5.000	ACRES
EVAPORATIVE ZONE DEPTH	=	1.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	0.252	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	0.464	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.187	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	81.827	INCHES
TOTAL INITIAL WATER	=	81.827	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SHREVEPORT LOUISIANA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	58
END OF GROWING SEASON (JULIAN DATE)	=	331
AVERAGE ANNUAL WIND SPEED	=	8.60 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	70.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
4.02	3.46	3.77	4.71	4.70	3.54
3.56	2.52	3.29	2.63	3.77	3.87

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
46.00	49.80	57.00	65.70	73.00	79.80
82.90	82.40	77.10	66.70	55.70	48.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

STATION LATITUDE = 32.06 DEGREES

HEAD #1: AVERAGE HEAD ON TOP OF LAYER 2
DRAIN #1: LATERAL DRAINAGE FROM LAYER 1 (RECIRCULATION AND COLLECTION)
LEAK #1: PERCOLATION OR LEAKAGE THROUGH LAYER 2
HEAD #2: AVERAGE HEAD ON TOP OF LAYER 6
DRAIN #2: LATERAL DRAINAGE FROM LAYER 4 (RECIRCULATION AND COLLECTION)
LEAK #2: PERCOLATION OR LEAKAGE THROUGH LAYER 6

DAILY OUTPUT FOR YEAR 1

DAY	AIR	SOIL	RAIN IN.	RUNOFF IN.	ET IN.	E. ZONE WATER IN./IN.	HEAD #1 IN.	DRAIN #1 IN.	LEAK #1 IN.	HEAD #2 IN.	DRAIN #2 IN.	LEAK #2 IN.
1			0.00	0.000	0.073	0.1850	0.1963	.0000E+00	.3535E-02	0.0012	.3535E-02	.0000E+00
2			0.00	0.000	0.030	0.1488	0.0159	.0000E+00	.8603E-03	0.0003	.8603E-03	.0000E+00
3			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
4			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
5			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
6			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
7			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
8			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
9			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
10			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
11			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
12			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
13			0.00	0.000	0.000	0.1451	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
14			0.17	0.000	0.033	0.2649	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
15	*		0.02	0.000	0.039	0.2641	0.0412	.0000E+00	.1729E-02	0.0006	.1727E-02	.0000E+00
16			0.00	0.000	0.055	0.2101	0.0599	.0000E+00	.3442E-02	0.0011	.3442E-02	.0000E+00
17			0.00	0.000	0.026	0.1800	0.0059	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
18			0.00	0.000	0.000	0.1767	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
19			0.00	0.000	0.000	0.1767	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
20			0.01	0.000	0.008	0.1787	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
21			0.02	0.000	0.013	0.1854	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
22			0.00	0.000	0.008	0.1793	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
23			0.00	0.000	0.000	0.1779	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
24			0.00	0.000	0.000	0.1778	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
25			0.00	0.000	0.000	0.1778	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
26			0.00	0.000	0.000	0.1778	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
27			0.52	0.128	0.033	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1019E-02	.0000E+00
28			0.17	0.132	0.086	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
29			0.52	0.400	0.078	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
30			0.00	0.000	0.103	0.4219	0.9100	.0000E+00	.4021E-02	0.0013	.4021E-02	.0000E+00
31			0.00	0.000	0.086	0.3373	0.6782	.0000E+00	.3863E-02	0.0013	.3863E-02	.0000E+00
32			0.00	0.000	0.084	0.2494	0.4118	.0000E+00	.3682E-02	0.0012	.3682E-02	.0000E+00
33			0.00	0.000	0.083	0.1625	0.1764	.0000E+00	.3522E-02	0.0012	.3522E-02	.0000E+00
34			0.11	0.000	0.061	0.1944	0.0020	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
35			0.00	0.000	0.048	0.1586	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
36			0.00	0.000	0.003	0.1505	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
37			0.03	0.000	0.008	0.1697	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
38			0.00	0.000	0.009	0.1649	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
39			0.00	0.000	0.003	0.1615	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
40			0.27	0.000	0.034	0.3676	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
41			0.00	0.000	0.033	0.3646	0.5605	.0000E+00	.3783E-02	0.0013	.3781E-02	.0000E+00
42			0.00	0.000	0.031	0.3293	0.5257	.0000E+00	.3759E-02	0.0012	.3759E-02	.0000E+00
43			0.00	0.000	0.030	0.2958	0.4312	.0000E+00	.3695E-02	0.0012	.3695E-02	.0000E+00
44			0.00	0.000	0.028	0.2638	0.3273	.0000E+00	.3624E-02	0.0012	.3624E-02	.0000E+00
45			0.09	0.000	0.028	0.3108	0.2552	.0000E+00	.3575E-02	0.0012	.3575E-02	.0000E+00
46			0.00	0.000	0.026	0.2924	0.1854	.0000E+00	.3528E-02	0.0012	.3528E-02	.0000E+00
47			0.00	0.000	0.025	0.2639	0.1601	.0000E+00	.3510E-02	0.0012	.3510E-02	.0000E+00
48			0.00	0.000	0.024	0.2364	0.1459	.0000E+00	.3501E-02	0.0012	.3501E-02	.0000E+00
49			0.00	0.000	0.023	0.2096	0.1448	.0000E+00	.3500E-02	0.0012	.3500E-02	.0000E+00
50			0.00	0.000	0.022	0.1840	0.0899	.0000E+00	.2608E-02	0.0009	.2608E-02	.0000E+00
51			0.00	0.000	0.019	0.1646	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
52			0.19	0.000	0.019	0.3121	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
53			0.32	0.103	0.022	0.4640	0.6045	.0000E+00	.2962E-02	0.0010	.2961E-02	.0000E+00
54			0.43	0.355	0.068	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
55			0.00	0.000	0.086	0.4416	0.9516	.0000E+00	.4049E-02	0.0013	.4049E-02	.0000E+00
56			0.01	0.000	0.066	0.3855	0.7799	.0000E+00	.3932E-02	0.0013	.3932E-02	.0000E+00
57			0.00	0.000	0.099	0.2885	0.5329	.0000E+00	.3764E-02	0.0012	.3764E-02	.0000E+00
58			0.24	0.000	0.092	0.4023	0.3404	.0000E+00	.3633E-02	0.0012	.3633E-02	.0000E+00
59			0.11	0.000	0.082	0.4419	0.7617	.0000E+00	.3920E-02	0.0013	.3920E-02	.0000E+00
60			0.00	0.000	0.116	0.3401	0.7186	.0000E+00	.3890E-02	0.0013	.3890E-02	.0000E+00
61			0.00	0.000	0.095	0.2384	0.4058	.0000E+00	.3678E-02	0.0012	.3678E-02	.0000E+00
62			0.00	0.000	0.085	0.1487	0.1596	.0000E+00	.2651E-02	0.0009	.2651E-02	.0000E+00
63			0.64	0.159	0.076	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1020E-02	.0000E+00
64			0.00	0.000	0.145	0.4020	0.8851	.0000E+00	.4004E-02	0.0013	.4004E-02	.0000E+00

65	0.00	0.000	0.088	0.3124	0.6057	.0000E+00	.3814E-02	0.0013	.3814E-02	.0000E+00
66	0.00	0.000	0.094	0.2155	0.3433	.0000E+00	.3635E-02	0.0012	.3635E-02	.0000E+00
67	0.57	0.120	0.127	0.4640	0.3749	.0000E+00	.3657E-02	0.0012	.3657E-02	.0000E+00
68	0.00	0.000	0.120	0.4064	0.8877	.0000E+00	.4005E-02	0.0013	.4005E-02	.0000E+00
69	0.00	0.000	0.124	0.2862	0.5589	.0000E+00	.3782E-02	0.0013	.3782E-02	.0000E+00
70	0.09	0.000	0.078	0.2775	0.3228	.0000E+00	.3621E-02	0.0012	.3621E-02	.0000E+00
71	0.00	0.000	0.092	0.1947	0.1747	.0000E+00	.3520E-02	0.0012	.3520E-02	.0000E+00
72	0.00	0.000	0.036	0.1503	0.0242	.0000E+00	.8636E-03	0.0003	.8636E-03	.0000E+00
73	0.43	0.011	0.099	0.4262	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
74	0.65	0.423	0.102	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
75	0.00	0.000	0.144	0.4426	0.9534	.0000E+00	.4050E-02	0.0013	.4050E-02	.0000E+00
76	0.00	0.000	0.086	0.3608	0.7457	.0000E+00	.3909E-02	0.0013	.3909E-02	.0000E+00
77	0.00	0.000	0.106	0.2534	0.4593	.0000E+00	.3714E-02	0.0012	.3714E-02	.0000E+00
78	0.00	0.000	0.086	0.1618	0.1618	.0000E+00	.2652E-02	0.0009	.2652E-02	.0000E+00
79	0.00	0.000	0.017	0.1360	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
80	0.00	0.000	0.000	0.1338	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
81	0.00	0.000	0.000	0.1338	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
82	0.01	0.000	0.010	0.1342	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
83	0.00	0.000	0.000	0.1343	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
84	0.00	0.000	0.000	0.1343	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
85	0.00	0.000	0.000	0.1343	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
86	0.27	0.000	0.053	0.3243	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
87	0.00	0.000	0.049	0.3064	0.2428	.0000E+00	.2716E-02	0.0009	.2715E-02	.0000E+00
88	0.00	0.000	0.043	0.2590	0.2851	.0000E+00	.3596E-02	0.0012	.3596E-02	.0000E+00
89	1.16	0.629	0.040	0.4640	0.6290	.0000E+00	.3829E-02	0.0013	.3829E-02	.0000E+00
90	0.00	0.052	0.184	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
91	0.00	0.000	0.148	0.3617	0.8165	.0000E+00	.3957E-02	0.0013	.3957E-02	.0000E+00
92	0.00	0.000	0.177	0.1886	0.4187	.0000E+00	.3686E-02	0.0012	.3686E-02	.0000E+00
93	0.02	0.000	0.061	0.1282	0.0679	.0000E+00	.1745E-02	0.0006	.1745E-02	.0000E+00
94	0.00	0.000	0.002	0.1214	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
95	0.00	0.000	0.000	0.1211	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
96	0.00	0.000	0.000	0.1211	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
97	0.00	0.000	0.000	0.1211	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
98	0.52	0.068	0.077	0.4514	0.0250	.0000E+00	.8674E-03	0.0003	.8660E-03	.0000E+00
99	1.08	0.843	0.078	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
100	0.05	0.071	0.135	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
101	0.00	0.000	0.174	0.3323	0.7819	.0000E+00	.3934E-02	0.0013	.3934E-02	.0000E+00
102	0.00	0.000	0.148	0.1808	0.3212	.0000E+00	.3620E-02	0.0012	.3620E-02	.0000E+00
103	0.00	0.000	0.039	0.1272	0.0416	.0000E+00	.8703E-03	0.0003	.8703E-03	.0000E+00
104	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
105	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
106	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
107	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
108	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
109	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
110	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
111	0.00	0.000	0.000	0.1224	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
112	0.39	0.007	0.039	0.4233	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
113	0.00	0.000	0.038	0.4291	0.9232	.0000E+00	.4030E-02	0.0013	.4028E-02	.0000E+00
114	0.00	0.000	0.033	0.3916	0.7753	.0000E+00	.3929E-02	0.0013	.3929E-02	.0000E+00
115	0.18	0.040	0.033	0.4640	0.8304	.0000E+00	.3966E-02	0.0013	.3966E-02	.0000E+00
116	0.00	0.000	0.056	0.4346	0.9377	.0000E+00	.4039E-02	0.0013	.4039E-02	.0000E+00
117	0.01	0.000	0.029	0.4099	0.8055	.0000E+00	.3950E-02	0.0013	.3950E-02	.0000E+00
118	0.00	0.000	0.027	0.3800	0.6949	.0000E+00	.3874E-02	0.0013	.3874E-02	.0000E+00
119	0.00	0.000	0.026	0.3503	0.6170	.0000E+00	.3821E-02	0.0013	.3821E-02	.0000E+00
120	0.01	0.000	0.026	0.3291	0.5060	.0000E+00	.3746E-02	0.0012	.3746E-02	.0000E+00
121	0.00	0.000	0.024	0.3025	0.4331	.0000E+00	.3696E-02	0.0012	.3696E-02	.0000E+00
122	0.00	0.000	0.023	0.2756	0.3359	.0000E+00	.3630E-02	0.0012	.3630E-02	.0000E+00
123	0.00	0.000	0.022	0.2494	0.2607	.0000E+00	.3579E-02	0.0012	.3579E-02	.0000E+00
124	0.00	0.000	0.022	0.2240	0.1662	.0000E+00	.3515E-02	0.0012	.3515E-02	.0000E+00
125	0.58	0.199	0.023	0.4640	0.5754	.0000E+00	.3793E-02	0.0013	.3793E-02	.0000E+00
126	0.19	0.114	0.206	0.4442	0.9457	.0000E+00	.4045E-02	0.0013	.4045E-02	.0000E+00
127	0.00	0.000	0.254	0.2155	0.5117	.0000E+00	.3750E-02	0.0012	.3750E-02	.0000E+00
128	0.00	0.000	0.056	0.1325	0.0765	.0000E+00	.1746E-02	0.0006	.1746E-02	.0000E+00
129	0.38	0.003	0.075	0.3897	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
130	0.02	0.000	0.059	0.3896	0.6891	.0000E+00	.3870E-02	0.0013	.3869E-02	.0000E+00
131	0.16	0.016	0.050	0.4638	0.7805	.0000E+00	.3933E-02	0.0013	.3933E-02	.0000E+00
132	0.52	0.309	0.221	0.4615	0.9930	.0000E+00	.4077E-02	0.0013	.4077E-02	.0000E+00
133	0.00	0.000	0.273	0.2189	0.6203	.0000E+00	.3824E-02	0.0013	.3824E-02	.0000E+00
134	0.00	0.000	0.069	0.1220	0.0955	.0000E+00	.2268E-02	0.0007	.2268E-02	.0000E+00
135	0.00	0.000	0.009	0.1056	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
136	0.00	0.000	0.000	0.1044	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
137	0.00	0.000	0.000	0.1044	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
138	0.00	0.000	0.000	0.1044	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00

139	0.00	0.000	0.000	0.1044	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
140	0.33	0.001	0.034	0.3627	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
141	0.00	0.000	0.033	0.3671	0.5751	.0000E+00	.3793E-02	0.0013	.3791E-02	.0000E+00
142	0.00	0.000	0.031	0.3318	0.5475	.0000E+00	.3774E-02	0.0012	.3774E-02	.0000E+00
143	0.00	0.000	0.030	0.2982	0.4876	.0000E+00	.3733E-02	0.0012	.3733E-02	.0000E+00
144	0.00	0.000	0.028	0.2662	0.3705	.0000E+00	.3654E-02	0.0012	.3654E-02	.0000E+00
145	0.00	0.000	0.027	0.2355	0.2774	.0000E+00	.3590E-02	0.0012	.3590E-02	.0000E+00
146	0.00	0.000	0.026	0.2061	0.1686	.0000E+00	.3516E-02	0.0012	.3516E-02	.0000E+00
147	0.00	0.000	0.025	0.1781	0.0846	.0000E+00	.2606E-02	0.0009	.2606E-02	.0000E+00
148	0.00	0.000	0.017	0.1604	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
149	1.14	0.561	0.025	0.4640	0.5000	.0000E+00	.2041E-02	0.0007	.2039E-02	.0000E+00
150	0.11	0.066	0.300	0.4523	0.9659	.0000E+00	.4059E-02	0.0013	.4059E-02	.0000E+00
151	0.00	0.000	0.247	0.2315	0.6033	.0000E+00	.3812E-02	0.0013	.3812E-02	.0000E+00
152	0.00	0.000	0.076	0.1312	0.1241	.0000E+00	.2632E-02	0.0009	.2632E-02	.0000E+00
153	0.00	0.000	0.012	0.1109	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
154	0.00	0.000	0.000	0.1094	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
155	0.00	0.000	0.000	0.1094	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
156	0.00	0.000	0.000	0.1094	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
157	0.00	0.000	0.000	0.1094	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
158	0.05	0.000	0.018	0.1375	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
159	0.00	0.000	0.015	0.1285	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
160	0.32	0.000	0.032	0.3782	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
161	0.27	0.116	0.033	0.4640	0.8864	.0000E+00	.4005E-02	0.0013	.4003E-02	.0000E+00
162	0.00	0.000	0.097	0.4346	0.9377	.0000E+00	.4039E-02	0.0013	.4039E-02	.0000E+00
163	0.00	0.000	0.028	0.4023	0.8063	.0000E+00	.3950E-02	0.0013	.3950E-02	.0000E+00
164	0.98	0.637	0.029	0.4640	0.9346	.0000E+00	.4037E-02	0.0013	.4037E-02	.0000E+00
165	0.04	0.062	0.194	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
166	0.04	0.024	0.227	0.2975	0.7496	.0000E+00	.3912E-02	0.0013	.3912E-02	.0000E+00
167	0.52	0.103	0.177	0.4640	0.5693	.0000E+00	.3789E-02	0.0013	.3789E-02	.0000E+00
168	0.00	0.000	0.284	0.2527	0.6610	.0000E+00	.3851E-02	0.0013	.3851E-02	.0000E+00
169	0.00	0.000	0.097	0.1350	0.1783	.0000E+00	.2661E-02	0.0009	.2661E-02	.0000E+00
170	0.00	0.000	0.019	0.1060	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
171	0.00	0.000	0.000	0.1036	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
172	0.00	0.000	0.000	0.1036	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
173	0.23	0.000	0.049	0.2618	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
174	1.39	0.856	0.051	0.4640	0.7500	.0000E+00	.3061E-02	0.0010	.3060E-02	.0000E+00
175	0.00	0.000	0.332	0.4328	0.9330	.0000E+00	.4036E-02	0.0013	.4036E-02	.0000E+00
176	0.00	0.000	0.243	0.2121	0.5103	.0000E+00	.3749E-02	0.0012	.3749E-02	.0000E+00
177	0.00	0.000	0.056	0.1305	0.0765	.0000E+00	.1746E-02	0.0006	.1746E-02	.0000E+00
178	0.00	0.000	0.003	0.1207	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
179	0.00	0.000	0.000	0.1203	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
180	0.00	0.000	0.000	0.1203	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
181	0.00	0.000	0.000	0.1203	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
182	0.00	0.000	0.000	0.1203	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
183	0.00	0.000	0.000	0.1203	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
184	0.84	0.310	0.041	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1019E-02	.0000E+00
185	0.26	0.181	0.204	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
186	1.13	0.862	0.157	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
187	0.18	0.108	0.274	0.3911	0.8198	.0000E+00	.3959E-02	0.0013	.3959E-02	.0000E+00
188	1.08	0.576	0.220	0.4640	0.8972	.0000E+00	.4012E-02	0.0013	.4012E-02	.0000E+00
189	0.00	0.000	0.261	0.4044	0.8865	.0000E+00	.4005E-02	0.0013	.4005E-02	.0000E+00
190	0.00	0.000	0.216	0.2040	0.4395	.0000E+00	.3701E-02	0.0012	.3701E-02	.0000E+00
191	0.00	0.000	0.046	0.1343	0.0628	.0000E+00	.1742E-02	0.0006	.1742E-02	.0000E+00
192	0.13	0.000	0.108	0.1479	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
193	0.00	0.000	0.018	0.1349	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
194	0.62	0.077	0.184	0.4476	0.0348	.0000E+00	.8740E-03	0.0003	.8726E-03	.0000E+00
195	0.00	0.000	0.303	0.2183	0.6275	.0000E+00	.3828E-02	0.0013	.3828E-02	.0000E+00
196	0.00	0.000	0.068	0.1212	0.0947	.0000E+00	.2130E-02	0.0007	.2130E-02	.0000E+00
197	0.00	0.000	0.009	0.1049	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
198	0.00	0.000	0.000	0.1037	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
199	0.02	0.000	0.007	0.1155	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
200	0.11	0.000	0.022	0.1940	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
201	0.00	0.000	0.029	0.1797	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
202	0.58	0.164	0.041	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1019E-02	.0000E+00
203	0.00	0.000	0.122	0.4291	0.9232	.0000E+00	.4030E-02	0.0013	.4030E-02	.0000E+00
204	0.00	0.000	0.033	0.3916	0.7753	.0000E+00	.3929E-02	0.0013	.3929E-02	.0000E+00
205	0.00	0.000	0.031	0.3562	0.6659	.0000E+00	.3855E-02	0.0013	.3855E-02	.0000E+00
206	0.00	0.000	0.030	0.3226	0.5517	.0000E+00	.3777E-02	0.0012	.3777E-02	.0000E+00
207	0.00	0.000	0.028	0.2905	0.4496	.0000E+00	.3707E-02	0.0012	.3707E-02	.0000E+00
208	0.00	0.000	0.027	0.2598	0.3381	.0000E+00	.3632E-02	0.0012	.3632E-02	.0000E+00
209	0.00	0.000	0.026	0.2303	0.2502	.0000E+00	.3572E-02	0.0012	.3572E-02	.0000E+00
210	0.00	0.000	0.025	0.2018	0.1613	.0000E+00	.3511E-02	0.0012	.3511E-02	.0000E+00
211	0.00	0.000	0.024	0.1756	0.0592	.0000E+00	.1735E-02	0.0006	.1735E-02	.0000E+00
212	0.00	0.000	0.014	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00

213	0.00	0.000	0.000	0.1588	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
214	0.00	0.000	0.000	0.1588	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
215	0.00	0.000	0.000	0.1588	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
216	0.00	0.000	0.000	0.1588	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
217	0.00	0.000	0.000	0.1588	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
218	0.18	0.000	0.018	0.3005	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
219	0.05	0.000	0.020	0.3444	0.1867	.0000E+00	.2678E-02	0.0009	.2677E-02	.0000E+00
220	0.75	0.411	0.021	0.4640	0.8324	.0000E+00	.3968E-02	0.0013	.3968E-02	.0000E+00
221	0.00	0.000	0.227	0.4352	0.9393	.0000E+00	.4041E-02	0.0013	.4041E-02	.0000E+00
222	0.00	0.000	0.221	0.2341	0.5792	.0000E+00	.3796E-02	0.0013	.3796E-02	.0000E+00
223	0.00	0.000	0.080	0.1336	0.1410	.0000E+00	.2641E-02	0.0009	.2641E-02	.0000E+00
224	0.02	0.000	0.028	0.1163	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
225	0.30	0.000	0.071	0.3157	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
226	0.00	0.000	0.056	0.2929	0.2416	.0000E+00	.2716E-02	0.0009	.2714E-02	.0000E+00
227	0.05	0.000	0.051	0.2817	0.2699	.0000E+00	.3585E-02	0.0012	.3585E-02	.0000E+00
228	0.00	0.000	0.043	0.2404	0.1840	.0000E+00	.3527E-02	0.0012	.3527E-02	.0000E+00
229	0.04	0.000	0.041	0.2307	0.1425	.0000E+00	.3498E-02	0.0012	.3498E-02	.0000E+00
230	0.00	0.000	0.036	0.1972	0.0360	.0000E+00	.1724E-02	0.0006	.1724E-02	.0000E+00
231	0.00	0.000	0.016	0.1786	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
232	0.00	0.000	0.002	0.1749	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
233	0.10	0.000	0.022	0.2428	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
234	0.06	0.000	0.025	0.2830	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
235	0.00	0.000	0.026	0.2646	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
236	0.78	0.365	0.028	0.4640	0.5330	.0000E+00	.2914E-02	0.0010	.2912E-02	.0000E+00
237	0.00	0.000	0.202	0.4428	0.9536	.0000E+00	.4050E-02	0.0013	.4050E-02	.0000E+00
238	0.00	0.000	0.253	0.2149	0.5370	.0000E+00	.3767E-02	0.0012	.3767E-02	.0000E+00
239	0.00	0.000	0.057	0.1316	0.0771	.0000E+00	.1747E-02	0.0006	.1747E-02	.0000E+00
240	0.00	0.000	0.003	0.1216	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
241	0.07	0.000	0.034	0.1529	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
242	0.50	0.089	0.060	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1019E-02	.0000E+00
243	0.00	0.000	0.217	0.3086	0.7599	.0000E+00	.3919E-02	0.0013	.3919E-02	.0000E+00
244	0.00	0.000	0.144	0.1574	0.2959	.0000E+00	.3603E-02	0.0012	.3603E-02	.0000E+00
245	0.00	0.000	0.033	0.1093	0.0256	.0000E+00	.8641E-03	0.0003	.8641E-03	.0000E+00
246	0.99	0.387	0.078	0.4640	0.2500	.0000E+00	.1020E-02	0.0003	.1020E-02	.0000E+00
247	0.00	0.000	0.244	0.3914	0.8613	.0000E+00	.3987E-02	0.0013	.3987E-02	.0000E+00
248	0.00	0.000	0.206	0.1979	0.4200	.0000E+00	.3687E-02	0.0012	.3687E-02	.0000E+00
249	0.00	0.000	0.044	0.1312	0.0581	.0000E+00	.1690E-02	0.0006	.1690E-02	.0000E+00
250	0.17	0.000	0.100	0.1868	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
251	0.28	0.001	0.071	0.3771	0.0149	.0000E+00	.8605E-03	0.0003	.8591E-03	.0000E+00
252	0.11	0.000	0.125	0.3865	0.5548	.0000E+00	.3779E-02	0.0012	.3779E-02	.0000E+00
253	0.00	0.000	0.186	0.2186	0.2958	.0000E+00	.3603E-02	0.0012	.3603E-02	.0000E+00
254	0.00	0.000	0.037	0.1620	0.0361	.0000E+00	.8682E-03	0.0003	.8682E-03	.0000E+00
255	0.10	0.000	0.047	0.2041	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
256	0.59	0.184	0.060	0.4640	0.4548	.0000E+00	.2010E-02	0.0007	.2009E-02	.0000E+00
257	0.00	0.000	0.152	0.4060	0.8875	.0000E+00	.4005E-02	0.0013	.4005E-02	.0000E+00
258	0.00	0.000	0.216	0.2055	0.4405	.0000E+00	.3701E-02	0.0012	.3701E-02	.0000E+00
259	0.00	0.000	0.047	0.1356	0.0630	.0000E+00	.1742E-02	0.0006	.1742E-02	.0000E+00
260	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
261	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
262	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
263	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
264	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
265	0.00	0.000	0.000	0.1298	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
266	1.42	0.747	0.038	0.4640	0.5000	.0000E+00	.2041E-02	0.0007	.2039E-02	.0000E+00
267	0.00	0.063	0.189	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
268	0.00	0.000	0.219	0.3058	0.7574	.0000E+00	.3917E-02	0.0013	.3917E-02	.0000E+00
269	0.00	0.000	0.141	0.1563	0.2933	.0000E+00	.3601E-02	0.0012	.3601E-02	.0000E+00
270	0.00	0.000	0.033	0.1089	0.0244	.0000E+00	.8636E-03	0.0003	.8636E-03	.0000E+00
271	0.00	0.000	0.000	0.1048	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
272	0.00	0.000	0.000	0.1048	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
273	0.00	0.000	0.000	0.1048	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
274	0.00	0.000	0.000	0.1048	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
275	0.08	0.000	0.023	0.1548	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
276	0.00	0.000	0.018	0.1462	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
277	0.00	0.000	0.000	0.1440	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
278	0.00	0.000	0.000	0.1440	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
279	0.00	0.000	0.000	0.1440	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
280	0.00	0.000	0.000	0.1440	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
281	0.00	0.000	0.000	0.1440	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
282	0.12	0.000	0.021	0.2303	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
283	0.15	0.000	0.025	0.3520	0.0286	.0000E+00	.8698E-03	0.0003	.8684E-03	.0000E+00
284	0.00	0.000	0.026	0.3415	0.3252	.0000E+00	.3623E-02	0.0012	.3623E-02	.0000E+00
285	0.00	0.000	0.025	0.3129	0.3049	.0000E+00	.3609E-02	0.0012	.3609E-02	.0000E+00
286	0.00	0.000	0.024	0.2853	0.3069	.0000E+00	.3610E-02	0.0012	.3610E-02	.0000E+00

287		0.00	0.000	0.023	0.2584	0.3289	.0000E+00	.3625E-02	0.0012	.3625E-02	.0000E+00
288		0.00	0.000	0.022	0.2322	0.2420	.0000E+00	.3566E-02	0.0012	.3566E-02	.0000E+00
289		0.00	0.000	0.022	0.2068	0.1628	.0000E+00	.3512E-02	0.0012	.3512E-02	.0000E+00
290		0.00	0.000	0.021	0.1825	0.0758	.0000E+00	.2600E-02	0.0009	.2600E-02	.0000E+00
291		0.00	0.000	0.018	0.1644	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
292		0.40	0.047	0.022	0.4530	0.1935	.0000E+00	.9820E-03	0.0003	.9806E-03	.0000E+00
293		0.03	0.002	0.050	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
294		0.00	0.000	0.021	0.4436	0.9548	.0000E+00	.4051E-02	0.0013	.4051E-02	.0000E+00
295		0.00	0.000	0.019	0.4208	0.8368	.0000E+00	.3971E-02	0.0013	.3971E-02	.0000E+00
296		0.00	0.000	0.018	0.3984	0.7706	.0000E+00	.3926E-02	0.0013	.3926E-02	.0000E+00
297		0.00	0.000	0.018	0.3764	0.6774	.0000E+00	.3862E-02	0.0013	.3862E-02	.0000E+00
298		0.00	0.000	0.018	0.3548	0.6348	.0000E+00	.3833E-02	0.0013	.3833E-02	.0000E+00
299		0.60	0.304	0.020	0.4640	0.8929	.0000E+00	.4009E-02	0.0013	.4009E-02	.0000E+00
300		0.34	0.324	0.091	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
301		0.00	0.000	0.123	0.4227	0.9117	.0000E+00	.4022E-02	0.0013	.4022E-02	.0000E+00
302		0.14	0.002	0.085	0.4593	0.8283	.0000E+00	.3965E-02	0.0013	.3965E-02	.0000E+00
303		0.70	0.513	0.089	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
304		0.00	0.000	0.119	0.4398	0.9487	.0000E+00	.4047E-02	0.0013	.4047E-02	.0000E+00
305		1.24	0.879	0.095	0.4640	0.9622	.0000E+00	.4056E-02	0.0013	.4056E-02	.0000E+00
306		0.22	0.270	0.088	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
307		0.50	0.421	0.086	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
308		0.00	0.000	0.112	0.4330	0.9335	.0000E+00	.4037E-02	0.0013	.4037E-02	.0000E+00
309		0.00	0.000	0.122	0.3181	0.6499	.0000E+00	.3844E-02	0.0013	.3844E-02	.0000E+00
310		0.00	0.000	0.142	0.1749	0.2942	.0000E+00	.3602E-02	0.0012	.3602E-02	.0000E+00
311		0.00	0.000	0.033	0.1272	0.0252	.0000E+00	.8639E-03	0.0003	.8639E-03	.0000E+00
312		0.00	0.000	0.000	0.1231	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
313		0.00	0.000	0.000	0.1231	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
314		0.16	0.000	0.074	0.1986	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
315		0.00	0.000	0.058	0.1587	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
316		0.00	0.000	0.020	0.1338	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
317		0.02	0.000	0.011	0.1390	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
318		0.00	0.000	0.003	0.1377	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
319		0.00	0.000	0.000	0.1373	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
320		0.00	0.000	0.000	0.1373	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
321		0.00	0.000	0.000	0.1373	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
322		0.00	0.000	0.000	0.1373	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
323		0.92	0.370	0.052	0.4640	0.2822	.0000E+00	.1893E-02	0.0006	.1891E-02	.0000E+00
324		0.00	0.035	0.107	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
325		0.00	0.000	0.079	0.4116	0.8914	.0000E+00	.4008E-02	0.0013	.4008E-02	.0000E+00
326		0.00	0.000	0.086	0.3253	0.6404	.0000E+00	.3837E-02	0.0013	.3837E-02	.0000E+00
327		0.00	0.000	0.078	0.2424	0.3873	.0000E+00	.3665E-02	0.0012	.3665E-02	.0000E+00
328		0.06	0.000	0.058	0.2309	0.2062	.0000E+00	.3542E-02	0.0012	.3542E-02	.0000E+00
329		0.00	0.000	0.064	0.1731	0.0664	.0000E+00	.1744E-02	0.0006	.1744E-02	.0000E+00
330		0.00	0.000	0.005	0.1611	0.0000	.0000E+00	.0000E+00	0.0000	.1431E-05	.0000E+00
331		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
332		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
333		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
334		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
335		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
336		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
337		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
338		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
339		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
340		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
341		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
342		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
343		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
344		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
345		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
346		0.00	0.000	0.000	0.1605	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
347	*	0.76	0.000	0.024	0.1778	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
348	*	0.00	0.000	0.023	0.1975	0.0000	.0000E+00	.0000E+00	0.0000	.0000E+00	.0000E+00
349		0.00	0.267	0.000	0.4640	0.5000	.0000E+00	.2041E-02	0.0007	.2039E-02	.0000E+00
350		0.00	0.029	0.088	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
351		0.00	0.000	0.091	0.3973	0.8755	.0000E+00	.3997E-02	0.0013	.3997E-02	.0000E+00
352		0.00	0.000	0.066	0.3264	0.6267	.0000E+00	.3828E-02	0.0013	.3828E-02	.0000E+00
353		0.00	0.000	0.062	0.2600	0.4173	.0000E+00	.3685E-02	0.0012	.3685E-02	.0000E+00
354	*	0.91	0.000	0.025	0.2658	0.3245	.0000E+00	.3622E-02	0.0012	.3622E-02	.0000E+00
355	*	0.00	0.000	0.027	0.2818	0.3011	.0000E+00	.3606E-02	0.0012	.3606E-02	.0000E+00
356		0.00	0.429	0.000	0.4640	0.6418	.0000E+00	.3838E-02	0.0013	.3838E-02	.0000E+00
357		0.00	0.072	0.082	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
358		0.00	0.000	0.106	0.4098	0.8898	.0000E+00	.4007E-02	0.0013	.4007E-02	.0000E+00
359		0.00	0.000	0.101	0.3100	0.6086	.0000E+00	.3816E-02	0.0013	.3816E-02	.0000E+00
360		0.96	0.491	0.079	0.4640	0.7227	.0000E+00	.3893E-02	0.0013	.3893E-02	.0000E+00

361	0.61	0.596	0.075	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
362	0.00	0.015	0.125	0.4640	1.0000	.0000E+00	.4082E-02	0.0014	.4082E-02	.0000E+00
363	0.11	0.066	0.087	0.4315	0.9136	.0000E+00	.4023E-02	0.0013	.4023E-02	.0000E+00
364	0.00	0.000	0.110	0.3269	0.6483	.0000E+00	.3843E-02	0.0013	.3843E-02	.0000E+00
365	0.01	0.000	0.066	0.2601	0.3999	.0000E+00	.3674E-02	0.0012	.3674E-02	.0000E+00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.43	1.80	3.82	2.26	3.43	3.84
	4.95	2.90	3.66	2.56	3.12	3.36
STD. DEVIATIONS	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00
RUNOFF						
TOTALS	0.660	0.458	1.395	1.029	1.268	1.797
	2.278	0.865	1.383	1.193	1.976	1.965
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	0.669	1.154	2.296	1.345	2.208	2.073
	2.567	1.858	2.409	0.961	1.373	1.238
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0266	0.0686	0.0748	0.0582	0.0803	0.0496
	0.0662	0.0496	0.0499	0.0739	0.0473	0.0642
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0266	0.0686	0.0748	0.0582	0.0803	0.0496
	0.0662	0.0496	0.0499	0.0739	0.0473	0.0642
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH LAYER 6						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 2						
AVERAGES	0.1341	0.2995	0.3609	0.3521	0.3569	0.3039

	0.3399	0.2149	0.2411	0.4008	0.2780	0.3829
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 6

AVERAGES	0.0003	0.0008	0.0008	0.0006	0.0009	0.0005
	0.0007	0.0005	0.0005	0.0008	0.0005	0.0007
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 1

	INCHES		CU. FEET	PERCENT
PRECIPITATION	37.13	(0.000)	673909.5	100.00
RUNOFF	16.268	(0.0000)	295265.81	43.814
EVAPOTRANSPIRATION	20.152	(0.0000)	365763.09	54.275
PERCOLATION/LEAKAGE THROUGH FROM LAYER 2	0.70927	(0.00000)	12873.237	1.91023
AVERAGE HEAD ACROSS TOP OF LAYER 2	0.305	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.70927	(0.00000)	12873.237	1.91023
PERCOLATION/LEAKAGE THROUGH FROM LAYER 6	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 6	0.001	(0.000)		
CHANGE IN WATER STORAGE	0.000	(0.0000)	7.34	0.001

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 1

	(INCHES)	(CU. FT.)
PRECIPITATION	1.42	25773.000
RUNOFF	0.879	15961.2598
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.004082	74.08560
AVERAGE HEAD ACROSS LAYER 2	1.000	
DRAINAGE COLLECTED FROM LAYER 4	0.00408	74.08560
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 6	0.001	
SNOW WATER	0.89	16159.2168

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4640

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1004

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FINAL WATER STORAGE AT END OF YEAR 1

LAYER	(INCHES)	(VOL/VOL)
1	0.2526	0.2526
2	2.1350	0.4270
3	63.0720	0.2920
4	0.9960	0.0830
5	0.0000	0.0000
6	15.3720	0.4270
SNOW WATER	0.000	

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Interim

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.01   (14 OCTOBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     J:\MODELS\HELP3\c051124.D4
TEMPERATURE DATA FILE:       J:\MODELS\HELP3\c051124.D7
SOLAR RADIATION DATA FILE:   J:\MODELS\HELP3\c051124.D13
EVAPOTRANSPIRATION DATA:     J:\MODELS\HELP3\c051124.D11
SOIL AND DESIGN DATA FILE:   J:\MODELS\HELP3\j051124.D10
OUTPUT DATA FILE:            J:\MODELS\HELP3\j051124.OUT


TIME:  11:32     DATE:   6/26/2007


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     TITLE:  Mundy Cell VIII - Interim Condition

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  11
          THICKNESS                  =      6.00   INCHES
          POROSITY                   =      0.4640 VOL/VOL
          FIELD CAPACITY             =      0.3100 VOL/VOL
          WILTING POINT              =      0.1870 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.4156 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.639999998000E-04 CM/SEC


                                  LAYER  2
                                  --------

                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER  16
          THICKNESS                  =      6.00   INCHES
          POROSITY                   =      0.4270 VOL/VOL
          FIELD CAPACITY             =      0.4180 VOL/VOL
          WILTING POINT              =      0.3670 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.4270 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.100000001000E-06 CM/SEC
```

LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	840.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.0830	VOL/VOL
WILTING POINT	=	0.0330	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0830	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC
SLOPE	=	0.00	PERCENT
DRAINAGE LENGTH	=	0.0	FEET

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	2.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	2.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #11 WITH BARE GROUND CONDITIONS, A SURFACE SLOPE OF 10.% AND A SLOPE LENGTH OF 500. FEET.

SCS RUNOFF CURVE NUMBER	=	94.60	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	5.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.494	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.784	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.122	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	266.704	INCHES
TOTAL INITIAL WATER	=	266.704	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SHREVEPORT LOUISIANA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	58
END OF GROWING SEASON (JULIAN DATE)	=	331
AVERAGE ANNUAL WIND SPEED	=	8.60 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	70.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
4.02	3.46	3.77	4.71	4.70	3.54
3.56	2.52	3.29	2.63	3.77	3.87

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
46.00	49.80	57.00	65.70	73.00	79.80
82.90	82.40	77.10	66.70	55.70	48.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

STATION LATITUDE = 32.06 DEGREES

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ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
PRECIPITATION	37.13	673909.500	100.00
RUNOFF	7.868	142798.922	21.19

EVAPOTRANSPIRATION	28.565	518454.437	76.93
PERC./LEAKAGE THROUGH LAYER 2	0.697042	12651.311	1.88
AVG. HEAD ON TOP OF LAYER 2	0.6568		
DRAINAGE COLLECTED FROM LAYER 4	0.6970	12651.312	1.88
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0006		
CHANGE IN WATER STORAGE	0.000	4.985	0.00
SOIL WATER AT START OF YEAR	266.704	4840672.000	
SOIL WATER AT END OF YEAR	266.704	4840677.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.147	0.00

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ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	52.93	960679.437	100.00
RUNOFF	22.989	417243.500	43.43
EVAPOTRANSPIRATION	29.158	529209.125	55.09
PERC./LEAKAGE THROUGH LAYER 2	1.065643	19341.416	2.01
AVG. HEAD ON TOP OF LAYER 2	1.5329		
DRAINAGE COLLECTED FROM LAYER 4	1.0656	19341.416	2.01
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0009		
CHANGE IN WATER STORAGE	-0.282	-5114.658	-0.53
SOIL WATER AT START OF YEAR	266.704	4840677.000	
SOIL WATER AT END OF YEAR	266.422	4835562.500	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.080	0.00

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ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT

PRECIPITATION	43.60	791340.062	100.00
RUNOFF	16.897	306675.906	38.75
EVAPOTRANSPIRATION	25.385	460733.844	58.22
PERC./LEAKAGE THROUGH LAYER 2	0.891856	16187.181	2.05
AVG. HEAD ON TOP OF LAYER 2	1.2534		
DRAINAGE COLLECTED FROM LAYER 4	0.8919	16187.181	2.05
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0008		
CHANGE IN WATER STORAGE	0.427	7742.885	0.98
SOIL WATER AT START OF YEAR	266.422	4835562.500	
SOIL WATER AT END OF YEAR	266.849	4843305.500	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.235	0.00

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ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	36.69	665923.375	100.00
RUNOFF	10.821	196400.906	29.49
EVAPOTRANSPIRATION	25.225	457829.562	68.75
PERC./LEAKAGE THROUGH LAYER 2	1.215364	22058.863	3.31
AVG. HEAD ON TOP OF LAYER 2	1.6422		
DRAINAGE COLLECTED FROM LAYER 4	1.2154	22058.863	3.31
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0011		
CHANGE IN WATER STORAGE	-0.571	-10365.573	-1.56
SOIL WATER AT START OF YEAR	266.849	4843305.500	
SOIL WATER AT END OF YEAR	266.278	4832940.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.361	0.00

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ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	40.27	730900.375	100.00
RUNOFF	12.401	225077.500	30.79
EVAPOTRANSPIRATION	26.039	472608.844	64.66
PERC./LEAKAGE THROUGH LAYER 2	1.113793	20215.352	2.77
AVG. HEAD ON TOP OF LAYER 2	1.6364		
DRAINAGE COLLECTED FROM LAYER 4	1.1138	20215.352	2.77
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0010		
CHANGE IN WATER STORAGE	0.716	12998.785	1.78
SOIL WATER AT START OF YEAR	266.278	4832940.000	
SOIL WATER AT END OF YEAR	266.994	4845938.500	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.106	0.00

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	3.69	2.31	4.38	4.38	3.74	2.91
	3.99	3.06	2.94	2.90	3.45	4.38
STD. DEVIATIONS	1.96	0.85	2.83	1.89	1.36	3.08
	1.93	2.09	1.16	1.54	1.13	2.49
RUNOFF						
TOTALS	1.846	0.586	1.486	1.362	0.869	1.218
	1.212	0.834	0.706	0.778	1.187	2.110
STD. DEVIATIONS	1.759	0.583	2.011	0.717	0.593	2.093
	0.739	1.043	0.477	0.712	0.659	2.166
EVAPOTRANSPIRATION						
TOTALS	2.041	1.992	2.667	3.130	2.844	2.021
	2.237	2.280	2.391	1.900	1.870	1.501
STD. DEVIATIONS	0.262	0.562	0.390	0.893	0.827	1.400
	0.964	0.834	0.816	1.062	0.904	0.563
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.1653	0.0862	0.0862	0.0709	0.0490	0.0440
	0.0537	0.0806	0.0897	0.0742	0.0801	0.1168

STD. DEVIATIONS	0.0375	0.0624	0.0433	0.0439	0.0286	0.0425
	0.0473	0.0497	0.0195	0.0607	0.0638	0.0781

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.1653	0.0862	0.0862	0.0709	0.0490	0.0440
	0.0537	0.0806	0.0897	0.0742	0.0801	0.1168
STD. DEVIATIONS	0.0375	0.0624	0.0433	0.0439	0.0286	0.0425
	0.0473	0.0497	0.0195	0.0607	0.0638	0.0781

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 2

AVERAGES	3.5876	1.6751	1.4334	1.2267	0.5101	0.5364
	0.6472	0.8439	0.7218	0.9564	1.3620	2.6312
STD. DEVIATIONS	1.6514	1.6790	1.2220	1.1978	0.4109	0.6737
	0.5228	0.8674	0.3632	0.8585	1.1337	1.7728

DAILY AVERAGE HEAD ACROSS LAYER 6

AVERAGES	0.0017	0.0010	0.0009	0.0007	0.0005	0.0005
	0.0005	0.0008	0.0009	0.0008	0.0008	0.0012
STD. DEVIATIONS	0.0004	0.0007	0.0004	0.0005	0.0003	0.0004
	0.0005	0.0005	0.0002	0.0006	0.0007	0.0008

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 5

	INCHES		CU. FEET	PERCENT
PRECIPITATION	42.12	(6.649)	764550.6	100.00
RUNOFF	14.195	(5.9005)	257639.34	33.698
EVAPOTRANSPIRATION	26.874	(1.8513)	487767.19	63.798
PERCOLATION/LEAKAGE THROUGH FROM LAYER 2	0.99674	(0.20437)	18090.822	2.36620
AVERAGE HEAD ACROSS TOP OF LAYER 2	1.344	(0.416)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.99674	(0.20437)	18090.822	2.36620
PERCOLATION/LEAKAGE THROUGH FROM LAYER 6	0.00000	(0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 6	0.001	(0.000)		
CHANGE IN WATER STORAGE	0.058	(0.5205)	1053.28	0.138

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0

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 5

	(INCHES)	(CU. FT.)
PRECIPITATION	3.60	65340.000
RUNOFF	3.287	59660.5625
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.006803	123.47723
AVERAGE HEAD ACROSS LAYER 2	6.000	
DRAINAGE COLLECTED FROM LAYER 4	0.00680	123.47723
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 6	0.002	
SNOW WATER	1.94	35294.2852

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4640

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1510

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0

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FINAL WATER STORAGE AT END OF YEAR 5

LAYER	(INCHES)	(VOL/VOL)
1	2.7840	0.4640
2	2.5620	0.4270
3	245.2799	0.2920
4	0.9960	0.0830
5	0.0000	0.0000
6	15.3720	0.4270
SNOW WATER	0.000	

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Closed

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**               HELP MODEL VERSION 3.01   (14 OCTOBER 1994)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     J:\MODELS\HELP3\c051124.D4
TEMPERATURE DATA FILE:       J:\MODELS\HELP3\c051124.D7
SOLAR RADIATION DATA FILE:   J:\MODELS\HELP3\c051124.D13
EVAPOTRANSPIRATION DATA:     J:\MODELS\HELP3\c051124.D11
SOIL AND DESIGN DATA FILE:   J:\MODELS\HELP3\d051124.D10
OUTPUT DATA FILE:            J:\MODELS\HELP3\d051124.OUT


TIME:  11:37     DATE:   6/26/2007


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     TITLE:  Mundy Cell VIII - Closed Condition

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  27
          THICKNESS                    =      6.00   INCHES
          POROSITY                     =      0.4000 VOL/VOL
          FIELD CAPACITY               =      0.3660 VOL/VOL
          WILTING POINT                =      0.2880 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.2867 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.779999993000E-06 CM/SEC


                                  LAYER  2
                                  --------

                        TYPE 3 - BARRIER SOIL LINER
                        MATERIAL TEXTURE NUMBER  16
          THICKNESS                    =     24.00   INCHES
          POROSITY                     =      0.4270 VOL/VOL
          FIELD CAPACITY               =      0.4180 VOL/VOL
          WILTING POINT                =      0.3670 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.4270 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
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LAYER 3

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	1680.00	INCHES
POROSITY	=	0.6710	VOL/VOL
FIELD CAPACITY	=	0.2920	VOL/VOL
WILTING POINT	=	0.0770	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4570	VOL/VOL
FIELD CAPACITY	=	0.0830	VOL/VOL
WILTING POINT	=	0.0330	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0830	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000005000E-02	CM/SEC
SLOPE	=	0.00	PERCENT
DRAINAGE LENGTH	=	0.0	FEET

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
POROSITY	=	0.0000	VOL/VOL
FIELD CAPACITY	=	0.0000	VOL/VOL
WILTING POINT	=	0.0000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0000	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.199999996000E-12	CM/SEC
FML PINHOLE DENSITY	=	2.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	2.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #27 WITH A FAIR STAND OF GRASS, A SURFACE SLOPE OF 33.% AND A SLOPE LENGTH OF 650. FEET.

SCS RUNOFF CURVE NUMBER	=	90.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	33.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	1.720	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.400	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.728	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	518.896	INCHES
TOTAL INITIAL WATER	=	518.896	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
SHREVEPORT LOUISIANA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	58
END OF GROWING SEASON (JULIAN DATE)	=	331
AVERAGE ANNUAL WIND SPEED	=	8.60 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	70.00 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	72.00 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00 %

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
4.02	3.46	3.77	4.71	4.70	3.54
3.56	2.52	3.29	2.63	3.77	3.87

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
46.00	49.80	57.00	65.70	73.00	79.80
82.90	82.40	77.10	66.70	55.70	48.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR SHREVEPORT LOUISIANA

STATION LATITUDE = 32.06 DEGREES

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ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
PRECIPITATION	37.13	4447803.000	100.00
RUNOFF	29.356	3516534.750	79.06

EVAPOTRANSPIRATION	7.775	931409.750	20.94
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.001	-138.917	0.00
SOIL WATER AT START OF YEAR	518.896	62158560.000	
SOIL WATER AT END OF YEAR	518.895	62158420.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.799	0.00

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ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	52.93	6340484.500	100.00
RUNOFF	43.079	5160477.500	81.39
EVAPOTRANSPIRATION	9.844	1179196.500	18.60
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.007	811.566	0.01
SOIL WATER AT START OF YEAR	518.895	62158420.000	
SOIL WATER AT END OF YEAR	518.902	62159232.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.371	0.00

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ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT

PRECIPITATION	43.60	5222844.500	100.00
RUNOFF	36.191	4335343.000	83.01
EVAPOTRANSPIRATION	7.376	883607.562	16.92
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.032	3889.666	0.07
SOIL WATER AT START OF YEAR	518.902	62159232.000	
SOIL WATER AT END OF YEAR	518.934	62163120.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	4.056	0.00

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ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	36.69	4395094.500	100.00
RUNOFF	29.388	3520432.250	80.10
EVAPOTRANSPIRATION	7.342	879471.500	20.01
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.040	-4803.591	-0.11
SOIL WATER AT START OF YEAR	518.934	62163120.000	
SOIL WATER AT END OF YEAR	518.894	62158316.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-5.655	0.00

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ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	40.27	4823942.500	100.00
RUNOFF	32.098	3845002.500	79.71
EVAPOTRANSPIRATION	8.040	963148.625	19.97
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.132	15792.627	0.33
SOIL WATER AT START OF YEAR	518.894	62158316.000	
SOIL WATER AT END OF YEAR	519.026	62174112.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.257	0.00

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ANNUAL TOTALS FOR YEAR 6

	INCHES	CU. FEET	PERCENT
PRECIPITATION	39.87	4776027.500	100.00
RUNOFF	33.489	4011672.750	84.00
EVAPOTRANSPIRATION	6.461	773903.562	16.20
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.080	-9548.690	-0.20
SOIL WATER AT START OF YEAR	519.026	62174112.000	
SOIL WATER AT END OF YEAR	518.946	62164560.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.057	0.00

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ANNUAL TOTALS FOR YEAR 7

	INCHES	CU. FEET	PERCENT
PRECIPITATION	54.95	6582460.000	100.00
RUNOFF	44.626	5345779.500	81.21
EVAPOTRANSPIRATION	10.367	1241853.370	18.87
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.043	-5176.472	-0.08
SOIL WATER AT START OF YEAR	518.946	62164560.000	
SOIL WATER AT END OF YEAR	518.903	62159384.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	3.656	0.00

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ANNUAL TOTALS FOR YEAR 8

	INCHES	CU. FEET	PERCENT
PRECIPITATION	45.88	5495965.000	100.00
RUNOFF	38.899	4659736.500	84.78
EVAPOTRANSPIRATION	6.912	827982.000	15.07
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.069	8247.261	0.15
SOIL WATER AT START OF YEAR	518.903	62159384.000	
SOIL WATER AT END OF YEAR	518.972	62167632.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.971	0.00

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ANNUAL TOTALS FOR YEAR 9

	INCHES	CU. FEET	PERCENT
PRECIPITATION	37.46	4487333.000	100.00
RUNOFF	30.203	3618056.000	80.63
EVAPOTRANSPIRATION	7.177	859714.125	19.16
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.080	9563.312	0.21
SOIL WATER AT START OF YEAR	518.972	62167632.000	
SOIL WATER AT END OF YEAR	519.052	62177196.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.685	0.00

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ANNUAL TOTALS FOR YEAR 10

	INCHES	CU. FEET	PERCENT
PRECIPITATION	47.38	5675649.500	100.00
RUNOFF	38.798	4647587.500	81.89
EVAPOTRANSPIRATION	8.737	1046572.120	18.44
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.154	-18505.156	-0.33
SOIL WATER AT START OF YEAR	519.052	62177196.000	
SOIL WATER AT END OF YEAR	518.897	62158692.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-4.912	0.00

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ANNUAL TOTALS FOR YEAR 11

	INCHES	CU. FEET	PERCENT
PRECIPITATION	44.83	5370184.500	100.00
RUNOFF	36.321	4350871.500	81.02
EVAPOTRANSPIRATION	8.504	1018645.370	18.97
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.006	665.338	0.01
SOIL WATER AT START OF YEAR	518.897	62158692.000	
SOIL WATER AT END OF YEAR	518.903	62159356.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	2.399	0.00

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ANNUAL TOTALS FOR YEAR 12

	INCHES	CU. FEET	PERCENT
PRECIPITATION	33.17	3973435.000	100.00
RUNOFF	26.718	3200590.500	80.55
EVAPOTRANSPIRATION	6.387	765048.750	19.25
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.065	7793.954	0.20
SOIL WATER AT START OF YEAR	518.903	62159356.000	

SOIL WATER AT END OF YEAR	518.968	62167148.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.656	0.00

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ANNUAL TOTALS FOR YEAR 13

	INCHES	CU. FEET	PERCENT
PRECIPITATION	30.75	3683542.000	100.00
RUNOFF	24.051	2881116.250	78.22
EVAPOTRANSPIRATION	6.659	797644.125	21.65
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.040	4781.656	0.13
SOIL WATER AT START OF YEAR	518.968	62167148.000	
SOIL WATER AT END OF YEAR	519.008	62171932.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.057	0.00

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ANNUAL TOTALS FOR YEAR 14

	INCHES	CU. FEET	PERCENT
PRECIPITATION	32.51	3894372.250	100.00
RUNOFF	25.809	3091634.750	79.39
EVAPOTRANSPIRATION	6.777	811830.437	20.85
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		

CHANGE IN WATER STORAGE	-0.076	-9088.072	-0.23
SOIL WATER AT START OF YEAR	519.008	62171932.000	
SOIL WATER AT END OF YEAR	518.932	62162844.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-4.855	0.00

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ANNUAL TOTALS FOR YEAR 15

	INCHES	CU. FEET	PERCENT
PRECIPITATION	42.55	5097066.000	100.00
RUNOFF	33.489	4011694.250	78.71
EVAPOTRANSPIRATION	9.039	1082838.250	21.24
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.021	2529.745	0.05
SOIL WATER AT START OF YEAR	518.932	62162844.000	
SOIL WATER AT END OF YEAR	518.953	62165372.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	3.656	0.00

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ANNUAL TOTALS FOR YEAR 16

	INCHES	CU. FEET	PERCENT
PRECIPITATION	43.39	5197688.500	100.00
RUNOFF	36.440	4365195.000	83.98
EVAPOTRANSPIRATION	7.003	838885.937	16.14
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00

PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.053	-6390.165	-0.12
SOIL WATER AT START OF YEAR	518.953	62165372.000	
SOIL WATER AT END OF YEAR	518.900	62158984.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.228	0.00

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ANNUAL TOTALS FOR YEAR 17

	INCHES	CU. FEET	PERCENT
PRECIPITATION	36.38	4357960.500	100.00
RUNOFF	29.280	3507447.750	80.48
EVAPOTRANSPIRATION	7.097	850145.062	19.51
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.003	365.570	0.01
SOIL WATER AT START OF YEAR	518.900	62158984.000	
SOIL WATER AT END OF YEAR	518.903	62159348.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.828	0.00

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ANNUAL TOTALS FOR YEAR 18

	INCHES	CU. FEET	PERCENT
PRECIPITATION	27.34	3275059.250	100.00
RUNOFF	22.041	2640242.250	80.62
EVAPOTRANSPIRATION	5.239	627637.375	19.16
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00

AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.060	7179.796	0.22
SOIL WATER AT START OF YEAR	518.903	62159348.000	
SOIL WATER AT END OF YEAR	518.963	62166528.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.171	0.00

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ANNUAL TOTALS FOR YEAR 19

	INCHES	CU. FEET	PERCENT
PRECIPITATION	56.27	6740581.000	100.00
RUNOFF	46.703	5594591.000	83.00
EVAPOTRANSPIRATION	9.544	1143272.750	16.96
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.023	2712.530	0.04
SOIL WATER AT START OF YEAR	518.963	62166528.000	
SOIL WATER AT END OF YEAR	518.985	62169240.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.020	2433.529	0.04
ANNUAL WATER BUDGET BALANCE	0.0000	4.684	0.00

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ANNUAL TOTALS FOR YEAR 20

	INCHES	CU. FEET	PERCENT
PRECIPITATION	40.64	4868265.500	100.00
RUNOFF	33.786	4047171.000	83.13

EVAPOTRANSPIRATION	6.938	831146.437	17.07
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.104	-12479.395	-0.26
SOIL WATER AT START OF YEAR	518.985	62169240.000	
SOIL WATER AT END OF YEAR	518.901	62159196.000	
SNOW WATER AT START OF YEAR	0.020	2433.529	0.05
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0203	2427.531	0.05

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ANNUAL TOTALS FOR YEAR 21

	INCHES	CU. FEET	PERCENT
PRECIPITATION	53.74	6437515.000	100.00
RUNOFF	43.828	5250147.000	81.56
EVAPOTRANSPIRATION	9.923	1188619.370	18.46
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.010	-1257.561	-0.02
SOIL WATER AT START OF YEAR	518.901	62159196.000	
SOIL WATER AT END OF YEAR	518.891	62157936.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	6.169	0.00

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ANNUAL TOTALS FOR YEAR 22

	INCHES	CU. FEET	PERCENT

PRECIPITATION	39.63	4747278.000	100.00
RUNOFF	30.615	3667332.000	77.25
EVAPOTRANSPIRATION	9.022	1080727.870	22.77
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.007	-782.320	-0.02
SOIL WATER AT START OF YEAR	518.891	62157936.000	
SOIL WATER AT END OF YEAR	518.884	62157156.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.343	0.00

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ANNUAL TOTALS FOR YEAR 23

	INCHES	CU. FEET	PERCENT
PRECIPITATION	43.57	5219251.500	100.00
RUNOFF	35.360	4235748.000	81.16
EVAPOTRANSPIRATION	8.155	976867.312	18.72
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.055	6638.752	0.13
SOIL WATER AT START OF YEAR	518.884	62157156.000	
SOIL WATER AT END OF YEAR	518.940	62163792.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.399	0.00

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ANNUAL TOTALS FOR YEAR 24

	INCHES	CU. FEET	PERCENT
PRECIPITATION	44.59	5341437.000	100.00
RUNOFF	34.327	4112046.750	76.98
EVAPOTRANSPIRATION	10.306	1234571.870	23.11
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.043	-5183.784	-0.10
SOIL WATER AT START OF YEAR	518.940	62163792.000	
SOIL WATER AT END OF YEAR	518.896	62158608.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	2.056	0.00

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ANNUAL TOTALS FOR YEAR 25

	INCHES	CU. FEET	PERCENT
PRECIPITATION	51.05	6115279.500	100.00
RUNOFF	40.679	4872887.000	79.68
EVAPOTRANSPIRATION	10.369	1242065.620	20.31
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.003	329.013	0.01
SOIL WATER AT START OF YEAR	518.896	62158608.000	
SOIL WATER AT END OF YEAR	518.899	62158940.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.056	0.00

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ANNUAL TOTALS FOR YEAR 26

	INCHES	CU. FEET	PERCENT
PRECIPITATION	40.74	4860245.000	100.00
RUNOFF	32.816	3930995.500	80.55
EVAPOTRANSPIRATION	7.928	949671.437	19.46
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.004	-424.061	-0.01
SOIL WATER AT START OF YEAR	518.899	62158940.000	
SOIL WATER AT END OF YEAR	518.896	62158516.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.942	0.00

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ANNUAL TOTALS FOR YEAR 27

	INCHES	CU. FEET	PERCENT
PRECIPITATION	48.30	5785856.000	100.00
RUNOFF	40.409	4840614.500	83.66
EVAPOTRANSPIRATION	7.857	941217.812	16.27
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.034	4021.271	0.07
SOIL WATER AT START OF YEAR	518.896	62158516.000	
SOIL WATER AT END OF YEAR	518.929	62162536.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00

ANNUAL WATER BUDGET BALANCE	0.0000	2.628	0.00

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ANNUAL TOTALS FOR YEAR 28

	INCHES	CU. FEET	PERCENT
PRECIPITATION	34.84	4173483.500	100.00
RUNOFF	26.677	3195582.500	76.57
EVAPOTRANSPIRATION	8.191	981258.812	23.51
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.028	-3355.933	-0.08
SOIL WATER AT START OF YEAR	518.929	62162536.000	
SOIL WATER AT END OF YEAR	518.901	62159180.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.828	0.00

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ANNUAL TOTALS FOR YEAR 29

	INCHES	CU. FEET	PERCENT
PRECIPITATION	51.90	6217100.500	100.00
RUNOFF	43.108	5163962.500	83.06
EVAPOTRANSPIRATION	8.773	1050914.870	16.90
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	0.019	2222.666	0.04
SOIL WATER AT START OF YEAR	518.901	62159180.000	
SOIL WATER AT END OF YEAR	518.920	62161404.000	

SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.343	0.00

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ANNUAL TOTALS FOR YEAR 30

	INCHES	CU. FEET	PERCENT
PRECIPITATION	37.05	4438218.000	100.00
RUNOFF	28.980	3471504.750	78.22
EVAPOTRANSPIRATION	8.072	966932.125	21.79
PERC./LEAKAGE THROUGH LAYER 2	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 2	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 6	0.000000	0.000	0.00
AVG. HEAD ON TOP OF LAYER 6	0.0000		
CHANGE IN WATER STORAGE	-0.002	-219.342	0.00
SOIL WATER AT START OF YEAR	518.920	62161404.000	
SOIL WATER AT END OF YEAR	518.918	62161184.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.457	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	3.60	2.99	3.85	4.96	4.51	3.71
	3.53	2.17	3.08	2.64	3.69	3.58
STD. DEVIATIONS	2.46	1.48	1.64	2.11	2.06	2.37
	1.79	1.84	1.72	1.45	1.20	2.26
RUNOFF						
TOTALS	2.960	2.380	2.991	3.967	3.556	3.008
	2.892	1.709	2.564	2.193	3.075	2.957
STD. DEVIATIONS	2.260	1.338	1.368	1.818	1.759	1.976
	1.515	1.549	1.554	1.336	1.031	2.142

EVAPOTRANSPIRATION

TOTALS	0.652	0.610	0.856	0.991	0.969	0.698
	0.634	0.462	0.518	0.461	0.605	0.605
STD. DEVIATIONS	0.258	0.243	0.326	0.422	0.406	0.467
	0.417	0.341	0.251	0.242	0.208	0.208

PERCOLATION/LEAKAGE THROUGH LAYER 2

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 4

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 6

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ACROSS LAYER 2

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ACROSS LAYER 6

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	42.31	(7.468)	5068715.0	100.00
RUNOFF	34.252	(6.4932)	4103066.50	80.949
EVAPOTRANSPIRATION	8.060	(1.3271)	965560.25	19.049
PERCOLATION/LEAKAGE THROUGH FROM LAYER 2	0.00000	(0.00000)	0.000	0.00000

AVERAGE HEAD ACROSS TOP OF LAYER 2	0.000 (	0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.00000 (	0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH FROM LAYER 6	0.00000 (	0.00000)	0.000	0.00000
AVERAGE HEAD ACROSS TOP OF LAYER 6	0.000 (	0.000)		
CHANGE IN WATER STORAGE	0.000 (	0.0589)	6.38	0.000

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.10	491139.000
RUNOFF	3.910	468432.6560
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 2	0.000	
DRAINAGE COLLECTED FROM LAYER 4	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00000
AVERAGE HEAD ACROSS LAYER 6	0.000	
SNOW WATER	1.94	232942.2810

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.3660

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2792

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.7422	0.2904
2	10.2480	0.4270
3	490.5599	0.2920
4	0.9960	0.0830
5	0.0000	0.0000
6	15.3720	0.4270
SNOW WATER	0.000	

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Appendix S-3f

Leachate Pipe Structural Stability Analysis

STE Soil Testing Engineers, Inc.
316 Highlandia Drive • P. O. Box 83710
Baton Rouge, Louisiana 70884
Telephone (225) 752-4790
FAX (225) 752-4878

Project: Mundy Landfill - Cell VIII Client: DeSoto Parish Job #: 05-1124C
By: RCA Checked by: Date: 03/08/06 Sheet 1 of

Leachate Collection Pipes - Structural Stability

Objective: Verify the structural stability of proposed leachate collection pipes under maximum waste loads.

Load Calculation:

Use of prism load

$W_c = \gamma \cdot H \cdot B_c$

where

W_c = load, lb/ft

B_c = Outside Diameter of the pipe, ft

H = Layer height above pipe, ft

γ = Unit weight of material above pipe

B_c = 6.625 inches for 6" pipes

$H_{max} \cong 145$ ft

$\gamma = 65$ pcf

$\therefore W_c = 65 \times 145 \times \frac{6.625}{12} = 5{,}203$ lb/ft

Pipe Stiffness Calculation:

$$PS = \frac{4.47\,E}{(DR-1)^3}$$

where:

PS = pipe stiffness, psi

E = modulus of elasticity, psi

(30,000 psi for long-term HDPE pipes)

DR = dimension ratio

(17 for SDR 17 pipes)

STE Soil Testing Engineers, Inc.
316 Highlandia Drive • P. O. Box 83710
Baton Rouge, Louisiana 70884
Telephone (225) 752-4790
FAX (225) 752-4878

Project: _____ Client: _____ Job #: 05-1124C

By: _____ Checked by: _____ Date: _____ Sheet 2 of _____

$$\therefore PS = \frac{4.47 \times 30{,}000}{(17-1)^3} = 32.7 \text{ psi}$$

Deflection Calculation:

$$\Delta y = \frac{0.67 W_c}{PS + 0.41 E'}$$

where:

Δy = Deflection

E' = Modulus of soil reaction for trench material (2,000 psi for gravel free of fines, 70% relative density)

PS, W_c already defined

$$\therefore \Delta y = \frac{0.67 \times 5{,}203/12}{32.7 + 0.41 \times 2{,}000} = 0.34 \text{ inch}$$

Allowable Deflection Calculation:

Allowable deflection cannot exceed 7.5% of the outside diameter of the pipes (B_c)

$$\therefore \Delta y_{allow} = 7.5\% \times 6.625 \text{ in} = 0.50 \text{ inch} > \Delta y \text{ (Okay!)}$$

Conclusion:

The load of Cell VIII will not affect the structural integrity of the proposed leachate collection pipes, since the calculated deflection is lower than the allowable deflection.

Appendix S-4

2006 Permit Drawings

Number	Name
STE-S1	Location Plan
STE-S2	Flood Plain Location Map
STE-S3	Boring and Well Location Map
STE-S4	Cell VIII Existing Conditions
STE-S5	Cell VIII Conceptual Bottom of Excavation Plan
STE-S6	Cell VIII Conceptual Top of Liner (Base Grades)
STE-S7	Cell VIII Conceptual Cross-Sections
STE-S8	Cell VIII Final Contour Plan
STE-S9	Cell VIII Conceptual Drainage Plan
STE-S10	Cell VIII Details
STE-S11	Seismic Lines
STE-S12	Location of Oil and Gas Wells
JEI-S1	Location Map for North-South Geologic Cross-Sections
JEI-S2	Location Map for East-West Geologic Cross-Sections
JEI-S3	North-South Cross-Section E-E'
JEI-S4	North-South Cross-Section M-M'
JEI-S5	North-South Cross-Section N-N'
JEI-S6	North-South Cross-Section O-O'
JEI-S7	East-West Cross-Section G-G'
JEI-S8	East-West Cross-Section I-I'
JEI-S9	East-West Cross-Section J-J'
JEI-S10	East-West Cross-Section K-K'
JEI-S11	Isopach Map of Zone C
JEI-S12	Isopach Map of Zone G1
JEI-S13	Isopach Map of Zone G2
JEI-S14	Isometric Profile for Cell VIII Area
JEI-S15	Potentiometric Map, Zone C: 10/19/05
JEI-S16	Potentiometric Map, Zone C: 11/14/05
JEI-S17	Potentiometric Map, Zone C: 12/09/05
JEI-S18	Potentiometric Map, Zone C: 01/25/06
JEI-S19	Potentiometric Map, Zone C: 02/27/06
JEI-S20	Potentiometric Map, Zone C: 03/29/06
JEI-S21	Potentiometric Map, Zone C: 04/26/06
JEI-S22	Potentiometric Map, Zone C: 06/01/06
JEI-S23	Potentiometric Map, Zone C: 06/28/06
JEI-S24	Potentiometric Map, Zone C: 07/26/06
JEI-S25	Potentiometric Map, Zone C: 08/25/06
JEI-S26	Potentiometric Map, Zone C: 09/28/06
JEI-S27	Potentiometric Map, Zone G1: 10/19/05

Number	Name
JEI-S28	Potentiometric Map, Zone G1: 11/14/05
JEI-S29	Potentiometric Map, Zone G1: 12/09/05
JEI-S30	Potentiometric Map, Zone G1: 01/25/06
JEI-S31	Potentiometric Map, Zone G1: 02/27/06
JEI-S32	Potentiometric Map, Zone G1: 03/29/06
JEI-S33	Potentiometric Map, Zone G1: 04/26/06
JEI-S34	Potentiometric Map, Zone G1: 06/01/06
JEI-S35	Potentiometric Map, Zone G1: 06/28/06
JEI-S36	Potentiometric Map, Zone G1: 07/26/06
JEI-S37	Potentiometric Map, Zone G1: 08/25/06
JEI-S38	Potentiometric Map, Zone G1: 09/28/06
JEI-S39	Potentiometric Map, Zone G2: 10/19/05
JEI-S40	Potentiometric Map, Zone G2: 11/14/05
JEI-S41	Potentiometric Map, Zone G2: 12/09/05
JEI-S42	Potentiometric Map, Zone G2: 01/25/06
JEI-S43	Potentiometric Map, Zone G2: 02/27/06
JEI-S44	Potentiometric Map, Zone G2: 03/29/06
JEI-S45	Potentiometric Map, Zone G2: 04/26/06
JEI-S46	Potentiometric Map, Zone G2: 06/01/06
JEI-S47	Potentiometric Map, Zone G2: 06/28/06
JEI-S48	Potentiometric Map, Zone G2: 07/26/06
JEI-S49	Potentiometric Map, Zone G2: 08/25/06
JEI-S50	Potentiometric Map, Zone G2: 09/28/06
JEI-S51	Point of Compliance: Zone C
JEI-S52	Point of Compliance: Zone G1
JEI-S53	Point of Compliance: Zone G2

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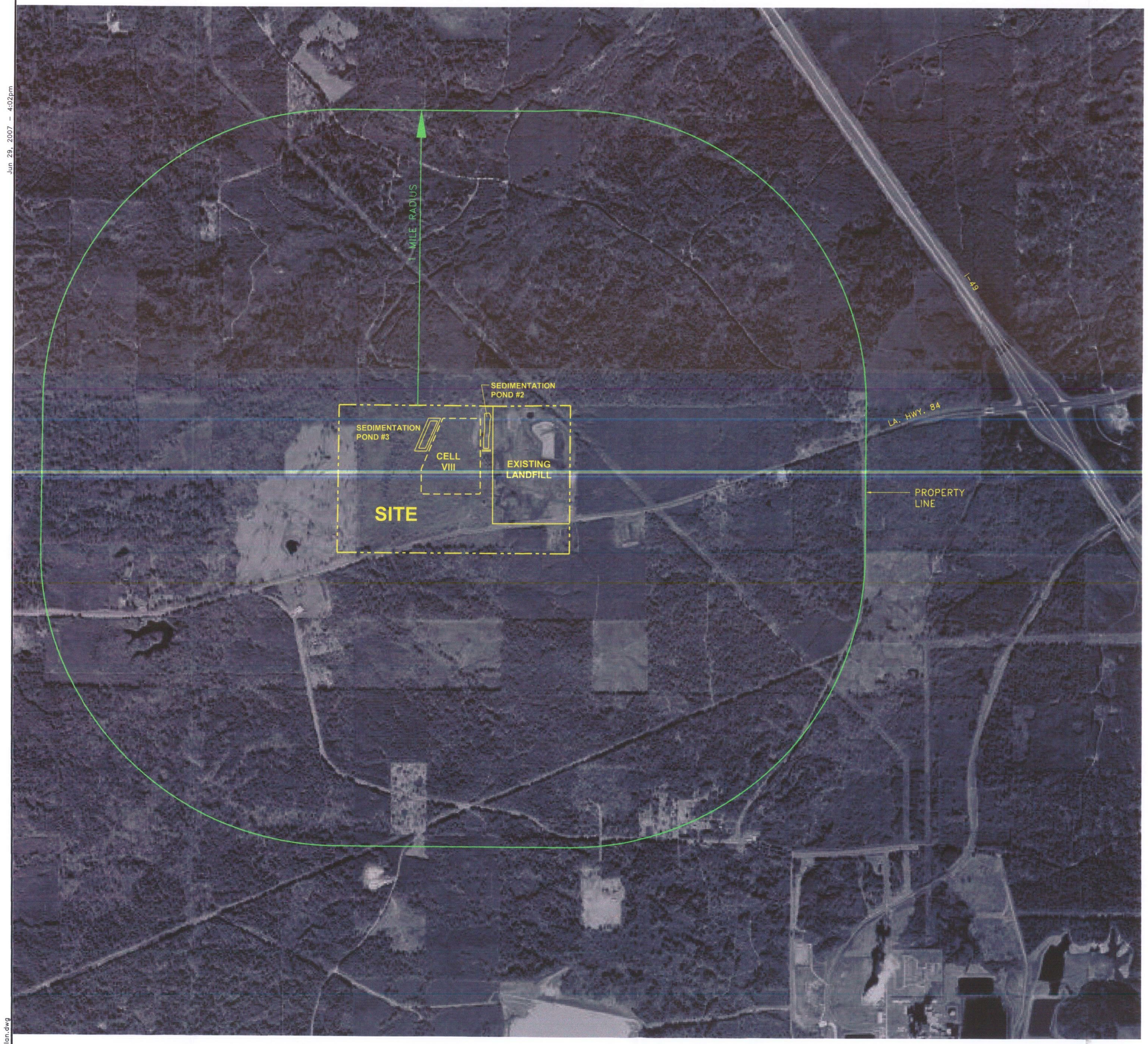
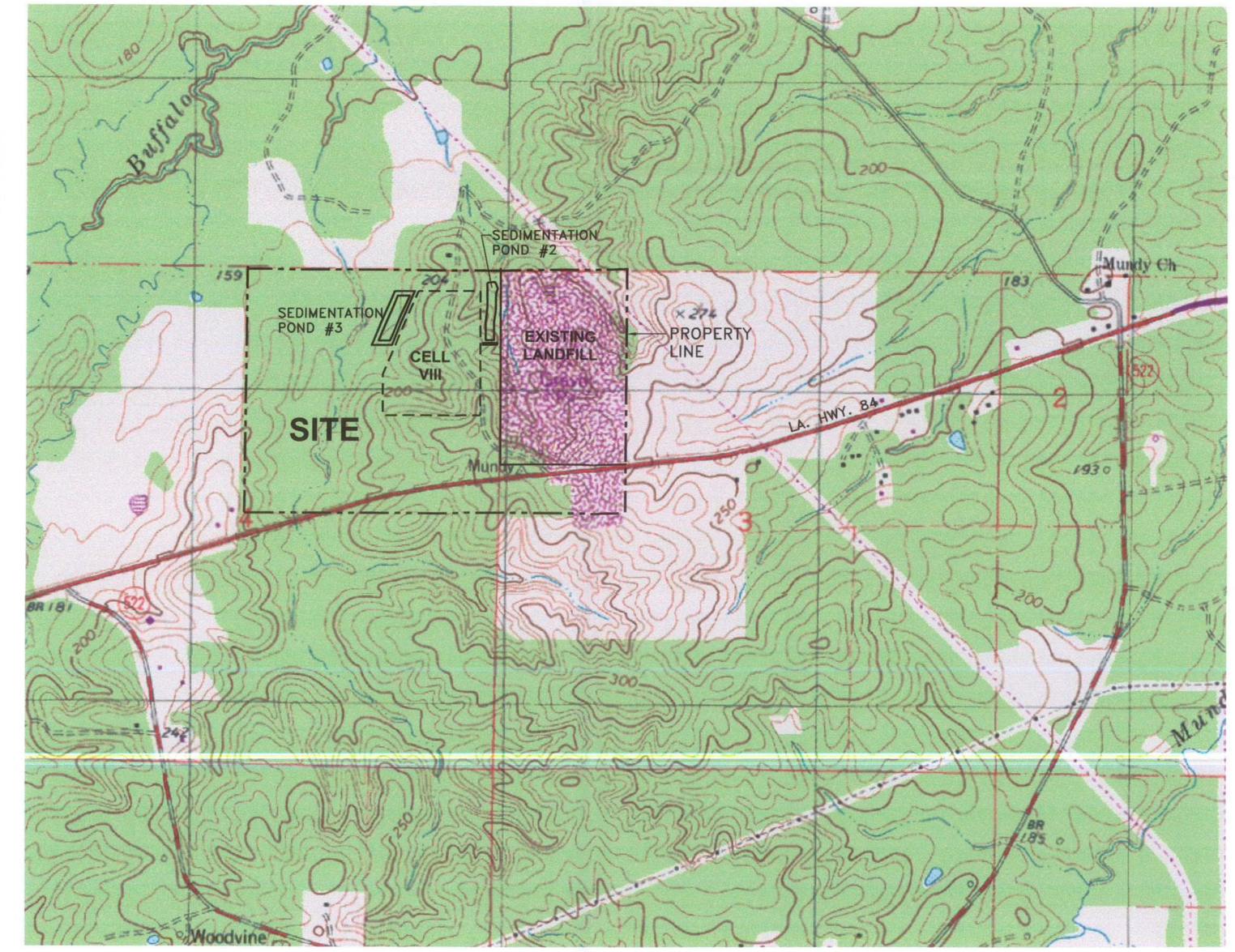


0 (feet) 2000±
SCALE

REFERENCE:
Aerial Photograph of Naborton, LA dated 1-16-1998.



0 (feet) 2000±
SCALE

REFERENCE:
USGS Quadrangle Map of Bayou Pierre Lake, 1992 edition.

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	11/06	Added ponds	rda

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

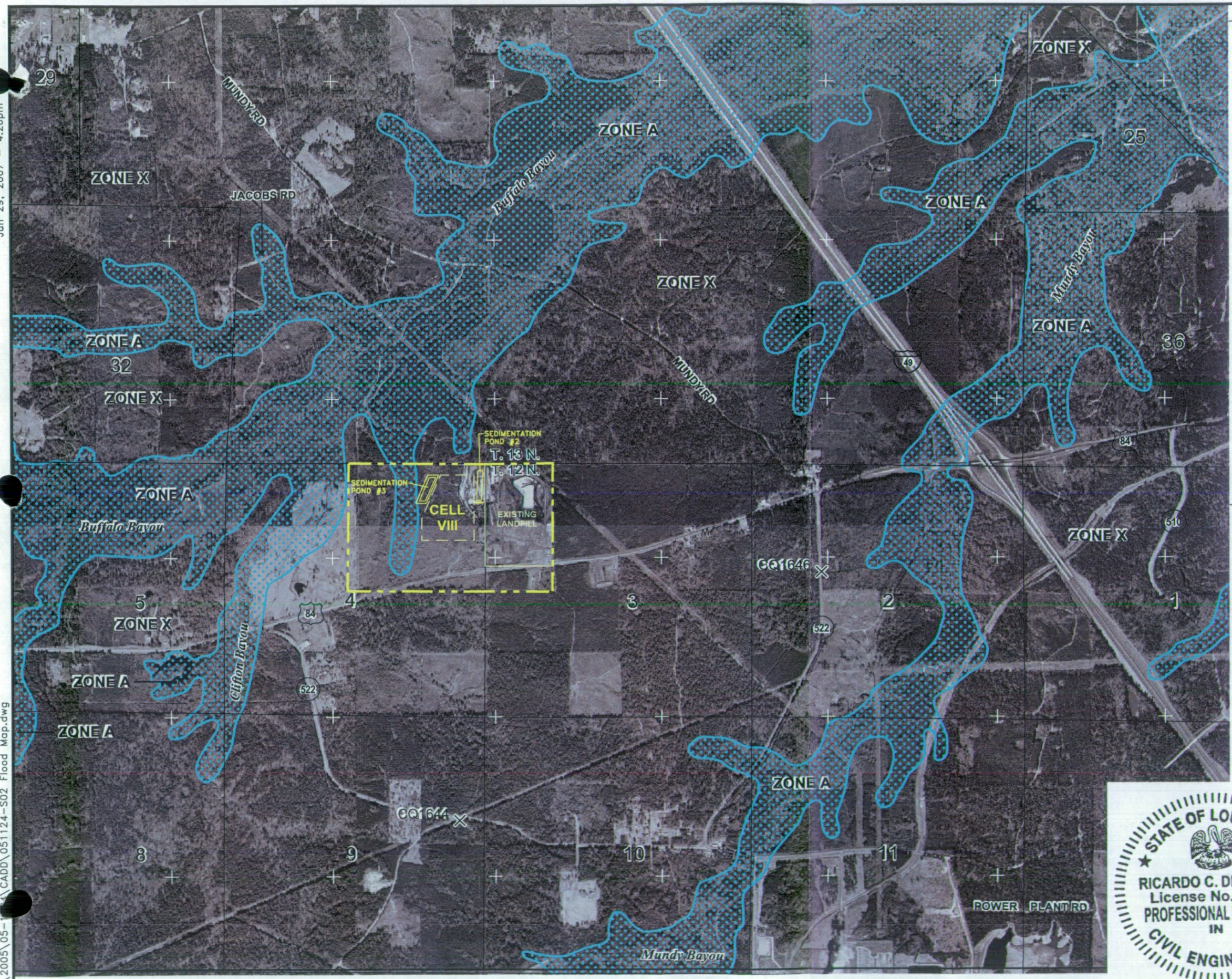
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-16-06	Drawing No.: STE-S1

Title:
LOCATION PLAN

P:\2005\05-1124\CADD\051124-S01 Location Plan.dwg



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - - -(23)	Transect line
45° 02' 08", -93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

0 (feet) 2500
SCALE

REFERENCE:
FEMA Flood Insurance Rate Map, De Soto Parish, LA and Incorporated Areas, Map No. 22031C0325C dated 12-16-03.

REV.	DATE	DESCRIPTION	BY
1	11/06	Added ponds	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA
for
DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-17-06	Figure No.: STE-S2

Title:
FLOOD PLAIN LOCATION MAP

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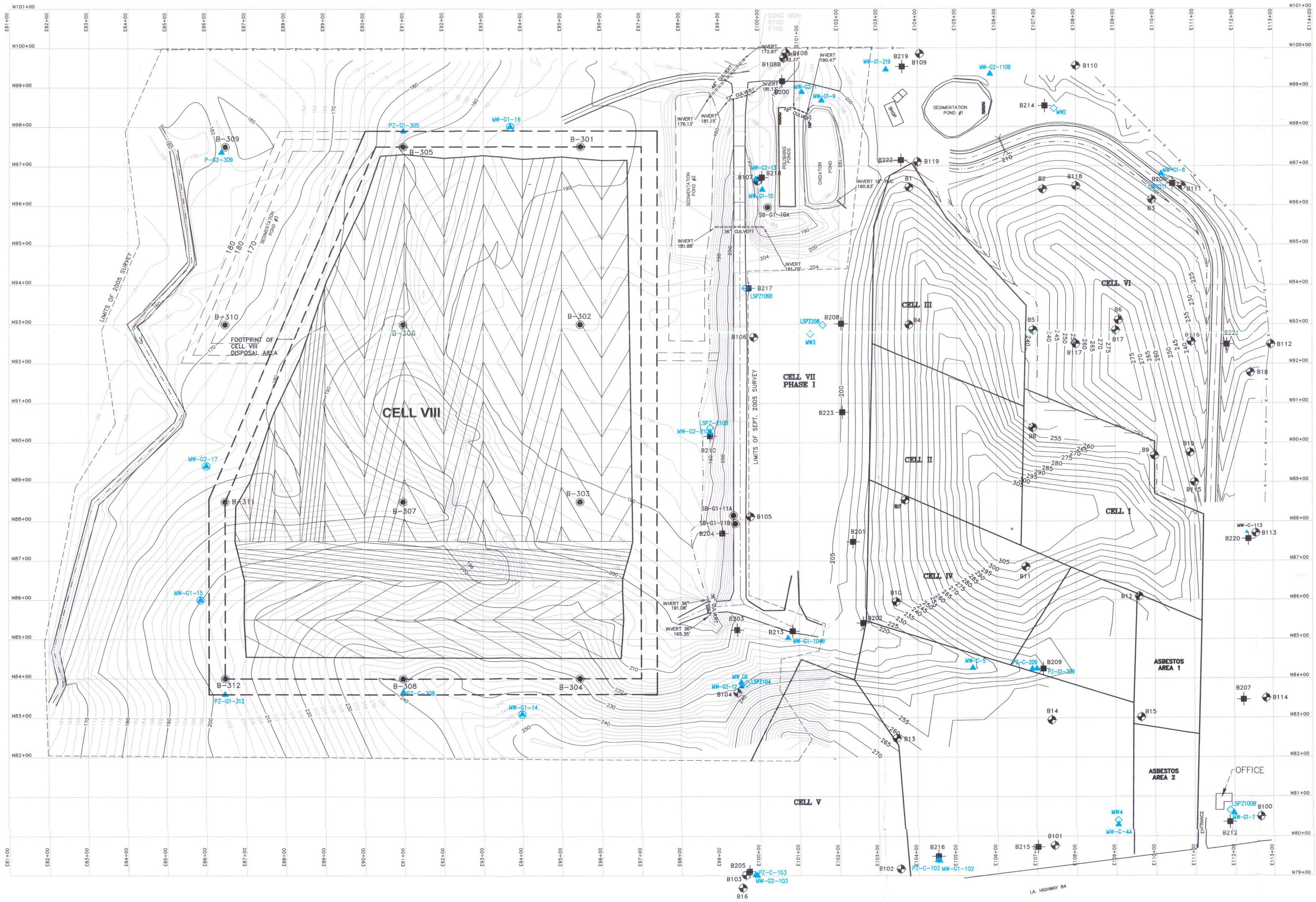
P:\2005\05-1124\CADD\051124-S02 Flood Map.dwg



0 (feet) 200
SCALE: 1" = 120'

NOTE:

Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.

SOIL BORINGS:

- 1996 AND PREVIOUS GEOTECHNICAL INVESTIGATIONS
- 2002 GEOTECHNICAL INVESTIGATION
- 2005 GEOTECHNICAL INVESTIGATION

MONITORING WELLS/PIEZOMETERS:

- EXISTING
- PLUGGED AND ABANDONED
- PROPOSED WELLS

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
2	3/07	New Bottom of Excavation	RDA
1	11/06	Added & removed wells, piezometers & points	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

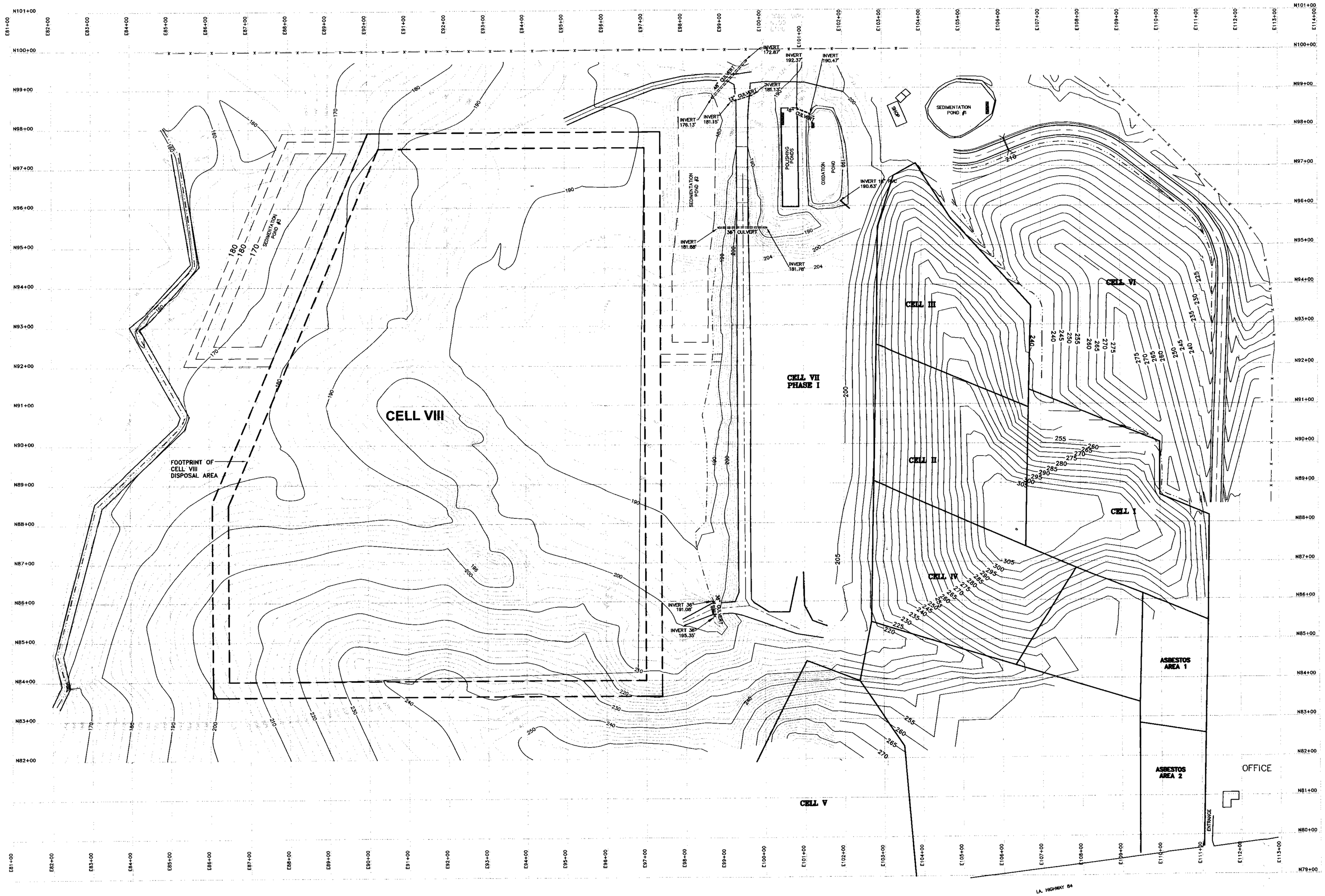
STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 12-05-05	Drawing No.: STE-S3

Title:
BORING & WELL LOCATIONS

Jun 29, 2007 - 4:21pm

P:\2005\05-1124\CADD\051124-S03Rev. Boring & Well Locations.dwg



0 (feet) 200
SCALE: 1" = 120'

NOTE:

Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

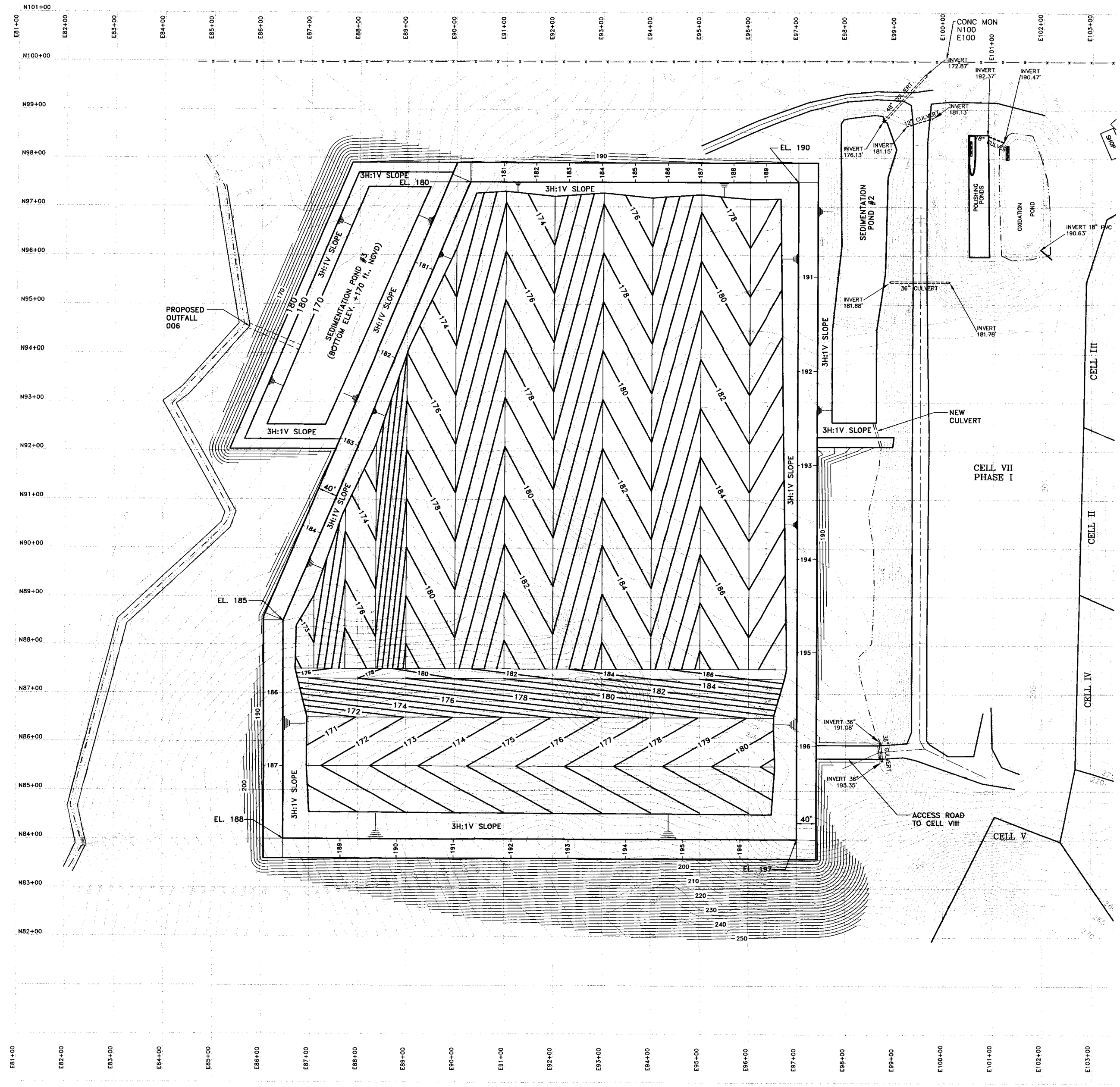
STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-17-06	Drawing No.: STE-S4

Title: **EXISTING CONDITIONS**

P:\2005\05-1124\CADD\051124-S04 Existing Conditions.dwg

Jul 02, 2007 - 7:19am



N

0 (feet) 100

SCALE: 1" = 100'

NOTE:

Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.

LEGEND:

200 EXISTING TOPOGRAPHIC CONTOUR LINES

170 PROPOSED BOTTOM OF EXCAVATION TOPOGRAPHIC CONTOUR LINES

EXISTING DITCH

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	3/07	New Bottom of Excavation	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

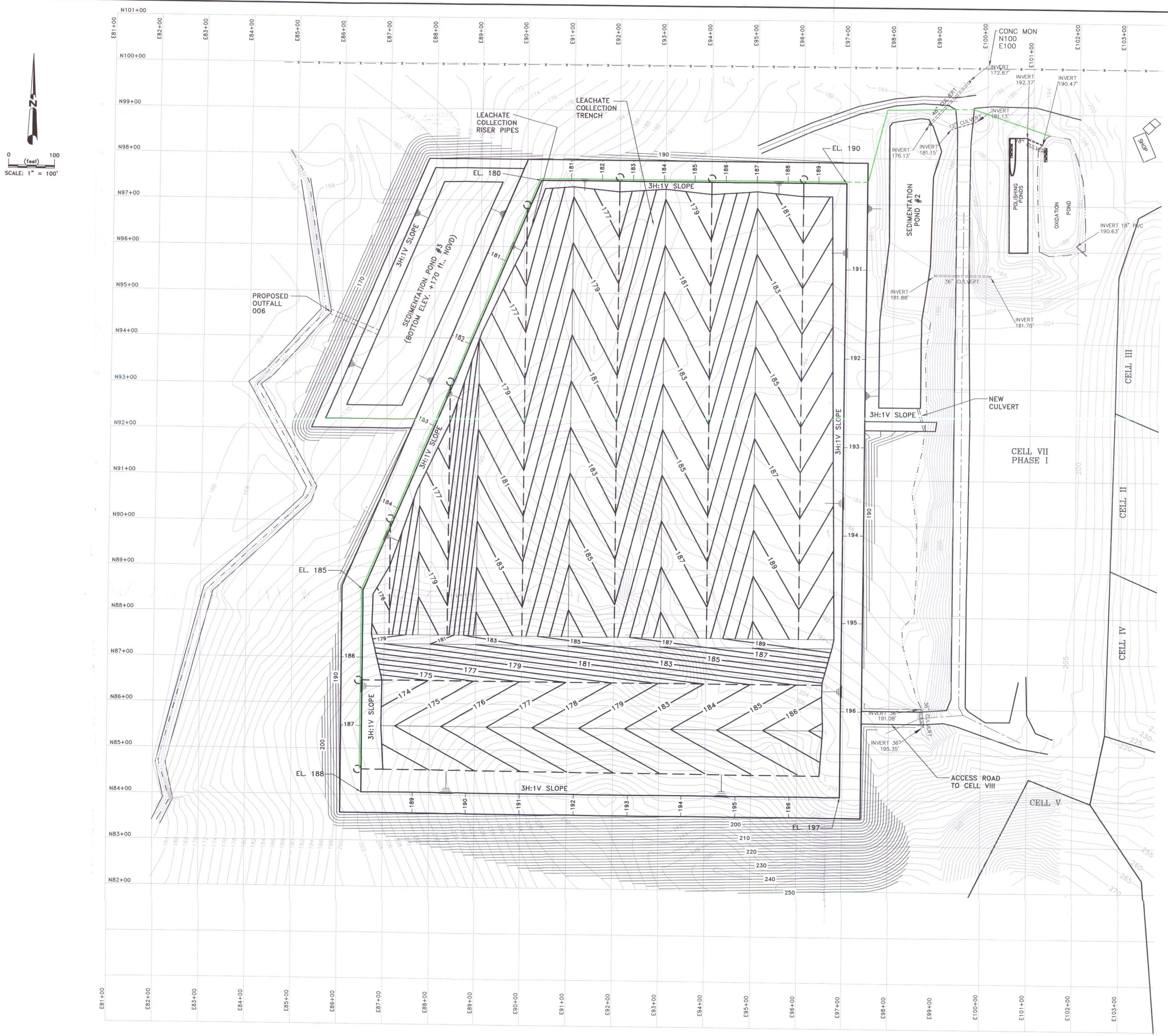
STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 12-23-05	Drawing No.: STE-S5

Title: **CELL VIII**
CONCEPTUAL BOTTOM OF EXCAVATION

Jul 02, 2007 - 7:52am

P:\2005\05-1124\CADD\051124-S05Rev New Bottom of Excavation.dwg



LEGEND:

- LEACHATE COLLECTION TRENCH
- LEACHATE TRANSMISSION LINE
- 200 EXISTING TOPOGRAPHIC CONTOUR LINES
- 180 PROPOSED TOP OF LINER TOPOGRAPHIC CONTOUR LINES
- EXISTING DITCH

NOTES:

1. Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.
2. For details of Leachate Collection System please refer to drawing STE-S10.

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	3/07	New Bottom of Excavation	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

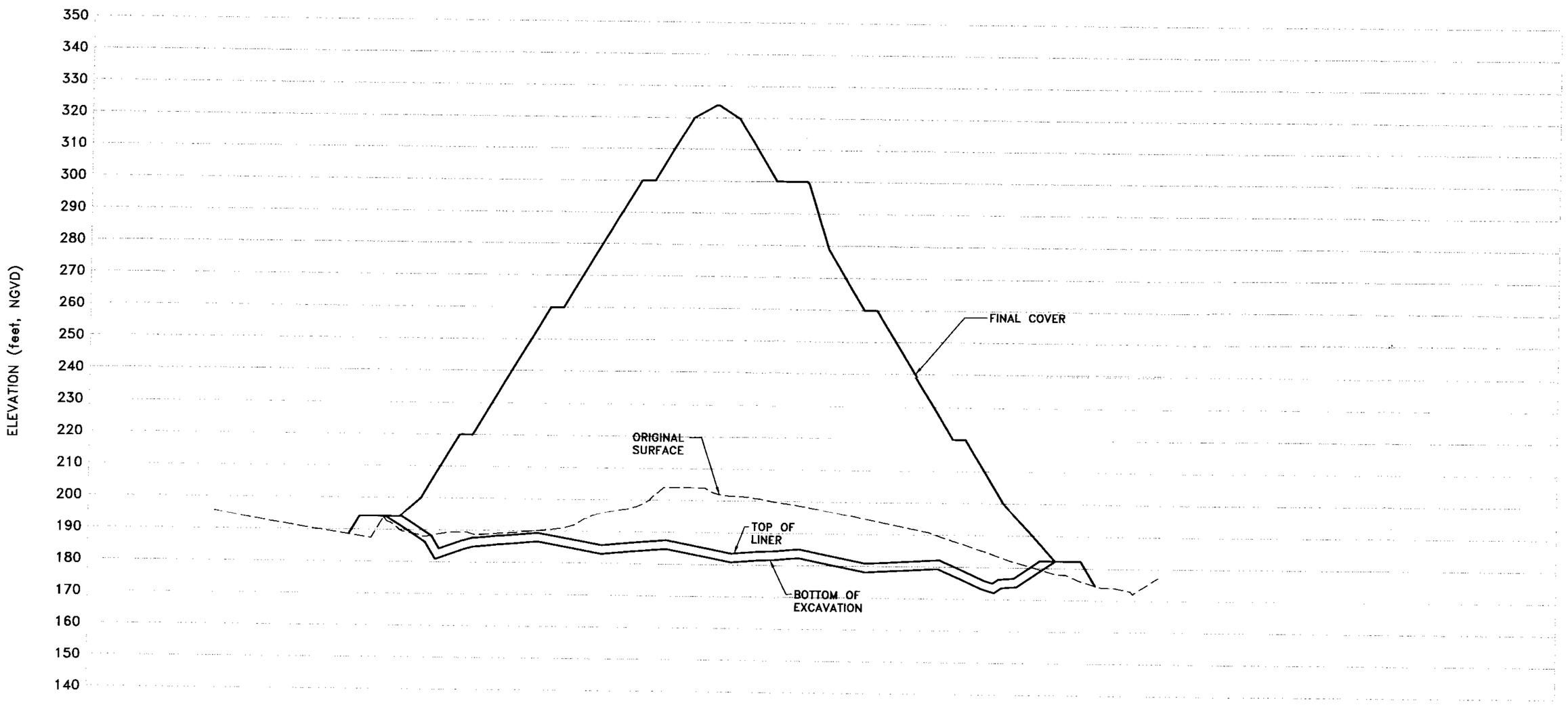
Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 3-17-06	Drawing No.: STE-S6

Title: CELL VIII - CONCEPTUAL

Jul 02, 2007 - 8:25am

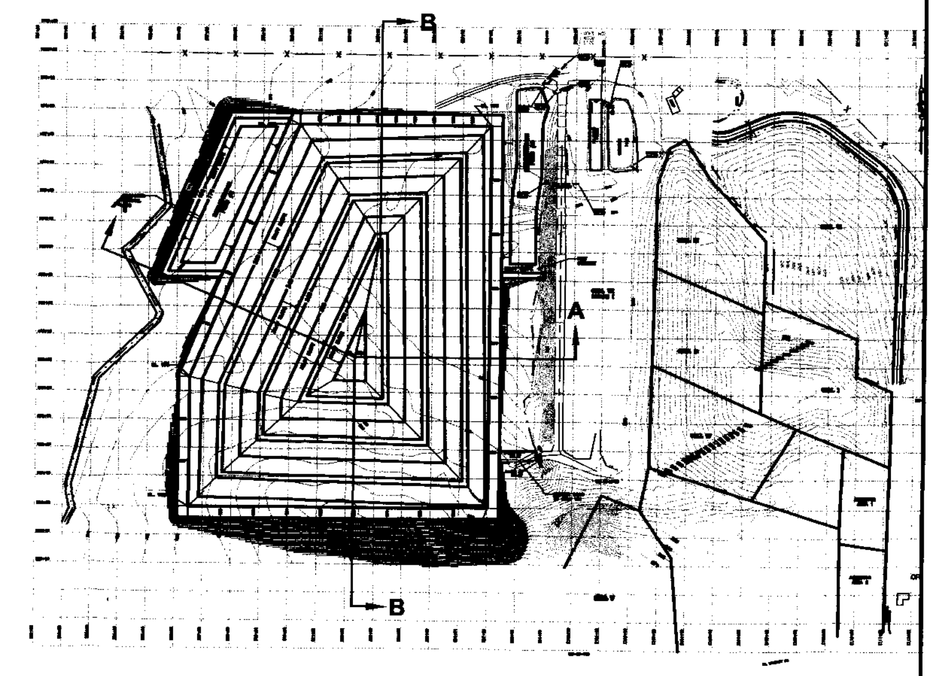
P:\2005\05-1124\CADD\051124-S06.dwg, Base Grades.dwg

Jul 02, 2007 - 9:10am

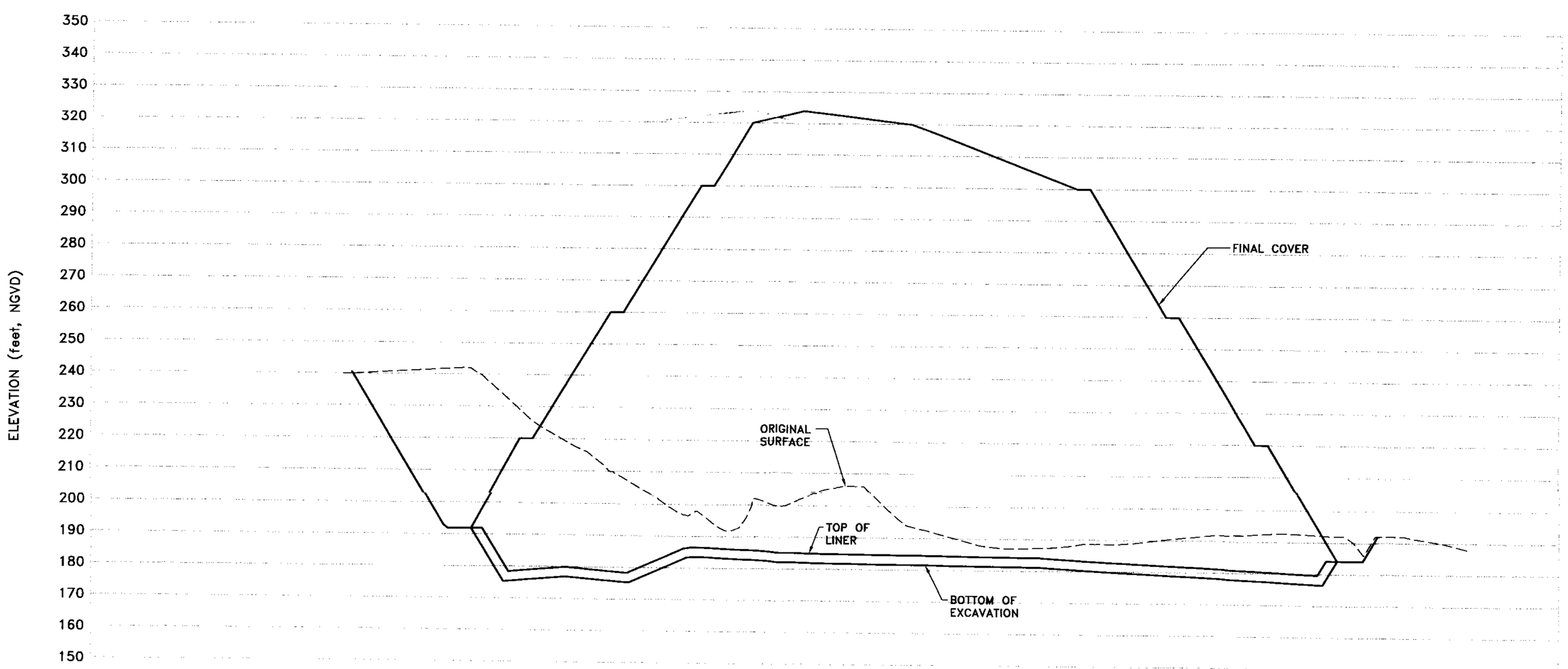


CROSS-SECTION A-A

0 (feet) 200
SCALE



0 (feet) 500
SCALE



CROSS-SECTION B-B

0 (feet) 200
SCALE

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	3/07	New Bottom of Excavation	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

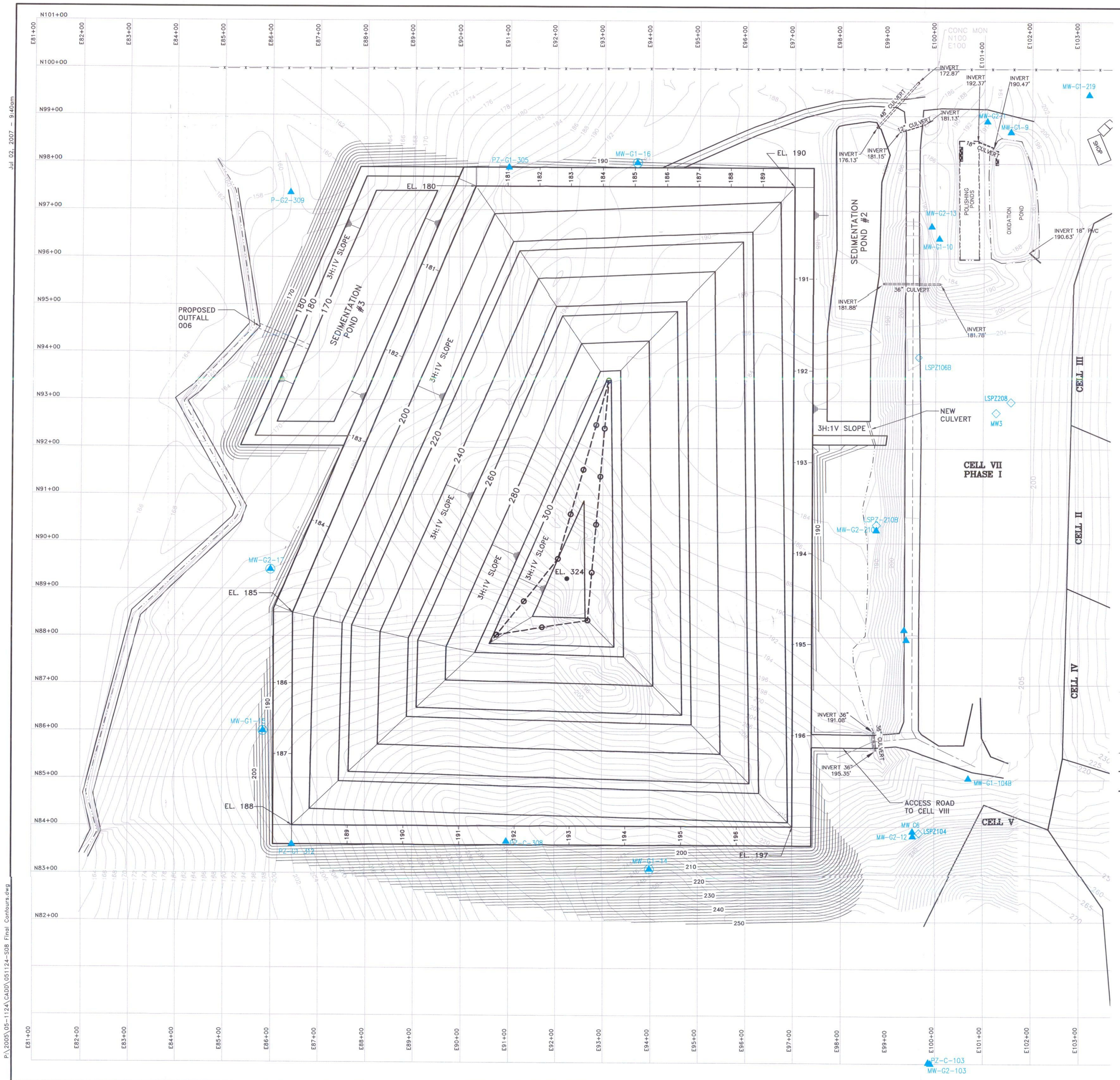
DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

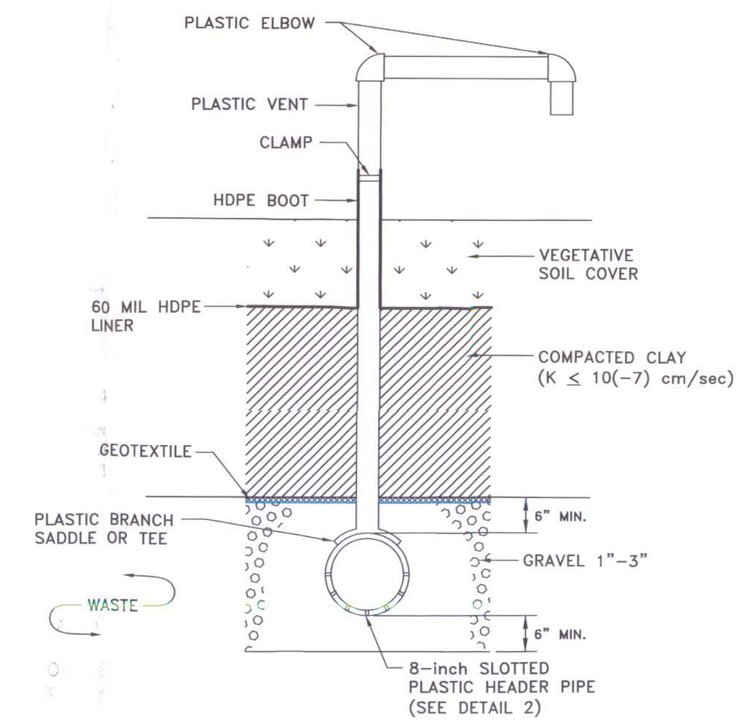
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

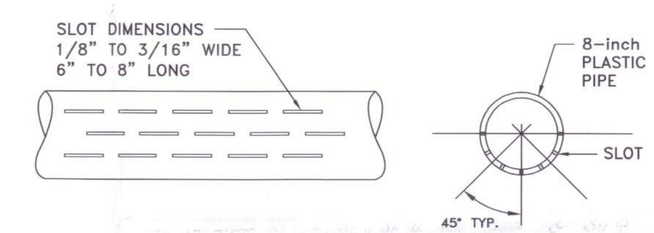
Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 4-10-06	Drawing No.: STE-S7
Title: CELL VIII		

P:\2005\05-1124\CADD\051124-S07Rev Profiles.dwg





DETAIL 1
GAS COLLECTION & EVAPORATION HEADER & VENT
NOT TO SCALE



DETAIL 2
8-INCH SLOTTED PLASTIC PIPE
NOT TO SCALE

L E G E N D:

- 200 — EXISTING TOPOGRAPHIC CONTOUR LINES
- 300 — FINAL COVER TOPOGRAPHIC CONTOUR LINES
- EXISTING DITCH
- GAS VENTS
- GAS LINES
- EXISTING WELLS/PIEZOMETERS
- PLUGGED & ABANDONED WELLS/PIEOMETERS
- PROPOSED WELLS

NOTES:

1. Final cover contours are conceptual. Actual locations of contours may vary due to facility operations and future construction. Side slopes will not exceed 3H:1V and the height will not exceed 324 feet, NGVD.

2. Final cover will be installed throughout the life of the facility. As one area is closed, final cover will be installed, in accordance with LAC.33.VII.711.E.

3. Erosion control measures such as silt fencing, hay bales, tire shreds, etc., may be employed as needed to assist in erosion control.

4. Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
1	11/06	Detail 1 & wells/piezometers	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

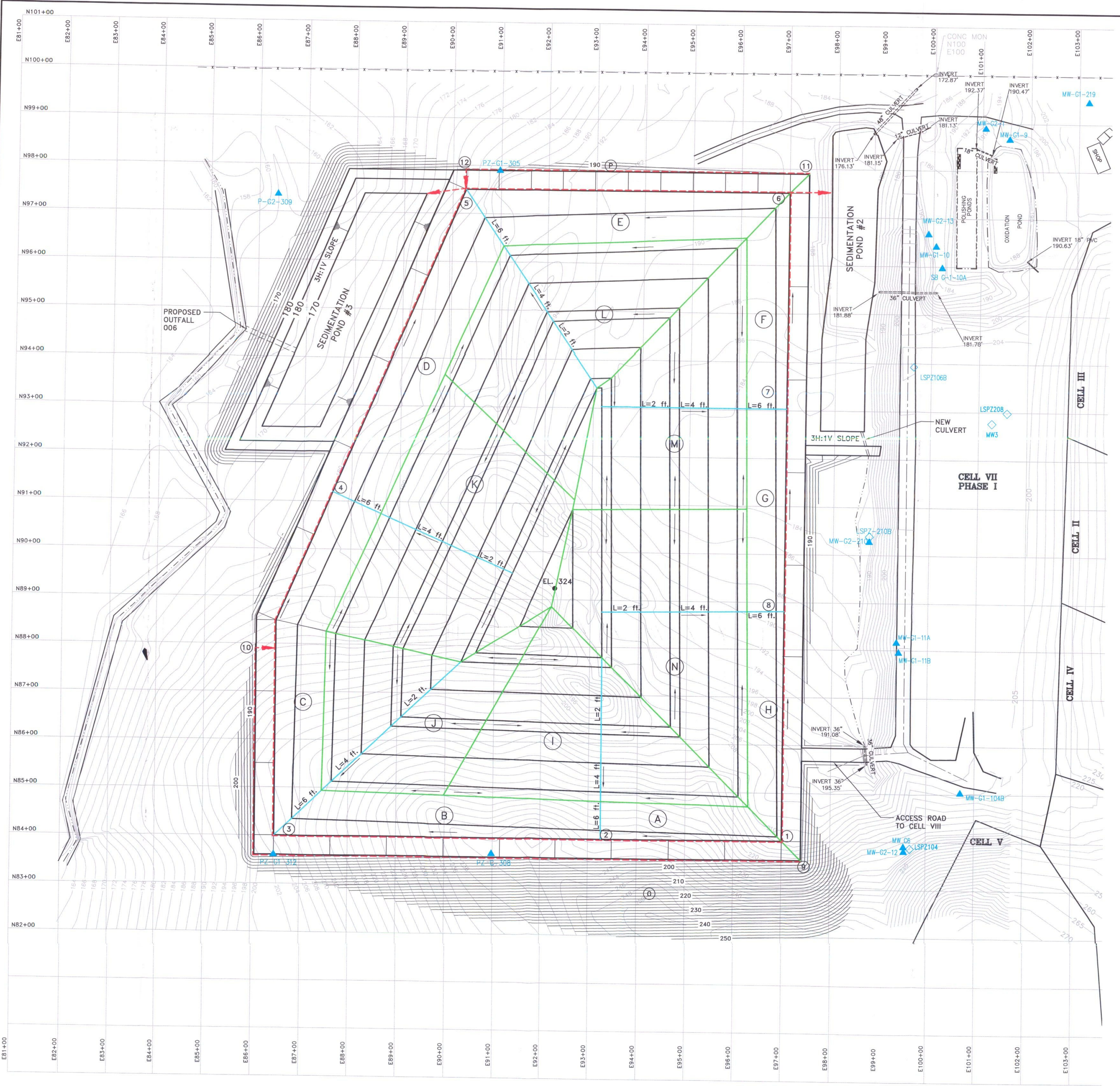
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

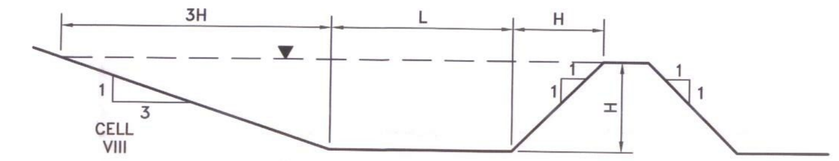
STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 4-03-06	Drawing No.: STE-S8

Title: **CELL VIII CONCEPTUAL FINAL CONTOUR PLAN**

P:\2005\05-1124\CADD\05112A-S08 Final Contours.dwg
Jul 02, 2007 - 9:40am

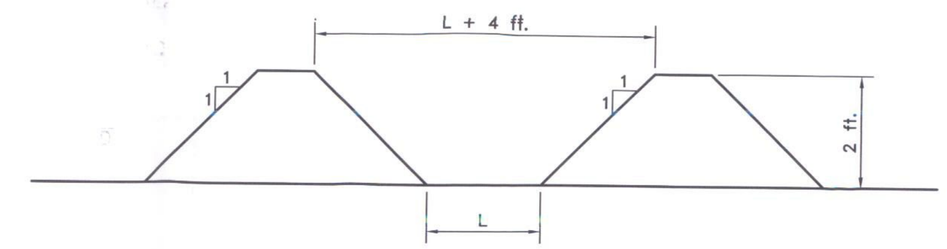




PERIMETER DITCHES

NOT TO SCALE

SIZING PERIMETER DITCHES		
DRAINAGE POINTS	H (ft.)	L (ft.)
1–2	2.0	3.0
2–3	3.0	4.0
3–4	5.0	6.0
4–5	5.0	6.0
1–8	2.0	3.0
8–7	4.0	5.0
7–6	4.0	5.0
6–5	2.0	3.0
9–10	3.0	4.0
11–12	1.0	2.0



LET DOWN CHUTES

NOT TO SCALE

CULVERTS		
POINT	MIN. SLOPE (ft./ft.)	DIAMETER (ft.)
5	0.01	4
6	0.01	3
10	0.01	2
12	0.01	2

NOTES;

1. Survey of Cell VIII area by Rodney Ray & Associates, Inc., 2005.
2. For detail of drainage at terraces, please refer to drawing STE-S10.

LEGEND:

- CHUTES
- WATERSHED LIMITS
- PERIMETER DITCHES
- (A) WATERSHED AREAS
- (1) DRAINAGE POINTS
- FLOW DIRECTION
- NEW CULVERTS

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31257
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

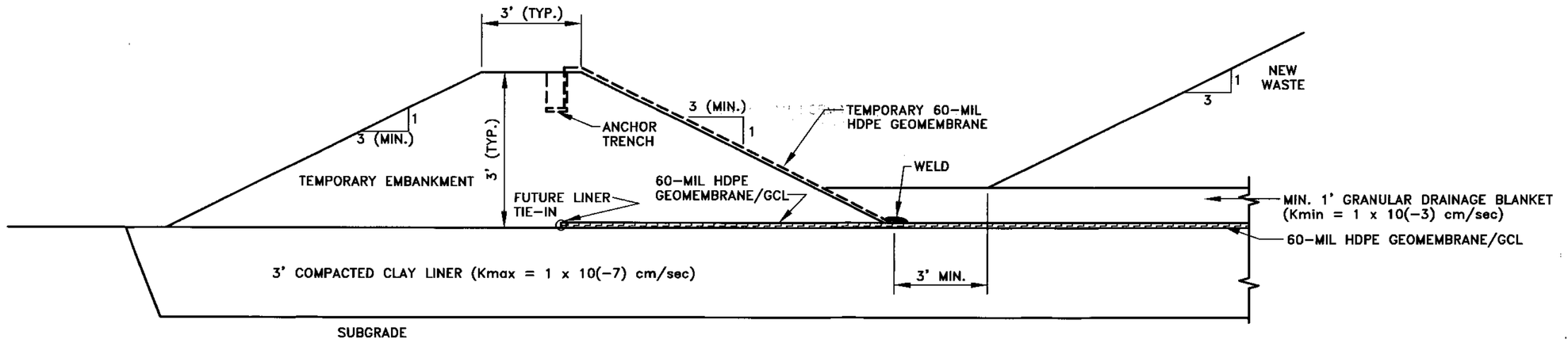
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

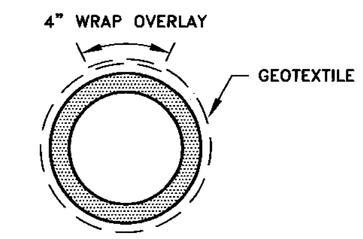
Project Engineer: R. de Abreu	Drawn by: DMS	Checked by:
File No.: 05-1124	Date: 2-20-06	Drawing No.: STE-S9
Title: CELL VIII		

Jul 02, 2007 - 10:13am

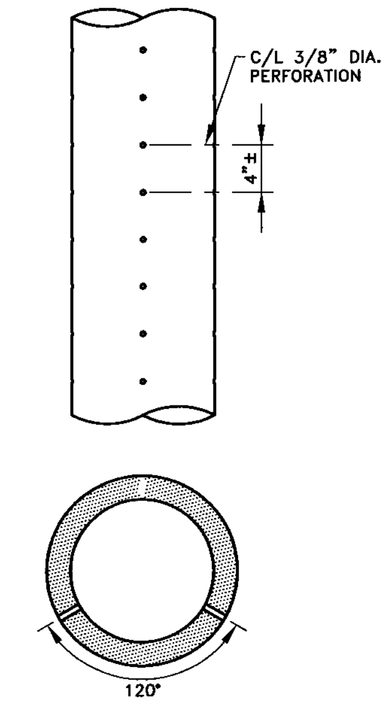
P:\2005\05-1124\CADD\051124-S09 Drainage Plan.dwg



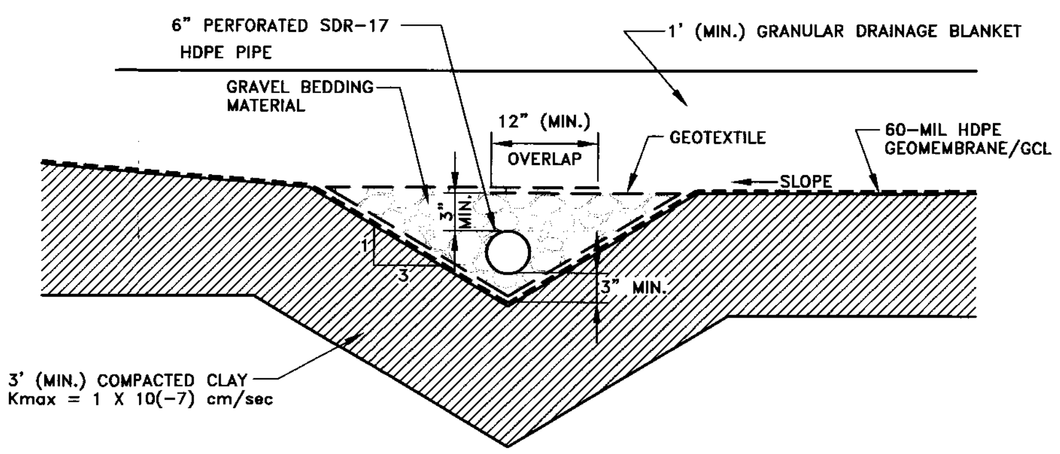
TYPICAL SUB-CELL EMBANKMENT DIVIDER
1 NOT TO SCALE



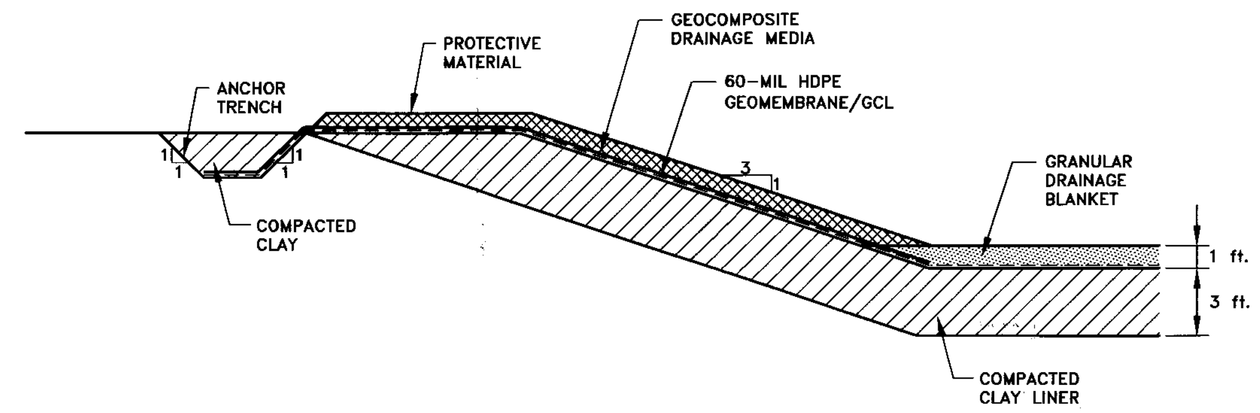
LEACHATE COLLECTION AND HEADER PIPE WRAP
2 NOT TO SCALE



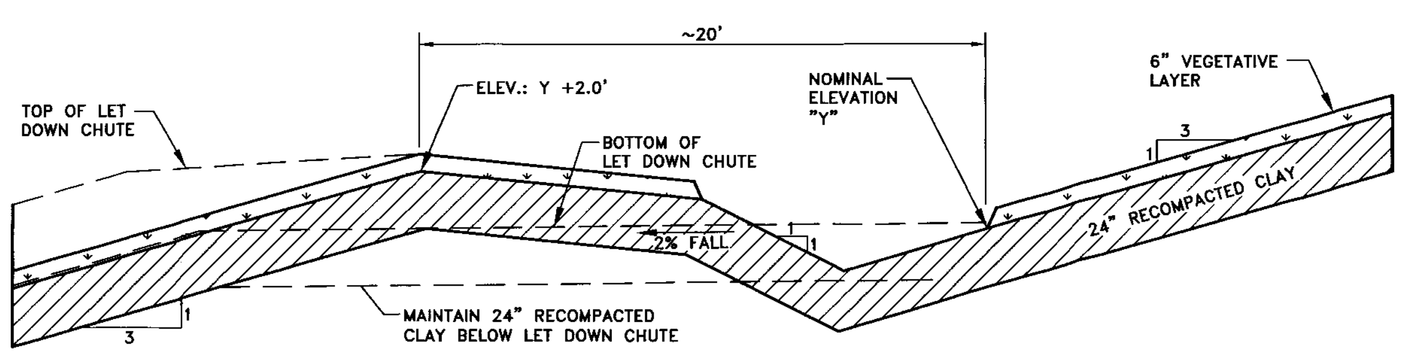
LEACHATE COLLECTION AND HEADER PIPES
3 NOT TO SCALE



LEACHATE COLLECTION TRENCH
4 NOT TO SCALE



LINER/LEACHATE COLLECTION SYSTEM DETAIL
5 NOT TO SCALE



FINAL COVER
(LONGITUDINAL SLOPE = 0.5%)
6 NOT TO SCALE

NOTE:
RIPRAP/EROSION CONTROL MATERIAL EXTENDS ACROSS TERRACE LET DOWN CHUTES.

NOTES:

1. One-foot granular drainage blanket shall have minimum hydraulic conductivity equal to 1 x 10(-3) cm/sec.
2. Leachate collection pipes shall be 6" diameter, perforated, SDR-17 HDPE pipe. Pipes shall be perforated generally as shown in Detail 3.
3. Geotextile shall be a minimum 8 oz/yd^2 non-woven fabric (for internal wrap) unless geotextile contacts geomembrane, then fabric shall be at least 12 oz/yd^2 non-woven textile (for external wrap).
4. Completed geotextile may be tied with a plastic band prior to final placement.
5. Minimum anchorage for geosynthetics is two feet.
6. The HDPE geomembrane shall be installed down the slope, in the direction of flow, not across the slope.
7. If construction of the cell occurs in phases, a sub-cell embankment divider shall be constructed, as shown in Detail 1.
8. Geocomposite drainage media is comprised of a geonet sandwiched between geofabrics (non-woven). Geocomposite drainage media shall have a minimum transmissivity of 1.0 x 10(-4) m^2/sec at i = 1.0, 5000 psf.
9. GCL may be used as a single component or bonded to the HDPE geomembrane.

STATE OF LOUISIANA
RICARDO C. DE ABREU
License No. 31267
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

REV.	DATE	DESCRIPTION	BY
3	7/07	Change in sand permeability	RDA
2	3/07	Added GCL	RDA
1	11/06	Added drainage media & note 8	RDA

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA

for

DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA

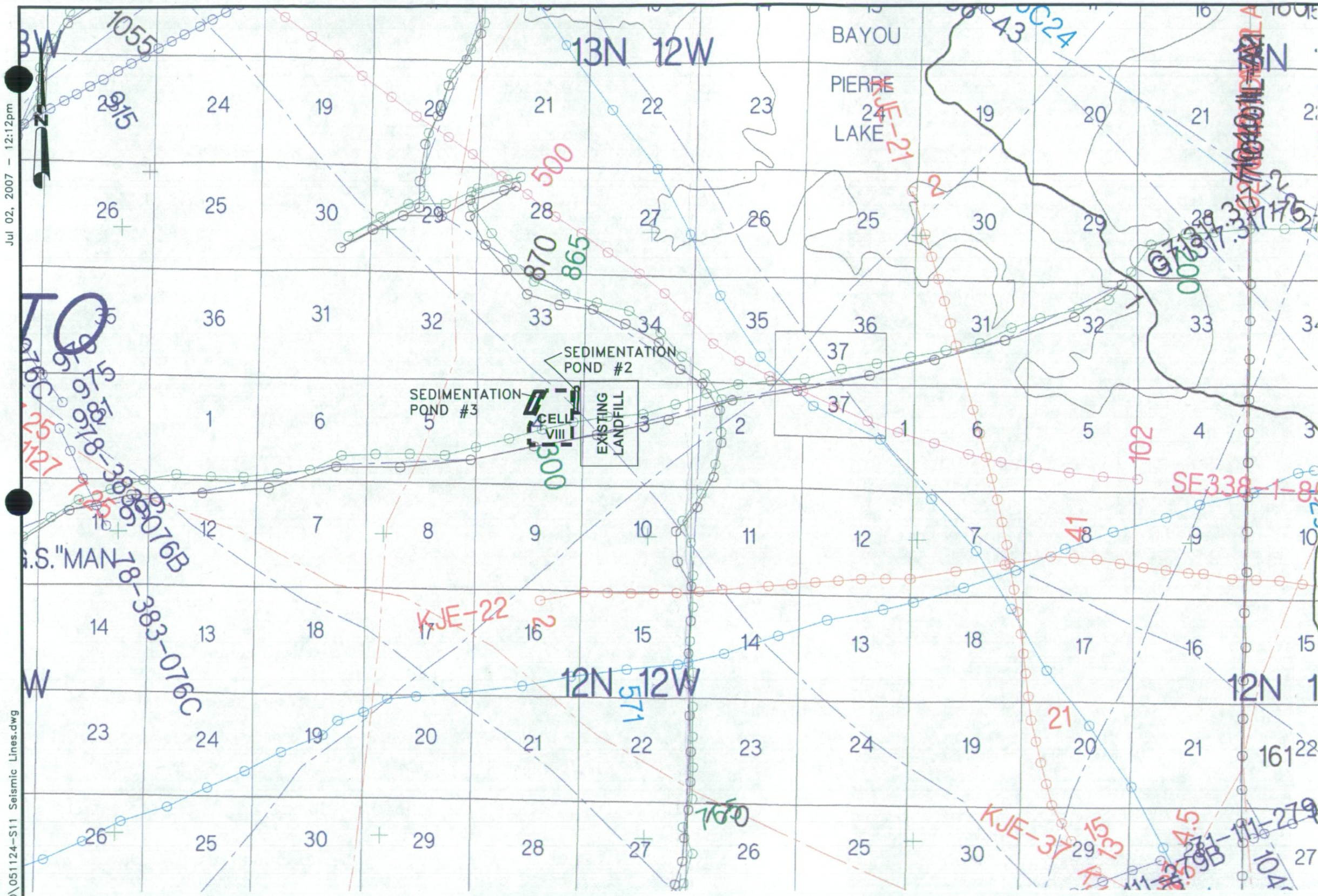
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 12-05-05	Drawing No.: STE-S10

Title:
CELL VIII DETAILS

Jul 02, 2007 - 10:44am
P:\2005\05-1124\CADD\051124-S10 Details.dwg



Color Legend

- SEI SPEC
- ARCO/Vastar
- BEAU COUP - Amoco, Burlington
- BEAU COUP - Unocal, Amerada
- MILESTONE - Shell, Exxon (TX)
- MILESTONE II - ChevronTexaco
- LA PEGASUS - Mobil LA & TX
- NATIONAL SEISMIC - Oryx
- SEI - Fina, Nuevo
- CHARGER SEISMIC - EEI
- SEI OIL - KCOT, Saga, HPC
- DASHED - OTHER SPEC
- DASHED - PRIME BROKER
- DASHED - OTHER E & P

REFERENCE:
SEISEARCH of De Soto Parish, LA by Seismic Exchange, Inc. dated 11-14-06.

MUNDY SANITARY LANDFILL
DE SOTO PARISH, LOUISIANA
for
DE SOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

STE
Soil Testing Engineers, Inc.
Baton Rouge, LA Jefferson, LA Biloxi, MS

Project Engineer:	Drawn by:	Checked by:
R. de Abreu	DMS	
File No.: 05-1124	Date: 11-16-06	Figure No.: STE-S11

Title: **SEISMIC LINES**

Jul 02, 2007 - 12:12pm
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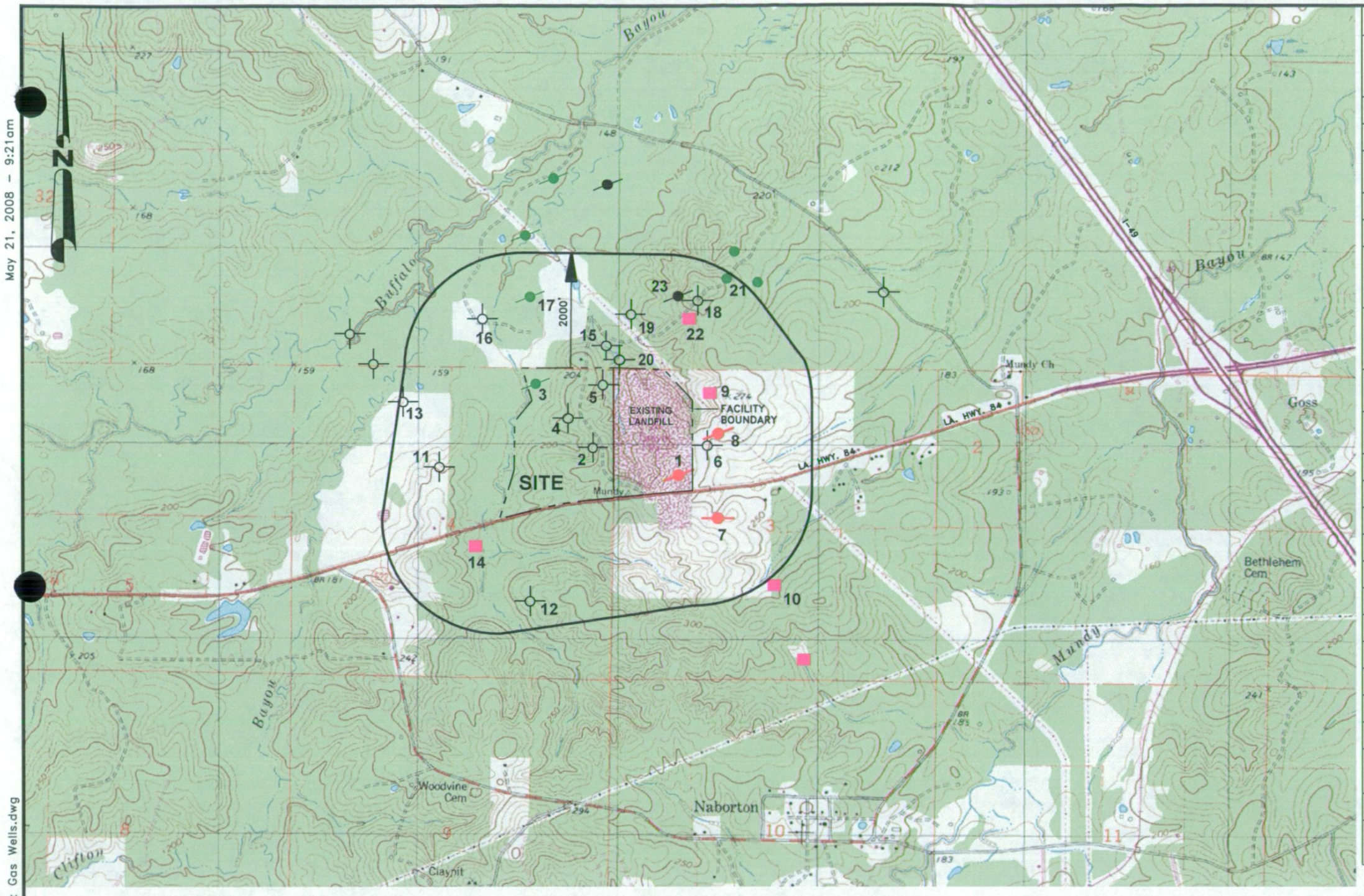


OIL & GAS WELLS				
MAP REF. NO.	WELL NAME	WELL NO.	LATITUDE	LONGITUDE
1	P.M.	001	32.05853	-93.58990
2	Terrell	001	32.05943	-93.59472
3	Lizzie Terrell	001	32.06231	-93.59795
4	Farmer	B-1	32.06077	-93.59609
5	Farmer	B-2	32.06217	-93.59429
6	Mansfield Hardwood Lbr. Co	E-1	32.05967	-93.58859
7	Mansfield Hardwood Lbr. Co	001	32.05617	-93.58819
8	Nabors Minerals E	002	32.06017	-93.58819
9	Nabors Minerals E	003	32.06192	-93.58843
10	Jenkins B	018	32.05435	-93.58392
11	Brownfield	002	32.05850	-93.60298
12	Saunders	A-6	32.05242	-93.59800
13	Ricks	001	32.06147	-93.60479
14	Quinn	001	32.05481	-93.60087
15	Saunders	B-4	32.06417	-93.59409
16	Clifton	001	32.06537	-93.60099
17	Saunders	A-16	32.06621	-93.59812
18	S-T-H	001	32.06627	-93.58909
19	Saunders	B-1	32.06547	-93.59269
20	Sanders B	002	32.06377	-93.59329
21	RRBB NAB PXY RC SU; MSTH	010-1	32.06707	-93.58769
22	S-T-H	006	32.06535	-93.58969
23	RRBB NAB PXY RC SU; MSTH	005	32.06643	-93.59014

LEGEND FOR OIL & GAS WELLS

- P & A DRY HOLE
- P & A OIL PRODUCER
- SHUT IN PRODUCTIVE (G&C)
- P & A G & C PRODUCER
- P & A PRODUCER
- DIRECTIONAL - SURFACE LOC
- PRODUCING - NO PRODUCT CODE
- PRODUCING - OIL

0 (feet) 4000±
SCALE

REFERENCE:
USGS Quadrangle Map of Bayou Pierre Lake, 1992 edition.

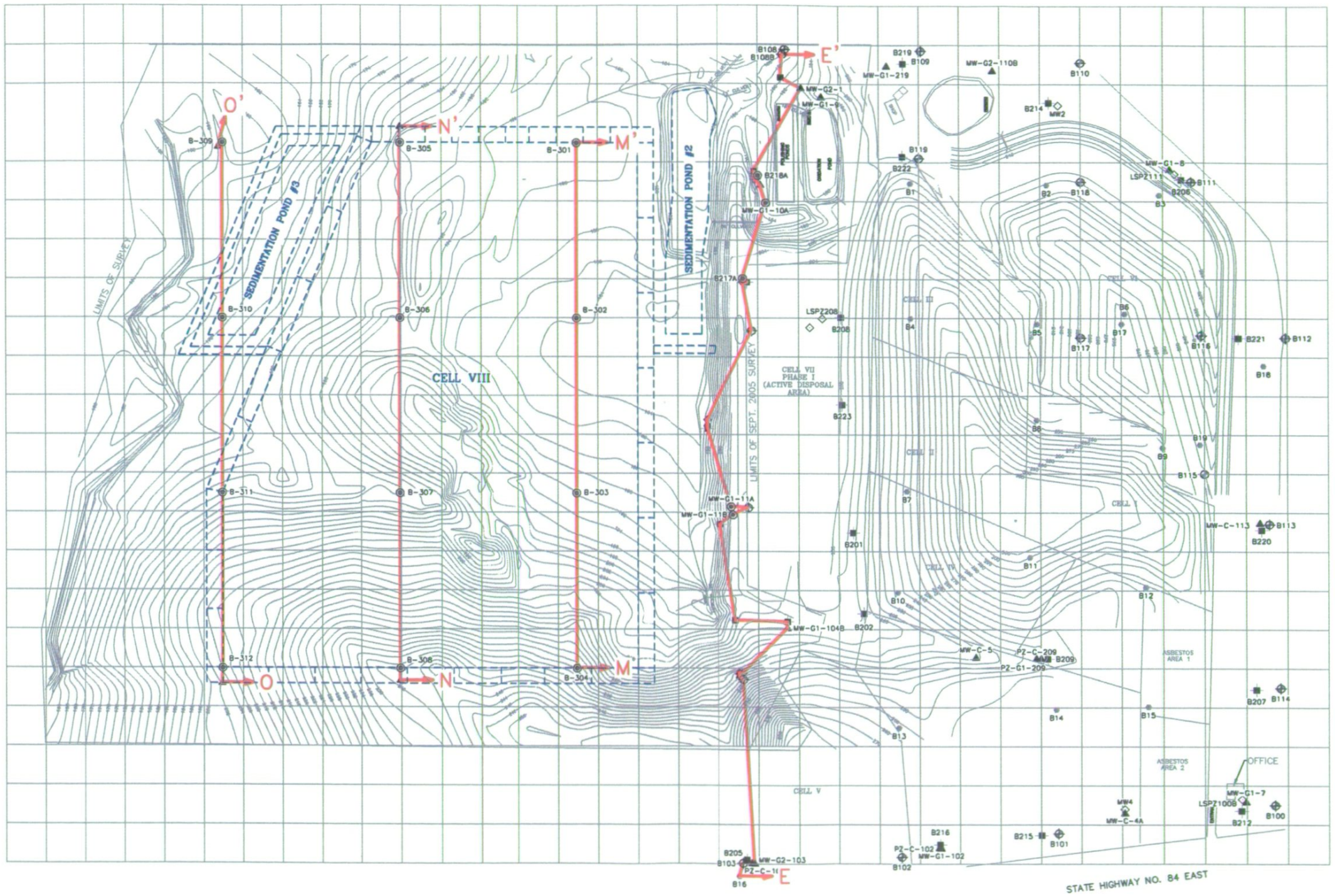
MUNDY LANDFILL
DESOTO PARISH, LOUISIANA
for
DESOTO PARISH POLICE JURY
MANSFIELD, LOUISIANA
JONES ENVIRONMENTAL, INC.
SHREVEPORT, LOUISIANA

AAI
Ardaman & Associates, Inc.
Baton Rouge, LA Jefferson, LA

Project Engineer:	Drawn by:	Checked by:
R. deAbreu	NMS	
File No.: 05-L1124	Date: 01/18/08	Figure No.: STE-S12

Title: **LOCATION OF OIL AND GAS WELLS**

May 21, 2008 - 9:21am
P:\2005\05-1\CADD\051124-S12 Oil & Gas Wells.dwg



LEGEND

- 250 — TOPOGRAPHIC CONTOUR (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- LIMITS OF SEPT. 2005 SURVEY
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996-1997
- SOIL BORING PRE-1996
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Roy & Associates, Inc., September 2005.

NOTE:
Western boundary of sedimentation pond estimated by JEI in 2004 from AFJM Sheet 3 – Project Completion Site Plan, Cell VI (1997).

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

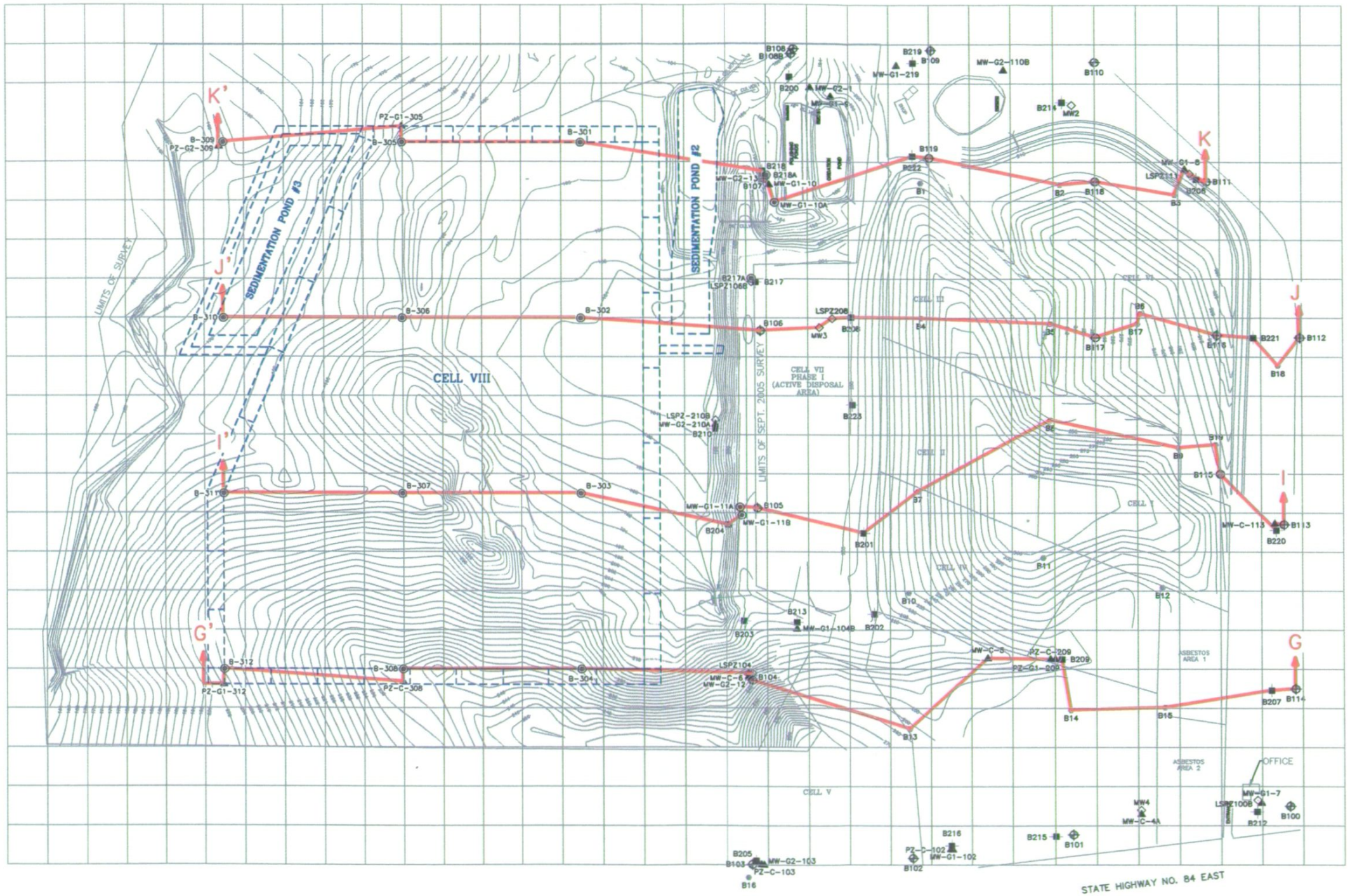
DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

LOCATION MAP FOR NORTH-SOUTH GEOLOGIC CROSS-SECTIONS

Sheet JEI-S1



LEGEND

- 250 — TOPOGRAPHIC CONTOUR (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- LIMITS OF SEPT. 2005 SURVEY
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996–1997
- SOIL BORING PRE–1996
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

NOTE:
Western boundary of sedimentation pond estimated by JEI in 2004 from AFJM Sheet 3 – Project Completion Site Plan, Cell VI (1997).

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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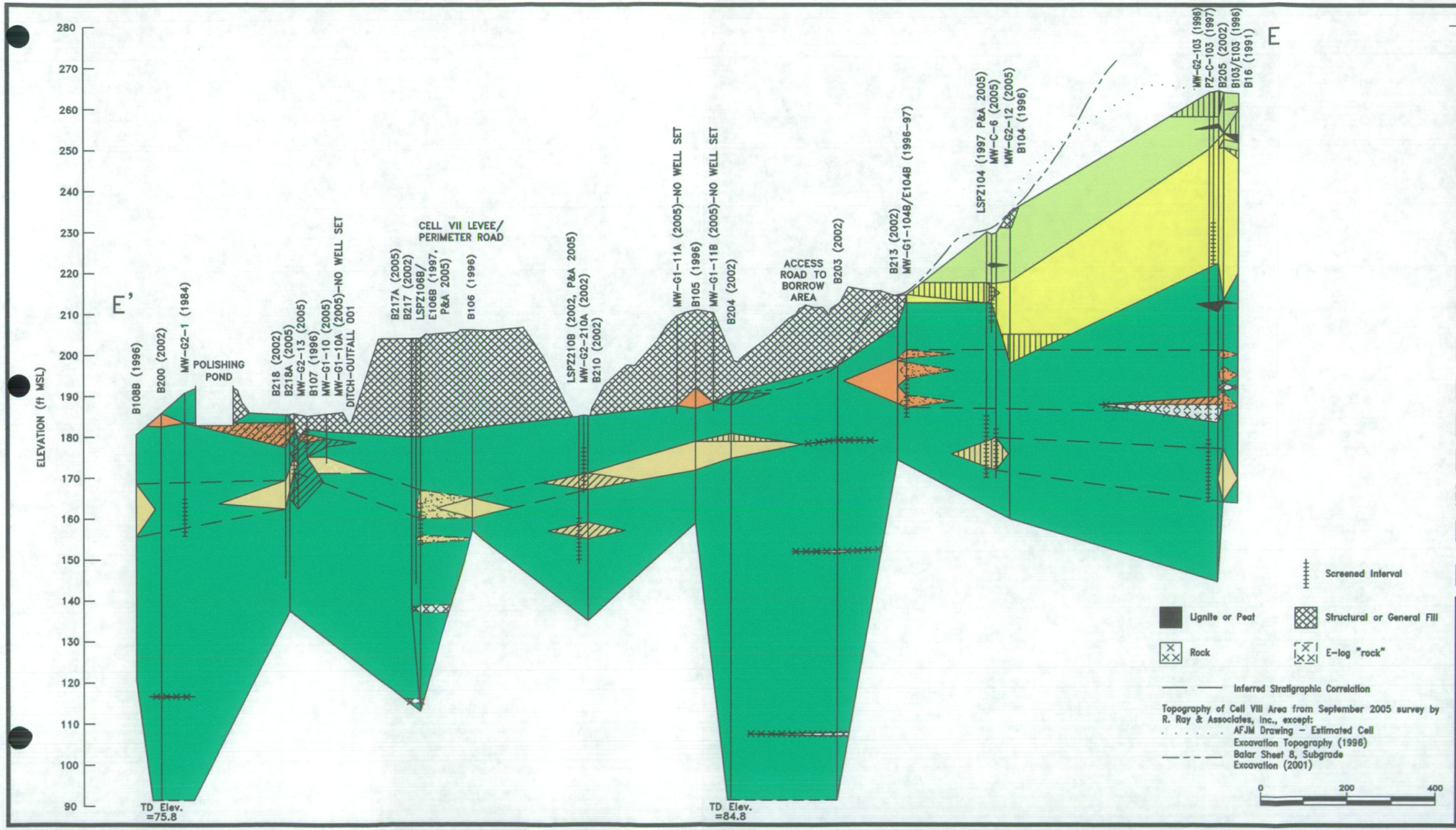
LOCATION MAP FOR EAST–WEST GEOLOGIC CROSS-SECTIONS

Sheet JEI–S2



LEGEND

- Zone B: Clay (CH), Silty Clay, & fine-grained Sandy Clay (CL); firm to stiff, tan, orange, gray, and brown; some laminations, occasional lignite or iron nodules and laminations.
- Zone B: Silt, Clayey Silt, and Sandy Silt (ML); firm to stiff, gray, brown, tan, and orange; some laminations, occasional lignite or iron nodules and laminations.
- Zone B: Clayey Sand (SC); reddish-tan.
- Zone C: Silty Sand (SM), Clayey Sand and Clayey Silty Sand (SC), and Sand (SP); fine-grained, brown, tan, orange, and gray, loose to stiff; laminated, occasional lignite and ironstone layers.
- Zone C: Sandy Silt and Clayey Silt (ML); gray, firm to stiff, laminated.
- Zone G1: Silt, Sandy Silt, Clayey Silt, and Clayey Sandy Silt (ML, sandy ML, sandy CL) and Silty Sand (SM); gray, brown, tan, and orange, soft to hard, laminated, often fissile, some clay laminations & lenses.
- Zone G1: Clayey Silty Sand and Clayey Sand (SC and SC/SM); gray, brown, tan and orange, loose to dense, laminated or mottled, some ironstone nodules, some clay layers and laminations.
- Zone G1: Very Silty Clay (CL) associated with rock layer, gray, very stiff, trace fine sand.
- Zone G1: E-log "sand".
- Zone G2: Clayey Silty Sand and Clayey Sand (SC), Sandy Silty Clay (sandy CL), and Silty Sandy Clay (CL with Sand); gray, brown, tan, and orange, frequently laminated, some clay and sandy silt laminations, occasional iron nodules.
- Zone G2: Clayey Silt with Silty Clay (CL/ML), very Sandy Clay-Silt (sandy CL-ML); dark to light gray, some orange, laminated, fissile, stiff to very stiff.
- Zone G2: Sandy Silty Clay and Silty Clay with very fine sand (CH/CL), gray, brown, and orange, mottled or laminated; trace iron nodules glauconite.
- Zone G2: Sand (SP), gray/tan, fine grained, some coarse sand/fine gravel, some clay clasts.
- Zone G2: E-log "sand".
- Zones D1&D2: Silty Clay (CH & CL) and Clay (CH) with thin lenses and laminations of silt and sandy silt; light to dark gray and brown, tan, and orange, laminated, occasional ripple laminations or mottling; typically very stiff, hard.
- Zone D1: Silty Sandy Clay, Sandy Silty Clay, and Sandy Clay (CL), tan, gray, brown, and orange, medium to very stiff, laminated.

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1" : 20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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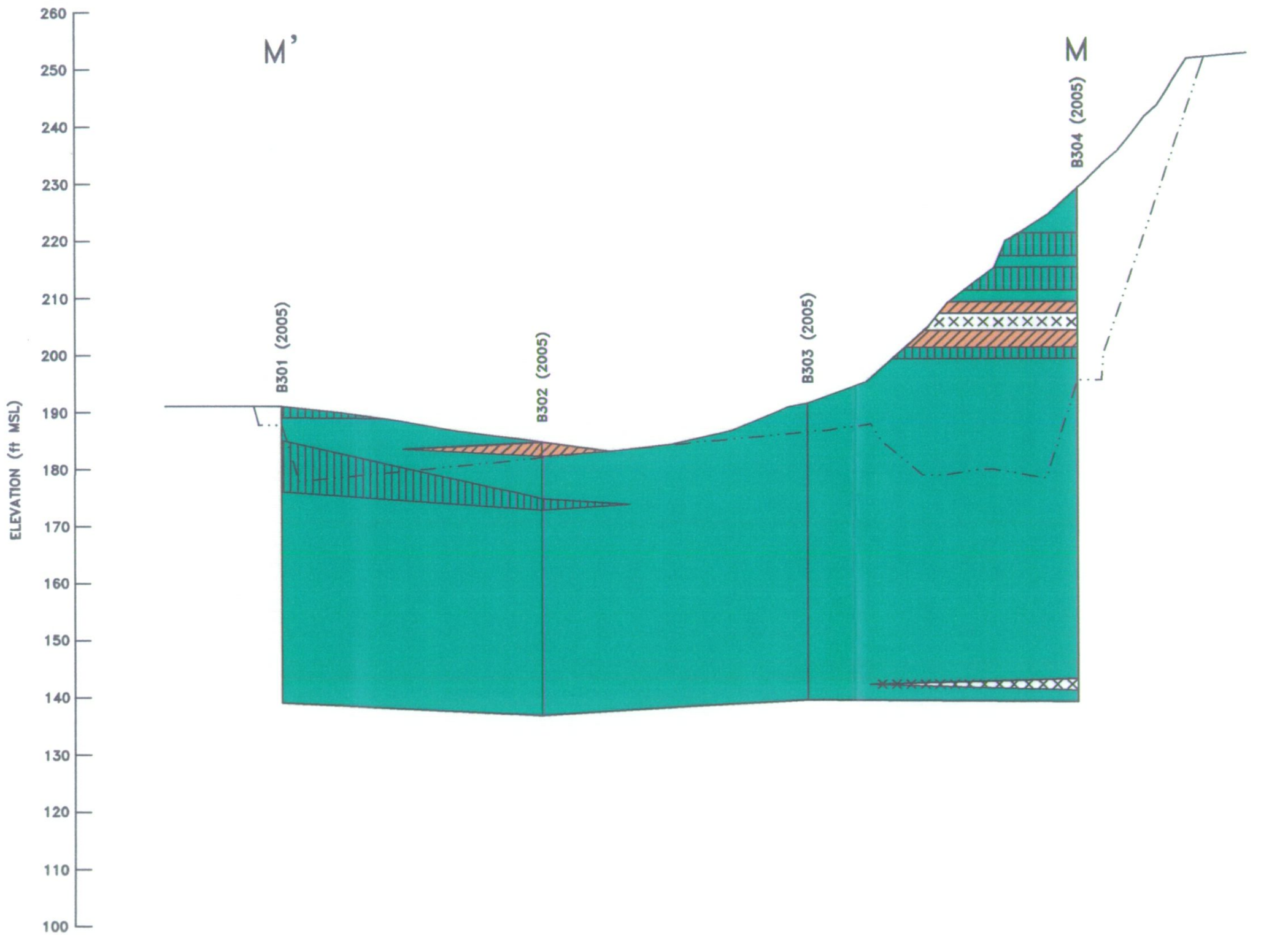
NORTH-SOUTH CROSS-SECTION E-E'

Sheet JEI-S3

CELL VIII AREA



LEGEND

- Zone G1: Silt with clay (CL) and Sandy Silty Clay (CL with sand), brown to gray, typically laminated, fissile, soft to hard, some thin black clay laminations, some very fine grained sand.
- Zones D1&D2: Silty Clay (CL & CH) and Clay (CH); dark to light gray/brown, tan, frequently laminated and fissile, dry, very stiff to hard, thin light gray silt laminations, occasional green glauconite minerialzation below +154' MSL.
- Zones D1&D2: Clayey Silt and Silt with clay (CH); light gray, tan, and dark gray/brown, laminated, fissile, very stiff to hard.
- Rock

Bottom of Excavation for Proposed Landfill:
— · · — · · — · · — STE Drawing – Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

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Mansfield, Louisiana 71052

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1":20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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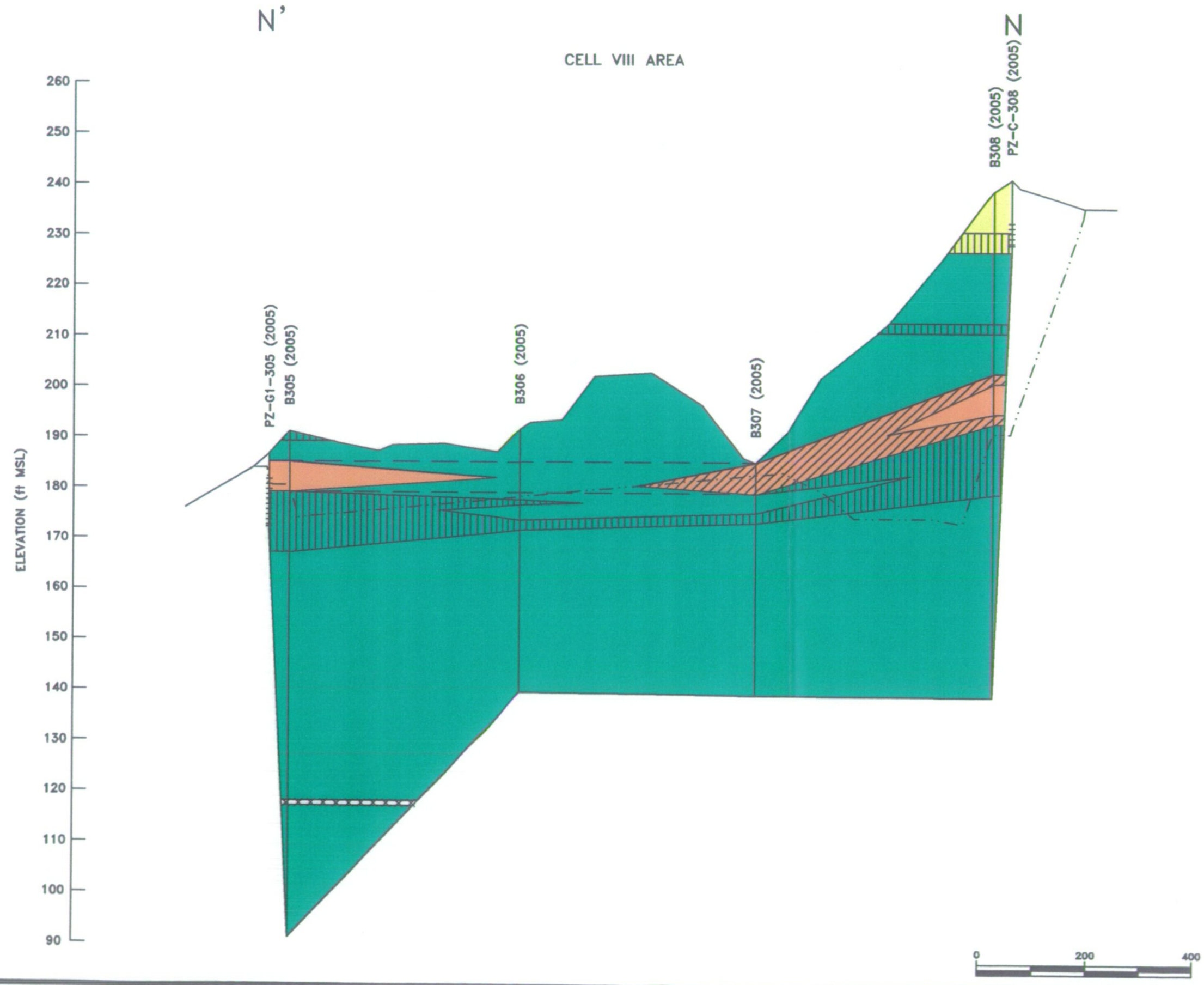
NORTH–SOUTH CROSS–SECTION M–M'

Sheet JEI–S4



LEGEND

- Zone C: Silty Sand (SM), fine-grained, tan to orange, some mottling, moderately clayey, stiff to hard.
- Zone C: Sandy Silt (sandy ML), tan and gray, some orange mottling, moderately clayey, dry.
- Zone G1: Silt and Silt with clay (ML); gray, tan; mottled to laminated, some clay, silty clay laminations, very stiff to hard.
- Zone G1: Sandy Clay and Sandy Silty Clay (Sandy CL, CL with sand) & Silt with clay & Clayey Silt (CL); very fine fine-grain sand; tan, gray, and brown, soft to hard, fissile, trace organics.
- Zones D1&D2: Silty Clay (CH & CL) and Clay (CH), dark to light gray/brown, some tan and orange, laminated, dry, very stiff to hard, thin light gray silt laminations, occasional green glauconite mineralization below +154' MSL.
- Zones D1&D2: Clayey Silt and Silt with clay (CH); gray, brown, tan, occasional orange, laminated, fissile, very stiff to hard, trace organics.
- Rock
- Screened Interval

—— —— —— Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:

— · · — · · — · · — STE Drawing – Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

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Mansfield, Louisiana 71052

DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1":20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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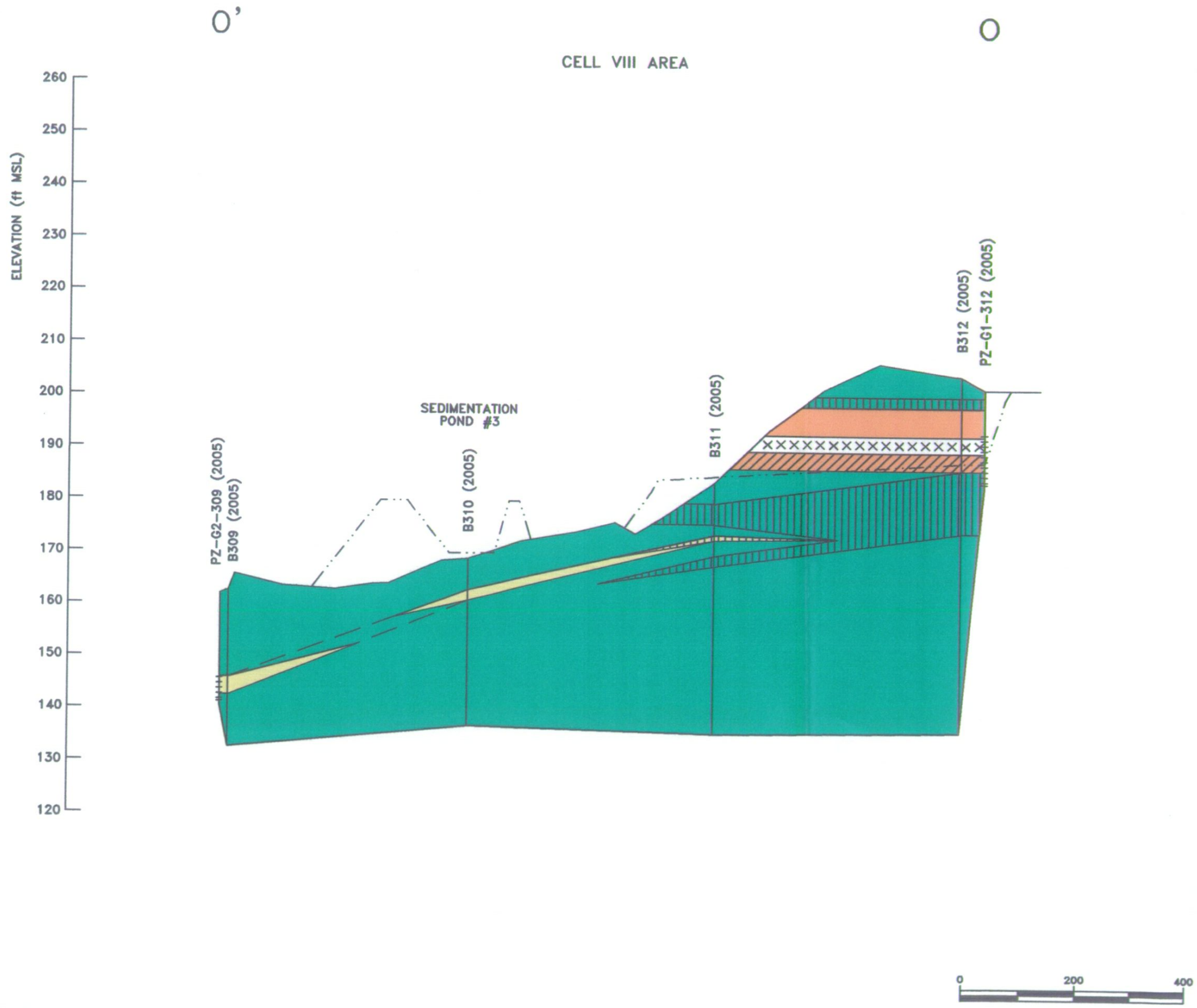
NORTH-SOUTH CROSS-SECTION N-N'

Sheet JEI-S5



LEGEND

- Zone G1: Silt (ML); light tan to gray with orange and brown, laminated, very stiff to hard, fissile, some thin orange clay laminations, some white carbonate, trace black organics.
- Zone G1: Silt with some clay (CL), light tan to gray with orange, very stiff, laminated, very stiff, fissile, some orange clay laminations, some burrows.
- Zone G2: Clayey Sand and Sandy Clay (Sandy CL), gray to orange/brown, very fine – fine grain sand, soft to stiff, silty.
- Zone G2: Silt (CL), tan/gray, laminated, very stiff, some clay, trace sand.
- Zones D1&D2: Silty Clay (CL & CH) and Clay (CH); dark to light gray/brown, some brown, tan, and orange, mottling, laminations, very stiff to hard, thin light gray silt laminations, occasional green glauconite mineralization below +147' MSL.
- Zones D1&D2: Clayey Silt and Silt with clay (CH), tan, orange to dark brown, laminated, fissile, hard.
- Rock
- Screened Interval

—— —— —— Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:

— · · — · · — · · — STE Drawing – Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

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Mansfield, Louisiana 71052

DeSoto Parish Police Jury

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1":20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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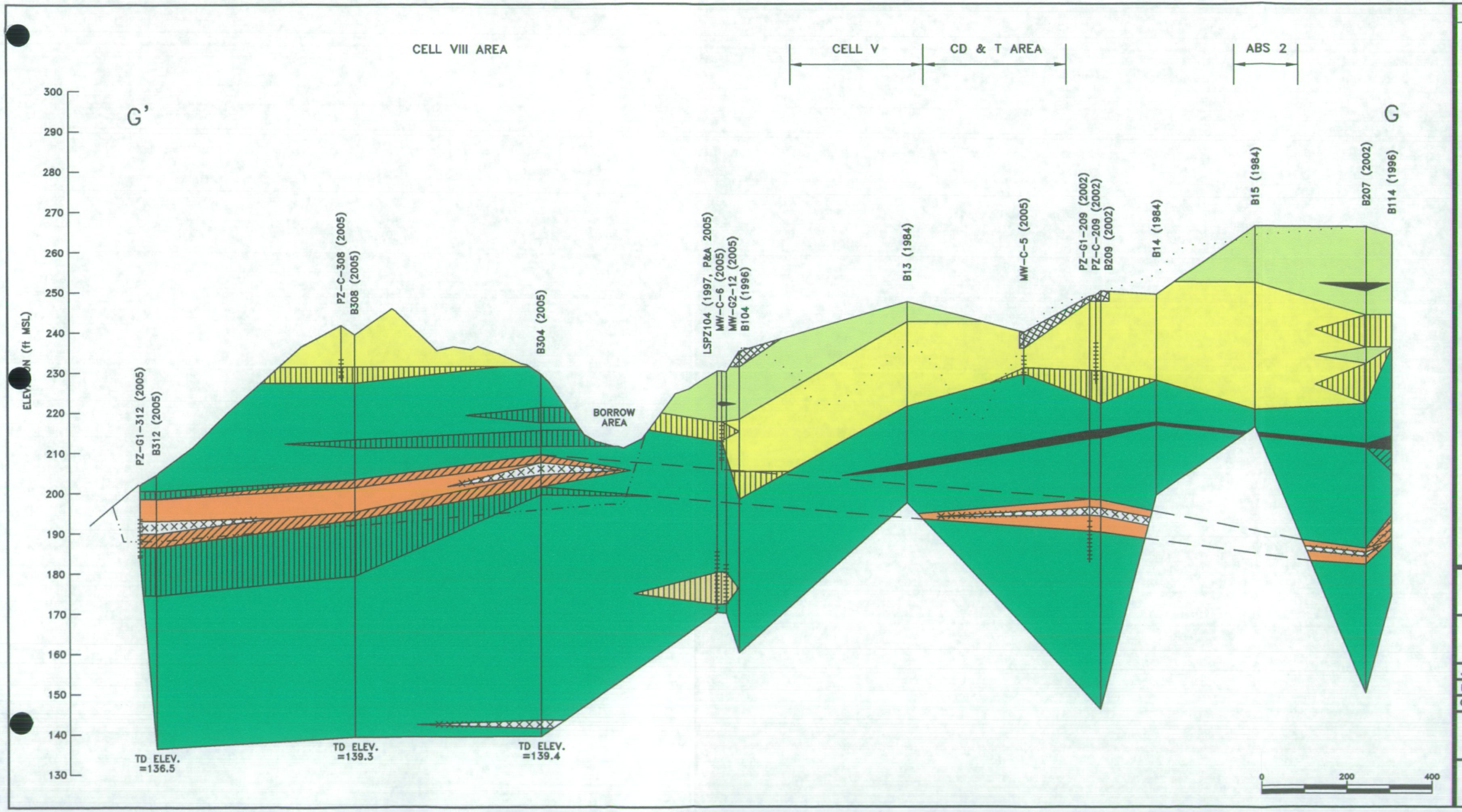
NORTH–SOUTH CROSS–SECTION O–O'

Sheet JEI–S6



LEGEND

- Zone B: Clay (CH), Silty Clay, & fine-grained Sandy Clay (CL); firm to stiff, tan, orange, gray, and brown; some laminations, occasional lignite or iron nodules and laminations.
- Zone C: Silty fine-grained Sand (SM), Clayey Sand and Clayey Silty Sand (SC), and Sand (SP); brown, tan, orange, and gray, loose to hard; laminated, mottled, occasional lignite and ironstone layers.
- Zone C: Silt and Sandy and Clayey Silt (ML, sandy ML); tan and gray, firm to stiff, laminated or mottled.
- Zone G1: Silt, Sandy Silt, Clayey Silt, Silt with clay, and Clayey Sandy Silt (ML, sandy ML, ML/CL, CL-ML, ML/CL with Sand) and Silty Sand (SM); gray, brown, tan, and orange, soft to hard, laminated, some clay laminations & lenses.
- Zone G1: Clayey Silty Sand (SC); gray, dense, some clay laminations.
- Zone G1: Silt with Clay and Clayey Silt (CL), light tan to gray with brown and orange, very stiff, laminated, fissile, some orange clay laminations, some very fine to fine sand, some burrows.
- Zone G2: Clayey Silt with Silty Clay (CL/ML), very Sandy Clay-Silt (sandy CL-ML); dark to light gray, some orange, laminated, fissile, stiff to very stiff, some fine sand laminations.
- Zone D1&D2: Silty Clay (CL & CH) and Clay (CH) with thin lenses and laminations of silt and sandy silt; light to dark gray and brown, tan, and orange, laminated, occasional mottling; typically very stiff, hard.
- Zone D1: Silty Sandy Clay (CL); black and gray, trace lignite.
- Zone D1 & D2: Clayey Silt and Silt with clay (CH), dark gray to brown with some light gray, tan, and orange, laminated, fissile, very stiff to hard.
- Lignite or Peat
- Screened Interval
- Rock
- Structural or General Fill

— — — Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:

— · — · — · · — STE Drawing - Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

Bottom of Excavations for Existing Landfill:

. . . . . AFJM Drawing - Estimated Cell Excavation Topography (1996)

Mundy Landfill

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Mansfield, Louisiana 71052

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1" : 20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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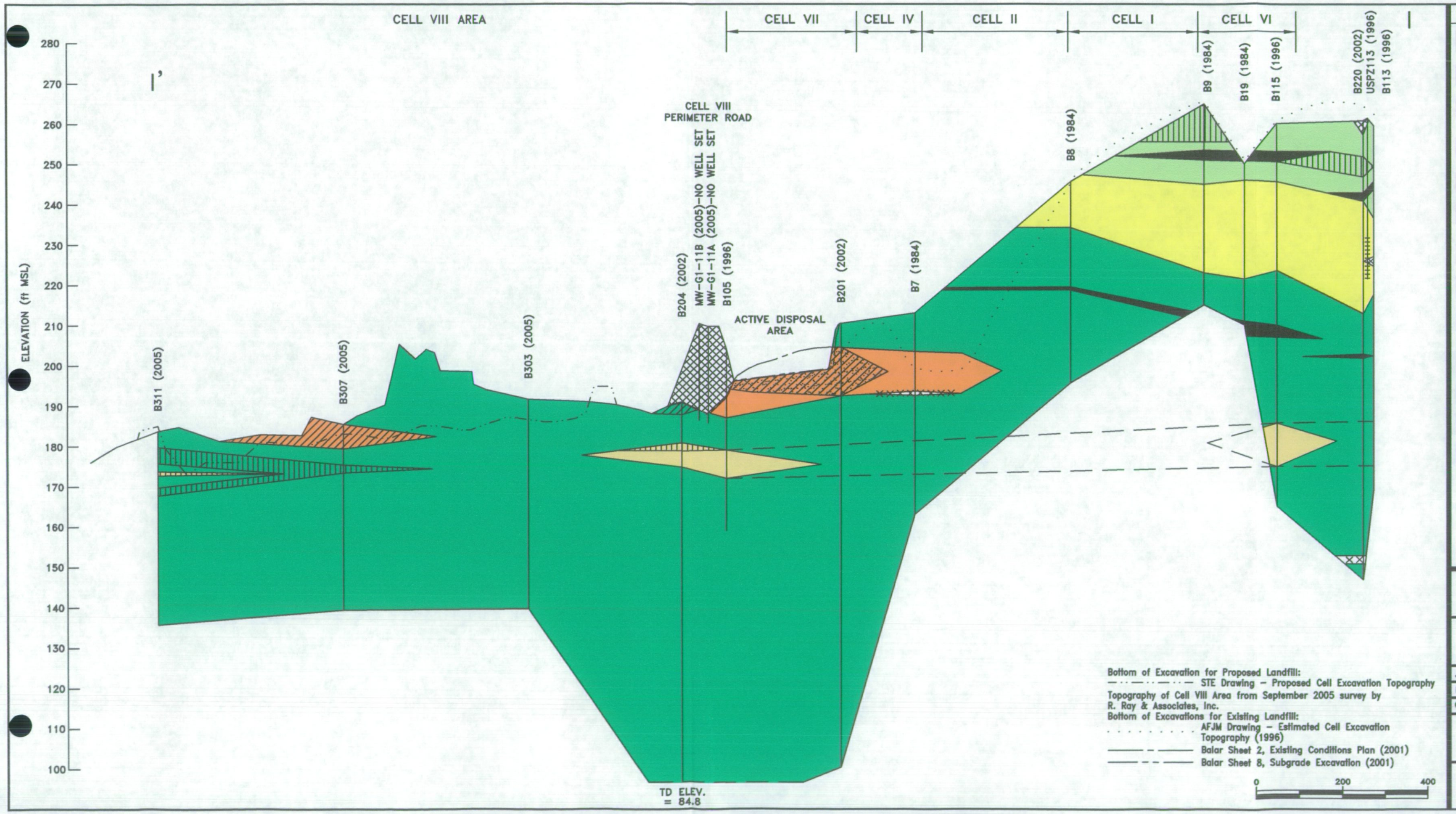
EAST-WEST CROSS-SECTION G-G'

Sheet
JEI-S7



LEGEND

- Zone B: Clay (CH), Silty Clay, & fine-grained Sandy Silty Clay (CL); firm to stiff, tan, orange, gray, and brown; some laminations, occasional lignite or iron nodules and laminations.
- Zone B: Silt, Clayey Silt, and Sandy Silt (ML); firm to stiff, gray, brown, tan, and orange; some laminations, occasional lignite or iron nodules and laminations.
- Zone C: Silty fine-grained Sand (SM), Clayey Sand and Clayey Silty Sand (SC), and Sand (SP); brown, tan, orange, and gray, loose to stiff; laminated, occasional lignite and ironstone layers.
- Zone G1: Silt, Sandy Silt, Clayey Silt, and Clayey Sandy Silt (ML, sandy ML, ML/CL, CL-ML, ML/CL with Sand) and Silty Sand (SM); gray, brown, tan, and orange, soft to very stiff, laminated, some clay laminations & lenses.
- Zone G1: Clayey Sand (SC) and Silty Sandy Clay (sandy CL); gray, tan and orange, loose to dense.
- Zone G1: Sandy Clay and Silty Sandy Clay (CL with sand, sandy CL), tan, light gray, and brown, soft to hard, trace organics, some mottling.
- Zone G2: Clayey Silty Sand (SC), Sand Silty Clay (sandy CL), and Silty Sandy Clay (CL with Sand); gray, brown, tan, and orange, frequently laminated, some clay and sandy silt laminations, occasional iron nodules.
- Zone G2: Very Sandy Clay-Silt (sandy CL-ML), and Silt (CL); gray, tan, laminated.
- Zones D1&D2: Silty Clay (CL and CH), and Clay (CH) with thin silt lenses and laminations; light to dark gray and brown, tan, and orange, laminated, occasional ripple laminations or mottling; typ. very stiff, hard.
- Zone D1: Silty Sandy Clay, Sandy Silty Clay, and Very Silty Clay (CL), tan, gray, brown, and orange, medium to very stiff, laminated.
- Zones D1&D2: Clayey Silt and Silt with clay (CH), light gray/tan to dark brown, some orange, laminated, fissile, very stiff to hard.
- Lignite or Peat
- Structural or General Fill
- Rock
- Screened Interval
- Inferred Stratigraphic Correlation

Mundy Landfill

2712 Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1" : 20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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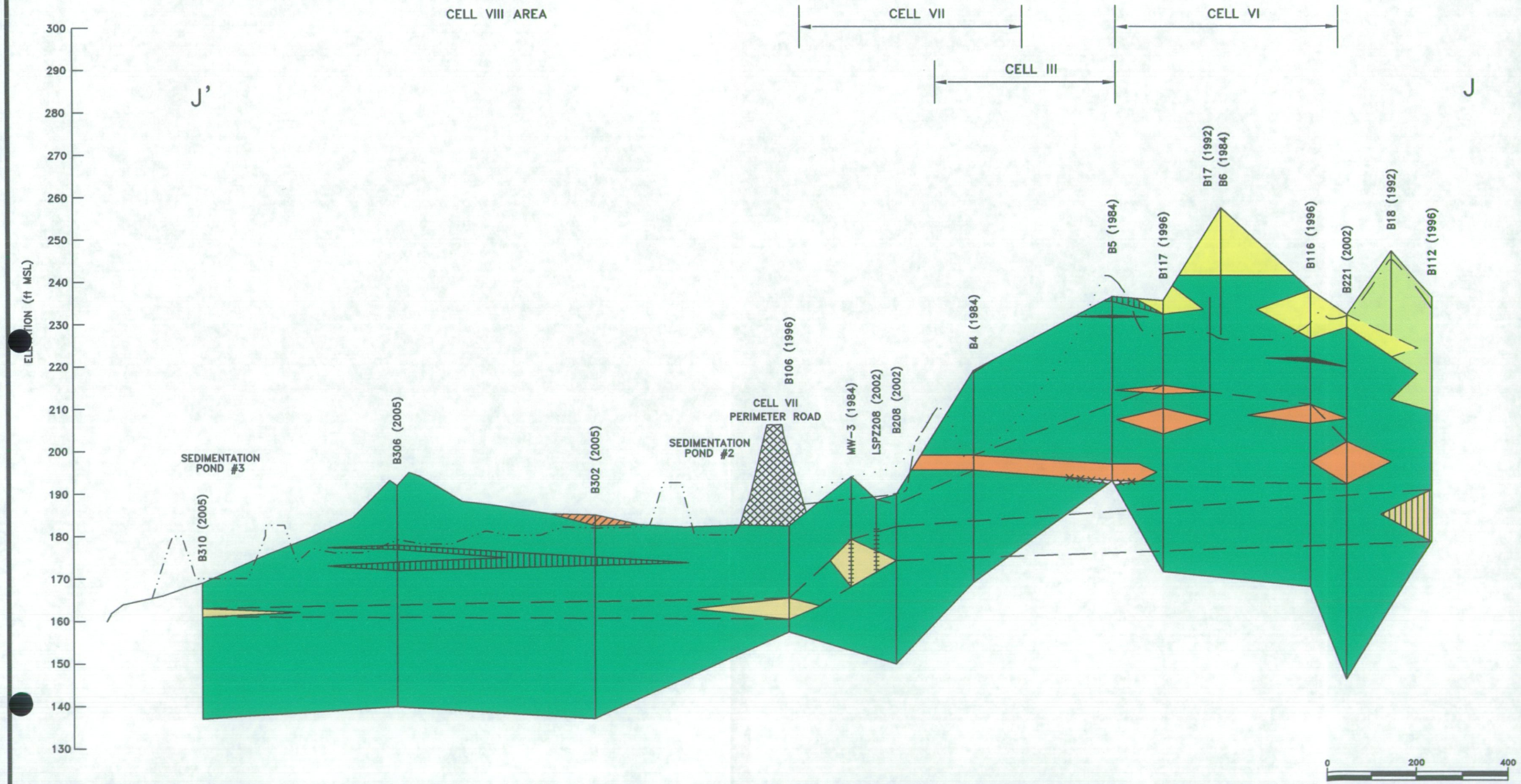
EAST-WEST CROSS-SECTION I-I'

Sheet
JEI-S8



LEGEND

- Zone B: Clay (CH), Silty Clay, & fine-grained Sandy Clay (CL); firm to stiff, tan, orange, gray, and brown; some laminations, occasional lignite or iron nodules and laminations.
- Zone C: Silty fine-grained Sand (SM), Clayey Sand and Clayey Silty Sand (SC), and Sand (SP); brown, tan, orange, and gray, loose to stiff; laminated, occasional lignite and ironstone layers.
- Zone G1: Silt, Sandy Silt, Clayey Silt, and Clayey Sandy Silt (ML, sandy ML, ML/CL, CL-ML, ML/CL with Sand) and Silty Sand (SM); gray, brown, tan, and orange, soft to very stiff, laminated, some clay laminations & lenses.
- Zone G1: Sandy Silty Clay (CL with Sand), brown to gray, typically laminated, fissile, soft to hard, some thin black clay laminations, some very fine grained sand.
- Zone G2: Clayey Silty Sand (SC), Sandy Silty Clay and Sandy Clay (sandy CL), and Silty Sandy Clay (CL with Sand); gray, brown, tan, and orange, frequently laminated, some mottling, some clay and sandy silt laminations, occasional iron nodules.
- Zone G2: Clayey Sandy Silt (ML); gray, laminated.
- Zones D1&D2: Silty Clay (CL & CH), Clay (CH), and Silty Sandy Clay (CH) with frequent thin lenses and laminations of silt; light to dark gray and brown, tan, and orange, laminated, occasional mottling; typically very stiff, hard.
- Zone D1: Clayey Silt (CH, ML at ground surface), gray, brown, or black, medium to hard, some roots, frequently laminated, fissile.
- Lignite or Peat
- Screened Interval
- Rock
- Structural or General Fill

— — — Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:

— · — · — · — STE Drawing – Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

Bottom of Excavations for Existing Landfill:

· · · · · · · · · · AFJM Drawing – Estimated Cell Excavation Topography (1996)

— · — — · — AFJM Sheet 40 – Waste Disposal Layout Grid (Cell VI) (1997)

— — — — Balar Sheet 8, Subgrade Excavation (2001)

Mundy Sanitary Landfill

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Mansfield, Louisiana 71052

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JEI # : FINAL DOC	DATE	SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1" : 20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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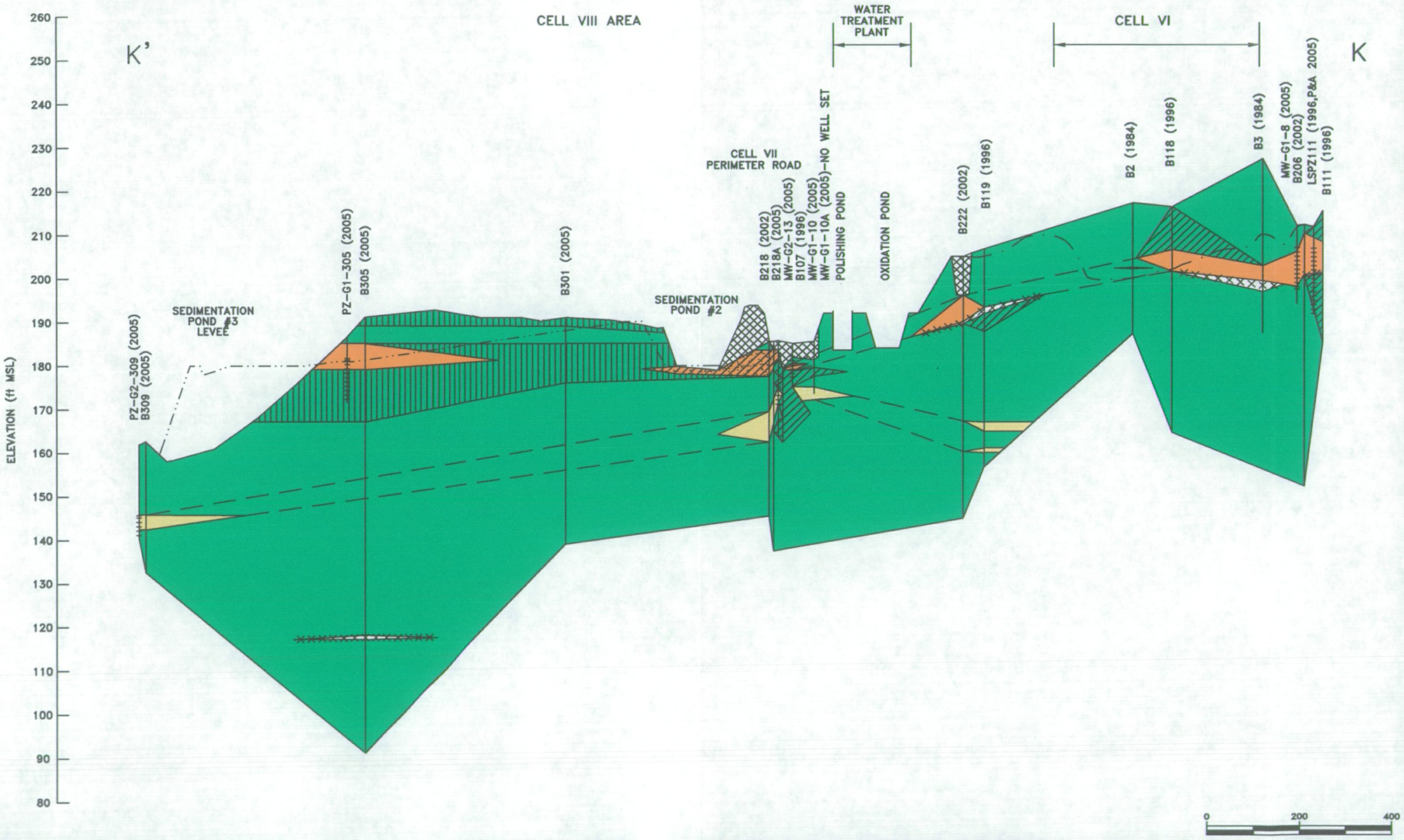
EAST–WEST CROSS–SECTION J–J'

Sheet JEI–S9



LEGEND

- Zone G1: Silt, Sandy Silt, Clayey Silt, and Clayey Sandy Silt (ML, sandy ML, ML/CL, CL-ML, ML/CL with Sand) and Silty Sand (SM); gray, brown, tan, and orange, soft to very stiff, mottled to laminated, some clay laminations & lenses.
- Zone G1: Clayey Sand and Clayey Silty Sand (SC, SC/SM); gray, brown, tan and orange, loose to dense, some clay layers and laminations, some mottling.
- Zone G2: Clayey Silty Sand and Clayey Sand (SC), Sand Silty Clay (sandy CL), Silty Sandy Clay (CL with Sand); gray, brown, tan, and orange, frequently laminated, some clay and sandy silt laminations, occasional iron nodules.
- Zone G2: Sand (SP), gray/tan, fine grained, some coarse sand/fine gravel, some clay clasts.
- Zones D1&D2: Silty Clay (CH and CL) and Clay (CH) with thin lenses and laminations of silt; light to dark gray and brown, tan, and orange, laminated, occasional ripple laminations or mottling; typically very stiff, hard.
- Zone D1: Silty Sandy Clay and Sandy Silty Clay (CL), tan, gray, brown, and orange, medium to very stiff, laminated or mottled.
- Zone D1: Clayey Silt and Silt with Clay (CH), dark gray to brown with some light gray, tan and orange, laminated, rarely mottled, fissile, very stiff to hard.
- Lignite or Peat
- Rock
- Structural or General Fill
- Screened Interval

Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:
STE Drawing - Proposed Cell Excavation Topography

Topography of Cell VIII Area from September 2005 survey by R. Ray & Associates, Inc.

Bottom of Excavations for Existing Landfill:
AFJM Sheets 40 & 41- Waste Disposal Layout Grid, Cell VI (1997)

Mundy Landfill

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Mansfield, Louisiana 71052

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 200'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1":20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION X 10

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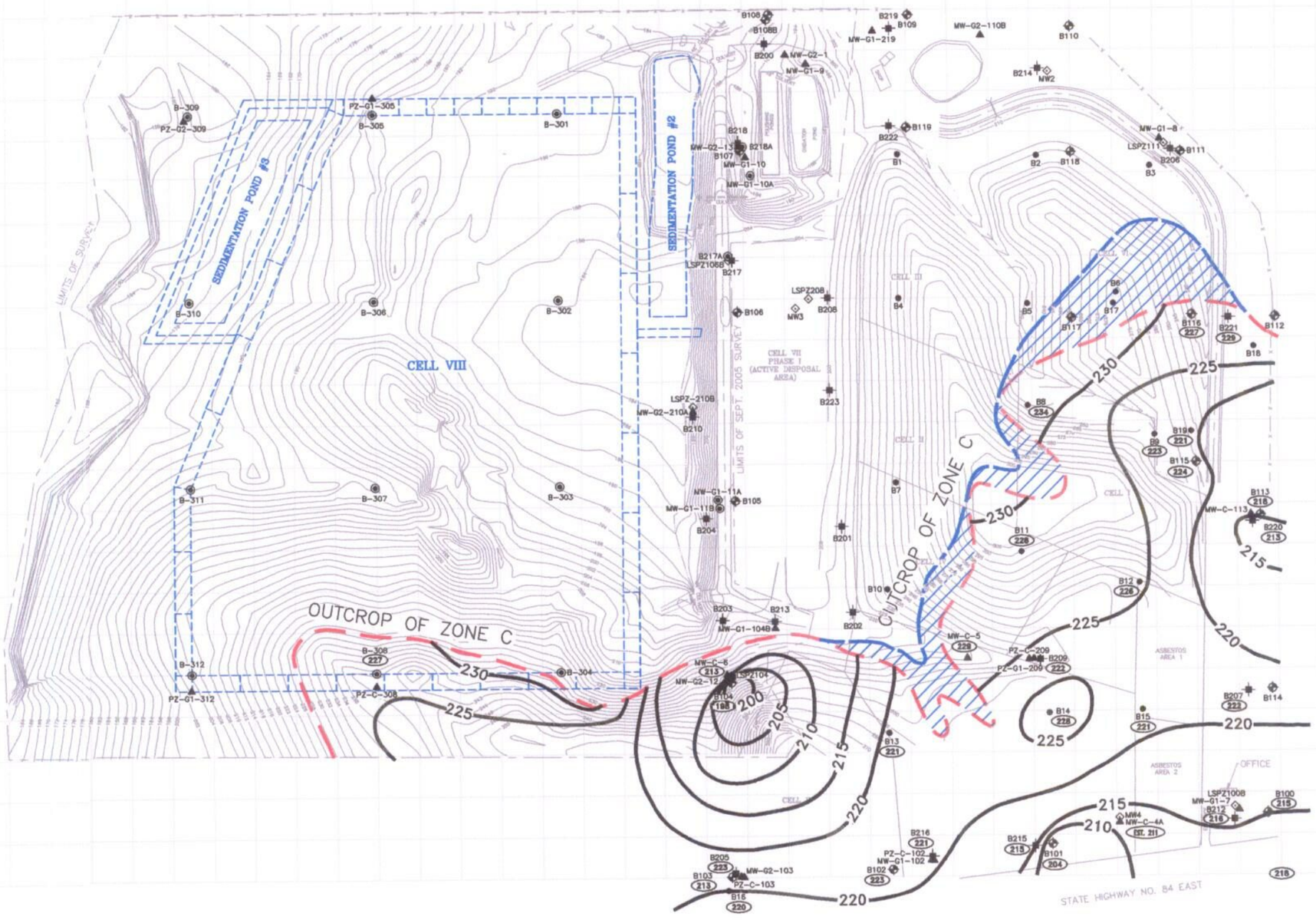
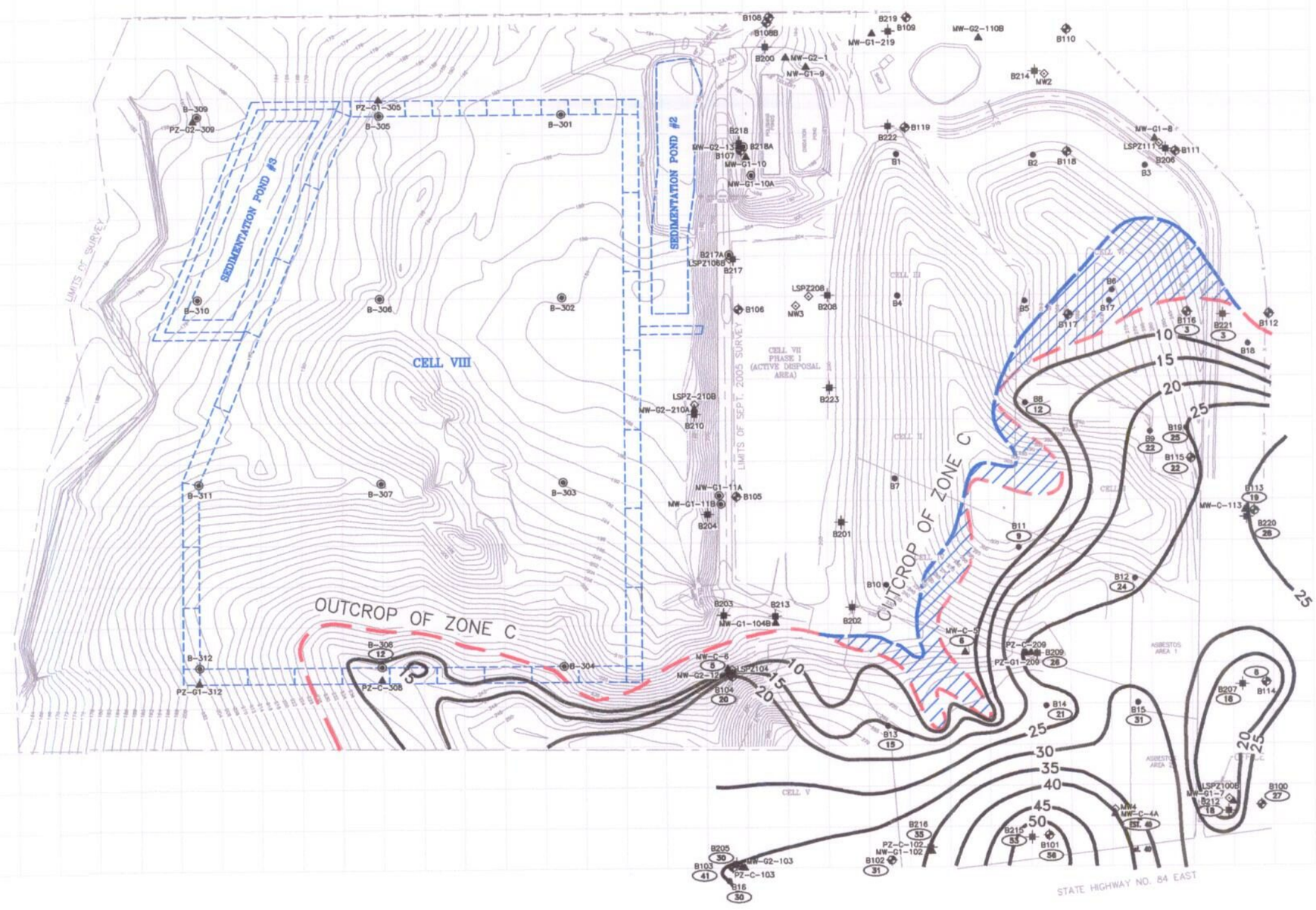
EAST-WEST CROSS-SECTION K-K'

Sheet
JEI-S10



ELEVATIONS AT BASE OF ZONE C



THICKNESS OF ZONE C

LEGEND

- TOPOGRAPHIC CONTOUR (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- LIMITS OF SEPT. 2005 SURVEY
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/ PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996–1997
- SOIL BORING PRE–1996
- POST–CONSTRUCTION OUTCROP OF ZONE C
- PRE–CONSTRUCTION OUTCROP OF ZONE C
- AREA OF ZONE C COMPLETELY REMOVED BY EXCAVATION OF WASTE DISPOSAL CELLS
- (218) (12) ELEVATION AT BASE OF ZONE C (ft MSL) OR THICKNESS OF ZONE C (ft)
- 220 / 20 CONTOUR OF ELEVATION OF BASE OF ZONE C (ft MSL) OR THICKNESS OF ZONE C (ft)
- EST. ESTIMATED
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

NOTE:
Western boundary of sedimentation pond estimated by JEI in 2004 from AFJM Sheet 3 – Project Completion Site Plan, Cell VI (1997).
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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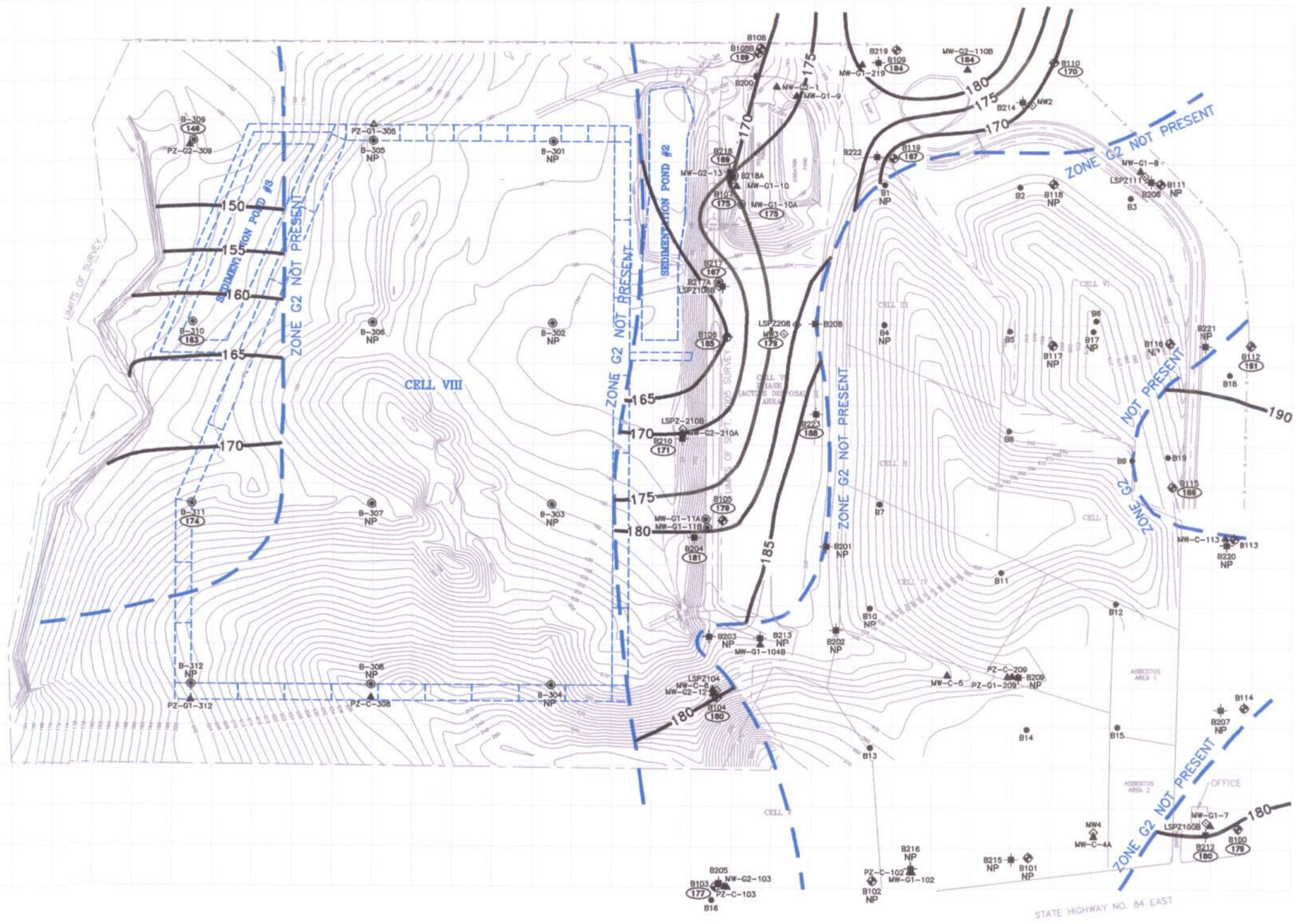
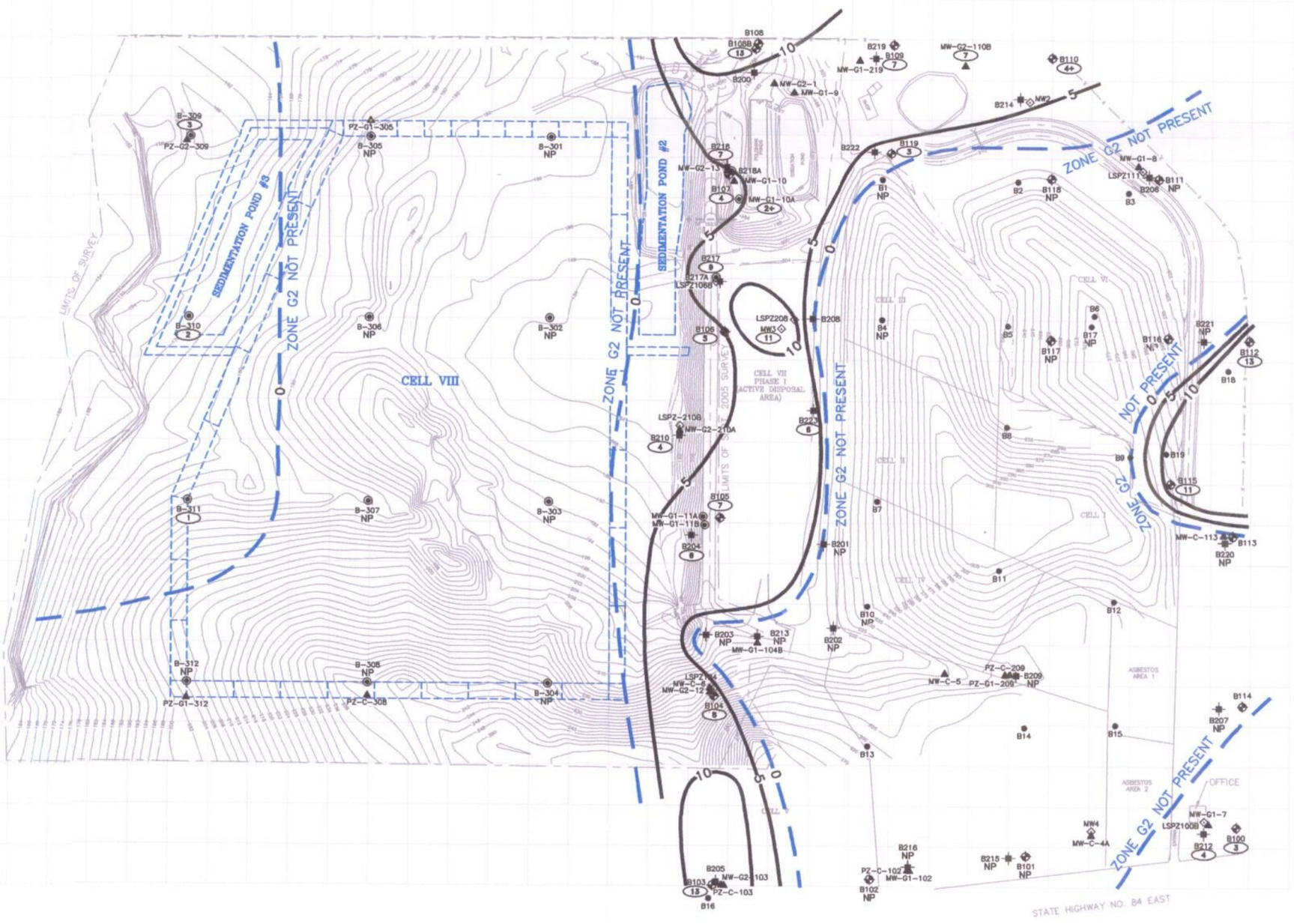
ISOPACH MAPS OF ZONE C

Sheet JEI–S11



ELEVATIONS AT TOP OF ZONE G2



THICKNESS OF ZONE G2

LEGEND

- TOPOGRAPHIC CONTOUR (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- LIMITS OF SEPT. 2005 SURVEY
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/ PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996–1997
- SOIL BORING PRE–1996
- ZONE G2 NOT PRESENT. THICKNESS = 0

NP — ZONE G2 NOT PRESENT IN SOIL BORING OF SUFFICIENT DEPTH

179 — ELEVATION AT TOP OF ZONE G2 (ft MSL)

11 — OR THICKNESS OF ZONE G2 (ft)

180 — CONTOUR OF ELEVATION AT TOP OF ZONE G2 (ft MSL)

5 — OR THICKNESS OF ZONE G2 (ft)

EST. — ESTIMATED

FOOTPRINT OF PROPOSED CELL VIII EXPANSION

NOTES:
Western boundary of sedimentation pond estimated by JEI in 2004 from AFJM Sheet 3 – Project Completion Site Plan, Cell VI (1997).
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

Mundy Landfill
2712 US Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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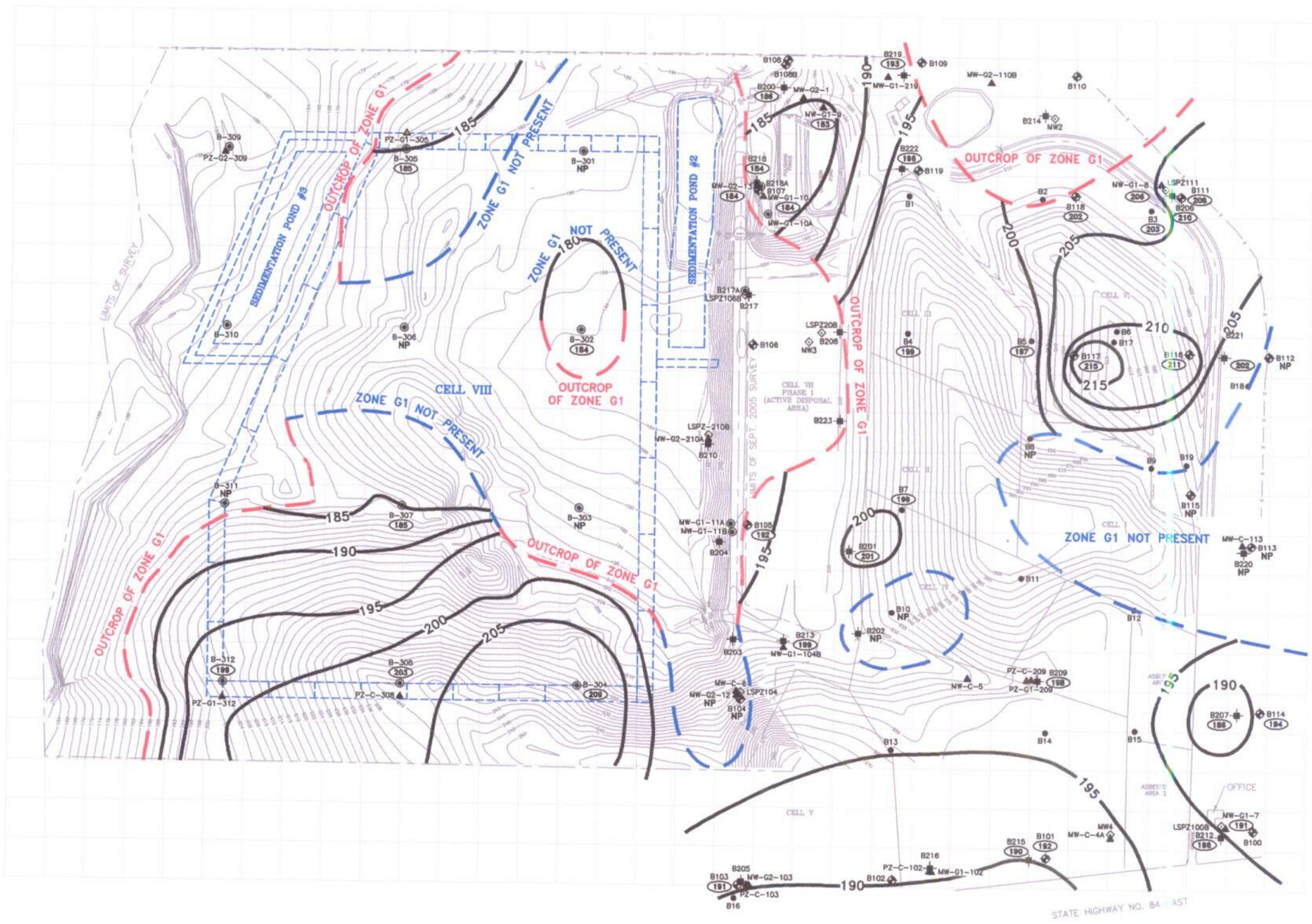
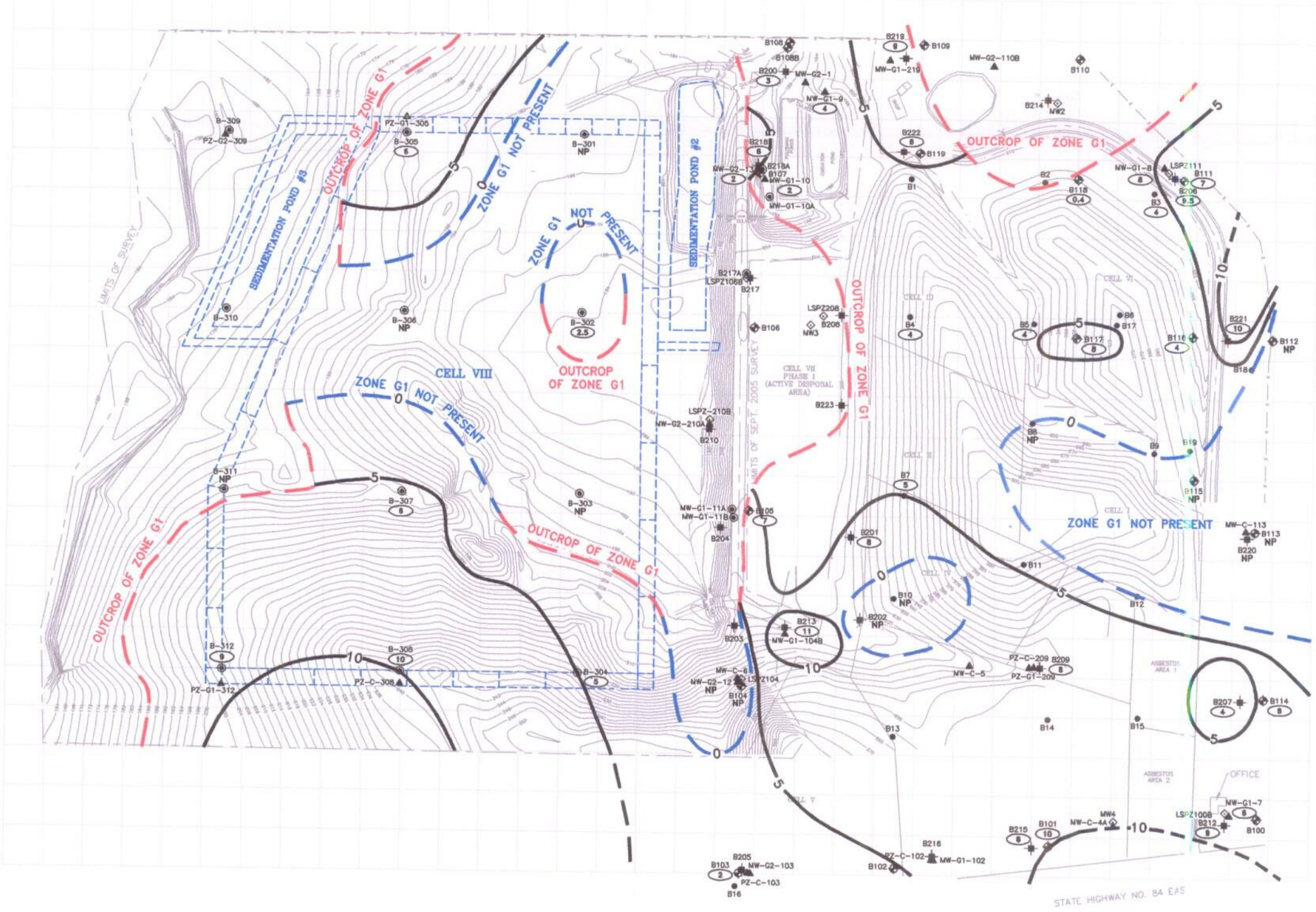
ISOPACH MAPS OF ZONE G2

Sheet JEI–S13



ELEVATIONS AT TOP OF ZONE G1



THICKNESS OF ZONE G1

LEGEND

- TOPOGRAPHIC CONTOUR (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- LIMITS OF SEPT. 2005 SURVEY
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/ PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996–1997
- SOIL BORING PRE-1996
- ZONE G1 NOT PRESENT OR THICKNESS = 0

- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1
- (184) — ELEVATION AT TOP OF ZONE G1 (ft MSL)
- (4) — OR THICKNESS OF ZONE G1 (ft)
- 180 — CONTOUR OF ELEVATION AT TOP OF ZONE G1 (ft MSL)
- 5 — OR THICKNESS OF ZONE G1 (ft)
- EST. — ESTIMATED
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

NOTES:
Western boundary of sedimentation pond estimated by JEI in 2004 from AFJM Sheet 3 – Project Completion Site Plan, Cell VI (1997).
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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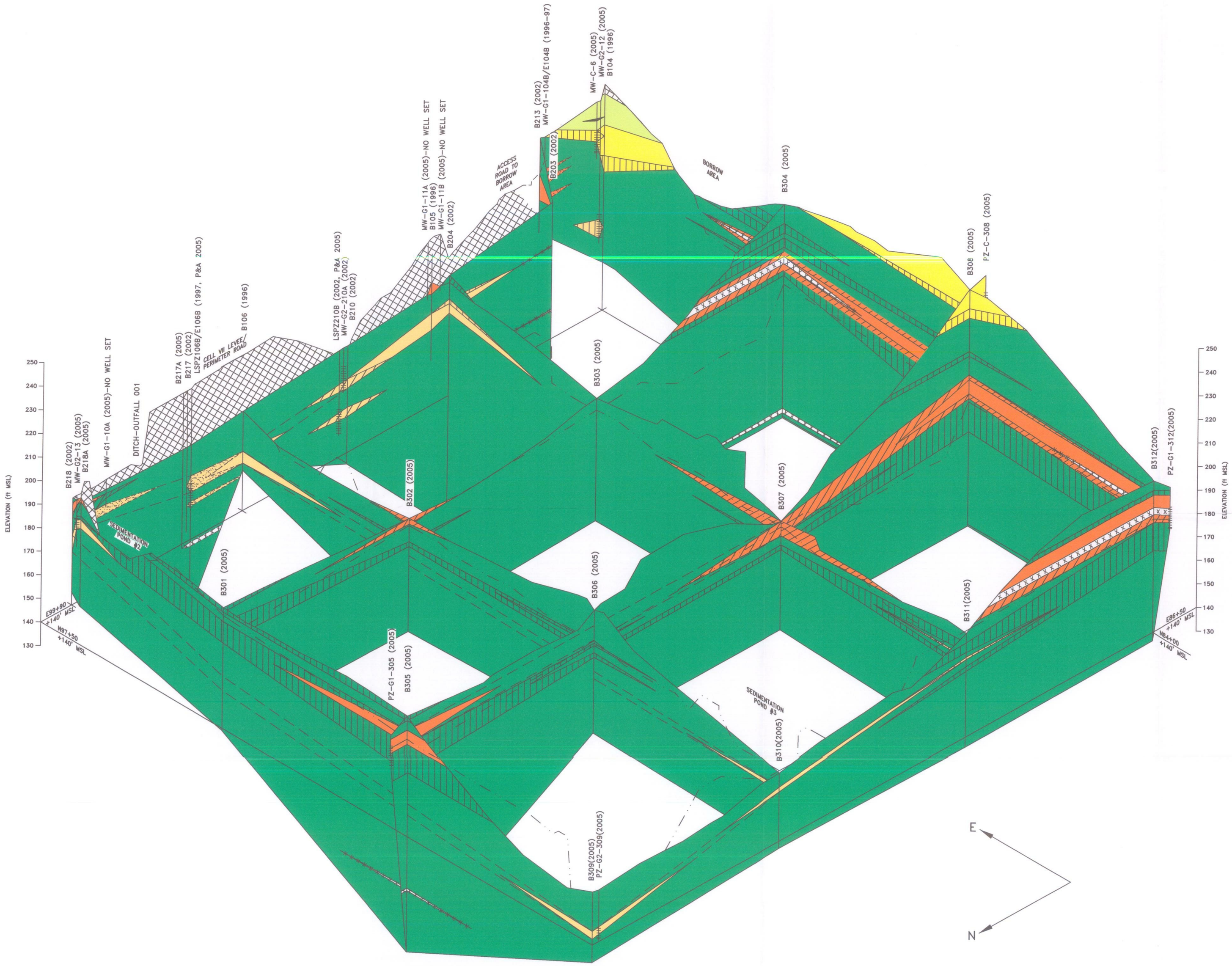
ISOPACH MAPS OF ZONE G1

Sheet JEI-S12



LEGEND

- Zone C: Silty Sand (SM), fine grained, tan to orange, some mottling, moderately clayey, stiff to hard.
- Zone C: Sandy Silt (sandy ML), Silt and Clayey Silt (ML), and Clayey Sandy Silt (ML), tan & gray, some orange mottling, moderatly clayey, dry.
- Zone G1: Silty, Silt with clay, Clayey Sandy Silt, Clayey Silt, and Sandy Silt (ML); gray & tan with brown & orange, mottled to laminated, occassional ripple laminations, stiff to hard; often fissile, trace fine sand, white carbonate, and black organics.
- Zone G1: Sandy Clay and Sandy Silty Clay (sandy CL and CL with sand), Silt with clay, and Clayey Silt (CL), gray & tan with brown & orange; laminated, fissile, very stiff to hard, some black or orange clay laminations, occassional burrows, some very fine to fine sand.
- Zone G1: Clayey Sand and Clayey Silty Sand (SC, SC/SM), gray, brown, orange, & tan; mottled or laminated, some ironstone nodules.
- Zone G1: E-log "sand".
- Zone G2: Clayey Sand and Clayey Silty Sand (SC and Sandy CL), Sandy Clay and Silty Sandy Clay (Sandy CL and CL with sand), gray, orange, tan, brown, & red, very fine to fine sand, soft to stiff, mottled or laminated, some iron mineralization, some black organics.
- Zone G2: Clayey Silt with Silty Clay (CL/ML), very Sandy Clay-Silt (sandy CL-ML), and Silt (CL), dark to light gray, tan, some orange, laminated, fissile, stiff to very stiff.
- Zone G2: Silty Clay and Sandy Silty Clay (CH/CL), gray, dark brown, some orange, trace to some fine sand, laminated, trace iron nodules and glauconite.
- Zone G2: Sand (SP), gray/tan, fine grained, some coarse sand/fine gravel, some clay clasts.
- Zone G2: E-log "sand".
- Zones D1&D2: Silty Clay (CH&CL) and Clay (CH), light to dark gray/brown, tan, & orange, laminated, some mottling, thin laminations of silt and fine sandy silt, occassional ripple laminations or mottling, very stiff to hard, occassional green glauconite mineralization in Zone D2.
- Zones D1&D2: Clayey Silt and Silt with clay (CH), light to dark gray/brown, tan, occassional orange, laminated, fissile, very stiff to hard.
- Zone D1: Silty Sandy Clay, Sandy Silty Clay, and Very Silty Clay (CL), tan, gray, brown, & orange, medium to hard, laminated or mottled, sometimes fissile.
- Lignite or Peat
- Rock
- E-log "rock"
- Structural or General Fill
- Screened Interval
- Inferred Stratigraphic Correlation

Bottom of Excavation for Proposed Landfill:
STE Drawing - Proposed Cell Excavation Topography

E-log interpretations for E104B and E106B for Zone G1, Zone G2, and rock layers were used to supplement visually logged borings to construct this isometric profile.

Locations of B218, MW-G2-13, B218A, B107, MW-G1-10, MW-G1-10A, B217A, LSPZ106B, B106, LSPZ210B, MW-G2-210A, B210, MW-G1-11A, B105, MW-G1-11B, B204, B203, MW-C-6, MW-G2-12, and B104 projected on to line at E99+90, MW-G2-13 located on E99+90.

0 100 200

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 100'
DWN BY : HMM	07/02/07	VERTICAL SCALE: 1" : 20'
CK BY : SM	07/02/07	VERTICAL EXAGGERATION x 5

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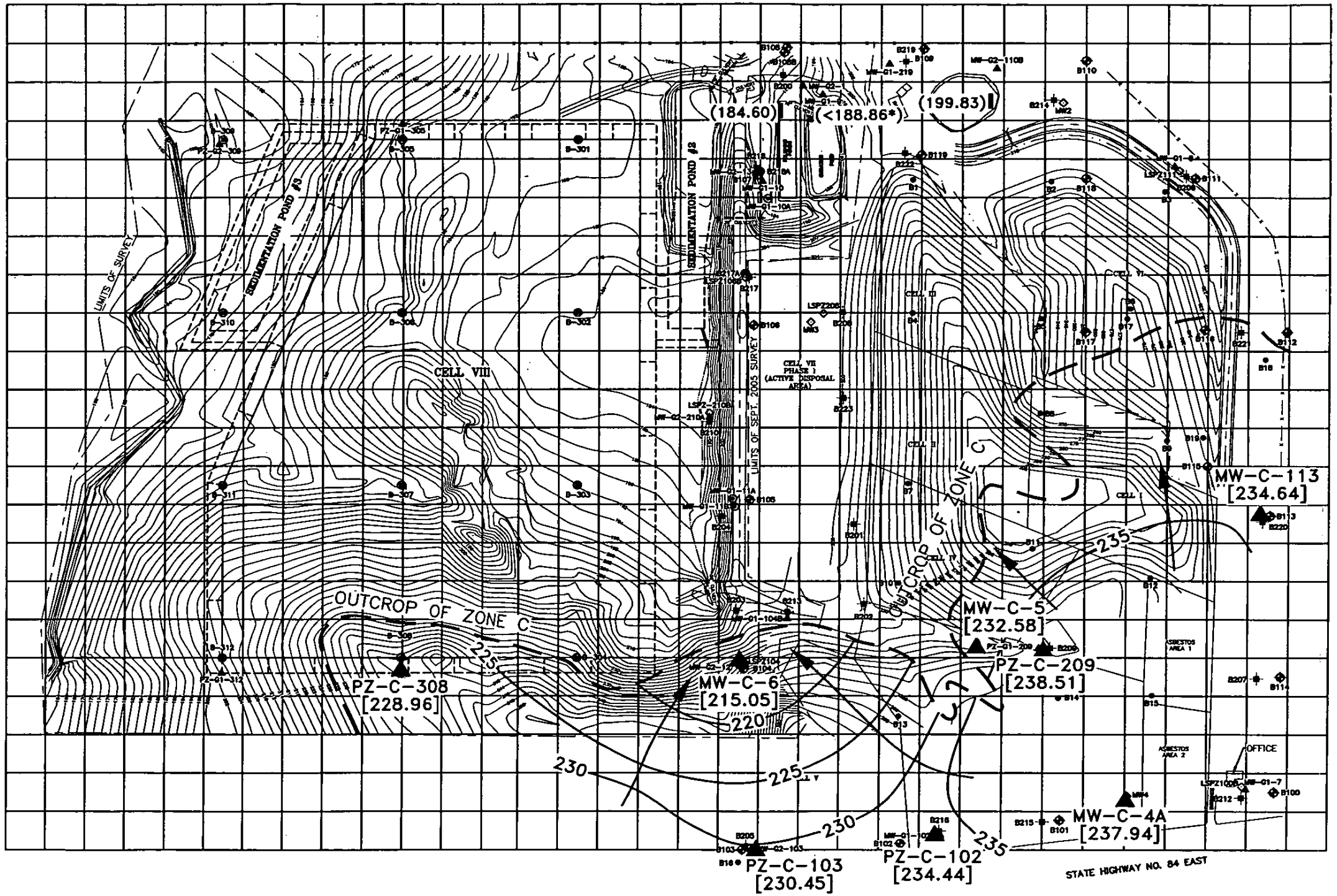
ISOMETRIC PROFILE FOR

Sheet



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [238.51] GROUNDWATER ELEVATION (FT. MSL)
- (199.83) POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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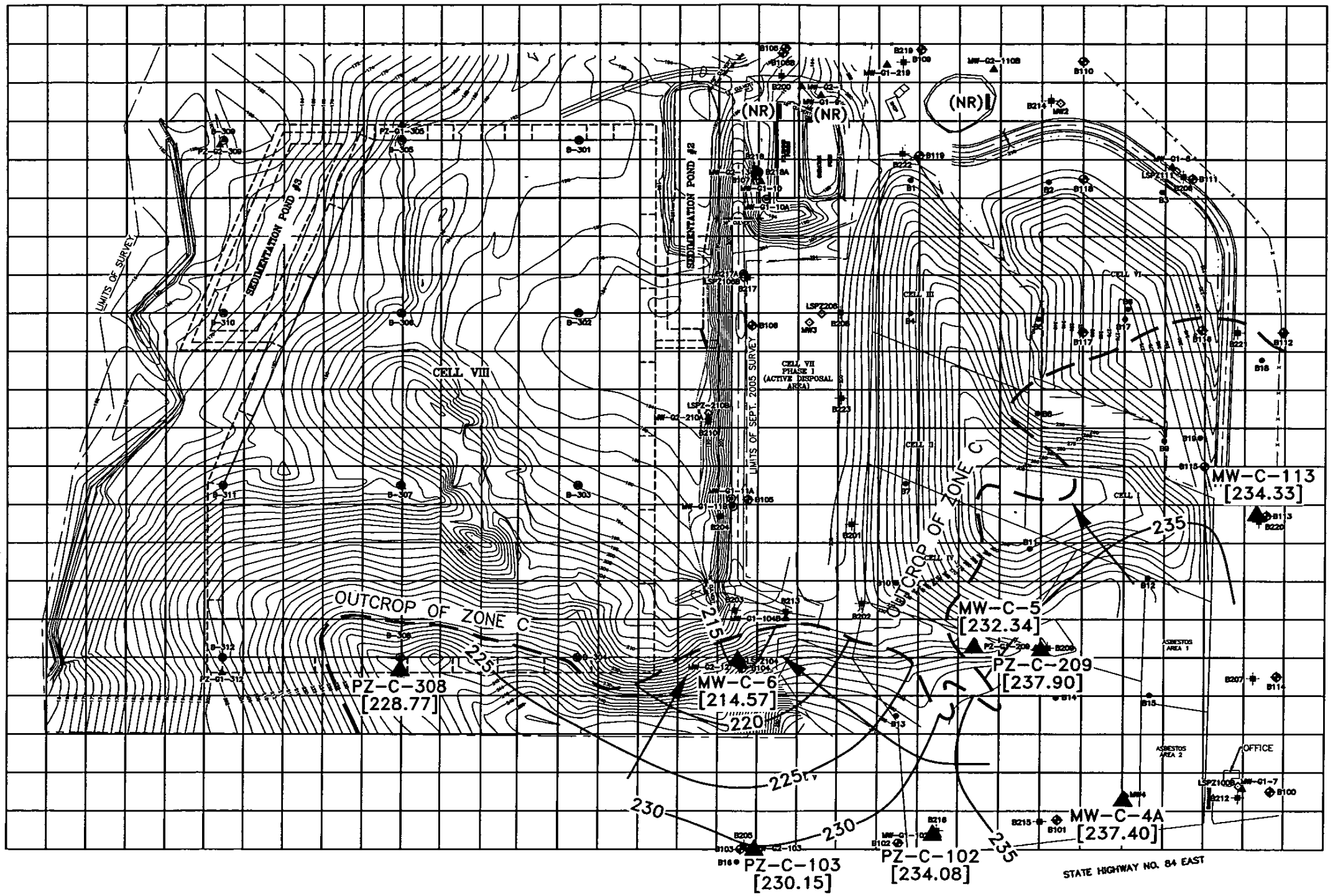
POTENTIOMETRIC MAP
ZONE C: 10/19/05

Sheet
JEI-S15



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [237.90] GROUNDWATER ELEVATION (FT. MSL)
- (199.83) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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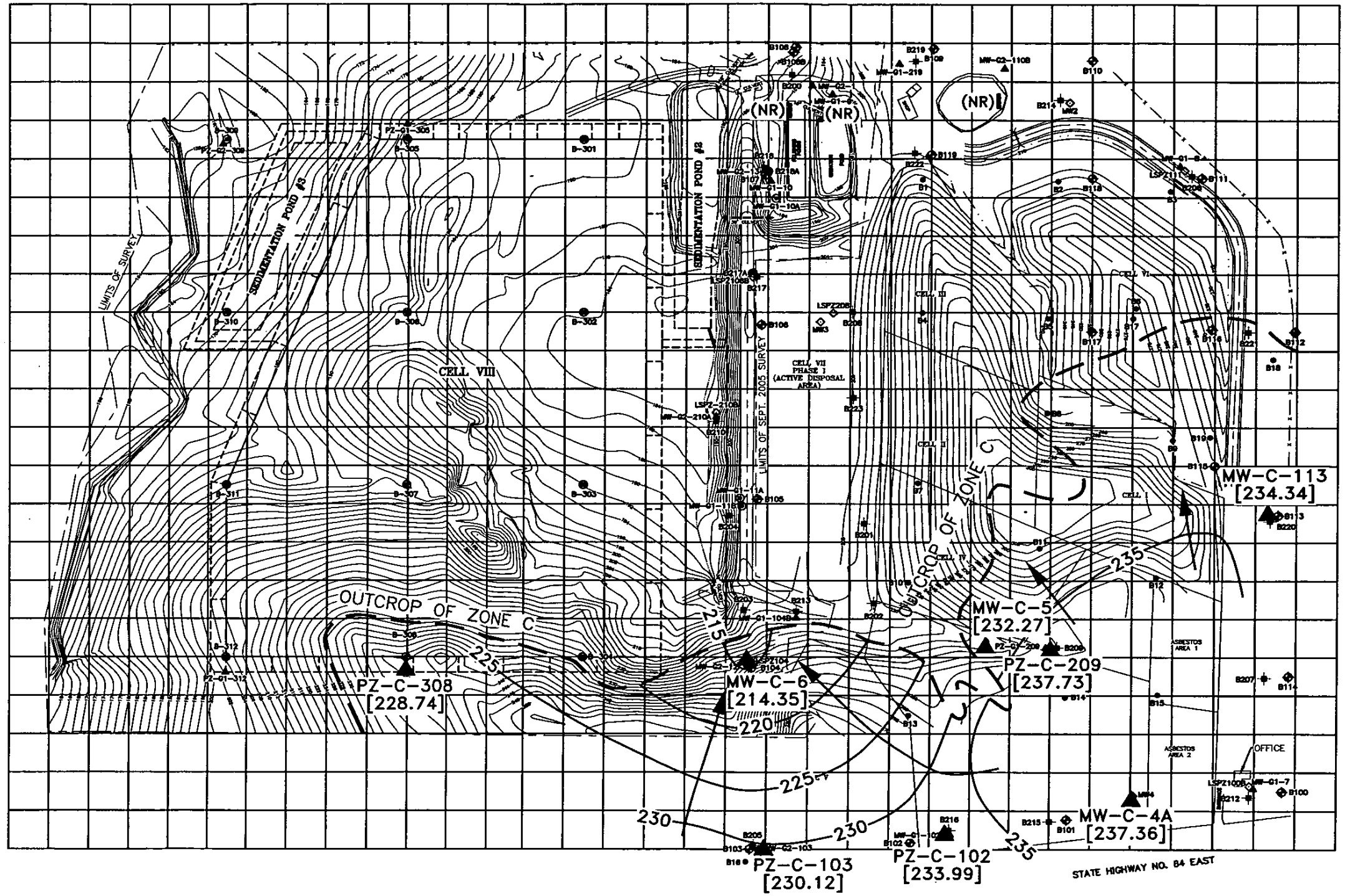
POTENTIOMETRIC MAP
ZONE C: 11/17/05

Sheet
JEI-S16



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [237.73] GROUNDWATER ELEVATION (FT. MSL)
- (199.83) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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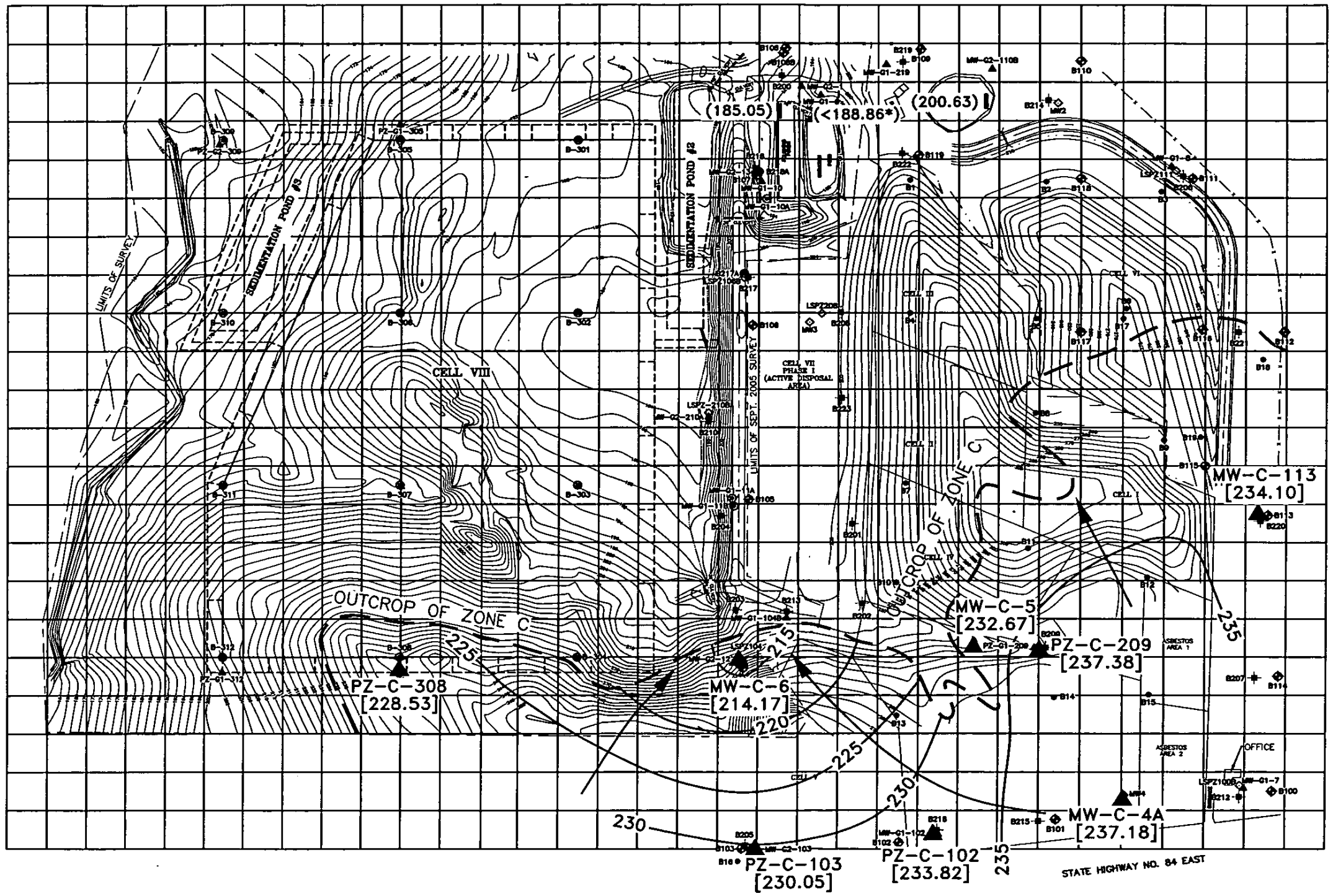
POTENTIOMETRIC MAP
ZONE C: 12/09/05

Sheet
JEI-S17



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.10] GROUNDWATER ELEVATION (FT. MSL)
- (200.63) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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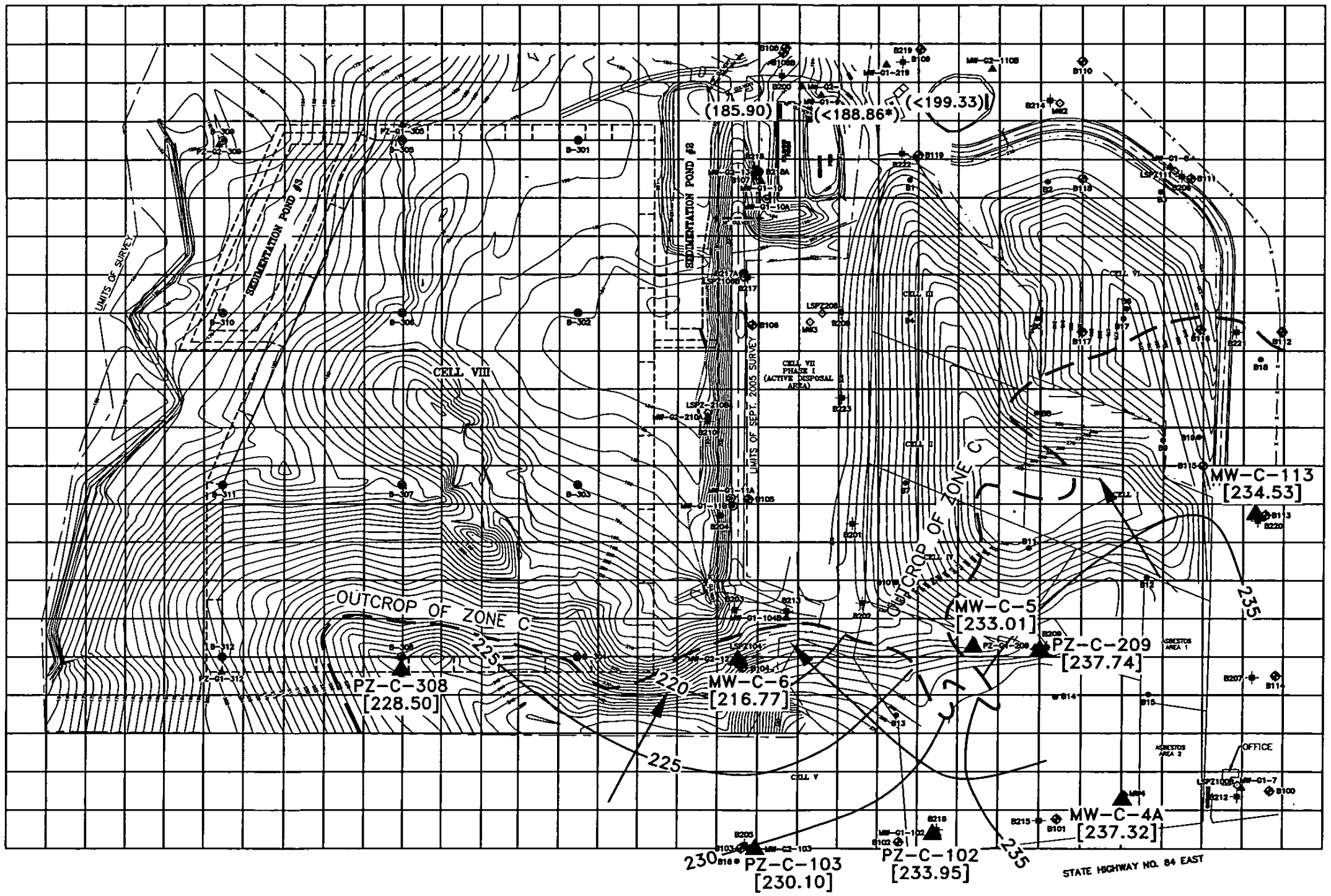
POTENTIOMETRIC MAP
ZONE C: 01/25/06

Sheet
JEI-S18



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- —250— TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.53] GROUNDWATER ELEVATION (FT. MSL)
- (185.90) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- —225— GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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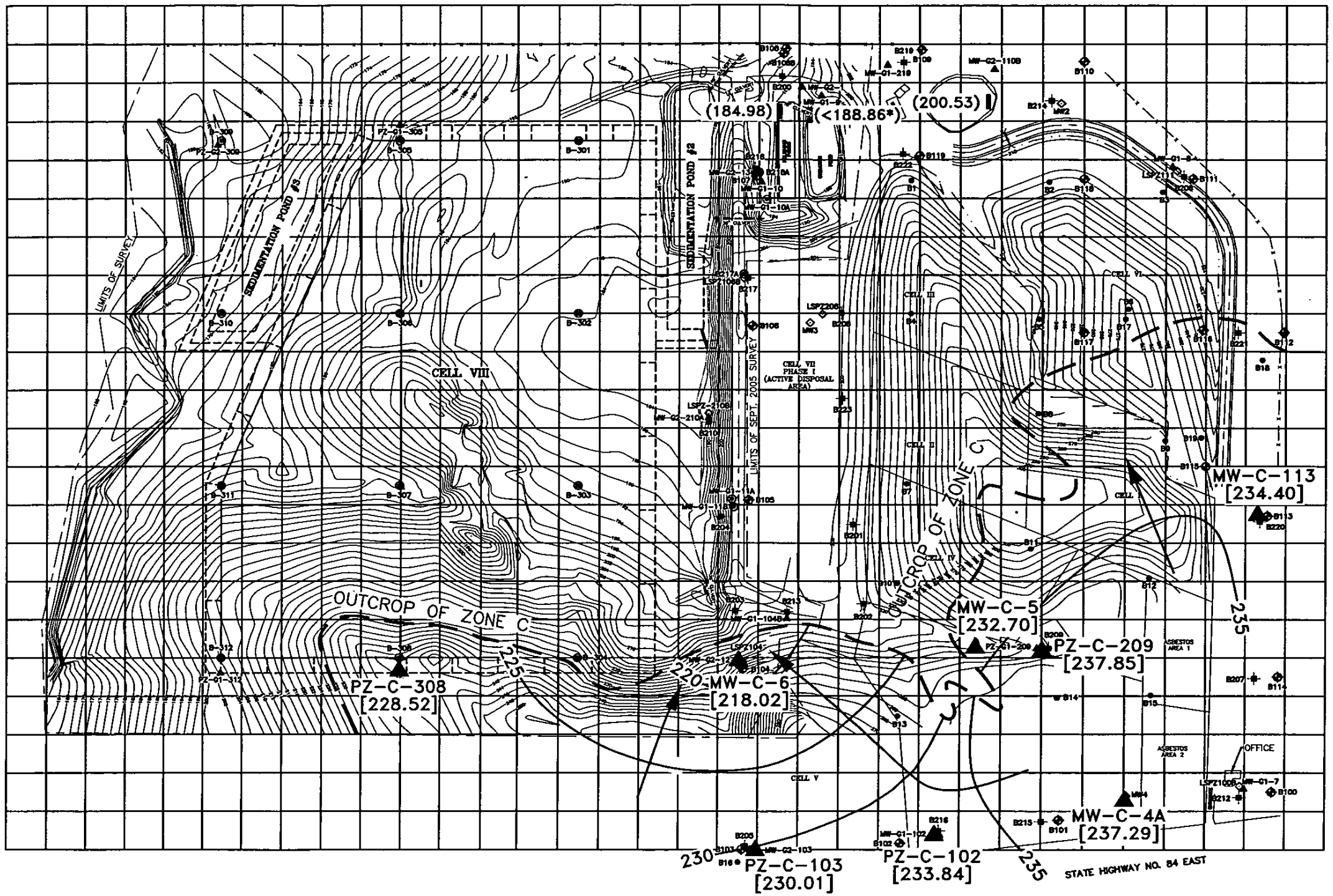
POTENTIOMETRIC MAP
ZONE C: 02/27/06

Sheet
JEI-S19



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.40] GROUNDWATER ELEVATION (FT. MSL)
- (184.98) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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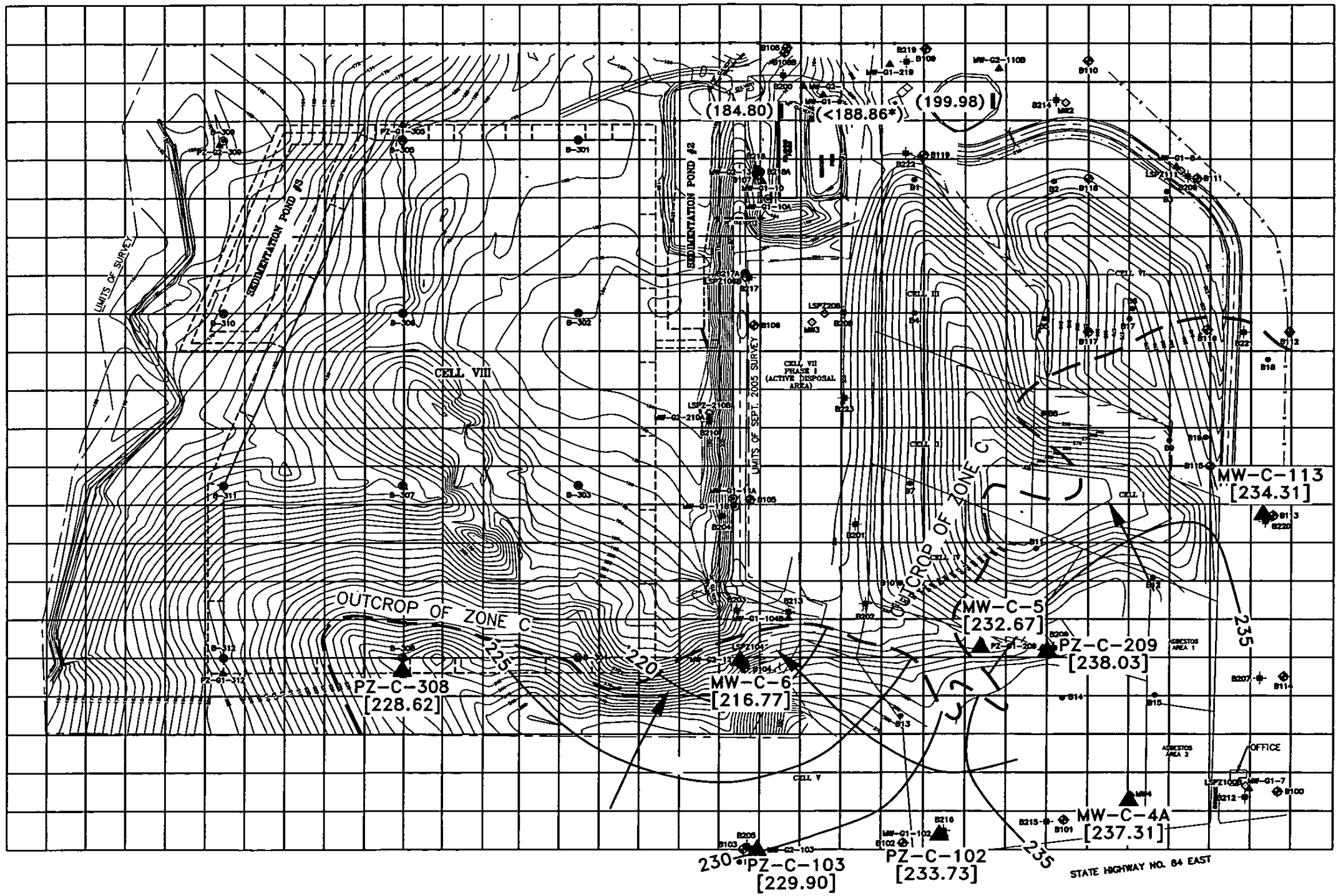
POTENTIOMETRIC MAP
ZONE C: 03/29/06

Sheet
JEI-S20



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.31] GROUNDWATER ELEVATION (FT. MSL)
- (184.80) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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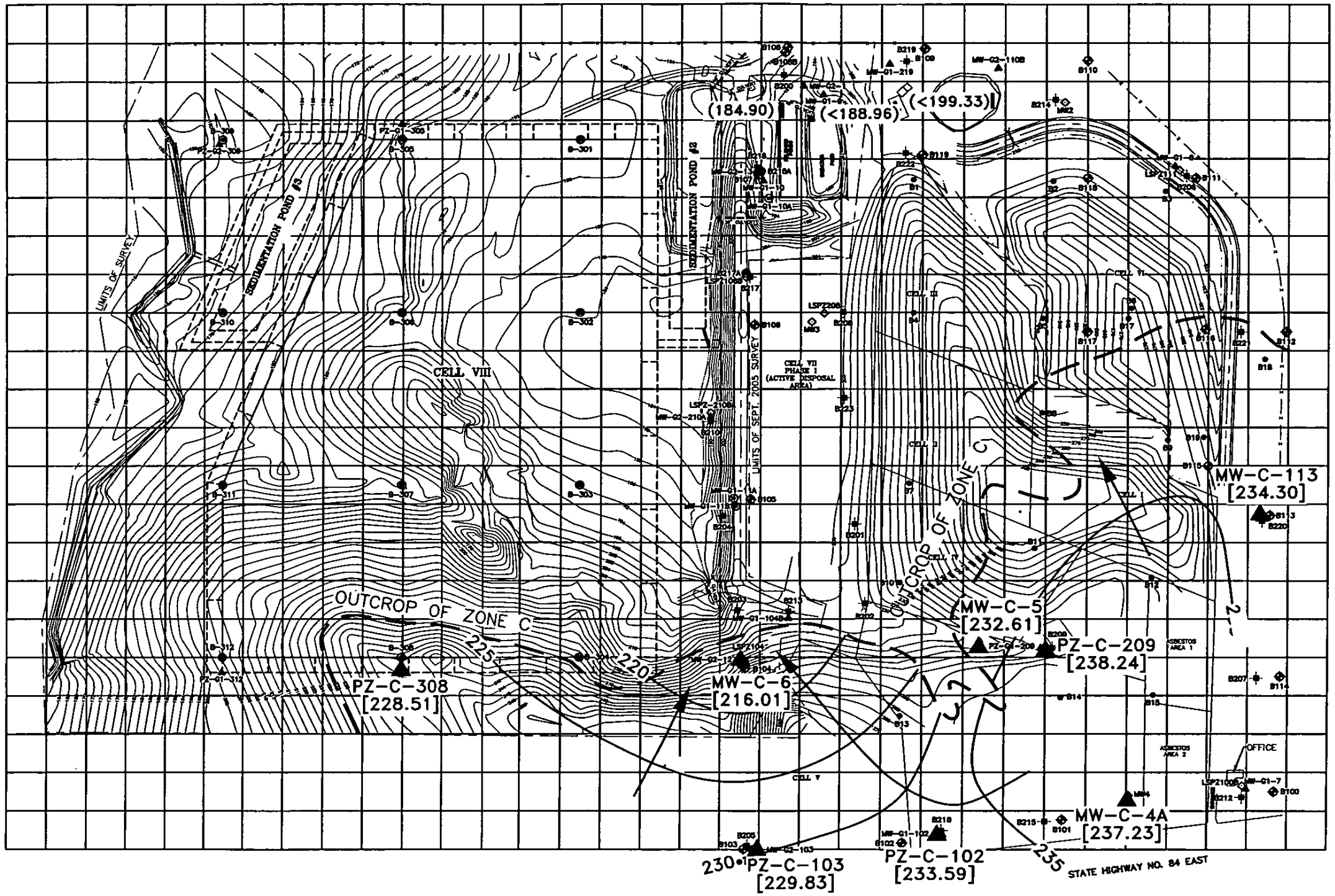
POTENTIOMETRIC MAP
ZONE C: 04/26/06

Sheet
JEI-S21



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.30] GROUNDWATER ELEVATION (FT. MSL)
- (184.90) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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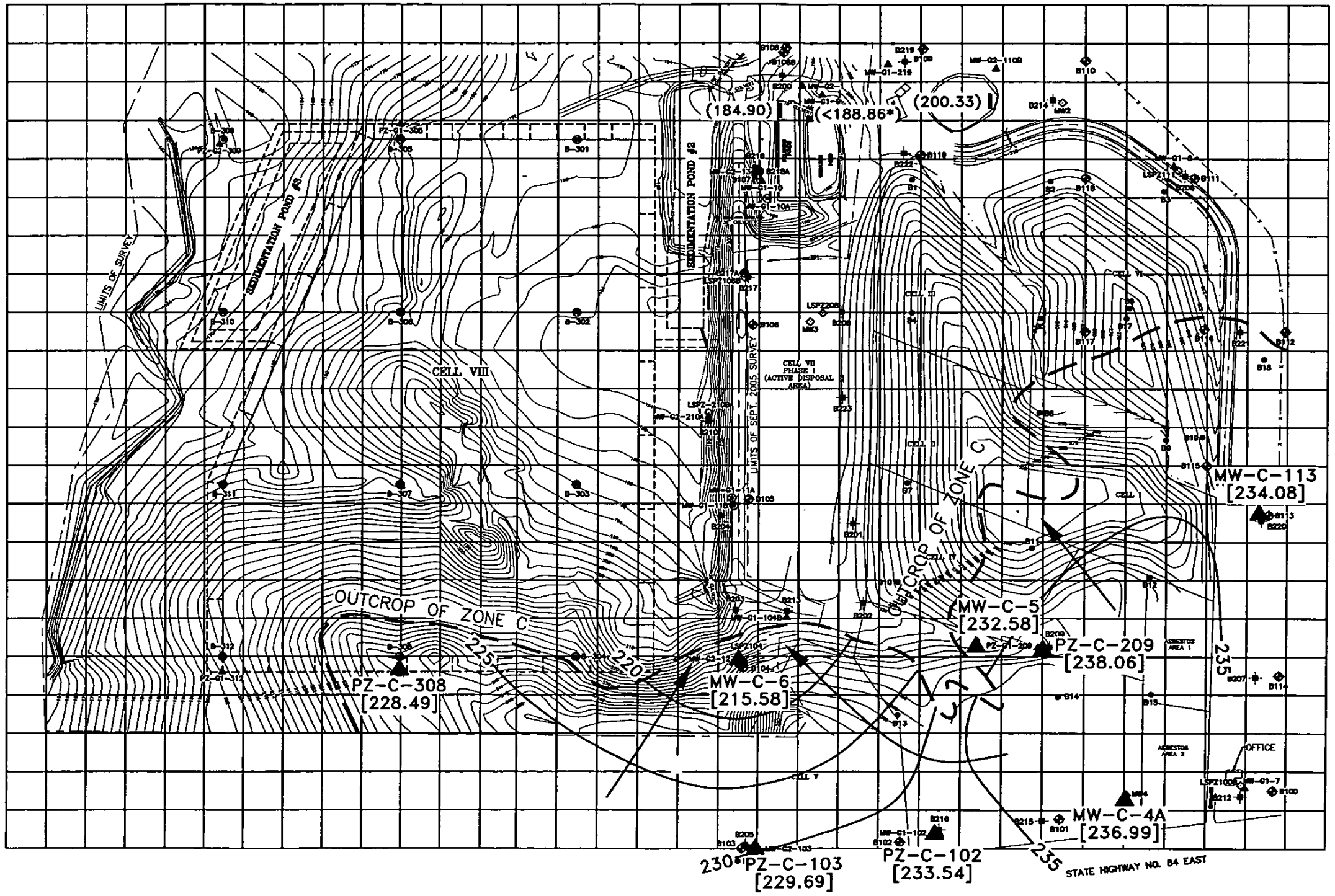
POTENTIOMETRIC MAP
ZONE C: 06/01/06

Sheet
JEI-S22



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.08] GROUNDWATER ELEVATION (FT. MSL)
- (184.90) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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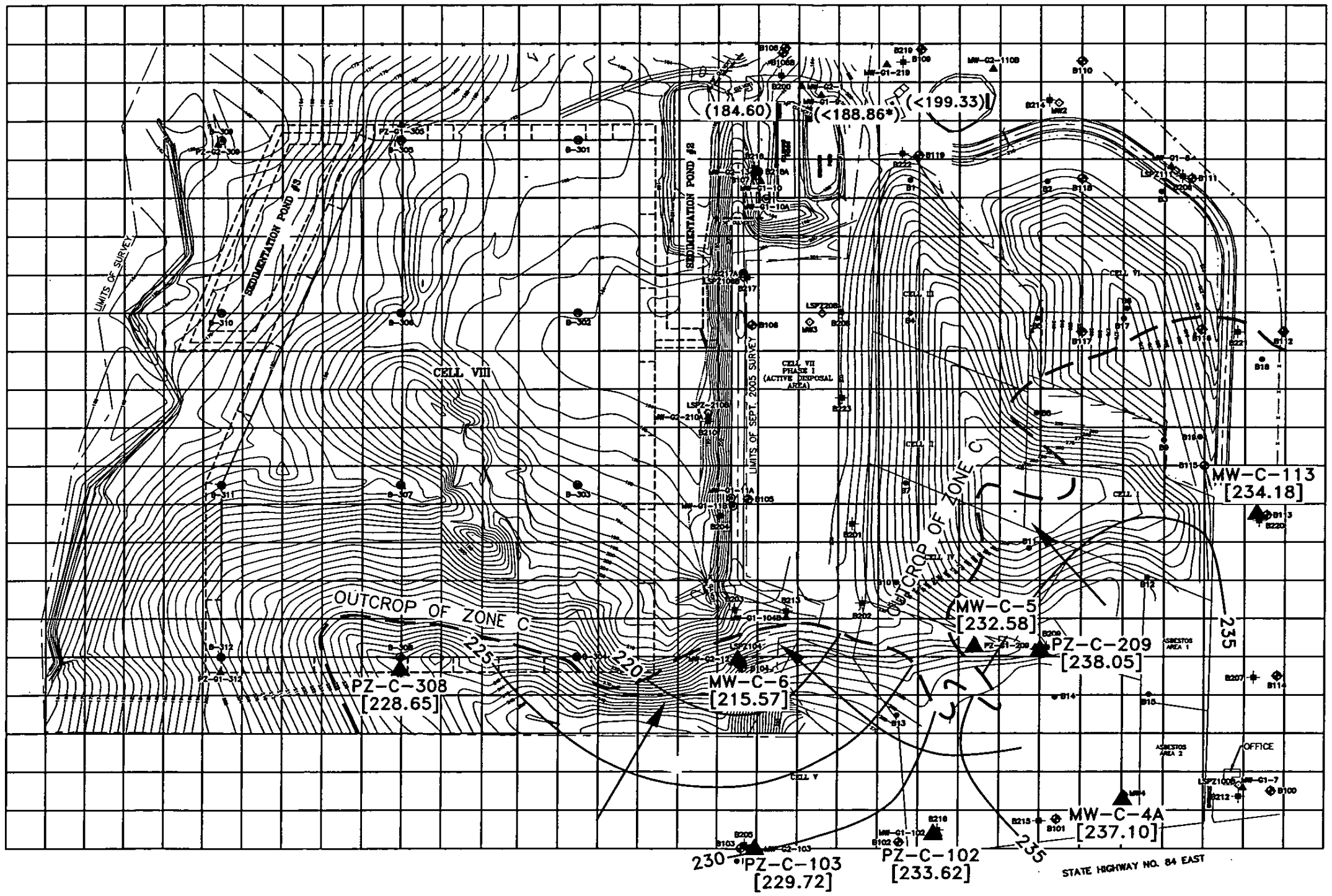
POTENTIOMETRIC MAP
ZONE C: 06/28/06

Sheet
JEI-S23



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.18] GROUNDWATER ELEVATION (FT. MSL)
- (184.60) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
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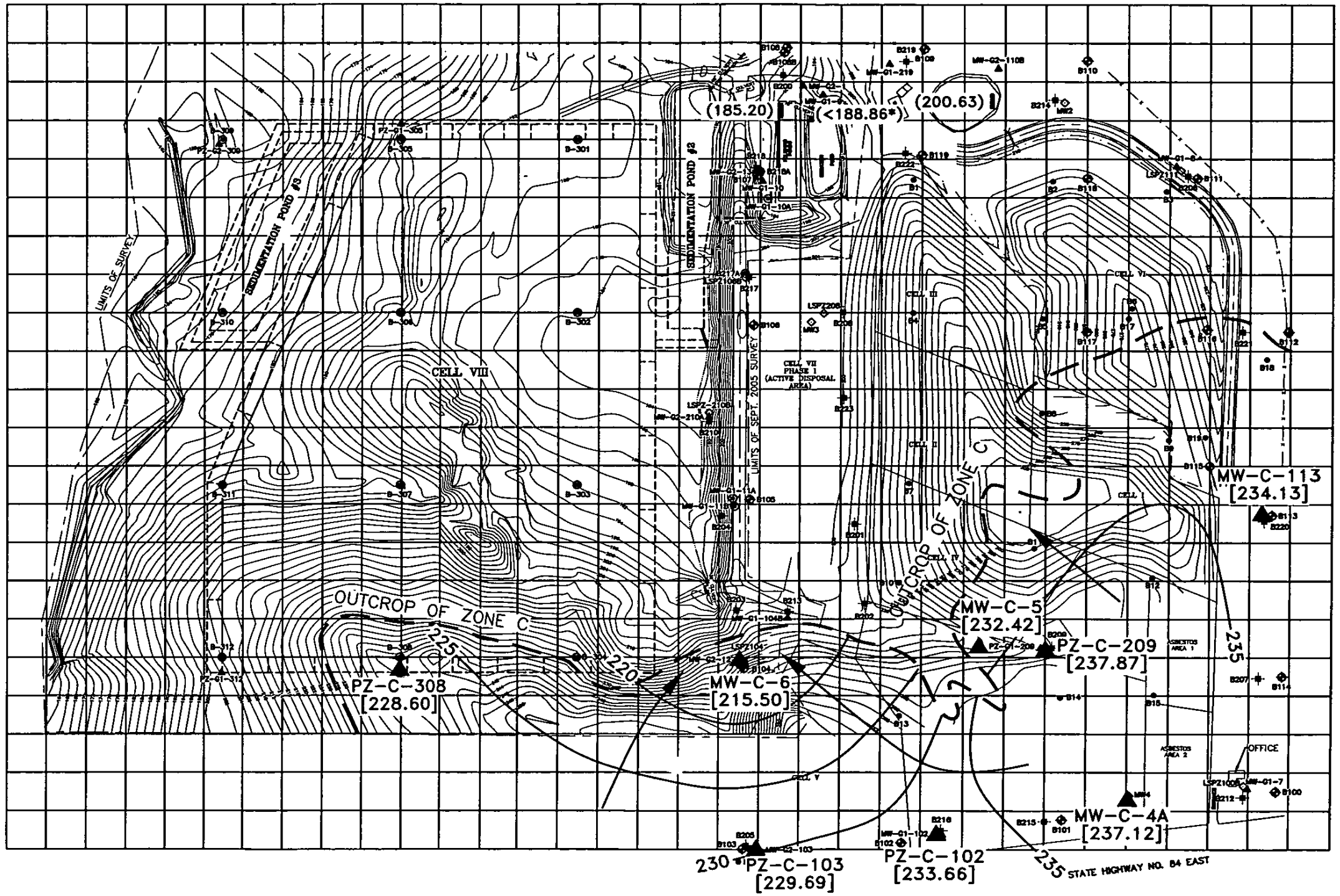
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE C: 07/26/06

Sheet
JEI-S24



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [234.13] GROUNDWATER ELEVATION (FT. MSL)
- (185.20) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
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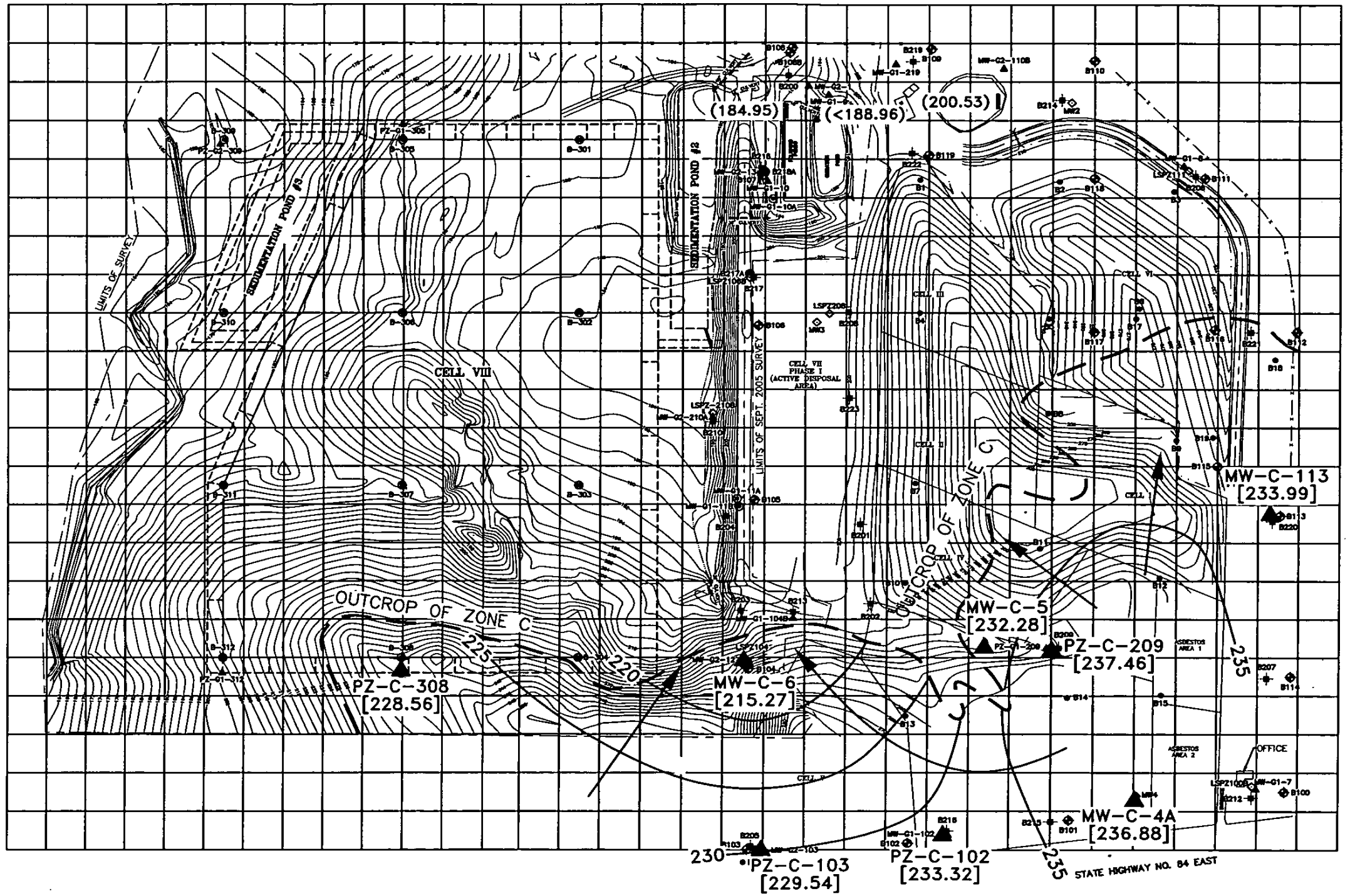
(318) 226-8444

POTENTIOMETRIC MAP
ZONE C: 08/25/06

Sheet
JEI-S25



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C
- STAFF GAUGE
- [233.99] GROUNDWATER ELEVATION (FT. MSL)
- (184.95) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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705 Milam St., Ste. 100, Shreveport, LA
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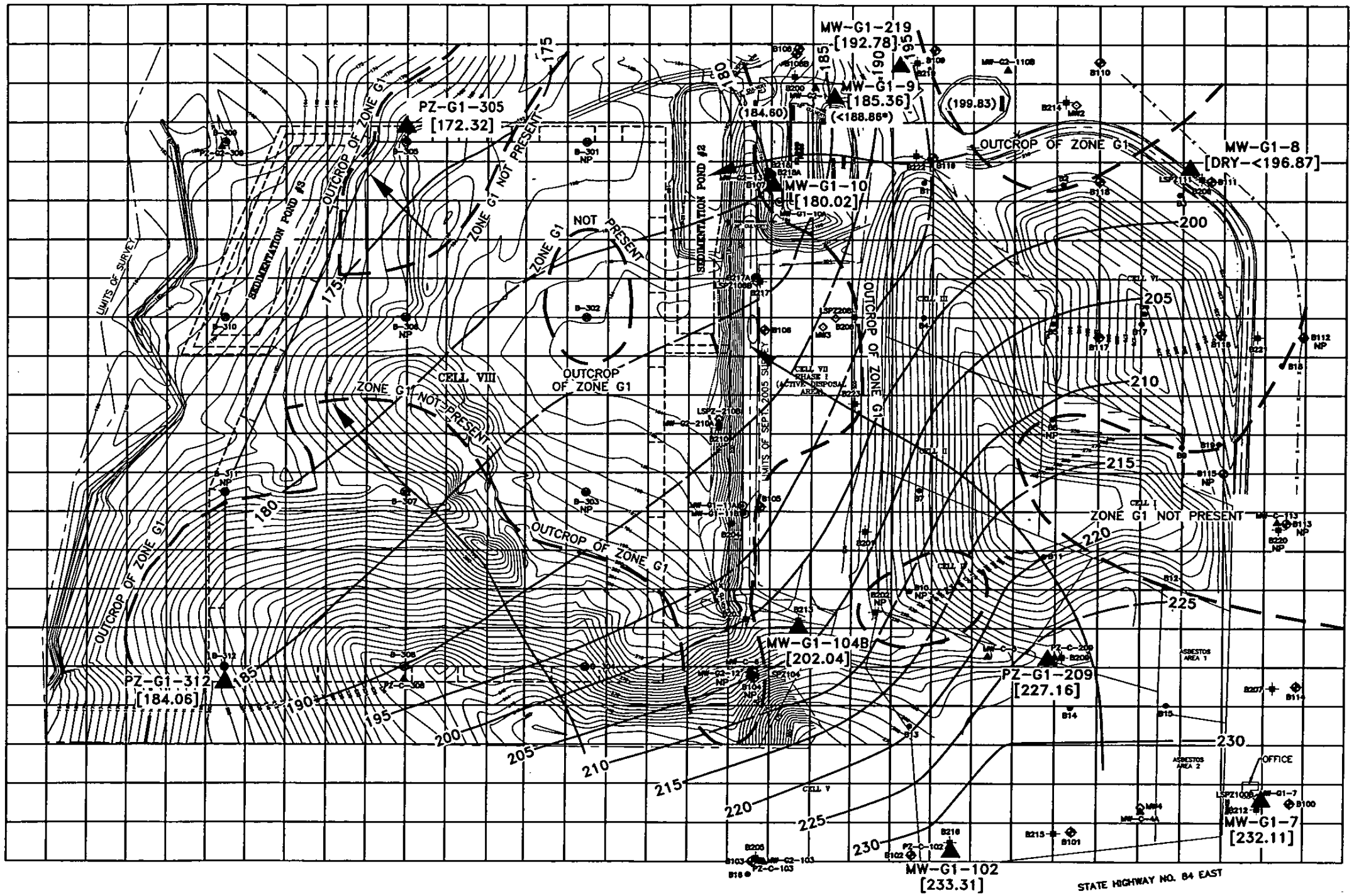
POTENTIOMETRIC MAP
ZONE C: 09/28/06

Sheet
JEI-S26



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [180.02] — GROUNDWATER ELEVATION (FT. MSL)
- (199.83) — POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Bolar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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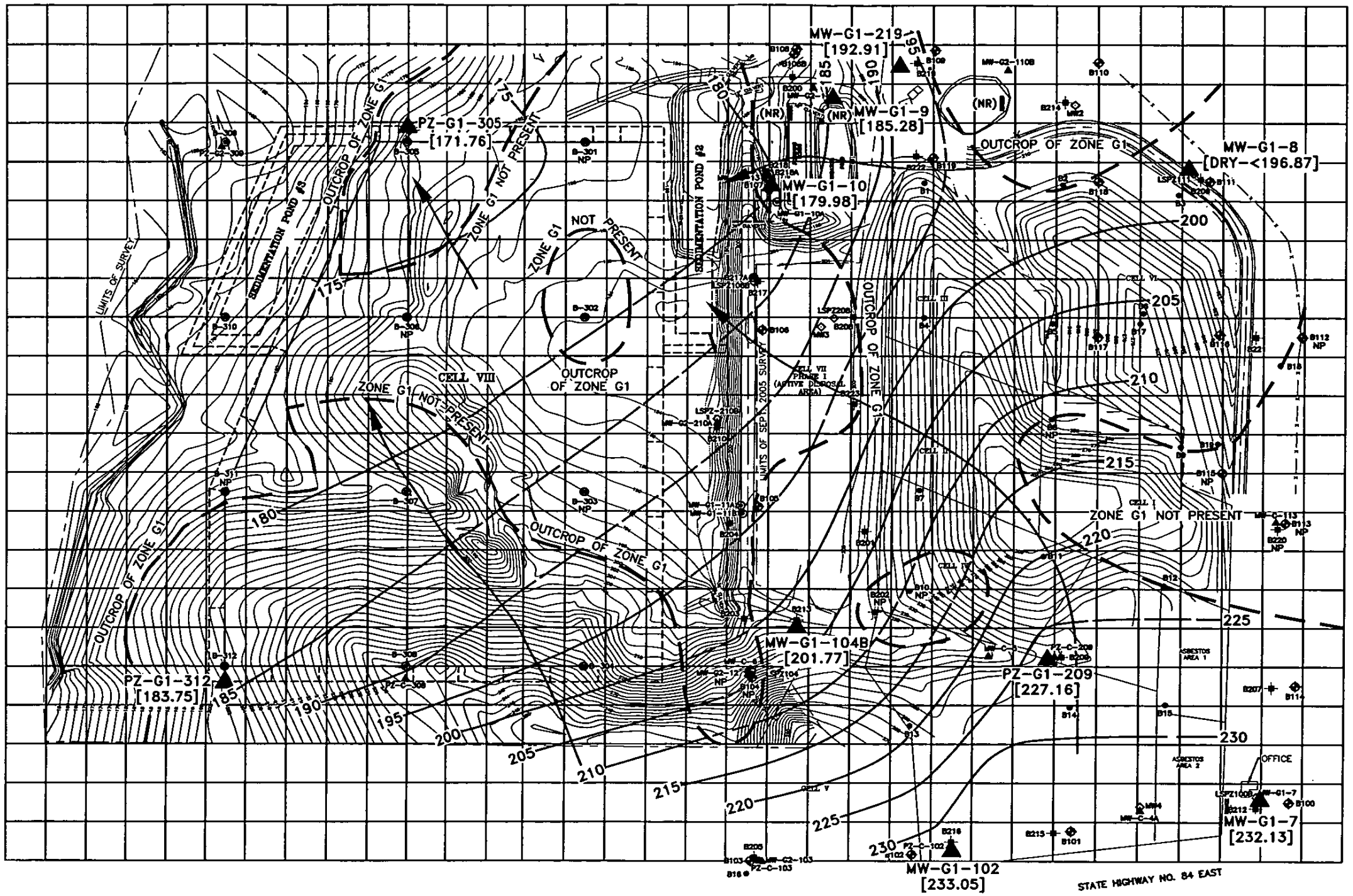
POTENTIOMETRIC MAP
ZONE G1: 10/19/05

Sheet
JEI-S27



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- —250— TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [180.02] GROUNDWATER ELEVATION (FT. MSL)
- (199.83) POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- —225— GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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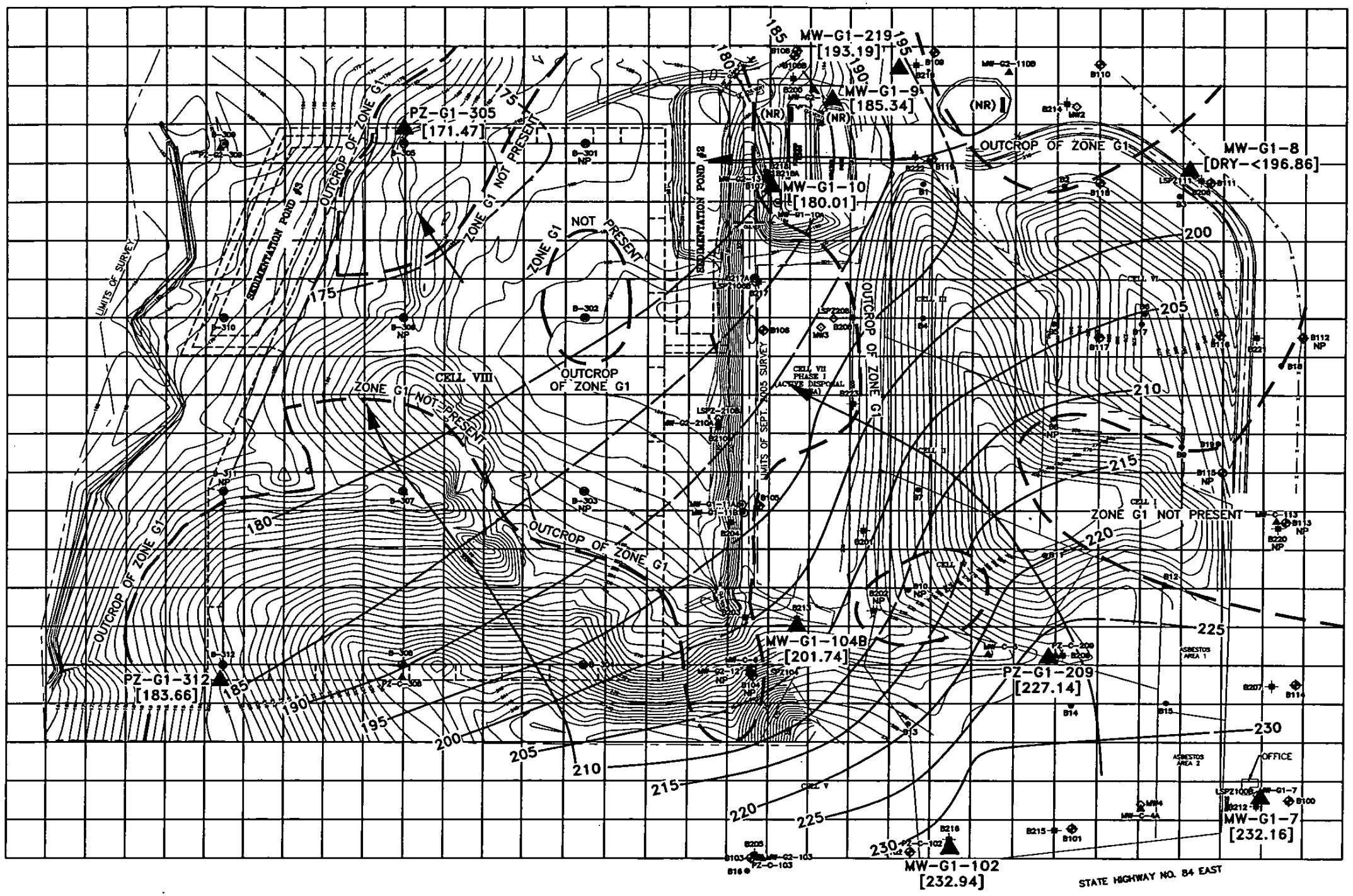
POTENTIOMETRIC MAP
ZONE G1: 11/17/05

Sheet
JEI-S28



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [180.02] — GROUNDWATER ELEVATION (FT. MSL)
- (199.83) — POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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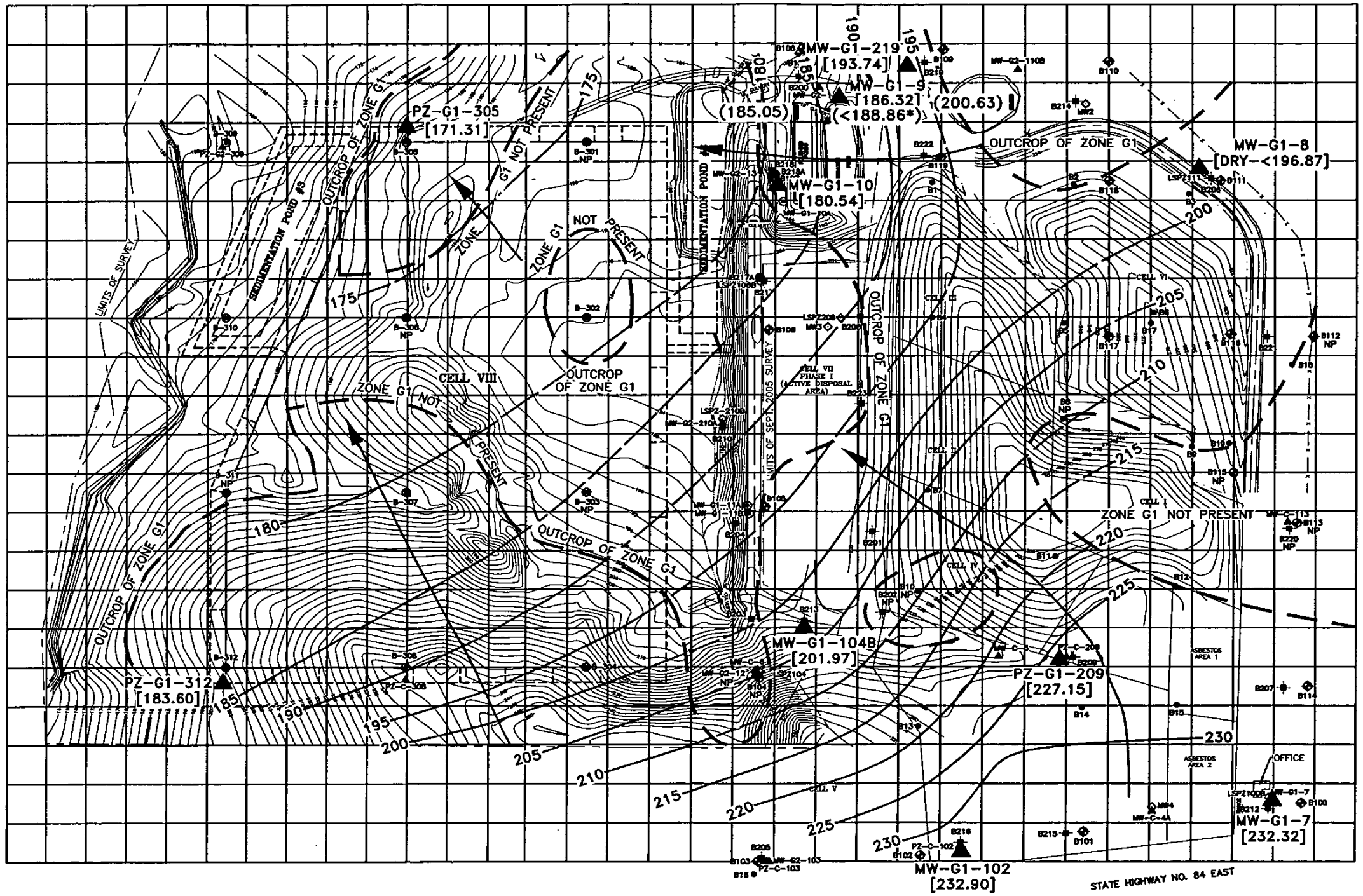
POTENTIOMETRIC MAP
ZONE G1: 12/09/05

Sheet
JEI-S29



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [180.54] — GROUNDWATER ELEVATION (FT. MSL)
- (200.63) — POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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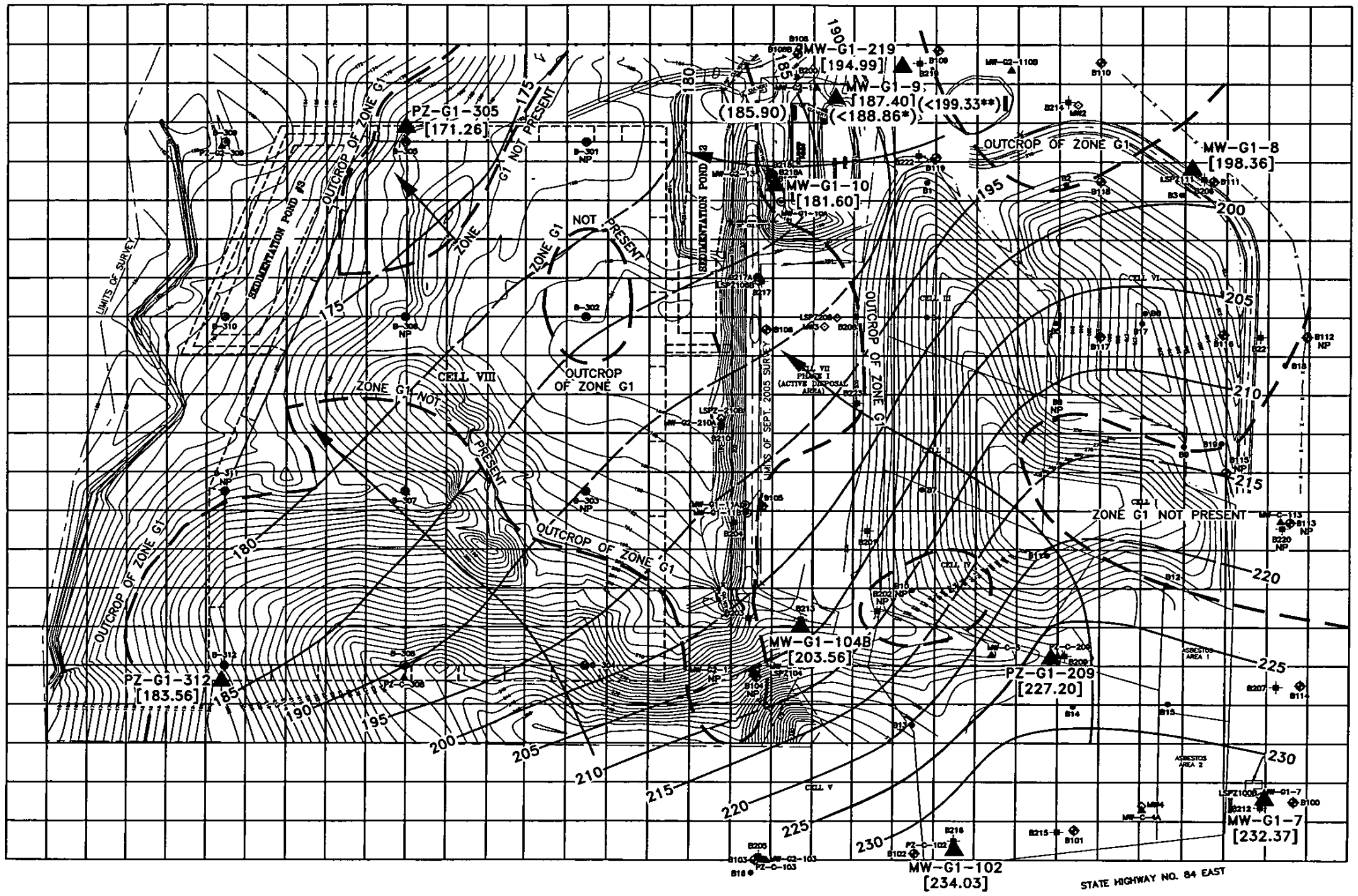
POTENTIOMETRIC MAP
ZONE G1: 01/25/06

Sheet
JEI-S30



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
——250——	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
— — —	OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
▮	STAFF GAUGE
[180.54]	GROUNDWATER ELEVATION (FT. MSL)
(200.63)	POND SURFACE WATER ELEVATION (FT. MSL)
◄——	GROUNDWATER FLOW DIRECTION
——225——	GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - - -	FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.
** Water level in Sedimentation Pond #1 was below bottom of staff gauge.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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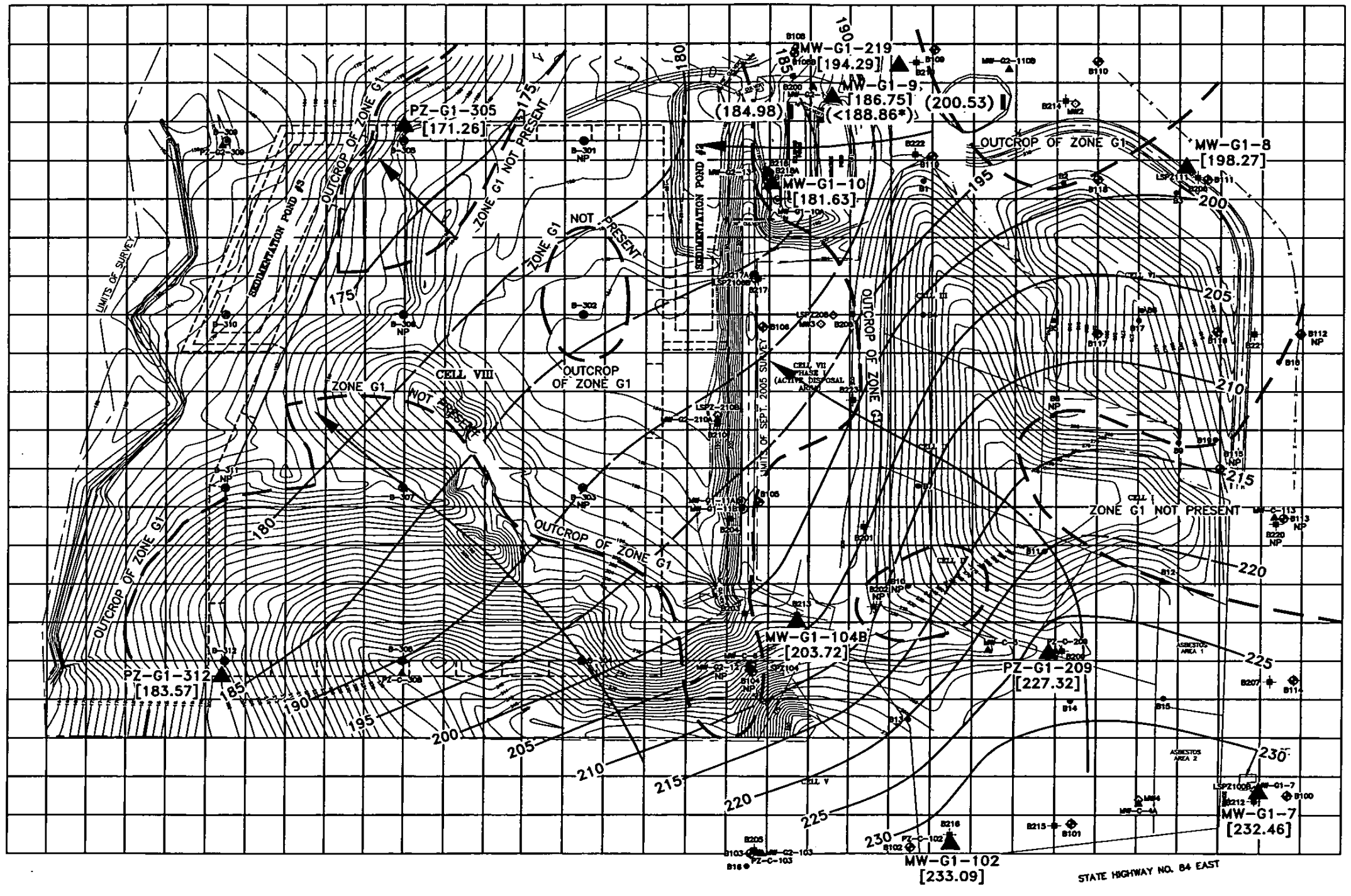
POTENTIOMETRIC MAP
ZONE G1: 02/27/06

Sheet
JEI-S31



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- ——250—— TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- — — — OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [198.27] GROUNDWATER ELEVATION (FT. MSL)
- (200.53) POND SURFACE WATER ELEVATION (FT. MSL)
- ← GROUNDWATER FLOW DIRECTION
- ——225—— GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - - - FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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2712 Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury
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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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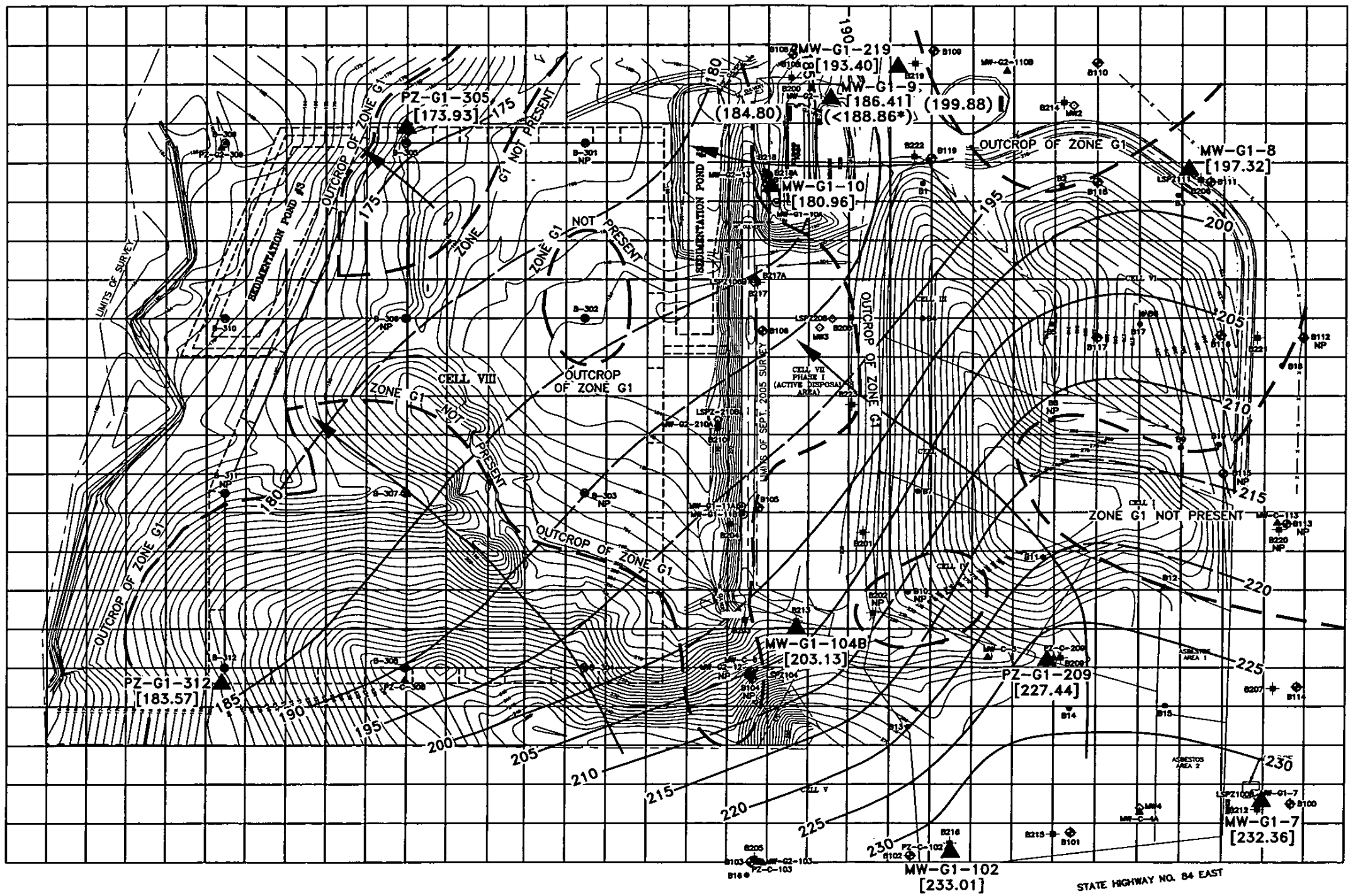
POTENTIOMETRIC MAP
ZONE G1: 03/29/06

Sheet
JEI-S32



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
250	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
— — —	OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
▮	STAFF GAUGE
[197.32]	GROUNDWATER ELEVATION (FT. MSL)
(199.88)	POND SURFACE WATER ELEVATION (FT. MSL)
←	GROUNDWATER FLOW DIRECTION
225	GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - -	FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

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Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
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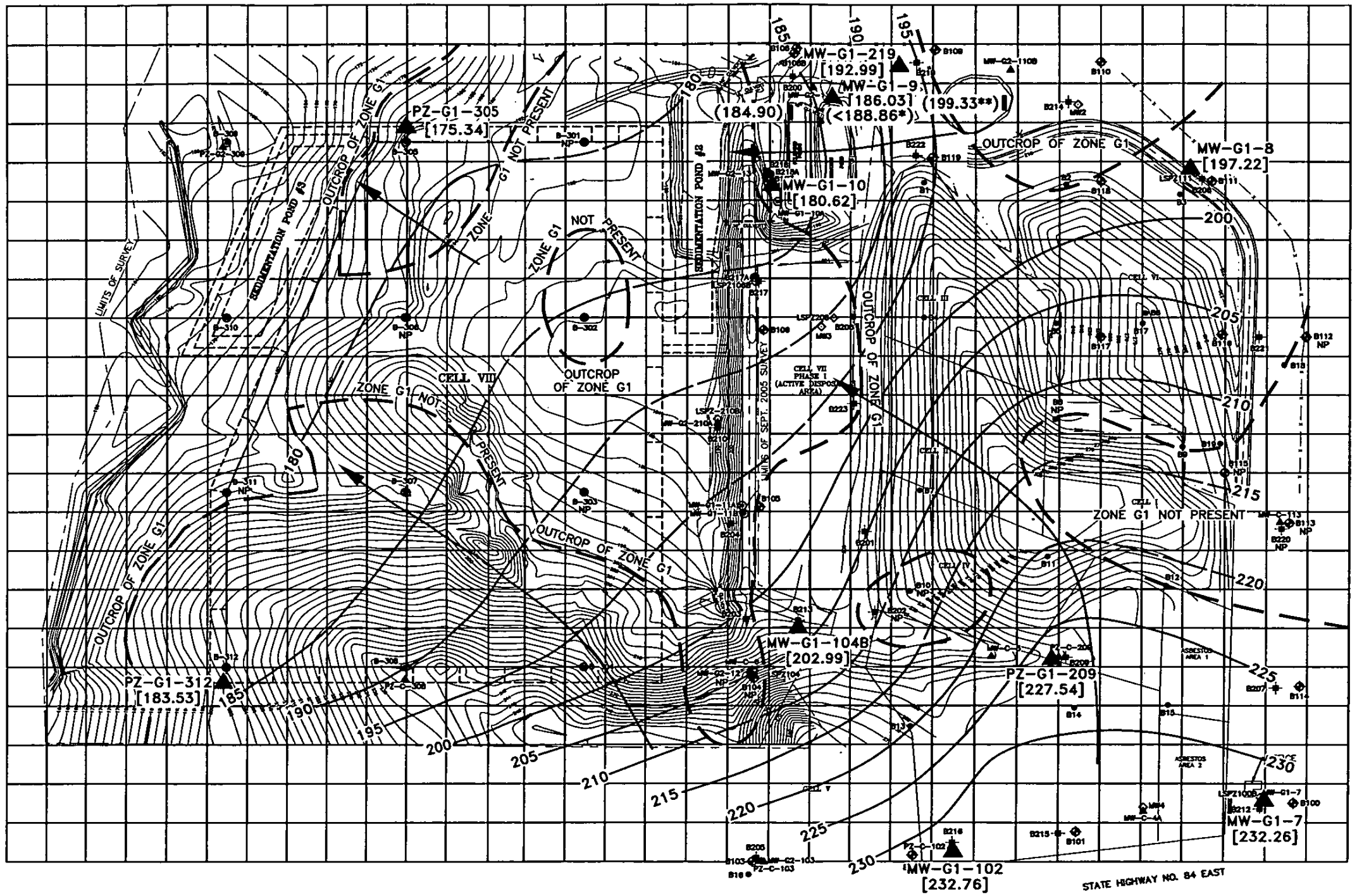
POTENTIOMETRIC MAP
ZONE G1: 04/26/06

Sheet
JEI-S33



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [197.22] — GROUNDWATER ELEVATION (FT. MSL)
- (184.90) — POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

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JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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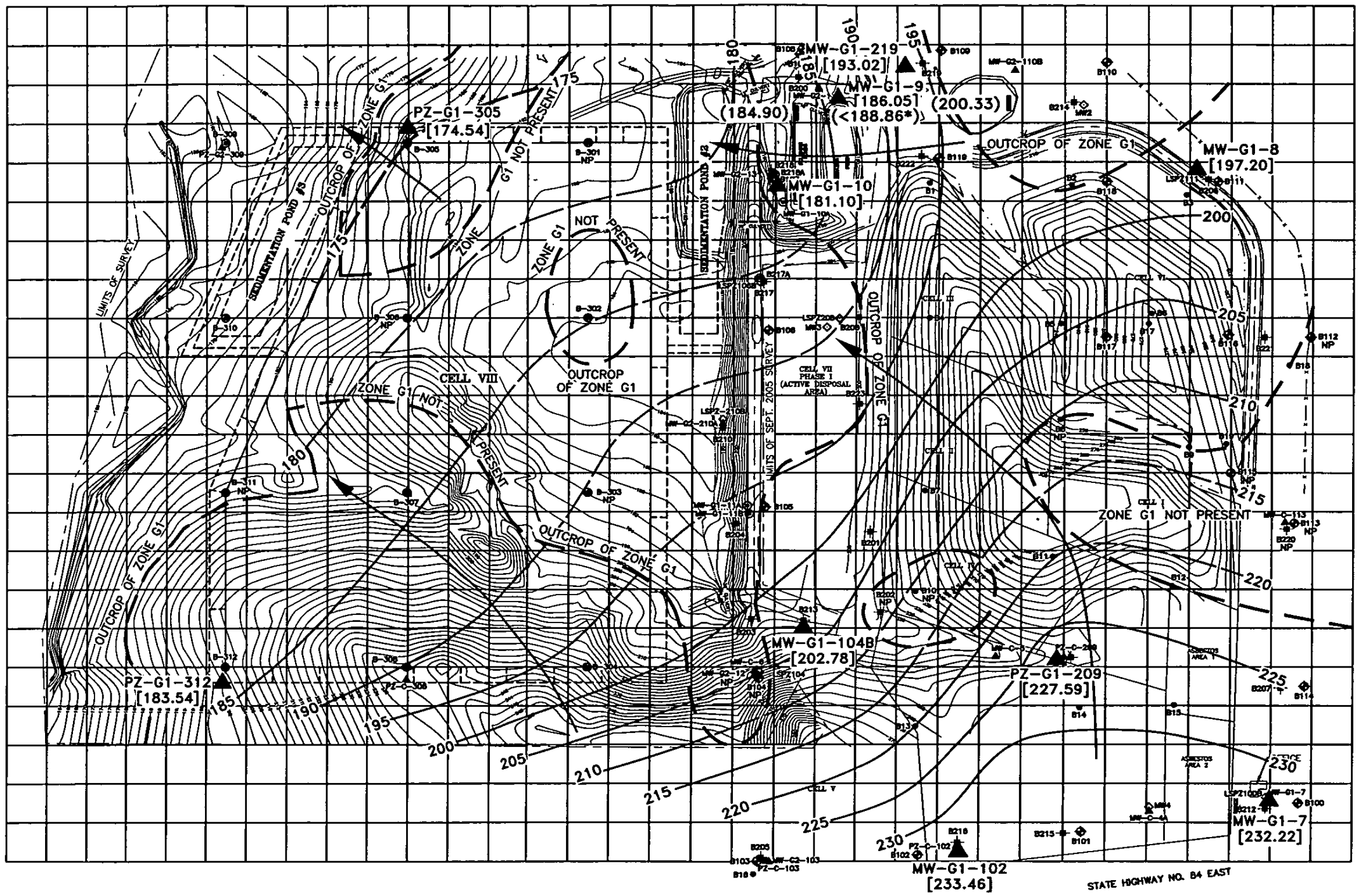
POTENTIOMETRIC MAP
ZONE G1: 06/01/06

Sheet
JEI-S34



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [197.20] GROUNDWATER ELEVATION (FT. MSL)
- (184.90) POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

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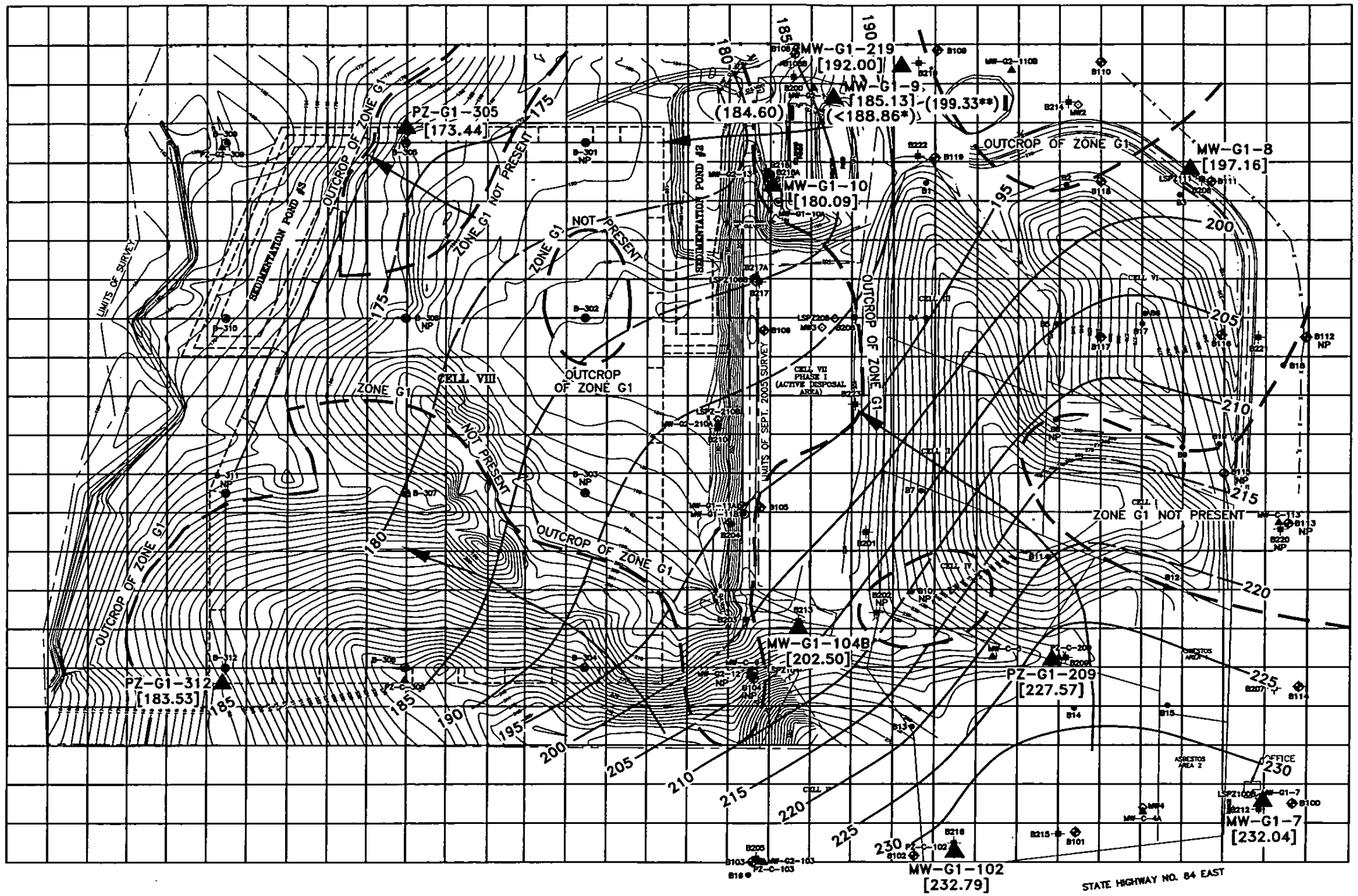
JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G1: 06/28/06

Sheet
JEI-S35



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [197.16] GROUNDWATER ELEVATION (FT. MSL)
- (184.60) POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.
** Water level in Sedimentation Pond #1 was below bottom of staff gauge.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

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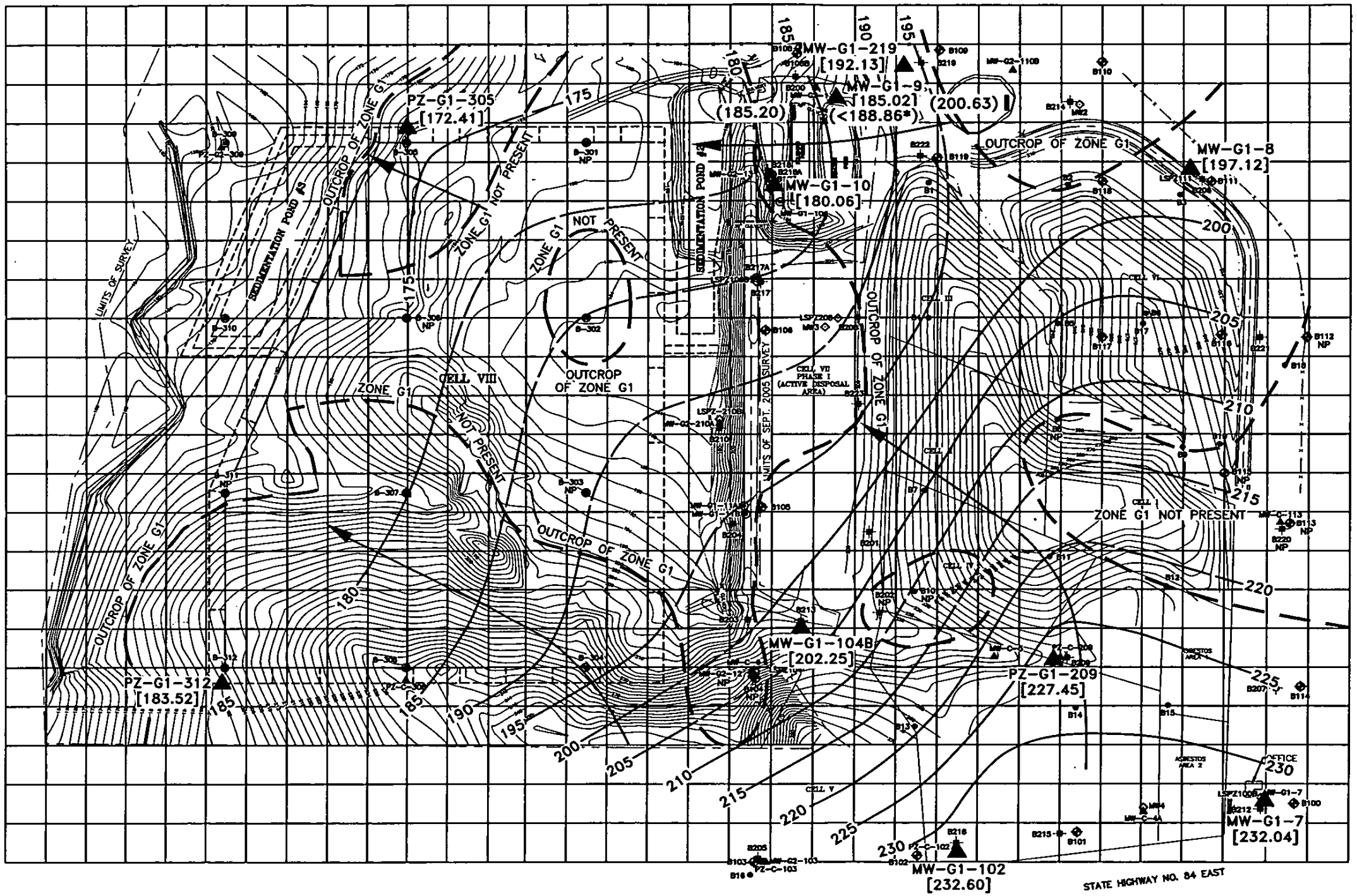
JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G1: 07/26/06

Sheet
JEI-S36



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- —250— TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- — — — OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- ▮ STAFF GAUGE
- [197.12] GROUNDWATER ELEVATION (FT. MSL)
- (185.20) POND SURFACE WATER ELEVATION (FT. MSL)
- ◄ GROUNDWATER FLOW DIRECTION
- —225— GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - - FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
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N

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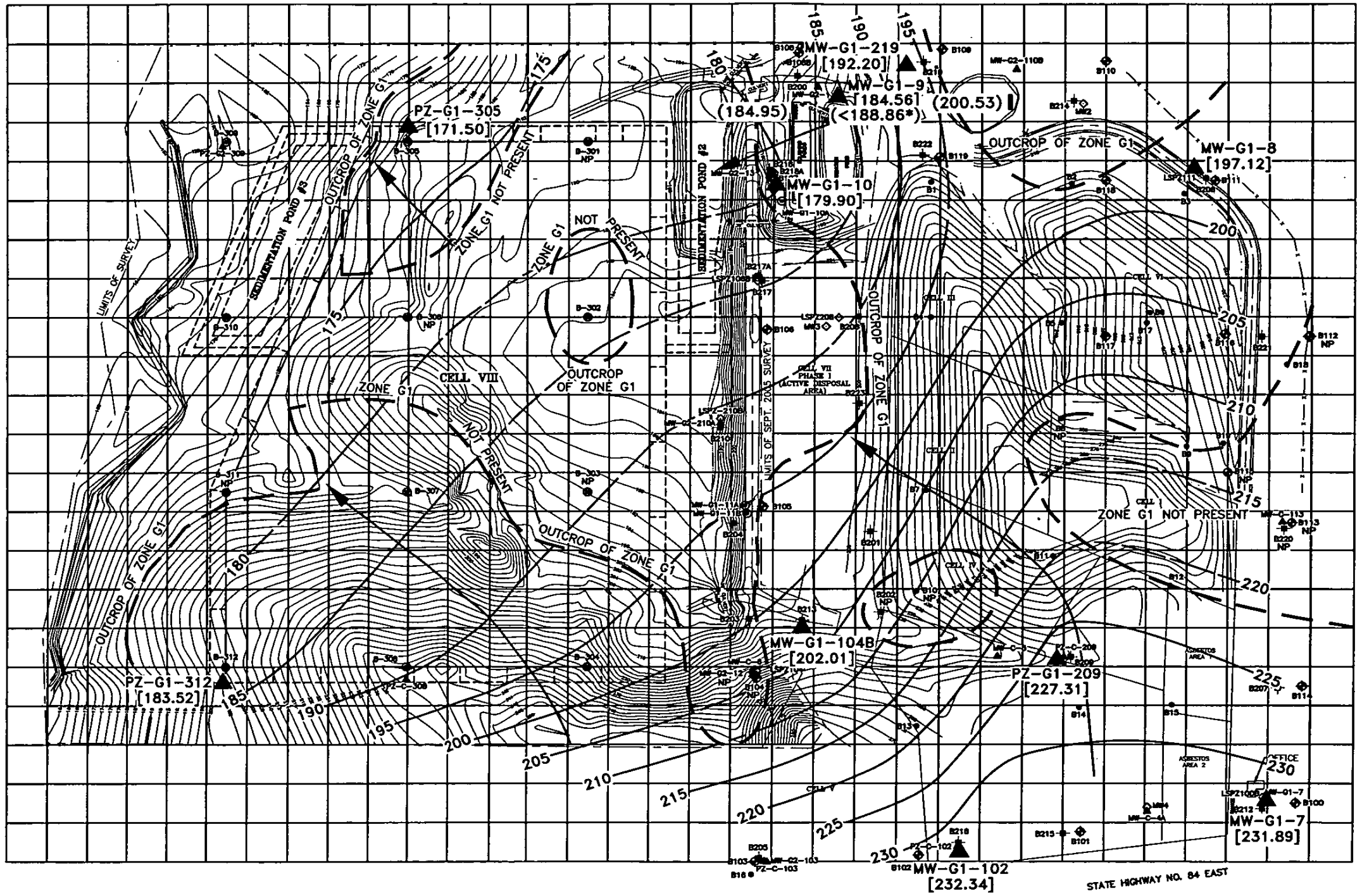
JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G1: 08/25/06

Sheet
JEI-S37



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- STAFF GAUGE
- [197.12] — GROUNDWATER ELEVATION (FT. MSL)
- (184.95) — POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- 225 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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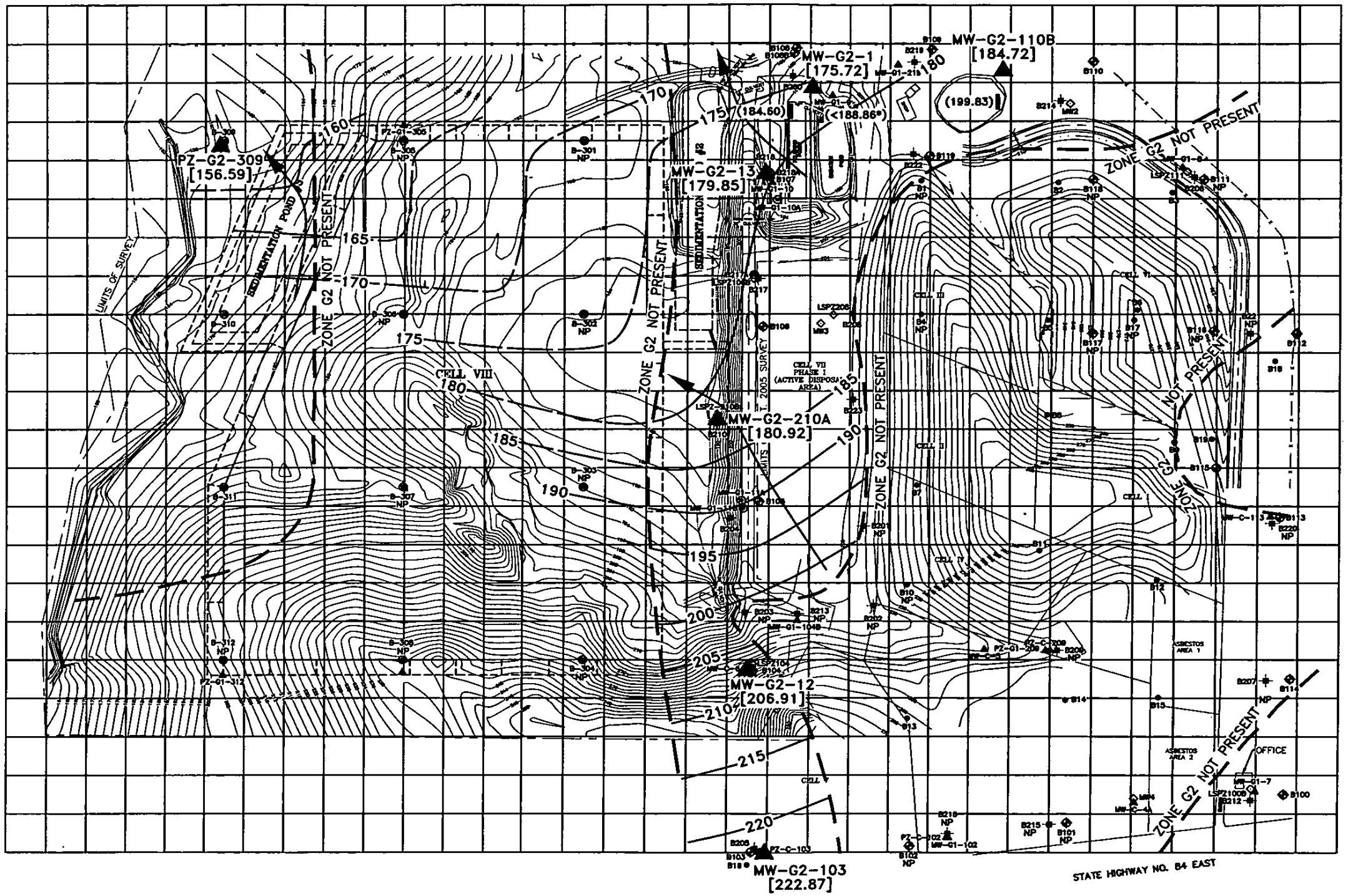
POTENTIOMETRIC MAP
ZONE G1: 09/28/06

Sheet
JEI-S38



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- —250— TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [180.92] GROUNDWATER ELEVATION (FT. MSL)
- (199.83) POND SURFACE WATER ELEVATION (FT. MSL)
- GROUNDWATER FLOW DIRECTION
- —185— GROUNDWATER ELEVATION CONTOUR (FT. MSL)

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

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2712 Highway 84 East
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DeSoto Parish Police Jury
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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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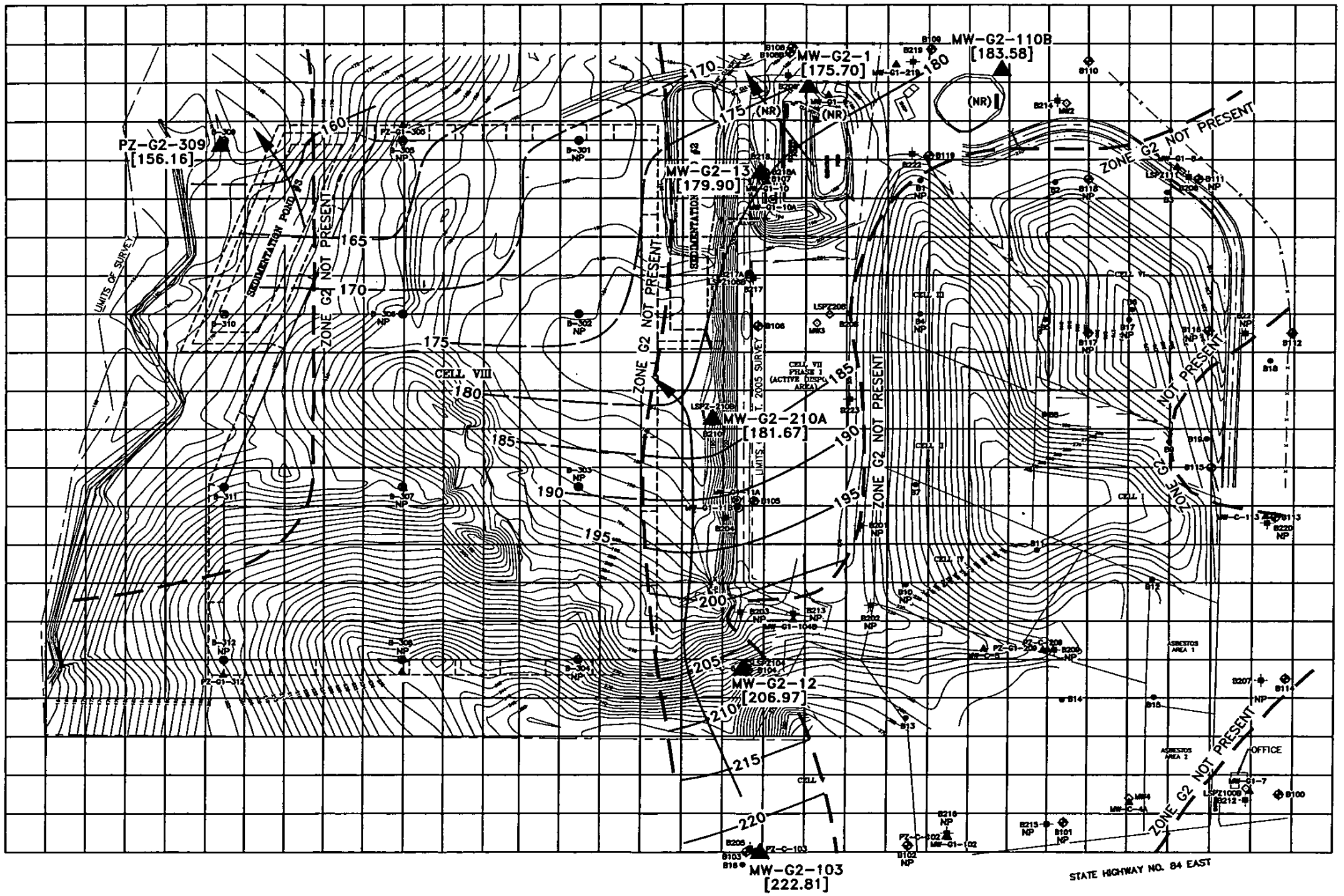
POTENTIOMETRIC MAP
ZONE G2: 10/19/05

Sheet
JEI-S39



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
250	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
— — —	ZONE G2 NOT PRESENT
▮	STAFF GAUGE
[180.92]	GROUNDWATER ELEVATION (FT. MSL)
(199.83)	POND SURFACE WATER ELEVATION (FT. MSL)
NR	NOT REPORTED
←	GROUNDWATER FLOW DIRECTION
185	GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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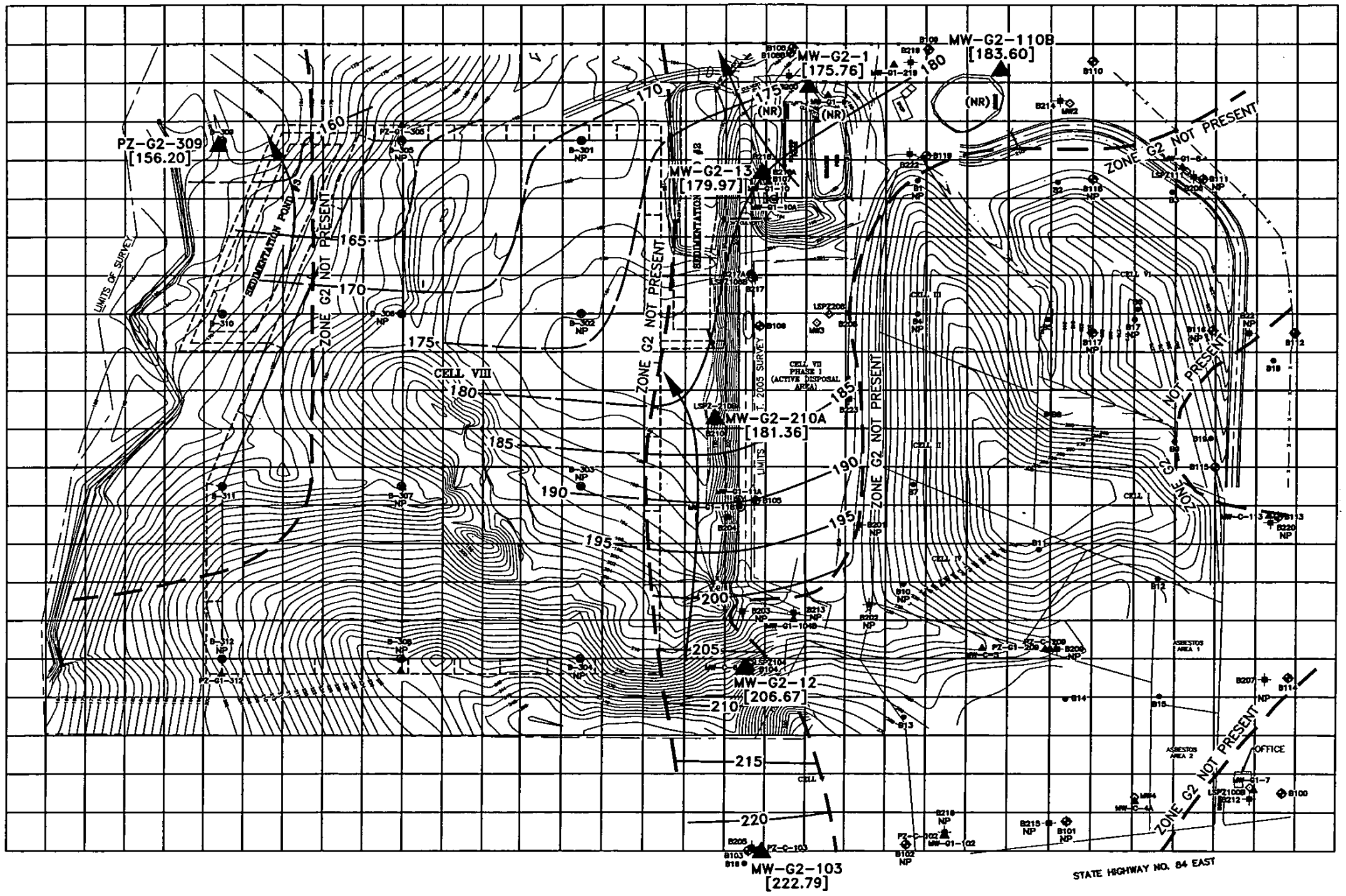
POTENTIOMETRIC MAP
ZONE G2: 11/17/05

Sheet
JEI-S40



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
—250—	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
— — —	ZONE G2 NOT PRESENT
▮	STAFF GAUGE
[180.92]	GROUNDWATER ELEVATION (FT. MSL)
(199.83)	POND SURFACE WATER ELEVATION (FT. MSL)
NR	NOT REPORTED
◄	GROUNDWATER FLOW DIRECTION
—185—	GROUNDWATER ELEVATION CONTOUR (FT. MSL)

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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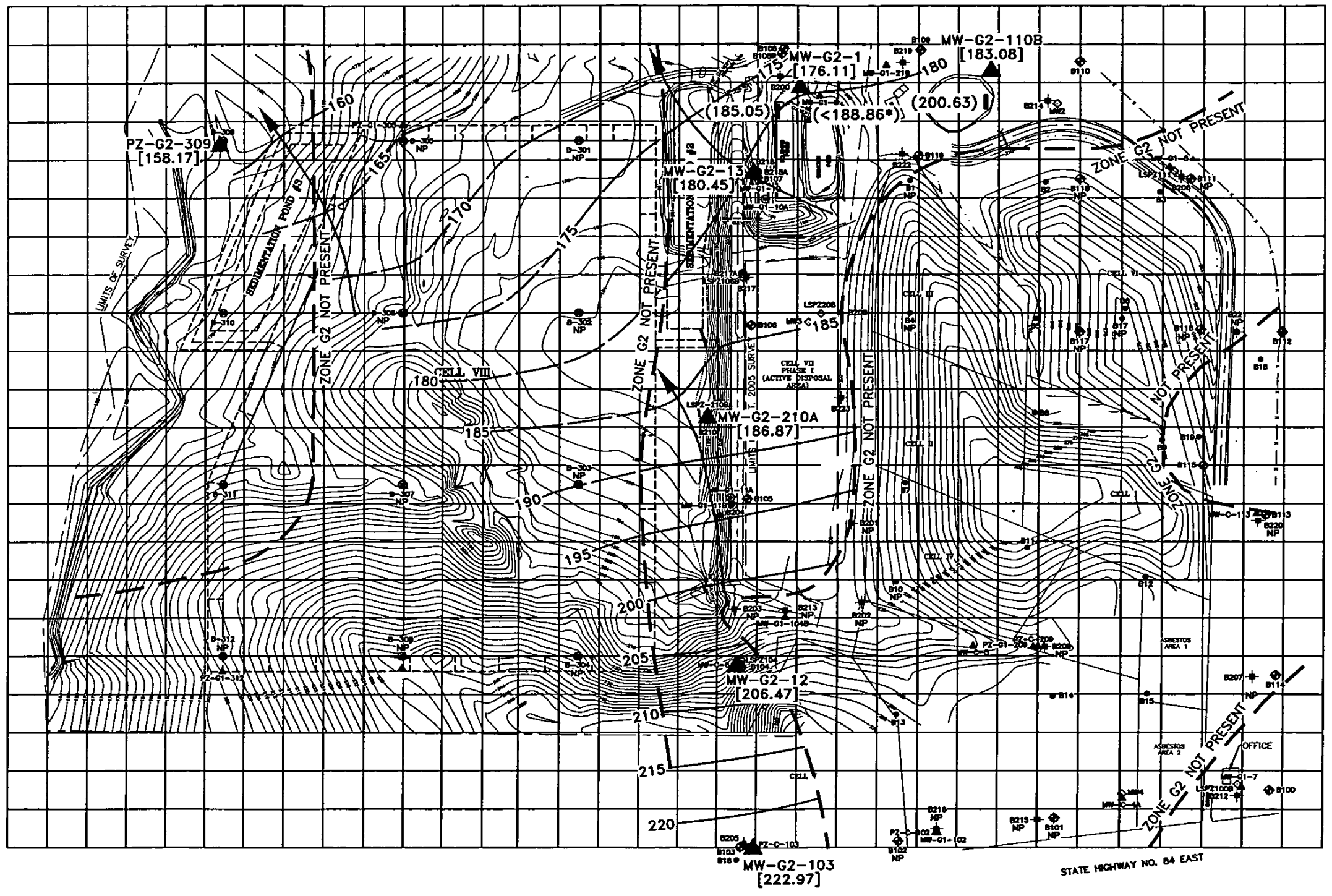
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 12/09/05

Sheet
JEI-S41



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
—250—	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
— — —	ZONE G2 NOT PRESENT
▮	STAFF GAUGE
[180.45]	GROUNDWATER ELEVATION (FT. MSL)
(200.63)	POND SURFACE WATER ELEVATION (FT. MSL)
NR	NOT REPORTED
◄——	GROUNDWATER FLOW DIRECTION
—185—	GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - - -	FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

N

0 300 600

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Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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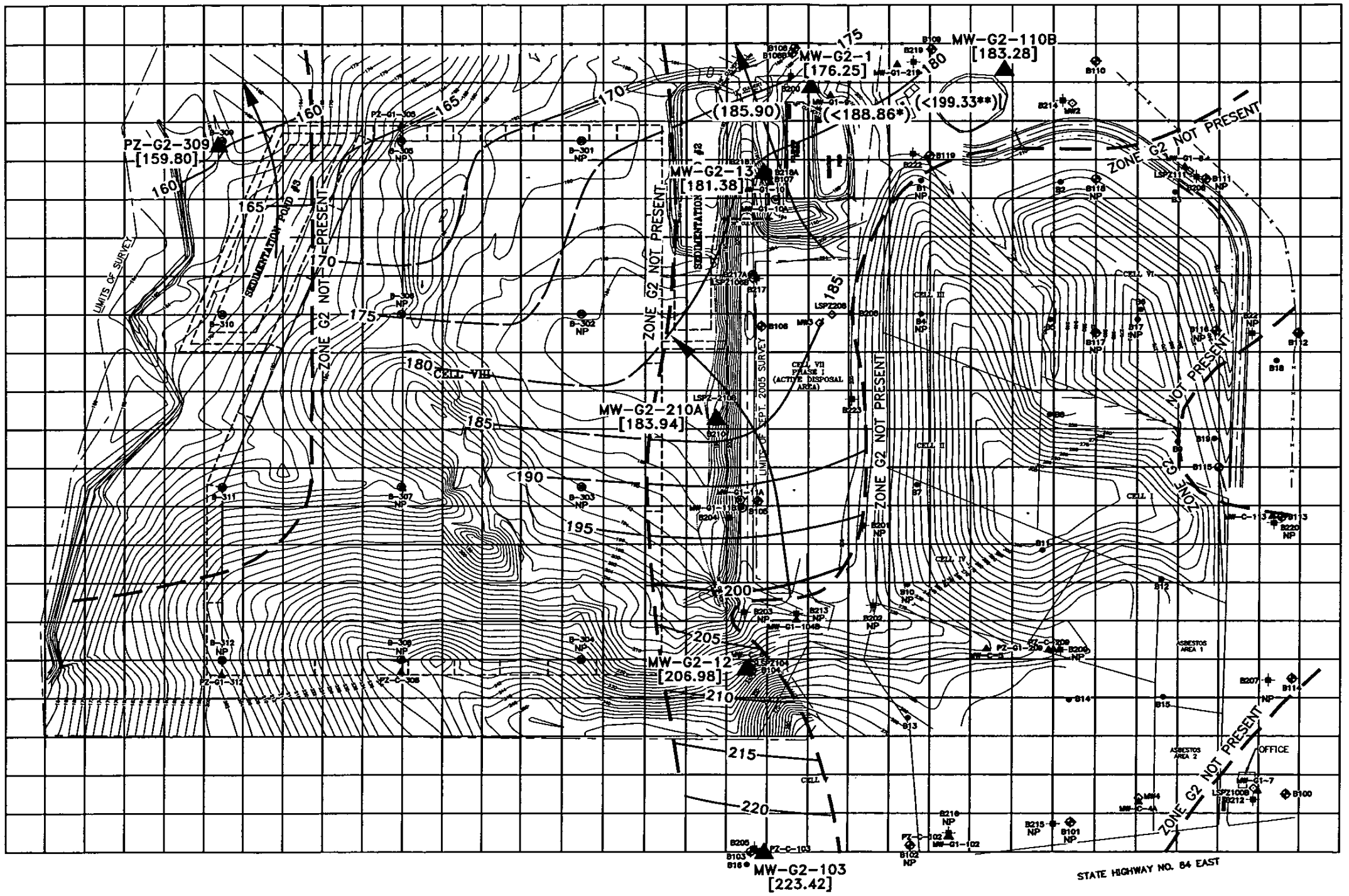
POTENTIOMETRIC MAP
ZONE G2: 01/25/06

Sheet
JEI-S42



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [183.28] — GROUNDWATER ELEVATION (FT. MSL)
- (185.90) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.
** Water level in Sedimentation Pond #1 was below bottom of staff gauge.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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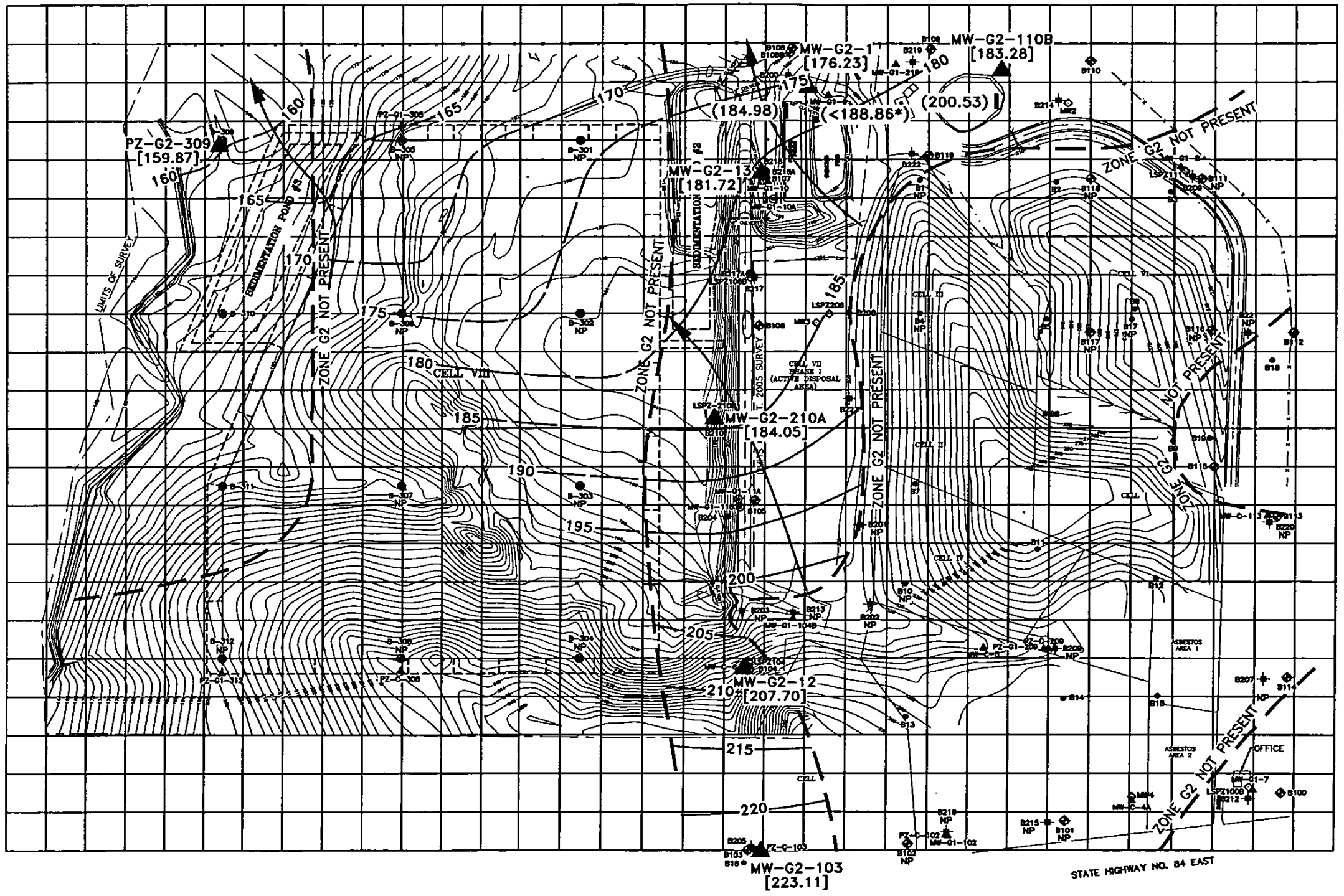
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 02/27/06

Sheet
JEI-S43



LEGEND:

▲	MONITORING/PIEZOMETER WELL
◇	MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
——250——	TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
NP	NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
— — —	ZONE G2 NOT PRESENT
▌	STAFF GAUGE
[183.28]	GROUNDWATER ELEVATION (FT. MSL)
(184.98)	POND SURFACE WATER ELEVATION (FT. MSL)
NR	NOT REPORTED
◄——	GROUNDWATER FLOW DIRECTION
—185—	GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- - - - - -	FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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2712 Highway 84 East
Mansfield, Louisiana 71052

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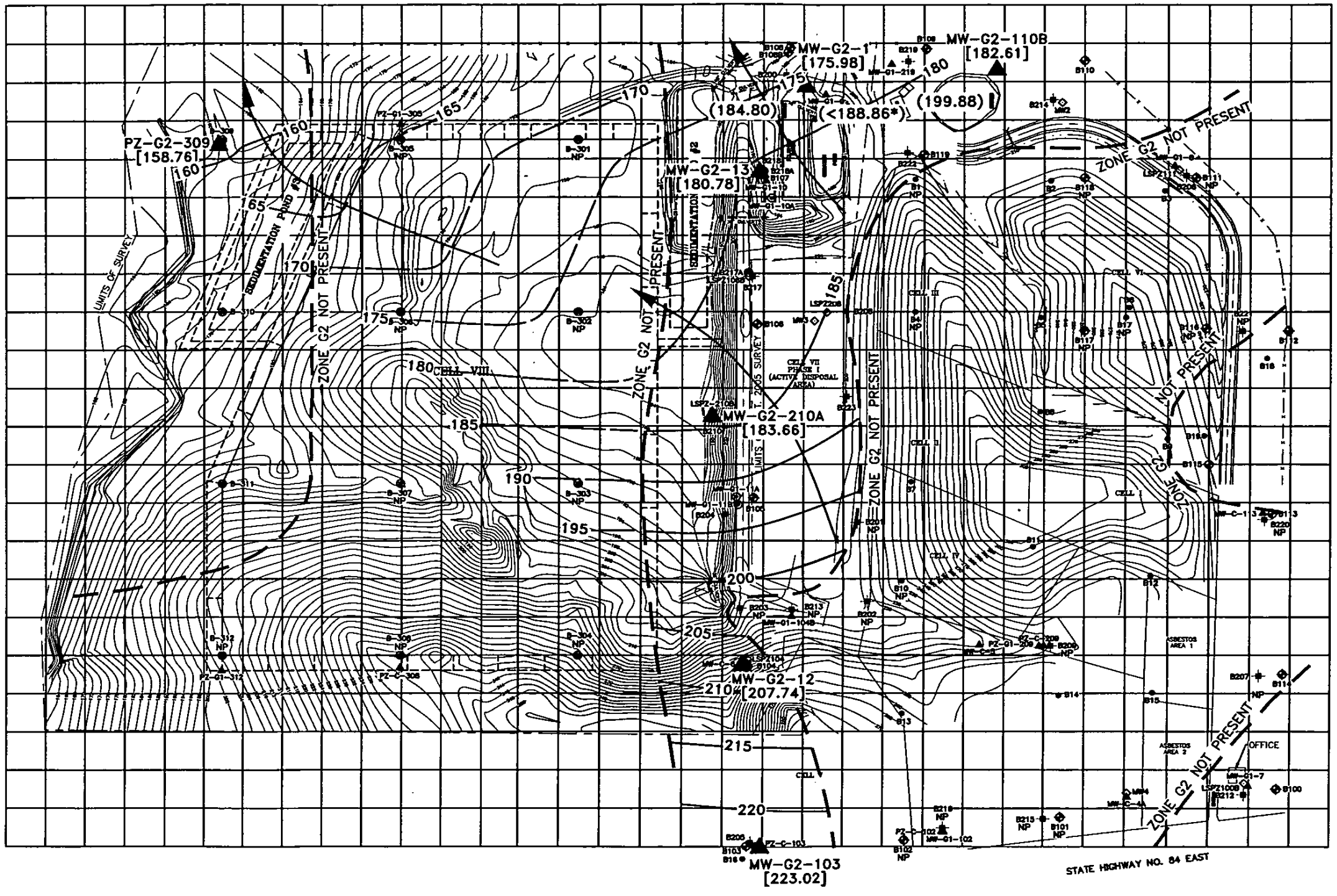
P.O. Box 898
Mansfield, Louisiana 71052

JEI # : FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 03/29/06

Sheet
JEI-S44



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [182.61] — GROUNDWATER ELEVATION (FT. MSL)
- (184.80) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

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P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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706 Milam St., Ste. 100, Shreveport, LA
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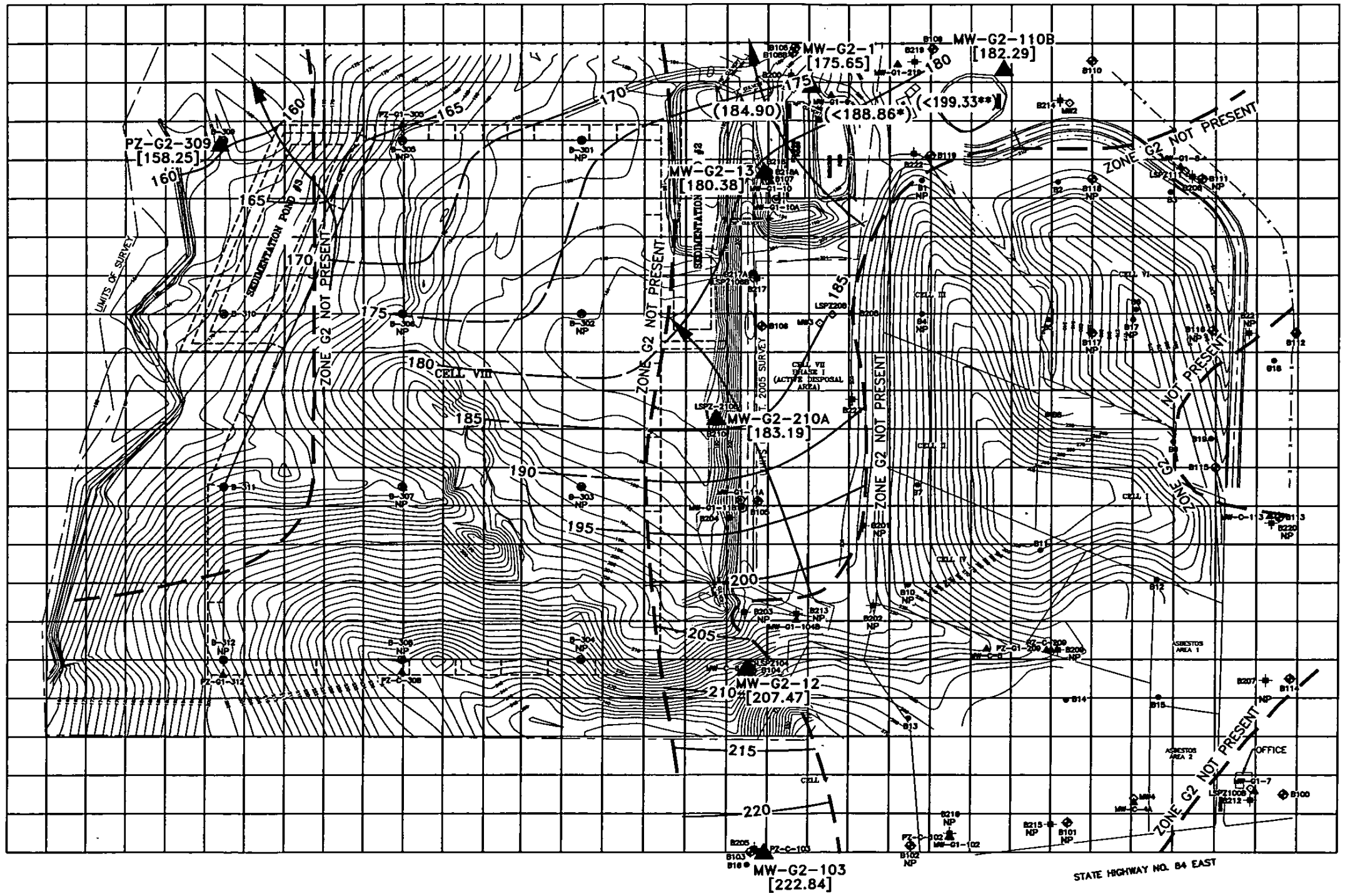
POTENTIOMETRIC MAP
ZONE G2: 04/26/06

Sheet
JEI-S45



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [182.29] GROUNDWATER ELEVATION (FT. MSL)
- (184.90) POND SURFACE WATER ELEVATION (FT. MSL)
- NR NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.
** Water level in Sedimentation Pond #1 was below bottom of staff gauge.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

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P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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706 Milam St., Ste. 100, Shreveport, LA
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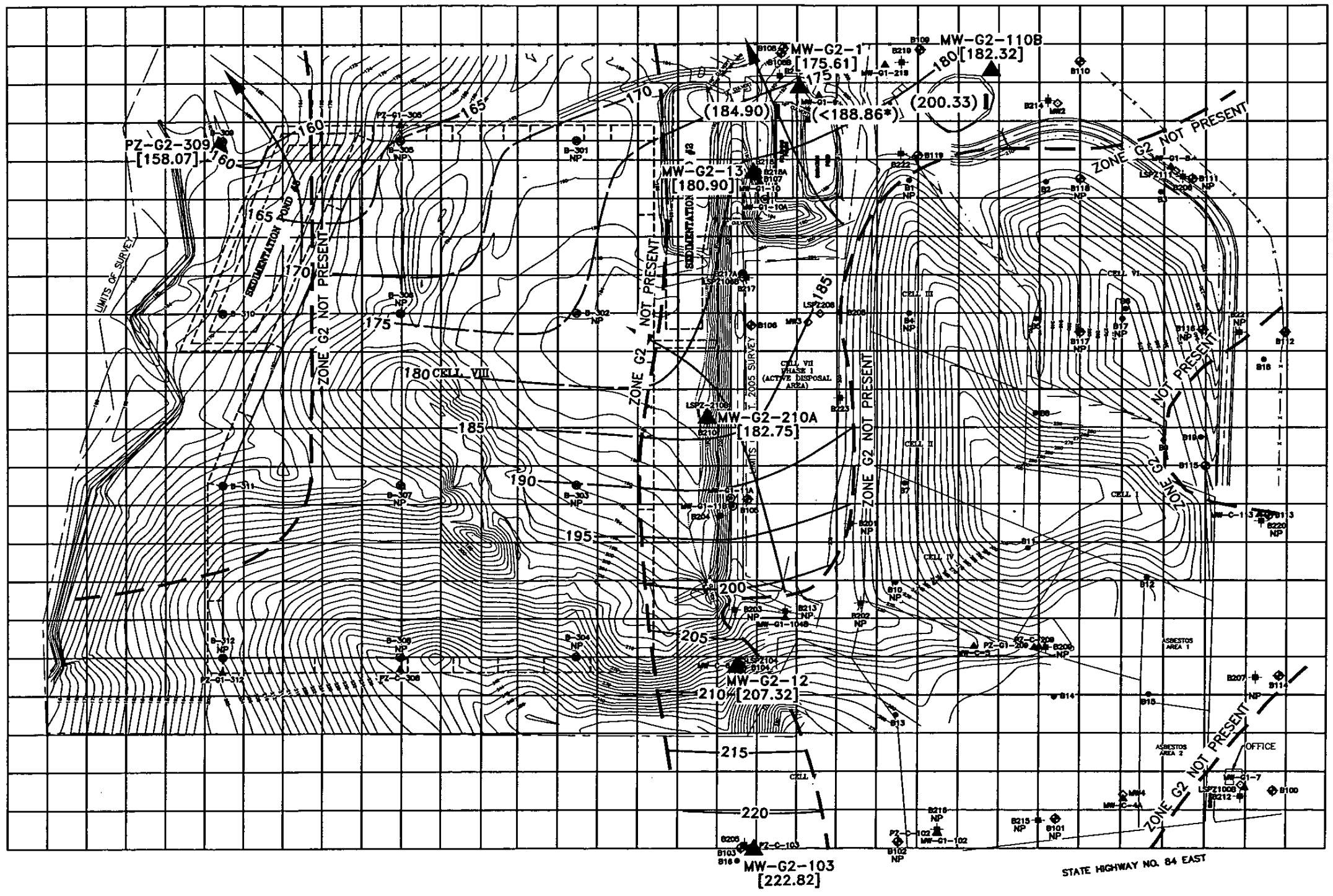
POTENTIOMETRIC MAP
ZONE G2: 06/01/06

Sheet
JEI-S46



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [182.32] — GROUNDWATER ELEVATION (FT. MSL)
- (184.90) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

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Mansfield, Louisiana 71052

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P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

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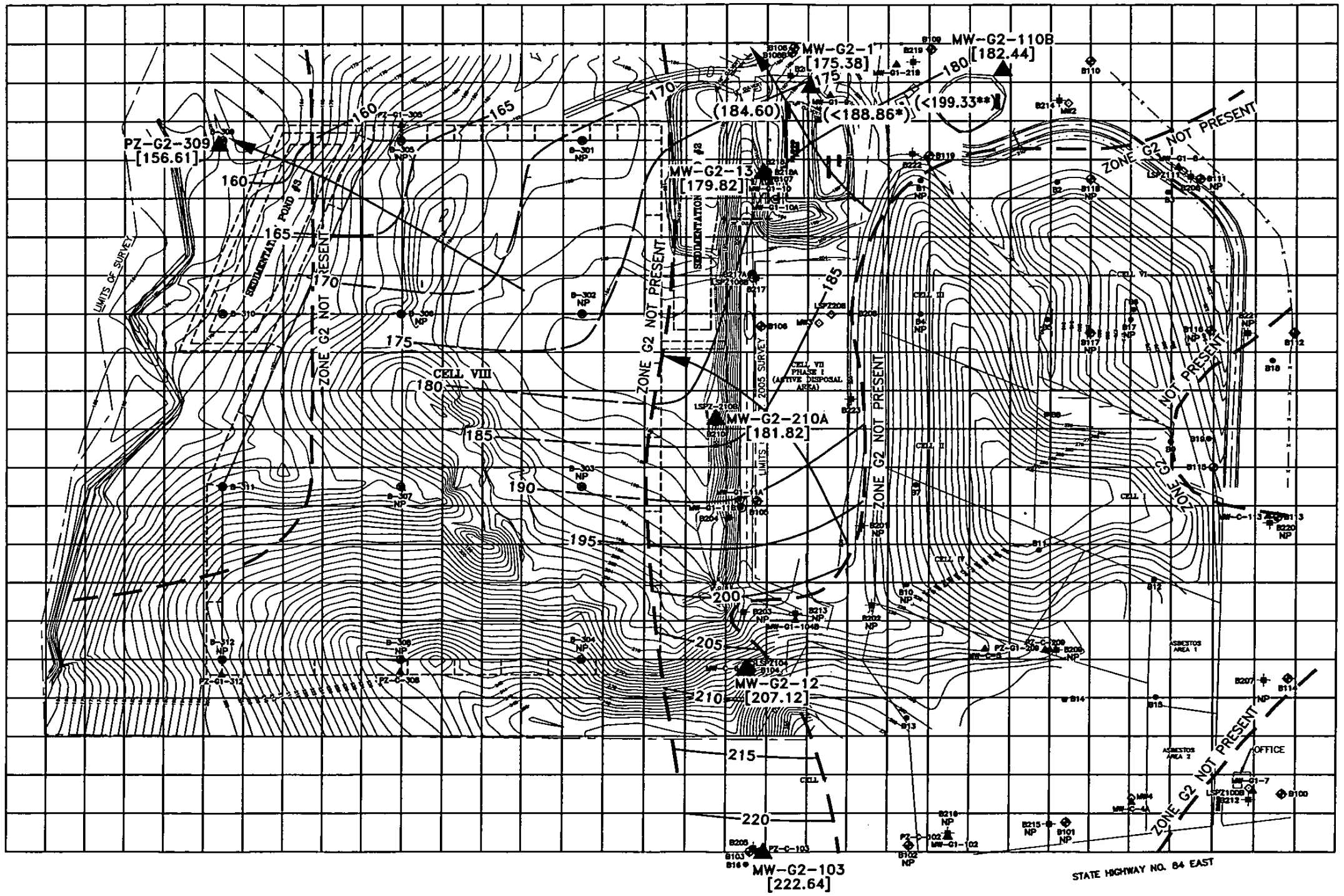
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 06/28/06

Sheet
JEI-S47



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [182.44] — GROUNDWATER ELEVATION (FT. MSL)
- (184.60) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.
** Water level in Sedimentation Pond #1 was below bottom of staff gauge.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
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0 300 600

Mundy Landfill
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Mansfield, Louisiana 71052

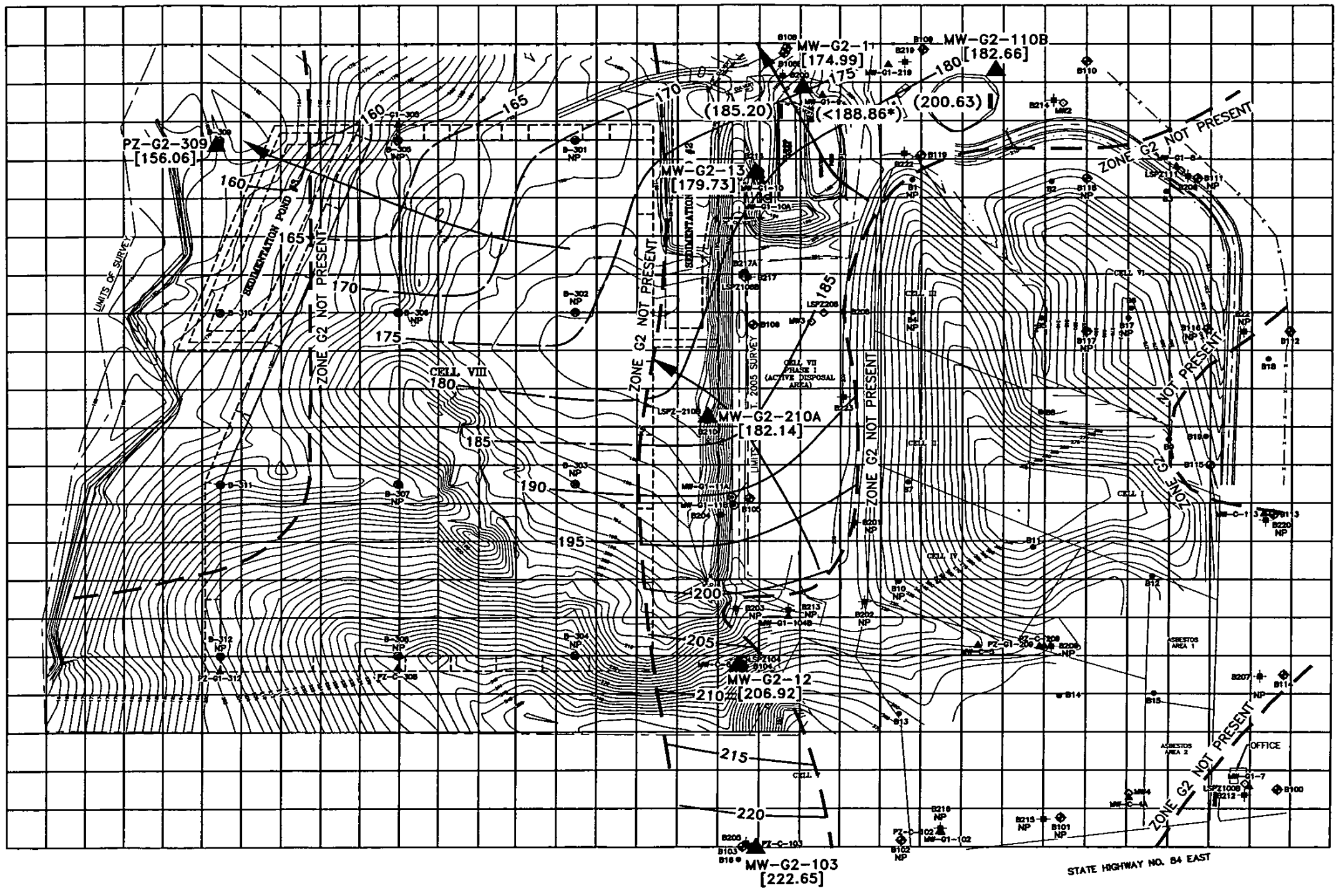
DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
708 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 07/26/06

Sheet
JEI-S48



LEGEND:

- ▲ MONITORING/PIEZOMETER WELL
- ◇ MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [182.66] — GROUNDWATER ELEVATION (FT. MSL)
- (185.20) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
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0 300 600

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Mansfield, Louisiana 71052

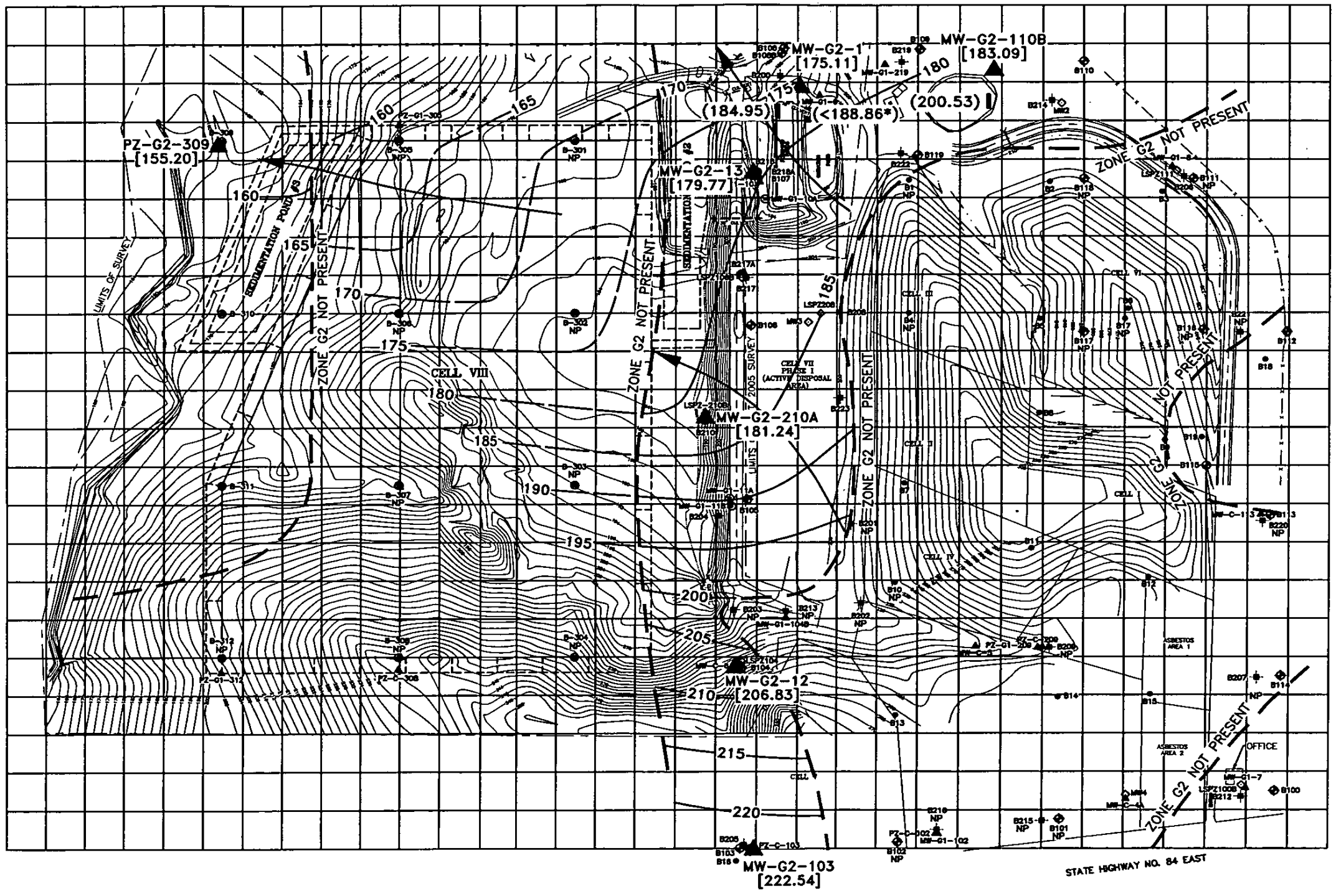
DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 08/25/06

Sheet
JEI-S49



LEGEND:

- MONITORING/PIEZOMETER WELL
- MONITORING/PIEZOMETER WELL (PLUGGED & ABANDONED)
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- STAFF GAUGE
- [183.09] — GROUNDWATER ELEVATION (FT. MSL)
- (184.95) — POND SURFACE WATER ELEVATION (FT. MSL)
- NR — NOT REPORTED
- GROUNDWATER FLOW DIRECTION
- 185 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

* Water level in oxidation pond was below bottom of staff gauge. Sludge was excavated from oxidation pond in September 2005.

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

0 300 600

Mundy Landfill
2712 Highway 84 East
Mansfield, Louisiana 71052

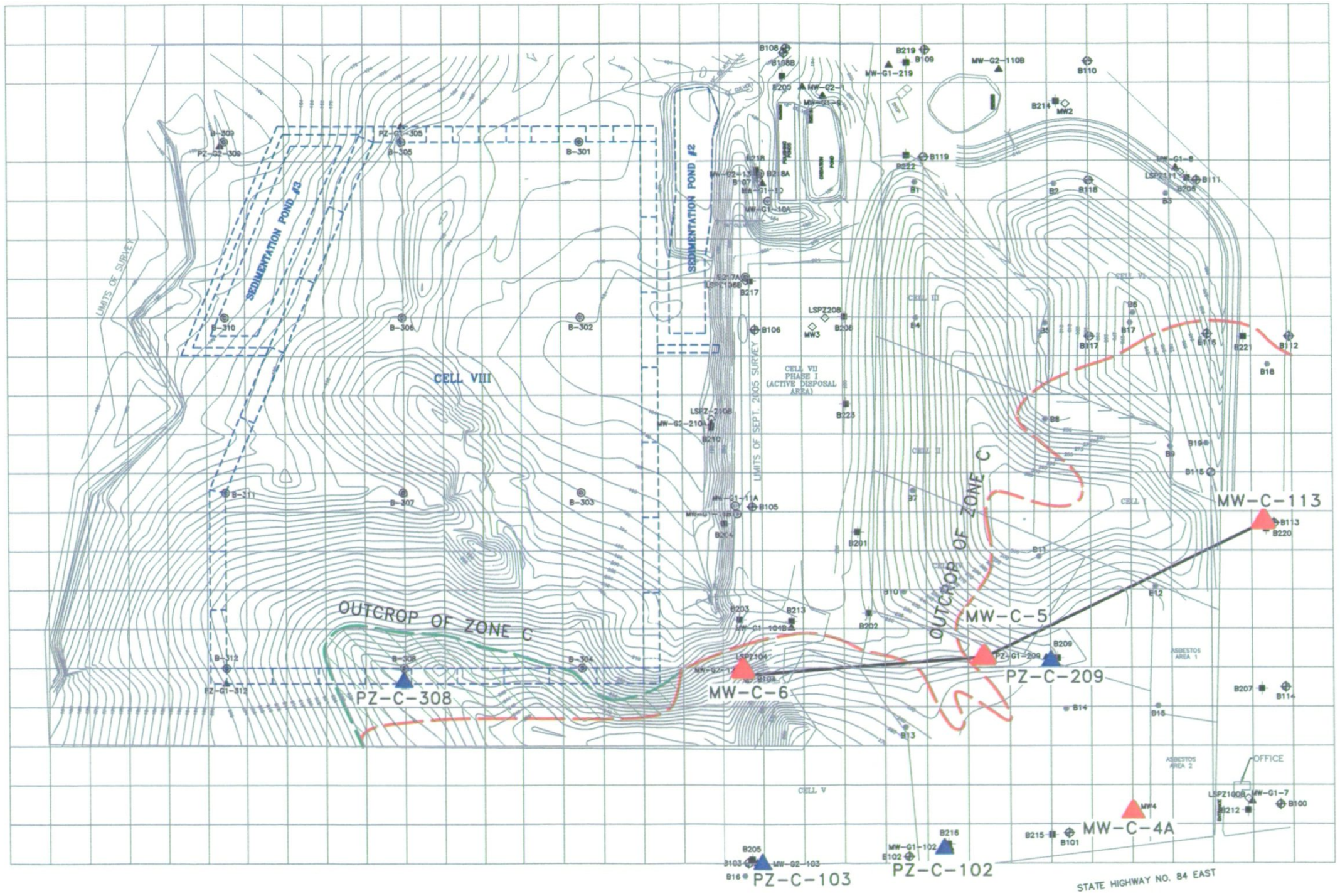
DeSoto Parish Police Jury
P.O. Box 898
Mansfield, Louisiana 71052

JEI # :FINAL DOC	DATE	HORIZONTAL SCALE: 1" : 300'
DWN BY : HMM	07/02/07	CONTOUR INTERVAL: AS SHOWN
CK BY : SM	07/02/07	DATUM: MSL

Jones Environmental, Inc.
706 Milam St., Ste. 100, Shreveport, LA
(318) 226-8444

POTENTIOMETRIC MAP
ZONE G2: 09/28/06

Sheet
JEI-S50



LEGEND:

- ZONE C MONITORING WELL
- ZONE C PIEZOMETER
- POINT OF COMPLIANCE
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996-1997
- SOIL BORING PRE-1996
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- OUTCROP OF ZONE C (AFTER CELL VIII CONSTRUCTION)
- AREA OF ZONE C TO BE COMPLETELY REMOVED BY CONSTRUCTION OF CELL VIII
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

PZ-C-308 WILL BE PLUGGED AND ABANDONED

REFERENCE:
Existing Conditions Plan by Bolar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Roy & Associates, Inc., September 2005.

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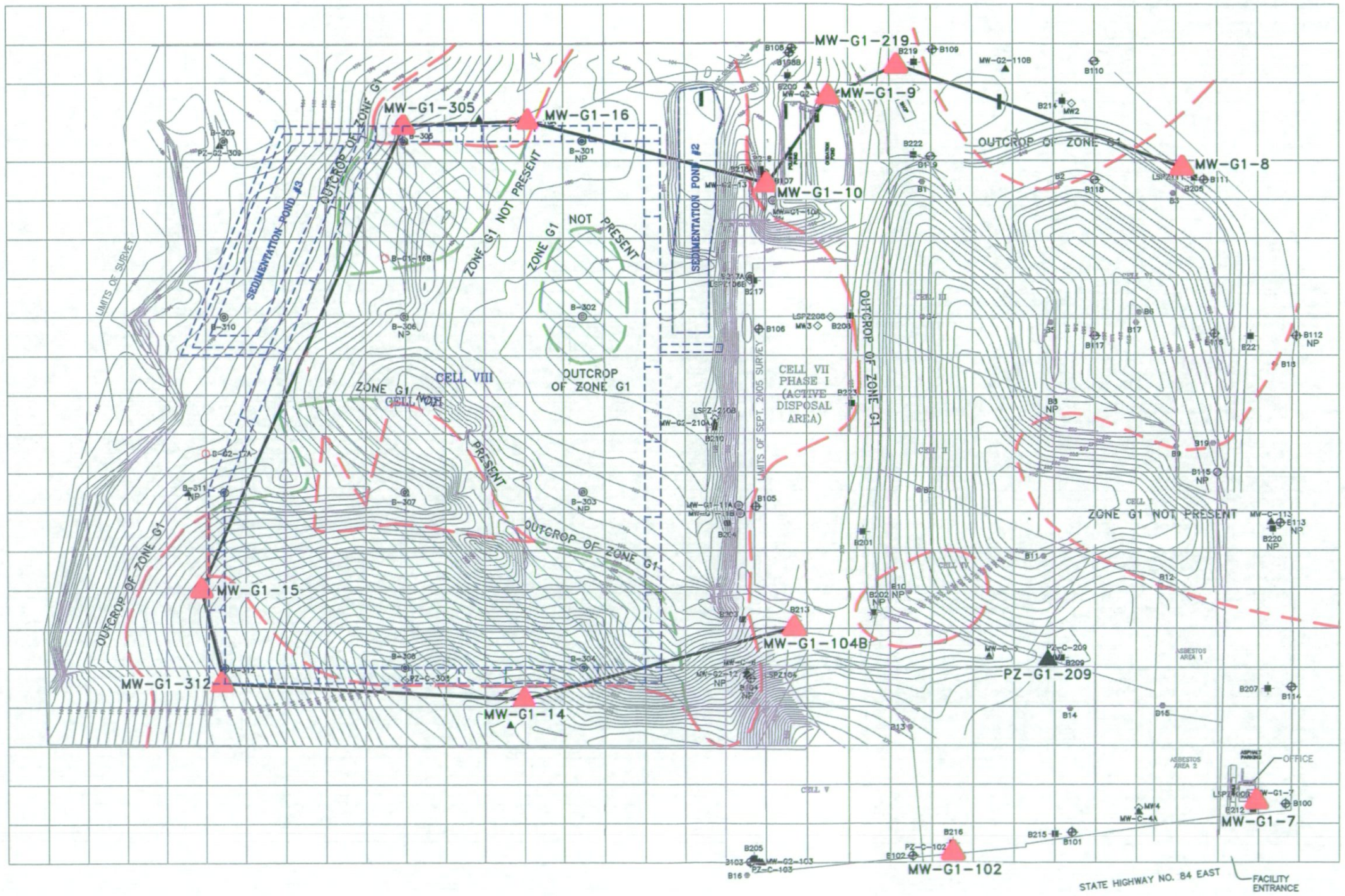
POINT OF COMPLIANCE: ZONE C

Sheet JEI-S51



LEGEND:

- ZONE G1 MONITORING WELL
- ZONE G1 PIEZOMETER
- POINT OF COMPLIANCE
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996-1997
- SOIL BORING PRE-1996
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G1 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT SURFACE ELEVATION AND DEPTH
- OUTCROP OF ZONE G1/ZONE G1 NOT PRESENT
- AREA OF ZONE G1 TO BE COMPLETELY REMOVED BY CONSTRUCTION OF CELL VIII
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Roy & Associates, Inc., September 2005.

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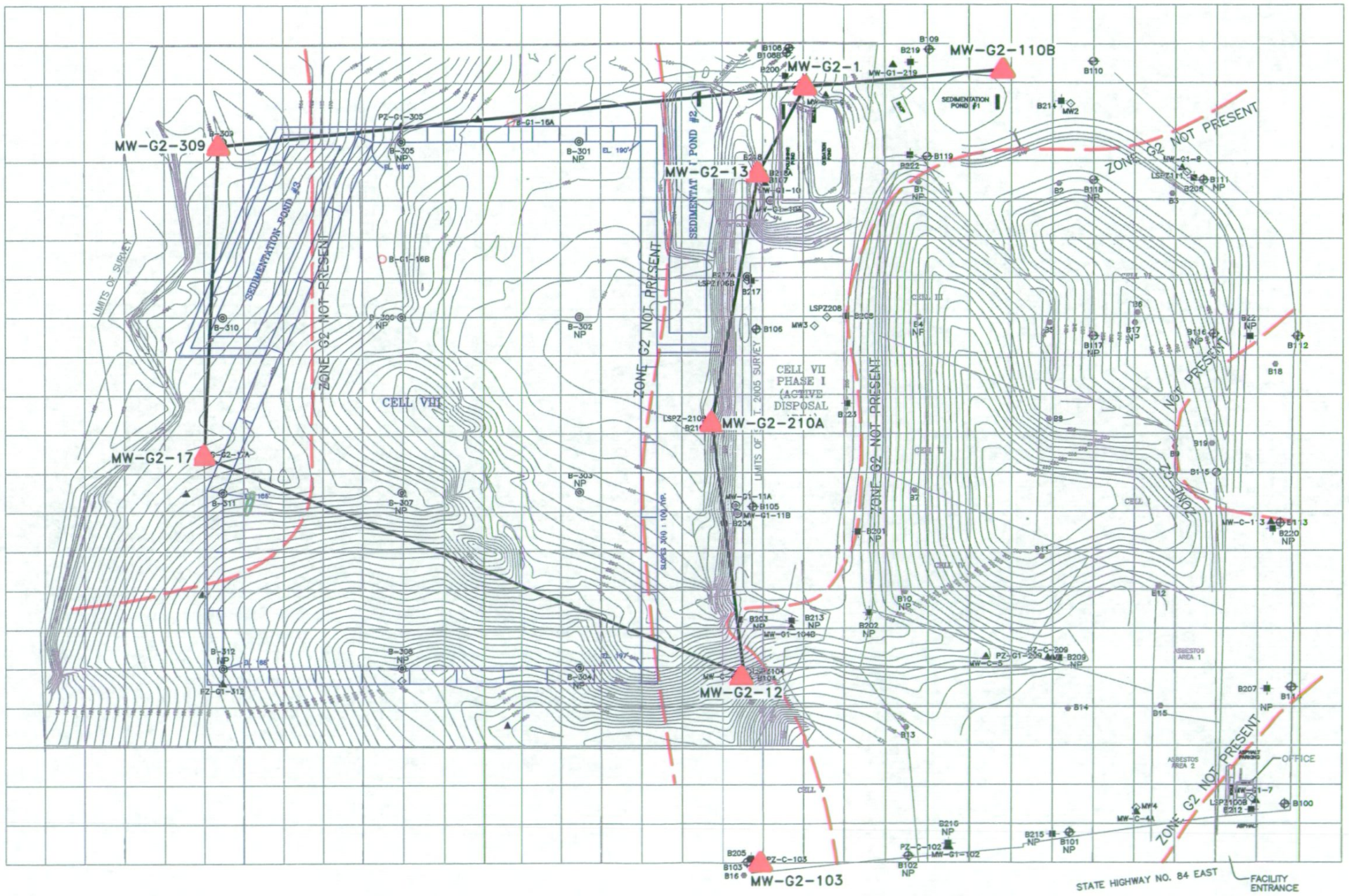
POINT OF COMPLIANCE: ZONE G1

Sheet JEI-S52



LEGEND:

- ZONE G2 MONITORING WELL
- POINT OF COMPLIANCE
- EXISTING MONITORING WELL/PIEZOMETER
- PLUGGED & ABANDONED MONITORING WELL/PIEZOMETER
- SOIL BORING 2005
- SOIL BORING 2002
- SOIL BORING 1996-1997
- SOIL BORING PRE-1996
- CULVERT
- 250 — TOPOGRAPHIC CONTOUR LINE (5 FT. CONTOUR INTERVAL FOR EXISTING LANDFILL, 2 FT. CONTOUR INTERVAL FOR CELL VIII AREA)
- NP — NOT PRESENT. ZONE G2 NOT IDENTIFIED IN SOIL BORING OF SUFFICIENT DEPTH
- ZONE G2 NOT PRESENT
- AREA OF ZONE G2 TO BE PARTIALLY OR COMPLETELY REMOVED BY CONSTRUCTION OF CELL VIII
- FOOTPRINT OF PROPOSED CELL VIII EXPANSION

REFERENCE:
Existing Conditions Plan by Balar Engineers & Surveyors dated September 2001.
Survey of Cell VIII Area by Rodney Ray & Associates, Inc., September 2005.

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POINT OF COMPLIANCE: ZONE G2

Sheet JEI-S53