



PERMIT APPLICATION

ST. GABRIEL REDEVELOPMENT CONSTRUCTION AND DEMOLITION LANDFILL (TYPE III)

SECTIONS 84, 85, 99, & 101, T9S-R1E
IBERVILLE PARISH, LOUISIANA

Prepared by:
TRC ENVIRONMENTAL
8550 UNITED PLAZA, SUITE 502
BATON ROUGE, LA 70809
February 2008

PUBLIC NOTICE
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ)
ST. GABRIEL REDEVELOPMENT CONSTRUCTION AND DEMOLITION LANDFILL

**PUBLIC HEARING AND REQUEST FOR PUBLIC COMMENT ON A TECHNICALLY COMPLETE
TYPE III CONSTRUCTION AND DEMOLITION SOLID WASTE PERMIT APPLICATION
AND THE ASSOCIATED ENVIRONMENTAL ASSESSMENT STATEMENT (EAS)**

The LDEQ, Office of Environmental Services, will conduct a public hearing to receive comments on a Technically Complete Type III Construction and Demolition Solid Waste Permit Application and the associated Environmental Assessment Statement (EAS) for St. Gabriel Redevelopment, LLC, 114 Schlieff Drive, Belle Chasse, LA 70037 for the St. Gabriel Redevelopment Construction and Demolition Landfill. **The facility is located at 5981 Highway 75, Carville, LA 70721, approximately 0.5 miles east of the intersection of Highway 75 and Point Clair Road in Iberville Parish.**

The hearing will be held on **Tuesday, May 6, 2008, beginning at 6:00 p.m., at the St. Gabriel Community Center, 1400 Gordon Simon LeBlanc Drive, St. Gabriel, LA 70776.** During the hearing, all interested persons will have an opportunity to comment on the proposed permit.

St. Gabriel Redevelopment, LLC proposes to construct a Type III Construction and Demolition landfill.

All interested persons will be afforded the opportunity to comment on the proposed Technically Complete Type III Construction and Demolition Solid Waste Permit Application and the EAS.

The EAS submitted by the applicant addresses avoidance of potential and real environmental effects, balancing of social and economic benefits against environmental impact costs, and alternative sites, projects, and mitigative measures.

Written comments or written requests for notification of the final permit decision regarding this permit may also be submitted to Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. **Written comments and/or written requests for notification must be received by 12:30 p.m., Monday, June 9, 2008.** Written comments will be considered prior to a final permit decision.

LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The Technically Complete Type III Construction and Demolition Solid Waste Permit Application and the associated Environmental Assessment Statement are available for review at the LDEQ, Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, LA. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). **The available information can also be accessed electronically on the Electronic Document Management System (EDMS) on the DEQ public website at www.deq.louisiana.gov.**

Additional copies may be reviewed at the Iberville Parish Library, East Iberville Branch, 5715 Monticello Street, St. Gabriel, LA 70776 and the Ascension Parish Library, Gonzales Branch, 708 South Irma Boulevard,

Gonzales, LA 70737. Another copy is available at the Iberville Parish Council, 58050 Meriam Street, Plaquemine, LA 70565-0389.

Individuals with a disability, who need an accommodation in order to participate in the public hearings, should contact Laura Ambeau at the above address or by phone at (225) 219-3277.

Inquiries or requests for additional information regarding this permit action should be directed to Elizabeth Kashefi, LDEQ, Waste Permits Division, P.O. Box 4313, Baton Rouge, LA 70821-4313, phone (225) 219-3068.

Persons wishing to be included on the LDEQ permit public notice mailing list or for other public participation related questions should contact the Public Participation Group in writing at LDEQ, P.O. Box 4313, Baton Rouge, LA 70821-4313, by email at deqmaillistrequest@la.gov or contact the LDEQ Customer Service Center at (225) 219-LDEQ (219-5337).

Permit public notices including electronic access to general information from the technically complete solid waste permit application can be viewed at the LDEQ permits public notice webpage at www.deq.louisiana.gov/apps/pubNotice/default.asp and general information related to the public participation in permitting activities can be viewed at www.deq.louisiana.gov/portal/tabid/2198/Default.aspx.

Alternatively, individuals may elect to receive the permit public notices via email by subscribing to the LDEQ permits public notice List Server at www.doa.louisiana.gov/oes/listservpage/ldeq_pn_listserv.htm

All correspondence should specify AI Number 152065 and Activity Number PER20070001.

BOBBY JINDAL
GOVERNOR



HAROLD LEGGETT, Ph.D.
SECRETARY

State of Louisiana
DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

MAR 31 2008

CERTIFIED MAIL# 7003 2260 0005 9324 2382

Mr. Claude Klein
St. Gabriel Redevelopment Company, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

RE: Technically Complete Determination
St. Gabriel Redevelopment Construction and Demolition Landfill
AI#152065/D-047-12745/PER20070001
Iberville Parish

Dear Mr. Klein:

We are in receipt of the finalized copies of your permit application dated February 12, 2008. After review of these documents, we have determined that your application is technically complete and prepared for public review.

The Environmental Assistance Division will distribute copies of your application for public review and place public notices in the appropriate newspapers in accordance with LAC 33:VII.513.F.3. Please contact Ms. Soumaya Ghosn at (225) 219-3276 for the date of publication and the dates for the comment period. At the conclusion of the comment period, we will consider all comments and render a permit decision regarding your application.

Please continue to reference your Agency Interest and Facility Identification Numbers on all future correspondence regarding this matter. If you have any questions, please contact Elizabeth Kashefi of the Permits Division at (225) 219-3068.

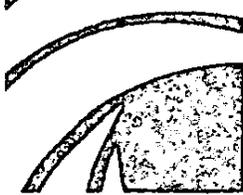
Sincerely,

A handwritten signature in black ink, appearing to read "Bijan Sharafkhani".

Bijan Sharafkhani, P.E.
Administrator
Waste Permits Division

ek

c: Mr. Michael Daigle
TRC Environmental
8550 United Plaza, Suite 502
Baton Rouge, LA 70808



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483 PHONE
225.216.0732 FAX

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February 12, 2008

LA DEQ/Waste Permits Division
P.O. Box 4313
Baton Rouge, LA 70821-4313

RECEIVED
 FEB 13 2008
 LDEQ

Attn: Bijan Sharafkhani, P.E.
Administrator

Re: Submittal of Final Permit Application
Type III Construction and Demolition Landfill
St. Gabriel Redevelopment Construction and Demolition Landfill
✓ AI 152065/D-047-12745/PER20070001 ✓
Iberville Parish, LOUISIANA

Dear Mr. Sharafkhani:

On behalf of our client, St. Gabriel Redevelopment, LLC, and in response to your letter of February 4, 2008, we are herewith submitting six (6) original bound copies of the complete application using the original submitted application and incorporating all previously accepted revisions, that make up the final complete Type III Construction and Demolition Landfill permit application.

Please send your response to the undersigned and to:

Mr. Claude Klein, St. Gabriel Redevelopment, LLC, 114 Schlieff Drive, Belle Chasse, LA 70037

St. Gabriel Redevelopment, LLC appreciates your consideration in this matter and if you should have any questions, please call me at (225) 216-7483 or Mr. Claude Klein at (504) 388-3670.

Sincerely,

Michael K. Daigle, P.E.
Principal Environmental Consultant

attachments

PERMIT APPLICATION

**ST. GABRIEL REDEVELOPMENT
CONSTRUCTION AND DEMOLITION
LANDFILL (TYPE III)
AI# 152065**

**SECTIONS 84, 85, 99, & 101, T9S-R1E
IBERVILLE PARISH, LOUISIANA**

Prepared By:

*TRC
ENVIRONMENTAL
8550 UNITED PLAZA
SUITE 502
BATON ROUGE, LA 70809*

FEBRUARY 2008

INTRODUCTION

The south Baton Rouge area has been experiencing tremendous growth and development. Due to the significant development in this area, the need for adequate C&D disposal capacity has become significant.

The only C&D landfill in the south Baton Rouge area is D&J Landfill, which is under order to close by the Louisiana Department of Environmental Quality by April 2008. The D&J Landfill is 10 miles northeast of the St. Gabriel site.

The St. Gabriel site will serve as a replacement for the D&J landfill and will be the only C&D landfill available to serve the C&D disposal needs in the south Baton Rouge area (Parishes of southern E. Baton Rouge, Iberville, Ascension, St. John the Baptist, St. James, and Livingston). The closest alternative is the Ronaldson Field Facility located in Alsen, Louisiana approximately 31 miles away and requires transporting through the Baton Rouge area.

No other C&D landfills are nearer than St. Gabriel to provide disposal to replace that at D&J, which reported more than 96,000 tons were taken between July 1, 2005 and June 30, 2006.

Locating a replacement facility in the south Baton Rouge Area will conserve fuel for waste haulers, allow disposal at a reasonable cost, limit traffic impact to interstate and state highways and discourage illegal dumping due to hauling costs and travel time.

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AI# 152065**

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Subchapter D. Permit Application

§519. Part I: Permit Application Form

A. The applicant shall complete a standard permit application Part I Form obtained from the Office of Environmental Services, Waste Permits Division, or the department's website. The form requires the following information:

1. the name of the applicant (prospective permit holder) applying for a standard permit;
2. the facility name;
3. a description of the location of the facility (identify by street and number or by intersection of roads, or by mileage and direction from an intersection);
4. the geographic location (section, township, range, and parish where the facility is located, and the coordinates, as defined by the longitude and latitude to the second), of the centerpoint of the facility;
5. the mailing address of the applicant;
6. the contact person for the applicant (the position or title of the contact person is acceptable);
7. the telephone number of the contact person;
8. the type and purpose of the operation (check each applicable box);
9. the status of the facility (if leased, state the number of years of the lease and provide a copy of the lease agreement);
10. the operational status of the facility;
11. the total site acreage and the amount of acreage that will be used for processing and/or disposal;
12. a list of all environmental permits that relate directly to the facility represented in this application;
13. the zoning of the facility that exists at the time of the submittal of the standard permit application (note the zone classification and zoning authority, and include a zoning affidavit or other documentation stating that the proposed use does not violate existing land-use requirements);
14. the types, maximum quantities (wet tons/week), and sources (percentage of the on-site or off-site-generated waste to be received) of waste to be processed or disposed of by the facility;
15. the specific geographic area(s) to be serviced by the solid waste facility;
16. proof of publication of the notice regarding the submittal of the permit application as required in LAC 33:VII.513.A;
17. the signature, typed name, and title of the individual authorized to sign the application (provide proof of the legal authority of the signatory to sign for the applicant); and
18. any additional information required by the administrative authority.

RESPONSE

The Solid Waste Standard Permit Application – Part I follows:

SOLID WASTE STANDARD PERMIT APPLICATION-PART I

(The form shall be completed in accordance with the instructions found in LAC 33:VII.513.A.1)

1. Name of the applicant (prospective permit Holder): St. Gabriel Redevelopment, LLC.

2. Facility Name: St. Gabriel Redevelopment Construction & Demolition Landfill

3. Facility Location/Description: 5981 Highway 75, Carville, LA 70721, approximately 0.5 miles east of the intersection of Highway 75 and Point Clair Road

4. Location: Section 67, 84 and 85 Township 9S Range 1E

Parish: Iberville

Coordinates: Lat. - Degrees 30 Minutes 13 Seconds 48

Long. - Degrees 91 Minutes 05 Seconds 41

5. Mailing Address: 114 Schlieff Drive
Belle Chasse, LA 70037

6. Contact: Mr. Claude Klein

7. Telephone: (504) 388-3670

8. Type and Purpose of Operation: (check each applicable line)

Type I

Industrial Landfill ____
Industrial Surface Impoundment ____
Industrial Landfarm ____

Type I-A

Industrial Incinerator Waste Handling Facility ____
Industrial Shredder/Compactor/Baler ____
Industrial Transfer Station ____

Type II

Sanitary Landfill ___
Residential/Commercial Surface Impoundment ___
Residential Commercial Landfarm ___

Type II-A

Residential/Commercial Incinerator Waste Handling Facility ___
Residential/Commercial Shredder/Compactor/Baler ___
Residential/Commercial Transfer Station ___
Residential/Commercial Refuse-Derived Fuel ___

Type III

Construction/Demolition-Debris Landfill X
Woodwaste Landfill ___
Compost Facility ___
Resource Recovery/Recycling Facility ___

Other Describe: _____

9. Site Status: Owned ___ Leased X Lease Term 40 Years
(Note: If leased, provide copy of lease agreement)

A copy of the lease agreement is presented in Attachment 2. The term of the lease is forty (40) years. The lease ends at midnight on the 30th day of November 2046

10. Operation Status: Existing ___ Proposed X

11.. Total Acres 100 Processing ___ Disposal Acres 80

12. Environmental Permits: (list)

An LPDES permit application has been submitted and a copy of the application located in Appendix F.

13.. Zoned: Yes X No ___ Zoning Requested ___

Zone Classification: M-2 (Heavy Industrial)

A zoning affidavit is located in Appendix I.

(Note: If zoned, include zoning affidavit and/or other documentation stating that the proposed use does not violate existing land-use requirements.)

14. Types, Quantities, and Sources of Waste:

| | Processing | | Disposal | |
|-------------|------------|----------|--|----------|
| | On-Site | Off-Site | On-Site | Off-Site |
| Residential | | | | |
| Industrial | | | | |
| Commercial | | | | |
| Other | | | 11,000 to 22,000 yd ³ /week (1,122 to 2,244 wet tons/week) | |

15. Service Area: _____

List of Parishes _____

Statewide Unlimited _____

16. Proof of Operator's Public Notice - Attach proof of publication of the notice regarding the permit application submittal as required by LAC 33:VII.513.A.

Proof of publication of the notice regarding the permit application is presented in Exhibit 1 of Part 2 of the permit application.

17. Certification: I have personally examined and am familiar with the information submitted in the attached document, and I hereby certify under penalty of law that this information is true, accurate, and complete to the best of my knowledge. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/or imprisonment.

Signature Claude L. Klein

Date 01/0708

Type Name and Title: Claude Klein, President

(Attach proof of the legal authority of the signee to sign for the applicant, if applicable.)

18. Any additional information required by the Administrative Authority.

§520. Compliance Information

- A. All applicants for solid waste permits shall comply with the requirements of LAC 33:I.1701.

RESPONSE

A detailed response to LAC 33:I.1701 follows below.

§1701. Requirements for Obtaining a Permit

A. In addition to meeting the requirements for permits outlined in the applicable sections of the environmental quality regulations, an applicant shall:

1. have no history of environmental violation(s) that demonstrates to the department an unwillingness or inability to achieve and maintain compliance with the permit for which the application is being made, unless the department determines that the applicant's history of environmental violation(s) can be adequately addressed by permit conditions;

RESPONSE

The applicant has no adverse history.

2. if required, register with the Secretary of State;

RESPONSE

The applicant is a limited liability company(LLC) registered with the Secretary of State.

3. owe no outstanding fees or final penalties to the department; and

RESPONSE

The applicant owes no outstanding fees or penalties to the department.

4. if under a compliance schedule, be making satisfactory progress in meeting the conditions of the compliance schedule.

RESPONSE

The applicant is not under a compliance schedule.

B. Before issuing any permit or transfer of ownership of a permit, the administrative authority may conduct an evaluation of the applicant related to the management of any facilities or activities subject to regulation under any applicable air, water, solid waste, hazardous waste, radiation control, or other environmental programs administered by the various states of the United States or by the federal government. If, pursuant to this evaluation, the administrative authority determines that the applicant has demonstrated an unwillingness or inability to achieve and maintain compliance with the permit for which application is being made, the administrative authority may:

1. include such conditions in the permit as reasonably deemed necessary for the protection of human health and the environment; or
2. deny any application for the issuance or transfer of the permit.

RESPONSE

The applicant will cooperate in said evaluation and cooperate with the administrative authority.

C. The applicant shall provide to the Office of Environmental Services, Air Permits Division or Water and Waste Permits Division, a list of the state(s) where he or she has federal or state environmental permits identical to, or of a similar nature to, the permit for which application is being made. This information shall be provided for all individuals, partnerships, corporations, or other entities who own a controlling interest (50 percent or more) in the company or who participate in the environmental management of the facility for an entity applying for a permit or an ownership interest.

RESPONSE

The applicant has no other applicable permits in other states.

D. In addition to providing the information required in Subsection C of this Section, the applicant shall submit a written statement to the Office of Environmental Services, Air Permits Division or Water and Waste Permits Division, as part of the permit application, to certify that:

1. if required, the applicant has registered with the secretary of state; and
2. no outstanding fees or final penalties are owed to the department.

RESPONSE

The applicant has 1). registered with the secretary of state and 2). has no adverse history; and a written statement so stating is included hereto as Attachment 1.

E. The administrative authority may require the submission of additional information if the administrative authority deems such information necessary in order to make a determination under this Chapter.

RESPONSE

The applicant will provide any additional information that is required by the administrative authority.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2014.2 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of the Secretary, LR 25:660 (April 1999), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2441 (November 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 31:2433 (October 2005).

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq., and in particular Section 2014.2.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of the Secretary, LR 25:661 (April 1999), repromulgated by the Office of the Secretary, Legal Affairs Division, LR 33:1040 (June 2007).

§521. Part II: Supplementary Information, All Processing and Disposal Facilities

A. The permit application for solid waste processing and disposal facilities shall contain the information described in this Section. All responses and exhibits shall be identified in the following sequence to facilitate the evaluation. Additionally, all applicable Sections of LAC 33:VII.Chapters 7 and 8 shall be addressed and incorporated into the application responses. If a Section does not apply, the applicant shall state that it does not apply and explain why.

RESPONSE

The requirements listed are included in the responses below.

B. Location Characteristics. Standards pertaining to location characteristics are contained in LAC 33:VII.709.A (Type I and II facilities), LAC 33:VII.717.A (Type I-A and II-A facilities), and LAC 33:VII.719.A (Type III facilities). The following information is required for all facilities:

RESPONSE

The requirements listed in LAC 33:VII.719.A "Location Characteristics" referenced above are included in the responses to items 1 through 5 below.

1. area master plans;

RESPONSE

A master plan is presented as Figure 2 that includes the requirements of LAC 33:VII.719.A.1 as follows:

- a. the facility is outlined on Figure 2*
- b. the road network is shown on Figure 2*
- c. major drainage systems are Bayou Braud and Community Canal shown on Figure 6*
- d. drainage-flow patterns are Bayou Braud and Community Canal shown on Figure 6*
- e. the location of the closest population centers is Carville, shown on Figure 2*
- f. The facility will not processes or disposes of putrescible solid waste*
- g. the location of the 100-year flood plain based on the most recent data is shown on Figure 2*
- h. there is not known to be any other pertinent information.*

2. access facilities;

RESPONSE

Access to facilities as required by LAC 33: VII.719.A.2 is by land transportation by all-weather roads that can meet the demands of the facility and are designed to avoid, to the extent practicable, congestion, sharp turns, obstructions, or other hazards conducive to

accidents. The surface roadways shall be adequate to withstand the weight of transportation vehicles. The locations are presented in Figure 3.

3. a letter from an appropriate agency concerning the traffic flow for facilities receiving waste generated off-site;

RESPONSE

The letter from LADOTD is included in Appendix A.

4. the distance to the nearest airport runway and proof of notification to the affected airport and the Federal Aviation Administration;

RESPONSE

In response to LAC 33: VII.719.A.3, the site will not accept Municipal Solid Waste (MSW); therefore, the locations of public use airports are not applicable.

5. the existing land use;

RESPONSE

In response to LAC 33: VII.719.A.6 and 8 the land surrounding the facility is zoned M-2 Industrial. The estimated total existing land use within three miles of the facility is: 5% residential, 1% health-care facilities and schools, 5% agricultural, 25% industrial and manufacturing, 10% other commercial uses, 1% recreational, 53% undeveloped.

6. an aerial photograph of the site;

RESPONSE

In response to LAC 33:VII.719.A.7, an aerial photograph showing total existing land use within one mile of the facility is presented in Figure 4.

7. the environmental characteristics of the site;

RESPONSE

The section 404 Permit from the USACE and the mitigation plan is presented in Appendix B.

In response to LAC 33:VII.719.A.4.c concerning the protection of such areas, there are no swamps, marches, estuaries, wildlife-hatchery areas, habitat of endangered species, archaeological sites, historic sites, publicly-owned recreation area, and similar critical environmental area located within 1,000 feet of the facility perimeter.

In response to LAC 33:VII.719.A.4 and 10, there are approximately 17 acres of wetlands that were delineated within the facility operational boundaries. The Section 404 (wetlands) Permit from the U.S. Army Corps of Engineers (USACE) and the mitigation plan is presented in Appendix B. Documentation from the appropriate state and federal agencies substantiating the historic sites, recreation areas, archaeological sites, designated wildlife-management areas, habitats for endangered species, and other sensitive ecologic areas within the operational area of the facility is presented in Appendix C.

8. a wetlands demonstration, if applicable, as provided in LAC 33:VII.709.A.8;

RESPONSE

The Section 404 Permit from the USACE and the mitigation plan is presented in Appendix B. .

9. demographic information concerning the estimated population density, within a 3-mile radius of the facility boundary, based on the latest census figures; and

RESPONSE

In response to LAC 33:VII.719.A.9, Census Figures (2000) indicate that St. Gabriel has a population of 5,514 people (Appendix D). Census data are not available in a format that specifically covers a true three mile radius surrounding the facility boundary. The population density was calculated using the population count for zip code 70721, and the portions that fall outside the zip code appear to be more rural as shown on the map in Figure 4.

10. information regarding wells, faults, seismic impact zones, unstable areas, and utilities, which is required for Type I and II facilities.

RESPONSE

Not Applicable because this is a Type III facility.

 Facility Characteristics. Standards concerning facility characteristics are contained in LAC 33:VII.709.B (Type I and II facilities), LAC 33:VII.717.B (Type I-A and II-A facilities), and LAC 33:VII.719.B (Type III facilities). A facility plan, including drawings and a narrative, describing the information required below shall be provided.

RESPONSE

The requirements listed are included in the responses below.

1. The following information is required for all facilities:
 - a. elements of the process or disposal system employed;

RESPONSE

In response to LAC 33:VII.719.B1, as presented in Figure 3, there are two entrances planned for the landfill. Primary access is planned to be from the north from Louisiana Highway 75 through ICI road to the landfill gatehouse. An alternate entrance will be from the south through Bear Industries from Louisiana Highway 75. All vehicles hauling waste will be inspected at the gatehouse upon entering the facility. Documentation of the waste load entering the facility will be prepared on a computer generated ticket. After the waste has been inspected and documented in accordance with the operational plan, trucks will proceed to the working face, where they will be subject to a second inspection and the operator will instruct the drivers where to place the waste. Objectionable material will be sent to a covered outbox. Roads to the working face will be all weather roads to maintain satisfactory conditions. The disposal areas will be graded to drain storm water to the north end of the excavation. Water will be pumped from an earthen sump at the northeast end of the

excavation through a permitted outfall. The site will be graded so that drainage outside of the waste disposal area will be by sheet flow away from the excavation. The existing ditches surrounding the property will remain as the primary site drainage features. A site plan is presented in Figure 3 and original contours are shown in Figure 5.

- b. the perimeter barrier and other control measures;

RESPONSE

In response to LAC 33:VII.719.B.2, a gate will be installed at each entrance to the facility. Access to the north is protected by Community Canal and to the south by Bayou Braud. A security fence will be installed near the east and west facility boundaries. During operating hours, each facility entry point shall be continuously manned, monitored or locked. During nonoperating hours each entry point shall be locked.

- c. a buffer zone;

RESPONSE

In response to LAC 33:VII.719.B.3, a minimum 50-foot buffer zone will be maintained around the waste disposal area limits as shown on Figure 3. No storage, processing, or disposal of solid waste will occur within the buffer zone.

- d. fire-protection and medical care measures;

RESPONSE

In response to LAC 33:VII.719.B.4, the facility will maintain two pumps on-site that may be used to pump water from on-site canals/bayous and one 5,000 gallon water tank with a dedicated pump. Fire extinguishers will be maintained at the facility. Additionally, cover soil may be used to smother a fire within the disposal area. Fire protection and medical care services are also available locally as described in the contingency plan (Appendix E). The plan outlines facility operations and emergency procedures to be followed in case of accident, fire, explosion, or other emergencies. The plan shall be filed with, in addition to the Office of Environmental Services, Waste Permits Division, the local fire department and the closest hospital or clinic. The plans shall be updated annually or when implementation demonstrates that a revision is needed. Training sessions shall be conducted annually for all employees working at the facility. A copy of the training program shall be filed with the Office of Environmental Services, Waste Permits Division.

- e. landscaping and other beautification efforts;

RESPONSE

In response to LAC 33:VII.719.B.5, each entrance to the facility will be landscaped with appropriate vegetation and kept in a trimmed, neat appearance.

- f. devices or methods to determine, record, and monitor incoming waste;

RESPONSE

In response to LAC 33:VII.719.B.6, waste entry to the site will be controlled through visual vehicle inspections at the front gate to determine the nature and quantity of waste in order to prevent entry of unrecorded or unauthorized deliverables (i.e. hazardous, unauthorized, or unpermitted solid waste). Readable signs will be posted at the waste inspection point listing the types of wastes that can be received at the facility. The waste will consist of construction & demolition debris from the service area. During operating hours, the facility entrances will be continuously monitored, manned, or locked. The quantity of waste entering the facility will be measured based on volume. (The volume of the waste will be converted to wet tons using density conversion factors established for each type of waste, included herein as Attachment 4.) A comprehensive record keeping system will be maintained in the office at the site.

- g. NPDES/LPDES discharge points (existing and proposed);

RESPONSE

In response to LAC 33:VII.719.B.7, discharges from the waste disposal area will be controlled through the proposed Louisiana Pollutant Discharge Elimination System (LPDES) outfalls presented in Figure 3. The completed LPDES Permit Application to Discharge Industrial Wastewater (form SCC-2) is included in Appendix F.

and

- h. other features, as appropriate.

RESPONSE

Proposed features are presented in Figure 6.

- 2. The following information is required for Type I and II facilities:

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section is not applicable.

- a. areas for isolating nonputrescible waste or incinerator ash, and borrow areas; and
- b. location of leachate collection/treatment/removal system.

D. Facility Surface Hydrology. Standards governing facility surface hydrology are contained in LAC 33:VII.711.A (Type I and II landfills), LAC 33:VII.713.A (Type I and II surface impoundments), LAC 33:VII.715.A (Type I and II landfarms), LAC 33:VII.717.C (Type I-A and II-A facilities), LAC 33:VII.719.C (Type III facilities), and LAC 33:VII.723.B (composting facilities). The following information is required for all facilities:

RESPONSE

The requirements listed in LAC 33:VII.719.C "Surface Hydrology" referenced above is included in the responses to items 1 through 5 below.

- 1. a description of the method to be used to prevent surface drainage through the operating areas of the facility;

RESPONSE

Land surfaces outside of disposal areas will be graded so that non-contact storm water drains by sheet flow away from active solid waste management areas. Earthen berms will be used to prevent backflow of rainwater to operational areas if necessary.

2. a description of the facility runoff/run-on collection system;

RESPONSE

Within the waste disposal excavation, runoff will drain to the northeast to an established sump area, away from the working face to minimize storm water contact with the waste. Runoff will be collected in an earthen sump in the northeast corner of the excavation, and pumped out of the sump through an LPDES outfall into Community Canal (see Figure 6).

Storm water runoff from within all waste storage areas will be segregated from non-process storm water and directed back to the disposal area by use of grading, berms, ditches, piping, and/or other appropriate measures for discharge through the appropriate LPDES outfall.

The site will be visually inspected after significant rainfall events (>1/2 inches) occurring during operating hours to confirm that storm water management practices are adequate. Modifications to storm water management practices will be implemented as necessary.

3. the rainfall amount from a 24-hour/25-year storm event;

RESPONSE

The State of Louisiana, DOTD, Hydraulics Manual, adopted November 1984, Revised March 1987, identifies the 24-hour/25-year storm event for Iberville Parish as 9.6 inches. A 12-inch, 24-hour/25-year storm event was used for evaluating storm water management capacity at the proposed facility. The landfill will be constructed to an average depth of approximately 20 feet over approximately 90 acres; therefore, the water from the design storm event can be managed within the disposal area. Storm water runoff from within all waste storage areas will be segregated from non-process storm water and directed back to the disposal area by use of grading, berms, ditches, piping, and/or other appropriate measures for discharge through the appropriate LPDES outfall will be adequate to handle the storm event.

4. the location of aquifer recharge areas in the site or within 1,000 feet of the site perimeter, along with a description of the measures planned to protect those areas from the adverse impact of operations at the facility; and

RESPONSE

At the site, the soil lithology is principally clay with discontinuous thin clayey silt and silty clay and sandy units within clay, peaty organic zones (Appendix H). This lithology is typical

fluvial back swamp and natural levee deposits. These deposits that are at this location are not being used as a source of residential or municipal water supply. Because of their lenticular and discontinuous nature of these units are not in expected to be in direct contact with the Mississippi River, however, to prevent potential migration from the landfill, any permeable area that are excavated from the bottom or side slopes of the landfill will be covered with a minimum of two feet of recompacted clay.

According to the Louisiana Geological Survey Bulletin 16, the first major recognized drinking water aquifer is the Plaquemines aquifer that begins below approximately 100' in this area. The landfill excavation is planned for a 20' maximum depth. There are no known surficial connections to the Plaquemines Aquifer or to the river, therefore in the landfill area any surface water will not recharge the aquifer, so there are not aquifer recharge zones.

According to the LDOTD well registry there are only tow water wells within one mile of the proposed landfill. These two wells are at depths greater than 300 feet and are located approximately 0.7 miles south of the site near the Mississippi River at Carville. The only other registered wells in the area are environmental groundwater monitoring wells at the industrial sites in the area (Pioneer, Syngenta, and Kinder Morgan).

The excavation and operation at the C&D landfill site will have no connection or impact on any of these wells because of the lack of lateral continuity of the thin porous zones encased within the fat clays. This is typical of sediments deposited in the fluvial environment in natural levee and backswamp depositional environments. Therefore, based upon this site specific information there are not aquifer recharge areas in the site or within 1000 feet of the site perimeter.

5. if the facility is located in a flood plain, a plan to ensure that the facility does not restrict the flow of the 100-year base flood or significantly reduce the temporary water-storage capacity of the flood plain, and documentation indicating that the design of the facility is such that the flooding does not affect the integrity of the facility or result in the washout of solid waste.

RESPONSE

The proposed landfill is a not located in a flood plain as presented in Figure 2.

E Facility Plans and Specifications. Standards governing facility plans and specifications are contained in LAC 33:VII.711.B (Type I and II landfills), LAC 33:VII.713.B (Type I and II surface impoundments), LAC 33:VII.715.B (Type I and II landfarms), LAC 33:VII.717.E (Type I-A and II-A facilities), LAC 33:VII.721.A (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.A (composting facilities), and LAC 33:VII.725.A (Type III separation and woodwaste processing facilities).

RESPONSE

The cover material will be soil saved from the excavation and excavated from adjacent areas as necessary. Where appropriate, approved alternate cover material will possibly be

used. The cover material will be of an adequate volume with a thickness of one foot to cover a surface area approximately 40 feet wide and 535 feet long and a working face of approximately 20 feet. Based upon the final dimensions of the landfill, the calculation of volume of material required indicate the daily cover will be 800 cubic yards per month and final cover will be 380,000 cubic yards. There will be 650,000 cu yd retained on site for daily cover and final cover.

In accordance with 721.A.2.a and b, the cover material will:

- a.*
 - i. minimize vector-breeding areas and animal attraction by controlling:
(a). fly, mosquito, and other insect emergence and entrance;
(b). rodent burrowing for food and harborage; and
(c). Bird and animal attraction*
 - ii. control leachate generation by:
(a). minimizing external-moisture infiltration;
(b). minimizing erosion: and
(c). Utilizing materials with minimum free-liquid content;*
 - iii. reduce fire-hazard potential*
 - iv. minimize blowing paper and litter;*
 - v. reduce noxious odors by minimizing outward movement of methane and other gasses;*
 - vi. provide aesthetic appearance to the landfill operation; and*
 - vii. allow accessibility regardless of weather.*

- b. Wastes will be deposited in the smallest practical area each day and compacted. The wastes shall be covered with silty clays applied a minimum of 12 inches thick, at least every 30 days and documented in the facility's records.*

The requirements listed in LAC 33:VII.721.A "Plans and Specifications: referenced above is included in the responses to items 1 through 5 below.

1. Certification. The person who prepared the permit application shall provide the following certification:

"I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of LAC 33:VII.Subpart 1. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment."

RESPONSE

A certification statement is presented in Appendix G.

2. Geotechnical field tests and laboratory tests shall be conducted according to the standards of the American Society for Testing and Materials (ASTM) or the EPA or other applicable standards approved by the administrative authority. The results of these tests may be used for modeling and analysis purposes.

RESPONSE

Attached as Appendix H is the report of geotechnical field tests and laboratory tests conducted according to the standards of the American Society for Testing and Materials (ASTM).

3. The following information is required for Type I and II facilities:

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section is not applicable.

- a. detailed plan-view drawings showing original contours, proposed elevations of the base of units prior to installation of the liner system, and proposed final contours (e.g., maximum height);
- b. detailed drawings of slopes, levees, and other pertinent features;
- c. the type of material and its source for levee construction. Calculations shall be performed to indicate the volume of material required for levee construction;
- d. representative cross sections showing original and final grades, drainage, the location and type of liner, and other pertinent information;
- e. a description of the liner system, which shall include calculations of anticipated leachate volumes, rationales for particular designs of such systems, and drawings; and
- f. a description of the leachate collection and removal system, which shall include calculations of anticipated leachate volumes, rationales for particular designs of such systems, and drawings.

4. The following information is required for Type I, II, and III landfills:

- a. approximate dimensions of daily fill and cover; and

RESPONSE

The approximate dimensions of daily fill and cover will be approximately 800 cubic yards per month.

- b. the type of cover material and its source for daily, interim, and final cover. Calculations shall be performed to indicate the volume of material required for daily, interim, and final cover.

RESPONSE

The cover material will be soil saved from the excavation and excavated from adjacent areas as necessary. Where appropriate, approved alternate cover material will possibly be used. The cover material will be of an adequate volume with a thickness of one foot to cover a surface area approximately 40 feet wide and 535 feet long and a working face of approximately 20 feet. Based upon the final dimensions of the landfill, the calculation of volume of material required indicate the daily cover will be 800 cubic yards per month and final cover will be 380,000 cubic yards. There will be 650,000 cu yd retained on site for daily cover and final cover.

In accordance with LAC 33:VII.721.A.2.a and b, the cover material will:

- i. *minimize vector-breeding areas and animal attraction by controlling:*

- (a). fly, mosquito, and other insect emergence and entrance;
- (b). rodent burrowing for food and harborage; and
- (c). bird and animal attraction;
- ii. control leachate generation by:
 - (a). minimizing external-moisture infiltration;
 - (b). minimizing erosion; and
 - (c). utilizing materials with minimum free-liquid content;
- iii. reduce fire-hazard potential;
- iv. minimize blowing paper and litter;
- v. reduce noxious odors by minimizing outward movement of methane and other gasses;
- vi. provide aesthetic appearance to the landfill operation; and
- vii. allow accessibility regardless of weather

Wastes will be deposited in the smallest practical area each day and compacted. The wastes shall be covered with silty clays applied a minimum of 12 inches thick, at least every 30 days and documented in the facility's records.

5. Type I and II landfills and surface impoundments with a potential to produce gases shall provide a gas collection/treatment or removal system.

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section is not applicable.

F Facility Administrative Procedures. Standards governing facility administrative procedures are contained in LAC 33:VII.711.C (Type I and II landfills), LAC 33:VII.713.C (Type I and II surface impoundments), LAC 33:VII.715.C (Type I and II landfarms), LAC 33:VII.717.F (Type I-A and II-A facilities), **LAC 33:VII.721.B (Type III construction and demolition debris and woodwaste landfills)**, LAC 33:VII.723.C (composting facilities), and LAC 33:VII.725.B (Type III separation and woodwaste processing facilities).

RESPONSE

The requirements listed in LAC 33:VII.721.B "Facility Administrative Procedures" referenced above is included in the responses to items 1 through 5 below.

1. The following information is required for all facilities:

a. a description of the recordkeeping system, including types of records to be kept, and the use of records by management to control operations as required;

RESPONSE (equivalent to LAC 33:VII.721.B.2)

All records necessary for the effective management of the facility and for preparing required reports will be maintained at the site, including:

- *A log of waste receipt dates, waste types, transporter name/solid waste identification number, and waste quantities;*
- *A log of wastes shipped from the site for disposal and the permitted facility that the wastes were sent to;*
- *Annual solid waste reports;*
- *A copy of the current Louisiana Solid Waste Rules and Regulations;*
- *The permit;*
- *The permit application; and*
- *Permit modifications.*

Annual reports will be submitted to the Office of Management and Finance, Financial Services, indicating quantities and types of solid waste (expressed in wet-weight tons per year), received and disposed of during the period. For unacceptable wastes that are shipped off-site for disposal, the report will identify the permitted facility used for disposal. All calculations used to determine the solid waste amounts received for disposal during the annual reporting period will be from July 1 through June 30 and annual reports will be submitted to the administrative authority by August 1 of each reporting year. These records will be maintained for the life of the facility and will be kept on file for at least three years after closure.

b. an estimate of the minimum personnel, listed by general job classification, required to operate the facility;

RESPONSE (equivalent to LAC 33:VII.721.B.3)

There will be sufficient personnel at the facility to maintain the operational requirements. At a minimum, the facility will have a level "A" operator in charge of the overall facility, and either a level "A" or "B" operator who is present at the facility during hours of operation and in direct charge of day-to-day operations. Additional personnel will be at the facility on an as needed basis depending on operations. These numbers and levels of certified operators employed at the facility will satisfy the requirements of the department in accordance with LAC 46:Part XXIII Certified Solid Waste Operators regulations. Operator certificates shall be prominently displayed at the facility. The Board of Certification and Training for Solid Waste Disposal System Operators and the Office of Environmental Services, Waste Permits Division, shall be notified within 30 days of any changes in the employment status of certified operators.

c. the maximum days of operation per week and hours per facility operating day (maximum hours of operation within a 24-hour period); and

RESPONSE

The maximum hours of operation will be 6:00 AM to 6:00 PM, six days a week (Monday through Saturday). The facility will accept waste outside of these operating hours only with prior verbal and written notification to the Louisiana Department of Environmental Quality. Additionally, the facility may choose to restrict operating hours to less than the maximum hours of operation.

- d. an annual report submitted to the administrative authority.

RESPONSE (equivalent to LAC 33:VII.721.B.1)

Annual reports will be submitted to the Office of Management and Finance, Financial Services, indicating quantities and types of solid waste (expressed in wet-weight tons per year), received and disposed of during the period. For unacceptable wastes that are shipped off-site for disposal, the report will identify the permitted facility used for disposal. All calculations used to determine the solid waste amounts received for disposal during the annual reporting period will be from July 1 through June 30 and annual reports will be submitted to the administrative authority by August 1 of each reporting year. These records will be maintained for the life of the facility and will be kept on file for at least three years after closure.

2. Type II and Type III facilities shall include the number of certified facility operators determined and certified by the Louisiana Solid Waste Operator Certification and Training Program Board (R.S. 37:3151 et seq. and LAC 46:Part XXIII).

RESPONSE

The facility will have at a minimum a level "A" operator in charge of the overall facility, and either a level "A" or "B" operator who is present at the facility during hours of operation and in direct charge of day-to-day operations. Additional personnel will be at the facility on an as needed basis depending on operations. These numbers and levels of certified operators employed at the facility will satisfy the requirements of the department in accordance with LAC 46:Part XXIII Certified Solid Waste Operators regulations. Operator certificates shall be prominently displayed at the facility. The Board of Certification and Training for Solid Waste Disposal System Operators and the Office of Environmental Services, Waste Permits Division, shall be notified within 30 days of any changes in the employment status of certified operators.

G Facility Operational Plans. Standards governing facility operational plans are contained in LAC 33:VII.711.D (Type I and II landfills), LAC 33:VII.713.D (Type I and II surface impoundments), LAC 33:VII.715.D (Type I and II landfarms), LAC 33:VII.717.G (Type I-A and II-A facilities), **LAC 33:VII.721.C (Type III construction and demolition debris and woodwaste landfills)**, LAC 33:VII.723.D (composting facilities), and LAC 33:VII.725.C (Type III separation and woodwaste processing facilities).

RESPONSE

The requirements listed in LAC 33:VII.721.C "Facility Operations" referenced above is included in the responses to items 1 through 6 below.

1. The following information is required for all facilities:

a. types of waste (including chemical, physical, and biological characteristics of industrial wastes generated on-site), maximum quantities of wastes per year, and sources of waste to be processed or disposed of at the facility;

RESPONSE

The following types of waste will be accepted for disposal at the site:

- *Construction and demolition debris as defined in LAC 33:VII.115 and a maximum of five percent by volume of paper-waste associated with such debris. Sources of waste in the service area may include, but are not limited to, the following sources identified in LAC 33:VII.721.C:*

- *Land clearing operations;*
- *Municipal, commercial, and residential sites;*
- *Municipal commercial, and residential construction sites;*

The following will be prohibited:

- *Disposal of E&P wastes.*
- *Receipt/disposal of hazardous waste or any other wastes that present special handling or disposal problems as excluded by the administrative authority;*
- *Open burning, unless authorization is first obtained from the administrative authority and other applicable federal, state and/or local authorities;*
- *Salvaging, unless approved by the administrative authority;*
- *Scavenging; and*
- *Disposal of liquid waste, infectious waste, residential waste, commercial waste, friable asbestos, and putrescible waste.*

The maximum quantity of waste that will be accepted per year is 572,000 cubic yards (58,378 wet tons).

b. *waste-handling procedures from entry to final disposition, which could include shipment of recovered materials to a user;*

RESPONSE

Waste transporters will enter the site and proceed to the waste receiving gatehouse. At the waste receiving gatehouse, wastes will be inspected for conformance with permit requirements, measured for quantity, and other pertinent information will be recorded. Waste information will be recorded on standard forms or in a logbook designed to record all the necessary information. By using a specifically designed form or logbook, the person logging the waste will have a comprehensive checklist to ensure that all the necessary information is documented.

After determining that the waste is acceptable and recording appropriate information, the transporter will be directed to the active area of the working face to unload. Wastes determined to be unacceptable will be turned away at the receiving gatehouse. Should unacceptable wastes be discovered at the site, the wastes will be stored in a closed container and removed from the site for disposal at an approved facility within seven (7) days. Records of such events will be kept including the date of waste recovery, a description of the waste, the estimated quantity of waste, the method of isolation/containment, the date of removal from the site, and the ultimate disposal facility to which the waste was sent. The disposal area will be operated as one unit, with waste disposal proceeding from north to south.

Unacceptable materials will be stored in a manner that does not create a nuisance, health hazard, or detriment to the environment and all materials will be removed or disposed of prior to facility closure. All unacceptable hazardous or industrial waste will be immediately rejected at the gate or if discovered as unloading will be immediately recovered and reloaded. Rejected material of this type will be immediately returned to the generator.

All unacceptable municipal non-hazardous waste (including sanitary refuse, garbage, etc) shall be stored in a closed container and removed from the site at least every seven (7) days.

- c. minimum equipment to be furnished at the facility;

RESPONSE

Sufficient equipment will be provided and maintained at the facility to meet operational needs. The following equipment will be at the site as required for site operations and maintenance:

- A six-inch pump to remove storm water from the excavation and through the permitted outfall; and*
- An operational bulldozer, backhoe or other piece of equipment capable of placing waste and cover material.*

- d. plan to segregate wastes, if applicable;

RESPONSE

Only construction and demolition debris will be accepted for disposal. Wastes that are not consistent with these categories will not be accepted at the site. Wastes that, for unforeseen reasons, are accepted at the site, but are not acceptable for disposal, will be removed from the site within seven days. These wastes will be stored in a closed container that prevents vector and odor problems, and a log of dates and volumes of waste removed from the facility will be maintained.

- e. procedures planned in case of breakdowns, inclement weather, and other abnormal conditions (including detailed plans for wet-weather access and operations);

RESPONSE

The facility will have access to additional equipment through an affiliated construction company as well as established accounts with local equipment rental companies to provide additional equipment. The facility design, as presented in Figures 2 and 6, is such that the access roads are designed to drain quickly by sheet flow and are above the 100-year base flood elevation. This design should provide adequate access, to all facility areas during wet weather conditions.

During wet weather, waste haulers will be instructed to stay off the working face slope. Waste will be dumped within the limits of the waste disposal area/runoff control area at the working face crest and incorporated into the working face when weather permits safe operation on the slope. Water will be collected in the excavation bottom. Water discharge will proceed as soon as it is safe for the facility personnel to operate the discharge pump. Pondered water at the east end of the excavation will not inhibit facility operations associated with the acceptance of construction and demolition debris.

Waste will not be placed in standing water.

- f. procedures, equipment, and contingency plans for protecting employees and the general public from accidents, fires, explosions, etc., and provisions for emergency response and care, should an accident occur (including proximity to a hospital, fire and emergency services, and training programs); and

RESPONSE

A contingency plan outlining facility operations and emergency procedures to be followed in case of an accident, fire, explosion, or other emergency is included in Appendix E. The local Fire Department is also the first responder EMS and a copy of the contingency plan outlining facility operations and emergency procedures to be followed in case of an accident, fire, explosion, or other emergency has been submitted to the St. Gabriel Fire Department (transmittal letter in Appendix I). It will also be filed with the closest hospital or clinic. The contingency plan contains the names, phone numbers and addresses (proximity) of local emergency response teams/facilities. The contingency plan will be updated annually or when implementation demonstrates that a revision is needed. Copies of the updated contingency plan will be filed with the Office of Environmental Services, Permits Division as well as the local fire department and closest hospital.

Correspondence from the local fire department, emergency medical services agency (EMS) and the local medical facility are included in Appendix C of the revised permit application.

An annual training session in the form of a contingency plan review will be required for all employees working at the facility. The program for the training session will consist of:

- A contingency plan review;*
- A discussion to clarify any emergencies not covered by the plan or identify areas of the plan that require updating; and*
- Signing a form documenting that the employee(s) received training.*

g. provisions for controlling vectors, dust, litter, and odors.

RESPONSE

The wastes accepted by this facility have a low potential to cause vector, dust, litter, odor problems. The use of cover soils or alternate covers should effectively minimize vector, litter, and odor problems. The facility will be cleaned daily to maintain an orderly appearance. Dust control procedures may include, but are not limited to:

- Spreading gravel on access roads;*
- Wetting access roads with water or other dust inhibitors; and*
- Planting grass.*

2. The following information is required for Type I, I-A, II, II-A, and III facilities:

a. a comprehensive operational plan describing the total operation, including but not limited to, inspection of incoming waste to ensure that only permitted wastes are accepted (Type II landfills shall provide a plan for random inspection of incoming waste loads to ensure that hazardous wastes or Toxic Substances Control Act (TSCA) regulated PCB wastes are not disposed of in the facility.); traffic control; support facilities; equipment operation; personnel involvement; and day-to-day activities. A quality-assurance/quality-control (QA/QC) plan shall be provided for facilities receiving industrial waste; domestic-sewage sludge; incinerator ash; asbestos-containing waste; nonhazardous petroleum-contaminated media; and debris generated

from underground storage tanks (UST), corrective action, or other special wastes as determined by the administrative authority. The QA/QC plan shall include, but shall not be limited to, the necessary methodologies; analytical personnel; preacceptance and delivery restrictions; handling procedures; and appropriate responsibilities of the generator, transporter, processor, and disposer. The QA/QC plan shall ensure that only permitted, nonhazardous wastes are accepted;

RESPONSE

Waste entry to the site will be controlled through visual vehicle inspections at the front gate to determine the nature and quantity of waste. In order to prevent entry of unrecorded or unauthorized deliverables (i.e. hazardous, unauthorized, or unpermitted solid waste), readable signs will be posted at the waste inspection point listing the types of wastes that can be received at the facility. The waste from the service area will consist of construction & demolition debris identified in LAC 33:VII.721.C. During operating hours, the facility entrance will be continuously monitored, manned, or locked. The quantity of waste entering the facility will be measured based on volume. (The volume of the waste will be converted to wet tons using density conversion factors established for each type of waste.) A comprehensive record keeping system will be maintained in the office at the site. Waste slopes will be no steeper than 3(H):1(V).

- b. salvaging procedures and control, if applicable;

RESPONSE

To discourage/control unauthorized salvaging, site access will be restricted by fences erected along the eastern and western borders of the property, by Bayou Braud on the southern border of the property and by Community Canal on the northern border of the property. Readable signs will also be posted noting that unauthorized salvaging is not allowed. Personnel will be on-site during operating hours to enforce this policy.

- c. scavenging control; and

RESPONSE

To discourage/control unauthorized scavenging, site access will be controlled by fences erected along the eastern and western borders of the property, by Bayou Braud on the southern border of the property and by Community Canal on the northern border of the property. Readable signs will also be posted noting that scavenging is not allowed. Personnel will be on-site during operating hours to enforce this policy.

- d. a comprehensive air monitoring plan for facilities receiving waste with a potential to produce methane gases.

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section does not apply.

- 3. The following information is required for Type I and II landfills.

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section does not apply.

- a. Items to be submitted, regardless of land use, include:
 - i. a detailed analysis of waste, including but not limited to, pH, phosphorus, nitrogen, potassium, sodium, calcium, magnesium, sodium-adsorption ratio, and total metals (as listed in LAC 33:VII.715.D.3.b);
 - ii. soil classification, cation-exchange capacity, organic matter, content in soil, soil pH, nitrogen, phosphorus, metals (as listed in LAC 33:VII.715.D.3.b), salts, sodium, calcium, magnesium, sodium-adsorption ratio, and PCB concentrations of the treatment zone; and
 - iii. annual application rate (dry tons per acre) and weekly hydraulic loading (inches per acre).
 - b. Items to be submitted in order for landfarms to be used for food-chain cropland include:
 - i. a description of the pathogen-reduction method for septage, domestic sewage sludges, and other sludges subject to pathogen production;
 - ii. crops to be grown and the dates for planting;
 - iii. PCB concentrations in waste;
 - iv. annual application rates of cadmium and PCBs; and
 - v. cumulative applications of cadmium and PCBs.
 - c. Items to be submitted for landfarms to be used for non-food-chain purposes include:
 - i. a description of the pathogen-reduction method in septage, domestic sewage sludges, and other sludges subject to pathogen production; and
 - ii. a description of control of public and livestock access.
4. The following information is required for Type I-A and II-A incinerator waste-handling facilities and refuse-derived energy facilities:

RESPONSE

The proposed landfill is a Type III facility; therefore, this Section does not apply.

- a. a description of the method used to handle process waters and other water discharges that are subject to NPDES/LPDES permit and state water discharge permit requirements and regulations; and
- b. a plan for the disposal and periodic testing of ash (All ash and residue shall be disposed of in a permitted facility.).

5. The following information is required for Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities:

RESPONSE

The proposed landfill is a Type III facility and will not be functioning as a separating and composting facility; therefore, this Section does not apply.

- a. a description of the testing to be performed on the fuel or compost; and
 - b. a description of the uses for and the types of fuel/compost to be produced.
6. Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities shall include a description of marketing procedures and control.

RESPONSE

The proposed landfill is a Type III facility and will not be functioning as a separating and composting facility; therefore, this Section does not apply.

H. Implementation Plans. All facilities shall have implementation plans in accordance with standards in LAC 33:VII.709.D (Type I and II facilities), LAC 33:VII.717.H (Type I-A and II-A facilities), and LAC 33:VII.719.E (Type III facilities).

RESPONSE

The construction schedule is presented as below.

- *Day 1 to Day 30 – Final permits and notice to proceed are issued by LDEQ*
 - *Complete gatehouse/office setup;*
 - *Discharge water from open excavation in accordance with LPDES permit;*
 - *Continue excavation in active disposal areas as necessary; and*
 - *start waste receipts.*
- *Day 30 to Day 7,300*
 - *soil excavation/waste filling; and*
 - *place final cover as areas reach final grade.*
- *Day 7,300*
 - *receive final waste; and*
 - *grade waste for final capping, and begin final capping of remaining area.*
- *Day 7,330*
 - *complete final capping procedures and notify LDEQ for closure inspection and;*
 - *start post closure maintenance.*

Development (excavation, filling, and covering) of the site will proceed as one continuous operation and not in phases. The cap will be constructed as the facility is filled. The exact final cap placement schedule will be dependent upon waste receipt rates.

I. Facility Closure. Standards governing facility closure are contained in LAC 33:VII.711.E (Type I and II landfills), LAC 33:VII.713.E (Type I and II surface impoundments), LAC 33:VII.715.E (Type I and II landfarms), LAC 33:VII.717.I (Type I-A and II-A facilities), LAC 33:VII.721.D (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.E (composting facilities), and LAC 33:VII.725.D (Type III separation and woodwaste processing facilities).

1. The closure plan for all facilities shall include the following:
 - a. the date of final closure;

RESPONSE

The estimated date of final closure is twenty years from the date of first waste receipts. The administrative authority will be notified in writing at least 90 days before final closure or intent to close, seal, or abandon any facility areas. The following information will be provided with the notification:

- *planned closure date;*
- *changes, if any, requested in the approved closure plan; and*
- *closure schedule and estimated cost.*

b. the method to be used and steps necessary for closing the facility; and

RESPONSE

The facility closure method will be capping with a 24-inch silty clay cover with six inches of topsoil. Final cover will be applied within 30 days after final grades are reached. If necessary due to inclement weather or other circumstances, the facility may file a request with the administrative authority to extend this deadline. The design presented in Figure 8 shows side slopes will be no steeper than 4 (horizontal):1 (vertical), and will have a minimum six (6) percent slope on the cap top.

The steps required to achieve closure will be:

- *standing water will be removed, treated and discharged or disposed of offsite;*
- *storm water runoff diversion systems will be maintained until final cover is in place;*
- *complete and document an insect and rodent inspection before the final cover*
- *installation, and exterminate vectors if required;*
- *compact and grade wastes to designed final contours;*
- *request a closure inspection prior to placing the six-inch topsoil layer and planting the ground cover;*
- *place a 24-inch silty clay cap;*
- *place a six-inch topsoil layer; and*
- *plant a vegetative cover or other suitable cover approved by the administrative authority to prevent erosion and return the facility to a more natural appearance.*
- *submit the engineering certification for LDEQ approval.*

After a closure inspection and approval, the parish mortgage and conveyance records will be updated to record the specific location of the facility and to specify that the property was used for the disposal of solid waste. The document shall identify the name and address of the person with knowledge of the contents of the facility. An example of the form to be used for this purpose is provided in Appendix K. The facility will provide the Office Environmental Services, Waste Permits Division, with a true copy of the document filed and certified by the parish clerk of court.

c. an itemized cost of closure of the facility, based on the estimated cost of hiring a third party to close the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive.

RESPONSE

The estimated facility closure cost, based on hiring a third party to close the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive is \$166,366 as detailed in Appendix J.

2. The closure plan for Type I and II landfills and surface impoundments shall include:

RESPONSE

The proposed landfill is a Type III facility, therefore, this Section is not applicable.

- a. a description of the final cover and the methods and procedures used to install the cover;
- b. an estimate of the largest area of the facility ever requiring a final cover at any time during the active life;
- c. an estimate of the maximum inventory of solid waste ever on-site over the active life of the facility; and
- d. a schedule for completing all activities necessary for closure.

3. The closure plan for all Type I and II facilities and Type III wood waste and construction/demolition debris facilities shall include the following:

- a. the sequence of final closure of each unit of the facility, as applicable;

RESPONSE

At the time the facility approaches final closure, capping should be substantially complete with the exception of a very small portion of the landfill where waste was last placed. No more than 10 acres will at any time require final cover. The last uncapped portion will be graded, capped, and seeded.

- b. a drawing showing final contours of the facility; and

RESPONSE

The facility final contours are presented in Figure 9.

- c. a copy of the document that will be filed upon closure of the facility with the official parish record keeper indicating the location and use of the property for solid waste disposal, unless the closure plan specifies a clean closure.

RESPONSE

The document that will be filed upon facility closure with the official parish record keeper is included in Appendix K. The document in Appendix K will update the parish mortgage and conveyance records by entering the specific facility location and specifying that the property was used for the solid waste disposal. The document will also identify the name and address of a person with knowledge of the facility contents. The Office of Environmental Services, Solid Waste Division will be provided with a true copy of the document filed and certified by the parish clerk of court.

J. Facility Post-Closure. Standards governing post-closure requirements are contained in LAC 33:VII.711.F (Type I and II landfills), LAC 33:VII.713.F (Type I and II surface impoundments), LAC 33:VII.715.F (Type I and II landfarms), and LAC 33:VII.721.E (Type III construction and demolition debris and woodwaste landfills).

1. The post-closure plan for all facilities shall include the following:
 - a. discussion of the long-term use of the facility after closure, as anticipated; and

RESPONSE

The long-term facility use has not been determined. The integrity and grade of the cap will be maintained for no less than three years after the date of the administrative authority's approval of the facility closure.

- b. an itemized cost of conducting post-closure of the facility, based on the estimated cost of hiring a third party to conduct post-closure activities in accordance with the closure plan.

RESPONSE

The estimated facility post-closure cost based on a 3-year period is \$108,000 as detailed in Appendix J. The 3-year post-closure care will include:

- *maintaining the cap integrity and grade;*
- *storage of facility records; and*
- *preparing and submitting annual reports concerning the cap integrity to the Office of Environmental Compliance, Surveillance Division for a period of three years after closure.*

2. The post-closure plan for Type I and II facilities shall include the following:

RESPONSE

The proposed landfill is a Type III facility, therefore, this Section is not applicable.

- a. the method for conducting post-closure activities, including a description of the monitoring and maintenance activities and the frequency at which they will be performed;
 - b. the method for abandonment of monitoring systems, leachate collection systems, gas-collection systems, etc.;
 - c. measures planned to ensure public safety, including access control and gas control; and
 - d. a description of the planned uses of the facility during the post-closure period.

K. Financial Responsibility. Standards governing financial responsibility are contained in LAC 33:VII.Chapter 13. All applicable Sections of LAC 33:VII.Chapter 13 must be addressed and incorporated into the permit application responses. A section documenting financial responsibility according to LAC 33:VII.Chapter 13 that contains the following information shall be included for all facilities:

1. the name and address of the person who currently owns the land and the name and address of the person who will own the land if the standard permit is granted (if different from the permit holder, provide a copy of the lease or document which evidences the permit holder's authority to occupy the property); or

RESPONSE

St. Gabriel Redevelopment, LLC has a lease on the property for a period of 40 years with renewal options. The owner of the property is Bear Industries, LLC. A copy of the lease to St. Gabriel Redevelopment, LLC is included as Attachment 2.

2. the name of the agency or other public body that is requesting the standard permit, or if the agency is a public corporation, its published annual report, or if otherwise, the names of the principal owners, stockholders, general partners, or officers;

RESPONSE

Not applicable, St. Gabriel Redevelopment, LLC is not an agency, public body, or public corporation.

3. evidence of liability coverage, including:
- a. personal injury, employees, and the public (coverage, carriers, and any exclusions or limitations);
 - b. property damage (coverage and carrier);
 - c. environmental risks; and

RESPONSE

St. Gabriel Redevelopment, LLC will provide liability coverage acceptable to the administrative authority. The wording of the certificate of liability insurance will be identical to the wording specified in LAC 33:VII.1399.Appendix B (formerly 727.A.I.d.i(e)). Documentation of liability coverage will be in place prior to the receipt of waste in accordance with LAC 33:VII.1301.A.

4. evidence of a financial assurance mechanism for closure and/or post-closure care and corrective action for known releases when needed.

RESPONSE

St. Gabriel Redevelopment, LLC will establish a financial assurance mechanism for closure and post-closure care acceptable to the administrative authority. Documentation of a financial assurance mechanism will be in place prior to the receipt of waste in accordance with LAC 33:VII.1303.A.

If St. Gabriel Redevelopment, LLC uses a letter of credit to satisfy the requirements of this section, the Company will also provide to the administrative authority evidence of the establishment of a standby trust fund. The wording of the standby trust agreement must be identical to the wording specified in 1399.Appendix D (formerly 727.A.2.d.ix). The letter of credit will be accompanied by a letter from the permit holder or applicant referring to the letter of credit by number, issuing institution, and date and providing the following information: agency interest number; solid waste identification number; site name; facility name; facility permit number; and the amount of coverage of the facility by the letter of

credit. The letter of credit will be identical to the wording on LAC 33:VII.1399.AppendixG, except that the instructions in brackets will be replaced with the relevant information and the brackets deleted.

L. Solid Waste Fees. Standards governing solid waste fees are contained in LAC 33:VII.Chapter 15. A section documenting compliance with applicable fees according to LAC 33:VII.Chapter 15 shall be included for all facilities.

RESPONSE

St. Gabriel Redevelopment, LLC will establish compliance with all applicable fees according to LAC 33:VII Chapter 15.

M. Special Requirements. The administrative authority may require additional information for special processes or systems and for supplementary environmental analysis.

RESPONSE

St. Gabriel Redevelopment, LLC acknowledges that the administrative authority may require additional information for special processes or systems and for supplementary environmental analysis.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Solid and Hazardous Waste, Solid Waste Division, LR 19:187 (February 1993), amended LR 19:1143 (September 1993), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2521 (November 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 33:1040 (June 2007).

§522. General Facility Geology, Subsurface Characterization, and Facility Groundwater Monitoring

A. General Facility Geology. Standards governing facility geology are contained in LAC 33:VII.801. The following information is required for Type I, Type I-A, Type II, Type II-A, and Type III facilities:

1. a demonstration that the person who characterized the subsurface soil and groundwater conditions at the facility is qualified. At a minimum, this individual shall be a geologist, or a professional engineer licensed in the state of Louisiana with expertise in geotechnical engineering and hydrogeology; and

RESPONSE

Geotechnical engineering was done for St. Gabriel Redevelopment, LLC by Kendrick Engineering, LLC. A copy of the registration stamp from the report is included in Appendix H.

2. a demonstration that the facility has natural soils of low permeability as provided in LAC 33:VII.801.A.2; or

RESPONSE

The Geotechnical report demonstrating that the facility has natural soils of low permeability as provided in LAC 33:VII.801.A.2 is included in Appendix H.

3. a design for surfacing natural soils that do not meet the low permeability standard as provided in LAC 33:VII.801.A.3.

RESPONSE

The Geotechnical report demonstrating that the facility has natural soils of low permeability as provided in LAC 33:VII.801.A.2 is included as Appendix H - therefore the above design is not required.

B. Subsurface Characterization. Standards governing subsurface characterization are contained in LAC 33:VII.803.

1. Type I, II, and III facilities shall demonstrate that the facility meets the boring requirements provided in LAC 33:VII.803.A.

RESPONSE

The Geotechnical report demonstrating that the boring requirements as provided in LAC 33:VII.803.A is included as Appendix H.

2. Type I and II facilities shall demonstrate that:

a. the facility meets the piezometer or monitoring well requirements as provided in LAC 33:VII.803.B; and

b. the facility meets the geology and groundwater flow characterization requirements provided in LAC 33:VII.803.C.

RESPONSE

The proposed landfill is a Type III facility, therefore, this Section is not applicable.

C Facility Groundwater Monitoring. Standards governing facility groundwater monitoring are contained in LAC 33:VII.805. The following information is required for Type I and II facilities:

RESPONSE

The proposed landfill is a Type III facility, therefore, this Section is not applicable.

1. a designation of each zone that will be monitored;
2. a map for each groundwater monitoring zone that depicts the locations of all monitoring wells (including proposed monitoring wells) that are screened in a particular zone and each zone's relevant point of compliance, along with information that demonstrates that monitoring wells meet the standards in LAC 33:VII.805.A.1 and 2. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting a revised well location map showing all existing and proposed monitoring wells that are screened in each particular zone;
3. a geologic cross section along the perimeter of the facility showing screen intervals for existing and proposed monitoring wells, along with other applicable information required in LAC 33:VII.803.C.2.a. For proposed monitoring wells, the response to this requirement shall include an implementation schedule for revising applicable geologic cross sections to include the screen interval of the newly installed monitoring wells and other applicable information required in LAC 33:VII.803.C.2.a;
4. a designation of each monitoring well (including any proposed monitoring wells) as either "background" or "down gradient," for each zone that will be monitored;
5. a table displaying pertinent well construction details for each monitoring well, including the elevation of the reference point for measuring water levels to the National Geodetic Vertical Datum (NGVD), the elevation of the ground surface (NGVD), the drilled depth (in feet), the depth to which the well is cased (in feet), the depth to the top and bottom of the bentonite seal (in feet), the depth to the top and bottom of the screen (in feet), the slot size, the casing size, and the type of grout; and as-built diagrams (cross sections) of each well providing the aforementioned well construction details. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting the information specified in this requirement;
6. a demonstration that the monitoring wells are constructed according to the standards in LAC 33:VII.805.A.3. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting the information specified in this requirement;
7. for an existing facility, all background data and at least three years of detection monitoring data from monitoring wells in place at the time of the permit application. If this data exists in the department records, the administrative authority may allow references to the data in the permit application. For an existing facility with no wells, groundwater data shall be

submitted within 90 days after the installation of monitoring wells. For a new facility or expansion, groundwater data (one sampling event) shall be submitted before waste is accepted;

8. a sampling and analysis plan that meets the standards in LAC 33:VII.805.B and includes a table that specifies each parameter, analytical method, practical quantitation limit, and Chemical Abstracts Service registry number (CAS RN); and

9. a plan for detecting, reporting, and verifying changes in groundwater.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of the Secretary, Legal Affairs Division, LR 33:1044 (June 2007).

§523. Part III: Additional Supplementary Information

A. The following supplementary information is required for all solid waste processing and disposal facilities. All responses and exhibits shall be identified in the following sequence to facilitate the evaluation:

1. a discussion demonstrating that the potential and real adverse environmental effects of the facility have been avoided to the maximum extent possible;

RESPONSE

The potential and real adverse environmental effects of the proposed landfill have been avoided to the maximum extent possible, to a great extent because the environmental effects of the waste at this proposed facility are inherently low. Waste disposed at this facility will be construction and demolition (C & D) debris from building demolition, renovation or construction. Because C & D wastes (such as concrete, asphalt, wood, wallboard, and floor tile roofing, tree stumps rocks and dirt etc.) are non-putrescible and cannot rot to produce odors and attract vermin the facility has little real potential to impact the environment by producing odors or attracting pests. Even though the waste is inherently safe, to further minimize potential environmental effects, C&D landfills are designed, operated and located to prevent potential environmental effects to air, water, soil, and minimize economic & social impacts.

Air:

- *Potential releases to air from C & D debris facilities occur in the form of dust and wind-blown materials. Application of cover soils/material prevents releases of odors and wind-blown debris. Dust at the facility will be controlled by covering/capping the waste with clay and planting vegetation (i.e. grass) spreading gravel, and wetting down areas.*

Water:

- *When rain falls on C& D debris this rain will run over concrete, asphalt, wood, wallboard, floor tile, roofing, tree stumps rocks, dirt etc. Most of these materials used for building construction and are not water-soluble. Hence the potential for ground water contamination is remote.*
- *To further assure ground water protection the bottom of the landfill has a natural clay liner to prevent this rainwater entering the ground water.*
- *The perimeter of the landfill has a 5'-10' embankment/dyke (see Figure 6) to prevent rainwater moving over the surface of the land leaving the facility. High levels of water in the facility will be pumped out only if the water quality meets water permit levels protective of human health and the environment.*

Habitat:

- *The utilization of this facility as a C & D debris disposal facility will not result in any further destruction of habitat.*
- *The US Department of the Interior has determined that threatened or endangered species will not be threatened by the proposed facility (see Appendix C).*

- *The State Historical Preservation Officer has determined that there are no known cultural or historical sites in the vicinity of the site (see Appendix C).*
- *The US Army Corps of Engineers have determined that sensitive wetlands will not be affected by the proposed facility (see Appendix B).*

Impact of proposed facility on potential contamination at existing site:

- *As indicated under zoning, the proposed site is located close to the heavy chemical industrial complex of St. Gabriel, Louisiana. However the site does not contain historical/hidden waste that could be released to environment during operation/excavation. Soil borings on the site (see Appendix H), did not detect any unauthorized buried drums, chemical waste pits that could have been illegally or inadvertently deposited.*

Economic & Social impacts:

- *Letters from the Louisiana Department of Transportation and Development are attached indicating that the local roads are adequate to withstand both the flow and weight of trucks entering the facility (see Appendix A).*
- *Also attached is a letter from the zoning authority indicating that the proposed site is classified as heavy industrial (see Appendix C) due to the large number of chemical plants and other industry (including Honeywell, Pioneer, Bear Industries and others plants, see Appendix C) within 3 miles of the town of St. Gabriel.*
- *Investigation of the adjacent community within 1 mile of the facility (see Appendix D) shows the nearest facility to the proposed site is Bear Industries. Bear Industries employs 12 full time workers engaged in preparing the landscaping, fill, road material, and other product combinations. The north principal access to the landfill is by an unused road on the edge of Syngenta (ICI) property. As such traffic will not be principally flowing through the residential area of St. Gabriel. Even though there will be truck traffic (up to 22 a day, see Appendix A), it is not anticipated that these trucks will impact any operations and will not create any traffic problems more than other large trucks on the highway. As such, it is reasonable to state that there will not be any measurable impacts from the proposed site to be permitted as a C&D land fill.*
- *In summary, real impacts have been avoided by only permitting non-hazardous debris to be disposed at the proposed site. Potential effects have been avoided by designing the landfill with caps (to prevent dust becoming wind blown); clays liners (to protect the ground water) & dykes (to protect surface water) and through appropriate siting away from sensitive environmental areas in an area zoned for industry.*

2. a cost-benefit analysis demonstrating that the social and economic benefits of the facility outweigh the environmental-impact costs;

RESPONSE

The environmental effects of the proposed facility have been avoided to the maximum extent possible through the acceptance of low risk building waste, proper landfill design to minimize impacts and appropriate siting in an industrial area away from sensitive communities/habitats.

The following benefits have been considered in planning this facility:

- *Payroll - facility operations will require an estimated up to eight (8) full time employees with an annual payroll of approximately \$225,000;*
- *Tremendous need for the C&D Landfill will be at a critical point by the time the permit is issued by LDEQ, since by then it will be the only C&D Landfill within a reasonable transportation distance available to service the parishes south of Baton Rouge (southern E. Baton Rouge, Iberville, Ascension, St. John the Baptist, St. James, and Livingston). At present, the only C&D landfill in the south Baton Rouge area is D&J Landfill, which is under order to close by the Louisiana Department of Environmental Quality by April 2008 (see Appendix L). The D&J Landfill is 10 miles northeast of the St. Gabriel site. The St. Gabriel site will serve as a replacement for the D&J landfill and will be the only C&D landfill available to serve the C&D disposal in the south Baton Rouge area. The closest alternative is the Ronaldson Field Facility located in Alsen, Louisiana approximately 31 miles away and requires transporting through the Baton Rouge area. No other C&D landfills are nearer than the St. Gabriel site to provide disposal of the more than 96,000 tons of construction and demolition debris reported taken between July 1, 2005 and June 30, 2006 at the D&J landfill (see Appendix L).*
- *Facilitate growth through reduced transportation costs - the proposed facility location is near St. Gabriel in Iberville Parish and near dock facilities on the Mississippi River. The facility will provide contractors with a cost-effective way to manage C & D debris generated during site clearing, construction, renovation or demolition. The economic effects of reduced haulage to the nearest C&D landfill are estimated based on typical truck haulage rates at \$50/hour.*
- *Siting this facility in St. Gabriel approximately 2 or more hours from the nearest C & D landfills located north of Baton Rouge, near Norco, Slidell in St. Tammany, and Jefferson Parish will save \$686,400 based on 22 trucks/day utilizing the proposed St. Gabriel site.*

22 trucks a day x 2 hour saved/trip x \$50/hour x 6 days/week x 52 weeks/year = \$686,400 in avoided transportation costs.

- *These avoided transportation costs will benefit construction, renovation & demolition contractors in Iberville, East St John Parish and surrounding areas to the South.*
- *This saving will also conserve fuel supplies and reduce emissions to the atmosphere from truck exhaust.*
- *Generation of borrow material for improvements to property in the service area. - It is calculated that excavation of an 80 acre C&D landfill will generate up to 2,445,900 cubic yards of soil/clay. This material will be used for improvements by providing fill & dike material.*
- *There should be no increased burden in public costs for police, or fire protection, or roads costs associated with facility operation. Letters from the local emergency response agency, fire department, and hospital are attached stating that they can respond to an incident at the facility (see Appendix I).*
- *The majority of the debris received at the site will be transported by truck. The Louisiana Department of Transportation and Development has determined that the*

local roads are adequate for the anticipated facility truck traffic flow and weight. Thus there will be no burden on the Parish to improve the highway (see Appendix A).

In summary, a cost-benefit analysis of the environmental impact cost balanced against the social and economic benefits of the project demonstrate that the social and economic benefits outweigh the environmental impacts. This is because the weight of the evidence shows that C&D landfill material poses little environmental risk.

3. a discussion and description of possible alternative projects that would offer more protection to the environment without unduly curtailing nonenvironmental benefits;

RESPONSE

Alternate projects for C & D waste disposal have been considered.

Municipal Landfill Project

As shown in Attachment 3, a large amount of C&D waste was placed in municipal solid waste landfills in 1996 (up to 40%). However as an alternate project, this was rejected by the applicant who does not wish to apply for a permit for a sanitary landfill at St. Gabriel. This is because special precautions above and beyond C&D landfills are required to keep birds, vermin and odors under control at a sanitary landfill. As such, a sanitary landfill potentially poses more risk to the environment in terms of odors .

Incineration Project

Incineration is a project that will be more protective to the environment in terms of solid waste reduction. This would occur by burning all the wood going to the C&D landfill. However, although this waste volume reduction would be real, the cost to install/permit an incinerator to burn wood and the cost to install/permit a landfill for the non-burnable concrete/bricks make the project unpractical. Furthermore Iberville Parish officials have voiced concerns over any burning/combustion in the St. Gabriel area.

Composting project

Composting will be more protective to the environment in terms of solid waste reduction. This would occur by composting wood waste for use as fertilizer etc. thereby reducing the volume of waste going to the C&D landfill. However, although this volume reduction would be real, a landfill would still be required for the non-compostable C&D waste such as brick, concrete etc.

Recycle Projects

St. Gabriel is installing a C&D landfill to handle mixed waste that it is not feasible to separate. This mixed waste may include small amounts of pipe/steel and or concrete. Generators of scrap steel etc will profit by taking their metal waste to companies such as Southern Scrap in Baton Rouge. Similarly there is a concrete recycle facility adjacent on the

south at Bear Industries. As such, the St. Gabriel project is designed to handle mixed waste and it is felt that operating as a recycle facility would not be feasible due to the proximity of the two other named facilities.

4. a discussion of possible alternative sites that would offer more protection to the environment without unduly curtailing nonenvironmental benefits; and

RESPONSE

There are a limited number of commercially available properties that may be appropriate for construction and operation of a Type III landfill. Among the available properties a number of sites were considered but rejected since they were either located in primarily residential areas, areas of agriculture or rural housing, or in commercial areas on highways more appropriate to use as store front businesses. When searching for alternative sites for the project, the criteria for a suitable site included:

- *A size requirement of 100 to 200 acres of commercially available land to create 30 to 60 years of airspace;*
- *The property must be zoned industrial;*
- *The property must be located in an area so that the waste deposition area is not readily visible to residential areas;*
- *The property must be located in a area where truck traffic will not adversely impact residential areas;*
- *The property must be located close to the waste source to keep road traffic to a minimum;*
- *The property must be located in an area with soil characteristics suitable for a C&D Landfill;*
- *The property must be located outside of but relatively near large population areas and in close proximity to industrial areas; and*
- *The property must be in close proximity to an area with the opportunity to capture waste streams the facility from rapidly developing areas (southern half of East Baton Rouge Parish, Ascension Parish and eastern half of Iberville Parish).*

St. Gabriel Redevelopment requested real estate agents to perform a search of the area for properties that would satisfy the criteria listed above. The properties considered were:

1. Hwy 1081, St. Tammany Parish, LA

This tract of land meets none of the criteria listed above. It is located too far outside the service area and additionally, the area is in a primarily residential development area, not commercial, therefore the site was not appropriate.

2. Richcroft - E. Baton Rouge Parish, LA

The site again does not meet the criteria listed above. It is in Baton Rouge near North Sherwood Forest Park and is located too far outside of the southern part of the service area. Road access is difficult and even though there is some commercial development in the area the combination of it being located too far

away from the service area, proximity to residential areas, and the poor truck access makes the site not appropriate.

3. Ascension Industrial Land, La Hwy 75, Geismar, LA 70734

The site is located approximately 5 miles down river from the Carville, LA, and so is located within the service area. However, since the property is located between Highway 75 and the levee on the left descending bank of the Mississippi River, any excavation at this location would be a potential problem due to nearness to the Mississippi River levee. In addition the property appears to be approximately 50% wetlands. Because of the nearness to the river levee and the amount of wetlands, the tract is not appropriate.

4. Kinder Morgan Property

This property is in Iberville Parish adjacent to the Kinder Morgan Bulk Terminal located near Highway 75 and 3115. The Kinder Morgan property is located within the area where there is need for a C&D Landfill. They had no interest in selling or leasing with the intended use as a land fill because they preferred to keep the property for future expansion or development of their own business.

5. The C. Furroux Property

The C. Furroux property located west of Highway 75 and on state highway 141 was considered. The land is principally farmland and pasture, and it was determined that the owner would have no interest in selling or leasing the property for use as a land fill since it would be difficult to restore the property to agricultural use after the landfill was closed.

6. W.E. Caldwell Property

The property located in Iberville Parish off Highway 74 owned by Mr. Caldwell was considered as a possible location. However when examining the property it appeared to be mostly wetland so it could not be used. Other property in the same area was deemed not suitable for the same reasons.

7. S. P. Elisar Property

The property located in Iberville Parish off highway 30 owned by Mr. S. P. Elisar was considered. The area has a significant amount of businesses located and/or attempting to locate along this section of Highway 30, therefore it was determined that the cost would be prohibitive for the intended use and the use restrictions were excessive for a landfill due to the amount of industry that wanted to locate on that highway. The area in Iberville Parish has commercial/industrial development with current principal commercial development on Highway 30 being for store front types of businesses involved with retail merchandising of goods and services such as retail/wholesale merchandise or equipment sales and distribution, retail equipment, etc. Along Highway 30 just to the north approaching Bayou Paul the

area is principally residential development. A power transmission line right of way is on the south side of the property, which would likely restrict property use. With the concerns of maintaining commercial zoning/land use consistency, and proximity to residential and potential residential development the property was passed over for a more suitable site.

8. Bear Industries Property

The property is in Iberville Parish in Carville, LA, off of Highway 75 and is adjacent to and on the back of the Bear Industries facility. The Bear Industries facility is a commercial operation engaged in the sale of road bed and fill material that is prepared from spent gypsum that is trucked into the site from nearby fertilizer manufacturing plants. The tract considered for the landfill located is on a 108 acre tract of property at the back of the Bear Industries operation. Bear Industries indicated that a landfill located adjacent to their operation would not adversely affect or interfere with any of their other activities. Additionally, the federal morgue that was set up after hurricanes Katrina and Rita is located on Bear Industries property on a separate access road between the landfill site and the Bear Industries operation. The land considered was found to be principally dry and appeared to have a limited amount of wetlands. An impermeable clay well suited for a C&D landfill is also present at the site. Access to the site is by way of a good road constructed from the tract across the Bear Industries property to Louisiana highway 75. Road traffic would be primarily on roads with existing truck traffic that already travel to and from the Bear Industries. Due to these factors and because no other acceptable properties were found, the Bear Industries property was selected.

There were no alternative sites that would offer more protection to the environment without unduly curtailing nonenvironmental benefits.

Tremendous need for the C&D Landfill exists in the service area, and will continue to grow as development escalates. The landfill location will be within a reasonable transportation distance available to service the high growth area of southern E. Baton Rouge Parish, Iberville Parish, Ascension Parish, and Livingston Parish, then to a lesser degree, St. John the Baptist, and St. James Parishes. At the current time the primary service area listed above is between the area on the north served by Ronalson Field Landfill and the area on the south served by Killona Landfill.

The bulk of the waste accepted at the facility is generated from the demolition and construction of ongoing residential, commercial and industrial projects in the area. According to the Solid Waste Disposer Annual Reports on file at the LDEQ, approximately 1,543,000 cubic yards of waste have been received in the south Baton Rouge service area between the years of 2000 to 2007. Approximately 2,144,186 cubic yards of waste have been received at the Ronaldson Field Landfill during the same time period. The Ronaldson Field Facility located in Alsen, Louisiana is the closest alternative, and is approximately 31 miles away and requires transporting through the Baton Rouge area.

The primary service areas do not significantly overlap. Therefore, it is important that adequate disposal capacity is present in the South Baton Rouge operating area to discourage any potential illegal disposal of the waste generated in the primary service area due to the increased cost of transporting the waste to Ronaldson Field. It will be critical to have an accessible facility conveniently located, open and operating so that there is an economically viable alternative for disposal for the local waste hauling companies in the south Baton Rouge service area.

In summary, it is shown that St. Gabriel is the optimum location for the first C&D landfill in Iberville Parish when all the environmental, social and economic considerations are weighed.

5. a discussion and description of the mitigating measures which would offer more protection to the environment than the facility, as proposed, without unduly curtailing nonenvironmental benefits.

RESPONSE

A number of mitigating measures to reduce pollution from the site will be in place prior to and during the operation of a C&D landfill. There will be sufficient personnel at the facility to maintain the operational requirements. At a minimum, the facility will have a level "A" operator in charge of the overall facility, and either a level "A" or "B" operator who is present at the facility during hours of operation and in direct charge of day-to-day operations. Additional personnel will be at the facility on an as needed basis depending on operations. These numbers and levels of certified operators employed at the facility will satisfy the requirements of the department in accordance with LAC 46:Part XXIII Certified Solid Waste Operators regulations. Operator certificates shall be prominently displayed at the facility. The Board of Certification and Training for Solid Waste Disposal System Operators and the Office of Environmental Services, Waste Permits Division, shall be notified within 30 days of any changes in the employment status of certified operators.

Within the waste disposal excavation, runoff will drain to the northeast to an established sump area, away from the working face to minimize storm water contact with the waste. Runoff will be collected in an earthen sump in the northeast corner of the excavation, and pumped out of the sump through an LPDES outfall into Community Canal (see Figure 6).

Storm water runoff from within all waste storage areas will be segregated from non-process storm water and directed back to the disposal area by use of grading, berms, ditches, piping, and/or other appropriate measures for discharge through the appropriate LPDES outfall.

Only construction and demolition debris will be accepted for disposal. Wastes that are not consistent with these categories will not be accepted at the site. Wastes that, for unforeseen reasons, are accepted at the site, but are not acceptable for disposal, will be removed from the site within seven days. These wastes will be stored in a closed container that prevents vector and odor problems, and a log of dates and volumes of waste removed from the facility will be maintained.

Waste will be covered and capped to prevent air borne dust from leaving the waste cells. Operational controls include rejection of non C & D debris, which are easily identified

through a visual inspection of incoming waste loads. Waste not conforming to the definition of C & D debris will be rejected from the site without unloading.

Mitigating measures will be in place in the event of an emergency. The facility will maintain two pumps on-site that may be used to pump water from on-site canals/bayous and one 5,000 gallon water tank with a dedicated pump. Fire extinguishers will be maintained at the facility. Additionally, cover soil may be used to smother a fire within the disposal area. Fire protection and medical care services are also available locally as described in the contingency plan (Appendix E). The plan outlines facility operations and emergency procedures to be followed in case of accident, fire, explosion, or other emergencies. The plan shall be filed with, in addition to the Office of Environmental Services, Waste Permits Division, the local fire department and the closest hospital or clinic. The plans shall be updated annually or when implementation demonstrates that a revision is needed. Training sessions shall be conducted annually for all employees working at the facility. A copy of the training program shall be filed with the Office of Environmental Services, Waste Permits Division.

B. An application for renewal or extension of an existing permit shall not be subject to submittal of the additional supplementary information required in Subsection A of this Section, unless said renewal or extension encompasses changes that need to be addressed as major applications.

RESPONSE

If an application for renewal or extension of the permit that is requested is filed, it will be noted that it shall not be subject to submittal of the additional supplementary information required in Subsection A of this Section.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:2001 et seq.

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Solid and Hazardous Waste, Solid Waste Division, LR 19:187 (February 1993), amended by the Office of Waste Services, Solid Waste Division, LR 23:1685 (December 1997), amended by the Office of the Secretary, Legal Affairs Division, LR 33:1044 (June 2007).

NOTE: Former Subchapter D has moved to Chapter 15.

NOTE: §525 has moved to §1501.

NOTE: §527 has moved to §1503.

NOTE: §529 has moved to §1505.

Chapter 7. Solid Waste Standards

NOTE: Former Subchapter A has moved to Chapter 5.Subchapter A.

NOTE: §701 has moved to §501.

NOTE: §703 has moved to §503.

NOTE: §705 has moved to §505.
NOTE: §707 has moved to §507.

Exhibit 1

Proof of Public Notice

CAPITAL CITY PRESS

Publisher of
THE ADVOCATE

PROOF OF PUBLICATION

The hereto attached notice was published in THE ADVOCATE, a daily newspaper of general circulation published in Baton Rouge, Louisiana, and the official Journal of the State of Louisiana, the City of Baton Rouge, and the Parish of East Baton Rouge, in the following issues:

07/21/07



Susan A. Bush, Public Notices Clerk

Sworn and subscribed before me by the person whose signature appears above:

July 21, 2007



Pegen Singley, Notary Public #66565
My Commission Expires: Indefinite
Baton Rouge, Louisiana

PUBLIC NOTICE

Notice is hereby given that St. Gabriel Redevelopment, LLC, does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Waste Permits Division, an application for a permit to operate a Type III construction & demolition debris disposal facility in Iberville Parish, Sections 84, 85, 99, & 101, Township 9S, Range 1E, which is approximately 1 mile northeast of Carville.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
PO Box 4313
Baton Rouge, LA 70821-4313

3675953-jul 21-1t

TRC ENVIRONMENTAL - BR

3675953

MICHAEL K DAIGLE

8550 UNITED PLAZA BLVD STE 502

BATON ROUGE LA 70809

POST SOUTH

Post Office Box 589
Plaquemine, LA 70765-0589

PROOF OF PUBLICATION

Pub. Not. Office of Ent. Services

The hereto attached notice was published in the Post/South, a weekly newspaper of general circulation published in Plaquemine, Louisiana, and the official Journal of the State of Louisiana, City of Plaquemine, and the Parish of Iberville, in the following issues:

July 26, 2007

Tear Sheets Attached

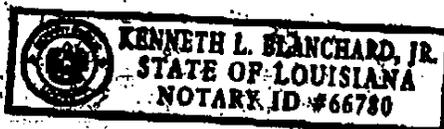
PROOF OF PUBLICATION

Michelle Didier
Michelle Didier
Legal/Public Notices Representative

SWORN TO AND SUBSCRIBED BEFORE ME

This 26th day of July 2007

K. Blanchard
Notary Public.



the Sheriff of Iberville, State of Louisiana, by the Honorable the 18th Judicial District Court, in and for the Parish of Iberville, in the above numbered and entitled case. I have set and will offer for sale at Public Auction, in the lobby of the new Courthouse Building, Meriam Street, Plaquemine, Louisiana, Iberville Parish, between the legal hours prescribed by law, beginning at 10:00 a.m. without the benefit of appraisement, to the last and highest bidder on Wednesday, August 1, 2007 the following described property, to wit: One (1) certain lot or parcel of ground, together with all the buildings and improvements thereon, situated in the Parish of Iberville, State of Louisiana, in that subdivision thereof known as SUNSHINE PLACE SUBDIVISION, and being more particularly described according to the final plat of said subdivision, by Atlas Plat No. 1973, recorded in the office of the Clerk and Recorder for Iberville Parish, in COB 151, as LOT NUMBER SIXTY-SEVEN (67), said subdivision, said lot having such dimensions, and being subject to such servitudes as shown on the official plat referred to herein above.

Property Address:
2005 Highway 1973
Sunshine, La 70780

Attorney for the Plaintiff:
Dean Moran, N.P.
1505 North 19th Street
P.O. Box 2867
Monroe, LA 71209

an electric public utility having facilities to provide retail electric service to residential, commercial, industrial, and governmental customers in forty-six Parishes of the State of Louisiana, filed with the Louisiana Public Service Commission ("LPSC") an Application for Approval to Repower the Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Costs Recovery.

The filing includes the Company's request for a Regulatory Approval Plan which includes, among other items: 1) a request for permission for the contemporaneous recovery

07/26:b

★

SP# 9120

NOTICE TO BIDDERS

Sealed bids will be opened and publicly read by the Purchasing Section of the Division of Administration, 1201 N. 37th St., 2nd Floor Suite 2-160, P.O. Box 94095, Baton Rouge, Louisiana, 70804 at 10:00 A.M. for the following:

File No. O10934X
Bid No. 2218865
Forlift Aug. 7
File No. OML61H
Bid No. 2218902
Contract for Aggregates for Facilities of the Dept.

by law, beginning at 10:00 a.m. with the benefit of appraisement to the last and highest bidder on Wednesday, August 29, 2007 the following described property to wit: A certain lot or parcel of land lying being and situated in Section 18, Township 9 South, Range 12 East and being designated on a "Final Plat of Dupont Property for J. Child Dupont" located in Section 18 and 44, Township 9 South, Range 2 East, made by Norris J. Decoteau, dated February 28, 1977 attached to Act of Sale recorded in C.B. 252, E. 132 and being Lot No. 46, which measures fifty feet (50) front on the North side of Barrow Street by a depth between

PUBLIC NOTICE

Notice is hereby given that St. Gabriel Redevelopment, LLC, does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Waste Permits Division, an application for a permit to operate a Type III construction & demolition debris disposal facility in Iberville Parish, Sections 84, 85, 99, & 101, Township 9S, Range 1E, which is approximately 1 mile northeast of Carville. Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
PO Box 4315
Baton Rouge, LA 70821-4315
07/26:b

Environmental Services, W...
...for permit to...

FIGURE 1

Site Location Map



ST. GABRIEL REDEVELOPMENT
CONSTRUCTION AND DEMOLITION
LANDFILL
ST. GABRIEL, LOUISIANA

SITE LOCATION MAP
FIGURE 1



FIGURE 2

Master Plan

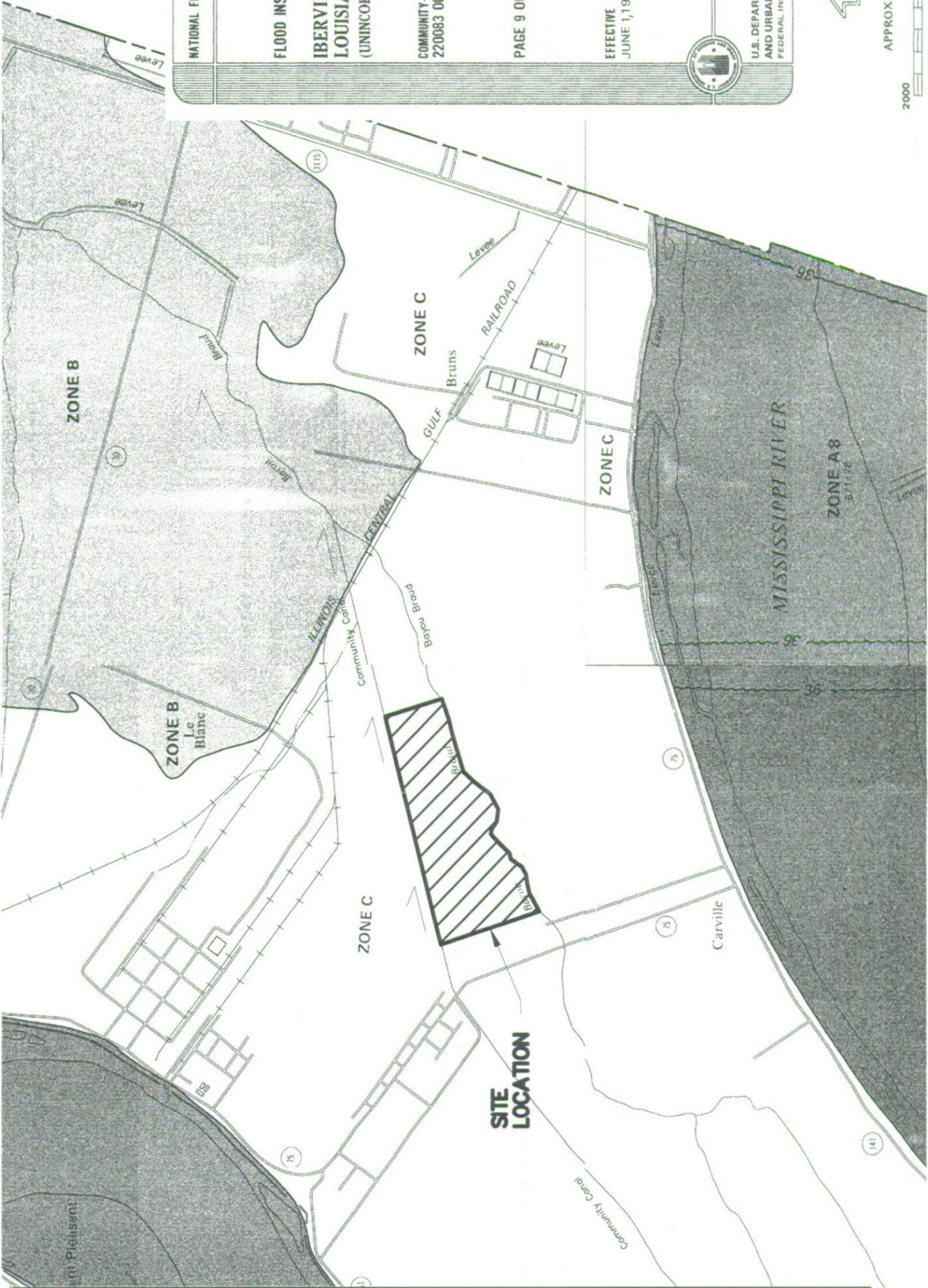
KEY TO MAP

- 500-Year Flood Boundary
- 100-Year Flood Boundary
- Zone Designations*
- 100-Year Flood Boundary
- 500-Year Flood Boundary
- Base Flood Elevation Line With Elevation in Feet**
- Base Flood Elevation in Feet Where Uniform Within Zone**
- Elevation Reference Mark
- Zone D Boundary
- River Mile
- Undeveloped Coastal Barriers

***EXPLANATION OF ZONE DESIGNATIONS**

| ZONE | EXPLANATION |
|--------|--|
| A | Areas of 100-year flood; base flood elevations and flood hazard factors not determined. |
| AO | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined. |
| AH | Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined. |
| A1-A30 | Areas of 100-year flood; base flood elevations and flood hazard factors determined. |
| A99 | Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined. |
| B | Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading) |
| C | Areas of minimal flooding. (No shading) |
| D | Areas of undetermined, but possible, flood hazard. |
| V | Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined. |
| V1-V30 | Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined. |

**Referenced to the National Geodetic Vertical Datum of 1929



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

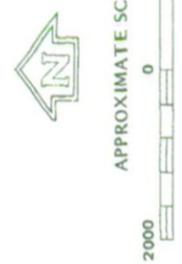
IBERVILLE PARISH, LOUISIANA (UNINCORPORATED AREAS)

COMMUNITY-PANEL NUMBER 220083 0009 B

PAGE 9 OF 11

EFFECTIVE JUNE 1, 1978

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT FEDERAL INSURANCE ADMINISTRATION



| SCALE | DESIGNED | DRAWN | CHECKED | REVIEWED | DATE |
|-------|----------|-------|---------|----------|------|
| | | | | | |

SHEET DESCRIPTION

REVISION

PROJECT

FIGURE

ST. GABRIEL REDEVELOPMENT CONSTRUCTION AND DEMOLITION LANDFILL

ST. GABRIEL REDEVELOPMENT, L.L.C.

ST. GABRIEL, LOUISIANA

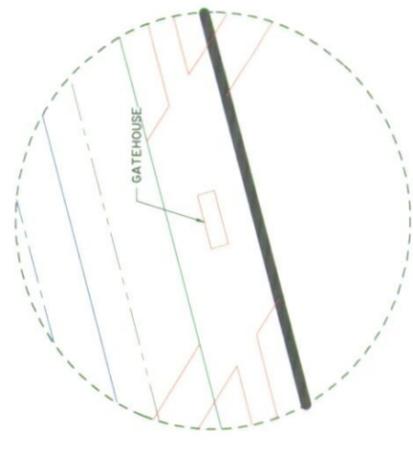
MASTER PLAN

FIGURE 2



FIGURE 3

Site Plan



LEGEND
 TRAFFICE FLOW



| | | | | | | |
|-------------------|---------------|--|-------|---------|----------|----------|
| | PROJECT TITLE | ST. GABRIEL REDEVELOPMENT CONSTRUCTION AND DEMOLITION LANDFILL ST. GABRIEL REDEVELOPMENT, L.L.C. ST. GABRIEL, LOUISIANA | | | | |
| | SCALE | DESIGNED | DRAWN | CHECKED | REVIEWED | DATE |
| SHEET DESCRIPTION | | SITE PLAN FIGURE 3 | | | | REVISION |
| | | | | | | PROJECT |
| | | | | | | FIGURE |

FIGURE 4

Land Use Maps



- Undeveloped
- Agricultural
- Industrial
- Residential



**ST. GABRIEL REDEVELOPMENT CONSTRUCTION
AND DEMOLITION LANDFILL**
ST. GABRIEL REDEVELOPMENT, L.L.C.
ST. GABRIEL, LOUISIANA

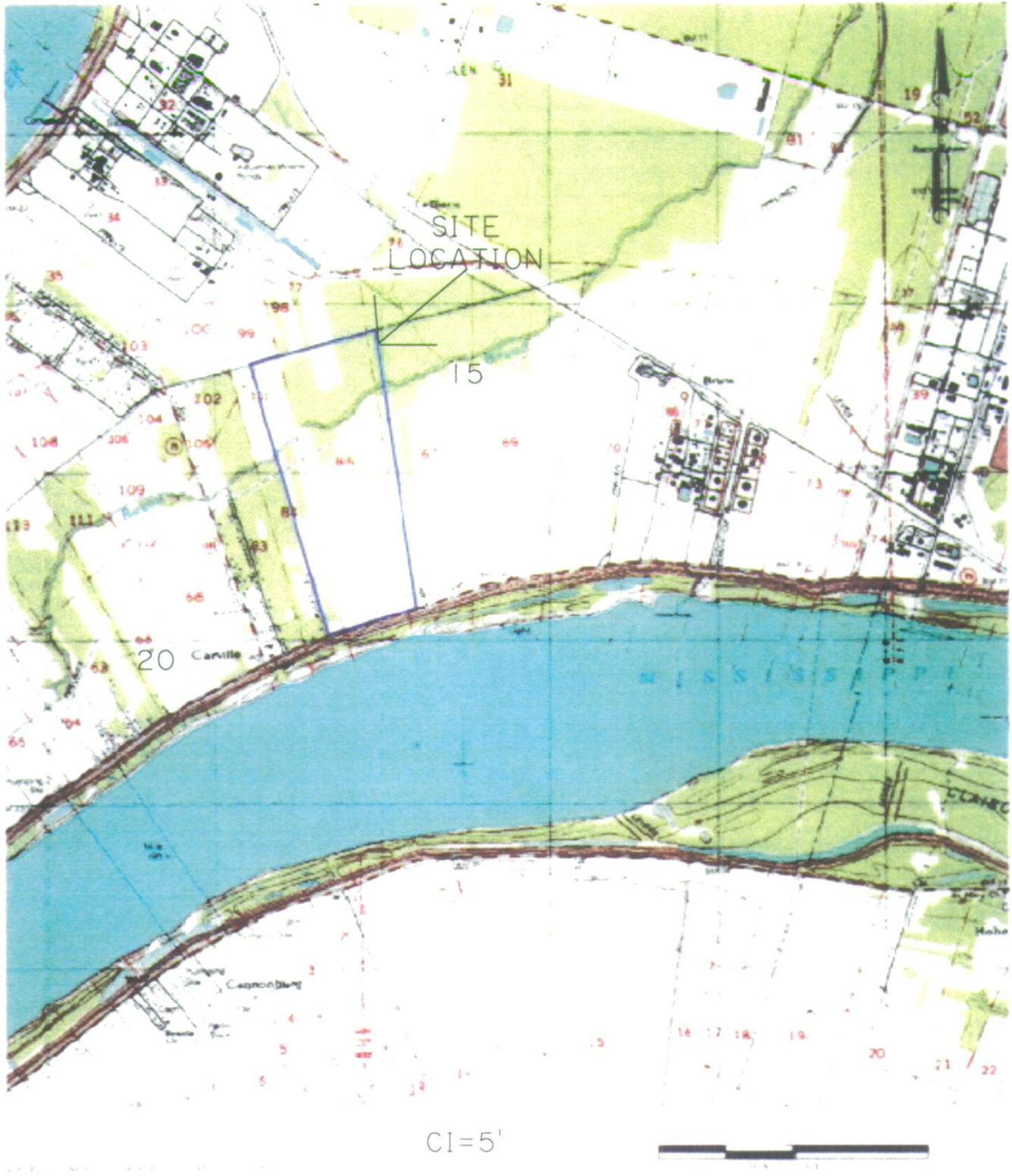
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SHEET DESCRIPTION
**AREA LAND USE MAP
FIGURE 4**

| REVISION | PROJECT | FIGURE |
|----------|---------|--------|
| | | |

FIGURE 5

Topographic Map with original contours

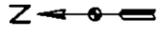
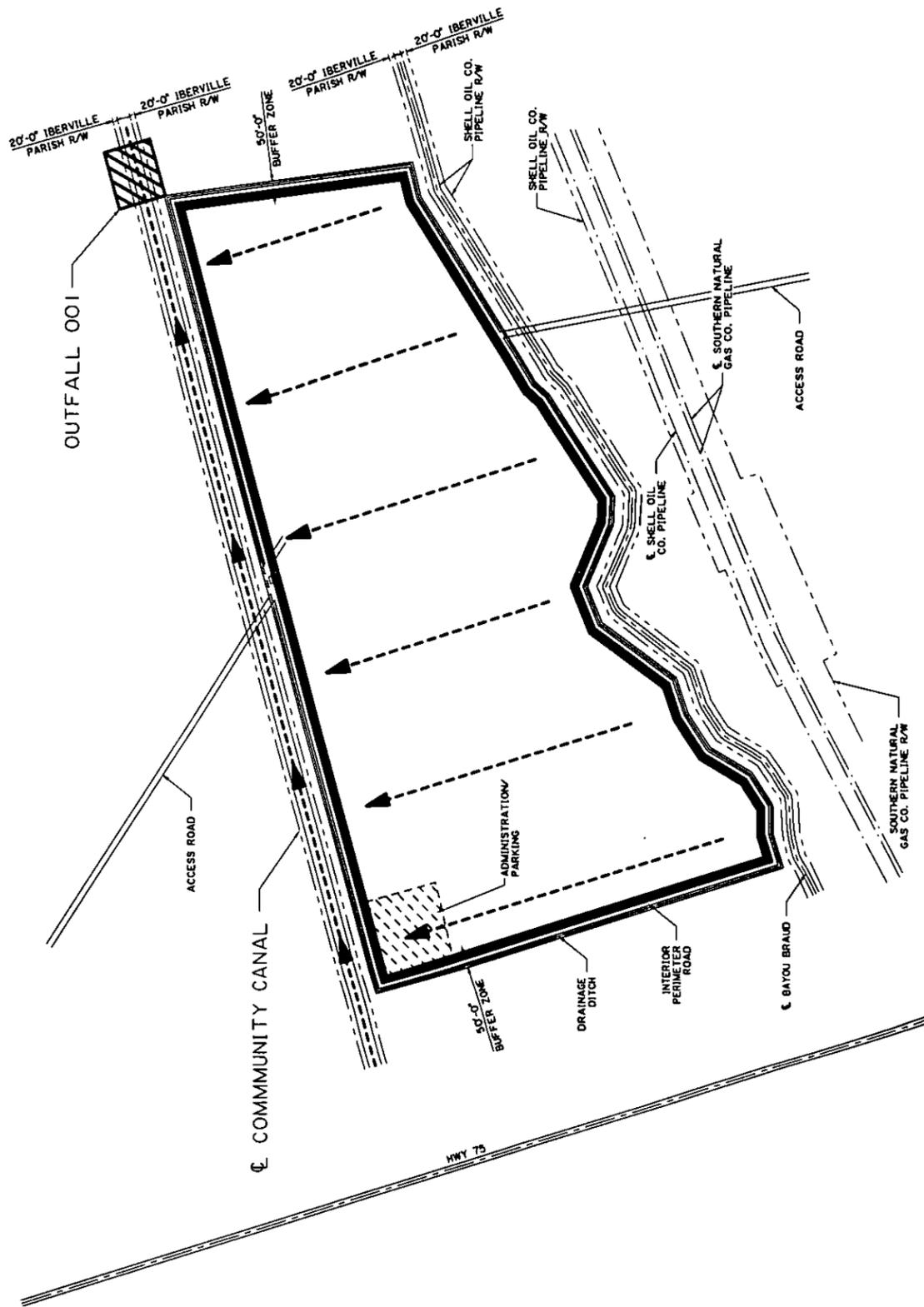


ST. GABRIEL REDEVELOPMENT
 CONSTRUCTION AND DEMOLITION
 LANDFILL
 ST. GABRIEL, LOUISIANA

TOPOGRAPHIC MAP WITH
 ORIGINAL CONTOURS
 FIGURE 5

FIGURE 6

Water Management



LEGEND
 - - - - - STORMWATER FLOW



PROJECT TITLE

ST. GABRIEL REDEVELOPMENT CONSTRUCTION
 AND DEMOLITION LANDFILL
 ST. GABRIEL REDEVELOPMENT, L.L.C.
 ST. GABRIEL, LOUISIANA

SCALE

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| DRAWN | |
| CHECKED | |
| REVIEWED | |
| DATE | |

SHEET DESCRIPTION

WATER
 MANAGEMENT
 PLAN
 FIGURE 6

REVISION

PROJECT

FIGURE

FIGURE 7

Aquifer Recharge Map



AQUIFER SYSTEM



Map #13 of the Aquifer Recharge Atlas

**Aquifer Recharge Potential
of the
Baton Rouge Quadrangle**

1988

2nd Edition 1992

Compiled by Don P. Bomsel
Pedologic contributions by Whitney J. Aulin
Project Coordinator: Bradford C. Hanson
Design and production by John I. Sincad
Edited by Jacquelyn L. Monday

Cartography by Susan S. Birnbaum
Scribed by Susan S. Birnbaum
Color separations and type by Edwin B. Millet, Susan S. Birnbaum,
Edward G. Koch, David J. McCraw, and Ed Babbin

PROJECT TITLE

**ST. GABRIEL REDEVELOPMENT CONSTRUCTION
AND DEMOLITION LANDFILL**
ST. GABRIEL REDEVELOPMENT, L.L.C.
ST. GABRIEL, LOUISIANA

SHEET DESCRIPTION

**AQUIFER RECHARGE MAP
FIGURE 7**

| | |
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| DESIGNED | |
| DRAWN | |
| CHECKED | |
| REVIEWED | |
| DATE | |

| | |
|----------|--|
| REVISION | |
| PROJECT | |
| FIGURE | |



FIGURE 8

Landfill
Cross Section



PROJECT TITLE

ST. GABRIEL REDEVELOPMENT CONSTRUCTION
 AND DEMOLITION LANDFILL
 ST. GABRIEL REDEVELOPMENT, L.L.C.
 ST. GABRIEL, LOUISIANA

SCALE

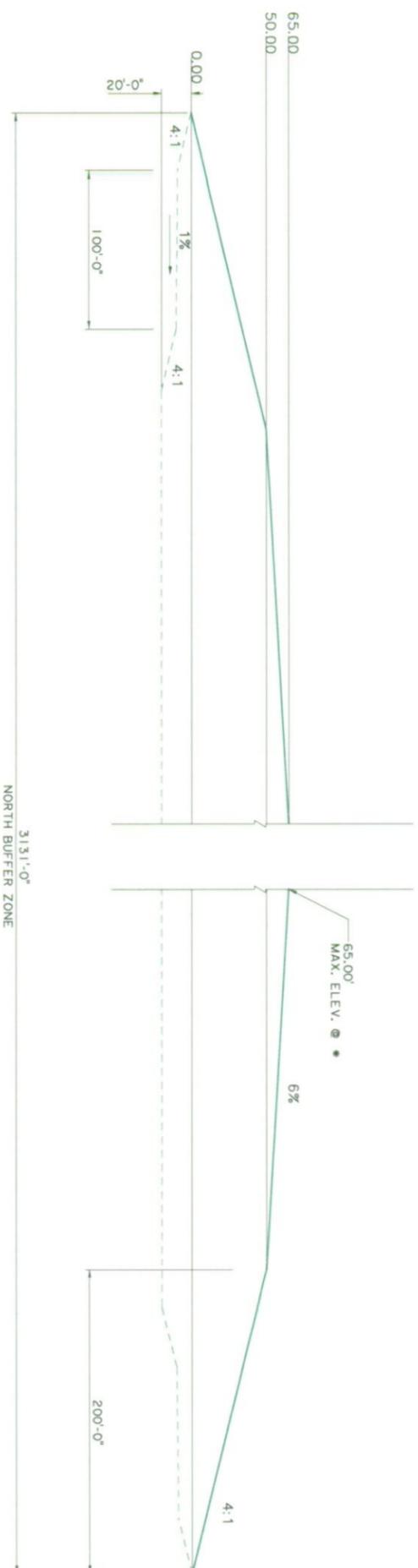
| | |
|----------|--|
| DESIGNED | |
| DRAWN | |
| CHECKED | |
| REVIEWED | |
| DATE | |

SHEET DESCRIPTION

LANDFILL CAP
 CROSS SECTION 4--A'
 FIGURE 8

REVISION

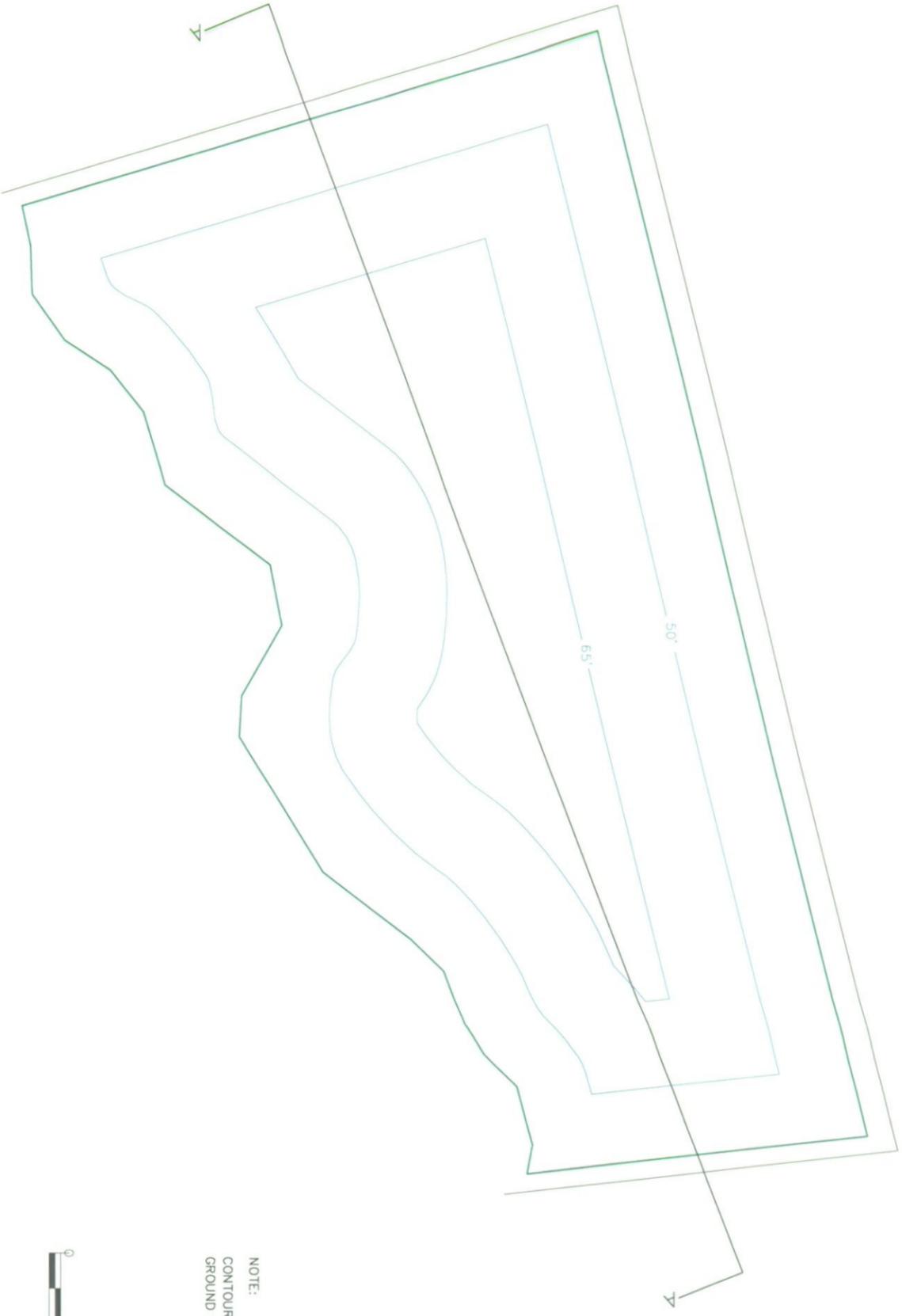
| | |
|---------|--|
| PROJECT | |
| FIGURE | |



NOTE:
 CONTOUR VALUES RELATIVE TO ASSUMED
 GROUND ELEVATION OF 0.00.

FIGURE 9

Landfill Plan View
&
Final Contours



NOTE:
CONTOUR VALUES RELATIVE TO ASSUMED
GROUND ELEVATION OF 0.00



PROJECT TITLE

ST. GABRIEL REDEVELOPMENT CONSTRUCTION
AND DEMOLITION LANDFILL
ST. GABRIEL REDEVELOPMENT, L.L.C.
ST. GABRIEL, LOUISIANA

SCALE

DESIGNED _____
DRAWN _____
CHECKED _____
REVIEWED _____
DATE _____

SHEET DESCRIPTION

LANDFILL CAP
PLAN VIEW
FIGURE 9

REVISION

PROJECT _____
FIGURE _____



ATTACHMENT 1

Proof of Incorporation from Secretary of State

UNITED STATES OF AMERICA

State of Louisiana



Jox McKeithen
 SECRETARY OF STATE

As Secretary of State, of the State of Louisiana, I do hereby Certify that
 a copy of the Articles of Organization and Initial Report of

ST. GABRIEL REDEVELOPMENT COMPANY LLC

Domiciled at BELLE CHASSE, LOUISIANA,

Was filed and recorded in this Office on June 14, 2005,

And all fees having been paid as required by law, the
 limited liability company is authorized to transact business
 in this State, subject to the restrictions imposed by law,
 including the provisions of R.S. Title 12, Chapter 22.

*In testimony whereof, I have hereunto set
 my hand and caused the Seal of my Office
 to be affixed at the City of Baton Rouge on,
 June 14, 2005*

Jox McKeithen
 MBE 35959338K

Secretary of State





Louisiana Secretary of State COMMERCIAL DIVISION Corporations Database



Louisiana Secretary of State Detailed Record

Charter/Organization ID: 35959338K

Name: ST. GABRIEL REDEVELOPMENT COMPANY LLC

Type Entity: Limited Liability Company

Status: Active

Annual Report Status: In Good Standing **Add Certificate of Good Standing to Shopping Cart**

Last Report Filed on 05/30/2007

Mailing Address: C/O CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

Domicile Address: 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

File Date: 06/14/2005

Registered Agent (Appointed 6/14/2005): CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

Manager: CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

Member: CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

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Louisiana Secretary of State COMMERCIAL DIVISION Corporations Database



Louisiana Secretary of State Detailed Record

Charter/Organization ID: 35959338K

Name: ST. GABRIEL REDEVELOPMENT COMPANY LLC

Type Entity: Limited Liability Company

Status: Active

Annual Report Status: In Good Standing **Add Certificate of Good Standing to Shopping Cart**

Last Report Filed on 05/30/2007

Mailing Address: C/O CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

Domicile Address: 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

File Date: 06/14/2005

Registered Agent (Appointed 6/14/2005): CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

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Member: CLAUDE L. KLEIN, 114 SCHLIEF DRIVE, BELLE CHASSE, LA 70037

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ATTACHMENT 2

Lease from Bear Industries

1 **LEASE AGREEMENT**
2
3

4 This lease agreement is hereby made and entered into by and between Bear
5 Industries, Inc. (hereinafter referred to as "Lessor" or "Landlord") and St. Gabriel
6 Redevelopment Company LLC (hereinafter referred to as "Lessee."or "Tenant")

7 WITNESSETH:

8 1. DESCRIPTION OF PROPERTY

9 Lessor hereby leases to Lessee the following described premises situated in the
10 Parish of Iberville, State of Louisiana:

11 THAT CERTAIN PORTION OF GROUND, identified as Lot 4J,
12 constituting 122.457 acres more or less, as described and drawn on
13 the attached map showing subdivision of a 365.79 acre tract into
14 tracts 1-A, 2-A, 3-A, 3-B, 4-A, 4-B, 4-C, 4-D, 4-E, 4-F, 4-G, 4-H, &
15 4-J located in Sections 67, 84, 99, 100, 101, &102, T-9-S, R-1-E,
16 Southeastern District of Louisiana, East of the Mississippi River,
17 Iberville Parish, Louisiana For Bear Industries, Inc. by Paul J.
18 Morel, P.L.S. of Forte & Tablada, Inc.
19

20 2. TERM OF LEASE

21 This lease is made for an initial term of forty (40) years, unless terminated earlier
22 by any provision of this lease, commencing at 12:01 A.M. CST on the First day of
23 December, 2006 and ending at midnight on the 30th Day of November
24 2046.

25 3. RENT

26 This lease is made for and in consideration of rental payment during the term of
27 said lease as follows:

1 For the period from December 1, 2006 until thirty days after any government
2 permits necessary to operate a construction and demolition waste disposal on the site
3 are issued, the rent shall be one dollar per month.

4 For the period from thirty days after all government permits necessary to operate
5 a construction and demolition waste disposal on the site are issued, through the end of
6 this lease, the rent shall be computed based upon the tipping fees paid to Lessee
7 during the previous month. Each and every payment of rent shall include a Payment
8 Statement detailing the basis of computation of the payment tendered. As rent, Lessee
9 shall pay to Lessor, no later than the 10th day of each month, a sum equal to [REDACTED]
10 [REDACTED] of the tipping fees collected by Lessee hereunder during the
11 preceding calendar month. Lessee will take all steps as are reasonable and necessary
12 to promptly collect all unpaid fees, including without limitation tipping fees and fees
13 from sale of overburden.

14 The tipping fee shall be that as on a schedule and shall be based on a
15 reasonable and customary charge in the market for similarly situated disposal sites as
16 that may change from time to time. The schedule may provide for volume discounts
17 but shall not otherwise favor any commercial source of waste or waste disposal
18 operator who is depositing waste at the site. Residents of the City of St. Gabriel may
19 receive a favored rate for non-commercial disposal. [REDACTED]

20 [REDACTED]
21 [REDACTED]

1 Rent shall be paid to Lessor at the following address:

2 Bear Industries, Inc.
3 4323 No. River Rd.
4 Port Allen, LA 70767
5

6 4. OPTION

7 Lessee is hereby granted and shall have one (1) option to consecutively extend
8 the term of this lease for an additional forty (40) year period by giving Lessor written
9 notice thereof on or before six (6) months prior to the expiration of the lease term upon
10 the same terms, covenants, and conditions herein contained. The written notice by
11 Lessee of its election to extend shall be accomplished by personal delivery or depositing
12 same in the United States mail, certified, return receipt requested on or before six (6)
13 months prior to the expiration of the lease in an envelope addressed to Lessor at
14 Lessor's address.

15 5. USE OF PREMISES AND EARLY TERMINATION

16 The premises herein leased may be used for any lawful purpose, including
17 specifically as a construction and demolition waste disposal site pursuant to any permits
18 as issued by any competent government agency. Lessee shall not permit the
19 placement of any wastes upon the leased premises prior to the issuance of all permits
20 as required by law and the publication to Lessor of a tipping fee list or tariff. Further,
21 any use of the premises for waste disposal shall be not result in the placement of any
22 waste within fifty feet of any lot line of tract 4J. This lease may be terminated by
23 Lessee, prior to the end of the term provided for above, if within 45 days of the
execution of this lease Lessor does not deliver to Lessee a subordination of any

1 mortgage on this property. Further, this lease will terminate at any point prior to the
2 term provided for herein if the site ceases to be useful for the commercial disposal of
3 construction and demolition wastes. At the time of any such termination, Lessee shall
4 close the facility as required by any issued permits or applicable law and complete
5 closing operations within 120 days of the closure of the disposal site.

6 6. TRIPLE NET LEASE

7 The Lessee acknowledges and agrees that it is intended that this a triple net
8 lease. It is the intention of the parties that Lessor shall receive all rentals payable
9 hereunder free from all impositions upon or by reason of the leased premises, the land,
10 and the building and improvements constructed thereon. The Lessor is not responsible
11 during the term of the lease agreement for any costs, charges, expenses, and outlays
12 of any nature whatsoever arising from or relating to the leased premises, or the use
13 and occupancy thereof, or the contents thereof, or the business carried on therein; and
14 the Lessee shall pay all taxes, charges, expenses, costs, and outlays of every nature
15 and kind, including but not limited to fuel for the underground storage tanks,
16 merchandise, goods and stock relating to the leased premises except as expressly set
17 out in this lease. Under no circumstances shall Lessee incur debt or have credit
18 extended to Lessee by vendors under the name of Lessor.

19 7. MAINTENANCE

20 Lessee shall maintain the premises in good condition and shall make, at its own
21 expense, all repairs of any kind, whether ordinary or extraordinary. Lessee shall pay all
22 bills for water, light, gas and other utilities services and will comply at the Lessee's

1 expense with all local, state and federal ordinances and laws now existing or hereinafter
2 enacted. [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED] Lessee shall bear all other costs of road maintenance after overburden

10 removal begins. Within 30 days after completion of overburden removal operations

11 Lessee shall return the road to the condition as found and maintenance of this road

12 thereafter shall be the responsibility of Lessor and Lessee shall cease use of this access.

13 Thereafter, access by the Lessee shall be through the roadway adjacent to the

14 community canal and connecting to La. highway 75 in its present location. Construction

15 and maintenance of any and all other roadways necessary for the overburden removal

16 operations or use of the site as a permitted disposal facility shall be born entirely by

17 Lessee.

18 8. TAXES

19 All local, state and federal taxes and assessments levied against the property

20 that is the subject of this lease shall be paid pro-rata between Lessor and Lessee.

21 Lessee shall be responsible for the payment of seventy five percent (75%) of all local,

state and federal taxes and assessments levied against the property and shall provide

1 Lessor with proof of such payment by copy of the receipted tax bill no later than
2 January 30th of each year. Further, if Lessee becomes aware that Lessor has failed to
3 pay Lessor's twenty five percent (25%) of any local, state and federal taxes and
4 assessments levied against the property when due, Lessee shall have the right to pay
5 such taxes and deduct such payment from any rent payments due thereafter. All taxes
6 attributable to Lessee's personal property shall be the responsibility of the Lessee.

7 9. ALTERATIONS TO PREMISES

8 The Lessee shall have the right and privilege at all time during the continuance
9 of this lease to make, at its own expense, such changes, improvements, alterations,
10 deletions and additions to the premises as Lessee may desire without first any consent
11 of the Lessor. Lessee may convert to Lessee's own use all old materials removed by
12 Lessee by making alterations, changes, improvements, deletions and additions to the
13 premises. [REDACTED]

14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]

18 [REDACTED] Net funds shall be the sum of the total funds received due to sale less
19 the costs of the materials paid to Bear Industries under other terms of this lease.
20 Lessee shall have the right to demolish any existing or any new structure which the
21 Lessee herein may place upon the premises. Lessee shall have the right to erect
separate buildings on the premises, or to erect on the premises only a single structure.

1 All improvements shall be erect in full compliance with all applicable locate, state and
2 federal building and fire laws, acts ordinances and regulations.

3 All buildings, structures or improvements erected or constructed on the leased
4 premises and any additions, alterations, changes or improvements thereto, with the
5 exception of movable fixtures and equipment shall remain upon the leased premises
6 and, upon the expiration or termination of this lease shall then become and remain the
7 property of the Lessor in full ownership without the necessity of the Lessor paying
8 anything whatsoever therefor.

9 The Lessee may, on the expiration of this lease or at any time during term,
10 renewal, extension or continuance of this lease, remove from said leased premises all
11 portable and movable fixtures, equipment or other moveable property and supplies that
12 have not become immovables by destination by virtue of being incorporated in the
13 construction of buildings or structures. So long as Lessee's occupancy, operation, use
14 and closure of the construction and demolition waste landfill conforms to local, state
15 and federal law, Lessee shall have no obligation during the term of this lease, or at the
16 termination of this lease, to restore the premises to the condition of the premises at the
17 inception of this lease, it being expressly recognized by Lessor and Lessee that the
18 premises may be used by Lessee to operate a construction and demolition waste
19 landfill.

20 Lessor agrees to cooperate with the Lessee in securing such building or other
21 permits as may be necessary to accomplish any of the work under the provision of this
paragraph. Improvements made by the Lessee shall be constructed in a workmanlike

1 manner, and shall be completed as speedily as possible, free of any and all liens or
2 claims or laborers, subcontractors, mechanics, material men or contractors.

3 10. FIRE CLAUSE

4 In the event that the leased premises are wholly or partially destroyed or
5 damaged by fire or other casualty at any time during the initial term of this lease or any
6 renewal period thereof, the Lessee shall at his sole cost expense make such repairs as
7 are necessary to restore or rebuild the leased premises to substantially the same
8 condition which existed prior to the damage or destruction. Such rebuilding shall
9 commence within thirty (30) days after the date that such damage or destruction
10 occurs and shall continue with due diligence to completion. However, if such damage
11 or destruction of the leased premises should occur during the last two (2) years of the
12 term of this lease and by virtue of such damage, the premises are rendered unfit for
13 occupancy, the Lessee shall only have an obligation to commence repairs or rebuilding
14 as set forth hereinabove if the Lessor also agrees in writing to extend the term of this
15 lease for an additional period of forty years beyond the current expiration date, which is
16 likewise agreed by Lessor and, in the absence of such written agreement within
17 ninety(90) from the date of such damage or destruction, Lessee shall have no
18 obligation to repair or rebuild and this lease shall cease and terminate. During any
19 period that repairs or rebuilding are being performed and the leased premises are
20 wholly or partially unfit for occupancy by Lessee, the Lessee shall be entitled to no
21 reduction of the rent thereunder.

11. SIGN AND DECORATIONS

1 Lessee shall have the right to place whatever signs and/or decorations it may
2 wish on or in the leased premises, without requiring the approval of Lessor, and Lessee
3 shall assume the responsibility for the condition and safety. All signs, decorations, etc.
4 shall be in compliance with all applicable laws and ordinances.

5 12. INSURANCE

6 Lessee shall, at Lessee's sole cost and expense maintain a public liability policy
7 from an insurance carrier satisfactory to the Lessor, and designating the Lessor as a
8 named insured in an amount not less than \$1,000,000 to insure and indemnify Lessor
9 against all claims, suits and demand for personal injury or property damage occurring
10 on the premises and shall furnish to the Lessor a valid certificate of such insurance on
11 or before the anniversary date of said policy or policies of insurance. Lessee will carry
12 workers compensation insurance which shall include Lessor as an additional named
13 insured. Lessee, to the extent Lessee operates motor vehicles on or about the leased
14 premises shall carry public liability motor vehicle insurance with limits of liability for a
15 single accident of at least \$1,000,000 and provide proof thereof if requested by Lessor.
16 Lessee shall require any invitees permitted to enter the site to provide proof of
17 substantially similar insurance policies covering the activities and presence of any such
18 invitees on the site and naming Lessor as an additional named insured.

19 13. TITLE AND PERMITS

20 The Lessor warrants to the Lessee the peaceful possession and enjoyment of the
21 leased premises against disturbances caused by fault of the Lessor and further warrants
the Lessor is vested with a valid and merchantable title to the leased premises, free of

1 all liens, unpaid tax liens, unpaid assessments, tenancies, agreements, encumbrances,
2 encroachment or defects in title of any nature and Lessee takes the property subject to
3 any pre-existing servitudes, rights of way or other grants of record. Lessor shall use its
4 best efforts to minimize the impact of any such servitudes on the rights granted herein.
5 Lessor retains the right to grant servitudes or other rights in the property that do not
6 adversely impact the rights granted to Lessee herein. Lessor further warrants that it is
7 the successor in interest to a title policy concerning the leased premises. Lessor agrees
8 to defend and indemnify Lessee as to any action involving Lessee arising from any claim
9 involving defect in Lessor's title as warranted herein.

10 Lessor further warrants there are no restrictive covenants or zoning or other
11 ordinances or regulations which will prevent the Lessee from using the entire area of
12 the premises to full limits of the property lines as one undivided tract. Lessor agrees to
13 cooperate with Lessee in any permit or zoning applications requested by Lessee.

14 Lessee shall use its best efforts to obtain all permits necessary to operate a
15 construction and demolition waste disposal on the site and shall make initial application
16 for all such permits within 12 months of the execution of this lease. If all such permits
17 have not been issued within 24 months from the date of the last to sign below, this
18 lease terminates. Lessee, within 30 days after receipt of any governmental permits
19 necessary to operate a construction and demolition waste disposal site shall provide
20 Lessor with a photocopy of such governmental permits issued to Lessee covering
21 operations upon the premises.

14. RECORDS

1 Lessee shall make available to Lessor for inspection and copying, upon 10 days
2 written notice, (1) records of waste disposal at the premises as required to be
3 maintained under any permit issued by any government agency, (2) any permit
4 application, engineering reports or opinions, permits, closure reports, or required
5 reports to any governmental agency concerning the operations at the site and (3) a
6 copy of each and every tipping schedule as established by lessee during the term of this
7 lease. The tipping fee shall be that as set by Lessee on a published tariff or list. Any
8 tipping fee tariff or list so published, prior to the effective date thereof, shall be
9 delivered to Lessor by US mail at the address for payment of rent.

10 15. LESSEE'S RIGHT OF FIRST REFUSAL

11 Should Lessor at any time during the Term of this Lease determine to sell this
12 Property, Lessee shall have a right of first refusal to acquire the Property for the same
13 amount and terms offered by the third party. To the extent Lessee refuses to purchase
14 the property after notice from Lessor, the right of first refusal in favor of Lessee shall
15 terminate.

16 16. NOTICES, DEMANDS AND OTHER INSTRUMENTS

17
18 All notices, offers, consents and other instruments given pursuant to this Lease
19 shall be in writing and shall be validly given when actually delivered or sent by a courier
20 or express service guaranteeing overnight delivery (a) if to Lessor, addressed to Lessor
21 ~~at its address set forth below, (b) if to Lessee, addressed to Lessee at its address set~~
22 forth below. Lessor and Lessee each may from time to time specify, by giving notice to
the other party, (i) any other address in the United States as its address for purposes of

1 this Lease and (ii) any other person or entity that is to receive copies of notices, offers,
2 consents and other instruments hereunder.

3

4 If to Lessor: Bear Industries, Inc.
5 4323 No. River Rd.
6 Port Allen, LA 70767
7

8

9 With a copy to: Attn: David M. Cohn
10 The Cohn Law Firm
11 10754 Linkwood Court
12 Baton Rouge, La. 70810
13

14

15 If to Lessee: St. Gabriel Redevelopment Company LLC
16 114 Schlieff Dr
17 Belle Chasse, LA 70037
18 Attn: Claude L. Klein
19

20

21 With a copy to:
22 Henry A. Miller
23 201 St. Charles Ave
24 Suite 3100
25 New Orleans, LA 70170

26 17. BINDING EFFECT; AMENDMENT

27
28 All provisions contained in this Lease shall be binding upon, inure to the benefit
29 of, and be enforceable by the respective successors and assigns or Lessor and Lessee
30 to the same extent as if each such successor and assign were named as a party hereto.
31 This Lease may not be changed, modified or discharged except by a writing signed by
32 Lessor and Lessee. Any such change, modification or discharge made otherwise than
33 as expressly permitted by this paragraph shall be void. Notwithstanding anything herein
34 contained to the contrary, the Lessee may not assign, in whole or in part, its rights,
privileges or obligations under this lease.

1
2 18. HEADINGS AND TABLE OF CONTENTS
3

4 The table of contents and the headings of the various Sections and Schedules of
5 this Lease have been inserted for reference only and shall not to any extent have the
6 effect of modifying, amending or changing the expressed terms and provisions of this
7 Lease.

8
9 19. COUNTERPARTS
10

11 This Lease may be executed in any manner of counterparts, each of which shall
12 be an original, but all of which together shall constitute one and the same instrument.

13
14 20. MEMORANDUM OF LEASE
15

16 Upon request of either party hereto, the parties shall execute and deliver to each
17 other duplicate originals of a memorandum of this Lease, in recordable form, containing
18 the information required by law for recording the same.

19
20 21. NO PARTNERSHIP
21

22 The parties hereto intend the relationship created by this Lease to be that of
23 lessor and lessee and do not intend for the arrangement between them to be a
24 partnership.

25
26 22. NO RULE OF CONSTRUCTION
27

28 The parties acknowledge that this Agreement was initially prepared by Lessee
29 solely as a convenience and that all parties and their counsel hereto have read and fully
30 negotiated all the language used in this Agreement.

1 The parties acknowledge that because all parties had an opportunity for their
2 counsel to participate in negotiating and drafting this Agreement, no rule of
3 construction shall apply to this Agreement, which construes ambiguous or unclear
4 language in favor of or against any party.

5
6 23. CHOICE OF LAW
7

8 This Lease shall be governed by and interpreted in accordance with the laws of
9 the State of Louisiana applicable to contracts executed within and to be performed
10 wholly within such state. It is the intent of these parties that the Lessor and Lessee
11 have each and every right and remedy to which they can be lawfully entitled under the
12 laws of the State of Louisiana.

13
14 24. COOPERATION
15

16 The parties hereto shall execute and deliver such further documents and do such
17 further acts and things as shall be necessary to effectuate the purposes of this Lease.

18
19 25. ATTORNEY'S FEES
20

21 In the event of any litigation by any party against another party to this Lease to
22 enforce any provision of this Lease, the prevailing party, in addition to all other relief,
23 will be entitled to reasonable attorney's fees and costs.

24
25 26. EXECUTION WARRANTY
26

27 Each individual signing this Lease warrants that such execution has been duly
28 authorized by the party for which such individual is signing, that the execution and

1 performance of this Lease by such party has been duly authorized by all applicable laws
2 and regulations and all necessary company action, if any, and that this Lease
3 constitutes the valid and enforceable obligation of such party in accordance with the
4 terms of this Lease.

5
6 28. NO WAIVER

7
8 No delay on the part of a party in the exercise of any right or remedy shall
9 operate as a waiver thereof, and no single or partial exercise by a party of any right or
10 remedy shall preclude other or further exercise thereof, or the exercise of any other
11 right or remedy.

12
13 29. ENTIRE AGREEMENT

14
15 This Lease contains the entire agreement of the parties with respect to the
16 subject matter hereof.

17
18 30. NO LIENS

19
20 Lessee shall not permit any mechanics' liens or other liens to be filed against the
21 Premises or any part thereof by reason of any work, labor or materials done on or in, or
22 supplied to, the Premises at Lessee's request or at the request of any of Lessee's
23 agents, employees or sublessees. Should any such lien be filed, Lessee agrees to
24 discharge such lien and cause it to be removed forthwith. Should Lessee fail to
25 discharge any such lien, Lessor may (but shall not be obligated to) discharge the same
26 or take such other action as it deems necessary to prevent a judgment or foreclosure
on said lien from being executed against the Premises, and all costs and expenses

1 (including reasonable attorneys' fees and disbursements and consultants' fees) incurred
2 by Lessor shall be repaid by Lessee to Lessor on demand. Further, any such failure by
3 Lessee shall constitute a default under this Lease.

4
5 31. DEFAULT

6 No party will be in default of any requirement hereunder, save those terms
7 concerning the payment of rent, unless the other party gives thirty days written notice
8 ("cure period") pursuant to the terms hereof to the party alleged to be in default. No
9 party will be in default hereunder for non-payment of rent unless the other party gives
10 ten days written notice ("cure period") pursuant to the terms hereof to the party
11 alleged to be in default. Any cure period shall begin on the date the notice is actually
12 delivered to a party or the date the delivery service making the delivery makes its first
13 attempt to deliver at the address of the party. In the event the default is not cured
14 within the cure period, then the party not in default without waiver of any other remedy
15 hereunder or at law, shall have the privilege of canceling the lease. Notwithstanding
16 anything herein contained to the contrary, the Lessee shall be entitled to notice of
17 default with respect to Lessee's payment obligations only twice within any calendar
18 year.

19 32. **LIMITATIONS OF LESSOR'S LIABILITY:**

20 Lessor shall not be liable to Lessee for damage to persons or property resulting
21 from the use of or operation by Lessee on the leased premises or in accordance
with the lease for any purpose whatsoever. Lessor assumes no obligation or

1 liability for any technical or safety advice it furnishes concerning the Lessee's use
2 or operations on the leased premises, the parties agreeing that unless otherwise
3 agreed all such advice is given without charge or warranty, and at Lessee's risk.
4 Lessor's liability for damages shall not include liability for special, incidental,
5 indirect, punitive or consequential damages including lost profits.

6 **33. LESSEE'S STATUS:**

7 The parties agree that Lessee shall be construed to be an independent
8 contractor under this Agreement and that Lessor's relationship with Lessee
9 hereunder will not be represented as anything other than that of an independent
10 contractor. No partnership or joint venture between Lessor and Lessee is
11 expressed or implied.

12 **34. INDEMNITY BY LESSEE:**

13 Lessee agrees to exonerate, indemnify, defend and hold harmless Lessor, its
14 officers and employees, from and against any and all claims or actions, liabilities,
15 losses, costs (including costs of litigation and attorney's fees), expenses,
16 damages, fines (to the extent permitted by law), claims or demands of any
17 nature on account of injuries (including death) to any persons or loss of or
18 damage to any properties (including but not limited to Lessor's and Lessee's
19 employees and property), arising out of or resulting in any manner from or
20 occurring in connection with the Lessee's use of the premises leased including
21 the operation of a construction and demolition waste disposal site and its closure
according to law Lessee shall indemnify, defend, and hold harmless Lessor from

1 and against any and all liens, attachments or charges in the nature of mechanic's
2 liens or the like, arising out of Lessee's performance of this Agreement.

3 **35. HAZARDOUS AND TOXIC MATERIALS:**
4

5 35.1 As used herein:

6 (a) "Claim" shall mean and include any demand, cause of action,
7 proceeding or suit (i) for damages, losses, injuries to person or property,
8 damages to natural resources, fines, penalties, interest, or contribution;
9 (ii) for the costs of site investigations, feasibility studies, information
10 requests, health or risk assessments or Response actions; or (iii) for
11 enforcing this Section 35.

12 (b) "Environmental Law" means federal, state, regional, county
13 and local administrative rules, statutes, codes, ordinances, regulations,
14 licenses, permits, approvals, plans, authorizations, directives, rulings,
15 injunctions, decrees, orders, judgments, and any similar items, relating to
16 the protection of human health, safety, or the environment including
17 without limitation: (a) the Comprehensive Environmental Response,
18 Compensation and Liability Act of 1980 ("CERCLA") (42 U.S.C. §§ 9601 et
19 seq.); (b) the Superfund Amendments and Reauthorization Act of 1986 (42
20 U.S.C. §§ 9601 et seq.); (c) The Hazardous Materials Transportation
21 Control Act of 1970 (49 U.S.C. §§ 1802 et seq.); (d) the Resource
22 Conservation and Recovery Act of 1976, as amended by the Solid and
23 Hazardous Waste Act Amendments ("RCRA") (42 U.S.C. §§ 6901 et seq.);
24 (e) the Federal Water Pollution Control Act, as amended by the Clean
25 Water Act of 1977 (33 U.S.C. §§ 1251 et seq.) (the "Clean Water Act"); (f)
26 the Safe Drinking Water Act (42 U.S.C. §§ 300h et seq.); (g) the Clean Air
27 Act, as amended by the Clean Air Act Amendments of 1990 (42 U.S.C. §§
28 1857 et seq.); (h) the Solid Waste Disposal Act, as amended by RCRA (42
29 U.S.C. § 6901 et seq.); (i) the Toxic Substances Control Act (15 U.S.C. §§
30 2601 et seq.); (j) the Emergency Planning and Community Right-to-Know
31 Act of 1986 ("EPCRA") (42 U.S.C. §§ 11001 et seq.); (k) the Federal
32 Insecticide, Fungicide and Rodenticide Act ("FIFRA") (7 U.S.C. §§ 136 et
33 seq.); (l) the National Environmental Policy Act of 1975 (42 U.S.C. §§
34 4321 et seq.); (m) the Radon Gas and Indoor Air Quality Reserve Act (42
35 U.S.C. §§ 7401 et seq.); (n) the National Environmental Policy Act of 1975
36 (42 U.S.C. §§ 4321 et seq.); (o) the Rivers and Harbors Act of 1899 (33
37 U.S.C. §§ 401 et seq.); (p) the Oil Pollution Act of 1990 (33 U.S.C. §§
38 1321 et seq.); (q) the Endangered Species Act of 1973, as amended (16
39 U.S.C. §§ 1531 et seq.); (r) the Occupational Safety and Health Act of
40 1970, as amended, (29 U.S.C. §§ 651 et seq.); (s) North American Free
41 Trade Act, (t) counterparts of any of the foregoing federal statutes

1 enacted within or outside the United States or by any other nation, any
2 U.S. state, region, county or local government (including any subdivisions
3 thereof); (u) any and all laws, rules, regulations, codes, ordinances,
4 licenses, permits, approvals, plans, authorizations, directives, rulings,
5 injunctions, decrees, orders and judgments enacted or promulgated under
6 any of the foregoing, all as amended and as may be amended in the
7 future, and (v) common law theories of nuisance, trespass, waste,
8 negligence, and abnormally dangerous activities arising out of or relating
9 to the presence of Hazardous Substances in the environment or work
10 place.

11 (c) "Hazardous Substance" shall be construed broadly to include
12 any substance, material or waste, including without limitation any
13 constituent, chemical, element, particle, compound, material, substance or
14 waste which is defined as a "hazardous waste," "hazardous material,"
15 "hazardous substance," "extremely hazardous substance," "restricted
16 hazardous waste," "contaminant," "toxic waste," "toxic substance," or
17 "special waste" under any Environmental Law which includes, but is not
18 limited to, petroleum, petroleum by-products (including crude oil and any
19 fraction thereof), waste oils, any hydrocarbon based substance, asbestos,
20 asbestos-containing materials, urea formaldehyde and polychlorinated
21 biphenyls. However, "Hazardous Substance" shall not mean nor be
22 construed to mean any substance, material or waste which is placed on or
23 in the leased premises in accordance with any permit, issued by any
24 competent governmental agency, which is in effect at the time of
25 placement.

26 (d) "Manage" or "Management" means to generate,
27 manufacture, process, treat, store, use, re-use, refine, recycle, reclaim,
28 blend or burn for energy recovery, incinerate, accumulate speculatively,
29 transport, transfer, dispose of or abandon Hazardous Substance.

30 (e) "Release" shall mean releasing, spilling, leaking, pumping,
31 pouring, emitting, emptying, discharging, injecting, escaping, leaching,
32 disposing or dumping into the indoor or outdoor environment, including
33 without limitation the abandonment or discarding of barrels, drums,
34 containers, tanks and other receptacles containing or previously
35 containing any Hazardous Substance.

36 (f) "Response" or "Respond" shall mean action required by any
37 Environmental Law to correct, remove, remediate, cleanup, prevent,
38 mitigate, monitor, evaluate, investigate, assess or abate a Release of a
39 Hazardous Substance.

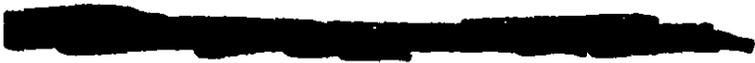
1 35.2 During the Term, Tenant, at its sole cost and expense, shall (a) comply
2 with all Environmental Laws relating solely to its use of the Premises, and permits
3 issued thereunder; (b) conduct any Management of Hazardous Substances by Tenant
4 on the Premises in compliance with Environmental Laws; (c) use commercially
5 reasonable efforts so as to not cause or allow the Release of any Hazardous Substances
6 on, to or from the Premises, except in compliance with Environmental Laws and permits
7 issued thereunder; (d) arrange for the lawful transportation and off-site disposal of all
8 Hazardous Substances that it generates; and (e) secure, maintain, and comply with all
9 permits required by Environmental Laws in connection with Tenant's use of the
10 Premises.

11 35.3 Landlord and Landlord's agents and employees shall have the right to
12 enter upon the Premises to conduct appropriate inspections or tests in order to
13 determine Tenant's compliance with Environmental Laws, provided that (a) such
14 inspections and tests shall be performed at the sole cost and expense of Landlord; (b)
15 Landlord shall provide Tenant with written notice not less than five business (5) days
16 prior to conducting such inspections or tests; (c) such tests shall be performed at
17 reasonable times designated by Tenant, and in all other respects shall not interfere with
18 Tenant's business operations and shall be in compliance with Tenant's security
19 procedures; and (d) Landlord promptly shall communicate and, when appropriate,
20 delivery copies of the results of any investigation and tests, to Tenant.

21 35.4 If Tenant's Management of Hazardous Substances at the Premises (a)
22 results in or causes a Release which violates an Environmental Laws or permits issued
23 thereunder; (b) gives rise to liability or a Claim or requires a Response under common
24 law or any Environmental Law or permit issued thereunder; (c) causes a significant
25 public health effect; or (d) creates a nuisance, Tenant, in any and all such occurrences
26 and at its sole cost and expense, promptly shall take all applicable action in Response.

27 35.6 Tenant shall indemnify, defend and hold harmless Landlord, its
28 beneficiary, managing agents and mortgagees from all Claims arising from or
29 attributable to any breach by Tenant of any of its warranties, representations or
30 covenants in this Section 35. The warranties of Tenant shall survive the termination of
31 this lease.

32 35.7 Notwithstanding anything in the Section 35 to the contrary, Tenant shall
33 not be liable and Landlord shall take all applicable action in Response and shall fully
34 indemnify and hold Tenant harmless from and against any and all liabilities, damages,
35 expenses, costs and losses arising from, or as a result of, any use and occupancy of the
36 Premises prior to the Commencement Date, including any violation of any
37 Environmental Laws attributable to the period prior to the Commencement Date.



[REDACTED]

5

6 IN WITNESS WHEREOF, the parties hereto have executed this lease to be
7 effective on the date hereinabove set forth.

8

9 WITNESSES:

LESSOR:
Bear Industries, Inc.

10 John D. LaCaze

By: [Signature]
Name: Cass L. Moore
Title: Secretary/Treasurer

14

15

16 WITNESSES:

LESSEE:
St. Gabriel Redevelopment Company
LLC.

17 Suzanne S. Sarnell

By: [Signature]
Name: CLAUDE L. KLEIN
Title: CEO

24

25

26

27

28

29

30

31

32

Sworn to and subscribed before me this 17th day of November 2006 in the Parish
of Orleans.

34

35

36

37

[Signature]
John Person
Notary
Louisiana Bar Roll 10531

ATTACHMENT 3

Characterization of Building Related Construction & Demolition
Debris in the United States

Attachment 3

From Characterization of Building Related Construction & Demolition Debris in the United States

USEPA Report # 530-R-98-010

The U.S. EPA Report #530-R-98-010, *Characterization of Building-Related Construction and Demolition Debris in the United States* indicates the most common C&D debris management practice in the U.S is that up to 40% of the C&D debris was managed (diverted) on-site, or buried at MSW landfills and unpermitted sites.

| Table ES-1 SUMMARY OF ESTIMATED BUILDING RELATED C&D DEBRIS GENERATION, 1996* (Roadway, Bridge, and Land Clearing Debris not included) (Thousand Tons) | | | | | | |
|--|--------------|---------|----------------|---------|--------------|---------|
| Source | Residential | | Nonresidential | | Totals | |
| | Thou tons | Percent | Thou tons | Percent | Thou tons | Percent |
| Construction | 6,560 | 11 | 4,270 | 6 | 10,830 | 8 |
| Renovation | 31,900 | 55 | 28,000 | 36 | 59,900 | 44 |
| Demolition | 19,700 | 34 | 45,100 | 58 | 64,800 | 48 |
| | | | | | | |
| totals | 58,160 | 100 | 77,370 | 100 | 135,530 | 100 |
| | | | | | | |
| Percent | | 43 | | 57 | | 100 |
| *C&D debris managed onsite should in theory be deducted from generation. | | | | | | |
| Quantities managed onsite are unknown | | | | | | |
| Source: Franklin Associates | | | | | | |

Composition of C&D Debris from Buildings

The composition of C&D debris is highly variable and depends critically on the type of activity where sampling is done.

ATTACHMENT 4

Formula to Determine Quantity (Wet-Weight Tonnage) of
Incoming Solid Waste

ATTACHMENT 4

Formula to Determine Quantity (Wet-Weight Tonnage) of Incoming Solid Waste

$$A = B \times C [(D \times E \times F) + (G \times H \times I) + (J \times K \times L)] / 2,000$$

Legend of Variables

| | | |
|----|--|--------------|
| A= | Quantity (Wet-Weight Tonnage) | |
| B= | Number of loads entering site | |
| C= | Number of cubic yards per truck | 20(est.) |
| D= | Pounds per cubic yard of limbs, leaves, straw And other yard debris (Type I) | 270 (est.) |
| E= | Reduction factor of Type I debris | 0.40 (est.) |
| F= | Percent of Type I debris in relation to all debris | 0.90 (est.) |
| G= | Pounds per cubic yard of lumber and housing Construction/demolition debris (Type II) | 810 (est.) |
| H= | Reduction factor of Type II debris | 0.75 (est.) |
| I= | Percent of Type II debris in relation to all debris | 0.08 (est.) |
| J= | Pounds per cubic yard of concrete, brick, asphalt And other road construction/demolition Debris (Type III) | 3,240 (est.) |
| K= | Reduction factor of Type II debris | 0.90 (est.) |
| L= | Percent of Type III debris in relation to all debris | 0.02 (est.) |

Therefore, by entering all known (est.) variables, the formula is reduced to the following:

$$A = B \times 20 \times [(270 \times 0.40 \times 0.90) + (810 \times 0.75 \times 0.08) + (3,240 \times 0.90 \times 0.02)] / 2,000$$

Or

$$A = B^* \times 2.04$$

* Number of loads entering the site becomes the only remaining variable

APPENDIX A

Letter from DOTD



KATHLEEN BABINEAUX BLANCO
GOVERNOR

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

P.O. Box 831
Baton Rouge, Louisiana 70821-0831
October 17, 2007



JOHNNY B. BRADBERRY
SECRETARY

Mr. Michael K. Daigle, P.E.
TRC
Two United Plaza Suite 502
8550 United Plaza Boulevard
Baton Rouge, LA 70809

Subject: St. Gabriel Redevelopment, LLC
Solid Waste Permit Application
Type III Construction and Demolition Landfill
Iberville Parish

Dear Mr. Daigle:

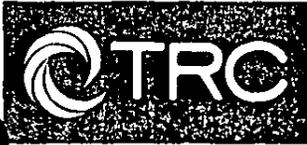
This is in response to your request for comments on the referenced project. We do not foresee any major transportation impacts that would result from this work provided that all loads delivered to the site are within legal limits. However, access to this site from any state route or any work done within DOTD right of way shall require a permit from DOTD. The permit will be used to determine specific driveway locations, driveway geometry, site drainage, turn lanes and any other traffic control items necessary.

Should you have any questions, please contact my office at (225) 231-4103.

Very truly yours,

Ronnie Robinson, P.E.
Assistant District Administrator
Engineering Division

PC: Mr. Roy Schmidt, P.E.
Mr. Joey Tureau, P.E.
Mr. Ronnie Carter, P.E.
Files



Two United Plaza
Suite 502
8550 United Plaza Boulevard
Baton Rouge, LA 70809

225.216.7483 PHONE
225.216.732 FAX

www.TRCSolutions.com

August 17, 2007

Mr. Ronnie Robinson
Assistant District Administrator - Engineering
Louisiana Department of Transportation and Development
P.O. Box 831
Baton Rouge, LA 70821-0831

Re: Assessment of Impact of St. Gabriel Redevelopment Construction & Demolition
Landfill on Traffic Flow, LA 30 Near LA 74 and LA 75 in St. Gabriel, Iberville Parish

Dear Mr. Robinson:

As previously discussed with the Department, St. Gabriel Redevelopment, LLC is in the process of preparing a solid waste permit application for a Type III construction & demolition landfill in Iberville Parish, Louisiana. A site location map is attached.

In accordance with the State of Louisiana Solid Waste Regulations, an impact assessment on the traffic flow of area roadways and a determination on whether or not the construction and maintenance of such roads is adequate to withstand the weight of the vehicles. As presented in the attached map, traffic would enter the site from either of two locations on Louisiana State Highway 75. St. Gabriel Redevelopment, LLC estimates a maximum of 100 trucks per day entering the facility at each location carrying loads below legal weight limits during peak operational periods.

To determine the potential impacts of the traffic flow from the landfill to the existing roadways, TRC conducted a traffic count at both locations. A Jamar TRAX I Plus Traffic Counter was placed approximately 315 feet to the S/SW of the intersection of ICI Road and Highway 75 and then approximately 150' W/NW of the intersection of Bear Industries drive and Highway 75.

Micro Tubes were placed across the road in accordance with the manufacturer's specifications in order to obtain a traffic count in both directions simultaneously. The counter was set to record basic data input. This setting gives a time stamped recording of each pneumatic pulse from a vehicle axle. This data is then processed to give a vehicle count for each lane of traffic over a 24 hour period. The total traffic counts at each location are presented below.

Intersection of ICI Road and Highway 75:

Upriver- 1893

Downriver- 1730

Total- 3623

Intersection of Bear Industries drive and Highway 75:

Upriver- 999

Downriver- 1063

Total- 2062

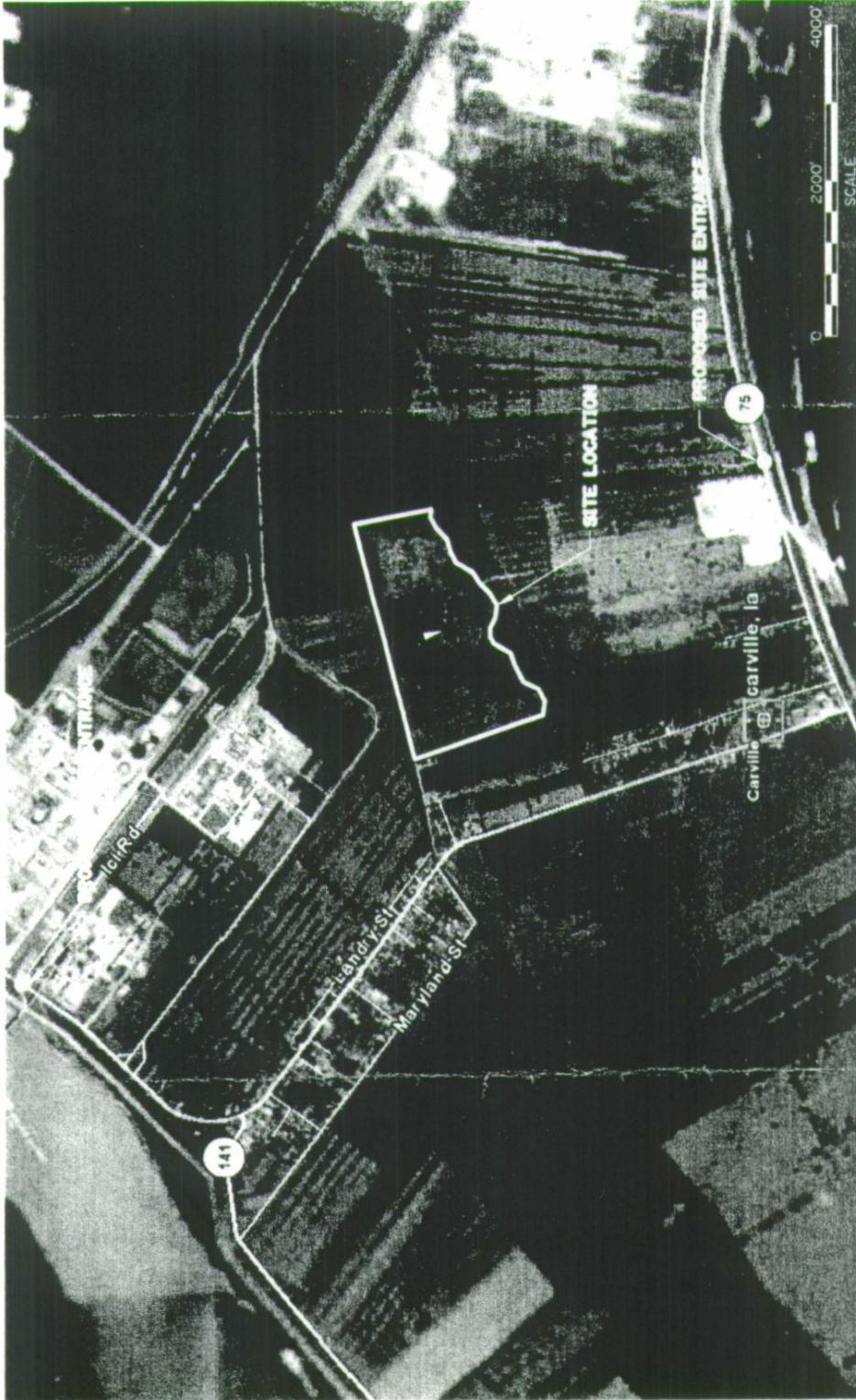
St. Gabriel Redevelopment, LLC appreciates your consideration in this matter and if you should have any questions, please call me at (225) 216-7483 or Mr. Claude Klein at (504) 388-3670.

Sincerely,



Michael K. Daigle, P.E.
Principal Environmental Consultant

BEST COPY



| SCALE | | SHEET DESCRIPTION | |
|----------|--|-------------------|--|
| DESIGNED | | DESIGNED | |
| SKETCHED | | SKETCHED | |
| REVISED | | REVISED | |
| DATE | | DATE | |

PROJECT TITLE
**ST. GABRIEL REDEVELOPMENT CONSTRUCTION
 AND DEMOLITION LANDFILL**
 ST. GABRIEL REDEVELOPMENT, L.L.C.
 ST. GABRIEL, LOUISIANA

TRAFFIC STUDY
 MAP



APPENDIX B

Corps of Engineers Section 404 Wetlands Permit



DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

January 30, 2008

Operations Division
Central Evaluation Section

SUBJECT: MVN 2007-3240 CT

St. Gabriel Redevelopment Company, LLC
114 Schlieff Drive
Belle Chasse, Louisiana 70037

Gentlemen:

This is in reference to your subject Department of the Army (DA) permit application to clear and excavate an area for a construction and demolition landfill, near Carville, Louisiana, in Iberville Parish.

In order to satisfy the requirements of our regulations, and comply with our 1990 Memorandum of Agreement with the U.S. Environmental Protection Agency (EPA), it has been determined that compensatory mitigation will be required for unavoidable impacts to jurisdictional wetlands.

At this time, you must provide a mitigation plan which fully compensates these impacts. You have the option to develop and submit your own mitigation plan within the basin of impact, or to contract with an approved mitigation bank for your compensation. If you prefer to utilize an approved mitigation bank, it will be important that you contact the bank sponsors specified on the enclosure to ensure the availability of the prescribed acreage and wetland habitat type, and advise us of your selection prior to making any contractual arrangement.

Please advise your project manager within 15 days of the date of this letter, as to your intent to contract with a mitigation bank or to submit a mitigation plan of your own design. If you have any questions, please contact Cathy Slumber at (504) 862-2284, or by e-mail at Cathy.T.Slumber@mvn02.usace.army.mil.

Sincerely,

Pete J. Serio
Chief, Regulatory Branch

Enclosure

Approved Mitigation Banks for
MVN 2007-3240 CT

Lago Espanol Unit I
17.1 acres of bottomland hardwood preservation

PLUS

Lago Espanol Unit III
19.6 acres of cypress enhancement

Mitigation Bank contact information:

Jackie Sanders
P. O. Box 320579
Flowood, MS 39232-0579
Ph: 602-919-3677

Appendix B

Corps of Engineers Section 404 Wetlands Permit Application



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483 PHONE
225.216.0732 FAX

www.TRCSolutions.com

25 July 2007

Mr. Pete Serio
Regulatory Branch
U.S.A.E. District, New Orleans
P.O. Box 60267
New Orleans, LA 70160-0267

RE: Request for an Individual Wetlands Permit for Excavation of Wetlands Associated with the Proposed St. Gabriel Redevelopment Company Landfill in St. Gabriel (Iberville Parish), Louisiana

Dear Mr. Serio:

Enclosed is a completed permit application (including the wetlands determination from the U.S.A.E New Orleans District) to excavate clay approximately 17 acres of wetlands in the St. Gabriel area of Iberville Parish, Louisiana. The resulting excavation will be used as part of a construction & demolition (C&D) landfill facility. The applicant, St. Gabriel Redevelopment Company, LLC is proposing to develop a C&D landfill on 104 acres of land in the area described below, which includes the approximately 17 acres of wetlands proposed to be impacted.

The property, located in Sections 84, 85, 99, and 101 Township 9 South, Range 1 East, was delineated by D.R. Sanders And Associates, Inc. in August 2006.

To reach the subject site, take Interstate 10 West toward Baton Rouge. Exit onto LA Hwy 30 west/north and proceed to St. Gabriel. Turn left at the traffic signal and proceed to the levee road (La Hwy 75). Proceed to Carville and turn left into the area occupied by the temporary morgue constructed following Hurricane Katrina. The site is north of the morgue and can be accessed by a farm road.

The site is not located within Coastal Zone Management Program jurisdiction. No threatened or endangered species are present, nor is habitat supporting such species present. Finally, the site is not located in an area likely to support significant cultural resources.



The applicant proposes to mitigate for the wetland impacts by purchasing 19 wetland mitigation credits (based on a ration of 1.25:1) for 15.13 acres of impacted wetlands from a Corps-approved wetlands mitigation bank containing wetlands to prevent wetlands in the rear of lots from being filled.

On behalf of our client, I am requesting that your office provide my client with a Section 404 wetlands permit to enable the development of the C&D landfill facility on the identified site. If you have questions or comments, please contact me at 225/216-7483.

Sincerely,



Michael K. Daigle, P.E.

1 Encl/mkd
CF: St. Gabriel Redevelopment Company, LLC
Cc: Cathy Slumber, U.S.A.C.E.



ATTACHMENT 1
SECTION 404 PERMIT APPLICATION

25 July, 2007

St. Gabriel Redevelopment Company, LLC
ATTN: Mr. Claude Klein
114 Schlieff Drive
Belle Chasse, Louisiana 70037

RE: Wetlands Identification/Delineation Report for the Proposed St. Gabriel
Redevelopment Company Landfill in St. Gabriel (Iberville Parish), Louisiana

Dear Mr. Klein:

This letter constitutes the final report on a wetlands identification/delineation study you requested on a 104.8-acre tract in Iberville Parish, Louisiana (Figure 1). The purpose of the study was to identify portions (if any) of the property that qualify as wetlands or other "Waters of the United States" pursuant to Section 404 of the Clean Water Act of 1977 (as amended), and to delineate their boundaries. Fieldwork for the study was conducted during August, 2006.

SITE DESCRIPTION

The study area (Figures 1 and 2) consists of 104.8 acres situated on a tract located between Community Canal and Bayou Braud near Carville, Louisiana. The property is accessed by a driveway intersecting LA Highway 75 from the south. It is situated in Sections 84, 85, and 67, Township 9 South, Range 1 East in Iberville Parish (Figure 1).

The property consists of three wetlands distributed more or less in the center of the property. Much of the area has been cleared of trees in the past and used for grazing cattle more recently. The dominant vegetation of the wetlands area includes boxelder (*Acer negundo*)(FACW) and green ash (*Fraxinus pennsylvanica*)(FACW), common buttonbush (*Cephalanthus occidentalis*)(OBL), Virginia willow (*Itea virginica*) (FACW+), black willow (*Salix nigra*)(OBL), American Elm (*Ulmus americana*) (FACW). Dominant species of the nonwetlands areas include American elm (FAC), American pokeweed (*Phytolacca americana*)(FACU+), common elderberry (*Sambucus canadensis*)(FACW-), American beautyberry (*Callicarpa americana*)(FACU-), (*Paspalum dUatatum*) (FACU+), Brazilian vervain (*Verbena brasiliense*) (NI), giant goldenrod (*Solidago gigantea*)(FACW), and field blackberry (*Rubus arvensis*)(FAC-).

Soils on the property consist of the Sharkey Clay soil map unit. The soil texture is clay. Hydrology on the property ranges from inundated/saturated in the wetlands areas to well drained with no saturated soil within the first 12 inches in the nonwetlands areas.

METHODS

Standard

The standard for wetlands used in this study conforms to the wetlands definition and procedures described in the 1987 Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987), as modified and clarified by 1991 and 1992 Memoranda from the Office, Chief of Engineers). Under these procedures, an area is a wetlands if positive wetland indicators are in evidence for each of three parameters or criteria -- hydrophytic vegetation, hydric soil, and wetlands hydrology. If positive wetland indicators cannot be ascertained for anyone of the three parameters, the area is a nonwetland.

Field Procedures

Routine wetland identification/delineation procedures described in Environmental Laboratory (1987) were applied at representative sampling stations. Sampling stations were chosen as representing typical conditions of a relatively large area of homogeneous topography, vegetation, soil, and hydrologic conditions.

At each sampling station, the vegetation was described by subjectively estimating the dominant species in each vegetation stratum. Hydrophytic vegetation was considered to be present when more than 50 percent of the dominant species at a sampling station had wetland indicator status of FACULTATIVE, FACULTATIVE WETLAND, and/or OBLIGATE (Reed, 1988). This information was noted on the vegetation section of the data form (See Appendix A).

The upper portion of the soil profile at each sampling station was described and recorded on the data sheet for that sampling station. The soil was considered to be hydric when one or more indicators of hydric soil appearing in Environmental Laboratory (1987) were observed in the soil at a sampling station.

Hydrologic conditions of each site were considered. Evidence was sought regarding the presence of any indicator of wetland hydrology listed in Environmental Laboratory (1987). If any primary indicator or two secondary indicators were present, the area at the sampling station was considered to have wetland hydrology. [Note: Because two listed secondary indicators of wetland hydrology (i. e., water-stained leaves and local soil survey data) have no technical validity, they were not considered in this delineation.]

The boundaries of areas qualifying as wetlands were flagged using consecutively numbered flags. Flags were placed at the highest (elevation ally) point where all three wetland parameters were met. In instances where wetland boundaries crossed property boundaries, the flag line was started at the approximate property boundary. Flag

D. R. SANDERS AND ASSOCIATES INC.

4017 Lake Wilma Road, Moss Point, MS 39562

positions and control points were recorded by D. R. SANDERS AND ASSOCIATES, INC. using a Global Positioning System (GPS) accurate to the submeter level. The final map was produced by D. R. SANDERS AND ASSOCIATES, INC., who also produced a scaled map of the property showing locations of wetlands and measured the acreage of wetlands and nonwetlands.

RESULTS AND DISCUSSION

General

Portions of the property qualifying as wetlands and non wetlands are provided on Figure 2. Also, locations of sampling stations are marked on Figure 2. Conditions at each sampling station are described on data sheets contained in Appendix A.

Wetlands

Characteristics of wetlands of the property are described on Data Sheets 1, 2, and 3 (See Appendix A and Figure 2). The vegetation of this site is dominated in the tree stratum, where present, by boxelder (*Acer negundo*) (FACW) and green ash (*Fraxinus pennsylvanica*) (FACW). Dominant species of the sapling/shrub stratum include common buttonbush (*Cephalanthus occidentalis*) (OBL), Virginia willow (*Itea virginica*) (FACW+), black willow (*Salix nigra*) (OBL), American Elm (*Ulmus americana*) (FACW). Dominant species of the herbaceous understory include common rush (*Juncus effusus*) (FACW+), shallow sedge (*Carex lurida*) (OBL), Pennsylvania smartweed (*Polygonum pennsylvanicum*) (FACW), beggar ticks (*Bidens* sp.), green flats edge (*Cyperus virens*) (FACW), and shortbristle homed beaksedge (*Rhynchospora comiculata*) (OBL). All of the dominant species contribute to hydrophytic vegetation.

Soils of the site consist of the Sharkey Clay soil map unit (NRCS, 1977), and is considered to be a hydric soil (1991). The soil texture is clay, exhibiting a matrix chroma of 1 with few common non-distinct associated bright mottles, which are characteristics of hydric soil. The sampling station consisted of some combination of the following primary indicators of wetlands hydrology: saturated soil in the upper 12 inches, water marks, drift lines, and sediment deposits. In addition, there were also oxidized root channels which are secondary indicators of wetland hydrology. Also, the vegetation passes the uFAC-Neutral Test" which means more dominant vegetative species were classified as OBL-FACW than FACU-UPL. The positive FAC-Neutral Test is another secondary indicator of wetlands hydrology. Since indicators are present for all three wetlands criteria, the areas around Sampling Stations 1, 2, and 3 are wetlands. The total area of the wetlands of the property is 15.13 acres, distributed as shown on Figure 2.

"Waters of the United States"

The total area of "waters of the United States" on the property is 15.56 acres, consisting of 15.13 acres of jurisdictional wetlands and 0.43 acre of waters in the form of a drainage channel, as shown on Figure 2. This area is potentially subject to Section 404 of the Clean Water Act of 1977 (as amended) and/or Section 10 of the Rivers and Harbors Act of 1899.

Nonwetlands

Nonwetlands plant communities of the property are typified by the descriptions on Data Sheets 4-7 (see Appendix A and Figure 2). These areas have been clear cut in the past and grazed. The vegetation of these areas is dominated in the sapling/shrub stratum, where present, by American elm (FAC), American pokeweed (*Phytolacca americana*)(F ACU+), common elderberry (*Sambucus canadensis*)(F ACW -), American beautyberry (*Callicarpa americana*)(F ACU-), Chinese tallow tree (*Sapium sebiferum*) (F AC), pignut hickory (*Carya glabra*)(F ACU), and roughleaf dogwood (*Comus drummondii*)(FAC). Dominant species of the herbaceous understory are dallisgrass (*Paspalum dilatatum*)(FACU+), Brazilian vervain (*Verbena brasiliense*)(NI), giant goldenrod (*Solidago gigantea*)(FACW), *Aster* sp., field blackberry (*Rubus arvensis*) (FAC-), yellow foxtail (*Setaria glauca*)(FAC), goldenrod (*Solidago* sp.), green flatsedge (FACW), dogfennel (*Eupatorium capillifolium*)(FACU), and bahiagrass (*Paspalum notatum*)(FACU+). The percentage of dominant species contributing to hydrophytic vegetation in nonwetland areas ranges from 50 to 66.7 percent. The vegetation is considered hydrophytic at Sampling Stations 4 and 6.

Soils of the nonwetlands consist of the Sharkey Clay soil map unit. These soils exhibit a matrix chroma of one, with few prominent bright mottles, which is indicative of hydric soils. There was no evidence of wetland hydrology at any of these sampling locations. Since all three criteria for wetlands are not observed in these areas, these are nonwetlands. The total area of non wetlands on the property is 89.24 acres, distributed as shown on Figure 2. These areas are not subject to federal jurisdiction under Section 404 of the Clean Water Act of 1977 (as amended).

CONCLUSIONS

Conclusions of this wetlands identification/delineation study are:

1. A total of 15.13 acres of the 104.8-acre tract qualifies as wetlands and is distributed as shown on Figure 2. These are subject to jurisdiction under Section 404 of the Clean Water Act of 1977 (as amended).

D. R. SANDERS AND ASSOCIATES INC.

4017 Lake Wilma Road, Moss Point, MS 39562

2. The total area of "waters of the United States" on the property is 15.56 acres, consisting of 15.13 acres of jurisdictional wetlands and 0.43 acre of waters in the form of a drainage canal. These are distributed as shown on Figure 2. These areas are subject to jurisdiction under Section 404 of the Clean Water Act of 1977 (as amended).

3. The total area of non wetlands on the property is 89.24 acres, distributed as shown on Figure 2. These areas are not subject to jurisdiction under Section 404 of the Clean Water Act of 1977 (as amended).

REFERENCES

Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," U. S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

NRCS. 1977. "Soil Survey of Iberville Parish, Louisiana," U.S.D.A. Natural Resources Conservation Service [formerly Soil Conservation Service], Washington, D.C.

NRCS. 1991. "Hydric Soils of the United States of America: 1991," U.S.D.A. Natural Resources Conservation Service [formerly Soil Conservation Service], Washington, D.C.

Reed, Porter R, Jr. 1988. "National List of Plant Species That Occur in Wetlands, Region 2: Southeast," National Wetlands Inventory, U. S. Fish and Wildlife Service, Washington, D. C.

If you have questions or comments regarding this letter report, please contact me at (228)-588-1244.

Sincerely,

Dana R. Sanders, Sr., PhD.

D.R. SANDERS AND ASSOCIATES, INC.

4017 Lake Wilma Road, Moss Point, MS 39562

PART II
INDIVIDUAL WETLANDS PERMIT APPLICATION
ST. GABRIEL REDEVELOPMENT CO. C&D LANDFILL
ST. GABRIEL (IBERVILLE PARISH), LOUISIANA

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO. 2. FIELD OFFICE CODE 3. DATE RECEIVED 4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME
ST. GABRIEL REDEVELOPMENT COMPANY, LLC.
POC CLAUDE KLEIN

8. AUTHORIZED AGENT'S NAME AND TITLE
DR. DANA R. SANDERS, SR.
WETLANDS SPECIALIST

6. APPLICANT'S ADDRESS
114 SCHLIEF DRIVE
BELLE CHASSE, LA 70037

9. AGENT'S ADDRESS
4017 LAKE WILMA ROAD
MOSS POINT, MS

7. APPLICANT'S PHONE
a. Residence
b. Business (504) 388-3670

10. AGENT'S PHONE
a. Residence (288) 588-0030
b. Business (288) 588-1244

11. STATEMENT OF AUTHORIZATION

I hereby authorize Dana R. Sanders, Sr., PhD to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

[SEE ATTACHMENT B]

APPLICANT'S SIGNATURE

DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE

ST. GABRIEL REDEVELOPMENT CO. C&D LANDFILL NORTH OF LA. HWY 75 IN ST. GABRIEL, LA

13. NAME OF WATERBODY, IF KNOWN (if applicable) 14. PROJECT STREET ADDRESS

30° 13' 22.206" NORTH
91° 04' 58.873" WEST

15. LOCATION OF PROJECT

BETWEEN BAYOU BRAUD AND COMMUNITY CANAL NORTH OF THE TEMPORARY MORGUE USED FOR HURRICANE KATRINA

COUNTY IBERVILLE PARISH

STATE LA

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (SEE INSTRUCTIONS) Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.

SECTIONS 84, 85, 99, and 101 TOWNSHIP 9 SOUTH, RANGE 1 EAST

17. DIRECTIONS TO THE SITE

TRAVEL WEST ON INTERSTATE 10 TOWARD BATON ROUGE. EXIT ON LA HWY 30 WEST. FOLLOW LA HWY 30 WEST TO ST. GABRIEL. TAKE RIVER ROAD (LA HWY 75 SOUTH TO CARVILLE). TAKE HWY 141 EAST APPROXIMATELY 1 MILE. TURN LEFT ONTO DRVIE TO TEMPORARY MORGUE. SITE IS NORTH OF THE MORGUE.

18. Nature of Activity (Description of project, include all features)

NATIVE SOIL, WILL BE EXCAVATED FOR THE CONSTRUCTION OF A C&D LANDFILL

19. Project Purpose (Describe the reason or purpose of the project, see instructions)
THIS PROJECT IS FOR THE CONSTRUCTION OF A C&D LANDFILL IN IBERVILLE PARISH, LOUISIANA.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge
THE SOIL PROFILE ON THIS PARCEL HAS A DEEP CLAY LAYER. THIS CLAY WILL BE REMOVED FOR THE CONSTRUCTION OF THE C&D LANDFILL.

21. Type(s) of material being discharged and the amount of each type in cubic yards

A TOTAL OF 2,000,000 YD³ OF CLAY WILL BE REMOVED (EXCAVATED)

22. Surface area in acres of wetlands or other waters filled (see instructions)

**15.13 ACRES OF WETLANDS WILL BE IMPACTED
0.43 ACRE OF OTHER WATERS WILL BE IMPACTED**

23. Is any portion of the work already complete? Yes NO IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of adjoining property owners, lessees, Etc., whose property adjoins the waterbody (if more than can be entered here, please attach a supplemental list)

SEE ATTACHMENT D

25. List of other certification or approvals/denials received from other federal, state, or local agencies for work described in this application

| AGENCY | TYPE APPROVAL | ID NUMBER | DATE APPLIED | DATE APPROVED | DATE DENIED |
|--------|---------------|-----------|--------------|---------------|-------------|
|--------|---------------|-----------|--------------|---------------|-------------|

*Would include but is not restricted to zoning, building, and flood plain permits

26. To the best of my knowledge the proposed activity described in my permit application complies with and will be conducted in a manner that is consistent with the Louisiana Coastal Management Program. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant

[SEE ATTACHMENT B]

| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|------------------------|------|--------------------|------|
|------------------------|------|--------------------|------|

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ATTACHMENT A

**PROJECT DESCRIPTION
ST. GABRIEL REDEVELOPMENT COMPANY C&D LANDFILL
ST. GABRIEL, (IBERVILLE PARISH), LOUISIANA**

ATTACHMENT A

**PROJECT DESCRIPTION
ST. GABRIEL REDEVELOPMENT COMPANY C&D LANDFILL
ST. GABRIEL, (IBERVILLE PARISH), LOUISIANA**

The proposed St. Gabriel Redevelopment Company Construction & Demolition Landfill is proposed to be developed on 104.8 acres located between Community Canal and Bayou Braud near St. Gabriel, Louisiana (Figure 1). The property is accessed via a drive off the north side of LA Highway 75 leading to the site of the temporary morgue constructed following Hurricane Katrina. It is situated in Sections 84, 85, 99, and 101 Township 9 South, Range 1 East in Iberville Parish.

The total area of wetlands on the property is 15.13 acres, all of which will be impacted by the construction of the landfill. A plan view and cross-section of the landfill design are presented in Figures 2 and 3 respectively.

The property is bordered on the south by Bayou Braud and on the north by Community Canal. Undeveloped land is located on the east and west of the property. Natural drainage from the property is to the north into Community Canal.

Project Design

A plan view of the proposed landfill project is provided in Figure 2. Figure 3 shows a typical cross-sectional view of the project through wetlands (See location A-A' on Figure 2 for location of cross-section shown in Figure 3).

The project will be accessed by an off-site driveway off LA Highway 75. There will be a 20 feet wide right of way adjacent to both Community Canal and Bayou Braud. In addition there will be a 50 feet wide buffer zone around the entire landfill area. Internal side slopes of the periphery of the landfill will be constructed at a 4 : 1 slope. Soil and clay will be excavated and removed to a depth of 20 feet.

Wetland Impacts

The spatial distribution of wetlands to be filled is shown on Figure 2. A total of 15.13 acres of historically hardwood bottom wetlands (although most of the area has been clear cut) are proposed to be impacted by the project (see Figure 2). The proposed wetland impacts consist of the construction of a C&D landfill. The wetlands currently have very low functionality because they have been cleared, but were previously hardwood bottom. The nonwetlands of the property were probably bottomland hardwood forest and pasture. Impacts to wetlands are unavoidable for this project.

Best Management Practices

Best management practices will be implemented during and following all construction activities. Silt fences and other appropriate materials will be installed to block erosion and sedimentation in wetlands outside the project area.

ATTACHMENT B
AUTHORIZATION TO ACT AS AGENT

ATTACHMENT B

AGENT AUTHORIZATION

I authorize the person(s) and/or company listed below to act as my agent regarding the proposed project as described in the Joint Application and Notification at the location listed below:

| | |
|---|--|
| <u>Dana R. Sanders, St., PhD.</u> (Name of agent) | <u>St. Gabriel Redevelopment Company</u> <u>Landfill in St. Gabriel (Iberville Parish,</u> <u>Louisiana</u> (Location of project) |
| <u>4017 Lake Wilma Road</u> (address) | |
| <u>Moss Point, Mississippi 39562</u> (City, State, Zip Code) | |
| <u>228/588-1244</u> (Agent telephone number) | |
| <u>St. Gabriel Redevelopment Company, LLC</u> Applicant's Name (printed) Claude Klein | |
| Applicant's Signature | Date |

Do you want the permit mailed to the agent? ___Yes ___X___ No

ATTACHMENT C

**ENVIRONMENTAL ASSESSMENT AND WETLAND MITIGATION
PLAN FOR ST. GABRIEL REDEVELOPMENT CO. C&D LANDFILL
ST. GABRIEL (IBERVILLE PARISH), LOUISIANA**

ATTACHMENT C

ENVIRONMENTAL ASSESSMENT AND WETLAND MITIGATION
PLAN FOR ST. GABRIEL REDEVELOPMENT CO. C&D LANDFILL
ST. GABRIEL (IBERVILLE PARISH), LOUISIANA

This project consists of a 104.8-acre parcel in which clay will be excavated for the construction of a C&D landfill. The proposed excavation is on a tract located between Community Canal and Bayou Braud near Carville, Louisiana. The property is accessed by a driveway intersecting LA Highway 75 from the south. It is situated in Sections 84, 85, 99, and 101 Township 9 South, Range 1 East in Iberville Parish (Figure 1).

Scope of Project

The soil profile on this tract has a deep clay layer. This clay will be excavated for the construction of a C&D landfill. The project (Attachment A, Figure 2) includes 89.24 acres of nonwetlands. There are 15.13 acres of wetlands within the project area which will be impacted by the construction of landfill. In addition there is 0.43 acre of other waters in the form of a ditch running north to south on the west side of the property.

The completed project will include an excavated area of 104.8 acres with a side slopes around the periphery of the excavated area constructed at a 2:1 slope. The scope of the project is more fully described in Attachment A.

Current Environmental Status

Most of wetlands proposed to be filled have been clear cut and some have been grazed by cattle. They were probably historically hardwood bottoms, but there are very few trees present now. The sapling/shrub stratum is present in some areas and includes some combination of American elm (FAC), American pokeweed (*Phytolacca americana*)(F ACU+), common elderberry (*Sambucus canadensis*)(FACW -), American beautyberry (*Callicarpa Americana*)(FACU-), and Chinese tallow tree (*Sapium sebiferum*)(FAC). Soils of the wetland areas are Sharkey Clay (NRCS, 1977), which is considered to be poorly drained and a hydric soil. The soils in wetland areas were inundated in some areas and saturated within 12 inches of the soil surface in other areas during mid August, 2006, which is a primary indicator of wetlands hydrology. In addition, water marks, drift lines, and sediment deposits were observed.

A detailed wetland quality assessment has not been conducted, but my best professional opinion is that the wetlands of the property (15.13 acres) should be classified as having **low to moderate wetland quality**.

Wetland Impacts of Proposed Project

The proposed project will result in wetland impacts to 15.13 acres of wetlands within the project footprint (Figure 2). All wetlands characteristics and functions of the 15.13 acres of wetlands proposed to be impacted by the project will be eliminated by excavating clay to a depth of 20 feet in the entire project area.

Proposed Mitigation for Wetland Impacts

The proposed mitigation for wetland impacts associated with the proposed project in Iberville Parish, Louisiana is to consider the possibility of avoiding wetlands, of minimizing the impacts to wetlands, and to provide compensatory mitigation for unavoidable wetland impacts.

Avoidance of Wetland Impacts. It is not possible to avoid these wetlands for the proposed project.

Minimization of Wetland Impacts. Minimization of wetland impacts will be carried out by using best management practices, such as constructing silt fences and placing bales of hay along the boundary of the property to protect off-site wetlands.

Proposed Compensatory Wetlands Mitigation. The total area of wetlands to be impacted by the project is 15.13 acre of clear cut bottomland hardwood wetlands (Attachment A, Figure 2). Based on my best professional judgment, all 15.13 acres of wetlands proposed to be impacted by this project have **low/moderate** wetland value. The total number of required wetland credits to offset impacts to the wetlands at a proposed ratio of 1.25: 1 is (15.13 acres X 1.25 credits/acre = 18.91 credits). Rounding the required credits to the next highest tenth of a credit, the applicant proposes to purchase a total of 19.0 bottomland hardwood wetland mitigation credits from a wetlands mitigation bank approved by the Corps of Engineers.

ATTACHMENT D
ADJACENT LANDOWNERS TO
ST. GABRIEL REDEVELOPMENT CO. C&D LANDFILL
ST. GABRIEL (IBERVILLE PARISH), LOUISIANA

D. R. SANDERS AND ASSOCIATES, INC.

4017 Lake Wilma Road, Moss Point, MS 39562

ATTACHMENT D
ADJACENT LANDOWNERS

Numbers correspond to those provided on boundaries shown on Figure 2
(Attachment A).

1. Kinder Morgan, Inc.
4735 Point Clair Road
St. Gabriel, LA 70776
2. John Lapeyrolerie
6015 HWY 75
St. Gabriel, LA 70776
3. Bear Industries
5981 HWY 75
St. Gabriel, LA 70776
4. Louis A. Carville
5835 HWY 75
St. Gabriel, LA 70776

ATTACHMENT 2

USACE WETLANDS JURISDICTIONAL DETERMINATION



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

January 25, 2007

Operations Division
Surveillance and Enforcement Section

Dr. Dana R. Sanders
D.R. Sanders and Associates, Inc.
4017 Lake Wilma Road
Moss Point, Mississippi 39562

Dear Dr. Sanders:

Reference is made to your request, on behalf of the St. Gabriel Redevelopment Company, L.L.C., for a U.S. Army Corps of Engineers' (Corps) jurisdictional determination on property located in Sections 67, 84, 85, 99, and 101, Township 9 South, Range 1 East, Iberville Parish, Louisiana (enclosed map). Specifically, this property is identified as a 104-acre tract adjacent and south of Community Canal and adjacent and north of Bayou Braud.

Based on review of recent maps, aerial photography, soils data, information provided with your request, and a field investigation on January 10, 2007, we have determined that part of the property is wetland and subject to Corps' jurisdiction. The approximate limits of the wetland are designated in red on the map. A Department of the Army (DA) permit under Section 404 of the Clean Water Act will be required prior to the deposition or redistribution of dredged or fill material into this wetland. Additionally, a DA permit will be required if you propose to deposit dredged or fill material into the waters designated in blue on the map.

You and your client are advised that this approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date.

Should there be any questions concerning these matters, please contact Mr. Rob Heffner at (504) 862-2274 and reference our Account No. MVN-2006-4924-SU. If you have specific questions regarding the permit process or permit applications, please contact our Central Evaluation Section at (504) 862-1270.

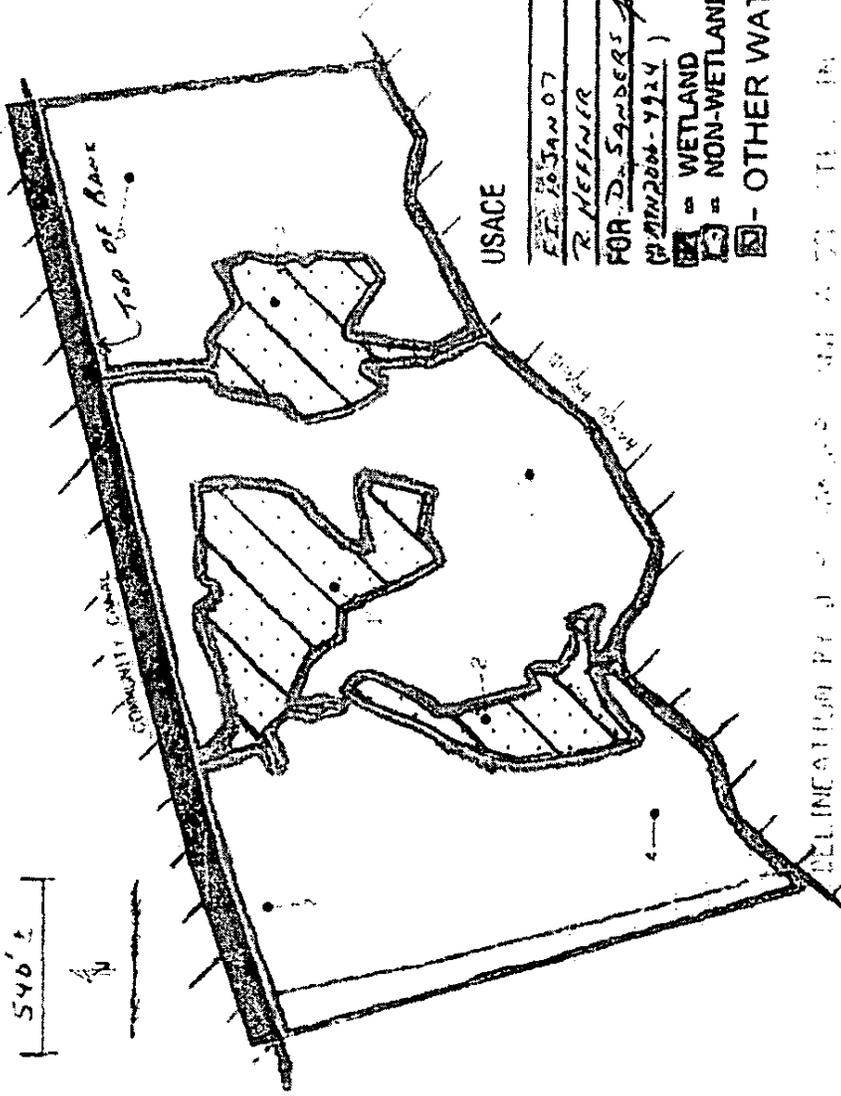
Sincerely,


Ronald J. Ventola
Chief, Regulatory Branch

Enclosures

BEST COPY

FIGURE 1: WETLAND DELINEATION OF THE PROPERTY AS INDICATED BY THE
PROPERTY RECORDS IN LAZARUS, LOUISIANA



USACE

FEB 10 JAN 07

R. NEFFNER

FOR D. SANDERS AT ST. GABRIEL RESERVOIR

(PARISH 2006-4924)

▨ = WETLAND

□ = NON-WETLAND

□ - OTHER WATERS

DELINEATION BY J. SANDERS

APPROVED
JURISDICTIONAL DETERMINATION

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

| | | |
|--|--|--------------------------|
| Applicant: St. Gabriel Redevelopment Co., LLC | File No.: MVN-2006-4924-SU | Date: JAN 30 2007 |
| Attached is: | | See Section below |
| <input type="checkbox"/> | INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | A |
| <input type="checkbox"/> | PROFFERED PERMIT (Standard Permit or Letter of permission) | B |
| <input type="checkbox"/> | PERMIT DENIAL | C |
| <input checked="" type="checkbox"/> | APPROVED JURISDICTIONAL DETERMINATION | D |
| <input type="checkbox"/> | 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 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.

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:

John Bruza (504) 862-1288
Chief, Surveillance and Enforcement Section
U.S. Army Corps of Engineers
P.O. Box 60627
New Orleans, LA 70160

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

Ms. Beth S. Guynes
U.S. Army Corps of Engineers Division,
Mississippi Valley
ATTN: CEMVD-PD-KM
Post Office Box 80
Vicksburg, Mississippi 39181-0080
Telephone: 601-631-5276
FAX: 601-631-5459

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.

Signature of appellant or agent.

Date:

Telephone number:

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers

Revised 8/13/04

DISTRICT OFFICE: New Orleans
FILE NUMBER: MVN-2006-4924-SU

PROJECT LOCATION INFORMATION:

State: Louisiana
Parish: Iberville
Center coordinates of site (latitude/longitude): NAD-83 30.22931N / 91.09188W
Approximate size of area (parcel) reviewed, including uplands: 104 acres.
Name of nearest waterway: Bayou Braud and Community Canal
Name of watershed: Amite, Louisiana, Mississippi

JURISDICTIONAL DETERMINATION

Completed: Desktop determination Date:
Site visit(s) Date(s): 10Jan07

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(n) 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.
 (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 adjacent² 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).

B5 - Waters are part of the tributary system of Alligator Bayou, a Section 10 water of the U.S.
B7 - Wetlands are adjacent to waters described in B5

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 JURISDICTIONAL DETERMINATION (mark all that apply):

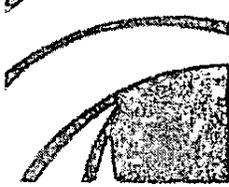
- Maps, plans, plots or plat submitted by or on behalf of the applicant.
- Data sheets prepared/submitted by or on behalf of the applicant.
- This office concurs with the delineation report, dated _____, prepared by (company):
- This office does not concur with the delineation report, dated _____, prepared 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:
- U.S. Geological Survey 7.5 Minute Historic quadrangles:
- U.S. Geological Survey 15 Minute Historic quadrangles:
- USDA Natural Resources Conservation Service Soil Survey:
- 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): '95, '98, & '04 aerial infrared
- Other photographs (Date):
- Advanced Identification Wetland maps:
- Site visit/determination conducted on: see Jurisdictional Determination Section at top of previous page
- Applicable/supporting case law:
- Other information (please specify):

¹Wetlands 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).

²The 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.

ATTACHMENT 3

NEEDS ANALYSIS/ALTERNATE SITES



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483 (PHONE)
225.216.0732 (FAX)

www.TRCsolutions.com

July 25, 2007

Department of the Army
New Orleans District Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Attention: Operations Division
Central Evaluation Section
Ms Cathy Slumber

SUBJECT: MVN 2007-433 – Needs Analysis/Alternate Sites

Dear Ms Slumber:

On behalf of our client, St. Gabriel Redevelopment, LLC, we are submitting the following information to provide a basis of the need for the facility. The development of the property will be conducted in stages although the ultimate use of the property will be to utilize it as a Type III Construction and Demolition Debris (C&D) Landfill which will be permitted for operation by the Louisiana Department of Environmental Quality (LDEQ). The first stage of the property development will be as a borrow pit to mine soil and clay. There is a need for good quality clay fill material which can be utilized for home construction, road construction, general fill, and on an as needed basis by private and public parties for construction of flood control structures. The second phase, which will commence when excavation and permitting through LDEQ is complete, will be a Type III C&D Landfill.

In the needs analysis considered below, it is indicated that a tremendous need for the C&D Landfill will be at a critical point by the time the permit is issued by LDEQ, since by then it will be the only C&D Landfill within a reasonable transportation distance available to service the parishes south of Baton Rouge (southern E. Baton Rouge, Iberville, Ascension, St. John the Baptist, St. James, and Livingston). At present, the only C&D landfill in the south Baton Rouge area is D&J Landfill, which is under order to close by the Louisiana Department of Environmental Quality by April 2008 (see Attachment 5). The D&J Landfill is 10 miles northeast of the St. Gabriel site. The St. Gabriel site will serve as a replacement for the D&J landfill and will be the only C&D landfill available to serve the C&D disposal in the south Baton Rouge area. The closest alternative is the Ronaldson Field Facility located in Alsen, Louisiana approximately 31

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miles away and requires transporting through the Baton Rouge area. No other C&D landfills are nearer than the St. Gabriel site to provide disposal of the more than 96,000 tons of construction and demolition debris reported taken between July 1, 2005 and June 30, 2006 at the D&J landfill (see Attachment 6).

Attached is a description including location maps of the other sites that were considered for the project and the reasons the proposed site was selected instead of the other sites. The alternate site study for this project is submitted as "Attachment 1". A list of adjacent landowners to the project site, including railroads and utilities is included as "Attachment 2".

Also included are alternative designs that were considered to avoid or minimize the project's impacts on the wetland portions of the proposed site together with the reasons they were not considered acceptable. Design calculations are included which show that measures are in place to prevent storm water runoff from the site. The measures shown are designed to prevent storm water runoff from the site that may cause violations in the water quality standards for its subsegment, Bayou Braud, to the Amite River headwaters are contained in "Attachment 3".

A copy of the letter from LDEQ notifying that they are issuing the Water Quality Certification is attached as "Attachment 4".

Please report the findings of your assessment to:

Mr. Claude Klein
St. Gabriel Redevelopment, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

St. Gabriel Redevelopment, LLC appreciates your consideration in this matter and if you should have any questions, please call me at (225) 216-7483 or Mr. Claude Klein at (504) 388-3670.

Sincerely,



Michael K. Daigle, P.E.
Principal Environmental Consultant

MKD/deb

attachments

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**ATTACHMENT 1
ALTERNATE SITE STUDY**

Alternate Site Study

St. Gabriel Redevelopment Company, LLC searched for suitable places to locate the Construction and Demolition Landfill using the following criteria:

1. located in an area of increasing development and is in need of a C&D Landfill
2. be in an already primarily industrial area
3. adequate highway access
4. minimum area of wetlands
5. have clay suitable for use for cover, maintenance and construction

A discussion of the sites considered and details of each property follows.

A number of sites were evaluated based upon the above criteria, and as discussed in more detail below, the search for a suitable site was conducted in the "South Baton Rouge Area", which has been experiencing tremendous growth and development. Due to the significant development in this area, the need for adequate C&D disposal capacity has become significant. The only C&D landfill in the south Baton Rouge area is D&J Landfill, which is under order to close by the Louisiana Department of Environmental Quality by April 2008 (see Attachment 5). The D&J Landfill is 10 miles northeast of the St. Gabriel site. The St. Gabriel site will serve as a replacement for the D&J landfill and will be the only C&D landfill available to serve the C&D disposal in the south Baton Rouge area (Parishes of southern E. Baton Rouge, Iberville, Ascension, St. John the Baptist, St. James, and Livingston). The closest alternative is the Ronaldson Field Facility located in Alsen, Louisiana approximately 31 miles away and requires transporting through the Baton Rouge area. No other C&D landfills are nearer to provide disposal at the D&J which reported more than 96,000 tons were taken between July 1, 2005 and June 30, 2006 (see Attachment 6). Locating a replacement facility in the South Baton Rouge Area will conserve fuel for waste haulers, allow disposal at a reasonable cost, limit traffic impact to interstate and state highways and discourage illegal dumping due to hauling costs and travel time.

A discussion of the sites considered and details of each property follows. The location of five of the tracks of land that were considered is presented in "Attachment 3".

Five of the sites considered are discussed below. The search was conducted south of Baton Rouge in areas well located to service the C&D Landfill needs of the area, in areas with soil characteristics suitable for a C&D Landfill, and outside of but relatively near large population areas and in close proximity to industrial areas. The search for suitable sites was made, and the preference to keep road traffic to a minimum fostered an examination of locations in south Baton Rouge accessible from the centers of high construction activity within a reasonable

driving distance. "Attachment 3" is a map showing the general locations of five of the tracts listed below that were considered.

A. Kinder Morgan Property

This property is adjacent to the Kinder Morgan Bulk Terminal located near Highway 75 and 3115. The Kinder Morgan property is located within the area where there is need for a C&D Landfill. They had no interest in selling or leasing with the intended use as a land fill because they preferred to keep the property for future expansion or development of their own business.

B. The C. Furroux Property

The C. Furroux property located west of Highway 75 and on state highway 141 was considered. The land is principally farmland and pasture, and it was determined that the owner would have no interest in selling or leasing the property for use as a land fill since it would be difficult to restore the property to agricultural use after the landfill was closed.

C. W.E. Caldwell Property

The property located off Highway 74 owned by Mr. Caldwell was considered as a possible location. However when examining the property it appeared to be mostly wetland so it could not be used. Other property in the same area was deemed not suitable for the same reasons.

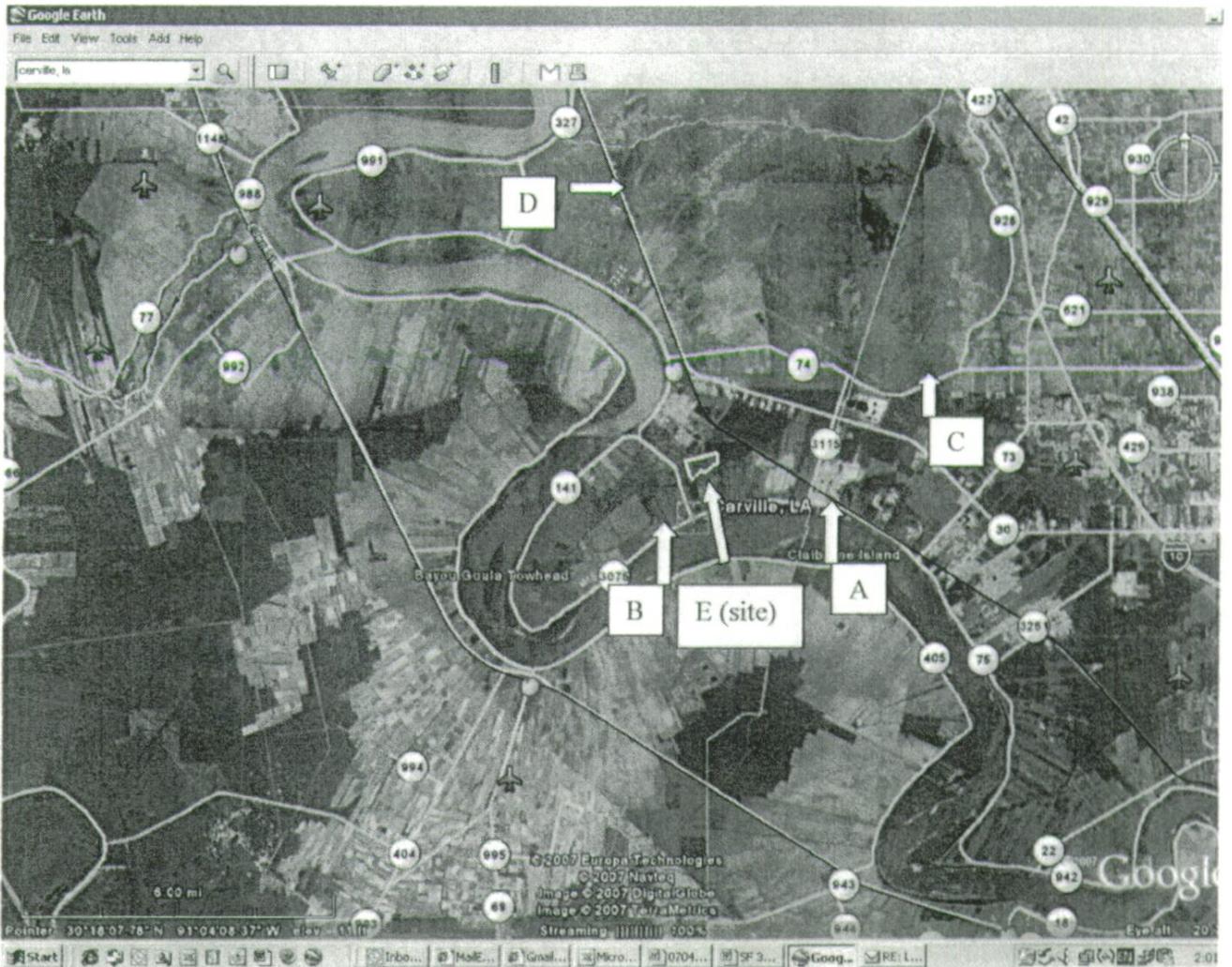
D. S. P. Elisar Property

The property located off highway 30 owned by Mr. S. P. Elisar was considered. The area has a significant amount of businesses located and/or attempting to locate along this section of Highway 30, therefore it was determined that the cost would be prohibitive for the intended use and the use restrictions were excessive for a landfill due to the amount of industry that wanted to locate on that highway.

E. Bear Industries Property

The property adjacent on the back to Bear Industries was considered. The tract is located on property at the back of their operation and they felt a landfill location there would not adversely interfere with any of their other activities. The federal morgue set up after hurricanes Katrina and Rita is also located on their property between the landfill site and the Bear Industries operation. The land was found to be principally dry and appeared to have a limited amount of wetlands. A good road from the tract of land at the back of the property is connected to the Louisiana highway 75 by a private road through the Bear Industries property. The features of this location included access to LA Highway 75 on the north through the ICI property and also from

the south across from a dock on the Mississippi River. Therefore road traffic would be primarily on the Bear Industries private property from the south and the ICI property on the north. Due to these factors and because no other acceptable properties were found, the Bear Industries property was selected.



Alternate Site Study

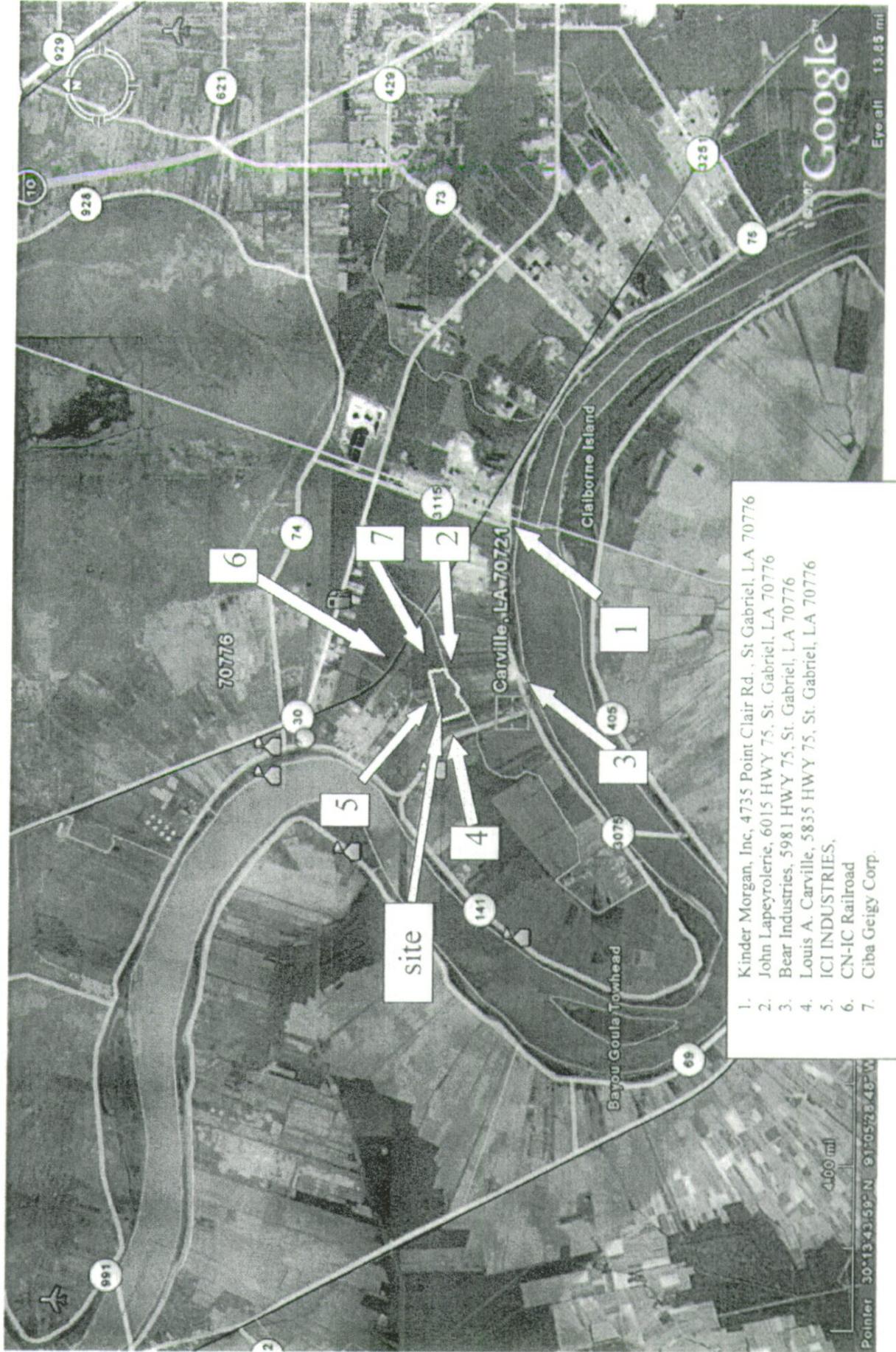
- A. Kinder Morgan Property
- B. The C. Furroux Property
- C. W. E. Caldwell Property
- D. S. P. Elisar Property
- E. Bear Industries Property

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ATTACHMENT 2

A LIST OF ADJACENT LANDOWNERS TO THE PROJECT SITE, INCLUDING RAILROADS AND UTILITIES



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**ATTACHMENT 3
ALTERNATE DESIGNS CONSIDERED FOR THE SITE**

ATTACHMENT 3

ALTERNATE DESIGNS CONSIDERED FOR THE SITE

Included are alternative designs that were considered to avoid or minimize the project's impacts on the wetland portions of the proposed site together with the reasons they were not consider acceptable. Design calculations are included which show that measures are in place to prevent storm water runoff from the site. The measures shown are designed to prevent storm water runoff from the site that may cause violations in the water quality standards for its subsegment which is Bayou Braud to the Amite River headwaters.

The facility will have a 50 foot buffer zone which will remain with natural vegetation and will prevent release of storm water and any potentially contaminated runoff water. All storm water will be managed on the site so that all rainfall on bare soil areas will be contained and discharged in accordance with regulations through a permitted LPDES outfall. The 50 foot buffer zone will be maintained so that it is vegetated with native plants as near to natural conditions as possible. Best Management Practices will be maintained during the life of the facility so that possibility of unacceptable releases will be eliminated. This buffer zone will remain undisturbed in order to reduce or eliminate unwanted releases of sediment, nutrients, or any pollutants that might be contained in surface runoff. In this manner, the wildlife habitat will not be impacted, protection against erosion will be provided, and vegetation will be allowed to grow naturally to maintain carbon storage.

Drainage from any roadways will be channeled to a collection area and managed with diversion levees, canals or devices so that drainage from any unvegetated area will not leave the site into waterways or adjoining property. During excavation the floor will be sloped to a collection area installed so that all storm water runoff will be contained within the excavation and will prevent storm water runoff from the site by collecting and pumping the storm water to the permitted outfall. Best Management Practices will be observed during this operation.

The 24-hour/25-year storm event is equivalent to 9.6 inches of rainfall. Based on that rainfall amount and assuming zero infiltration, rainfall collected in the excavation will go to the collection area where we will have necessary pumping equipment to discharge that amount of water through the LPDES permitted outfall. Runoff from other undisturbed areas will be diverted into on-site drainage ditches to avert overflow onto adjoining properties. Runoff from the site (an existing cow pasture) naturally flows into the adjacent receiving stream. Although channelized, future runoff will discharge through the permitted outfall and not onto adjacent properties.

All reasonable efforts will be made to reduce non-point source pollution during operation. We will employ Best Management Practices (BMP) including but not limited to: Brush barrier, Check dams, Construction entrances, Sediment trap, Sediment basins and rock dams, Sediment filters and sediment chambers, Silt fence, Sodding, Construction reviewer, Contractor certification and inspector training, Dust control Soil retention, Spill prevention and control plan, Temporary stream crossings, Vegetated buffer, and Others as appropriate.

Any exposed soils will be stabilized by the use of Best Management Practices in order to prevent future erosion and non-point runoff from the site. We will employ Best Management Practices (BMP) including but not limited to: Brush barrier, Check dams, Construction entrances, Sediment trap, Sediment basins and rock dams, Sediment filters and sediment chambers, Silt fence, Sodding, Construction reviewer, Contractor certification and inspector training, Dust control Soil retention, Spill prevention and control plan, Temporary stream crossings, Vegetated buffer, and Others as appropriate.

The number of personnel on site including employees and client is not expected to exceed a maximum of ten at any one time for an extended period. For this reason portable toilets will be utilized when operations begin at the facility. If an individual sewer treatment system is installed, approvals will be obtained from the Department of Health and Hospitals and copies of the approvals will be provided.

Alternative designs which included avoiding wetland areas or consolidating wetlands in one area were considered in order to avoid or minimize the project's impacts on the wetland portions of the proposed site. The stormwater design calculations that were made show that measures are in place to prevent storm water runoff from the site and the small areas of wetlands scattered in the three areas across the site would not produce a materially impact. Since the small area of wetlands is distributed in three areas within the site instead of principally in one area or in situated along the margins it was determined that in order for the property to be utilized that there were no other options. Design calculations are included which show that measures are in place to prevent storm water runoff from the site.

Geotechnical testing of the clay material that can be mined from the site indicates that it meets and/or exceeds the standards required by the US Army Corps of Engineers for repairing and for new construction of levees in the flood impacted areas along the Mississippi River. The location of the pit where the material will be dug is in an area where the impacts to the traffic and to the residents in the area will be a minimum. Trucks will not be driving on the highway but will only be crossing to the dock area. The clay material is to be sent by barge to the sites in the lower Mississippi River area near New Orleans. The design selected is the most efficient design with the fewest impacts to the wetlands area and the least impact to traffic in the area.

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**ATTACHMENT 4
LDEQ WATER QUALITY CERTIFICATION
(DH 070207-01/A1 148747/CER 20070001
CORPS OF ENGINEERS PERMIT (MVN-2007-433-CT)
IBERVILLE PARISH**



DEPARTMENT OF ENVIRONMENTAL QUALITY

KATHLEEN BABINEAUX BLANCO
GOVERNOR

MIKE D. McDANIEL, Ph.D.
SECRETARY

April 27, 2007

TRC
Two United Plaza, Suite 502
8550 United Plaza Blvd.
Baton Rouge, LA 70809

Attention: Mike Daigle, Agent for St. Gabriel Redevelopment Co., LLC – Clay Mine

RE: Water Quality Certification (DH 070207-01/A1 148747/CER 20070001)
Corps of Engineers Permit (MVN-2007-433-CT)
Iberville Parish

Dear Mr. Daigle:

The Department has received a copy of your application for a Corps of Engineers permit to excavate a 104 acre area as a clay mining operation, off I-10 on Hwy. 30, then west to River Road (Hwy. 75), then south to Carville, then east on Hwy. 141 about 1 mile, in St. Gabriel, Louisiana in Iberville Parish

The requirements for Water Quality Certification have been met in accordance with LAC 33:IX.1507.A-E. Based on the information provided in your application, we have determined that the dirt mining operation will not violate the water quality standards of Louisiana provided for under LAC 33:IX.Chapter 11. Therefore, the Department has issued a Water Quality Certification.

Sincerely,

Thomas R. Griggs
Engineer Manager

TRG/dph

c: Corps of Engineers, New Orleans, LA

ENVIRONMENTAL SERVICES
: PO BOX 4313, BATON ROUGE, LA 70821-4313
P:225-219-3181 F:225-219-3309
WWW.DEQ.LOUISIANA.GOV

*Operations Division
Central Evaluation Section
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**ATTACHMENT 5
D&J LANDFILL
LDEQ ORDER to CLOSE**

16432 Bluff Rd
Barringer, LA -

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF ENVIRONMENTAL SERVICES

| | | |
|----------------------------------|---|----------------------|
| IN THE MATTER OF | * | |
| | * | |
| D & J FILL, INC. | * | PERMITS TRACKING NO. |
| | * | |
| | * | |
| CONSTRUCTION AND DEMOLITION | * | OC-0354 |
| DEBRIS LANDFILL | * | |
| | * | |
| D-005-2831 | * | |
| ASCENSION PARISH | * | AGENCY INTEREST NO. |
| | * | |
| PROCEEDINGS UNDER THE LOUISIANA | * | 28092 |
| ENVIRONMENTAL QUALITY ACT, | * | |
| La. R.S. 30:2001, <u>ET SEQ.</u> | * | |

ORDER TO CLOSE

The following **ORDER TO CLOSE** is issued to D & J Fill, Inc (**RESPONDENT**) by the Louisiana Department of Environmental Quality (the Department), under the authority granted by the Louisiana Environmental Quality Act (the Act), Louisiana Revised Statutes (La R.S.) 30:2001, et seq., and particularly by La R.S. 30:2011 D(6) and (14) of the Act.

FINDINGS OF FACT

PERMIT-RELATED FACTS

I.

On or about August 5, 1994, the Department issued Order to Upgrade OU-0163 which required the facility to submit a permit application within 120 days. The Respondent requested

an extension for submittal of a Solid Waste Permit Application on or about December 1, 1994. On or about January 5, 1995, the Department amended OU-0163 to Order to Upgrade OU-0163A, which required the facility to submit the permit application on or before March 22, 1995. On or about March 3, 1995, the Respondent requested an additional sixty (60) days to submit the application. This request was denied by the Department.

II.

On or about March 22, 1995, an incomplete permit application for the Site was received by the Department. The Respondent stated in the cover letter that the application is not complete and additional information would be submitted.

III.

On or about May 4, 1998 the Department sent a Notice of Deficiency (NOD) letter #1 to the Respondent concerning its Solid Waste Permit Application. In correspondence sent to the Respondent on July 7, 1998, the Department approved a 120 day extension for the completion of responses to the Department's NOD letter #1. As a condition of the extension, the Respondent was to submit monthly status reports. These status reports were not received by the Department.

IV.

The Respondent submitted several incomplete submittals in response to the Department's May 4, 1998 NOD letter #1. These included partial responses received on or about September 14, 1998, September 25, 1998, September 26, 1998, October 4, 1998 and October 14, 1998. On or about September 15, 1999, the Department requested a completed, stand-alone bound response to NODs for the application to be submitted within thirty (30) days. The Respondent submitted partial responses on or about October 27, 1999, November 1, 1999, and December 19, 1999.

V.

On or about October 25, 2005, preliminary NOD letter #2 was emailed to the Respondent pertaining to the partial submittals dated September 14, 1998, September 25, 1998, September 26, 1998, October 4, 1998, October 14, 1998, October 27, 1999, November 1, 1999, and December 19, 1999. A meeting was conducted on or about March 22, 2006, between the Department and the Respondent. During the course of the meeting, the Respondent was informed that a new, updated Solid Waste Permit Application would be required, due to the fact that much of the application information submitted during 1998 and 1999 was out-dated and/or not included as a stand-alone bound document.

VI.

On or about June 21, 2006, another meeting between the Respondent and the Department was conducted to discuss the Respondent's permit application. During the course of the meeting, the Department required the Respondent to submit a Status Report on the permit application by August 4, 2006, and a report on the final decision for the future of the Site by August 28, 2006. The Department sent follow-up correspondence dated July 21, 2006, to the Respondent documenting the June meeting. A status report for the application was received August 4, 2006. In correspondence dated January 8, 2007, the Respondent indicated the Site would be closed.

COMPLIANCE-RELATED FACTS

I.

On or about September 14, 1995, a Notice of Violation with the Enforcement Tracking No. SE-N-95-0257 was issued to the Respondent which was based upon the following finding of facts:

- A. A compliance inspection of the Site was conducted on or about May 23, 1995. Upon arrival, the inspector found the open face engulfed in fire. Fire personnel were on-site and attempting to control the fire. Approximately 15 minutes after arrival, the Fire Department Chief removed his personnel from the fire and suggested Mr. Rodosta spread the material and to keep the open area saturated. At that time, Mr. Rodosta began to pump water from an adjacent area onto the face. He did this for the next several days.
- B. Upon following inspection on May 26, 1995, the fire was partially extinguished with only small hot spots remaining. The fire flared again on Monday, May 29, 1995. The Respondent pumped water onto the face for the next week. During this time, no waste was accepted at the Site.
- C. A follow up inspection was conducted on or about June 6, 1995. The inspector noted there was no sign of fire.

II.

On July 28, 1998, a Compliance Order with the Enforcement Tracking No. SE-C-98-0194 was issued to the Respondent which was based upon the following finding of facts:

- A. A compliance inspection of the Site was conducted on or about May 12, 1998. At the time of inspection, it was noted that the Respondent was not providing earthen cover over all portions of waste material every fourteen (14) days, as required in Item #6 of the facility's Interim Operation Plan. This failure to properly cover waste is a violation of the Interim Operational Plan (IOP), LAC 33:VII.901 and Section 2155 of the Act.
- B. On or about August 17, 1998, the Respondent requested the Department inspect the Site to confirm conformity with the Compliance Order.
- C. On or about August 24, 1998, the Department inspected the Site to determine conformity with this Compliance Order. The inspector noted the violations documented in the May 12, 1998 inspection had been corrected. It was recommended that a violation clear letter be issued to the Respondent.
- D. On or about October 2, 1998, a violation clear letter was issued to the Respondent.

III.

On or about May 5, 2005, a Notice of Deficiency Letter was issued to the Respondent for the following findings of fact:

- A. On or about March 23, 2005, an inspection of the Site was conducted to determine compliance with the Louisiana Environmental Quality Act and supporting regulations. The following area of concern was noted in the inspection report and/or subsequent file review:

LAC 33.VII.721.A.2.b and IOP #6: The logbook indicates that interim cover is not being applied as required and a large amount of uncovered waste is found adjacent to and surrounding the working face.

- B. A follow-up inspection was conducted on or about June 17, 2005. The inspector noted that a large amount of waste that was uncovered at the March, 23, 2005, inspection was now covered, but there still remained a large amount of waste that needed to be covered.

IV.

On or about January 16, 2006, a Notice of Corrected Violation with the Enforcement Tracking No. SE-CV-05-0086 was issued to the Respondent which was based upon the following findings of fact:

- A. On or about March 23, 2005, June 17, 2005, July 8, 2005, October 20, 24, 27 and 28, 2005, inspections of the Site were performed to determine the degree of compliance with the Act, the Site's Interim Operational Plan and the Solid Waste Regulations.
- B. During the course of the inspections, it was noted that the Respondent failed to provide adequate interim cover at least every fourteen (14) days applied at a minimum of twelve (12) inches thick. This is in violation of the facility's Order to Upgrade, OU-0163A IOP #6 and LAC 33:VII:721.A. Specifically, the inspections revealed areas of waste uncovered for greater than fourteen (14) days. Upon follow up inspection, the violation was corrected.

V.

On or about January 26, 2006, a Compliance Order with the Enforcement Tracking No. WE-C-05-0506 was issued to the Respondent based upon the following findings of fact:

- A. The Respondent submitted DEQ Form SCC-2 Application for an NPDES water discharge permit to the Department on or about September 16, 1991. On or about August 31, 1993, the Department requested via mail that the Respondent submit an updated SCC-2 application. On or about October 8, 1993, the Department submitted a second request to the Respondent for an updated application. As of the date of this order, the Respondent had not submitted an updated permit application. Therefore, the Respondent does not have a Louisiana Pollutant Discharge Elimination System (LPDES) permit or other authority to discharge wastes and/or other substance (pollutants) to the waters of the state.
- B. An inspection conducted by the Department on or about October 27, 2005, as a result of a citizen complaint, disclosed the following areas of concern:
 - i. The operations at the Respondent's facility are activities subject to permitting. The Respondent is required to submit an application for and obtain permit coverage under the LPDES Storm Water Multi-Sector General Permit for Industrial Activities. The Respondent's failure to submit a completed application for obtaining permit coverage is in violation of La. R.S 30:2076 (A) (3), LAC 33:IX.501.A, C, D and LAC 33:IX.2341.C.1.

- ii. The Respondent was not using the best management practices. Specifically, stained soil was observed around the two (2) diesel tanks and no secondary containment was being provided.

C. A follow up inspection was conducted by the Department on or about January 29, 2007, to evaluate compliance with this compliance order. The inspection noted that the following elements of the compliance order were not being met :

- i. A hose was observed running from the holding pond to a vegetated area. There were impressions in the ground, as if a piece of equipment had been recently removed from the area.
- ii. Erosion and sediment controls were not maintained and were inadequate for this site.
- iii. Sediment was observed off-site, specifically in the woods and along the property boundary by the I-10 interstate.
- iv. The South slope was eroding into adjacent property.
- v. A Storm Water Pollution Prevention Plan had not been developed or implemented.
- vi. The facility was not sampling as per the compliance order: WE-C-05-0506. Samples had only been pulled once in December 2006.
- vii. Facility has not submitted the required Discharge Monitoring Report as required since June 1, 2006.
- viii. Facility failed to submit a Notice of Intent for the proper Storm Water general permit.

VI.

On February 6, 2006, a Compliance Order and Notice of Potential Penalty with the Enforcement Tracking No. SE-CN-06-0026 was issued to the Respondent based on the following violations/findings of fact:

- A. On or about November 3, 2005, a Notice of Deficiency was issued to the Respondent, which noted numerous areas of smoke emitting from the landfill.
- B. On or about December 9, 2005, the Department received correspondence from the Respondent indicating the Notice of Deficiency had been addressed. The Respondent implemented the following actions to address the area of concern: increased compaction efforts through equipment tracking; application of additional cover materials and grading, including bringing in an outside contractor to supplement routine cover material transport capabilities; and temporary cessation of disposal activities in the areas of observed smoke emissions, and shifting the working area to more northerly portions of the site, so as to isolate the area of concern from additional waste depositions.
- C. On or about November 7, 2005, and January 31, 2006, inspections were conducted by representatives of the Department which revealed the following violation:

The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii. Specifically, numerous areas of the landfill were emitting smoke and smoldering.

The Respondent was ordered to:

- A. To immediately, upon receipt of the Compliance Order, address the smoking, smoldering areas of the landfill by locating, identifying and extinguishing the source of combustion so as to prevent any reoccurrence of smoldering;
- i. To notify the Enforcement Division within one (1) day prior to implementation of any actions taken to locate, identify or permanently extinguish the source of combustion at the landfill to allow Department personnel to be present to witness the actions taken;
 - ii. To immediately take, upon receipt of the Compliance Order, any and all steps necessary to meet and maintain compliance with the Solid Waste Regulations;
 - iii. To submit to the Enforcement Division, within thirty (30) days after receipt of the Compliance Order, a written report that includes a detailed description of the circumstances surrounding the cited violation and actions taken or to be taken to achieve compliance with the Order Portion of the Compliance Order.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

VII.

On May 18, 2006, a Consolidated Compliance Order and Notice of Potential Penalty, Enforcement Tracking No. SE-CN-06-0160 was issued to the Respondent, which was based on the following violations/findings of fact:

- A. On February 6, 2006, the Department issued Compliance Order & Notice of Potential Penalty SE-CN-06-0026. The Order was received by the Respondent on

February 8, 2006.

B. On or about March 1, 2006, and May 17, 2006, inspections were conducted by representatives of the Department that revealed the following violations:

- i. The Respondent caused and/or allowed the deposition of regulated solid waste without a permit and/or authority from the Department, in violation of La. R.S. 30:2155, and LAC 33:VII.315.A. Specifically, the Respondent had a 5-gallon container of diesel fuel at the Site. On March 1, 2006, and May 17, 2006, fuel stains were observed on the soil surrounding the container.
- ii. The Respondent failed to keep a solid waste container properly closed, in violation of LAC 33:VII.721.C.4 and Interim Operation Plan (IOP) Item #7. Specifically, on March 1, 2006, the container holding diesel fuels was not properly closed.
- iii. The Respondent failed to provide adequate security to the site, in violation of LAC 33:VII.721.B.2 and IOP Item 1. Specifically, on May 17, 2006, no personnel were posted at the front gate of the facility.
- iv. The Respondent failed to deposit solid waste in the smallest practical area, in violation of LAC 33:VII.721.A.2.b and IOP Item 6. Specifically, on May 17, 2006, the Respondent had two (2) working faces on the landfill.
- v. The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii and Compliance Order and Notice of Potential

Penalty SE-CN-06-0026. Specifically, on May 17, 2006, several locations on the eastern and southeastern portion of the landfill were emitting smoke and smoldering, and areas throughout the landfill had scorched and/or burnt grass.

- vi. The Respondent failed to minimize erosion, in violation of LAC 33:VII.721.A.2.a.ii.b. Specifically, on March 1, 2006, and May 17, 2006, areas on the eastern and southeastern portions of the landfill had inadequate vegetative cover to prevent erosion and cracks were observed in the existing cover that exposed a small amount of waste.
- vii. The Respondent failed to reduce noxious odors, in violation of LAC 33:VII.721.A.2.a.v.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

VIII.

On July 31, 2006, a Notice of Potential Penalty with the Enforcement Tracking No. SE-PP-06-0169 was issued to the Respondent which was based on the following violations/findings of fact:

- A. On or about May 30, 2006, an inspection of the Site was performed to determine the degree of compliance with the Act and the Solid Waste Regulations. It was determined the Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii, Compliance Order and Notice of Potential Penalty SE-CN-06-0026, and Compliance Order and Notice of Potential Penalty SE-CN-06-0160.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

IX.

On or about January 12, 2007, a Penalty Assessment with the Enforcement Tracking No. SE-P-06-0166 in the amount of \$22,609.75 was issued to the Respondent which was based upon the following findings of fact:

On or about November 7, 2005, January 31, 2006, March 1, 2006, May 17, 2006 and May 30, 2006, inspections were conducted by representatives of the Department which revealed the following violations:

- A. The Respondent failed to deposit solid waste in the smallest practical area, in violation of LAC 33:VII.721.A.2.b and IOP Item 6. Specifically, on May 17, 2006, the Respondent had two (2) working faces on the landfill
- B. The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii and Compliance Order & Notice of Potential Penalty SE-CN-06-0026 on February 6, 2006. Specifically, on May 17, 2006, several locations on the eastern and southeastern portion of the landfill were smoldering and areas throughout the landfill had scorched and/or burned grass. This violation was also noted in inspections conducted on November 7, 2005, January 31, 2006 and May 30, 2006.
- C. The Respondent failed to minimize erosion, in violation of LAC 33:VII.721.A.2.a.ii.b. Specifically, on March 1, 2006 and May 17, 2006 areas on the eastern and southeastern portions of the landfill did not have adequate

vegetative cover to prevent erosion. Cracks were observed in the existing cover exposing a small amount of waste.

- D. The Respondent failed to minimize noxious odors, in violation of LAC 33:VII.721.A.2.a.v. This violation was noted in the inspection conducted on May 17, 2006.

The Respondent is appealing this action.

X.

From July 28, 2005 to May 22, 2007, Single Point of Contact has logged in fifty (50) complaints on the Site. The last complaint was received on May 2, 2007. A total of seventy-eight (78) inspections have been conducted at the Site. Fourteen (14) Enforcement actions have been issued the Site since 1989.

ORDER

Based on the foregoing, the Respondent is hereby ordered:

I.

To submit to the Waste Permits Division, within thirty (30) days after receipt of this **ORDER TO CLOSE**, six bound copies of a plan to close the facility. The closure plan shall address applicable sections of LAC 33:VII.721.D and E. The Plan shall provide for initiating closure activities immediately and to cease accepting waste within twelve (12) months of receipt of this order. Closure activities shall be completed within ninety (90) days of final waste acceptance.

II.

To immediately establish financial assurance for closure and post closure costs in the form of a Stand-By Trust as per LAC 33:VII.727.A.2. The closure and post closure costs must be based on the cost estimate of hiring a third party to perform closure and post closure activities. The cost of closure and post closure cost shall be covered by the Trust. The Trust shall be funded monthly by the Respondent until the end of the twelve (12) month operation period.

III.

To regrade all areas of the landfill such that the maximum slopes are no steeper than 3(H):1(V) as required by LAC 33:VII.721.D3.a.ii and within the allotted twelve (12) month time frame.

IV.

To remove all solid waste deposited in the wetland and surrounding area. The slope encroaching upon the wetland area must be regraded by removing waste such that the maximum slope is no steeper than 3(H):1(V) as required by LAC 33:VII.721.D3.a.ii. The procedure shall follow a plan that ensures no exposed waste remains at the end of each construction day.

V.

To operate the facility in accordance with the **ORDER TO CLOSE** and approved closure plan.

VI.

In accordance with LAC 33:VII.517.A, no modification to the facility shall be affected without the approval of the Assistant Secretary of the Office of Environmental Services, Louisiana Department of Environmental Quality.

VII.

To submit to the Louisiana Department of Environmental Quality - Office of Management and Finance, Fiscal Services Division, a complete "Disposer Annual Report" by August 1st annually in accordance with LAC 33:VII.721.B.1.a as required by the Department's regulations.

THE RESPONDENT SHALL FURTHER BE ON NOTICE THAT:

I.

This **ORDER TO CLOSE** shall serve as the Respondent's permit to operate the facility. Thus the Respondent is henceforth subject to the annual maintenance and monitoring fee provided in LAC 33:VII.529. This **ORDER TO CLOSE** shall replace the **ORDER TO UPGRADE (OU-0164A)** issued to the Respondent on January 5, 1995.

II.

The Respondent shall notify the Office of Environmental Services, Permits Division in writing at least ten (10) days before closure or intent to close, seal, or abandon any individual units within a facility.

III.

This **ORDER TO CLOSE** shall become final and not subject to further administrative review by the Department unless the Respondent files, no later than thirty (30) days after receipt of the **ORDER TO CLOSE**, a written request for hearing. Failure to timely request a hearing constitutes a waiver of the Respondent's right to a hearing on a disputed issue of material fact or of law under Section 2025 (E) of the Act.

IV.

The request for adjudicatory hearing shall describe the basis for the hearing request. The request should reference the Permits Tracking Number, Facility Identification Number and Agency Interest Number, which are located on the first page of this document and should be directed to the following:

Department of Environmental Quality
Office of the Secretary
Post Office Box 4302
Baton Rouge, LA 70821-4302
Attn: Hearings Clerk, Legal Division
Re: Permits Tracking No. OC-0354
Agency Interest No. 29082

V.

Upon the Respondent's timely filing a request for a hearing, a hearing on the disputed issue of material fact or of law regarding this **ORDER TO CLOSE** may be scheduled. The hearing shall be governed by the Act, the Administrative Procedure Act (La. R.S. 49:950, et seq.), and the Department's Rules of Procedure. The Department may amend or supplement this **ORDER TO CLOSE** prior to the hearing, after providing sufficient notice and an opportunity for the preparation of a defense for the hearing.

VI.

The Respondent's failure or refusal to comply with this **ORDER TO CLOSE** and the provisions herein will subject the Respondent to possible enforcement procedures under LA R.S. 30:2025, which could result in the assessment of a civil penalty in an amount of not more than fifty thousand dollars (\$50,000) for each day of continued violation or noncompliance.

VII.

This ORDER TO CLOSE is effective upon receipt.

Baton Rouge, Louisiana, this _____ day of _____, 2007

Chuck Carr Brown, Ph.D.
Assistant Secretary
Office of Environmental Services

Copies of a request for a hearing and/or
Related correspondence should be sent to:

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Enforcement Division
P.O. Box 4312
Baton Rouge, LA 70821-4312
Attention: Hearings Clerk

*Operations Division
Central Evaluation Section
MVN 2007-433*

**ATTACHMENT 6
D&J LANDFILL
LDEQ SW DISPOSER ANNUAL REPORT**

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID WASTE DISPOSER ANNUAL REPORT
TYPE I AND II LANDFILLS, LANDFARMS, SURFACE IMPOUNDMENTS AND
TYPE III CONSTRUCTION DEMOLITION DEBRIS AND WOODWASTE LANDFILLS
(Please Refer to the Detailed Instructions)

- 1. Site Identification No. D-005-2831 July 1, '05 thru June 30, '06
- 2. Permit Number CU-0163-A Agency Interest Number 28092
- 3. Name of Permit Holder D + J FILL, INC.
- 4. Name of Disposal Facility D + J FILL, INC. CONST. + DEMO LANDFILL
- 5. Mailing Address P.O. Box 77164 B. R. LA 70879 Parish E. A. R.
- 6. Contact JOE RODOSTA Telephone (225) 445-5396
- 7. Type of Facility: Landfill Landfarm Surface Impoundment
 Construction/Demolition Debris Landfill Woodwaste Landfill

8. Surface Impoundments. This section applies only to surface impoundments.

- A. Indicate the quantity of waste (solids/sludge) that has been removed from the surface impoundments during the past year (July 1 - June 30). _____ Wet-weight Tons
- B. Provide the identification number and permit number of the facility used to dispose of the waste.
Site Identification Number _____
Facility Permit Number _____

9. Type I, II and III Landfills, Landfarms and Surface Impoundments. This section applies only to Type I, II and III landfills, landfarms and surface impoundments.

- A. Estimated remaining permitted capacity (expressed in wet-weight tons) 300 000 TONS
- B. Estimated life of facility (expressed in months and based on the permitted capacity of the facility)
36-42 MONTHS

10. Construction/Demolition and Woodwaste Landfills. This section applies only to construction/demolition and woodwaste landfills. Please mark all that apply.

- This facility receives only woodwaste that are beneficially used in accordance with a Best Management Practice Plan that has been approved in writing by the Department of Agriculture and submitted to the Office of Environmental Services, Permits Division.
- This facility receives only woodwaste resulting from utility right-of-way clearings. These woodwaste are only received from utility companies or their authorized contractors.
- This construction/demolition debris facility receives only wastes that have been generated on-site.
- This woodwaste facility receives only waste generated by the owner of the property on which this facility is located.

This form is to be returned to Financial Services Division at the following address no later than August 1 of each reporting year. Questions regarding the form may be directed to the Financial Services Division at 225-219-3863.

Financial Services Division
Attn: SW Reports
P. O. Box 4303
Baton Rouge, LA 70821-4303

RECEIVED

AUG 17 2006

SW-FSD-2

July 1, 05 thru June 30, 06

Page 4 of 4

Site Identification Number D-005-2831

Permit Number CU-0163-A

14. All Facilities: Provide all calculations used to compute the quantity (expressed in wet-weight tons) of solid waste received at the facility. Landfarm facilities must provide the calculations used to compute the quantity (in dry-weight tons) of solid waste received at the facility. Surface impoundments must provide all calculations used to compute the quantity of total suspended solid disposed in the facility.

Debris all received in trucks
measured by yardage. Yardage
converted to tons by using
 $\frac{1}{3}$ factor

DETAILED INSTRUCTIONS FOR TYPE I AND II FACILITIES
LANDFILLS, LANDFARMS, SURFACE IMPOUNDMENTS AND CLASS III
CONSTRUCTION DEMOLITION DEBRIS AND WOODWASTE DISPOSER ANNUAL REPORT

1. Identification Number: Indicate the identification number that has been assigned to the site by the administrative authority. Also, enter the year in which the report applies.
2. Permit Number: Enter the permit number for the facility in which this report applies. Each individual permitted facility is to be reported on a separate form.
3. Name of the Permit Holder: Enter the name of which the permit has been issued.
4. Name of Facility: Enter the name of the facility for which this report applies.
5. Mailing Address: Enter the mailing address for the facility, and the parish location.
6. Contact: Enter the name of the person knowledgeable of the information submitted on the report and his/her telephone number.
7. Type of Facility: Place a check by the type of facility being reported.
8. This section applies only to Surface Impoundments:
 - A. Indicate the quantity of waste removed from the surface impoundment(s).
 - B. Provide the identification number and permit number of the facility used to dispose of the waste removed from the surface impoundment(s).
NOTE: Permit holders of surface impoundments shall report the quantity (expressed in wet-weight tons) of total suspended solids received by the facility.
9. This section applies only to Type I and II Landfills, Landfarms and Surface Impoundments.
 - A. Estimated remaining permitted capacity. Enter the amount of remaining permitted capacity for the facility in wet-weight tons.
 - B. Estimated life of facility. Enter the life of the facility in months and based on the permitted capacity of the facility.
10. This section applies only to construction/demolition debris and woodwaste facilities only. Place a check by the appropriate statement(s).
11. Summary of non-industrial waste disposed.
 - (A) Enter the two digit waste number that applies.

| | | |
|-----------------------------------|-----------------------------|-----------------------------|
| 01 Residential | 06 Incinerator Ash | 10 Stable |
| 02 Commercial | 07 Domestic Sewage Sludge | 11 Infectious Waste |
| 03 Trash | 08 Underground Storage Tank | 12 Friable Asbestos |
| 04 Woodwaste | Corrective Action Waste | 13 Other, also specify name |
| 05 Construction/Demolition Debris | 09 Agricultural Waste | |
 - (B) Enter the amounts of non-industrial waste received in wet-weight tons. No other methods of reporting will be accepted.
 - (C) This section applies only to landfarms. Enter the quantity of waste received in dry-weight tons.
 - (D) Total: Enter the totals of wet-weight tons and dry-weight tons (landfarms must also enter dry-weight).
 - (E) Quantity of Waste (In-State): Enter the total amount of waste received from in-state sources in wet-weight tons.
 - (F) Quantity of Waste (Out-of-State): Enter the total amount of waste received from out-of-state sources in wet-weight tons.
12. Certification: The facility's legally authorized representative for the site operations should sign the form. Enter the date, name and the title of the person signing this form.
13. This section applies to Type I facilities. Provide a summary of all industrial solid waste received for disposal.
 - (A) Industrial Waste Number: Enter the seven-digit number assigned to each waste stream by the administrative authority.
 - (B) Quantity of Waste Received: Enter the quantity of waste received in wet-weight tons.
 - (C) Quantity Dry-Weight Tons: This section applies only to landfarm facilities. Enter the quantity of waste received in dry-weight tons.
 - (D) Subtotal of Like Industrial Wastes: Enter the subtotals of each like industrial waste received by the facility.
 - (E) Subtotal: Enter the subtotals for each page of this section of the report. Subtotals of the amounts received by the facility in wet-weight tons (Column B) and dry-weight tons must be provided.
 - (F) Total: Enter the total of waste received by the facility in wet-weight tons and dry-weight tons.
 - (G) Quantity of Waste Received (In-State): Enter the total amount of waste received from in-state sources.
 - (H) Quantity of Waste Received (Out-of-State): Enter the total amount of waste received from out-of-state sources.
14. Provide all calculations used to compute the quantity of solid waste received at the facility.



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483
225.216.0731

www.TRCSolutions.com

25 July 2007

Mr. Pete Serio
Regulatory Branch
U.S.A.E. District, New Orleans
P.O. Box 60267
New Orleans, LA 70160-0267

RE: Request for an Individual Wetlands Permit for Excavation of Wetlands Associated with the Proposed St. Gabriel Redevelopment Company Landfill in St. Gabriel (Iberville Parish), Louisiana

Dear Mr. Serio:

Enclosed is a completed permit application (including the wetlands determination from the U.S.A.E New Orleans District) to excavate clay approximately 17 acres of wetlands in the St. Gabriel area of Iberville Parish, Louisiana. The resulting excavation will be used as part of a construction & demolition (C&D) landfill facility. The applicant, St. Gabriel Redevelopment Company, LLC is proposing to develop a C&D landfill on 104 acres of land in the area described below, which includes the approximately 17 acres of wetlands proposed to be impacted.

The property, located in Sections 84, 85, 99, and 101 Township 9 South, Range 1 East, was delineated by D.R. Sanders And Associates, Inc. in August 2006.

To reach the subject site, take Interstate 10 West toward Baton Rouge. Exit onto LA Hwy 30 west/north and proceed to St. Gabriel. Turn left at the traffic signal and proceed to the levee road (La Hwy 75). Proceed to Carville and turn left into the area occupied by the temporary morgue constructed following Hurricane Katrina. The site is north of the morgue and can be accessed by a farm road.

The site is not located within Coastal Zone Management Program jurisdiction. No threatened or endangered species are present, nor is habitat supporting such species present. Finally, the site is not located in an area likely to support significant cultural resources.



The applicant proposes to mitigate for the wetland impacts by purchasing 19 wetland mitigation credits (based on a ration of 1.25:1) for 15.13 acres of impacted wetlands from a Corps-approved wetlands mitigation bank containing wetlands to prevent wetlands in the rear of lots from being filled.

On behalf of our client, I am requesting that your office provide my client with a Section 404 wetlands permit to enable the development of the C&D landfill facility on the identified site. If you have questions or comments, please contact me at 225/216-7483.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Daigle', with a long horizontal line extending to the right.

Michael K. Daigle, P.E.

1 Encl/mkd
CF: St. Gabriel Redevelopment Company, LLC
Cc: Cathy Slumber, U.S.A.C.E.



APPENDIX C

Agency Letters



CITY OF ST. GABRIEL

Incorporated in 1994 ~ Team City 1998
City Designation, 2001

George L. Grace, Sr.
Mayor

CITY COUNCIL

André L. Jones - Mayor Pro Tempore
Flora J. Danielfield
Freddie "Carl" Frazier
Lionel Johnson, Jr.
Nyra D. Taylor

CITY CLERK

Yolanda L. Andrews-Mattain

CHIEF OF POLICE

Kevin J. Ambeau, Sr.

July 18, 2007

TRC

Michael K. Daigle, P.E.
Principal Environmental Consultant
Two United Plaza, Suite 502
8550 United Plaza Boulevard
Baton Rouge, LA 70809

RE: Permit application information request for construction and debris facility

Dear Mr. Daigle:

This letter is in regard to the property located in St. Gabriel, LA, which is a part of the Bear Industries' industrial park.

This property is zoned Heavy Industrial and is conducive for locating a construction and debris facility. The Planning and Zoning Commission has no issues with the site, which must be constructed according to the existing building codes in effect at the state and local level.

If any additional information is needed, please feel free to contact my office at 225-642-9600, Ext. 2222.

Sincerely,

Atkins Williams, Jr., Director of Public Works
City of St. Gabriel



Acadian

Ambulance Service



NATIONALLY
ACCREDITED

P.O. Box 98000 • LAfAYETTE, LA • 70509-8000

EMPLOYEE
OWNED

AMBULANCE
DISPATCH
511
800-259-1111

ADMINISTRATION
337-291-3333
800-259-3333

BILLING
800-259-2222

December 21, 2007

Mr. Claude Klein
St. Gabriel Redevelopment, L.L.C.
114 Schlieff Drive
Belle Chasse, LA 70037

Dear Mr. Klein:

As requested by Mr. Michael Daigle of TRC, I am forwarding to you the following information concerning Acadian Ambulance Service, Inc.

Should the need arise for emergency ambulance service at St. Gabriel Redevelopment's facility in St. Gabriel, LA, we suggest you call 911 and request our services. We will, upon receipt of your request, immediately dispatch our closest ambulance to this location. Our response time will be based on the location of the ambulance that is dispatched when the request for help enters our dispatch center. We do have an ambulance based in St. Gabriel.

All of our ambulances are staffed with Nationally Registered Paramedics and are equipped at the ACLS level. This includes emergency cardiac care medications and ECG/defibrillator monitors.

Should you need any further information, you may call me at (225) 761-3330.

Sincerely,

Daniel J. Lennie
Vice President, Operations

DJL/jj

Cc: Mr. Michael K. Daigle, TRC



ST. GABRIEL HEALTH CLINIC, INC.

EASTSIDE COMMUNITY HEALTH CENTER

Box 209
5760 MONTICELLO DRIVE
ST. GABRIEL, LA 70776

Board of Directors

August 16, 2007

Mrs. Wilfret Lorraine
Board President

Mrs. Paula Lewis
Vice President

Mrs. Hazel Schexnayder
Past President

Mr. Larry Rouse
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Mrs. Rose Mary Brown
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Rev. Alfred Thomas
Chaplain

 *Ernest Dennis*
Member

Dr. Susan Steele
Member

Mr. Bobby Acaldo
Member

Mrs. Thelma Ruffin
Member

Mrs. Mary Thomas
Member

Mrs. Gertevia Robinson
Member

Mr. Claude Klein
St. Gabriel Redevelopment, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

Re: Letter of August 9, 2007, Request for Statement of Emergency
Medical Services for the Proposed St. Gabriel Construction & Demolition
Landfill St. Gabriel, Iberville Parish, Louisiana

Dear Mr. Klein:

St. Gabriel Eastside Community Health Center has the ability to serve and is willing to accept and treat your employees who are injured/ill who will need medical care. We are able to accept and treat patients who are contaminated with hazardous materials.

Thank you for considering our organization and we look forward to providing quality medical services to your employees.

If you have any questions, please contact me at 225.642-9652.

Sincerely,

Phyllis J. Adams, CEO
St. Gabriel Health Clinic, Inc.
padams@stgabrielhc.org



MITCHELL J. LANDRIEU
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF STATE PARKS

ANGÈLE DAVIS
SECRETARY

STUART JOHNSON, PH.D.
ASSISTANT SECRETARY

Mr. Claude Klein
St. Gabriel Redevelopment, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

Re: Construction and demolition landfill, Iberville Parish

Dear Sir:

Louisiana Office of State Parks has no facilities near your proposed St. Gabriel landfill site. Our closest park to this proposed landfill is Plaquemine Lock State Historic Site located at 57730 Main Street, Plaquemine, LA.

Best regards,

A handwritten signature in cursive script, appearing to read "John Lavin".

John Lavin
Land Officer



State of Louisiana

Kathleen Babineaux Blanco
Governor

Department of Wildlife & Fisheries
Post Office Box 88000
Baton Rouge, LA 70898-9000
(225) 765-2800

Janice A. Lansing
Acting Secretary

Date November 2, 2006

Name Michael Daigle

Company TRC Environmental Corporation

Street Address 8000 GSRI Ave, LBTC Bldg #3000

City, State, Zip Baton Rouge, LA 70820

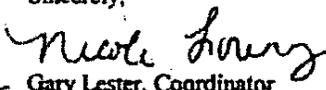
Project USACE Borrow Site

Invoice Number 06110223

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 (LNHP) 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. LNHP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time Heritage tracked species are encountered within the project area, please contact the LNHP Data Manager at 225-765-2643. If you have any questions, or need additional information, please call 225-765-2357.

Sincerely,

for 
Gary Lester, Coordinator
Natural Heritage Program



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

January 25, 2007

Operations Division
Surveillance and Enforcement Section

Dr. Dana R. Sanders
D.R. Sanders and Associates, Inc.
4017 Lake Wilma Road
Moss Point, Mississippi 39562

Dear Dr. Sanders:

Reference is made to your request, on behalf of the St. Gabriel Redevelopment Company, L.L.C., for a U.S. Army Corps of Engineers' (Corps) jurisdictional determination on property located in Sections 67, 84, 85, 99, and 101, Township 9 South, Range 1 East, Iberville Parish, Louisiana (enclosed map). Specifically, this property is identified as a 104-acre tract adjacent and south of Community Canal and adjacent and north of Bayou Braud.

Based on review of recent maps, aerial photography, soils data, information provided with your request, and a field investigation on January 10, 2007, we have determined that part of the property is wetland and subject to Corps' jurisdiction. The approximate limits of the wetland are designated in red on the map. A Department of the Army (DA) permit under Section 404 of the Clean Water Act will be required prior to the deposition or redistribution of dredged or fill material into this wetland. Additionally, a DA permit will be required if you propose to deposit dredged or fill material into the waters designated in blue on the map.

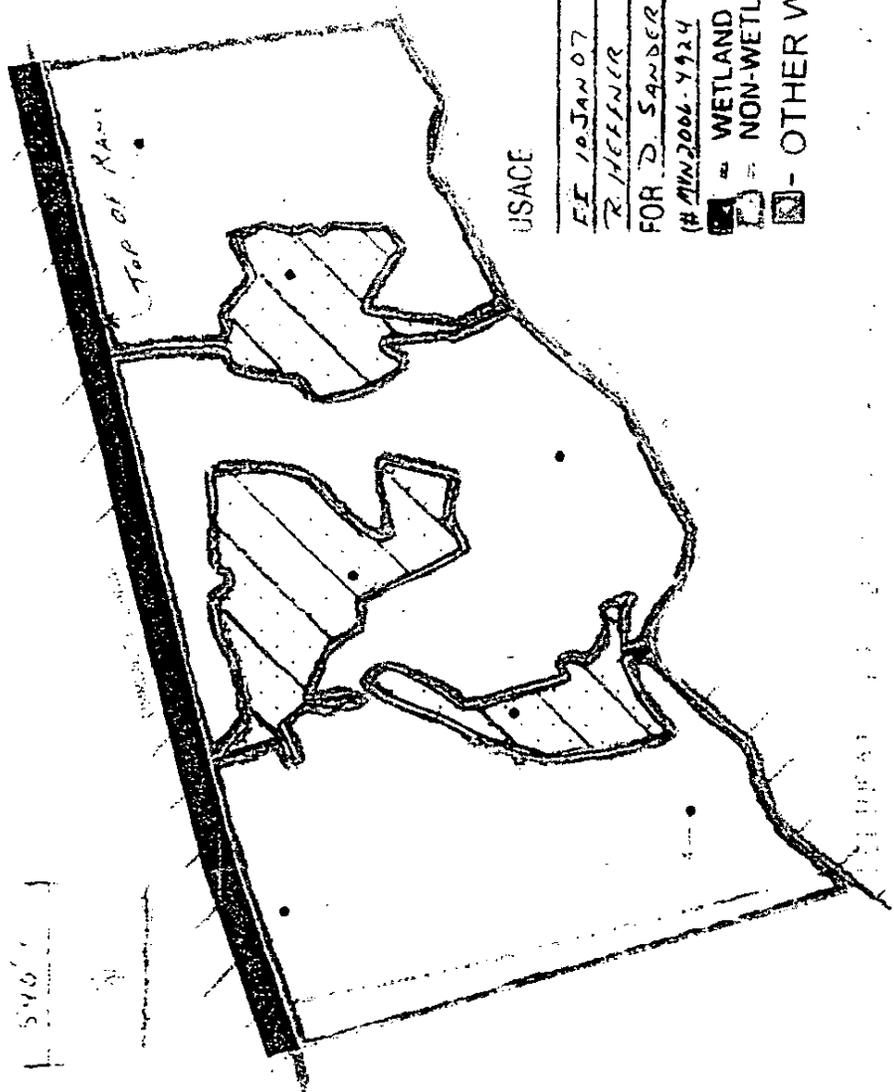
You and your client are advised that this approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision prior to the expiration date.

Should there be any questions concerning these matters, please contact Mr. Rob Heffner at (504) 862-2274 and reference our Account No. MVN-2006-4924-SU. If you have specific questions regarding the permit process or permit applications, please contact our Central Evaluation Section at (504) 862-1270.

Sincerely,

Ronald J. Ventola
Chief, Regulatory Branch

Enclosures



USACE

FF 10 JAN 07

R HEFFNER

FOR D. SANDERS AND ST. GARRETT RESERVE

(# MIN 2006-4924)

- WETLAND
- NON-WETLAND
- OTHER WATERS

APPROVED
 JURISDICTIONAL DETERMINATION

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

| | | |
|--|--|--------------------------|
| Applicant: St. Gabriel Redevelopment Co., LLC | File No.: MVN-2006-4924-SU | Date: JAN 30 2007 |
| Attached is: | | See Section below |
| <input type="checkbox"/> | INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | A |
| <input type="checkbox"/> | PROFFERED PERMIT (Standard Permit or Letter of permission) | B |
| <input type="checkbox"/> | PERMIT DENIAL | C |
| <input checked="" type="checkbox"/> | APPROVED JURISDICTIONAL DETERMINATION | D |
| <input type="checkbox"/> | 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/cccw/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 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.

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:

John Bruza (504) 862-1288
Chief, Surveillance and Enforcement Section
U.S. Army Corps of Engineers
P.O. Box 60627
New Orleans, LA 70160

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

Ms. Beth S. Guynes
U.S. Army Corps of Engineers Division,
Mississippi Valley
ATTN: CEMVD-PD-KM
Post Office Box 80
Vicksburg, Mississippi 39181-0080
Telephone: 601-631-5276
FAX: 601-631-5459

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.

| | | |
|----------------------------------|-------|-------------------|
| Signature of appellant or agent. | Date: | Telephone number: |
|----------------------------------|-------|-------------------|

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers

Revised 8/13/04

DISTRICT OFFICE: New Orleans
FILE NUMBER: MVN-2006-4924-SU

PROJECT LOCATION INFORMATION:

State: Louisiana
Parish: Iberville
Center coordinates of site (latitude/longitude): NAD-83 30.22931N / 91.09188W
Approximate size of area (parcel) reviewed, including uplands: 104 acres.
Name of nearest waterway: Bayou Braud and Community Canal
Name of watershed: Amite, Louisiana, Mississippi

JURISDICTIONAL DETERMINATION

Completed: Desktop determination Date:
Site visit(s) Date(s): 10Jan07

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 wetlands¹.

(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 adjacent² 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).

B5 - Waters are part of the tributary system of Alligator Bayou, a Section 10 water of the U.S.

B7 - Wetlands are adjacent to waters described in B5

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 JURISDICTIONAL 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 _____, prepared by (company):
- 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:
- U.S. Geological Survey 7.5 Minute Historic quadrangles:
- U.S. Geological Survey 15 Minute Historic quadrangles:
- USDA Natural Resources Conservation Service Soil Survey:
- 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): '95, '98, & '04 aerial infrared
- Other photographs (Date):
- Advanced Identification Wetland maps:
- Site visit/determination conducted on: see Jurisdictional Determination Section at top of previous page
- Applicable/supporting case law:
- Other information (please specify):

¹Wetlands 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).

²The 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.



**DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267**

REPLY TO
ATTENTION OF

July 3, 2007

Planning, Program and Project Management Division
Protection and Restoration Office

Subject: Statement of Acceptability of Borrow Area – Eastover for Use as Contractor-Furnished Source of Borrow Material for Hurricane and Storm Damage Reduction System Levee Construction Projects

Mr. Michael Daigle
TRC
8550 United Plaza Blvd., Suite 502
Baton Rouge, LA 70809

Dear Mr. Daigle:

The New Orleans District of the U.S. Army Corps of Engineers (Corps) has determined that the proposed Borrow Area – St. Gabriel, located in Iberville Parish near Carville, Louisiana – appears to be acceptable for use as a source of contractor-furnished material in the construction of Hurricane and Storm Damage Reduction System levees. This determination is based upon the information that you submitted to the Corps on behalf of the landowner.

This statement of acceptability for use as a contractor-furnished borrow area shall neither relieve the contractor from its obligation to furnish satisfactory material to the project nor commit the Government to the acceptance of the character, quantity or availability of material in this borrow area. Verification of the material should be performed by the contractor to assure that the material meets their contract specifications for levee construction material.

Be aware that some soil materials in your proposed pit may not be acceptable for use as levee fill. The soil boring data indicates that the area submitted has an appreciable amount of acceptable material with some exceptions.

The soils on the eastern side are acceptable to an excavation depth of 14 feet at boring B-1 and 16 feet at boring B-2. We would not recommend digging past 14 and 16 feet at this end due to a six-foot unacceptable strata of silt between 14 and 22 feet below the ground surface.

The center of the pit, represented by borings B-3 and B-4 is acceptable except for a two-foot stratum between 26 and 30 feet (depth difference depends on which boring is referenced). That two foot stratum would have to be wasted or totally avoided due to very high organic contents.

The soil on the western side around Boring B-5 is all acceptable, and the soil around Boring B-7 is acceptable except for a 6 foot stratum of ML between 12 and 18 feet.

Any processing, blending, or segregation of material performed to comply with material specifications for a project must be approved by the Contracting Officer for the project. Soils with organic content over 9% are not allowed. Only clays are allowed and must have a Plasticity Index of 10 or more. The materials must comply with the specifications for each project. The contractor will be responsible for borrow pit stability and safety according to OSHA requirements. Due to silts and sand present at the bottom of the borings, it is recommend a geotechnical engineer investigate seepage/heaving and uplift problems that may occur if and when the pit is dewatered.

This statement of acceptability does not relieve the Contractor from its obligation to comply with applicable permits or regulations, including requirements that may prevent the excavation and use of material from the approved source area. Specifically, operations at the site must not impact the wetlands located and identified in the MVN2006-4924 Jurisdictional Determination of Waters and Wetlands of the United States regulated by the Corps under Section 404 of the Clean Water Act, dated January 10, 2007 prior to issuance of a permit for alteration of these wetlands. The wetland areas to be avoided prior to permit issuance are shown on the attached map.

In the event any cultural resources are encountered during ground altering activities, no work will proceed in the area containing these cultural resources until a CEMVN archeologist has been notified and final coordination with the State Historic Preservation Officer has been completed.

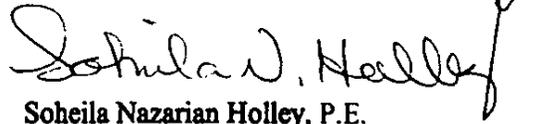
This statement of acceptability does not authorize the Contractor to conduct operations or remove material from outside the property boundary of the source area, and it is the Contractor's responsibility to verify that operations and excavations are conducted on the subject property.

The Corps has not determined whether there are pipelines, power lines, other public utilities or other such facilities that may impair the ability to fully utilize the borrow site. The Government assumes no cost or liability with regards to the identification of such items and/or the removal, modification, protection, or relocation of such items. We do caution that consideration should be made for any underground facilities, such as the American Association of State Highway and Transportation Officials (AASHTO) HS20-44 loading requirement.

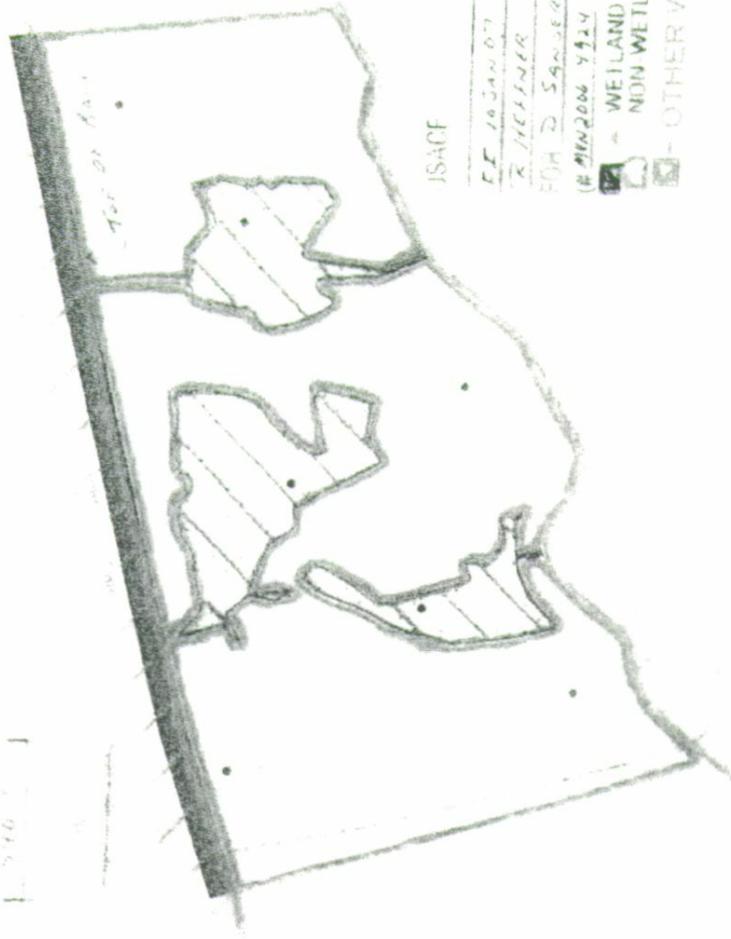
In order for Contractors to be fully informed about the quality of your site, please be advised that the Government will make available to prospective Contractors certain relevant information relative to your property for their consideration in preparation of bids for levee construction projects.

Mr. Michael Daigle
TRC
July 3, 2007
Page 3 of 3

Sincerely,

A handwritten signature in black ink, appearing to read "Soheila Nazarian Holley". The signature is fluid and cursive, with a long, sweeping tail that extends upwards and to the right.

Soheila Nazarian Holley, P.E.
Borrow Team
Senior Project Manager



ISACE

ET 10 JAN 07

R. HEFFNER

FOR D. SANDERS for GABRIEL, ALBI, MIDP
(# MIN 2006 4424)

- WETLAND

- NON WETLAND

- OTHER WATERS

APPROVED

FOR THE USE OF THE PROPERTY



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 BREUX
ASSISTANT SECRETARY

April 17, 2007

Dr. Malcolm K. Shuman
Surveys Unlimited Research Associates, Inc.
P.O. Box 14414
Baton Rouge, LA 70898-4414

Re: Draft Phase I CRM Report
Division of Archaeology Report No. 22-2907
*Cultural Resources Survey of a 49.67 Ha /
122.64 Ac Tract Near Carville, Iberville Parish, Louisiana*

Dear Dr. Shuman:

Receipt is acknowledged of your letter dated April 10, 2007, transmitting two copies of the above-referenced report. We have completed our review of the document and offer the following comments.

The report meets the Louisiana Division of Archaeology's standards and we concur with the findings that additional archaeological investigations are not warranted at the proposed borrow site, based on the negative findings of the Phase I survey. Consequently, we have no objections to the implementation of this project from a Section 106 compliance standpoint.

Enclosed with this letter are photocopied pages of the draft report with comments/corrections noted. Please address these as appropriate and transmit two copies of the final report for our files. Should you have any questions concerning our comments, do not hesitate to contact Duke Rivet in the Division of Archaeology at (225) 3420-8170.

Sincerely,

Pam Breux
State Historic Preservation Officer

Enclosure: as stated

APPENDIX D

Census Data

Census and Demographic information

Like Bienville Parish, the parish was named for Jean Baptiste le Moyne, Sieur de Bienville

RELATED TOPICS

Iberville Parish is one of 64 parishes in Louisiana.

The parish is in the Baton Rouge metro area. The estimated population in 2004 was 32,497. This was a decrease of -2.47% from the 2000 census.

INCOME SNAPSHOT

Median household income

Local

\$29,039

National

\$41,994

Source: 2000 census, U.S. Census Bureau

For more census details and comparisons, see our Iberville Parish demographic reports

In 2002, the per capita personal income in Iberville Parish was \$20,796. This was an increase of 19.7% from 1997. The 2002 figure was 67% of the national per capita income, which was \$30,906.

County seat: Plaquemine

Listed places in Iberville Parish:

Cemeteries (27)

Communities (8)

Libraries (8)

School districts (1)

Population 2000: 33,320

Square miles: 618.64

Metro area: Baton Rouge

2000 CENSUS DATA

IBERVILLE PARISH

LA

US

POPULATION

Number

Number

Number

| | | | |
|----------------------------|--------|--------|-------|
| Total population | 33,320 | | |
| Square miles (land) | 618.64 | | |
| Population per square mile | 53.86 | 102.59 | 79.56 |

GENDER

| | Number | Pct | Pct | Pct |
|--------|--------|------|------|------|
| Male | 16,640 | 49.9 | 48.4 | 49.1 |
| Female | 16,680 | 50.1 | 51.6 | 50.9 |

AGE

| | Number | Pct | Pct | Pct |
|---------------|--------|------|------|------|
| 15 or younger | 7,138 | 21.4 | 22.4 | 21.4 |
| 16-24 | 5,096 | 15.3 | 15.5 | 13.9 |
| 25-44 | 10,346 | 31.1 | 28.9 | 30.2 |
| 45-64 | 7,160 | 21.5 | 21.6 | 22.0 |
| 65+ | 3,580 | 10.7 | 11.6 | 12.4 |

| | Number | Number | Number |
|--|--------|--------|--------|
|--|--------|--------|--------|

| | | | |
|---------------------|-------|-------|-------|
| Average age (years) | 35.19 | 35.25 | 36.22 |
|---------------------|-------|-------|-------|

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

RACE AND ETHNICITY

| | Number | Pct | Pct | Pct |
|--|--------|------|------|------|
| White | 16,412 | 49.3 | 63.9 | 75.1 |
| Black or African American | 16,560 | 49.7 | 32.5 | 12.3 |
| American Indian and Alaska native | 59 | 0.2 | 0.6 | 0.9 |
| Asian | 86 | 0.3 | 1.2 | 3.6 |
| Native Hawaiian and other Pacific islander | 4 | 0.0 | 0.0 | 0.1 |
| Some other race | 48 | 0.1 | 0.7 | 5.5 |
| Two or more races | 151 | 0.5 | 1.1 | 2.4 |
| Hispanic or Latino | 343 | 1.0 | 2.4 | 12.5 |

Sources: U.S. Census Bureau, 2000 Census; ePodunk

Note: Hispanic ethnicity is a separate data category from race. This number should not be added to race totals.

APPENDIX E

Emergency Procedures Plan

Contingency Plan

The nature of the wastes disposed at this facility minimizes the chances of fires and explosions related directly to the waste materials. Employees will be trained in proper use of equipment to minimize the risk of accidents due to operator error. General responses to several types of emergencies are presented below; however, if unsure of the correct response, call the appropriate emergency response agency, and seek assistance.

Fire: If the fire is small enough to be safely extinguished with a fire extinguisher or smothered with dirt, this will be done, otherwise people should be evacuated from the area of the fire and the local fire department called.

Explosions: The response to an explosion will depend upon the type and extent of the explosion. In most cases, the response will be to evacuate people in the area of the explosion and call the local fire department or emergency response team (i.e. police).

Accidents: A qualified individual should attend to accidents resulting in an injury at the site. Individuals trained in first aid response may choose to attend to an injured individual; otherwise appropriate local emergency response teams should be contacted.

Weather: When a major storm or other weather event (i.e. rain, hurricane, flood, etc.) is anticipated, cover as much waste as possible to minimize waste exposure, check water pumps for proper operation, and generally secure the site against the wind and water damage associated with large weather systems.

Local Emergency Contacts

East Iberville Fire Department
2075 Highway 30
St. Gabriel, LA 70775
(225) 642-9980

St. Gabriel Police Department
P.O. Box 537
St. Gabriel, LA 70776
(225) 642-5222

St. Gabriel Health Center
P.O. Box 209
5730 Monticello Dr.
St. Gabriel, LA
(225) 642-9676

This plan will be updated annually or when implementation demonstrates that a revision is needed.

EMERGENCY PROCEDURES PLAN

TABLE OF CONTENTS

- 1.0 SCOPE
 - 1.1 Introduction
 - 1.2 Plan
 - 1.3 Administration
 - 1.4 Organization
- 2.0 EMERGENCY PROCEDURES
- 3.0 EMERGENCY PHONE NUMBERS
- 4.0 EMERGENCY COORDINATION
- 5.0 EMERGENCY EQUIPMENT
- 6.0 POST-INCIDENT ACTION
- 7.0 CASUALTY CONTROL PLAN
- 8.0 FIRE CONTROL PLAN
- 9.0 EMERGENCY FIRST AID PROCEDURES

1.0 SCOPE

1.1 Introduction

The attached procedure outlines the appropriate functions for handling a site emergency. It sets up a structure for directing the overall situation and establishes a framework for organization, control and communications. This procedure identifies the information required to effectively respond to potential hazards to human health or environment which may result from accidents, fire or other unplanned occurrences which can happen at the St. Gabriel Redevelopment Construction & Demolition Landfill. The procedure leaves flexible the response to specific situations.

1.2 Plan

This procedure is designed to establish a pre-event plan for coping with a major disaster or emergency, safely evacuating employees from the site and coordinating with local emergency services as required.

1.3 Administration

Each employee will be trained in proper use of this procedure carrying out his responsibilities as directed. Only the designated staff personnel will have the authority to implement this procedure.

1.4 Organization

The implementation and execution of the plan involves the actions of the Emergency Coordinator (EC), who is designated by the facility General Manager.

2.0 EMERGENCY PROCEDURES

In the event of an employee discovering an imminent or actual emergency situation, the employee shall immediately notify the EC or his designee, as well as personnel in the immediate area who may be in danger.

Upon notification, the EC or designee will:

- Determine the exact source, amount and area of involvement of the emergency
- Assess the possible hazards to human health and the environment

- Notify other applicable agencies with a preliminary assessment of the situation, notification of hazards beyond the site boundaries, and request appropriate assistance (see Section 3.0 of this plan)
- If casualties are involved, activate the Casualty Control Plan (see Section 7.0 of this plan)
- If a fire occurs, activate the Fire Control Plan (see Section 8.0 of this plan)
- If operations are stopped, monitor for potentially hazardous situations and
- Discontinue waste unloading at the incident area until cleanup procedures are completed.

3.0 EMERGENCY PHONE NUMBERS

The following agencies may be notified by the site for service in the event of an emergency:

| AGENCY | PHONE NUMBERS |
|---|----------------|
| Fire Department | 911 |
| Ambulance Service | 911 |
| Police Department | 911 |
| St. Gabriel Health Center | 225-642-9676 |
| Louisiana Department of Environmental Quality | |
| Baton Rouge, LA | |
| Solid Waste | 225-219-3640 |
| Water Quality | 225-219-3640 |
| 24-Hour Hotline | 225-342-1234 |
| | 225-219-3640 |
| | 888-763-5424 |
| U. S. Environmental Protection Agency | |
| Region IV, Dallas, TX | 1-214-655-6444 |
| Toxic Chemical and Oil Spills | 1-800-424-8802 |
| National Poison Control | 1-800-256-9822 |

Give the following information to all notified agencies:

Your name and telephone number

Name and address of the facility

Time and type of incident (e.g., fire/injury)

Possible material (s) involved, to the extent known

The extent of injuries, if any

Possible hazards to human health or the environment outside the facility

The EC or his designee will meet with representatives of local fire and police departments to discuss information concerning:

- Facility layout
- Possible hazards
- Emergency equipment location and operation
- Communication equipment and
- Other critical information and procedures.

4.0 EMERGENCY COORDINATOR

The Emergency Coordinator (EC) will be designated by the facility General Manager. The EC or his designee will be responsible for coordinating all emergency response measures.

5.0 EMERGENCY EQUIPMENT

The EC will maintain an updated list of the physical description, location, and capabilities of all emergency equipment required onsite. As a minimum, the facility will have available the following types of emergency equipment.

- Alarm and communication materials:
 - telephone
 - radios
- Fire Equipment:
 - ABC dry chemical fire extinguishers will be provided in all operating areas
 - onsite fire extinguishers are inspected routinely to verify operation

6.0 POST-INCIDENT ACTIONS

The EC or his designee will ensure that the affected areas of the site are ready for operations to resume. Additionally, treat, store, or dispose of uncovered waste, contaminated soil or surface water, or any other material that resulted from the incident with the requirements of the Federal, State, and Local authorities.

If applicable, submit a written report of the incident to the Louisiana Department of Environmental Quality including:

- Name, address, and telephone number of the owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, injury)
- The extent of injuries, if any
- An assessment of actual or potential hazards to human health or the environment, where applicable, and
- Estimated quantity and disposition of recovered material that resulted from the incident

A copy of the Incident Report form to be used is attached. Completed copies of this form will be retained in the site files.

7.0 CASUALTY CONTROL PLAN

Upon activation of the Casualty Control Plan (CCP), the Emergency Coordinator (EC) or his designee will:

- Request emergency medical assistance from an ambulance or hospital, if necessary
- The request will typically be:
 - this is a request for emergency medical assistance need by St. Gabriel Redevelopment Construction & Demolition Landfill located on Hwy 30, St. Gabriel, LA
 - the nature of the emergency
 - the estimate of the number, types, and conditions of the casualties
 - the existence of hazardous conditions or special risks
 - the name, location, and telephone number of the caller

The EC or his designee will assess the casualty situation and;

- Implement the CCP and establish the Primary Casualty Aid Station at the facility

- Direct and coordinate the CCP until relieved by appropriate public officials
- Provide direction to incoming emergency medical assistance
- Provide information on number, type, condition, and location of casualties
- Maintain a log with name type of injury, and disposition of each casualty
- Direct evacuation of casualties to community medical facilities in the absence of outside emergency medical assistance
- Notify receiving medical facility and provide basic information, including assessment of emergency involved and the nature of casualty exposure
- Coordinate access to onsite medical records of employees and employee records, listing current address, home telephone, person to be notified, etc.
- Maintain contact with emergency response teams
- Answer inquiries regarding the condition and disposition of individual casualties
- Account for employees and non-employees onsite at the time of the emergency using the sign in/sign out sheets or time cards and
- Provide follow-up, reporting assistance, etc., as directed

Outside emergency support personnel (public health and safety officials, police, fire, medical, emergency response teams, etc.) will take over responsibility for execution of the CCP from the EC or his designee. First aid procedures:

- Emergency first aid procedures are listed in Section 9.0 of this plan
- Casualties who can safely walk will be directed to the designated casualty aid station
- All entrance gates are considered routes of entrance and exit for casualty assistance and disposition
- The EC or his designee will have incoming emergency/medical assistance met and guided to the first aid station or location of onsite emergency
- Upon arrival of trained paramedics, the control of casualty treatment and disposition transfer to the medical service person in charge. The EC or his

designee will place himself and the casualty control resources under the direction of the medical service person in charge.

- The EC or his designee will keep a log listing names, nature of injuries, disposition, and times of departure of all casualties; and
- As a contingency, all company and private vehicles onsite will be considered as possible alternate modes of transportation of casualties to nearby medical facilities

Post-incident actions:

- As soon as possible after an incident involving casualties, the EC or his designee will prepare a written report on actions taken under the plan which will include the names of casualties, the disposition, and an analysis of types of injuries. This report will be retained at the site. If applicable, a report on the extent of injuries, if any will be submitted to the Louisiana Department of Environmental Quality, and
- Additional actions are as follows:
 - conduct a debriefing of persons involved in casualty control and analyze plan failures and deficiencies, and modify the Casualty Control Plan accordingly.
 - replace or repair expended or damaged supplies and equipment and ready all resources for use
 - rehearse the Casualty Control Plan while the experience and lesson learned are still fresh in everyone's mind

First aid supplies

As a minimum, the following first aid supplies in the quantity determined by the EC will be located at the casualty aid station

| | |
|---|--------------------------------|
| dressings | blankets |
| bandages | special site-specific supplies |
| splints | pencils and paper |
| medications | soap and potable water |
| simple instruments | flashlights and batteries |
| instructions and safety reference manuals | |

8.0 FIRE CONTROL PLAN

A fire involving structures and/or equipment will be handled based on an assessment of the combustible mater (s) involved. Portable fire extinguishers, located in buildings, on vehicles/equipment, or at various other locations throughout the site, may be used to control fires. Where applicable, operations should be stopped, and waste contained and collected, to ensure fire does not occur, reoccur, or spread.

Site personnel will attempt to extinguish only very small non-chemical fires. For larger fires or if there is a possibility that the fire will increase in size, assistance will be requested from the nearest fire department.

The General Manager will maintain an updated list of the physical description, location, and capabilities of all fore equipment onsite. As a minimum, the facility will have available the types of emergency equipment specified in Section 5.0 of this plan.

9.0 EMERGENCY FIRST AID PROCEDURES

Send for help. Most communities are served by experienced rescue squads or emergency units staffed with trained emergency medical technicians. As circumstances warrant, help may also be requested from local physicians or hospital emergency departments. Generally, in an emergency, the best course of action is to request help from the community emergency or rescue squad. Their communication system is usually linked to local hospitals, poison control centers, and other emergency agencies. Their transport capability is much safer than, for example, using a private vehicle to hurriedly and improperly rush a victim to a local hospital.

Incident Report

1. Time incident discovered: _____ Date: _____
2. Time incident contained: _____ Date: _____
3. Approximate location of incident or equipment number where incident occurred: _____

4. Type of incident: _____
5. Did the incident affect the environment? Yes _____ No _____
Describe: _____

6. Corrective action taken to contain release:

7. Corrective action taken or to be taken to prevent future incidents: _____

8. Department: _____ Signature: _____

EXHIBIT 27B
TRAINING PROGRAM

TRAINING PROGRAM

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 TRAINING PROGRAM

2.1 Scope of Training

- 2.1.1 Personal Protection and Safety
- 2.1.2 Health and Environment Effects
- 2.1.3 Regulatory Compliance
- 2.1.4 Facility Operation and Maintenance
- 2.1.5 Emergency Procedures Plan

2.2 Continuing Training

2.3 Documentation of Training

1.0 INTRODUCTION

The Training Program for the Ronaldson Field Landfill and Recovery Facility has been developed to provide employees with the knowledge necessary to insure safe and efficient operation of the facility. The plan also demonstrates to employees methods for rapid and effective responses to emergency situations.

2.0 TRAINING PROGRAM

In addition to supervised on-the-job training, all personnel handling solid waste at the St. Gabriel Redevelopment Construction & Demolition Landfill will complete a program of training which will teach them to perform their duties in accordance with environmental regulations. The training program includes:

- Personal Protection and Safety
- Health and Environmental Effects
- Regulatory Compliance
- Facility Operation and Maintenance
- Contingency and Emergency Response Procedures

2.1 Scope of Training

2.1.1 Personal Protection and Safety (Monthly Safety Meeting)

In this part of the Training Program, the facility's safety plan and procedures are reviewed. Employees are instructed in the use of protective clothing (e.g., hard hats, gloves, safety glasses, etc.) and safety equipment. The training is hands-on and emphasizes the selection, proper use, inspection and routine maintenance of all safety equipment and the limitations of this equipment. Personal hygiene and basic safety rules are emphasized.

2.1.2 Health and Environment Effects (Employee Right-To-Know)

Training in health and environmental effects enables the employee to recognize potential health hazards, proper reporting and personal protection steps and to understand any potential hazards associated with material handled at the facility.

Training is broad-based and covers proper handling of wastes, effects of groundwater contamination and applicable health and environmental standards.

2.1.3 Regulatory Compliance (Facility Solid Waste Permit)

Training in regulatory compliance provides a review of applicable state and local regulations with emphasis on application to the facility solids waste permit. Certified facility operators receive additional training on regulatory compliance at regularly scheduled meetings conducted by The Board of Certification and Training for Solid Waste Disposal System Operators and the LDEQ Solid Waste Division.

2.1.4 Facility Operation and Maintenance

Operations and maintenance training includes an overview of all elements on the operation of the facility and detailed instruction in those elements related only to the employee's specific job function.

Operation and maintenance training is composed of the following elements:

- Detailed facility description and individual unit operations
- Waste acceptance procedures, as described in the Permit Document
- Landfill operation, access road maintenance, waste unloading, spreading, and compacting, monthly and final covering, wet weather operations and general earth-moving activities.
- Maintenance, including inspection schedules, procedures, supplies and tools, and maintenance documentation
- Equipment safety with particular emphasis on lock-out procedures, confined space entry, and safe emergency response to equipment failures and
- Vehicular and mobile equipment operations, including operating inspection, maintenance and safety procedures

2.1.5 Emergency Procedures Plan

Each employee is familiarized with the facility Emergency Procedures Plan with the first month of employment. Training in emergency procedures is provided by the facility's Emergency Coordinator or his designee and includes:

- Description of emergency situations which might occur
- Duties of the Emergency Coordinator and others

- Emergency Communications
- Evacuation procedures
- Location of emergency equipment and
- Reporting mechanism

A facility walk-through is given to each new employee to point out areas of potential risk, locations of emergency equipment, and any alternate routes which may be used in an evacuation. The Emergency Coordinator or his designee will document that each new employee has demonstrated his knowledge of the communication system, evacuation procedures, and location of emergency equipment.

At least one employee per shift will be trained in first aid and at least one full time employee will be trained in cardiopulmonary resuscitation (CPR). This training is conducted by the American Red Cross, American Heart Association, YMCA, local fire departments/or first aid representatives.

2.2 Continuing Training

Continuing training is designed to maintain proficiency in job skills, increase safety and quality consciousness, and teach new skills. Such training consists of regularly scheduled safety meetings. In addition to equipment safety, these meetings will address fire fighting practices, emergency response, and other new skills, as required.

2.3 Documentation of Training

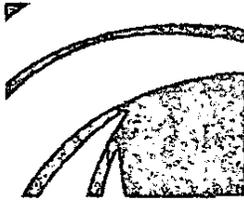
All training records are maintained on site. The records contain a written description of the content of each training session, identify attendees and instructor (s), and include dates and signatures of instructor (s) and attendees documenting the training that was completed.

APPENDIX F

LPDES Permit

LDEQ RECEIPT

2008 FEB 11 PM 1 51



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483 PHONE
225.216.0732 FAX

www.TRCsolutions.com

February 8, 2008

LA Department of Environmental Quality
Office of Environmental Services
P.O. Box 4313
Baton Rouge, LA 70821-4313
Attention: Permits Division

Re: LPDES PERMIT NOI - Proof of Public Notice, General Permit LAG780000 (AI 152065)
St. Gabriel Redevelopment, LLC,
Construction and Demolition Debris Landfill (AI 152065)
Iberville Parish, LA

On behalf of our client, St. Gabriel Redevelopment, LLC, we are transmitting proof of publication along with a copy of the public notice that has been published in a newspaper with a general circulation in that area, as required to comply with requirements for LPDES NOI to discharge wastewater and stormwater related to construction and demolition debris landfill operations.

I appreciate your consideration in this matter and if you should have any questions, please call me at (225) 247-6704.

Sincerely,

A handwritten signature in black ink, appearing to read "Douglas Bradford".

Douglas Bradford.
Senior Geologist

attachments

CAPITAL CITY PRESS

Publisher of
THE ADVOCATE

PROOF OF PUBLICATION

The hereto attached notice was published in THE ADVOCATE, a daily newspaper of general circulation published in Baton Rouge, Louisiana, and the official Journal of the State of Louisiana, the City of Baton Rouge, and the Parish of East Baton Rouge, in the following issues:

01/17/08



Susan A. Bush, Public Notices Clerk

Sworn and subscribed before me by the person whose signature appears above:

January 17, 2008



Pegen Singley, Notary Public, #86565
My Commission Expires: Indefinite
Baton Rouge, Louisiana

PUBLIC NOTICE

St. Gabriel Redevelopment, LLC is requesting coverage under General Permit LAG780000 for a new construction/demolition debris landfill located near Louisiana Highway 75 extension in St. Gabriel, LA in Iberville Parish. The facility will discharge into Bayou Braud then into Bayou Manchac via Spanish Lake and the Alligator Bayou control structure.

General Permit LAG780000 was issued by the Louisiana Department of Environmental Quality (LDEQ) authorizing the following possible discharges:

LANDFILL WASTEWATER, MAINTENANCE AND REPAIR SHOP FLOOR WASHWATER, STORM WATER, AND TREATED SANITARY WASTEWATER FROM CONSTRUCTION/DEMOLITION DEBRIS AND WOODWASTE LANDFILLS.

The general permit contains limitations and conditions intended to prevent the discharges from causing water quality problems in the receiving stream. General Permits are issued by LDEQ to regulate existing minor discharges, which were often unregulated in the past, and new minor discharges.

Copies of the General Permit and the NOI filed by the St. Gabriel Redevelopment, LLC may be examined at the office of Environmental Services, Public Records Center, Department of Environmental Quality, 602 North Street, Baton Rouge, Louisiana, or a copy may be obtained by contacting Mr. Linda Gauthier at (225) 219-3181. Viewing hours are 8:30 a.m. to 4:00 noon, Monday through Friday, except holidays. Persons wishing to comment and/or request a public hearing may do so within thirty days of publication of this notice by writing to the attention of Ms. Soumaya Ghosh at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313.

3800330-jan-17-1t

TRC ENVIRONMENTAL - BR

3800330

DOUG BRADFORD

8550 UNITED PLAZA BLVD STE 502

BATON ROUGE LA 70809

POST SOUTH

Post Office Box 589
Plaquemine, LA 70765-0589

PROOF OF PUBLICATION

The hereto attached notice was published in the Post/South, a weekly newspaper of general circulation published in Plaquemine, Louisiana, and the official Journal of the State of Louisiana, City of Plaquemine, and the Parish of Iberville, in the following issues:

1 tearsheet Jan 18th.

Tear Sheets Attached



ELIZABETH TROXCLAIR
Legal/Public Notices Representative

St. Gabriel, Louisiana
70776 ph. 225.642.12
fax 225.642.1653

**PUBLIC NOTICE OF
INTENT TO SUBMIT
PERMIT
APPLICATION
SYNGENTA CROP
PROTECTION, INC.
ST. GABRIEL PLANT**

Syngenta Crop Protection, Inc. St. Gabriel Plant, Iberville Parish, Louisiana. Notice is hereby given that Syngenta Crop Protection, Inc. does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Solid Waste Permits Division an application for a Beneficial Use of Other Solid Waste permit for materials resulting from operations at Syngenta's St. Gabriel plant located in Iberville Parish, Range 1-E, Township 9-S, Section 76, 77, 84, 85, 98, 100, 102, and 103 which is approximately two (2) miles south of St. Gabriel, Louisiana. Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Post Office of Environmental Services
Solid Waste Permits Division
Office Box 4313
Baton Rouge Louisiana 70821-4313
01/17/08

BEST COPY

Copies of the General Permit and the NOI filed by the St. Gabriel Redevelopment, LLC may be examined at the office of Environmental Services, Public Records Center, Department of Environmental Quality, 602 North Street, Baton Rouge, Louisiana, or a copy may be obtained by contacting Mr. Linda Gauthier at (225) 219-9181. Viewing hours are 8:30 a.m. to 4:00 p.m. Monday through Friday, except holidays. Persons wishing to comment and/or request a public hearing may do so within thirty days of publication of this notice by writing to the attention of Ms. Soumaya Ghosh, at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. 01/17/08E

JUDICIAL ADVERTISEMENT
 EIGHTEENTH JUDICIAL DISTRICT
 COURT STATE OF

Public Noti

Rickey Breaux
Dean Deslatte
Cary Haydel
Irma Jarvis
Leroy Pugh

Guests:
Jason Guidry
Joyce Guidry
Brian Berthelot
Tony Arikel

APPROVAL OF MINUTES

The November 14, 2007 minutes were accepted as delivered on a motion by Mr. Haydel, seconded by Mrs. Jarvis, with a roll call vote of all yeas, no nays, none absent, motion therefore carried.

NEW BUSINESS

Approval of the 2008 Meeting Dates

A list of the meeting dates for the 2008 calendar year was presented. These dates are comprised of the second and last Wednesdays of the month, except for the months of November and December where the last Wednesday of the omitted.

A motion offered by Mrs. Jarvis, seconded by Mr. Haydel approved the 2008 meeting dates as presented. (copy is attached); this motion came to a roll call vote of all yeas, no nays, none absent, motion therefore carried.

Request for Water Service from the Plaquemine Lions Club

A letter received from the Plaquemine Lions Club requesting that the district extend its water line to service their facility located at 60255 Bayou Jacob Road was read aloud to the Board by Mr. Breaux.

matter, it was decided on a motion by Mr. Pugh, seconded by Mr. Deslatte that this invoice in the amount of \$7,126.64 be paid to Layne Christensen Co., this motion came to a roll call vote of all yeas, no nays, none absent, motion therefore carried.

Two invoices from Tullier's Services, Inc. had also been held for payment were discussed at this time. Tullier's Services, Inc. provided a \$50.00 credit for rental of scaffolding to one of the invoices. Having discussed the matter further, it was decided on a motion by Mr. Deslatte, seconded by Mr. Pugh that these two invoices in the amount of \$1,504.28 and \$4,930.38 be paid, this motion came to a roll call vote of all yeas, no nays, none absent, motion therefore carried.

A motion offered by Mrs. Jarvis, seconded by Mr. Pugh authorized payment of the outstanding bills as presented; this motion came to a roll call vote of all yeas, no nays, none absent, motion therefore carried.

DISTRICT OPERATOR REPORT

Operation & Maintenance Contract Renewal

Since no changes on the part of either party were afore to mentioned, the contract automatically renewed on December 13, 2007 for one year.

Sanitary Survey

Mr. Berthelot advised that only minor violations and recommendations had been reported, and have been corrected.

ADJOURNMENT

In 1997 and 1998, the Louisiana Department of Health and Hospitals (LDHH) sampled water wells at the Myrtle Grove Trailer Park in Plaquemine, Louisiana, and detected levels of vinyl chloride which exceeded Maximum Contaminant Levels (MCLs). Vinyl chloride was detected again during the March 2001 sampling event. LDHH notified the Louisiana Department of Environmental Quality (LDEQ) on March 29, 2001.

The LDEQ immediately began a groundwater investigation to determine the source and extent of the contamination. The U.S. Environmental Protection Agency (EPA) joined the effort and provided expertise in modeling and an evaluation of the fate and transport of the contaminants in the aquifer.

Written comments regarding this proposed decision may be submitted during the forty-five (45) day public comment period to Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. Written comments and/or written requests for notification must be received by 4:30 p.m. Monday, March 3, 2008. Written comments will be considered prior to a final decision.

If LDEQ finds a significant degree of public interest, a public hearing may be held. LDEQ will send notification of the final decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

Eddie Gant
A.O. Persick
Eugene Simpson

Absent:
Morris Nichols
Karen Pirie

Guests:
Joyce Guidry
Jim Vallet
Brian Berthelot
Margaret Pritchard
Steve Marionneaux

The December 11, 2007 minutes were approved as delivered on a motion by Eugene Simpson, seconded by Eddie Gant, with a roll call vote of all yeas, no nays, motion therefore carried.

Ms. Pritchard with the CPA firm of Hugh Baxley provided the Annual Financial Report for September 30, 2007. She stated that she was happy to provide a good audit report to the District. Having heard the report submitted, a motion was made by Mr. Gant to accept the September 30, 2007 Audit Report as received; this motion was seconded by Eugene Simpson, with a vote of all yeas, no nays, motion carried.

A motion was made by Eddie Gant, seconded by Mr. Simpson to pay all bills that were presented; this motion came to roll call with all yeas, no nays, motion carried.

The meeting was adjourned on a motion made by Mr. Simpson, seconded by Mr. Gant, with a roll call vote of all yeas, no nays, therefore motion carried.

St. Gabriel Redevelopment, LLC is requesting coverage under General Permit LAG780000 for a new construction/demolition debris landfill located near Louisiana Highway 75 extension in St. Gabriel, LA in Iberville Parish. The facility will discharge into Bayou Braud then into Bayou Manchac via Spanish Lake and the Alligator Bayou control structure.

General Permit LAG780000 was issued by the Louisiana Department of Environmental Quality (LDEQ) authorizing the following possible discharges:

LANDFILL WASTE WATER, MAINTENANCE AND REPAIR SHOP FLOOR WASH WATER, STORM WATER, AND TREATED SANITARY WASTE WATER FROM CONSTRUCTION/DEMOLITION DEBRIS AND WOOD WASTE LANDFILLS

The general permit contains limitations and conditions intended to prevent the discharges from causing water quality problems in the receiving stream. General Permits are issued by LDEQ to regulate existing minor discharges which were often unregulated in the past, and new minor discharges.

Copies of the General Permit and the NOI filed by the St. Gabriel Redevelopment, LLC may be examined in the office of Environmental Services, Public Records Center, Department of Environmental Quality, 602 North Street, Baton Rouge, LA 70802.

GENERAL INFORMATION

CONSTRUCTION/DEMOLITION DEBRIS AND WOODWASTE LANDFILLS GENERAL PERMIT

LPDES GENERAL PERMIT LAG780000

HOW TO REQUEST COVERAGE. Request for coverage under the Construction/Demolition Debris and Woodwaste Landfills General Permit may be made by completing the attached C&D-G Notice of Intent (NOI) form. Within sixty (60) days after submittal of the NOI, the applicant shall provide proof of publication along with a copy of the public notice that has been published once in the local newspaper serving the location of the proposed discharge or, in the absence of a local newspaper, in a newspaper with a general circulation at that location, a public notice that reads as follows (the information in **bold** is to be replaced with the corresponding facility information):

Discharger Name is requesting coverage under General Permit LAG780000 for a **new/an existing** construction/demolition debris landfill **located/to be located** at **Facility Location - Street or Highway location and City and Parish**. The facility will discharge into **Name of Receiving Waterbody**.

General Permit LAG780000 was issued by the Louisiana Department of Environmental Quality (LDEQ) authorizing the following possible discharges:

LANDFILL WASTEWATER, MAINTENANCE AND REPAIR SHOP FLOOR WASHWATER, STORM WATER, AND TREATED SANITARY WASTEWATER FROM CONSTRUCTION/DEMOLITION DEBRIS AND WOODWASTE LANDFILLS

The general permit contains limitations and conditions intended to prevent the discharges from causing water quality problems in the receiving stream. General Permits are issued by LDEQ to regulate existing minor dischargers, which were often unregulated in the past, and new minor dischargers.

Copies of the General Permit and the NOI filed by the **Discharger Name** may be examined at the Office of Environmental Services, Public Records Center, Department of Environmental Quality, 602 North Street, Baton Rouge, Louisiana, or a copy may be obtained by contacting Ms. Linda Gauthier at (225) 219-3181. Viewing hours are 8:30 a.m. to 4:00 noon, Monday through Fridays, except holidays. Persons wishing to comment and/or request a public hearing may do so within thirty days of publication of this notice by writing to the attention of Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313.

CAUTION: To obtain coverage the water of the state actually receiving the discharge must be identified; if the discharge initially enters a storm water collection system or unnamed ditch, the first named waterbody receiving the discharge must be identified. The public notice must be published once and proof of publication along with a copy of the public notice and the date of publication must be provided by the applicant to this Office within sixty (60) days after submitting the completed NOI. The notice shall be published immediately after submittal of the NOI. (Facilities with a valid NPDES or LPDES individual permit are not required to public notice their intent to seek coverage under this general permit.) If the applicant does not provide the required proof of publication within sixty (60) after submitting the NOI, the NOI will be considered withdrawn and the facility file will be inactivated. In order to activate an inactive file, the applicant will be required to submit a new NOI and with the required proof of publication.



**To: Prospective Applicants for a Construction/Demolition
Debris and Woodwaste Landfills General Permit**

Attached is a **Construction/Demolition Debris and Woodwaste Landfills General Permit Notice of Intent (NOI) C&D-G**, for a Louisiana Pollutant Discharge Elimination System (LPDES) permit, authorized under EPA's delegated NPDES program under the Clean Water Act. To be considered complete, every item on the form must be addressed and the last page signed by an authorized company agent. If an item does not apply, please enter "NA" (for not applicable) to show that the question was considered.

Three copies (one original and two copies) of your **completed NOI**, each with a marked **U.S.G.S. Quadrangle map** or equivalent attached, should be submitted to:

Department of Environmental Quality
Office of Environmental Services
Post Office Box 4313
Baton Rouge, LA 70821-4313
Attention: Permits Division

Please be advised that completion of this NOI may not fulfill all state, federal, or local requirements for facilities of this size and type.

According to L. R. S. 48:385, any discharge to a state highway ditch, cross ditch, or right-of-way shall require approval from:

Louisiana DOTD
Office of Highways
Post Office Box 94245
Baton Rouge, LA 70804-9245
(225) 379-1301

AND

Louisiana DHH
Office of Public Health
6867 Bluebonnet Road, Box 7
Baton Rouge, LA 70810
(225) 765-5044

In addition, the plans and specifications for sanitary treatment plants must be approved by the Louisiana DHH, Office of Public Health at the address above.

A copy of the LPDES regulations may be obtained from the Department's website at <http://www.deq.state.la.us/planning/regs/index.htm> or by contacting the Office of Environmental Assessment, Regulations Development Section, Post Office Box 4314, Baton Rouge, Louisiana 70821-4314, phone (225) 219-3550.

After the review of the NOI, this Office will issue written notification to those applicants who are accepted for coverage under this general permit.

For help or questions regarding completion of this NOI please contact DEQ, Small Business Assistance at 1-800-259-2890.

Date 07/13/07
Agency Interest No. AI 148747
LWDPS Permit No. WP _____
NPDES/LPDES Permit No. LA _____

Please check: Initial Permit
 Permit Renewal
 Existing Facility

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Environmental Services, Permits Division
Post Office Box 4313
Baton Rouge, La 70821-4313
PHONE#: (225) 219-3181

LPDES NOTICE OF INTENT TO DISCHARGE CONSTRUCTION/DEMOLITION
DEBRIS AND WOODWASTE LANDFILLS GENERAL PERMIT

(Attach additional pages if needed.)

SECTION I - FACILITY INFORMATION

A. Permit is to be issued to the following: (must have operational control over the facility operations - see LAC 33:IX.2501.B and LAC 33:IX.2503.A and B).

1. Legal Name of Applicant/Owner
(Company, Partnership, Corporation, etc.) St. Gabriel Redevelopment, LLC.

Facility Name St. Gabriel Redevelopment, LLC.

Mailing Address 114 Schlieff Drive

Belle Chasse, LA Zip Code: 70037

If applicant named above is not also the owner, state owner name, phone # and address.

Please check status: Federal Parish Municipal
 State Public Private Other: _____

2. Location of facility. Please provide a specific street, road, highway, interstate, and/or River Mile/Bank location of the facility for which the NOI is being submitted.

Louisiana Highway 75 extension

City St. Gabriel Parish Iberville

Front Gate Coordinates:

Latitude- 30 deg. 13 min. 48 sec. Longitude- 91 deg. 05 min. 41 sec.

Method of Coordinate Determination: Quad map

(Quad Map, Previous Permit, website, GPS)

Is the facility located on Indian Lands? Yes No

3. Name & Title of Contact Person at Facility Claude Klein

SECTION I - FACILITY INFORMATION

Phone 504-388-3670 Fax _____ e-mail _____

SECTION I - FACILITY INFORMATION (cont.)

SIC (Standard Industrial Classification) Code(s): 4953 (secondary code 1499)

SIC codes can be obtained from the U. S. Department of Labor internet site at <http://www.osha.gov/oshstats/sicser.html>

B. Name and address of responsible representative who completed the NOI:

Name & Title Michael Daigle, Principal Environmental Consultant

Company TRC

Phone 225-216-7483 Fax 225-216-0732 e-mail mdaigle@trcsolutions.com

Address Two United Plaze, 8550 United Plaza Blvd., Suite 502, Baton Rouge, LA 70809

C. Facility Information.

1. Is the facility located adjacent to a Sanitary Landfill? Yes No
2. If this NOI is for a permit revision, please describe the requested revision to the existing permit.

Not Applicable- this is not a permit revision.

3. Source of water supply in gallons per day. List each source giving quality such as fresh, brackish, salt, hard, or soft; and give breakdown as to how each source is used.

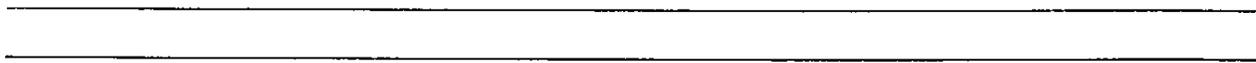
No water supply on site. May use water from Bear Industries.

4. Processes used which produce industrial wastes discharged into waters of the State. Please explain the operations in your facility in a comprehensive fashion. Explain how the wastewater discharges originate from the activities at your site.

St. Gabriel Redevelopment, LLC will be a Type III C&D debris landfill. The proposed landfill is currently undeveloped land. All trucks transporting waste to the site will enter through a single access gate, where there will be a trailer with computerized ticketing. After the waste has been inspected and documented in accordance with the operational plan, trucks will proceed to the working face and/or processing area, where they will be subject to another inspection and the operator will instruct them where to dump. Objectionable materials will be sent to a covered outbox. There will be no production at this facility, so water discharged under this permit may come in contact with construction and demolition debris during disposal.

5. Anticipated date or original date of startup or change in operations. When did, or will, present operations start?

September 1, 2007



SECTION I - FACILITY INFORMATION (cont.)

6. If this is new construction, describe the site property prior to construction. For example, was it undisturbed or was there a previous structure on the site?

Undisturbed pasture and woodlands.

7. If this is new construction, when was or when will the facility be completed? (Provide the actual date if completed or anticipated date if under construction.)

Anticipated September 1, 2007

8. Is this facility located in a designated industrial area? Yes No
9. List any solid or liquid waste disposal methods and facilities. Include a description of the ultimate disposal of any solid or fluid wastes that are disposed of other than by discharge.

Type III landfill permitted construction and demolition material. Any other material brought to the site will be separated, removed and disposed in accordance with regulations.

SECTION II – SITE HISTORY

- A. Date operations began at this site: Operations not started, anticipated to start September 1, 2007
- B. Is the current operator the original operator? Yes No

If no, give a reverse chronological list of previous operators. Include the company name and telephone number (if available), and the dates through which the company operated this facility.

| Company | Dates of Operation | | Telephone Number |
|---------|--------------------|------|------------------|
| | From | To | |
| none | none | none | none |
| | | | |
| | | | |
| | | | |
| | | | |

SECTION III - DISCHARGE INFORMATION

A. Stormwater – Complete the following for each stormwater discharge.

(Make additional copies if necessary)

Number of stormwater outfalls: 0

1. Outfall designation (ex. Stormwater Outfall 001) _____
2. Are storm water discharges covered by a storm water General Permit? Yes No
3. Acreage. For all outfalls that convey storm water only or that include storm water combined with other waste streams, give the area drained by the outfall in acreage, extent of impervious surfaces (paved areas, rooftops), and describe the activities that occur in that area.

4. List all chemicals and petroleum products stored outside and provide a description of the containment area.

5. Describe all significant materials that are currently or in the past three years have been treated, stored, or disposed of in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

6. Provide information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak and the type and amount of material released.

7. Describe evaluation method for the presence of non-storm water discharges in storm water outfalls named in this NOI. For any storm water outfalls covered by this NOI, signature on page 17 constitutes certification that the outfalls have been tested or evaluated for the presence of non-storm water discharges, and that all non-storm water discharges from these outfall(s) are identified in this NOI. Refer to LAC 33:IX.2511.C.1.a.iii.

SECTION III - DISCHARGE INFORMATION (cont.)

B. Complete this section for each discharge outfall. Outfalls are discharge points. An external outfall is a discrete discharge point beyond which the waste stream receives no further mixing with other waste streams prior to discharging into a receiving waterbody. An internal outfall is an outfall for a waste stream that combines with other waste stream(s) before discharging into an "external" outfall. Please provide your after-treatment test results in the units asked for on the NOI. For proposed facilities, estimates should be provided for any expected contaminants even though the facility is not in place yet.

Number of Outfalls: 1

1. Outfall Identification. Provide a description of all operations contributing wastewater to the effluent for the outfall including process wastewater, sanitary wastewater, cooling water, and storm water runoff; the average flow contributed by each operation; and the treatment received by the wastewater. Make additional copies for each outfall.

| Outfall No. | Operation Contributing Flow | Average Flow (gpd) |
|-------------|-----------------------------|--------------------|
| 001 | Cell Dewatering | |

2. Outfall Location. Provide a description of the physical location for each outfall.

Outfall 001 will be located in the northwestern most corner of the property.

3. Latitude/Longitude of Discharge:

Latitude- 30 deg. 13 min. 52 sec. Longitude- 91 deg. 05 min. 22 sec.

Method of Coordinate Determination: Quad Map

(Quad Map, Previous Permit, website, GPS)

4. If a new discharge, when do you expect to begin discharging? September 1, 2007
5. Indicate how the wastewater reaches state waters (named water bodies). This will usually be either *directly*, by *open ditch* (if it is a highway ditch, indicate the highway), or by *pipe*. Please specifically name all of the minor water bodies that your wastewater will travel through on the way to a major water body. This information can be obtained from U.S.G.S. Quadrangle Maps. Include river mile of discharge point if available.

By Ditch (effluent pipe, ditch, etc.);

thence into Community Canal (Parish drainage ditch, canal, etc.);

thence into Bayou Braud (named bayou, creek, stream, etc.);

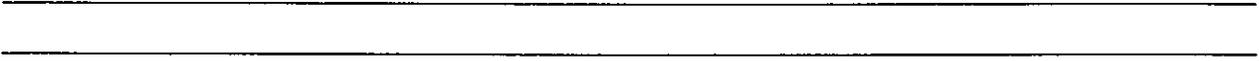
thence into Bayou Manchac via Spanish Lake and the Alligator Bayou control structure (river, lake, etc).

6. Except storm water, if any of the applicant's discharges are intermittent or seasonal, please complete the following table.

| Frequency of Flow (average) | | | Flow Rate (mgd) | |
|-----------------------------|---------------------|---------------------|-----------------|---------------|
| Number of Months/Year | Number of Days/Week | Number of Hours/Day | Long Term Avg. | Daily Maximum |
| | | | | |

7. Treatment Method. Please be specific.

Waters collected in the excavation run to the northern-most end of the pit where it will be pumped into an unnamed ditch and flow into Community Canal at the property's eastern-most edge.



SECTION III - DISCHARGE INFORMATION (cont.)

C. Miscellaneous Discharges

1. List any other discharges to the waters of the state such as sanitary wastewaters, hydrostatic wastewaters, once-through noncontact cooling water, washdown water, maintenance and repair shop floor washwater, etc? How are these waters discharged? Describe any treatment associated with each.

Not Applicable- At this time there are no such discharges at the site.

D. New Source Dischargers. If the facility will be discharging C&D landfill wastewater (including, but not limited to, cell dewatering wastewater, vehicle washwater, and contaminated storm water), complete the following items:

1. Engineering Report. Provide any technical evaluations concerning your wastewater treatment system, including engineering reports or pilot plant studies?

None Available

2. Similar Operations: Provide the name and location of any existing plant(s) that, to the best of your knowledge, resembles this facility with respect to processes, wastewater constituents, or wastewater treatment.

Killona Ventures in St. Charles Parish and Natural Resources Recovery in East Baton Rouge Parish

SECTION IV – LABORATORY ANALYSIS

- A. **Lab Analysis.** Make additional copies as necessary. Sampling and analytical protocols must conform to the requirements in LAC 33:IX.Chapters 25 and 65, and 40 CFR Part 136; when no analytical method is approved, the applicant may use any suitable method but must provide a description of the method. For storm water discharges, indicate date & duration of storm event sampled, total inches of precipitation, and number of hours since the end of the previous storm event that was greater than 0.1 inches.

Complete this section for each outfall. Complete this section for each pollutant, unless the applicant demonstrates a waiver for that pollutant is appropriate.

SECTION IV – LABORATORY ANALYSIS (cont.)

1. Landfill Wastewater

For discharges of *landfill wastewater* (includes cell dewatering wastewater, vehicle wash water, and contaminated storm water) from a Construction/Demolition Debris and Woodwaste Landfill complete the table below. (Proposed facilities shall have up to two years from commencement of operations to complete and submit the information below. An estimate based on engineering calculations and/or knowledge may be submitted in the interim.)

Number of Landfill Wastewater Outfalls: 1

Outfall Number: 001 Description: Cell Dewatering

| Pollutant | Effluent Analysis | | | |
|------------------------------|----------------------|-------------------------|-------------------------|-------------------|
| | Concentration (mg/l) | | Mass (lbs/day) | |
| | Monthly Average | Daily Maximum | Monthly Average | Daily Maximum |
| BOD ₅ | | | | |
| COD | | | | |
| TOC | | | | |
| Oil and Grease | | | | |
| Ammonia (as N) | | | | |
| Alpha Terpineol | | | | |
| Benzoic Acid | | | | |
| Total Suspended Solids | | | | |
| P-Cresol | | | | |
| Toluene | | | | |
| Total Zinc | | | | |
| Total Copper | | | | |
| Total Mercury | | | | |
| Total Lead | | | | |
| | Daily Maximum | Monthly Average Maximum | Monthly Average Minimum | Method of Measure |
| Flow (GPD) | | | | |
| | Minimum | Maximum | | |
| Discharge Duration (hrs/day) | | | | |
| pH (SU) | | | | |

* Within the previous two years. (The maximum monthly average value is the highest value of all the monthly averages over the previous two years. The monthly average minimum is the lowest value of the monthly averages over the previous two years.)

SECTION IV – LABORATORY ANALYSIS (cont.)

2. Washrack wastewater, maintenance and repair shop floor washdown waters

For discharges of For Discharges of washrack wastewater, maintenance and repair shop floor washdown from a Construction/Demolition Debris and Woodwaste Landfill complete the table below. (Proposed facilities shall have up to two years from commencement of operations to complete and submit the information below. An estimate based on engineering calculations and/or knowledge may be submitted in the interim.):

Number of washrack wastewater, maintenance and repair shop floor washdown outfalls: 0

Outfall Number: _____ Description: _____

| Pollutant | Effluent Analysis | | | |
|------------------------------------|----------------------|-------------------------|-------------------------|-------------------|
| | Concentration (mg/l) | | Mass (lbs/day) | |
| | Monthly Average | Daily Maximum | Monthly Average | Daily Maximum |
| COD | | | | |
| Oil and Grease | | | | |
| TSS | | | | |
| | Daily Maximum | Monthly Average Maximum | Monthly Average Minimum | Method of Measure |
| Flow (GPD) | | | | |
| | Minimum | Maximum | | |
| Discharge Duration (hrs/day) | | | | |
| Soaps and Detergents (Amount Used) | | | | |
| pH (SU) | | | | |

* Within the previous two years. (The maximum monthly average value is the highest value of all the monthly averages over the previous two years. The monthly average minimum is the lowest value of the monthly averages over the previous two years.)

SECTION IV – LABORATORY ANALYSIS (cont.)

3. Uncontaminated Stormwater

For discharges of *uncontaminated stormwater* from areas outside of the Construction/Demolition Debris and Woodwaste Landfill complete the table below. (Proposed facilities shall have up to two years from commencement of operations to complete and submit the information below. An estimate based on engineering calculations and/or knowledge may be submitted in the interim.):

Number of uncontaminated stormwater outfalls: 0

Outfall Number: _____ Description: _____

| Pollutant | Effluent Analysis | | | |
|------------------------------|----------------------|-------------------------|-------------------------|-------------------|
| | Concentration (mg/l) | | Mass (lbs/day) | |
| | Monthly Average | Daily Maximum | Monthly Average | Daily Maximum |
| COD | | | | |
| TOC | | | | |
| Oil and Grease | | | | |
| | Daily Maximum | Monthly Average Maximum | Monthly Average Minimum | Method of Measure |
| Flow (GPD) | | | | |
| | Minimum | Maximum | | |
| Discharge Duration (hrs/day) | | | | |
| pH (SU) | | | | |

* Within the previous two years. (The maximum monthly average value is the highest value of all the monthly averages over the previous two years. The monthly average minimum is the lowest value of the monthly averages over the previous two years.)

SECTION IV – LABORATORY ANALYSIS (cont.)

4. Treated Sanitary Wastewater

For discharges of *treated sanitary wastewater* from the Construction/Demolition Debris and Woodwaste Landfill complete the table below. (Proposed facilities shall have up to two years from commencement of operations to complete and submit the information below. An estimate based on engineering calculations and/or knowledge may be submitted in the interim.):

Number of sanitary wastewater outfalls: 0

Outfall Number: _____ Description: _____

| Pollutant | Effluent Analysis | | | |
|---|----------------------|----------------------------|----------------------------|----------------------|
| | Concentration (mg/l) | | Mass (lbs/day) | |
| | Monthly Average | Weekly Average | Monthly Average | Daily Maximum |
| BOD ₅ | | | | |
| TSS | | | | |
| Total Residual Chlorine (if Chlorine used) | | | | |
| Fecal Coliform Colonies/100 ml | | | | |
| Oil and Grease | | | | |
| | Monthly Average | Monthly Average Maximum | Monthly Average Minimum | Method of Measure |
| Flow (GPD) | | | | |
| | Minimum | Maximum | | |
| Discharge Duration (hrs/day) | | | | |
| pH (SU) | | | | |

* Within the previous two years. (The maximum monthly average value is the highest value of all the monthly averages over the previous two years. The monthly average minimum is the lowest value of the monthly averages over the previous two years.)

SECTION IV – LABORATORY ANALYSIS (cont.)

B. Additional Laboratory Data.

- 1 List any pertinent physical and chemical properties (e.g., toxic components, taste and odor compounds, heavy metals, etc.) that may be associated with the effluent.

None

2. Toxicity Data. List any bioassay tests conducted on the effluent from the facility. Provide a summary of the test results.

None

C. Laboratory Accreditation

If any of the analysis reported above were performed by a contract lab or consulting firm, provide the firm name, address, phone number and pollutants analyzed.

None

Laboratory procedures and analyses performed by commercial laboratories shall be conducted in accordance with the requirements set forth under LAC 33:I.Subpart 3, Chapters 49-55.

Laboratory data generated by commercial laboratories that are not accredited under LAC 33:I.Subpart 3, Chapters 47-57, will not be accepted by the department. Retesting of analysis will be required by an accredited commercial laboratory.

Regulations on the Environmental Laboratory Accreditation Program and a list of labs that have applied for accreditation are available on the department website located at:

<http://www.deq.state.la.us/laboratory/index.htm>.

Questions concerning the program may be directed to (225) 765-2405.

SECTION V – MAPS/DIAGRAMS

- A. **Site Diagram.** Attach to this NOI a complete site diagram of your facility demonstrating how the wastewater flows through your facility into each clearly labeled discharge point (including all treatment points). Indicate stormwater flow pattern on this diagram or provide additional diagrams if needed. Please indicate the location of the facility and the front gate or entrance to the facility on the site diagram.
- B. **Topographic Map.** Attach to this NOI a map or a copy of a section of the map which has been highlighted to show the path of your wastewater from your facility to the first named water body. Include on the map the area extending at least one mile beyond your property boundaries. Indicate the outline of the facility, the location of each of its existing and proposed discharge structures, and any existing hazardous waste treatment storage or disposal facilities.

A U.S.G.S. 1:24,000 scale map (7.5' Quadrangle) would be appropriate for this item. Appropriate maps can be obtained from local government agencies such as DOTD or the Office of Public Works. Maps can also be obtained online at www.map.ldeq.org or www.topozone.com. Private map companies can also supply you with these maps. If you cannot locate a map through these sources you can contact the Louisiana Department of Transportation and Development at:

1201 Capitol Access Road
Baton Rouge, LA 70802
(225) 379-1107
maps@dotd.louisiana.gov

SECTION VI – LAC 33.I.1701 REQUIREMENTS

- A. Does the company or owner have federal or state environmental permits identical to, or of a similar nature to, the permit for which you are applying in other states? (This requirement applies to all individuals, partnerships, corporations, or other entities who own a controlling interest of 50% or more in your company, or who participate in the environmental management of the facility for an entity applying for the permit or an ownership interest in the permit.)

Permits in Louisiana. List Permit Numbers: _____

Permits in other states (list states): _____

No other environmental permits.

- B. Do you owe any outstanding fees or final penalties to the Department? Yes No

If yes, please explain. _____

- C. Is your company a corporation or limited liability company? Yes No

If yes, attach a copy of your company's Certificate of Registration and/or Certificate of Good Standing from the Secretary of State.

SECTION VII – COMPLIANCE HISTORY

Report the history of all violations and enforcement actions for the facility, a summary of all permit excursions including effluent violations reported on the facility's Discharge Monitoring Reports (DMRs) and bypasses for the last three years. Using a brief summary, report on the current status of all administrative orders, compliance orders, notices of violation, cease and desist orders, and any other enforcement actions either already resolved within the past 3 years or currently pending. The state administrative authority may choose, at its discretion, to require a more in-depth report of violations and compliance actions for the applicant covering any law, permit, or order concerning pollution at this or any other facility owned or operated by the applicant.

According to the Louisiana Water Quality Regulations, LAC 33:IX.2503.B, the following requirements shall apply to the signatory page in this application:

Chapter 25. Permit Application and Special LPDES Program Requirements

2503. Signatories to permit applications and reports

A. All permit applications shall be signed as follows:

1. For a corporation - by a responsible corporate officer. For the purpose of this Section responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

2. For a partnership or sole proprietorship - by a general partner or the proprietor, respectively; or

3. For a municipality, parish, State, Federal or other public agency - either a principal executive officer or ranking elected official. For the purposes of this Section a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

B. All reports required by permits, and other information requested by the state administrative authority shall be signed by a person described in LAC 33:IX.2503.A, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described in LAC 33:IX.2503.A.

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as a position of plant manager, operator of a well or well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

3. The written authorization is submitted to the state administrative authority.

C. Changes to authorization. If an authorization under LAC 33:IX.2503.B is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of LAC 33:IX.2503.B must be submitted to the state administrative authority prior to or together with any reports, information, or applications to be signed by an authorized representative.

D. Any person signing any document under LAC 33:IX.2503.A or B shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

APPENDIX G

Certification Statement



Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809

225.216.7483 PHONE
225.216.0732 FAX

www.TRCSolutions.com

July, 27 2007

"I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of LAC 33:VII.Subpart 1. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment."

A handwritten signature in black ink, appearing to read "Michael K. Daigle", written over a horizontal line.

Michael K. Daigle, P.E.

APPENDIX H

Geotechnical Investigation, Kendrick Engineering, LLC

GEOTECHNICAL INVESTIGATION
POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
ST. GABRIEL, LOUISIANA
PROJECT NUMBER 1005

FOR
TRC SOLUTIONS, INC.
TWO UNITED PLAZA
8550 UNITED PLAZA BOULEVARD, SUITE 501
BATON ROUGE, LOUISIANA 70809

BY
KENDRICK ENGINEERING, LLC
LBTC 8000 GSRI AVE, BUILDING 3000
BATON ROUGE, LOUISIANA 70820

JULY 11, 2007

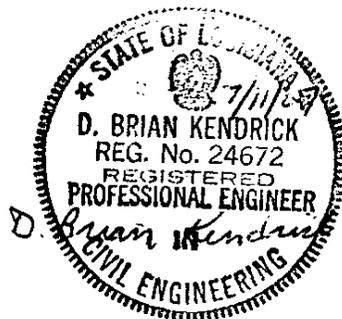


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INTRODUCTION

Kendrick Engineering, LLC (KE) was retained by TRC Solution, Inc. (TRC) to perform a geotechnical investigation for the proposed Point Clear Industrial Park Class III Landfill to be located in Iberville Parish, Louisiana. The proposed 100 acre construction and demolition debris landfill is to be located near State Highway 75 and Point Clair Road in Carville, Louisiana, approximately 1.5 miles south of St. Gabriel as shown in Figure 1.

The geotechnical investigation was authorized by Mr. Michael Daigle with TRC and Mr. Claude Klein on behalf of St. Gabriel Redevelopment, LLC. The scope of work included subcontract drilling and laboratory testing by Eustis Engineering Company, Inc. (Eustis) located in Metairie, Louisiana, evaluation of excavation and fill side slopes for the proposed landfill and determining maximum fill height. In addition, a field investigation and laboratory testing program was authorized and contracted to Eustis to perform a borrow investigation of the excavation area for use as material to construct/repair levees along the Mississippi River for the US Army Corp of Engineers.

PROJECT INFORMATION AND DESCRIPTION

Information about the project was provided by TRC and includes the following:

- A drawing showing the property lines and proposed footprint of the Class III Landfill with an area of approximately 100 acres.
- A boring location map for the borrow investigation by Eustis.
- The property is located in Sections 84, 85, 99, and 101, Township 9 South, Range 1 East with the center of the landfill property located at Latitude N 30° 15.7' and Longitude W 91° 05.5'.

PURPOSE AND SCOPE OF WORK

The purpose of our services was to make recommendations for maximum excavation cut, excavation and fill side slopes and maximum fill height. Our scope of work included the following:

- A general reconnaissance of the site;
- A subsurface exploration program including drilling 7 exploratory borings to depths of 75 feet below existing grade within the proposed footprint of the landfill, and 5 more shallow borings to 30 feet below existing grade for the borrow investigation;
- Laboratory testing of selected soil samples obtained from the exploratory borings;
- An engineering analysis and evaluation of the acquired data from the exploration and testing programs; and

- A summary of the findings and recommendations in this written report including discussions on subsurface soil conditions, graphic and tabulated results of laboratory tests and field studies, and recommendations regarding allowable cut, excavation and fill side slopes, maximum fill height, and erosion protection.

SITE DESCRIPTION

Site Geology

The project site is situated on natural levee and backswamp Quaternary deposits of recent Holocene geologic age. The Quaternary terrace or alluvial deposits are associated with the movement of the nearby Mississippi River. These Quaternary deposits consist of a heterogeneous mixture of gravels, sands, silts, and clays due to their alluvial nature. In general, the cleaner granular materials predominate near the bottom of these deposits. Early Pleistocene terrace deposits underlie these Quaternary deposits at depth.

Site Conditions

The majority of the project area is located in overgrown farmland/fields. The ground surface in these fields is at approximate elevations 18 to 20 feet, msl. The Class III landfill is bound to the north by the man-made Community Canal and to the south by Bayou Braud. Bayou Braud is unnavigable and typically dry during most of the dry season.

The property is located on Point Clair which is adjacent to the Mississippi River. The distance to the Mississippi River is approximately 0.85 miles to the southeast and approximately 1.25 miles to the northwest. Groundwater is anticipated to vary greatly with the river stage.

Investigations performed within the general area of the property have shown the presence of two soil strata of significantly different engineering properties and different geologic origin. The depths at which these strata have been encountered are indicated below:

| <u>Strata</u> | <u>Depths of Soil Strata (ft.)</u> | |
|----------------|------------------------------------|-----------|
| | <u>From</u> | <u>To</u> |
| 1. Topstratum | | |
| Natural Levee | Surface | 20 - 35 |
| Backswamp | 20 - 35 | 122 - 126 |
| 2. Substratum | | |
| 100-Foot Sands | 122 - 126 | |

The excavation of the proposed landfill will be located in the topstratum soil zone. Borings drilled for this and other projects have shown the natural levee and backswamp Quaternary deposits of Holocene age were encountered from the existing ground surface to the boring termination depth of 75 feet below grade. Based on other borings in the

area, this stratum continues to approximately 122 to 126 feet below grade. These deposits consist of layers or laminations of plastic clays, sandy and silty clays, silts, silty sands and fine sands. Decayed vegetation was encountered at various depths throughout the borings. Logs and tree limbs, sometimes partially decayed, were encountered deep within several of the borings. Early Pleistocene sediments were not encountered within the depth explored; however, we anticipate this stratum to appear at approximately 175 to 190 feet below grade.

In general, the clayey soils range from very soft to stiff in consistency and the silt and sand soils are loose to medium dense. At some boring locations the upper few feet of silty and clayey soils are relatively stiff due to desiccation.

This study has shown that most of the topstratum soils are preconsolidated due to partial drying following material deposition. The soils within the upper 25 to 35 feet appear to be moderately preconsolidated, while the underlying soils appear to consist of normally consolidated and slightly preconsolidated layers.

The static water level was observed to be generally at a depth of seven (7) feet below the top of the ground surface during the field investigation. In general, the groundwater was encountered between elevation 11 and 13 feet, msl, and is expected to fluctuate with season, area precipitation, and water stage of the Mississippi River.

INVESTIGATION METHODS

Field Exploration

Seven (7) exploratory borings designated B-1, B-2, B-8, B-10, B-17, B-18 and B-19 were drilled to 75 feet below the existing ground surface within the project footprint to observe the soil profile and to obtain samples for laboratory testing. The borings were advanced using wet rotary methods with an ADRCO all terrain marsh buggy drill rig. Samples were taken continuously in the upper 30 feet and intermittently thereafter to the boring termination depth of 75 feet. The boring locations were located in the field using a hand tape and taking distances off the property lines. The boring locations along with their latitude and longitude position are shown in Figure 2. Detailed descriptive logs of the borings and laboratory test results are presented in the Appendix A. Upon completion of drilling the borings, the borings were backfilled with cement-bentonite grout in accordance with current state regulatory requirements. The seven landfill borings were drilled between May 5 and 11, 2207.

Six (6) exploratory borings designated borings 1, 2, 3, 4, 5 and 7 were drilled to 35 feet below the existing ground surface as part of the borrow investigation. Borings 1 and 2 are located at the same locations as B-1 and B-2, respectively. The borings were advanced using wet rotary methods with an ADRCO all terrain marsh buggy drill rig. Samples were taken continuously to the boring termination depth of 35 feet. The boring locations were located in the field using a GPS and by taking distances off the property lines. The boring locations along with their latitude and longitude position are shown in Figure 2.

Detailed descriptive logs of the borings and laboratory test results are presented in the Appendix A. The six borrow investigation borings were drilled between March 2 and 3, 2007.

Cohesive and semi-cohesive relatively "undisturbed" samples were obtained within the test borings by pushing a 3-in. outside diameter Shelby Tube sampler (ASTM D 3550). The Shelby Tube sampler has a 3.0-inch outside diameter and a 2.37-inch inside diameter. Recovered soil samples were extruded at the site then sealed in moisture proof containers to preserve their natural water content and returned to the laboratory.

Cohesionless samples were obtained within the test borings using a Standard Penetration Test (SPT) sampler. The SPT sampler has a 2-in. outside diameter and a 1.38-in. inside diameter. The SPT samples were obtained by driving the sampler with a 140-lb hammer, manually activated by rope and cathead, and dropping 30 inches in general accordance with ASTM D 1586.

The final logs of the borings represent our interpretation of the contents of the field logs and the results of laboratory testing performed on the samples obtained during the subsurface exploration. The final logs are included in Appendix A of this report. The stratification lines represent the approximate boundaries between soil types, although the transitions may be gradational.

Laboratory Testing

Samples were reviewed along with field logs to select those that would be tested and analyzed further. Those selected for laboratory testing included soils that would be exposed and used during excavation and those deemed to be within the influence of the proposed excavation. Test results are presented on the boring logs in Appendix A and are summarized in Appendix B of this report. The tests were conducted in general accordance with the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The testing program consisted the following:

- In-situ moisture content and unit dry weight for the tube samples,
- Atterberg limits to assist in classifying the cohesive and semi-cohesive soils,
- Sieve and hydrometer tests to determine grain size and percent fines in order to assist in classifying the soils,
- Unconfined and confined compression tests and torvane tests to assess the undrained shear strength of cohesive and semi-cohesive soils; and,
- Permeability tests to determine the vertical flow of water through the soils.

DISCUSSION

Soil Conditions

The field exploration indicates site soils consist predominantly of high plasticity clays with silty clay and clayey silt layers that are medium stiff to stiff from ground surface to 20 feet below grade then becoming very soft to medium stiff to 75 feet below the ground surface. Along the eastern and western side of the property (Borings B-1, B-2, B-17, B-18, and B-19), loose to medium dense clayey silts to clayey sands layers were found approximately 8 feet to 30 feet below grade and 50 to 70 feet below grade. These layers vary in thickness from approximately 15 to 25 feet. Subsurface profiles of the soil stratigraphy are shown on Figures 3 through 5.

Soil density and strength test results were evaluated for use in our design calculations. Typically, the torvane shear strengths were slightly higher than the more conservative unconfined and confined compression test results and were used in our analysis. Appendix C presents the design parameters used in our computations.

Soil Permeability

Two permeability tests were performed on samples obtained from Boring B-8 at 38-40 feet and 48-50 feet below grade. The test results indicated the soils had coefficients of permeability of 6.9×10^{-8} and 1.0×10^{-7} cm/second, respectively. Higher coefficients of permeability can be expected in localized silt and sand layers, particularly along the eastern and western ends of the property.

BASAL HEAVE

Basal heave occurs at the bottom of temporary or permanent excavations when the seepage force due to the differential head equals the overlying total weight of the soil. In this area, the 100-Foot Sand layer acts as a direct conduit to the Mississippi River resulting in high gradients beneath the project area.

The basal heave factors of safety for a 15 and 20-foot excavation are 1.6 and 1.5, respectively. A factor of safety greater than 1.5 is typically recommended; therefore we recommend that the excavation remain at 15 feet below grade until fill refuse is available for immediate refill before excavating to 20 feet below grade.

SLOPE STABILITY

Slope stability analyses were performed using the computer program XSTABL, version 5.2 developed by Dr. Sunil Sharama with Interactive Software Designs, Inc. XSTABL was used to analyze the factor of safety for circular type failures for two-dimensional design sections using Bishop's simplified method. Nominal factors of safety between 1.3 and 1.5 are typically required for short-term strength cases under static loading conditions. Due to the close proximity of the man-made Community Canal and Bayou Braud, a minimum factor of safety of 1.4 is recommended.

Excavation Side Slopes

Slope stability analyses were first conducted on open excavations having side slopes of 3H:1V, 4H:1V and 5H:1V. Due to the low strengths of the soils below 20 feet, a maximum excavation depth of 15 feet is recommended. Table 1 summarizes the results of the analysis and Figure 6 graphically presents the most critical failure surfaces.

Table 1
Side Slope Stability Factor of Safety
Open Excavation w/o Draw Down of Water Table

| Excavation Depth (ft) | Excavation Side Slope | | |
|-----------------------|-----------------------|-----|-----|
| | 3:1 | 4:1 | 5:1 |
| 15' | 1.5 | 1.5 | 1.6 |
| 20' | 1.1 | 1.1 | 1.2 |
| 25' | 0.9 | 0.9 | 1.0 |

Slope stability analyses were next conducted on open excavations having side slopes of 3H:1V, 4H:1V and 5H:1V with a bench located at 10 feet below ground surface. The results of the slope stability analyses indicate nominal factors of safety between 1.4 and 1.5 for an excavation made to 20 feet below grade under static loading conditions. A description of the recommended excavation configuration is given as follows:

- The recommended excavation analyzed was assumed to slope from ground elevation to 10 feet below ground surface at a 4H:1V slope then 100 feet horizontally to create a bench, then to the base excavation depth of 20 feet below grade at a 4H:1V slope. Since the grading of the floor bottom will be one to two percent, the floor bottom was assumed to be flat.

A maximum excavation depth of 20 feet below grade and minimum bench width of 100 feet at 10 feet below grade is recommended. Table 2 summarizes the results of the analysis and Figure 6 graphically presents the most critical failure surfaces.

Table 2
Side Slope Stability Factor of Safety
Open Excavation with 100' Wide Bench at 10' Below Grade

| Excavation Depth (feet) | Excavation Side Slope | | |
|-------------------------|-----------------------|-----|-----|
| | 3:1 | 4:1 | 5:1 |
| 15' | 1.7 | 1.8 | 1.8 |
| 20' | 1.4 | 1.4 | 1.5 |
| 25' | 1.2 | 1.3 | 1.3 |

Temporary Slopes within the Refuse

Refuse sequencing and placement can become critical with regards to slope failure within the refuse if improperly established early in the project. Numerous slope failures have been reported where consideration of refuse slopes were not appropriately taken into account. Several factors must be considered when establishing a refuse sequencing and placement such as compactive effort, strength and saturation of the refuse, slope geometry including benches, and any weak interfaces such as low strength soils at the bottom of the excavation. Table 3 presents estimated factor of safety for unsaturated refuse with various unit weights. Care should be taken when interpreting the refuse parameters to ensure that they match actual field conditions. Should the refuse become saturated within the excavation, then a maximum lift height of 20 feet should be use with a minimum bench width of 40 feet.

Table 3
Slope Stability Factor of Safety
Temporary Slopes within the Refuse

| Refuse Height (feet) | 60 pcf | | | | 50 pcf | | | |
|----------------------|-----------------------------------|-----|-----|-----|-----------------------------------|-----|-----|-----|
| | Interface Angle of Friction, deg. | | | | Interface Angle of Friction, deg. | | | |
| | 8 | 12 | 16 | 12 | 8 | 12 | 16 | 20 |
| 20 | 2.1 | 2.3 | 2.5 | 2.7 | 2.3 | 2.5 | 2.7 | 2.9 |
| 40 | 1.6 | 1.9 | 2.1 | 2.4 | 1.7 | 2.0 | 2.2 | 2.5 |
| 60 | 1.4 | 1.8 | 2.1 | 2.4 | 1.5 | 1.8 | 2.1 | 2.5 |

Final Cover Slopes

Since a major portion of the final landfill configuration will have refuse as part of the construction, different sources were investigated to determine geotechnical design values. A significant amount of research has been conducted since 1988 on the subject of slope stability modeling techniques for waste fills. Based on different references, an average dry density of 65 pounds per cubic foot (pcf), an undrained shear strength (Su) of 300 pounds per square foot (psf), and an angle of internal friction of 23 degrees for solid waste and conservatively used in the analyses for construction and debris refuse. Bishop's simplified method of circular failures was used in our analysis since an HDPE liner is not required. Typically block failures along an HDPE liner would produce the lowest factor of safety. In addition, strength and unit weight properties of the 2-foot recompacted clay cover were conservatively estimated as being that of the refuse.

As refuse is placed in the landfill, the soils underlying the landfill consolidate under the imposed loads and gain strength, provided the excess pore pressures are allowed

sufficient time to dissipate. Since the foundation soils will increase in strength due to consolidation in the long-term, the soil strengths were conservatively increased by increasing the angle of internal friction by 3 degrees. Consequently, a nominal factor of safety in excess of 1.5 was determined for the maximum height of the landfill at approximate 50 feet above grade. A description of the analyzed final landfill cover configuration is given as follows:

- Beginning at the toe of the slope at ground elevation, the landfill will slope to 50 feet above grade at a 4H:1V slope. The slope will then flatten to a 6% slope to the crest height of 65 feet above grade.

Figure 7 presents the most critical failure surface with a nominal safety factor of 1.6 for the closed landfill configuration. Appendix D presents the XSTABL output files for all slopes analyzed for the excavation and final cover side slopes.

CONSTRUCTION CONSIDERATIONS

Site Preparation

All surface vegetative and foreign materials such as grass, roots, concrete rubble, debris, etc., should be stripped and removed prior to construction. Good drainage should be established at the outset of construction and maintained to preclude water from ponding in the proposed construction areas. Positive drainage should be maintained at all times to limit surface water from entering the excavation.

Groundwater Control and Dewatering

Based on field and laboratory test results, the coefficients of permeability have been estimated for the soils typically encountered at the site to be approximately 1×10^{-7} cm/sec or less. Due to the depositional characteristics of the soils, primarily horizontal bedding, the horizontal permeability of the laminated soils will typically be higher than the vertical permeability. We estimate that the horizontal permeability may be as much as two orders of magnitude higher than the vertical particularly along the eastern and western ends of the property.

It is believed that water above 15 feet below grade can be controlled by ditching, sumping, and pumping around the toe perimeter of the excavations. Ditches and sumps around the perimeter of the excavation may be used to collect groundwater seeping from the surficial clayey silts and any surface runoff from the slopes of the excavation. The ditches and sumps should be designed such that the invert of the ditch is a few feet below the excavation base. The top of the excavation slope should be bermed slightly to prevent inflow of surface runoff from outside the excavation.

Excavations exceeding 15 feet in depth may encounter severe groundwater control problems if an appropriate dewatering is not utilized. The exact amount of groundwater encountered will be dependent on the rainfall, the Mississippi River stage level, localized soil permeability characteristics, and the groundwater level at the time of construction.

Due to the variability of the groundwater conditions, we recommend that test areas be excavated with a backhoe just prior to construction. The test areas should be pumped and sumped to verify the constructability of dewatering using these methods. Dewatering trenches will be required below the 15-foot depth. The actual number of dewatering trenches and sumps constructed should be determined in the field by a registered professional engineer and/or supervised soils technician and will be dependent on the number of wet areas observed along the excavation floor during construction operations. A preliminary trench spacing of 50 feet is anticipated. Furthermore, trenches located within 100 feet of the toe of the excavation side slope will be required to be constructed and backfilled in 20-foot segments. This is required to reduce any potential slope failure while removing material near the slope toe. If poor performance is encountered, then an alternate dewatering program such as well points or slurry walls will be required. In addition, when excavating material between 15 and 20 feet below grade, we recommend refuse be available for refilling the excavation. Excavations below 15 feet below grade should be refilled as soon as possible, particularly during high river stage.

Excavation Safety

Occupational Safety and Health Administration (OSHA) regulations (Sub-part P, Part 1926 of the Code of Federal Regulations) stipulate that any excavation deeper than 5 feet in which workmen will enter, shall be shored, laid back to a stable slope, or be provided with some other means of protection. If workmen must enter excavations deeper than 5 feet, we recommend sloping back the sides of the excavation to a slope no steeper than 1-1/2 horizontal to 1 vertical, or that a designed bracing system be used.

The required cut for the removal of the borrow material is anticipated to be between 15 and 20 feet. Care should be taken to keep equipment and stockpiled materials well away from the outside edge of the excavation to prevent possible slope failure caused by these surcharge loads.

Construction Surveillance

Construction surveillance under the supervision of a professional engineer is essential to verify that the landfill is being constructed in accordance with the intent of the recommendations provided in this report. Services during construction should include verification of bearing strata, observation of excavations for possible failures and side slope safety and any testing if required. In addition, the excavation should be observed for any increases in water seepage, particularly during high river stage.

CONCLUSIONS

Our analysis indicates that the maximum open excavation depth should not exceed 20 feet below grade. Material between 15 and 20 feet below grade should only be excavated when refuse material is available for prompt refilling of the excavation.

The excavation side slopes should not exceed 4H:1V and should contain a 100-foot wide bench beginning at 10 feet below grade.

The final cover slopes should not exceed 4H:1V to a maximum height of 50 feet above grade, then flatten to a 6% slope to the crest height of 65 feet above grade.

LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for the exclusive use of TRC and their designated representatives for specific application to the subject site. In the event of any changes in the nature, design, or location of the proposed flood protection, the conclusions of this report are valid unless the changes are reviewed and the conclusions of this report are modified and verified in writing. Should these data be used by anyone other than TRC or their designated representatives, the user should contact KE for interpretation of data and to secure other information pertinent to this project.

The analyses and recommendations contained in this report are based, in part, on data obtained from the soil borings. The nature and extent of variations in subsoil conditions between and away from the boring locations may not become evident until construction. If variations then appear, it will be necessary to reevaluate the recommendations contained in this report.

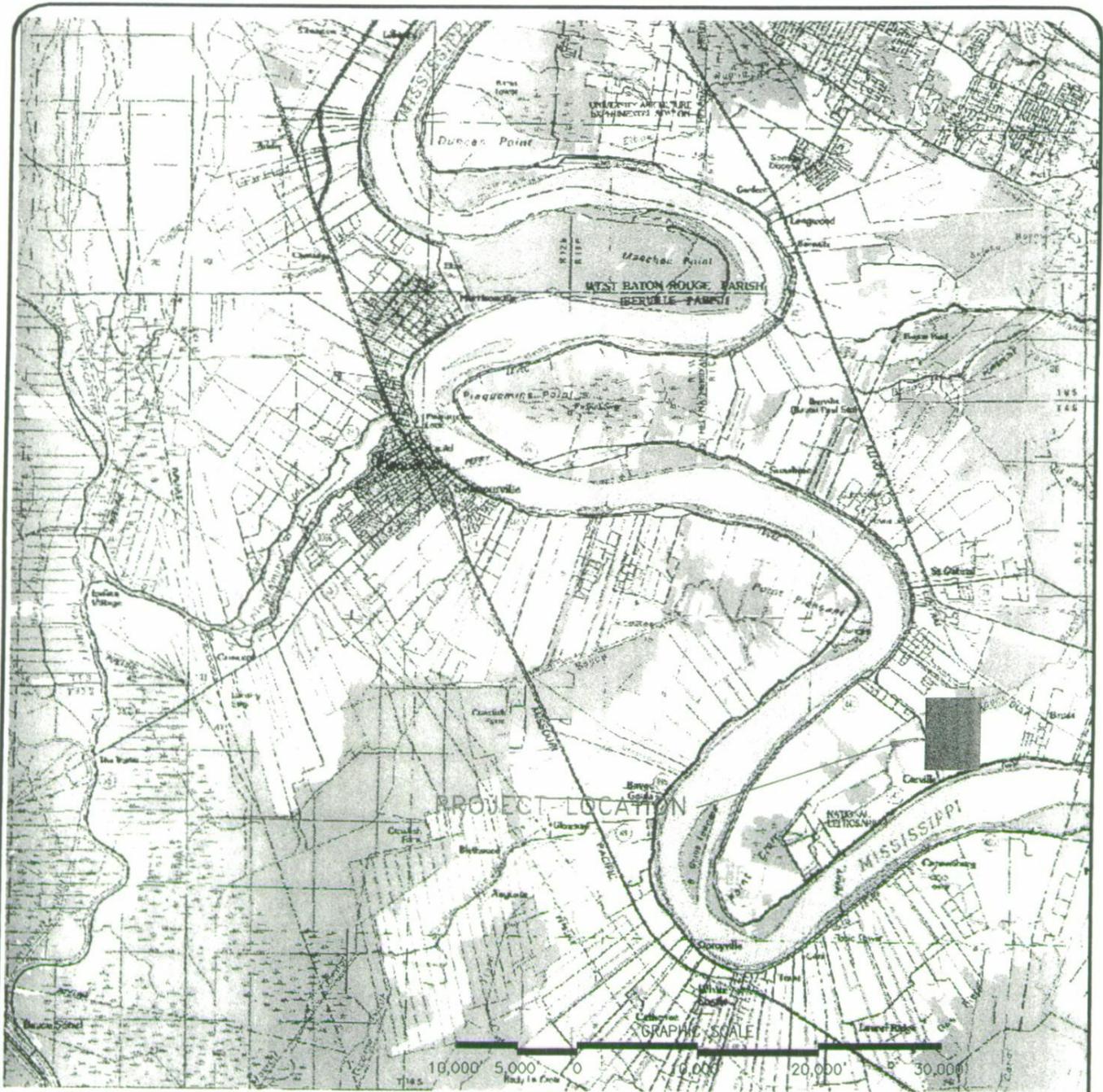
Recommendations and conclusions contained in this report are, to some degree, subjective and should be used only for design purposes. This report should not be included in the contract plans and specifications. However, the results of the soil borings and laboratory tests contained in the Appendix may be included in the plans and specifications.

Findings of this report are valid as of the issued date of the report. However, changes in the conditions of a property can occur with passage of time, whether they are from natural processes or works of man, on this or adjoining properties. In addition, changes in applicable standards occur, whether they result from legislation or broadening of knowledge. Accordingly, findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of one year.

KE should be provided the opportunity for a general review of the final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications. If KE is not accorded the privilege of making this recommended review, we can assume no responsibility for misinterpretation or our recommendations.

Although available through KE, the current scope of our services does not include an environmental assessment or an investigation for the presence or absence of wetlands; hazardous or toxic materials in the soil; surface water; ground water; or air on, below, or adjacent to the subject property.

FIGURES



TRC SOLUTIONS, INC.

**VICINITY MAP
POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
ST. GABRIEL, LOUISISANA**

**KENDRICK
ENGINEERING, LLC**

LETC, 8000 GSRI AVE., BLDG 3000
BATON ROUGE, LOUISIANA 70820
(225) 578-8577 (225) 205-7211

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |
| | | |

| | |
|--------------------------|-----------------|
| DRAWN BY: S. KENDRICK | FIGURE: 1 |
| CHECKED BY: B. KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B. KENDRICK | DATE: 6/29/07 |
| CAD FILE: | |

APPENDIX A
BORING LOGS



**LEGEND AND NOTES FOR
LOG OF BORING AND TEST RESULTS**

- PP** Pocket penetrometer: Resistance in tons per square foot
- SPT** Standard Penetration Test: Number of blows of a 140-lb hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches
- SPLR** Type of Sampling  Shelby  SPT  Auger  No sample
- SYMBOL** Clay  Silt  Sand  Peat/Humus  Shells  Stone/Gravel 
- Predominant type shown heavy; Modifying type shown light
- USC** Unified Soil Classification
- DENSITY** Unit weight in pounds per cubic foot

SHEAR TESTS

TYPE

- UC** Unconfined compression shear
- OB** Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure
- UU** Unconsolidated undrained triaxial compression shear
- CU** Consolidated undrained triaxial compression shear
- DS** Direct shear

- ϕ Angle of internal friction in degrees
- c** Cohesion in pounds per square foot

ATTERBERG LIMITS

- LL** Liquid Limit
- PL** Plastic Limit
- PI** Plasticity Index

OTHER TESTS

- CON** Consolidation
- PD** Particle size distribution (sieve and/or hydrometer)
- k** Coefficient of permeability in centimeters per second
- SP** Swelling pressure in pounds per square foot

Other laboratory test results reported on separate figures

GENERAL NOTES

- (1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. If important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.
- (2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | S P L R | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|-----|------------------|--------|--|-----|------------------|------------------|-----------------------------|----------------------------|-----|-------------|---|-----|------------------|----|----|----------------|
| | | | | | | | | | | Dry | Wet | Type | σ | C | LL | PL | PI | |
| | | | | | | | | | | Refer to "Legends & Notes" | | | | | | | | |
| 0 | | | | | Wash to 30 feet | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | |
| 34-35 | 0.75 | | | | Medium stiff gray clay w/roots | CH | 1 | 34-35 | 64 | 61 | 100 | UC | - | 539 | 106 | 27 | 79 | |
| 40 | 0.75 | | | | Medium stiff dark gray clay w/silt pockets & concretions | CH | 2 | 39-40 | | | | | | | | | | |
| 44-45 | 1.25 | | | | Stiff gray clay w/concretions & silt pockets | CH | 3 | 44-45 | 33 | 89 | 119 | UC | - | 933 | | | | |
| 50 | 1.00 | | | | | | 4 | 49-50 | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. **LOG OF BORING AND TEST RESULTS**
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale in Feet | Ground Elev.: | Datum: | SPT | SP LR | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests | |
|---------------------|---------------|--------|-----|----------|--|-----|------------------|------------------|-----------------------------|---------|-----|-------------|---|------|------------------|----|----|----------------|--|
| | | | | | | | | | | Dry | Wet | Type | φ | C | LL | PL | PI | | |
| 50 | | | | | | | | | | | | | | | | | | | |
| | 1.00 | | | | Stiff gray clay w/concretions & silt pockets | CH | 5 | 54-55 | 34 | 89 | 118 | UC | - | 1536 | 85 | 25 | 60 | | |
| | 1.00 | | | | Soft gray clay w/silt pockets | CH | 6 | 59-60 | | | | | | | | | | | |
| | 0.75 | | | | | | 7 | 64-65 | 48 | 71 | 105 | UC | - | 289 | | | | | |
| | 0.50 | | | | | | 8 | 69-70 | | | | | | | | | | | |
| | 0.50 | | | | | | 9 | 74-75 | 42 | 76 | 108 | UC | - | 297 | 55 | 25 | 30 | | |
| 80 | | | | | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. **LOG OF BORING AND TEST RESULTS**
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/07/07 | Boring: 2 | | | | Refer to "Legends & Notes" | | | | | |
|---------------------|----|-----|--------|---|--|----------------|-----------------------|---------------|-----------------------|-------------|-----|----------------------------|------------------|----|-------------|----|--|
| | | | S | P | | | | L | R | Shear Tests | | | Atterberg Limits | | Other Tests | | |
| | | | | | | | | | | Type | ϕ | | LL | PL | | PI | |
| 0 | | | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | | | | | | |
| | | | | | Wash to 30 feet | | | | | Dry | Wet | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 0.25 | | | | | Very soft gray clay w/silt pockets, shell fragments, & concretions | CH | 1 | 34-35 | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| 0.75 | | | | | Soft to medium stiff gray clay w/silt pockets & wood | CH | 2 | 39-40 | 72 | 58 | 99 | | | 83 | 19 | 64 | |
| 1.00 | | | | | | | 4 | 49-50 | 48 | 72 | 107 | UC | - | 98 | 25 | 71 | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 1)



| Scale in Feet | Ground Elev.: | Datum: | | SPT | S P L R Symbol | Visual Classification | USC | Sample Number | Depth in Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|---------------|--------|------------------|-----|----------------------------|--|-----|------------------|---------------------|-----------------------------|---------|-----|-------------|---|---|------------------|----|----|------------------------------|
| | | PP | Gr. Water Depth: | | | | | | | | Dry | Wet | Type | e | C | LL | PL | PI | |
| 0 | | 1.25 | | | | Medium stiff to stiff gray & tan clay w/silt pockets & roots | CH | 1 | 0-2 | 45 | | | | | | 83 | 24 | 59 | ORGANIC CONTENT = 5.1% |
| | | 1.50 | | | | | | 2 | 2-4 | 40 | | | | | | | | | |
| | | 1.50 | | | | | | 3 | 4-6 | 46 | | | | | | | | | |
| | | 1.50 | | | | | | 4 | 6-8 | 48 | | | | | | 83 | 23 | 70 | ORGANIC CONTENT = 3.9% |
| | | 1.50 | | | | | | 5 | 8-10 | 51 | | | | | | | | | |
| 10 | | 1.50 | | | | Medium stiff gray & tan silty clay w/clay layers & roots | CL | 6 | 10-12 | 39 | | | | | | | | | |
| | | 2.00 | | | | Stiff to very stiff gray & tan clay w/silt lenses | CH | 7 | 12-14 | 41 | | | | | | | | | |
| | | 2.25 | | | | | | 8 | 14-16 | 36 | | | | | | | | | |
| | | 2.00 | | | | Stiff gray clay w/silt lenses & concretions | CH | 9 | 16-18 | 47 | | | | | | | | | |
| | | 2.00 | | | | | | 10 | 18-20 | 39 | | | | | | | | | |
| | | 0.50 | | | | Medium stiff gray silty clay | CL | 11 | 20-22 | 40 | | | | | | | | | |
| | | 0.50 | | | | Soft to medium stiff gray clay w/silt pockets & roots | CH | 12 | 22-24 | 45 | | | | | | | | | |
| | | 0.50 | | | | | | 13 | 24-26 | 44 | | | | | | | | | |
| | | 0.50 | | | | | | 14 | 26-28 | 43 | | | | | | | | | |
| | | 1.00 | | | | Very stiff brown & black peat w/roots | PT | 15 | 28-30 | 179 | | | | | | | | | |
| | | 1.00 | | | | Medium stiff gray clay w/organic clay & wood w/wood | CH | 16 | 30-32 | | | | | | | | | | |
| | | 1.00 | | | | | | 17 | 32-34 | | | | | | | | | | |
| | | 1.00 | | | | | | 18 | 34-35 | | | | | | | | | | |

Job No.: 19695 Date Drilled: 3/02/07 Boring: 3 Refer to "Legends & Notes"

Comments: Latitude: N 30° 13.823' Longitude: W 91° 05.360'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 1)



| Scale In Feet | Ground Elev.: | Datum: | | SPT | SL Symbol | Gr. Water Depth: | Job No.: 19695 | Date Drilled: 3/03/07 | Boring: 4 | | | | Refer to "Legends & Notes" | | | | | |
|---------------------|---------------|--------|-------|-----|--------------|---|----------------|-----------------------|---------------|-----------------------|---------|------|----------------------------|---|-----|----|-----|-------------------------|
| | | PP | Other | | | | | | Shear Tests | Atterberg Limits | | | Other Tests | | | | | |
| | | | | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Type | e | C | LL | PL | Pi | |
| 0 | 0.50 | | | | | Stiff gray & tan clay w/silty clay layers & roots | CH | 1 | 0-2 | 45 | | | | | 71 | 17 | 54 | ORGANIC CONTENT = 3.0% |
| | 1.25 | | | | | Medium stiff gray & tan clay w/silty sand layers | CH | 2 | 2-4 | 32 | | | | | | | | |
| | 0.50 | | | | | Medium stiff gray & tan silty clay | CL | 3 | 4-6 | 40 | | | | | | | | |
| | 0.50 | | | | | Medium stiff to stiff gray & tan clay w/silt lenses & roots | CH | 4 | 6-8 | 34 | | | | | 88 | 30 | 58 | ORGANIC CONTENT = 3.6% |
| 10 | 0.50 | | | | | Medium stiff gray clay w/silt layers & roots | CH | 5 | 8-10 | 47 | | | | | | | | |
| | 0.50 | | | | | Stiff gray clay w/concretions | CH | 6 | 10-12 | 53 | | | | | | | | |
| | 3.00 | | | | | Stiff gray clay w/concretions | CH | 7 | 12-14 | 41 | | | | | | | | |
| | 1.50 | | | | | Medium stiff gray & tan clay w/silt lenses & concretions | CH | 8 | 14-16 | 50 | | | | | 78 | 22 | 56 | ORGANIC CONTENT = 3.3% |
| | 1.25 | | | | | Stiff gray clay w/silt pockets & roots | CH | 9 | 16-18 | 44 | | | | | | | | |
| | 0.50 | | | | | Medium stiff gray clay | CH | 10 | 18-20 | 49 | | | | | | | | |
| | 0.50 | | | | | Soft gray silty clay | CL | 11 | 20-22 | 50 | | | | | 95 | 25 | 70 | ORGANIC CONTENT = 3.4% |
| | 0.50 | | | | | Stiff gray organic clay w/roots | OH | 12 | 22-24 | 60 | | | | | | | | |
| | 0.50 | | | | | Medium stiff gray clay | CH | 13 | 24-26 | 43 | | | | | | | | |
| | 0.25 | | | | | | | 14 | 26-28 | 141 | | | | | 256 | 75 | 181 | ORGANIC CONTENT = 28.9% |
| | 0.50 | | | | | | | 15 | 28-30 | 119 | | | | | | | | |
| | 0.50 | | | | | | | 16 | 30-32 | | | | | | | | | |
| | 0.50 | | | | | | | 17 | 32-34 | | | | | | | | | |
| | 0.50 | | | | | | | 18 | 34-35 | | | | | | | | | |

Comments: Latitude: N 30° 13.743'
 Longitude: W 91° 05.347'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 1)



| Scale In Feet | Ground Elev.: | Datum: | | SPT | Gr. Water Depth: | Job No.: | Date Drilled: | Boring: 5 | | | Refer to "Legends & Notes" | | | |
|---------------------|---------------|--------|----|-----|--|----------|---------------|-----------------------|---------|-------------|----------------------------|------------------|-------------|------------------------|
| | | S | P | | | | | Water Content Percent | Density | Shear Tests | | Afterberg Limits | Other Tests | |
| | | PP | PL | RI | Visual Classification | USC | Depth In Feet | Type | g | C | LL | PL | PI | |
| 0 | | 0.25 | | | Stiff gray clay w/silt lenses & roots | CH | 0-2 | | 42 | | | | | ORGANIC CONTENT = 4.6% |
| | | 0.25 | | | Stiff gray & tan clay w/silt lenses & roots | CH | 2-4 | | 43 | | 92 | 26 | 66 | |
| | | 1.25 | | | | | 4-6 | | 42 | | | | | |
| | | 3.00 | | | Stiff gray clay w/silt lenses | CH | 6-8 | | 44 | | | | | |
| 10 | | 2.50 | | | Stiff gray & tan clay w/concretions | CH | 8-10 | | 44 | | | | | |
| | | 2.50 | | | Stiff gray clay w/silt lenses | CH | 10-12 | | 41 | | 78 | 23 | 53 | ORGANIC CONTENT = 3.2% |
| | | 2.00 | | | Stiff gray & tan clay w/silt lenses & concretions | CH | 12-14 | | 43 | | | | | |
| | | 1.25 | | | Medium stiff gray clay w/silt pockets & roots | CH | 14-16 | | 54 | | | | | |
| | | 1.50 | | | | | 16-18 | | 58 | | 97 | 30 | 67 | ORGANIC CONTENT = 3.4% |
| | | 1.50 | | | | | 18-20 | | 55 | | | | | |
| | | 1.25 | | | Stiff gray clay w/silty sand pockets & concretions | CH | 20-22 | | 45 | | | | | |
| | | 1.25 | | | | | 22-24 | | 47 | | 82 | 25 | 57 | ORGANIC CONTENT = 2.9% |
| | | 0.50 | | | | | 24-26 | | 48 | | | | | |
| | | 0.50 | | | | | 26-28 | | 52 | | | | | |
| | | 0.25 | | | Soft gray clay w/roots & silty sand pockets | CH | 28-30 | | 60 | | 66 | 21 | 45 | ORGANIC CONTENT = 4.8% |
| | | 0.25 | | | | | 30-32 | | | | | | | |
| | | 0.50 | | | Soft gray silty clay | CL | 32-34 | | | | | | | |
| | | 0.50 | | | Medium stiff gray clay | CH | 34-35 | | | | | | | |

Comments: Latitude: N 30° 13.844'
 Longitude: W 91° 05.501'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 1)



| Scale In Feet | PP | SPT | Datum: | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|----|-----|--------|---|---|-----|------------------|------------------|-----------------------------|---------|-----|-------------|---|-----|------------------|----|------------------------------|----------------|
| | | | S | R | | | | | | Dry | Wet | Type | c | C | LL | PL | PI | |
| 0 | | | | | Stiff gray & tan silty clay w/roots | CL | 1 | 0-2 | 26 | | | | | 50 | 21 | 29 | ORGANIC CONTENT = 3.5% | |
| 0.50 | | | | | | | 2 | 2-4 | 26 | | | | | | | | | |
| 2.00 | | | | | | | 3 | 4-6 | 31 | | | | | | | | | |
| 2.25 | | | | | Stiff gray & tan clay w/silty sand lenses & roots | CH | 4 | 6-8 | 35 | | | | | 68 | 21 | 47 | ORGANIC CONTENT = 2.7% | |
| 1.50 | | | | | Medium stiff gray & tan clay w/silty sand layers | CH | 5 | 8-10 | 46 | | | | | | | | | |
| 1.25 | | | | | Stiff gray & tan clay w/silty clay layers | CH | 6 | 10-12 | 46 | | | | | | | | | |
| 0.25 | | | | | Loose gray sandy silt | ML | 7 | 12-14 | 28 | | | | | N/P | | | ORGANIC CONTENT = 1.0% | |
| 0.25 | | | | | | | 8 | 14-16 | 26 | | | | | | | | | |
| 0.25 | | | | | | | 9 | 16-18 | 30 | | | | | | | | | |
| 0.25 | | | | | Soft gray clay | CH | 10 | 18-20 | 51 | | | | | 72 | 22 | 50 | ORGANIC CONTENT = 4.1% | |
| 0.50 | | | | | | | 11 | 20-22 | 65 | | | | | | | | | |
| 0.50 | | | | | Medium stiff gray clay w/roots & concretions | CH | 12 | 22-24 | 57 | | | | | | | | | |
| 0.25 | | | | | | | 13 | 24-26 | 52 | | | | | | | | | |
| 0.50 | | | | | Medium stiff gray clay | CH | 14 | 26-28 | 52 | | | | | | | | | |
| 0.50 | | | | | Soft gray silty clay | CL | 15 | 28-30 | 37 | | | | | | | | | |
| 0.50 | | | | | Medium stiff gray clay w/silty clay layers | CH | 16 | 30-32 | | | | | | | | | | |
| 0.50 | | | | | | | 17 | 32-34 | | | | | | | | | | |
| 0.50 | | | | | w/organic matter | | 18 | 34-35 | | | | | | | | | ORGANIC CONTENT = 3.4% | |

Comments: Latitude: N 30° 13.691'
 Longitude: W 91° 05.422'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Ground Elev.: Scale In Feet | PP | SPT | Datum: S P L R | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | Atterberg Limits | | | Other Tests | |
|--------------------------------------|------|-----|----------------------------|--|-----|------------------|---------------------|-----------------------------|---------|-----|-------------|----------|------------------|----|----|--------------------------|--------------------------|
| | | | | | | | | | Dry | Wet | Type | θ | C | LL | PL | | PI |
| 0 | | | | Stiff gray silty clay w/roots | CL | 1 | 0-1 | 36 | | | | | | | | ORG. CONT. = 4.733 | |
| | 2.00 | | | Stiff brown & gray clay w/silt pockets & roots | CH | 2 | 2-3 | 44 | | | | | 100 | 35 | 65 | | |
| | 2.00 | | | | | 3 | 5-6 | 44 | 75 | 108 | UC | ~ | 1021 | | | | |
| 10 | 2.75 | | | Medium stiff gray & brown clay w/silt pockets | CH | 4 | 8-9 | 39 | | | | | 108 | 35 | 71 | ORG. CONT. = 5.011 | |
| | 0.50 | | | | | 5 | 11-12 | 51 | | | | | | | | | |
| | 0.25 | | | Medium stiff gray clay w/sandy silt layers | CH | 6 | 14-15 | 42 | 77 | 110 | UC | ~ | 956 | 87 | 24 | 63 | ORG. CONT. = 3.811 |
| | 1.25 | | | Medium stiff tan & gray clay w/concretions | CH | 7 | 17-18 | 41 | | | | | | | | | |
| | 1.00 | | | Soft gray clay | CH | 8 | 20-21 | 39 | | | | | | | | | |
| | | | | Very soft gray silty clay w/wood | CL | 9 | 23-24 | 66 | 60 | 100 | UC | ~ | 263 | 74 | 27 | 47 | ORG. CONT. = 4.291 |
| | | | | Very soft gray clay w/sandy silt layers | CH | 10 | 26-27 | 37 | | | | | | | | | |
| 30 | | | | | | 11 | 29-30 | 53 | | | | | | 43 | 19 | 24 | ORG. CONT. = 3.036 |
| | | | | w/silty sand pockets & wood | | 12 | 34-35 | 71 | 58 | 99 | | | | 64 | 20 | 44 | PERM |
| 40 | | | | | | 13 | 39-40 | | | | | | | | | | |
| | 0.25 | | | | | 14 | 44-45 | 72 | 56 | 96 | UC | ~ | 204 | | | | |
| 50 | | | | | | 15 | 49-50 | | | | | | | | | | PERM |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/15/07 | Boring: 10 | | | | Refer to "Legends & Notes" | | | | | | | |
|---------------------|------|-----|--------|---|---|---------------------------|----------------|-----------------------|------------|-------------|------------------|---|----------------------------|-----|----|-----|----|--|--|--|
| | | | S | P | L | | | | R | Shear Tests | Atterberg Limits | | | | | | | | | |
| | | | | | | | | | | | Type | ϕ | | C | LL | PL | PI | | | |
| 0 | 4.25 | | | | | 1 | 0-1 | 26 | | | | | | | | | | | | |
| | 0.75 | | | | | 2 | 2-3 | 29 | 89 | 115 | UC | - | 654 | | | | | | | |
| | 4.75 | | | | | 3 | 5-6 | 28 | | | | | | 70 | 21 | 49 | | | | |
| | 0.50 | | | | | 4 | 8-9 | 34 | | | | | | | | | | | | |
| 10 | 0.50 | | | | | 5 | 11-12 | 45 | 75 | 108 | UC | - | 868 | 83 | 22 | 61 | | | | |
| | 0.50 | | | | | 6 | 14-15 | 38 | | | | | | | | | | | | |
| 20 | | | | | | 7 | 17-18 | 63 | | | | | | 93 | 26 | 67 | | | | |
| | | | | | | 8 | 20-21 | 49 | 71 | 106 | UC | - | 173 | | | | | | | |
| | | | | | | 9 | 23-24 | 66 | | | | | | 88 | 23 | 65 | | | | |
| | | | | | | 10 | 26-27 | 70 | | | | | | | | | | | | |
| 30 | | | | | | 11 | 28-30 | 100 | 44 | 89 | UC | - | 344 | 149 | 37 | 112 | | | | |
| | 0.50 | | | | | 12 | 34-35 | | | | | | | | | | | | | |
| 40 | | | | | | 13 | 39-40 | 52 | 69 | 105 | UC | - | 358 | | | | | | | |
| | 0.50 | | | | | 14 | 44-45 | | | | | | | | | | | | | |
| 50 | 1.00 | | | | | 15 | 49-50 | 58 | 63 | 100 | UC | - | 214 | 91 | 22 | 69 | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. **LOG OF BORING AND TEST RESULTS**
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale In Feet | Ground Elev.: | Datum: | | Gr. Water Depth: | Job No.: 19728 | Date Drilled: 5/15/07 | Boring: 10 | | Refer to "Legends & Notes" | | | | | | | | | | |
|---------------------|---------------|--------|-----|------------------|----------------|-----------------------|---|------------------|----------------------------|---------------|-----------------------|---------|------|---|------|----|----|----|--|
| | | PP | SPT | | | | Shear Tests | Atterberg Limits | | Other Tests | | | | | | | | | |
| | | S | P | L | R | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Type | ϕ | C | LL | PL | PI | |
| 50 | | | | | | | | | | | | | | | | | | | |
| | 0.75 | | | | | | Very soft gray clay w/silt pockets, shell fragments, & decayed wood | CH | 16 | 54-55 | 44 | 75 | UC | - | 304 | | | | |
| | | | | | | | Soft gray silty clay | CL | 17 | 59-60 | | | | | | | | | |
| | 0.50 | | | | | | Soft gray clay | CH | 18 | 64-65 | | | | | | | | | |
| | 0.75 | | | | | | Stiff gray clay w/silt pockets & concretions | CH | 19 | 69-70 | 51 | 68 | UC | - | 1600 | 92 | 24 | 68 | |
| | 0.75 | | | | | | | | 20 | 74-75 | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/11/07 | Boring: 17 | | Refer to "Legends & Notes" | | | | | | | |
|---------------------|------|-----|--------|---|--|----------------|-----------------------|---------------------|-----------------------------|----------------------------|------|----------------|-----|----|----|----|----------------|
| | | | S | P | | | | Shear Tests | Atterberg Limits | | | Other Tests | | | | | |
| | | | L | R | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Type | | e | C | LL | PL | PI |
| 0 | 1.00 | | | | Medium stiff gray clay w/silt pockets | CH | 1 | 0-2 | 38 | 77 | UC | - | 528 | 97 | 22 | 75 | ORG%= 5.148 |
| | 0.75 | | | | Medium stiff tan & gray clay | CH | 2 | 2-4 | 43 | | | | | | | | |
| | 0.25 | | | | Stiff light gray & tan silty clay | CL | 3 | 4-6 | 30 | | | | | | | | |
| | 0.25 | | | | Soft light gray & tan sandy clay | CL | 4 | 6-8 | 33 | | | | | | | | |
| 10 | 0.25 | | | | Very loose tan & gray clayey silt | ML | 5 | 8-10 | 26 | | | | | | | | |
| | 0.25 | | | | Loose to medium compact gray sandy silt w/clay pockets | ML | 6 | 10-12 | 31 | 91 | OB | 0 | 667 | | | | |
| | | | | | | | 7 | 12-14 | 31 | | | | | | | | |
| | | 16 | | | | | 8 | 14.5-16 | 30 | | | | | | | | |
| | | 12 | | | Medium compact gray clayey silt | ML | 9 | 16.5-18 | 34 | | | | | | | | |
| 20 | 0.25 | | | | Loose to medium compact gray sandy silt w/clay pockets & layers | ML | 10 | 18-20 | 29 | 94 | OB | 0 | 469 | 25 | 14 | 11 | ORG%= 1.490 |
| | 1.50 | | | | | | 11 | 20-22 | 25 | | | | | | | | |
| | 1.25 | | | | | | 12 | 22-24 | 31 | | | | | | | | |
| | 1.25 | | | | Medium stiff gray clay | CH | 13 | 24-26 | 58 | 65 | UC | - | 650 | 73 | 22 | 51 | ORG%= 5.844 |
| | | 11 | | | Medium compact gray clayey silt | MIL | 14 | 26.5-28 | 33 | | | | | | | | |
| 30 | | 16 | | | Wood w/clay layers | WD | 15 | 28.5-30 | 35 | | | | | | | | |
| | 0.50 | | | | Soft gray clay w/silty sand pockets & wood | CH | 16 | 34-35 | 359 | | | | | | | | |
| 40 | 0.25 | | | | Soft dark gray clay w/humus layers | CH | 17 | 39-40 | | | | | | | | | |
| | | | | | Soft gray clay w/sand pockets & lenses | CH | 18 | 44-45 | 46 | 72 | UC | - | 333 | | | | |
| 50 | 1.00 | | | | | | 19 | 49-50 | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Ground Elev.: | Scale in Feet | PP | SPT | Datum: | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/09/07 | Boring: 19 | | | Refer to "Legends & Notes" | | | | | | |
|---------------|---------------|------|-----|------------------|--|----------------|-----------------------|------------------|-----------------------|---------|----------------------------|------------------|------|-----|-------------|----|----------------|
| | | | | | | | | Atterberg Limits | | | | | | | | | |
| | | | | S P L R | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Shear Tests | Atterberg Limits | | | Other Tests | | |
| | | | | | | | | | Dry | Wet | Type | e | C | LL | PL | PI | |
| 0 | | 0.25 | | | Soft gray clay w/roots | CH | 1 | 0-2 | 49 | | | | | 101 | 29 | 72 | ORG%= 6.916 |
| | | 0.50 | | | Soft gray clay | | 2 | 2-4 | 45 | | | | | | | | |
| | | 0.75 | | | Medium stiff tan & gray clay w/silt pockets | CH | 3 | 4-6 | 36 | 83 | UC | - | 759 | 40 | 19 | 21 | ORG%= 2.740 |
| | | 0.50 | | | Soft gray silty clay | CL | 4 | 6-8 | 36 | | | | | | | | |
| 10 | | | 7 | | Loose gray clayey silt | ML | 5 | 8.5-10 | 31 | | | | | | | | |
| | | | 9 | | w/clay pockets | | 6 | 11-12.5 | 34 | | | | | | | | |
| | | | 11 | | Loose to medium compact gray sandy silt w/clay pockets | ML | 7 | 13.5-15 | 30 | | | | | | | | |
| | | | 9 | | Medium dense to very dense gray silty sand w/clay pockets | SM | 8 | 16-17.5 | 32 | | | | | 28 | 16 | 12 | ORG%= 1.629 |
| 20 | | | | | Loose to medium compact gray sandy silt | ML | 9 | 18-20 | 26 | 96 | OB | 0 | 3736 | NP | NP | 16 | 9 |
| | | | 11 | | | | 10 | 20-22 | 27 | | | | | 25 | 16 | 9 | ORG%= 1.125 |
| | | | 12 | | | | 11 | 22.5-24 | 29 | | | | | | | | |
| | | | 12 | | | | 12 | 25-26.5 | 28 | | | | | | | | |
| 30 | | | | | Soft gray clay w/silt pockets | CH | 13 | 27.5-29 | 28 | | | | | | | | |
| | | 0.25 | | | | | 14 | 34-35 | | | | | | | | | |
| 40 | | | | | Medium stiff dark gray clay w/silt pockets & organic matter | CH | 15 | 39-40 | 63 | 61 | UC | - | 383 | 81 | 21 | 60 | |
| | | 0.75 | | | Soft to medium stiff gray clay w/silt pockets, shell fragments, & wood | CH | 16 | 44-45 | | | | | | | | | |
| 50 | | 0.25 | | | | | 17 | 49-50 | 49 | 69 | UC | - | 302 | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale In Feet | PP | SPT | Datum: | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|-----|------------------|--------|---|-----|------------------|------------------|-----------------------------|---------|-----|-------------|--------|-----|------------------|----|----|----------------|
| | | | S P L R | Symbol | | | | | | Dry | Wet | Type | ϕ | C | LL | PL | PI | |
| 50 | | | | | Soft to medium stiff gray clay w/silt pockets, shell fragments, & wood | CH | 18 | 54-55 | 47 | 74 | 109 | UC | - | 412 | 94 | 24 | 70 | |
| 60 | 0.50 | | | | Soft gray & tan clay w/wood & concretions | CH | 19 | 59-60 | 47 | 74 | 109 | UC | - | 412 | 94 | 24 | 70 | |
| | 0.50 | | | | Soft gray clay w/silt lenses & roots | CH | 20 | 64-65 | | | | | | | | | | |
| 70 | 0.25 | | | | w/silt pockets, shell fragments, & roots | CL | 21 | 69-70 | 39 | 81 | 112 | OB | 0 | 421 | | | | |
| | 0.25 | | | | Soft gray silty clay w/clay layers | | 22 | 74-75 | | | | | | | | | | |

Ground Elev.: Datum: Gr. Water Depth: See Text Job No.: 19728 Date Drilled: 5/09/07 Boring: 19 Refer to "Legends & Notes"

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Ground Elev.: Scale in Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/10-11/07 | Boring: 20 | | | Refer to "Legends & Notes" | | | | | | | |
|--------------------------------------|------|-----|--------|---|---|--|----------------|--------------------------|------------|-----------------------|-----|----------------------------|---------------|-----------------------|---------|-------------|------------------|-------------|--|
| | | | S | P | R | | | | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Shear Tests | Atterberg Limits | Other Tests | |
| | | | | | | | | | | Dry | Wet | Type | ϕ | C | LL | PL | PI | | |
| 50 | | | | | | Very soft gray clay w/wood | CH | 20 | 54-55 | 87 | 50 | 93 | OB | 0 | 137 | | | | |
| 60 | 0.25 | | | | | w/silt pockets & roots Soft gray silty clay | CI | 21 | 59-60 | | | | | | | | | | |
| 70 | | 15 | | | | Medium compact gray sandy silt w/clay pockets | ML | 22 | 64-65 | 26 | 96 | 122 | OB | 0 | 1150 | 25 | 14 | 11 | |
| 80 | | 18 | | | | Medium compact gray clayey silt | ML | 23 | 68.5-70 | 30 | | | | | | | | | |
| 90 | | | | | | | | 24 | 73.5-75 | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | |

Comments:

APPENDIX B

LABORATORY TEST RESULTS

All borings logs and the laboratory test summary sheets for the landfill borings were classified using the Unified Soil Classification System. The laboratory test summary sheets for the borrow investigation were classified using the following U. S. Army correlation Chart.

CORRELATION CHART

| SOIL CLASSIFICATION | | | LETTER AND COR-RELATION SUBSCRIPT | GRAIN SIZE PERCENTAGES | | APP PLASTICITY RANGE N.O. DIST. | | STRATIGRAPHIC SYMBOL | |
|---------------------------|--------------|----------------------------------|--|--|----------------------------------|----------------------------------|--------------------------------------|--------------------------------|--------|
| DEGREE OF PLASTICITY | NEW CLASS | OLD CLASS (per USCS) | | SAND | CLAY | LIQUID LIMIT | PLASTICITY INDEX | HATCHING | COLOR |
| HIGH | SOILS | FAT CLAY | FAT CLAY MEDIUM CLAY SILTY CLAY High | CH ₄ CH ₃ CH ₂ | 0-20 0-20 0-20 | 70-100 50-70 40-50 | 70-110 55-80 50-60 | 45-75 30-55 25-40 | Blue |
| | | FAT CLAY (SANDY) | MED. CLAY SANDY SILTY CLAY H-S SANDY CLAY High | CH _{3-s} CH _{2-s} CH ₁ | 20-50 20-30 30-60 | 50-70 40-50 40-50 | 50-70 50-60 50 | 25-50 25-40 30 | |
| | | FAT ORGANIC CLAY | SLIGHTLY ORGANIC ORGANIC HIGHLY ORGANIC | ABOVE "A" LINE BELOW CH _{0a} CH _{0b} CH _{0c} | | 40-80 | ABOVE "A" LINE 50+ 75+ 100+ | 22+ 40+ 60+ | |
| LOW | GRAINED | LEAN CLAY | SILTY CLAY Low CLAY SILT | CL ₆ CL ₄ | 0-20 0-20 | 30-40 20-30 | 40-50 28-43 | 20-35 10-25 | Green |
| | | SANDY CLAY | SILTY CLAY Low-S SANDY CLAY Low CLAY SILT SANDY CLAY SAND | CL _{6-s} CL ₅ CL _{4-s} CL ₃ | 20-30 30-60 20-38 38-60 | 30-40 30-40 20-30 20-30 | 40-50 30-45 25-40 20-35 | 20-35 15-30 8-20 3-15 | |
| | | LEAN ORGANIC CLAY | SLIGHTLY ORGANIC ORGANIC HIGHLY ORGANIC | CL _{0a} CL _{0b} CL _{0c} | | 10-40 | 30+ 50+ 70+ | 10+ 25+ 40+ | |
| SLIGHT | FINE | SILT | SILT SANDY SILT | ML ₃ ML ₂ | 0-20 0-20 | 5-15 5-20 | 25-28 22-28 | 2-6 0-6 | Green |
| | | SANDY SILT | SANDY SILT SANDY SILTY SAND | ML _{2-s} ML ₁ | 20-45 45-60 | 5-20 0-15 | 17-28 15-20 | 0-6 0-6 | |
| | | ORGANIC SILT | ORG. CLAY SILT ORG. SANDY SILT | OL ₄ OL ₂ | 0-20 0-20 | 20-30 5-20 | 30-40 28-40 | 6-15 2-10 | |
| | | ORGANIC SANDY SILT | ORG. SANDY SILT SANDY ORG. SILTY SAND | OL _{2-s} OL ₁ | 20-45 45-60 | 5-20 0-15 | 28-35 30 | 0-6 0-5 | |
| NONE TO SLIGHT PLASTICITY | SAND & SANDY | CLAYEY SAND | SANDY CLAY Low-S CLAY SAND SANDY SILTY SAND SANDY | SC _{3-s} SC _{2-s} SC ₁ | 60-70 60-80 60-90 | 30-40 20-30 10-20 | >28 | >6 | Yellow |
| | | SILTY SAND | SILTY SAND SANDY | SM ₁ | 60-80 | 0-15 | <28 | <6 | |
| | | SAND | SAND | SM _{1-s} SP | 80-90 90-100 | 0-20 0-10 | NONE PLASTIC | | |
| FIBROUS ORGANIC SOILS | | PEAT, HUMUS, & MATTED VEGETATION | PEAT | PL | | | 200+ | | Orange |

SHELLS

SI

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 1

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|----------------------------|-------|-------|-----|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|-----|-------------|-------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ARS ML, RT | CH4 | 43 | 43 | | | | | | | 40 | 16 | 24 | | ORGANIC CONTENT = 1.8% | |
| 2 | 2-4 | ST GR & T CL6-S W/ RT | CL6-S | 26 | 26 | | | | | | | 47 | 18 | 29 | | ORGANIC CONTENT = 2.0% | |
| 3 | 4-6 | M GR & T CH4 W/ RT | CH4 | 49 | 49 | | | | | | | | | | | | |
| 4 | 6-8 | M GR & T CH2 | CH2 | 38 | 38 | | | | | | | | | | | | |
| 5 | 8-10 | M GR & T CL6 W/ RT | CL6 | 33 | 33 | | | | | | | | | | | | |
| 6 | 10-12 | M GR & T CL6 W/ RT | CL6 | 34 | 34 | | | | | | | | | | | | |
| 7 | 12-14 | SO GR CL4 | CL4 | 37 | 37 | | | | | | | N/P | | | | | |
| 8 | 14-16 | GR ML2 | ML2 | 27 | 27 | | | | | | | | | | | | |
| 9 | 16-18 | GR SM1 | SM1 | 23 | 23 | | | | | | | | | | | | |
| 10 | 18-20 | GR SM1 | SM1 | 25 | 25 | | | | | | | | | | | | |
| 11 | 20-22 | SO GR CL6 | CL6 | 38 | 38 | | | | | | | 41 | 21 | 20 | | ORGANIC CONTENT = 2.2% | |
| 12 | 22-24 | SO GR CH4 W/ LNS ML | CH4 | 70 | 70 | | | | | | | | | | | | |
| 13 | 24-26 | ST GR & BR CHOC W/ WD | CHOC | 186 | 186 | | | | | | | | | | | | |
| 14 | 26-28 | ST GR & BR CHOC W/ WD | CHOC | 179 | 179 | | | | | | | 258 | 89 | 169 | | ORGANIC CONTENT = 42.1% | |
| 15 | 28-30 | SO GR CH4 W/ WD | CH4 | 65 | 65 | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-1

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (¢) | W% | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests | |
|---------------|---------------|---------------------------------|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|-------------|--|
| NS | 0 | | | | | | | | | | | | | | | | | |
| 1 | 34 | MST G CL W/ RT (FLOC) | CH | 3 | 64 | 61 | 100 | 98 | UC | - | 1079 | 539 | 106 | 27 | 79 | 0.400 | | |
| 2 | 39 | | | | | | | | | | | | | | | | | |
| 3 | 44 | MST G CL W/ SI POC, CONC (FLOC) | CH | 5 | 33 | 89 | 119 | 100 | UC | - | 1866 | 933 | | | | 0.700 | | |
| 4 | 49 | | | | | | | | | | | | | | | | | |
| 5 | 54 | ST G CL W/ CONC, SI POC (FLOC) | CH | 3 | 34 | 89 | 118 | 100 | UC | - | 3073 | 1536 | 85 | 25 | 60 | 0.900 | | |
| 6 | 59 | | | | | | | | | | | | | | | | | |
| 7 | 64 | SO G CL W/ SI POC | CH | 2 | 48 | 71 | 105 | 94 | UC | - | 578 | 289 | | | | 0.260 | | |
| 8 | 69 | | | | | | | | | | | | | | | | | |
| 9 | 74 | SO G CL W/ SI POC | CH | 9 | 42 | 76 | 108 | 93 | UC | - | 594 | 297 | 55 | 25 | 30 | 0.300 | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 2

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | z (f) | W% | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TsF | Other Tests | Sample Notes |
|---------------|---------------|-------------------------------|------|-------|----|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | MT CL6 W/ RT | CL6 | 28 | | | | | | | | | | | | | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | 34 | | | | | | | | | | | | | |
| 3 | 4-6 | ST GR & T CH2 W/ RT | CH2 | 30 | | | | | | | | 53 | 17 | 36 | | ORGANIC CONTENT = 2.5% | |
| 4 | 6-8 | ST GR & T CH4 W/ ARS ML, RT | CH4 | 42 | | | | | | | | | | | | | |
| 5 | 8-10 | ST GR & T CH4 W/ ARS ML | CH4 | 43 | | | | | | | | | | | | | |
| 6 | 10-12 | M GR & T CH4 W/ ARS ML | CH4 | 48 | | | | | | | | 89 | 26 | 63 | | ORGANIC CONTENT = 4.2% | |
| 7 | 12-14 | GR ML2 | ML2 | 26 | | | | | | | | N/P | | | | ORGANIC CONTENT = 0.7% | |
| 8 | 14-16 | SO GR CL4 | CL4 | 38 | | | | | | | | | | | | | |
| 9 | 16-18 | GR ML2 | ML2 | 29 | | | | | | | | | | | | | |
| 10 | 18-20 | GR ML2 | ML2 | 27 | | | | | | | | | | | | | |
| 11 | 20-22 | GR ML2 W/ RT | ML2 | 28 | | | | | | | | | | | | | |
| 12 | 22-24 | SO GR CH3 W/ LNS ML, RT | CH3 | 58 | | | | | | | | 69 | 22 | 47 | | ORGANIC CONTENT = 3.2% | |
| 13 | 24-26 | SO GR CH4 W/ LNS & LYS ML, RT | CH4 | 69 | | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CHOA W/ RT | CHOA | 103 | | | | | | | | | | | | | |
| 15 | 28-30 | M GR CH4 W/ ARS & LNS ML | CH4 | 53 | | | | | | | | 107 | 34 | 73 | | ORGANIC CONTENT = 3.1% | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
 Boring: B-2

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests | | |
|---------------|---------------|-----------------------------------|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|----|---------------|-------------|--|--|
| NS | 0 | | | | | | | | | | | | | | | | | | |
| 1 | 34 | | | | 72 | 58 | 99 | 100 | UC | - | 69 | 34 | 83 | 19 | 64 | 0.080 | | | |
| 2 | 39 | XSO G CL W/ SI POC, SH FRAG, CONC | CH | 9 | | | | | | | | | | | | | | | |
| 3 | 44 | | CH | 5 | 48 | 72 | 107 | 97 | UC | - | 1167 | 583 | 96 | 25 | 71 | 0.500 | | | |
| 4 | 49 | MST G CL W/ WD, SI POC (FLOC) | | | | | | | | | | | | | | | | | |
| 5 | 54 | | CL | 5 | 29 | 92 | 119 | 96 | UC | - | 676 | 338 | | | | 0.120 | | | |
| 6 | 59 | SO G SACL W/ SISA LAY | | | | | | | | | | | | | | | | | |
| 7 | 64 | | CH | 3 | 57 | 65 | 102 | 97 | UC | - | 877 | 438 | | | | 0.500 | | | |
| 8 | 69 | SO G CL W/ WD, CONC (FLOC) | | | | | | | | | | | | | | | | | |
| 9 | 74 | | | | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
 File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 3

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% Density (pcf) | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|-----------------------------|-------|-------|------------------|-------------------|-------------------|-------|-----------------|-------|----------------|----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ ARS ML, RT | CH4 | | 45 | | | | | | | 83 | 24 | 59 | | ORGANIC CONTENT = 5.1% | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | | 40 | | | | | | | 93 | 23 | 70 | | ORGANIC CONTENT = 3.9% | |
| 3 | 4-6 | M GR & T CH3 W/ ARS ML, RT | CH3 | | 46 | | | | | | | | | | | | |
| 4 | 6-8 | ST GR & T CH4 W/ ARS ML | CH4 | | 48 | | | | | | | | | | | | |
| 5 | 8-10 | M GR & T CH4 W/ ARS ML | CH4 | | 51 | | | | | | | 70 | 19 | 51 | | ORGANIC CONTENT = 3.1% | |
| 6 | 10-12 | M GR & T CL6-S W/ RT | CL6-S | | 39 | | | | | | | | | | | | |
| 7 | 12-14 | ST GR & T CH3 W/ ARS ML | CH3 | | 41 | | | | | | | | | | | | |
| 8 | 14-16 | VST GR & T CH3 W/ ARS ML | CH3 | | 36 | | | | | | | | | | | | |
| 9 | 16-18 | ST GR CH4 W/ CC | CH4 | | 47 | | | | | | | | | | | | |
| 10 | 18-20 | ST GR & T CH3 W/ ARS ML, CC | CH3 | | 39 | | | | | | | 76 | 23 | 53 | | ORGANIC CONTENT = 3.8% | |
| 11 | 20-22 | M GR CL6 | CL6 | | 40 | | | | | | | | | | | | |
| 12 | 22-24 | M GR CH3 W/ ARS ML, RT | CH3 | | 45 | | | | | | | | | | | | |
| 13 | 24-26 | SO GR CH2 | CH2 | | 44 | | | | | | | 51 | 19 | 32 | | ORGANIC CONTENT = 2.6% | |
| 14 | 26-28 | SO GR CH2 W/ RT | CH2 | | 43 | | | | | | | | | | | | |
| 15 | 28-30 | VST BR & BK PT W/ RT | PT | | 179 | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 4

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|------------------------------|-------|-------|------|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|-----|-------------|-------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ ARS ML | CH4 | | 45 | | | | | | | 71 | 17 | 54 | | ORGANIC CONTENT = 3.0% | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | | 32 | | | | | | | | | | | | |
| 3 | 4-6 | M GR & T CH3 W/ ARS SM | CH3 | | 40 | | | | | | | | | | | | |
| 4 | 6-8 | M GR & T CH2-S | CH2-S | | 34 | | | | | | | | | | | | |
| 5 | 8-10 | ST GR & T CH4 W/ RT | CH4 | | 47 | | | | | | | 88 | 30 | 58 | | ORGANIC CONTENT = 3.6% | |
| 6 | 10-12 | M GR & T CH4 W/ ARS ML, RT | CH4 | | 53 | | | | | | | | | | | | |
| 7 | 12-14 | M GR CH3 W/ ARS & LYS ML, RT | CH3 | | 41 | | | | | | | | | | | | |
| 8 | 14-16 | ST GR CH4 W/ CC | CH4 | | 50 | | | | | | | 78 | 22 | 56 | | ORGANIC CONTENT = 3.3% | |
| 9 | 18-18 | M GR & T CH3 W/ ARS ML, CC | CH3 | | 44 | | | | | | | | | | | | |
| 10 | 18-20 | ST GR CH4 W/ ARS ML, RT | CH4 | | 49 | | | | | | | | | | | | |
| 11 | 20-22 | ST GR CH4 W/ RT | CH4 | | 50 | | | | | | | 95 | 25 | 70 | | ORGANIC CONTENT = 3.4% | |
| 12 | 22-24 | M GR CH4 | CH4 | | 60 | | | | | | | | | | | | |
| 13 | 24-26 | SO GR CL6 | CL6 | | 43 | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CHOC W/ RT | CHOC | | 141 | | | | | | | 256 | 75 | 181 | | ORGANIC CONTENT = 28.9% | |
| 15 | 28-30 | ST GR CHOA W/ RT | CHOA | | 119 | | | | | | | | | | | | |
| 16 | 30-32 | - | | | | | | | | | | | | | | | |
| 17 | 32-34 | - | | | | | | | | | | | | | | | |
| 18 | 34-35 | - | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 5

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane ISF | Other Tests | Sample Notes |
|---------------|---------------|-----------------------------|------|-------|------|-------------------|-------------------|-------|-----------------|-------|----------------|----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR CH4 W/ ARS ML, RT | CH4 | 42 | | | | | | | | 92 | 26 | 66 | | ORGANIC CONTENT = 4.6% | |
| 2 | 2-4 | ST GR & T CH4 W/ ARS ML, RT | CH4 | 43 | | | | | | | | | | | | | |
| 3 | 4-6 | ST GR & T CH4 W/ RT | CH4 | 42 | | | | | | | | | | | | | |
| 4 | 6-8 | ST GR CH4 W/ ARS ML | CH4 | 44 | | | | | | | | | | | | | |
| 5 | 8-10 | ST GR & T CH4 W/ CC | CH4 | 44 | | | | | | | | | | | | | |
| 6 | 10-12 | ST GR CH4 W/ ARS ML | CH4 | 41 | | | | | | | | 76 | 23 | 53 | | ORGANIC CONTENT = 3.2% | |
| 7 | 12-14 | ST GR & T CH4 W/ ARS ML, CC | CH4 | 43 | | | | | | | | | | | | | |
| 8 | 14-16 | M GR CH4 W/ RT | CH4 | 54 | | | | | | | | | | | | | |
| 9 | 16-18 | M GR CH4 W/ ARS ML, RT | CH4 | 58 | | | | | | | | 97 | 30 | 67 | | ORGANIC CONTENT = 3.4% | |
| 10 | 18-20 | M GR CH3 W/ ARS ML, RT | CH3 | 55 | | | | | | | | | | | | | |
| 11 | 20-22 | ST GR CH4 W/ ARS SM, CC | CH4 | 45 | | | | | | | | | | | | | |
| 12 | 22-24 | ST GR & T CH4 W/ ARS SM, CC | CH4 | 47 | | | | | | | | 82 | 25 | 57 | | ORGANIC CONTENT = 2.9% | |
| 13 | 24-26 | ST GR CH4 W/ ARS SM, CC | CH4 | 48 | | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CH4 W/ ARS SM, CC | CH4 | 52 | | | | | | | | | | | | | |
| 15 | 28-30 | SO GR CH3 W/ ARS SM, RT | CH3 | 60 | | | | | | | | 66 | 21 | 45 | | ORGANIC CONTENT = 4.8% | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 7

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|-------------------------------|-------|-------|----|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR & T CL6 W/ RT | CL6 | | 26 | | | | | | | 50 | 21 | 29 | | ORGANIC CONTENT = 3.5% | |
| 2 | 2-4 | ST GR & T CL6-S W/ RT | CL6-S | | 26 | | | | | | | | | | | | |
| 3 | 4-6 | ST GR & T CH2-S W/ ARS SM, RT | CH2-S | | 31 | | | | | | | | | | | | |
| 4 | 6-8 | ST GR & T CH3 W/ ARS SM, RT | CH3 | | 35 | | | | | | | 68 | 21 | 47 | | ORGANIC CONTENT = 2.7% | |
| 5 | 8-10 | M GR & T CH3 W/ ARS SM | CH3 | | 46 | | | | | | | N/P | | | | ORGANIC CONTENT = 1.0% | |
| 6 | 10-12 | ST GR & T CH4 W/ ARS ML | CH4 | | 46 | | | | | | | | | | | | |
| 7 | 12-14 | GR ML2 | ML2 | | 28 | | | | | | | | | | | | |
| 8 | 14-16 | GR ML2 | ML2 | | 26 | | | | | | | | | | | | |
| 9 | 16-18 | GR ML2 | ML2 | | 30 | | | | | | | | | | | | |
| 10 | 18-20 | SO GR CH3 W/ ARS ML, RT | CH3 | | 51 | | | | | | | 72 | 22 | 50 | | ORGANIC CONTENT = 4.1% | |
| 11 | 20-22 | SO GR CH4 W/ ARS & LNS ML | CH4 | | 65 | | | | | | | | | | | | |
| 12 | 22-24 | M GR CH4 W/ RT, CC | CH4 | | 57 | | | | | | | | | | | | |
| 13 | 24-26 | M GR CH4 W/ RT, CC | CH4 | | 52 | | | | | | | | | | | | |
| 14 | 26-28 | M GR CH4 W/ ARS SM, CC | CH4 | | 52 | | | | | | | | | | | | |
| 15 | 28-30 | SO GR CL6 | CL6 | | 37 | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-8

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (F) | Wt % | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|---|------|-------|------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|--------------------|
| 1 | 0 | ST G S I C L W / V E G, R T | CL | | 36 | | | | | | | | 100 | 35 | 65 | | ORG. CONT. = 4.733 |
| 2 | 2 | ST B R & G C L W / S I P O C | CH | | 44 | 75 | 108 | 95 | UC | - | 2041 | 1021 | 106 | 35 | 71 | 0.750 | ORG. CONT. = 5.011 |
| 3 | 5 | ST G & B R C L W / S I P O C, R T | CH | 5 | 44 | 77 | 110 | 96 | UC | - | 1912 | 956 | 87 | 24 | 63 | 0.700 | ORG. CONT. = 3.811 |
| 4 | 8 | ST B R & G C L W / S I P O C | CH | | 39 | | | | | | | | | | | | ORG. CONT. = 4.291 |
| 5 | 11 | M S T G & B R C L W / S I P O C | CH | 5 | 51 | 60 | 100 | 99 | UC | - | 526 | 263 | 74 | 27 | 47 | 0.200 | ORG. CONT. = 4.291 |
| 6 | 14 | M S T G & T C L W / S I P O C | CH | | 42 | | | | | | | | | | | | ORG. CONT. = 3.036 |
| 7 | 17 | M S T G C L W / S A S I L A Y | CH | 4 | 41 | | | | | | | | | | | | |
| 8 | 20 | M S T T & G C L W / C O N C (F L O C) | CH | | 39 | | | | | | | | | | | | |
| 9 | 23 | S O G C L (F L O C) | CH | | 66 | | | | | | | | | | | | |
| 10 | 26 | V S O G S I C L W / W D | CL | | 37 | | | | | | | | | | | | |
| 11 | 29 | V S O G C L W / S A S I L A Y | CL | | 53 | | | | | | | | | | | | |
| 12 | 34 | X S O G C L W / S I S A P O C, W D | CH | 9 | 71 | 58 | 99 | 100 | UC | - | 86 | 43 | 64 | 20 | 44 | 0.120 | |
| 13 | 39 | - | | | | | | | | | | | | | | | |
| 14 | 44 | X S O G C L W / S I S A P O C, W D | CH | 6 | 72 | 56 | 96 | 97 | UC | - | 408 | 204 | 108 | 26 | 82 | 0.140 | |
| 15 | 49 | - | | | | | | | | | | | | | | | |
| 16 | 54 | V S O G C L W / S I P O C, S H F R A G, O | CH | 12 | 70 | 57 | 96 | 94 | UC | - | 368 | 184 | | | | 0.220 | |
| 17 | 59 | - | | | | | | | | | | | | | | | |
| 18 | 64 | V S O G C L W / O, S I P O C | CH | 10 | 77 | 53 | 94 | 95 | UC | - | 332 | 166 | | | | 0.140 | |
| 19 | 69 | - | | | | | | | | | | | | | | | |
| 20 | 74 | V S O G C L W / S I P O C | CH | 19 | 59 | 64 | 102 | 97 | UC | - | 375 | 187 | 75 | 24 | 51 | 0.200 | |

Remarks: _____

EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
 Boring: B-10

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (F) | Wt % | Dry Dens (pcf) | Wet Dens (pcf) | Sat & | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|---------------------------------|------|-------|------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|-----|---------------|-------------|
| 1 | 0 | VST BR SICL W/ VEG, OM | CL | | 26 | 89 | 115 | 88 | UC | - | 1308 | 654 | 70 | 21 | 49 | 0.500 | |
| 2 | 2 | MST BR & G SICL | CL | 5 | 29 | 89 | 115 | 88 | UC | - | 1308 | 654 | 70 | 21 | 49 | 0.500 | |
| 3 | 5 | ST G & BR CL W/ SI POC, RTS | CH | | 28 | 89 | 115 | 88 | UC | - | 1308 | 654 | 70 | 21 | 49 | 0.500 | |
| 4 | 8 | MST T & G SICL W/ CL LEN | CL | | 34 | 75 | 108 | 96 | UC | - | 1736 | 868 | 83 | 22 | 61 | 0.600 | |
| 5 | 11 | MST G & T CL W/ SI POC | CH | 10 | 45 | 75 | 108 | 96 | UC | - | 1736 | 868 | 83 | 22 | 61 | 0.600 | |
| 6 | 14 | SO G & T CL W/ SI POC | CH | | 38 | 75 | 108 | 96 | UC | - | 1736 | 868 | 83 | 22 | 61 | 0.600 | |
| 7 | 17 | VSO G CL W/ RT, SI POC | CH | | 63 | 71 | 106 | 97 | UC | - | 345 | 173 | 93 | 26 | 67 | 0.300 | |
| 8 | 20 | VSO G CL W/ SISA POC & SICL LAY | CH | 1 | 49 | 71 | 106 | 97 | UC | - | 345 | 173 | 93 | 26 | 67 | 0.300 | |
| 9 | 23 | VSO G CL W/ RTS | CH | | 66 | 71 | 106 | 97 | UC | - | 345 | 173 | 93 | 26 | 67 | 0.300 | |
| 10 | 26 | VSO G CL W/ SI POC | CH | | 70 | 44 | 89 | 96 | UC | - | 688 | 344 | 88 | 23 | 65 | 0.300 | |
| 11 | 29 | SO G CL W/ OM & WD | CH | 7 | 100 | 44 | 89 | 96 | UC | - | 688 | 344 | 88 | 23 | 65 | 0.300 | |
| 12 | 34 | - | CH | | 100 | 44 | 89 | 96 | UC | - | 688 | 344 | 88 | 23 | 65 | 0.300 | |
| 13 | 39 | SO G CL W/ SI POC (FLOC) | CH | 3 | 52 | 69 | 105 | 97 | UC | - | 715 | 358 | 149 | 37 | 112 | 0.400 | |
| 14 | 44 | - | CH | | 52 | 69 | 105 | 97 | UC | - | 715 | 358 | 149 | 37 | 112 | 0.400 | |
| 15 | 49 | VSO G CL W/ SI POC, SH FRAG, WD | CH | 11 | 58 | 63 | 100 | 95 | UC | - | 429 | 214 | 91 | 22 | 69 | 0.200 | |
| 16 | 54 | - | CH | | 58 | 63 | 100 | 95 | UC | - | 429 | 214 | 91 | 22 | 69 | 0.200 | |
| 17 | 59 | SO G SICL | CL | 11 | 44 | 75 | 108 | 95 | UC | - | 610 | 304 | 92 | 24 | 68 | 0.260 | |
| 18 | 64 | - | CL | | 44 | 75 | 108 | 95 | UC | - | 610 | 304 | 92 | 24 | 68 | 0.260 | |
| 19 | 69 | ST G CL W/ SI POC, CONC (FLOC) | CH | 4 | 51 | 68 | 103 | 94 | UC | - | 3199 | 1600 | 92 | 24 | 68 | 0.460 | |
| 20 | 74 | - | CH | | 51 | 68 | 103 | 94 | UC | - | 3199 | 1600 | 92 | 24 | 68 | 0.460 | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
 File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-17

Current Date: 5/31/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (F) | W _s | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|-----------------------------|------|-------|----------------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|-------|---------------|-------------|
| 1 | 0 | MST G CL W/ SI POC | CH | 4 | 38 | 77 | 106 | 86 | UC | - | 1056 | 528 | 97 | 22 | 75 | 0.620 | ORG%=5.148 |
| 2 | 2 | MST T & G CL | CH | | 43 | | | | | | | | | | | | |
| 3 | 4 | ST LT G & T SACL | CL | | 30 | | | | | | | | | | | | |
| 4 | 6 | SO LT G & T SACL | CL | | 33 | | | | | | | | | | | | |
| 5 | 8 | VLO T & G CLSI | ML | | 26 | | | | | | | | | | | | |
| 6 | 10 | MC G SASI W/ CL POC | ML | 8 | 31 | 91 | 119 | 100 | OB | 0 | | 667 | | | 0.200 | | |
| 7 | 12 | LO G SASI | ML | | 31 | | | | | | | | | | | | |
| 8 | 14.5 | MC G SASI | ML | | 30 | | | | | | | | | | | | |
| 9 | 16.5 | MC G CLSI | ML | | 34 | | | | | | | | | | | | |
| 10 | 18 | LO G SASI W/ CL POC | ML | 4 | 29 | 94 | 121 | 99 | OB | 0 | | 469 | 25 | 14 | 11 | 0.200 | ORG%=1.490 |
| 11 | 20 | MC G SASI W/ CL POC | ML | | 25 | | | | | | | | | | | | |
| 12 | 22 | MC G SASI W/ CL LAY | ML | | 31 | | | | | | | | | | | | |
| 13 | 24 | MST G CL | CH | 3 | 58 | 65 | 103 | 97 | UC | - | 1300 | 650 | 73 | 22 | 51 | 0.300 | ORG%=5.844 |
| 14 | 26.5 | MC G CLSI | ML | | 33 | | | | | | | | | | | | |
| 15 | 28.5 | MC G CLSI | ML | | 35 | | | | | | | | | | | | |
| 16 | 34 | WD W/ CL LAY | WD | | 359 | | | | | | | | | | | | |
| 17 | 39 | - | | | | | | | | | | | | | | | |
| 18 | 44 | SO G & DK G CL W/ HUMUS LAY | CH | 14 | 46 | 72 | 105 | 92 | UC | - | 665 | 333 | | | | 0.300 | |
| 19 | 49 | - | | | | | | | | | | | | | | | |
| 20 | 54 | XSO G & BR CL W/ SISA LEN | CH | 2 | 67 | 60 | 100 | 99 | OB | 0 | | 84 | 73 | 13 | 60 | 0.110 | |
| 21 | 59 | - | | | | | | | | | | | | | | | |
| 22 | 64 | MST G CL W/ SASI POC | CL | | 60 | | | | | | | | | | | | |
| 23 | 69 | - | | | | | | | | | | | | | | | |
| 24 | 74 | SO G SACL | CL | 5 | 29 | 92 | 119 | 94 | OB | 0 | | 343 | 29 | 18 | 11 | 0.210 | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-19

Current Date: 5/31/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (¢) | Wt | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|--|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|-------------|
| 1 | 0 | SO G CL W/ RTS | CH | | 49 | | | | | | | | 101 | 29 | 72 | | ORG%=6.916 |
| 2 | 2 | SO G CL | CH | | 45 | | | | | | | | | | | | |
| 3 | 4 | MST T & G CL W/ SI POC | CH | 5 | 36 | 83 | 113 | 94 | UC | - | 1518 | 759 | 40 | 19 | 21 | 0.550 | ORG%=2.740 |
| 4 | 6 | SO G S ICL | CL | | 36 | | | | | | | | | | | | |
| 5 | 8.5 | LO G CLSI | ML | | 31 | | | | | | | | | | | | |
| 6 | 11 | LO G CLSI W/ CL POC | ML | | 34 | | | | | | | | | | | | |
| 7 | 13.5 | MC G SASI W/ CL POC | ML | | 30 | | | | | | | | | | | | |
| 8 | 16 | LO G SASI W/ CL POC | ML | | 32 | | | | | | | | | | | | |
| 9 | 18 | MD G SISA | SM | | 26 | | | | | | | | | | | | |
| 10 | 20 | VD G SISA W/ CL POC | SM | 7 | 27 | 96 | 122 | 98 | OB | 0 | | 3736 | 25 | 16 | 9 | | ORG%=1.629 |
| 11 | 22.5 | LO G SASI | ML | | 29 | | | | | | | | | | | | |
| 12 | 25 | MC G SASI | ML | | 28 | | | | | | | | | | | | |
| 13 | 27.5 | MC G SASI | ML | | 28 | | | | | | | | | | | | |
| 14 | 34 | - | | | | | | | | | | | | | | | |
| 15 | 39 | SO G CL W/ SI POC (FLOC) | CH | 3 | 63 | 61 | 100 | 97 | UC | - | 765 | 383 | 81 | 21 | 60 | 0.300 | ORG%=1.125 |
| 16 | 44 | - | | | | | | | | | | | | | | | |
| 17 | 49 | SO G CL W/ SI POC, SH FRAG, WD | CH | 10 | 49 | 69 | 103 | 92 | UC | - | 604 | 302 | | | | 0.280 | |
| 18 | 54 | - | | | | | | | | | | | | | | | |
| 19 | 59 | SO G & T CL W/ WD, CONC (FLOC) | CH | 4 | 47 | 74 | 109 | 100 | UC | - | 824 | 412 | 94 | 24 | 70 | 0.450 | |
| 20 | 64 | - | | | | | | | | | | | | | | | |
| 21 | 69 | SO G CL W/ SI POC, SH FRAG, RTS (FLOC) | CH | 7 | 39 | 81 | 112 | 95 | OB | 0 | | 421 | | | | 0.300 | |
| 22 | 74 | - | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-20

Current Date: 6/4/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (F) | Wt | Dry Dens (pcf) | Wet Dens (pcf) | Sat & | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests | |
|---------------|---------------|-----------------------------|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|----|---------------|-------------|--|
| 1 | 0 | MST BR & G CL W/WD | CH | | 40 | | | | | | | | | | | | | |
| 2 | 2 | MST BR CL W/WD | CH | | 51 | 79 | 111 | 95 | UC | - | 1348 | 674 | 89 | 28 | 61 | | ORG%=6.998 | |
| 3 | 4 | MST LT G & T SICL W/CONC | CL | 3 | 40 | | | | | | | | | | | | | |
| 4 | 6 | MST BR CL | CH | | 48 | | | | | | | | | | | | | |
| 5 | 8 | MST BR CL W/ SI POC | CH | | 44 | | | | | | | | | | | | | |
| 6 | 10 | MST BR & T CL W/ SI POC | CH | | 34 | | | | | | | | | | | | | |
| 7 | 14 | MC G & T CLSI | ML | 14 | 32 | 90 | 118 | 100 | OB | 0 | | 528 | 81 | 32 | 49 | | ORG%=5.484 | |
| 8 | 16 | MD G SISA W/ CL POC | SM | | 26 | | | | | | | | | | | | | |
| 9 | 18 | MD G SISA W/ CL POC | SM | | 41 | | | | | | | | | | | | | |
| 10 | 20 | VLO G SASI | ML | | 32 | | | | | | | | | | | | | |
| 11 | 22 | SO G SACL W/ WD | CL | | 30 | | | | | | | | | | | | | |
| 12 | 24 | SO G SICL | CL | 10 | 39 | 83 | 114 | 100 | UC | - | 502 | 251 | 29 | 16 | 13 | | ORG%=2.461 | |
| 13 | 26 | LO G CLSA | SC | | 29 | | | | | | | | | | | | | |
| 14 | 28 | VSO G SICL | CL | | 38 | | | | | | | | | | | | | |
| 15 | 34 | VSO G CL W/ SI POC, SH FRAG | CH | 9 | 67 | 59 | 99 | 97 | UC | - | 345 | 172 | 39 | 24 | 15 | | ORG%=2.976 | |
| 16 | 39 | | | | | | | | | | | | | | | | | |
| 17 | 44 | VSO G SICL W/ RTS | CL | 6 | 40 | 80 | 111 | 96 | OB | 0 | | 218 | 32 | 16 | 16 | | | |
| 18 | 47 | | | | | | | | | | | | | | | | | |
| 19 | 49 | | | | | | | | | | | | | | | | | |
| 20 | 54 | VSO G CL W/ SI POC, RTS | CH | 5 | 87 | 50 | 93 | 98 | OB | 0 | | 137 | | | | | | |
| 21 | 59 | | | | | | | | | | | | | | | | | |
| 22 | 64 | C G SASI W/ CL POC | ML | 6 | 26 | 96 | 122 | 96 | OB | 0 | | 1150 | 25 | 14 | 11 | | | |
| 23 | 68.5 | | | | | | | | | | | | | | | | | |
| 24 | 73.5 | MC G SASI | ML | | 30 | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728



EUSTIS ENGINEERING SERVICES, L.L.C.

3011 28TH STREET
METAIRIE, LOUISIANA 70002-6019
PN 504-834-0157 / FN 504-834-0354
EMAIL: INFO@EUSTISENG.COM / SITE: WWW.EUSTISENG.COM

12 June 2007

Chapel Hill, LLC
Post Office Box 14310
Monroe, Louisiana 71207

Attention Mr. Jack Singleton

Gentlemen:

Additional Laboratory Tests
Borrow Investigation
Point Clear Industrial Park
St. Gabriel, Louisiana
Eustis Project No. 19695

Transmitted are the results of additional laboratory test results for the Phase I borrow borings. Two hydrometer tests were performed on Boring 1, Sample 6 (10-ft depth) and Boring 7, Sample 2 (2-ft depth). The results are shown graphically on a separate sheet. In addition, Boring 4, Sample 4 (6-ft depth) was washed on a No. 200 mesh sieve to determine the percentage passing. The results indicate 98.2% passed the No. 200 mesh sieve.

Thank you for asking us to perform these services. Should you have any questions or require further information, please contact us.

Yours very truly,

EUSTIS ENGINEERING SERVICES, L.L.C.

JOHN R. EUSTIS, P.E.

JRE:aln/jkd

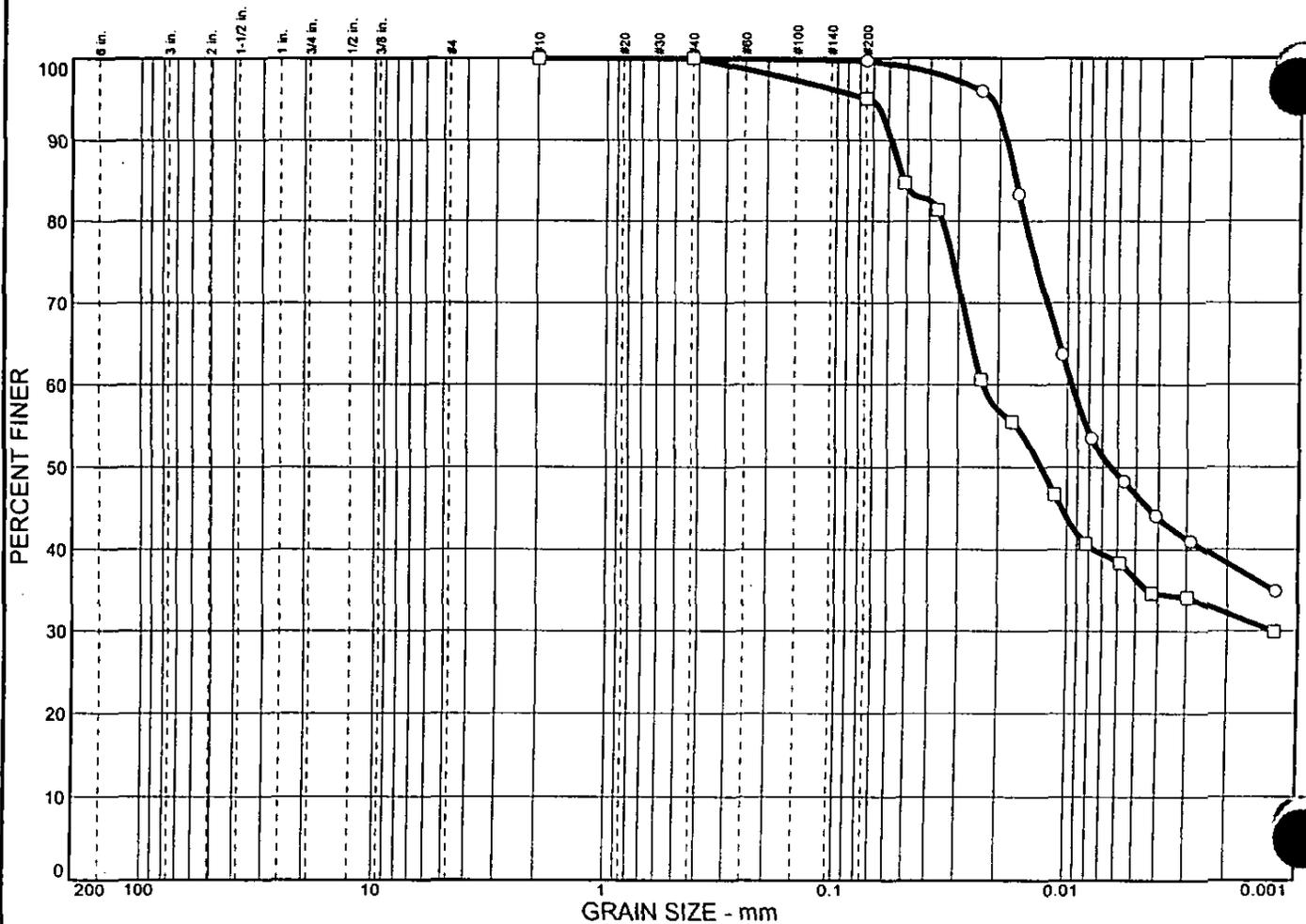
Enclosure

Chapel Hill, LLC
12 June 2007

Copy w/Enclosure to:
Kendrick Engineering, LLC
LSU Business & Technology Center
8000 GSRI Avenue, Building 3000
Baton Rouge, Louisiana 70820
Attention Mr. Brian Kendrick, P.E.

TRC Companies, Inc.
Two United Plaza
Suite 502
8550 United Plaza Boulevard
Baton Rouge, Louisiana 70809
Attention Mr. Michael K. Daigle, P.E.

Particle Size Distribution Report



| % COBBLES | % GRAVEL | | % SAND | | | % FINES | |
|-----------|----------|------|--------|--------|------|---------|------|
| | CRS. | FINE | CRS. | MEDIUM | FINE | SILT | CLAY |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 53.0 | 46.7 |
| □ | 0.0 | 0.0 | 0.0 | 0.0 | 4.9 | 58.7 | 36.4 |

| LL | PL | D ₈₅ | D ₆₀ | D ₅₀ | D ₃₀ | D ₁₅ | D ₁₀ | C _c | C _u |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ | | 0.0170 | 0.0096 | 0.0065 | | | | | |
| □ | | 0.0519 | 0.0234 | 0.0130 | 0.0013 | | | | |

| MATERIAL DESCRIPTION | USCS | AASHTO |
|----------------------|------|--------|
| ○ M GR & T CH2 | CH2 | |
| □ ST GR & T CL6 | CL6 | |

| | |
|---|---------------------------|
| Project No. 19695 Client: Project: POINT CLEAR INDUSTRIAL PARK BORROW INVESTIGATION ○ Source: 1 Sample No.: 6 Elev./Depth: 10 □ Source: 7 Sample No.: 2 Elev./Depth: 2 | Remarks: ○ □ |
|---|---------------------------|



Figure

POINT CLEAR INDUSTRIAL PARK - CLASS III LANDFILL,
 ST. GABRIEL (IBERVILLE PARISH), LOUISIANA
 EUSTIS PROJECT NO. 19728

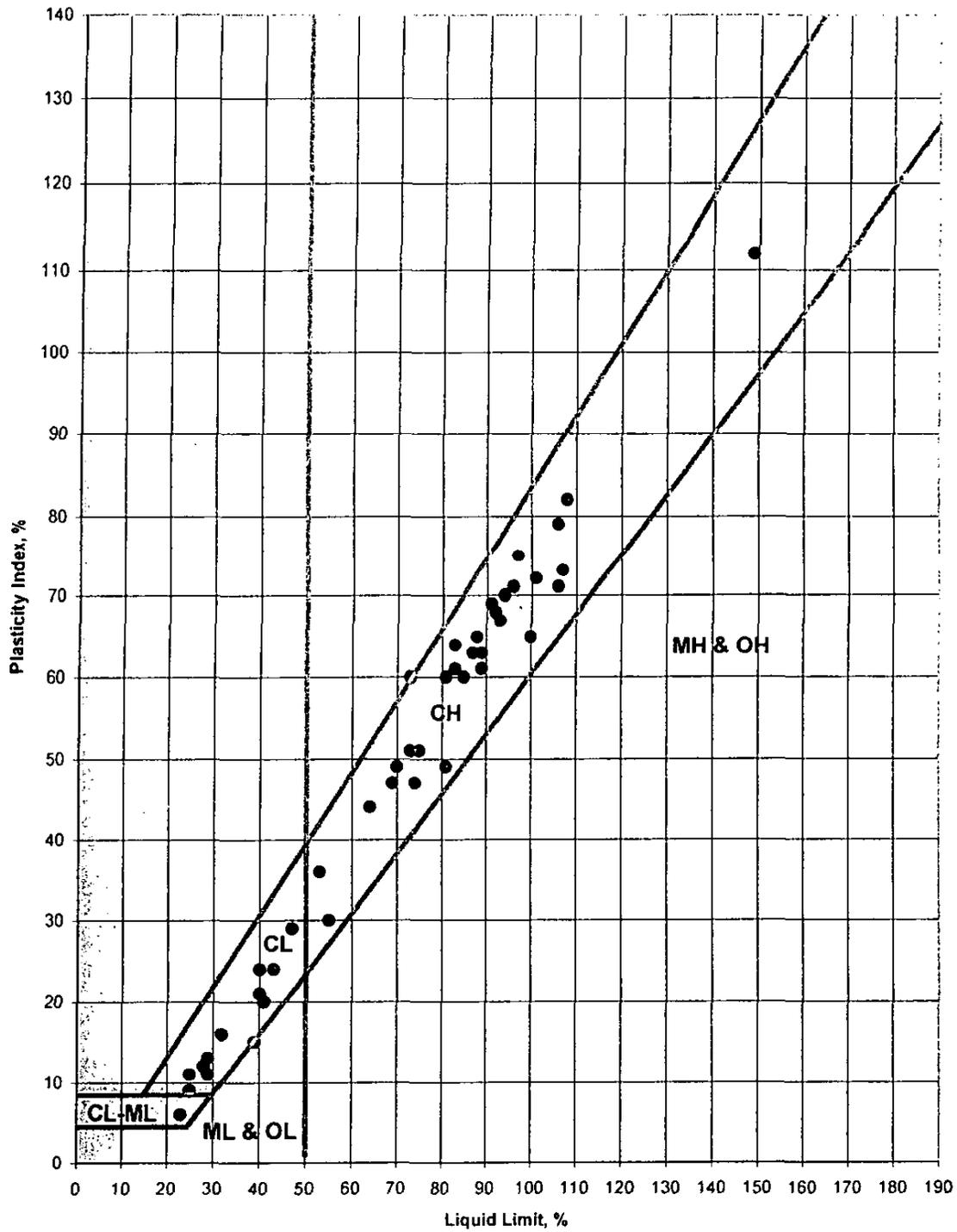
RESULTS OF SOIL MECHANICS LABORATORY TESTS

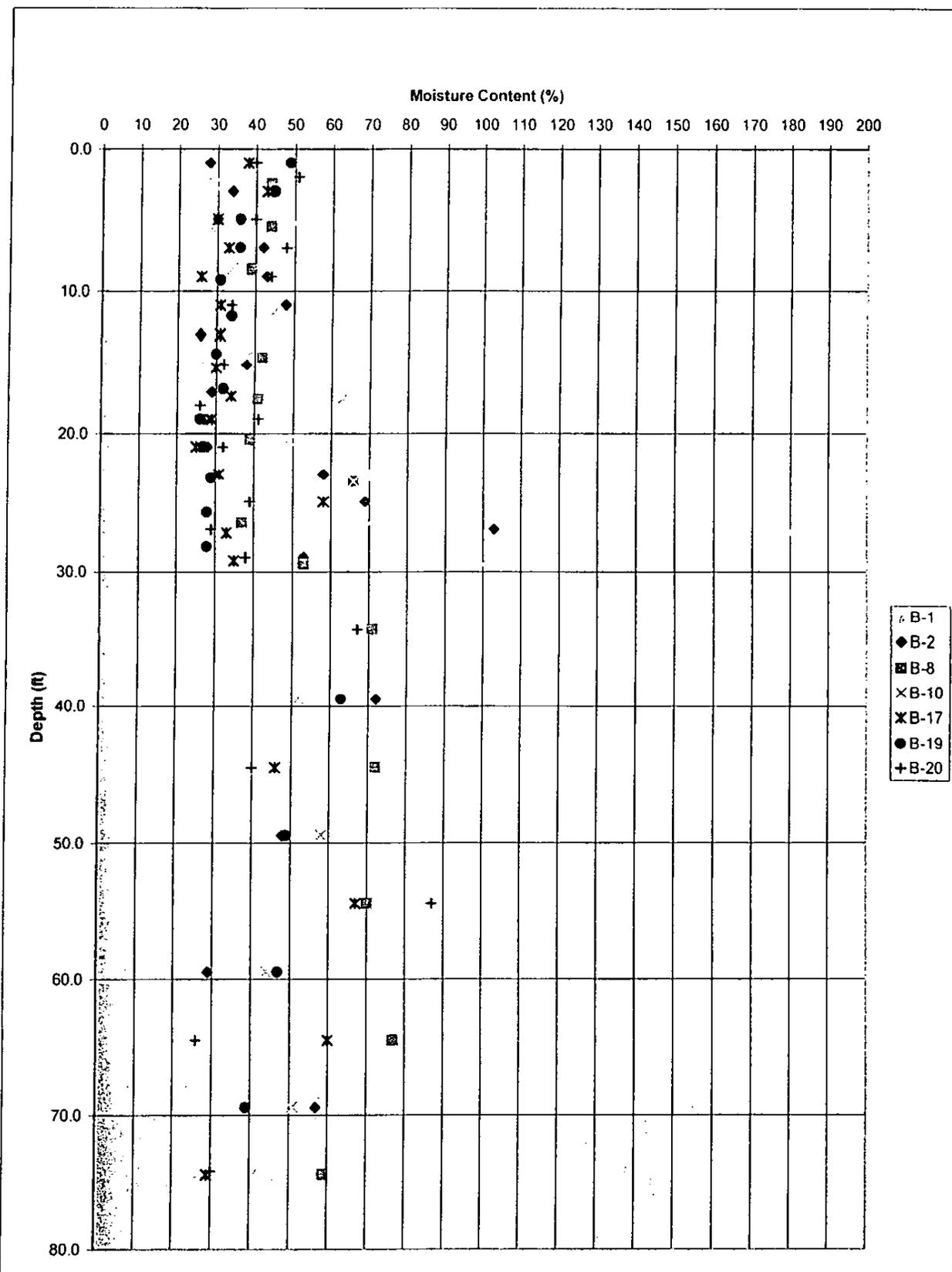
| BORING NUMBER | SAMPLE NUMBER | CLASSIFICATION ASTM D 2498 | INITIAL MOISTURE CONTENT ASTM D 2216 | DENSITY PCF | | COEFFICIENT OF PERMEABILITY AT 20° C CM / SEC. ASTM D 5084 | INITIAL SATURATION PERCENT |
|---------------|---------------|---|---|-------------|-------|--|----------------------------|
| | | | | DRY | WET | | |
| 8 | 13 | Soft gray clay w/ organic lens & roots (CH) | 62.0 | 64.6 | 104.6 | 6.9×10^{-9} | 100 |
| 8 | 15 | Soft gray clay w/ silt pockets & lenses, roots & organic layer (CH) | 63.1 | 62.3 | 101.6 | 1.0×10^{-7} | 100 |

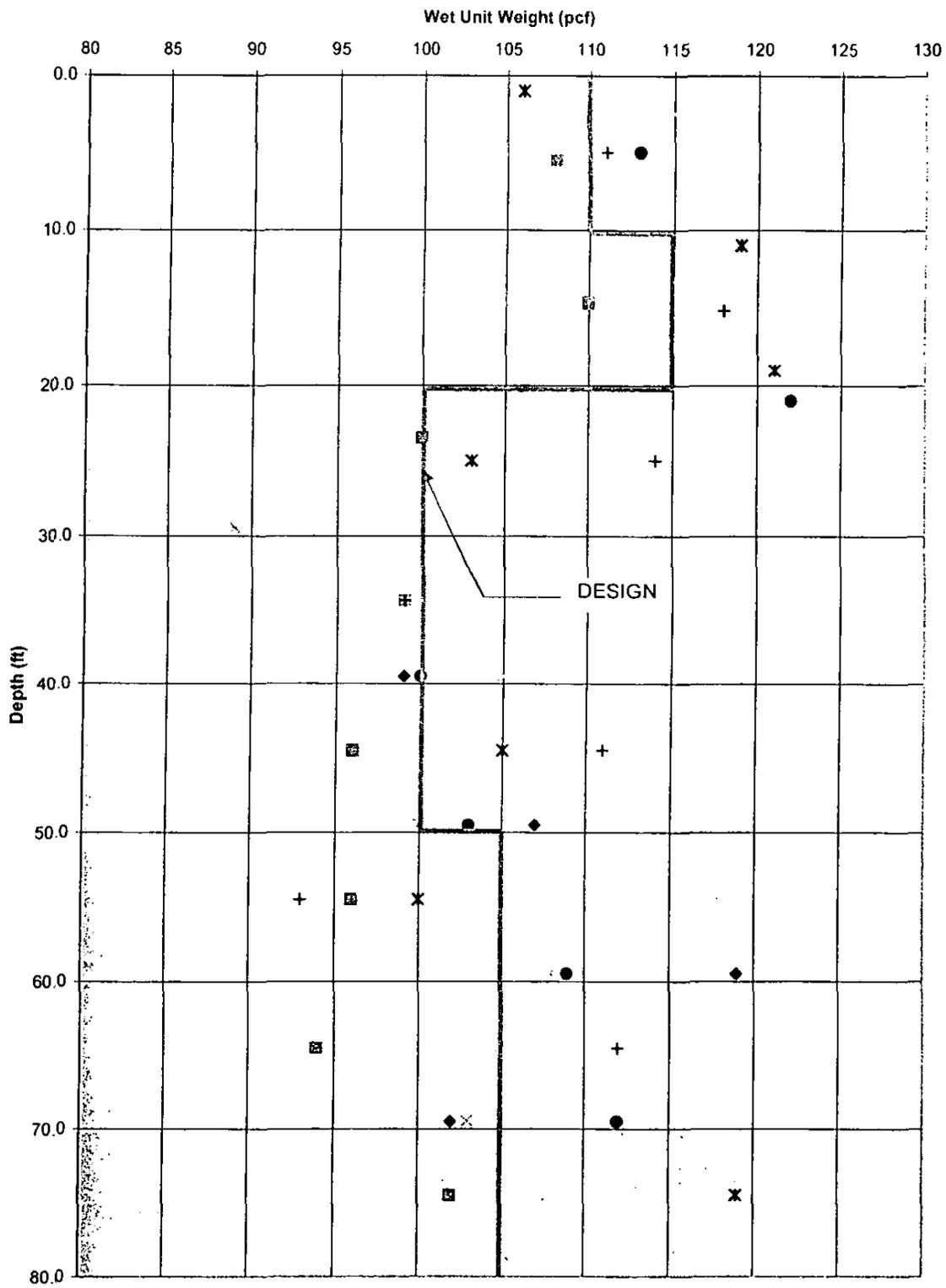
EUSTIS ENGINEERING COMPANY, INC.

APPENDIX C
DESIGN PARAMETERS

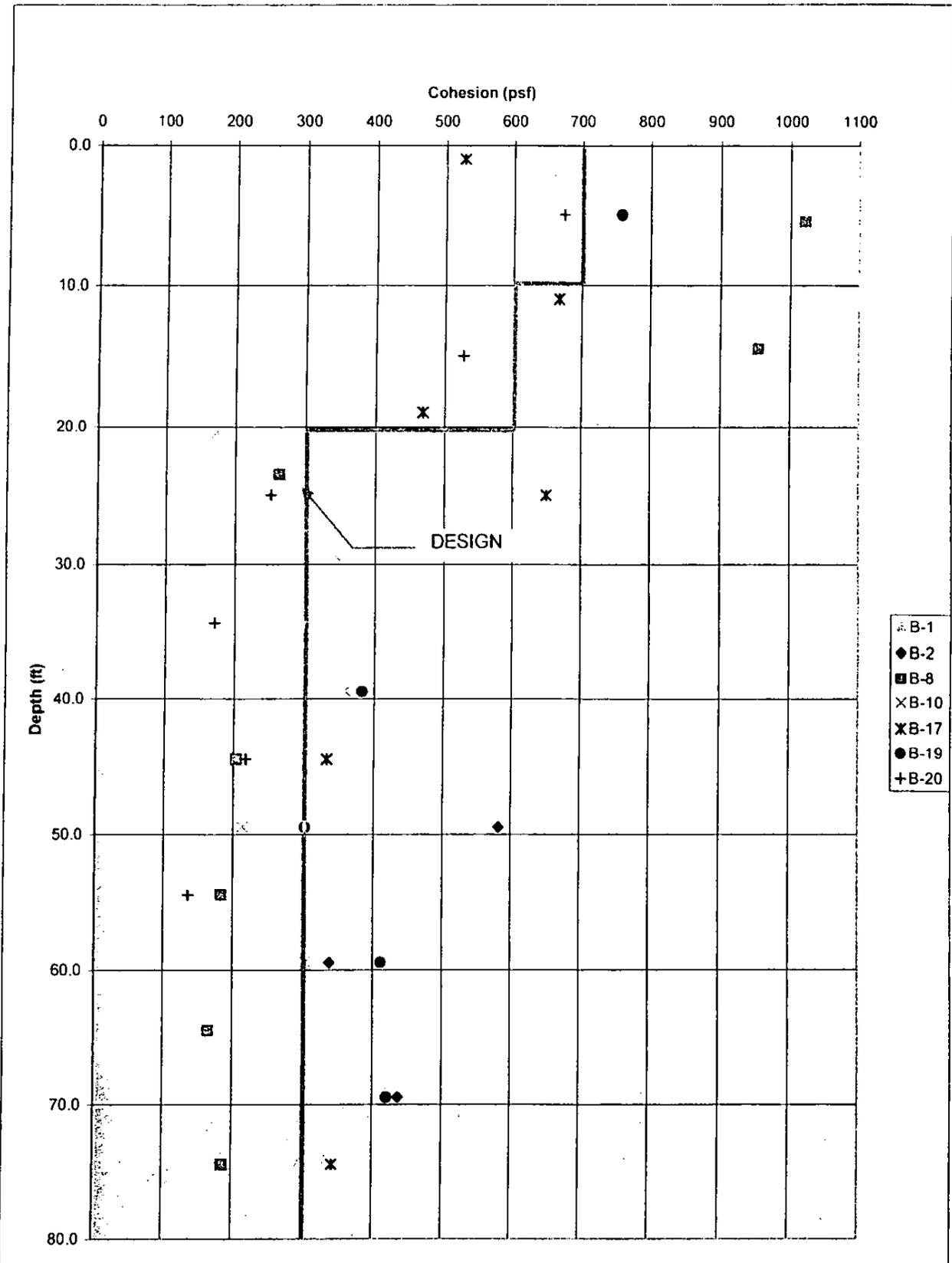
ATTERBERG LIMITS PLOT (ASTM D 4318)



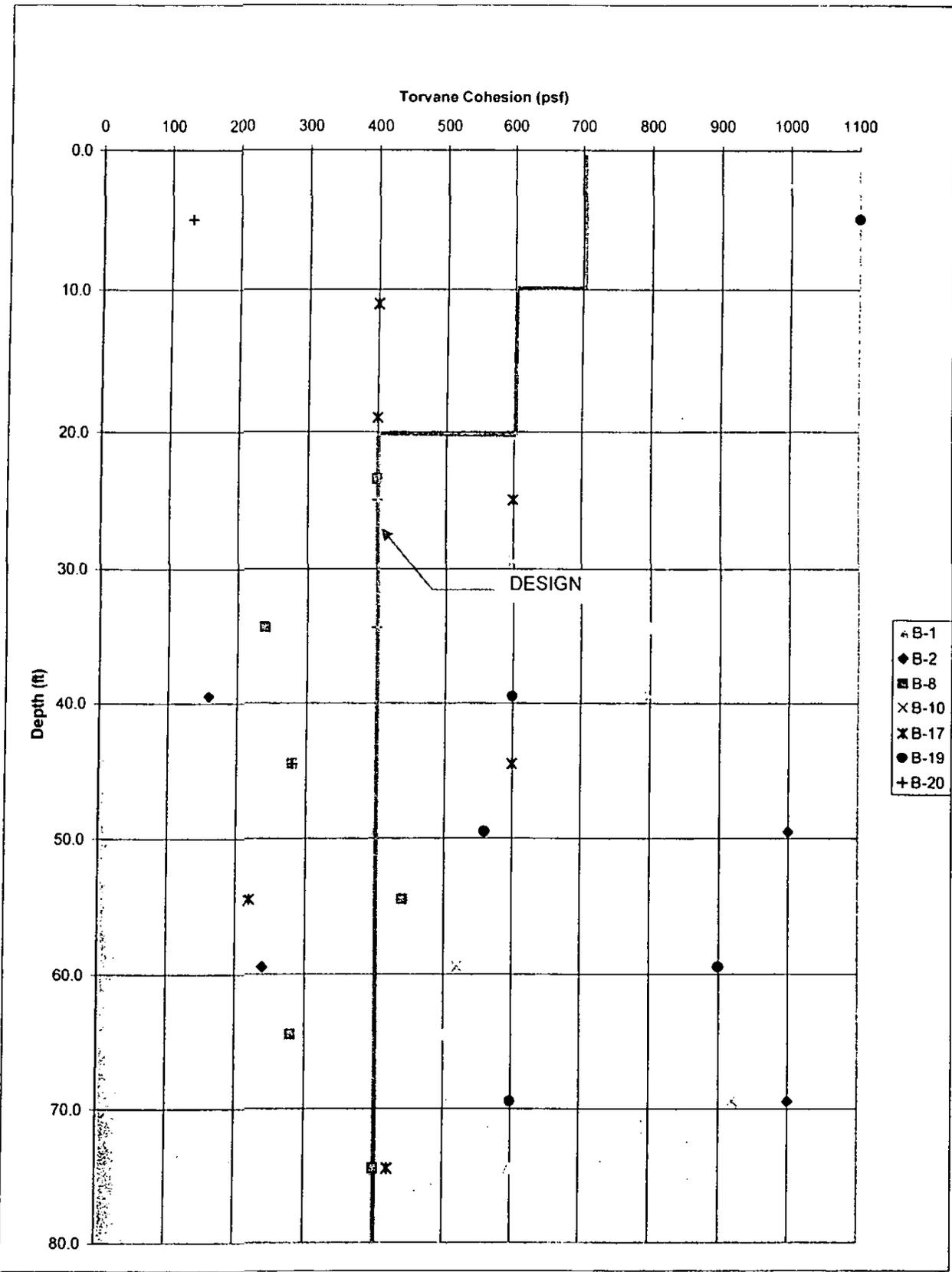




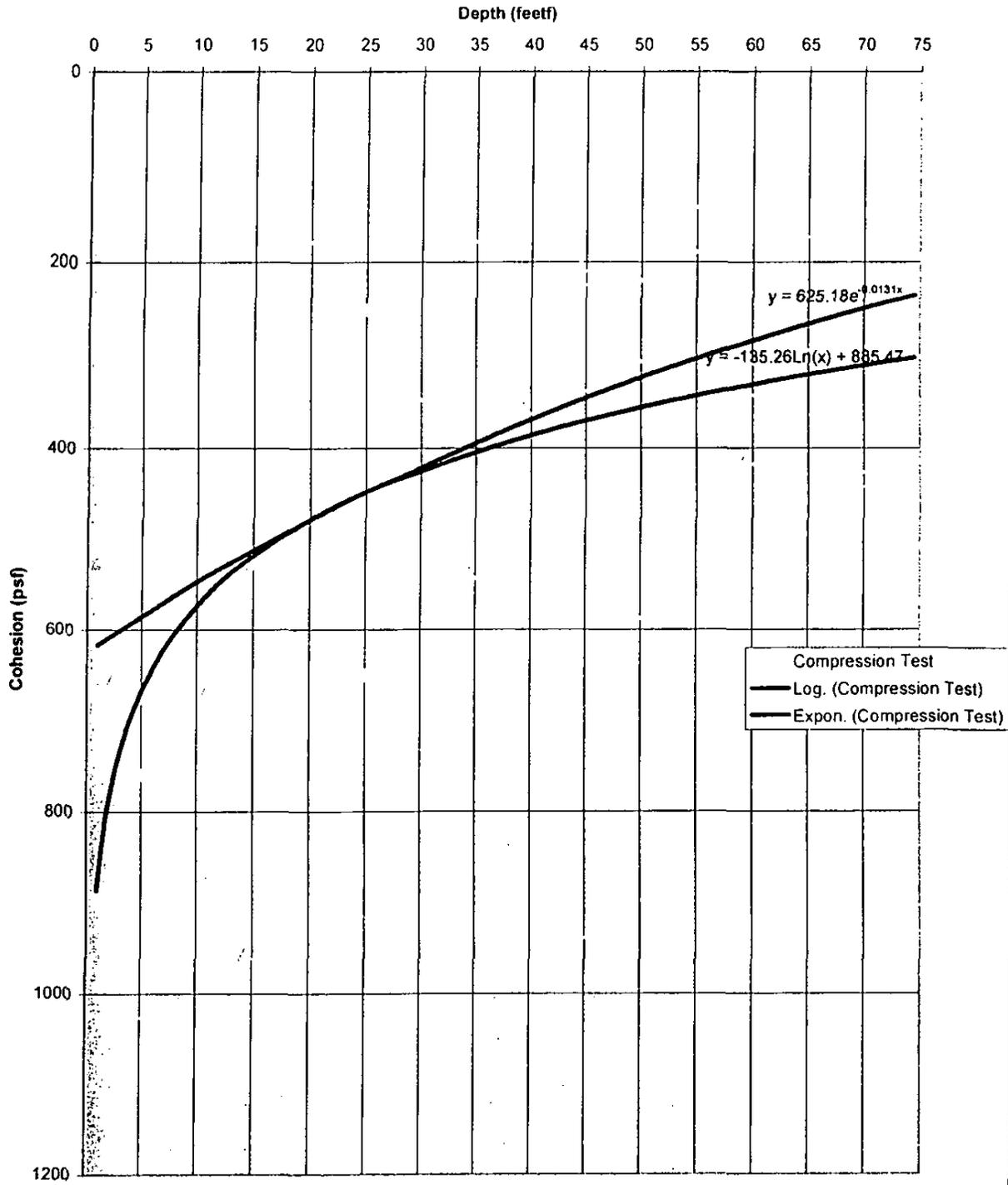
- B-1
- ◆ B-2
- B-8
- × B-10
- × B-17
- B-19
- + B-20



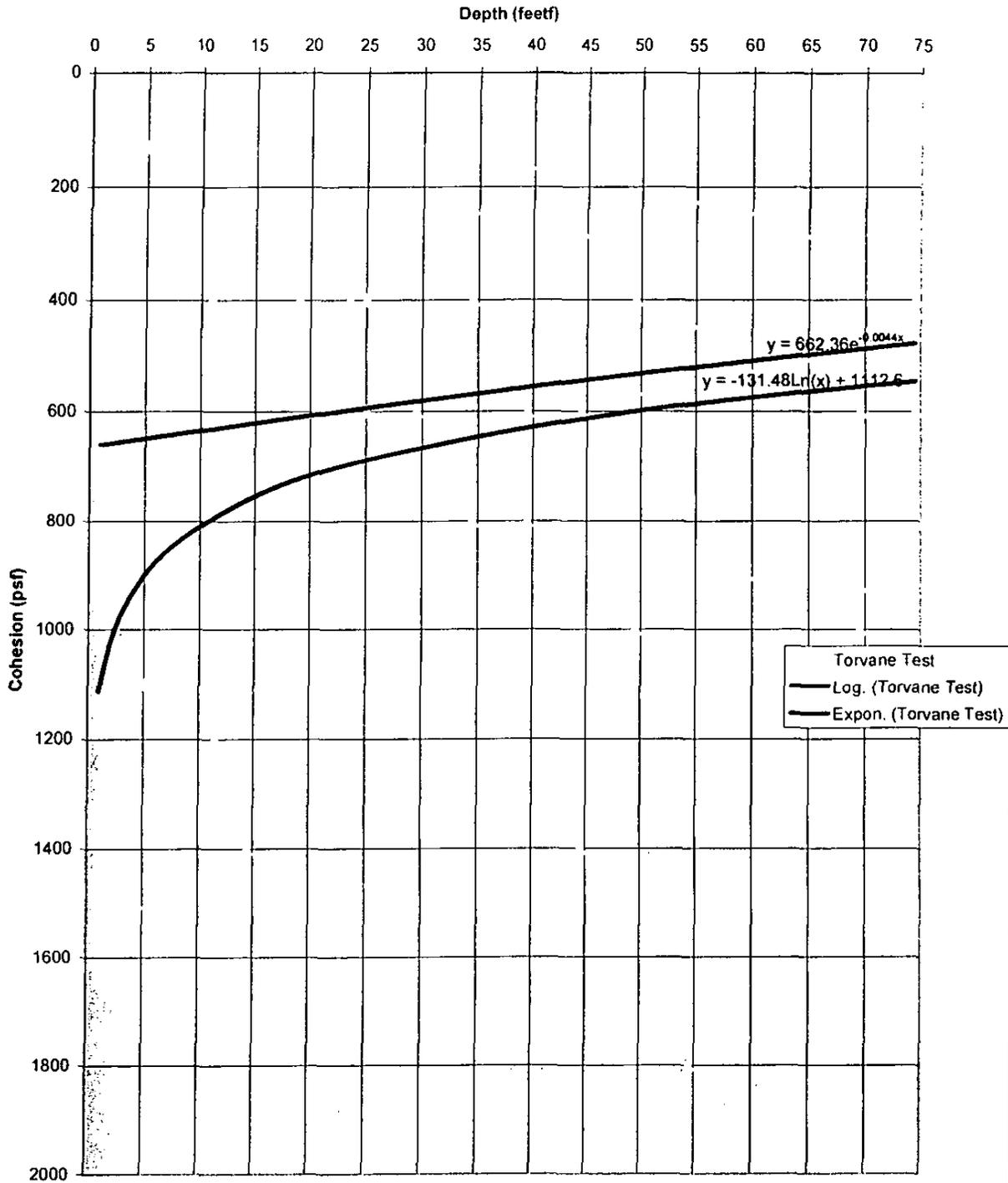
- B-1
- ◆ B-2
- B-8
- × B-10
- × B-17
- B-19
- + B-20



Correlation of Compression Test Results vs Depth



Correlation of Torvane Test Results vs Depth



APPENDIX D

ENGINEERING ANALYSES

```

*****
*           X S T A B L           *
*           *                     *
*           Slope Stability Analysis *
*           using the               *
*           Method of Slices        *
*           *                     *
*           Copyright (C) 1992 - 2004 *
*           Interactive Software Designs, Inc. *
*           Moscow, ID 83843, U.S.A. *
*           *                     *
*           All Rights Reserved     *
*           *                     *
*           Ver. 5.206               96 - 1969 *
*****
    
```

Problem Description : 3:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 130.0 | 85.0 | 2 |
| 2 | 130.0 | 85.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 4 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | |
|----|--------|--------|
| 3 | 25.03 | 71.23 |
| 4 | 32.79 | 64.93 |
| 5 | 40.86 | 59.03 |
| 6 | 49.23 | 53.55 |
| 7 | 57.86 | 48.51 |
| 8 | 66.75 | 43.92 |
| 9 | 75.85 | 39.79 |
| 10 | 85.16 | 36.13 |
| 11 | 94.65 | 32.96 |
| 12 | 104.28 | 30.28 |
| 13 | 114.04 | 28.10 |
| 14 | 123.90 | 26.42 |
| 15 | 133.83 | 25.25 |
| 16 | 143.81 | 24.59 |
| 17 | 153.81 | 24.44 |
| 18 | 163.80 | 24.81 |
| 19 | 173.76 | 25.69 |
| 20 | 183.66 | 27.08 |
| 21 | 193.48 | 28.98 |
| 22 | 203.19 | 31.38 |
| 23 | 212.76 | 34.28 |
| 24 | 222.17 | 37.66 |
| 25 | 231.40 | 41.52 |
| 26 | 240.41 | 45.85 |
| 27 | 249.19 | 50.64 |
| 28 | 257.71 | 55.87 |
| 29 | 265.95 | 61.53 |
| 30 | 273.90 | 67.61 |
| 31 | 281.51 | 74.08 |
| 32 | 288.79 | 80.94 |
| 33 | 295.70 | 88.17 |
| 34 | 302.24 | 95.74 |
| 35 | 305.55 | 100.00 |

**** Simplified BISHOP FOS = 1.528 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 15' Cut, No Pumping, t

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|----------|---------------|---------|--------|---------|----------|-----------|
| | (BISHOP) | x-coord | y-coord | | x-coord | x-coord | Moment |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft-lb) |
| 1. | 1.528 | 151.64 | 219.11 | 194.67 | 10.53 | 305.55 | 2.769E+07 |
| 2. | 1.529 | 154.75 | 217.01 | 191.67 | 15.79 | 306.54 | 2.690E+07 |
| 3. | 1.532 | 164.58 | 237.28 | 220.39 | 5.26 | 336.93 | 3.493E+07 |
| 4. | 1.535 | 161.96 | 224.96 | 202.37 | 15.79 | 321.07 | 2.968E+07 |
| 5. | 1.541 | 155.95 | 186.51 | 148.64 | 47.37 | 276.73 | 1.681E+07 |
| 6. | 1.542 | 144.17 | 201.64 | 169.60 | 21.05 | 279.84 | 2.138E+07 |
| 7. | 1.544 | 163.29 | 246.02 | 229.33 | .00 | 340.06 | 3.707E+07 |
| 8. | 1.544 | 142.53 | 217.53 | 190.80 | 5.26 | 292.76 | 2.645E+07 |
| 9. | 1.544 | 170.52 | 232.71 | 213.92 | 15.79 | 338.23 | 3.303E+07 |
| 10. | 1.547 | 160.97 | 191.90 | 155.99 | 47.37 | 286.93 | 1.834E+07 |

* * * END OF FILE * * *

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 135.00 | 84.00 |
| 3 | 150.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 200.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 10.53 | 85.00 |
| 2 | 17.60 | 77.93 |

XSTABL File: SG3_20T 6-25-07 14:23

```

*****
*                               *
*           X S T A B L         *
*                               *
*      Slope Stability Analysis  *
*            using the          *
*      Method of Slices         *
*                               *
*      Copyright (C) 1992 - 2004 *
*      Interactive Software Designs, Inc. *
*      Moscow, ID 83843, U.S.A.   *
*                               *
*      All Rights Reserved       *
*                               *
*      Ver. 5.206                96 - 1969 *
*****

```

Problem Description : 3:1 Slope, 20' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 4 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Weight Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|---------------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 150.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 10.0 ft and x = 50.0 ft

Each surface terminates between x = 250.0 ft and x = 325.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 14.21 | 80.00 |
| 2 | 21.28 | 72.93 |

| | | |
|----|--------|--------|
| 3 | 28.72 | 66.24 |
| 4 | 36.50 | 59.97 |
| 5 | 44.61 | 54.11 |
| 6 | 53.01 | 48.69 |
| 7 | 61.70 | 43.73 |
| 8 | 70.63 | 39.24 |
| 9 | 79.79 | 35.23 |
| 10 | 89.15 | 31.71 |
| 11 | 98.69 | 28.70 |
| 12 | 108.37 | 26.20 |
| 13 | 118.17 | 24.21 |
| 14 | 128.06 | 22.75 |
| 15 | 138.02 | 21.82 |
| 16 | 148.01 | 21.42 |
| 17 | 158.01 | 21.56 |
| 18 | 167.99 | 22.22 |
| 19 | 177.92 | 23.42 |
| 20 | 187.77 | 25.14 |
| 21 | 197.51 | 27.38 |
| 22 | 207.12 | 30.14 |
| 23 | 216.58 | 33.41 |
| 24 | 225.84 | 37.18 |
| 25 | 234.89 | 41.43 |
| 26 | 243.70 | 46.16 |
| 27 | 252.25 | 51.35 |
| 28 | 260.51 | 56.99 |
| 29 | 268.45 | 63.06 |
| 30 | 276.07 | 69.54 |
| 31 | 283.32 | 76.42 |
| 32 | 290.20 | 83.68 |
| 33 | 296.69 | 91.29 |
| 34 | 302.76 | 99.24 |
| 35 | 303.27 | 100.00 |

**** Simplified BISHOP FOS = 1.122 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 20' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center | | Radius (ft) | Initial | Terminal | Resisting Moment (ft-lb) |
|-----|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|--------------------------------|
| | | x-coord (ft) | y-coord (ft) | | x-coord (ft) | x-coord (ft) | |
| 1. | 1.122 | 150.51 | 209.23 | 187.82 | 14.21 | 303.27 | 2.607E+07 |
| 2. | 1.124 | 142.29 | 194.80 | 167.35 | 20.53 | 280.15 | 2.104E+07 |
| 3. | 1.124 | 149.08 | 204.24 | 180.30 | 18.42 | 296.14 | 2.411E+07 |
| 4. | 1.124 | 152.74 | 207.25 | 185.02 | 18.42 | 303.43 | 2.535E+07 |
| 5. | 1.125 | 150.96 | 201.56 | 176.77 | 22.63 | 295.57 | 2.327E+07 |
| 6. | 1.125 | 153.96 | 210.69 | 189.81 | 16.32 | 308.08 | 2.657E+07 |
| 7. | 1.125 | 140.99 | 200.56 | 174.95 | 14.21 | 284.13 | 2.278E+07 |
| 8. | 1.126 | 153.64 | 213.29 | 192.89 | 14.21 | 309.70 | 2.730E+07 |
| 9. | 1.127 | 140.00 | 190.55 | 161.23 | 22.63 | 273.35 | 1.963E+07 |
| 10. | 1.127 | 148.55 | 211.70 | 189.63 | 12.11 | 301.78 | 2.632E+07 |

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Problem Description : 3:1 Slope, 25' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 100.0 | 75.0 | 3 |
| 2 | 100.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 4 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 5 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 120.00 | 79.00 |
| 4 | 150.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 15.0 ft
and x = 60.0 ft

Each surface terminates between x = 250.0 ft
and x = 290.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 30 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 22.11 | 75.00 |
| 2 | 29.18 | 67.93 |
| 3 | 36.69 | 61.33 |
| 4 | 44.61 | 55.22 |
| 5 | 52.90 | 49.63 |
| 6 | 61.53 | 44.59 |
| 7 | 70.47 | 40.11 |
| 8 | 79.68 | 36.20 |
| 9 | 89.12 | 32.90 |
| 10 | 98.75 | 30.21 |
| 11 | 108.53 | 28.14 |
| 12 | 118.43 | 26.70 |
| 13 | 128.40 | 25.89 |
| 14 | 138.40 | 25.73 |
| 15 | 148.38 | 26.21 |
| 16 | 158.32 | 27.32 |
| 17 | 168.17 | 29.07 |
| 18 | 177.88 | 31.45 |
| 19 | 187.42 | 34.44 |
| 20 | 196.75 | 38.04 |
| 21 | 205.83 | 42.22 |
| 22 | 214.63 | 46.98 |
| 23 | 223.10 | 52.30 |
| 24 | 231.21 | 58.14 |
| 25 | 238.94 | 64.49 |
| 26 | 246.24 | 71.33 |
| 27 | 253.09 | 78.61 |
| 28 | 259.45 | 86.33 |
| 29 | 265.32 | 94.43 |
| 30 | 268.83 | 100.00 |

**** Simplified BISHOP FOS = .916 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 25' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|--------------|----------------------------|----------------------------|-------------|----------------------|-----------------------|--------------------------|
| 1. | .916 | 135.95 | 181.83 | 156.12 | 22.11 | 268.83 | 1.886E+07 |
| 2. | .916 | 137.01 | 183.08 | 157.74 | 22.11 | 271.06 | 1.921E+07 |
| 3. | .916 | 134.96 | 180.78 | 154.68 | 22.11 | 266.77 | 1.854E+07 |
| 4. | .916 | 134.28 | 182.52 | 157.11 | 19.74 | 267.91 | 1.908E+07 |
| 5. | .917 | 140.31 | 184.34 | 159.29 | 24.47 | 275.41 | 1.953E+07 |
| 6. | .918 | 137.95 | 176.84 | 148.98 | 29.21 | 265.49 | 1.730E+07 |
| 7. | .918 | 142.83 | 181.81 | 155.94 | 29.21 | 275.50 | 1.880E+07 |
| 8. | .918 | 132.05 | 180.25 | 153.92 | 19.74 | 263.32 | 1.838E+07 |
| 9. | .919 | 137.34 | 174.02 | 144.88 | 31.58 | 261.83 | 1.644E+07 |
| 10. | .920 | 131.11 | 185.12 | 160.03 | 15.00 | 266.58 | 1.965E+07 |

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Problem Description : 4:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 135.0 | 85.0 | 2 |
| 2 | 135.0 | 85.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 4 | 195.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 140.00 | 84.00 |
| 3 | 160.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 50.0 ft

Each surface terminates between x = 275.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 39 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 5.26 | 85.00 |
| 2 | 12.33 | 77.93 |
| 3 | 19.72 | 71.18 |
| 4 | 27.40 | 64.78 |
| 5 | 35.36 | 58.73 |
| 6 | 43.59 | 53.05 |
| 7 | 52.06 | 47.74 |
| 8 | 60.77 | 42.82 |
| 9 | 69.69 | 38.30 |
| 10 | 78.81 | 34.19 |
| 11 | 88.10 | 30.50 |
| 12 | 97.55 | 27.23 |
| 13 | 107.14 | 24.38 |
| 14 | 116.84 | 21.98 |
| 15 | 126.65 | 20.02 |
| 16 | 136.53 | 18.50 |
| 17 | 146.48 | 17.43 |
| 18 | 156.46 | 16.81 |
| 19 | 166.46 | 16.64 |
| 20 | 176.45 | 16.92 |
| 21 | 186.42 | 17.66 |
| 22 | 196.35 | 18.84 |
| 23 | 206.22 | 20.48 |
| 24 | 216.00 | 22.55 |
| 25 | 225.68 | 25.07 |
| 26 | 235.23 | 28.02 |
| 27 | 244.65 | 31.40 |
| 28 | 253.89 | 35.21 |
| 29 | 262.96 | 39.42 |
| 30 | 271.83 | 44.05 |
| 31 | 280.48 | 49.06 |
| 32 | 288.89 | 54.47 |
| 33 | 297.05 | 60.25 |
| 34 | 304.95 | 66.39 |
| 35 | 312.55 | 72.88 |
| 36 | 319.86 | 79.71 |
| 37 | 326.85 | 86.86 |
| 38 | 333.50 | 94.32 |
| 39 | 338.13 | 100.00 |

**** Simplified BISHOP FOS = 1.531 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 15' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.531 | 165.17 | 237.84 | 221.21 | 5.26 | 338.13 | 3.518E+07 |
| 2. | 1.532 | 170.34 | 240.43 | 224.83 | 7.89 | 345.86 | 3.627E+07 |
| 3. | 1.532 | 164.20 | 234.30 | 216.15 | 7.89 | 333.54 | 3.368E+07 |
| 4. | 1.534 | 167.10 | 238.08 | 220.86 | 7.89 | 339.41 | 3.497E+07 |
| 5. | 1.534 | 172.13 | 239.89 | 223.84 | 10.53 | 346.85 | 3.594E+07 |
| 6. | 1.534 | 163.64 | 237.36 | 219.76 | 5.26 | 335.11 | 3.463E+07 |
| 7. | 1.537 | 166.30 | 220.55 | 196.75 | 23.68 | 321.76 | 2.825E+07 |
| 8. | 1.538 | 159.75 | 227.89 | 206.60 | 10.53 | 321.94 | 3.087E+07 |
| 9. | 1.538 | 168.59 | 223.31 | 200.32 | 23.68 | 326.39 | 2.916E+07 |
| 10. | 1.539 | 170.89 | 234.55 | 215.46 | 15.79 | 339.10 | 3.331E+07 |

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XSTABL File: SG4_20T 6-25-07 14:38

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Problem Description : 4:1 Slope, 20' Cut, No Pumping, t

SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 4 | 195.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 160.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 50.0 ft

Each surface terminates between x = 250.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 15.79 | 80.00 |
| 2 | 22.87 | 72.94 |

| | | |
|----|--------|--------|
| 3 | 30.31 | 66.26 |
| 4 | 38.09 | 59.97 |
| 5 | 46.19 | 54.10 |
| 6 | 54.58 | 48.67 |
| 7 | 63.25 | 43.68 |
| 8 | 72.16 | 39.15 |
| 9 | 81.30 | 35.10 |
| 10 | 90.64 | 31.53 |
| 11 | 100.16 | 28.45 |
| 12 | 109.82 | 25.88 |
| 13 | 119.61 | 23.81 |
| 14 | 129.49 | 22.26 |
| 15 | 139.43 | 21.23 |
| 16 | 149.42 | 20.73 |
| 17 | 159.42 | 20.74 |
| 18 | 169.41 | 21.28 |
| 19 | 179.35 | 22.34 |
| 20 | 189.22 | 23.92 |
| 21 | 199.00 | 26.02 |
| 22 | 208.66 | 28.62 |
| 23 | 218.16 | 31.73 |
| 24 | 227.49 | 35.33 |
| 25 | 236.62 | 39.42 |
| 26 | 245.52 | 43.97 |
| 27 | 254.17 | 48.99 |
| 28 | 262.55 | 54.45 |
| 29 | 270.63 | 60.34 |
| 30 | 278.39 | 66.65 |
| 31 | 285.80 | 73.36 |
| 32 | 292.86 | 80.44 |
| 33 | 299.54 | 87.89 |
| 34 | 305.81 | 95.67 |
| 35 | 308.94 | 100.00 |

**** Simplified BISHOP FOS = 1.133 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 20' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.133 | 154.11 | 211.58 | 190.91 | 15.79 | 308.94 | 2.684E+07 |
| 2. | 1.135 | 150.13 | 213.22 | 192.97 | 10.53 | 306.34 | 2.735E+07 |
| 3. | 1.135 | 160.30 | 212.62 | 192.30 | 21.05 | 316.10 | 2.719E+07 |
| 4. | 1.137 | 161.12 | 207.85 | 185.79 | 26.32 | 312.34 | 2.554E+07 |
| 5. | 1.137 | 158.78 | 205.78 | 182.67 | 26.32 | 307.64 | 2.472E+07 |
| 6. | 1.139 | 153.32 | 197.50 | 171.10 | 28.95 | 293.83 | 2.191E+07 |
| 7. | 1.139 | 145.81 | 208.51 | 186.59 | 10.53 | 297.57 | 2.573E+07 |
| 8. | 1.140 | 154.12 | 201.96 | 176.66 | 26.32 | 298.33 | 2.316E+07 |
| 9. | 1.140 | 153.21 | 216.10 | 195.29 | 13.16 | 310.19 | 2.772E+07 |
| 10. | 1.140 | 152.37 | 203.03 | 178.03 | 23.68 | 297.47 | 2.347E+07 |

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```

Problem Description : 4:1 Slope, 25' Cut, No Pumping, t

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 95.0 | 75.0 | 3 |
| 2 | 95.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 4 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 5 | 195.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 120.00 | 80.00 |
| 4 | 160.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 50.0 ft

Each surface terminates between x = 250.0 ft and x = 300.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 31 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 30.26 | 75.00 |
| 2 | 37.35 | 67.95 |
| 3 | 44.87 | 61.35 |
| 4 | 52.79 | 55.24 |
| 5 | 61.07 | 49.64 |
| 6 | 69.69 | 44.57 |
| 7 | 78.61 | 40.05 |
| 8 | 87.80 | 36.10 |
| 9 | 97.21 | 32.73 |
| 10 | 106.82 | 29.96 |
| 11 | 116.58 | 27.80 |
| 12 | 126.46 | 26.26 |
| 13 | 136.42 | 25.34 |
| 14 | 146.42 | 25.04 |
| 15 | 156.41 | 25.37 |
| 16 | 166.37 | 26.33 |
| 17 | 176.24 | 27.92 |
| 18 | 186.00 | 30.11 |
| 19 | 195.59 | 32.92 |
| 20 | 205.00 | 36.32 |
| 21 | 214.17 | 40.31 |
| 22 | 223.07 | 44.86 |
| 23 | 231.67 | 49.97 |
| 24 | 239.93 | 55.60 |
| 25 | 247.83 | 61.74 |
| 26 | 255.32 | 68.36 |
| 27 | 262.38 | 75.44 |
| 28 | 268.98 | 82.95 |
| 29 | 275.10 | 90.86 |
| 30 | 280.72 | 99.14 |
| 31 | 281.22 | 100.00 |

**** Simplified BISHOP FOS = .938 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 25' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | .938 | 146.11 | 184.34 | 159.30 | 30.26 | 281.22 | 1.953E+07 |
| 2. | .938 | 147.58 | 182.88 | 157.45 | 32.89 | 281.40 | 1.914E+07 |
| 3. | .939 | 142.79 | 182.02 | 156.25 | 28.95 | 275.70 | 1.887E+07 |
| 4. | .939 | 149.15 | 181.55 | 155.76 | 35.53 | 281.76 | 1.878E+07 |
| 5. | .940 | 141.47 | 180.51 | 154.25 | 28.95 | 272.96 | 1.845E+07 |
| 6. | .940 | 151.27 | 182.73 | 157.16 | 36.84 | 284.84 | 1.907E+07 |
| 7. | .941 | 140.23 | 180.57 | 154.35 | 27.63 | 271.78 | 1.847E+07 |
| 8. | .941 | 150.01 | 180.11 | 153.48 | 38.16 | 280.86 | 1.826E+07 |
| 9. | .942 | 151.80 | 180.35 | 154.00 | 39.47 | 283.09 | 1.839E+07 |
| 10. | .942 | 140.23 | 179.22 | 152.47 | 28.95 | 270.47 | 1.807E+07 |

* * * END OF FILE * * *

XSTABL File: SG5_15T 6-25-07 14:48

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Problem Description : 5:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 140.0 | 85.0 | 2 |
| 2 | 140.0 | 85.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 4 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 145.00 | 84.00 |
| 3 | 170.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 75.0 ft

Each surface terminates between x = 270.0 ft and x = 310.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 32 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 43.42 | 85.00 |
| 2 | 50.49 | 77.93 |

| | | |
|----|--------|--------|
| 3 | 57.96 | 71.28 |
| 4 | 65.80 | 65.07 |
| 5 | 73.97 | 59.31 |
| 6 | 82.47 | 54.04 |
| 7 | 91.25 | 49.25 |
| 8 | 100.30 | 44.98 |
| 9 | 109.57 | 41.24 |
| 10 | 119.04 | 38.03 |
| 11 | 128.68 | 35.37 |
| 12 | 138.46 | 33.27 |
| 13 | 148.34 | 31.73 |
| 14 | 158.29 | 30.76 |
| 15 | 168.28 | 30.36 |
| 16 | 178.28 | 30.53 |
| 17 | 188.25 | 31.28 |
| 18 | 198.16 | 32.59 |
| 19 | 207.99 | 34.47 |
| 20 | 217.68 | 36.92 |
| 21 | 227.22 | 39.91 |
| 22 | 236.58 | 43.44 |
| 23 | 245.72 | 47.51 |
| 24 | 254.60 | 52.09 |
| 25 | 263.22 | 57.17 |
| 26 | 271.52 | 62.74 |
| 27 | 279.50 | 68.77 |
| 28 | 287.11 | 75.25 |
| 29 | 294.34 | 82.16 |
| 30 | 301.17 | 89.47 |
| 31 | 307.56 | 97.16 |
| 32 | 309.66 | 100.00 |

**** Simplified BISHOP FOS = 1.563 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 15' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.563 | 170.25 | 204.84 | 174.49 | 43.42 | 309.66 | 2.259E+07 |
| 2. | 1.563 | 170.27 | 204.97 | 174.59 | 43.42 | 309.70 | 2.260E+07 |
| 3. | 1.565 | 171.68 | 204.14 | 173.14 | 46.05 | 309.97 | 2.222E+07 |
| 4. | 1.565 | 170.43 | 202.31 | 170.97 | 46.05 | 307.35 | 2.176E+07 |
| 5. | 1.566 | 166.06 | 208.46 | 179.67 | 35.53 | 309.25 | 2.386E+07 |
| 6. | 1.567 | 165.11 | 210.20 | 182.09 | 32.89 | 309.98 | 2.445E+07 |
| 7. | 1.567 | 179.45 | 195.53 | 161.39 | 61.84 | 309.45 | 1.956E+07 |
| 8. | 1.568 | 173.22 | 197.55 | 164.00 | 53.95 | 304.96 | 2.011E+07 |
| 9. | 1.568 | 167.40 | 204.70 | 174.24 | 40.79 | 306.59 | 2.252E+07 |
| 10. | 1.568 | 166.34 | 209.39 | 180.51 | 35.53 | 309.87 | 2.400E+07 |

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Problem Description : 5:1 Slope, 20' Cut, No Pumping, t.

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 4 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 170.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 10.0 ft and x = 75.0 ft

Each surface terminates between x = 275.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 23.68 | 80.00 |
| 2 | 30.77 | 72.95 |

| | | |
|----|--------|--------|
| 3 | 38.22 | 66.27 |
| 4 | 45.99 | 59.98 |
| 5 | 54.09 | 54.11 |
| 6 | 62.47 | 48.66 |
| 7 | 71.12 | 43.64 |
| 8 | 80.02 | 39.09 |
| 9 | 89.15 | 34.99 |
| 10 | 98.47 | 31.38 |
| 11 | 107.97 | 28.25 |
| 12 | 117.61 | 25.61 |
| 13 | 127.38 | 23.47 |
| 14 | 137.25 | 21.84 |
| 15 | 147.19 | 20.72 |
| 16 | 157.17 | 20.12 |
| 17 | 167.17 | 20.03 |
| 18 | 177.16 | 20.46 |
| 19 | 187.11 | 21.40 |
| 20 | 197.01 | 22.85 |
| 21 | 206.81 | 24.81 |
| 22 | 216.50 | 27.28 |
| 23 | 226.06 | 30.24 |
| 24 | 235.44 | 33.69 |
| 25 | 244.64 | 37.62 |
| 26 | 253.62 | 42.02 |
| 27 | 262.36 | 46.88 |
| 28 | 270.84 | 52.18 |
| 29 | 279.03 | 57.91 |
| 30 | 286.92 | 64.05 |
| 31 | 294.48 | 70.60 |
| 32 | 301.70 | 77.52 |
| 33 | 308.54 | 84.81 |
| 34 | 315.00 | 92.44 |
| 35 | 320.76 | 100.00 |

**** Simplified BISHOP FOS = 1.150 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 20' Cut, No Pumping, t

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|----------|---------------|---------|--------|---------|----------|-----------|
| | (BISHOP) | x-coord | y-coord | | x-coord | x-coord | Moment |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft-lb) |
| 1. | 1.150 | 163.89 | 213.83 | 193.82 | 23.68 | 320.76 | 2.758E+07 |
| 2. | 1.151 | 167.48 | 210.20 | 188.96 | 30.53 | 320.92 | 2.634E+07 |
| 3. | 1.152 | 159.82 | 209.36 | 187.79 | 23.68 | 312.47 | 2.604E+07 |
| 4. | 1.154 | 171.22 | 206.79 | 184.37 | 37.37 | 321.43 | 2.519E+07 |
| 5. | 1.155 | 156.11 | 208.85 | 187.23 | 20.26 | 308.45 | 2.592E+07 |
| 6. | 1.157 | 153.54 | 209.74 | 188.47 | 16.84 | 306.71 | 2.623E+07 |
| 7. | 1.158 | 154.24 | 206.91 | 184.55 | 20.26 | 304.58 | 2.523E+07 |
| 8. | 1.159 | 175.21 | 207.78 | 185.47 | 40.79 | 326.07 | 2.542E+07 |
| 9. | 1.161 | 163.37 | 204.71 | 179.74 | 33.95 | 309.37 | 2.381E+07 |
| 10. | 1.161 | 164.55 | 215.08 | 192.71 | 27.11 | 319.06 | 2.688E+07 |

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Problem Description : 5:1 Slope, 25' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 90.0 | 75.0 | 3 |
| 2 | 90.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 4 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 5 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 95.00 | 74.00 |
| 3 | 120.00 | 80.00 |
| 4 | 170.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 30.0 ft and x = 45.0 ft

Each surface terminates between x = 255.0 ft and x = 295.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 31 coordinate points

| Point | x-surf | y-surf |
|-------|--------|--------|
|-------|--------|--------|

| No. | (ft) | (ft) |
|-----|--------|--------|
| 1 | 33.16 | 75.00 |
| 2 | 40.24 | 67.94 |
| 3 | 47.75 | 61.33 |
| 4 | 55.66 | 55.22 |
| 5 | 63.94 | 49.62 |
| 6 | 72.56 | 44.54 |
| 7 | 81.48 | 40.03 |
| 8 | 90.67 | 36.08 |
| 9 | 100.09 | 32.73 |
| 10 | 109.71 | 29.97 |
| 11 | 119.47 | 27.83 |
| 12 | 129.36 | 26.31 |
| 13 | 139.32 | 25.41 |
| 14 | 149.31 | 25.14 |
| 15 | 159.31 | 25.51 |
| 16 | 169.26 | 26.50 |
| 17 | 179.12 | 28.12 |
| 18 | 188.87 | 30.36 |
| 19 | 198.45 | 33.21 |
| 20 | 207.84 | 36.66 |
| 21 | 216.99 | 40.70 |
| 22 | 225.87 | 45.30 |
| 23 | 234.44 | 50.46 |
| 24 | 242.66 | 56.14 |
| 25 | 250.51 | 62.34 |
| 26 | 257.96 | 69.01 |
| 27 | 264.97 | 76.15 |
| 28 | 271.51 | 83.71 |
| 29 | 277.57 | 91.67 |
| 30 | 283.11 | 99.99 |
| 31 | 283.11 | 100.00 |

**** Simplified BISHOP FOS = .968 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 25' Cut, No Pumping, t

| FOS (BISHOP) | Circle Center x-coord (ft) | y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) | |
|-----------------|----------------------------------|-----------------|----------------|----------------------------|-----------------------------|--------------------------------|-----------|
| 1. | .968 | 148.53 | 183.55 | 158.41 | 33.16 | 283.11 | 1.936E+07 |
| 2. | .969 | 154.58 | 188.05 | 163.04 | 37.11 | 291.71 | 2.020E+07 |
| 3. | .969 | 156.17 | 183.90 | 158.47 | 41.05 | 290.58 | 1.932E+07 |
| 4. | .969 | 158.14 | 183.04 | 157.58 | 43.42 | 292.02 | 1.916E+07 |
| 5. | .970 | 153.22 | 182.52 | 156.52 | 39.47 | 286.13 | 1.888E+07 |
| 6. | .970 | 149.09 | 180.71 | 154.57 | 36.32 | 280.83 | 1.852E+07 |
| 7. | .970 | 147.43 | 186.55 | 161.40 | 30.79 | 283.59 | 1.988E+07 |
| 8. | .971 | 146.12 | 182.52 | 157.10 | 31.58 | 279.74 | 1.908E+07 |
| 9. | .971 | 150.81 | 180.15 | 153.72 | 38.68 | 281.90 | 1.833E+07 |
| 10. | .971 | 148.10 | 181.55 | 155.58 | 34.74 | 280.49 | 1.872E+07 |

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Problem Description : 3:1 Slope, 15' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 130.0 | 85.0 | 3 |
| 2 | 130.0 | 85.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 4 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 5 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------|--------------------------|----------------------|----------------------------|----------------|-------------------|
| 1 | 110.0 | 110.0 | -700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 135.00 | 84.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 150.0 ft

Each surface terminates between x = 300.0 ft and x = 500.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 40 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 39.47 | 85.00 |
| 2 | 46.67 | 78.05 |
| 3 | 54.16 | 71.43 |
| 4 | 61.93 | 65.13 |
| 5 | 69.96 | 59.18 |
| 6 | 78.25 | 53.58 |
| 7 | 86.77 | 48.34 |
| 8 | 95.51 | 43.48 |
| 9 | 104.45 | 39.00 |
| 10 | 113.57 | 34.92 |
| 11 | 122.87 | 31.23 |
| 12 | 132.32 | 27.95 |
| 13 | 141.90 | 25.08 |
| 14 | 151.59 | 22.64 |
| 15 | 161.38 | 20.61 |
| 16 | 171.26 | 19.01 |
| 17 | 181.19 | 17.84 |
| 18 | 191.16 | 17.10 |
| 19 | 201.15 | 16.79 |
| 20 | 211.15 | 16.92 |
| 21 | 221.14 | 17.48 |
| 22 | 231.09 | 18.47 |
| 23 | 240.99 | 19.89 |
| 24 | 250.81 | 21.74 |
| 25 | 260.55 | 24.02 |
| 26 | 270.18 | 26.71 |
| 27 | 279.69 | 29.82 |
| 28 | 289.05 | 33.34 |
| 29 | 298.25 | 37.26 |
| 30 | 307.27 | 41.57 |
| 31 | 316.09 | 46.28 |
| 32 | 324.71 | 51.36 |
| 33 | 333.09 | 56.81 |
| 34 | 341.23 | 62.61 |
| 35 | 349.11 | 68.77 |
| 36 | 356.72 | 75.26 |
| 37 | 364.04 | 82.08 |
| 38 | 371.05 | 89.20 |
| 39 | 377.76 | 96.62 |
| 40 | 380.55 | 100.00 |

**** Simplified BISHOP FOS = 1.675 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.675 | 203.23 | 247.44 | 230.66 | 39.47 | 380.55 | 3.704E+07 |
| 2. | 1.688 | 216.20 | 232.67 | 212.67 | 63.16 | 382.38 | 3.219E+07 |
| 3. | 1.694 | 234.27 | 261.80 | 246.04 | 63.16 | 419.60 | 4.099E+07 |
| 4. | 1.694 | 199.46 | 243.91 | 225.50 | 39.47 | 373.00 | 3.544E+07 |
| 5. | 1.702 | 207.56 | 279.35 | 262.18 | 31.58 | 398.75 | 4.459E+07 |
| 6. | 1.703 | 220.67 | 228.99 | 207.65 | 71.05 | 383.31 | 3.079E+07 |
| 7. | 1.706 | 206.32 | 232.41 | 211.06 | 55.26 | 370.62 | 3.154E+07 |
| 8. | 1.711 | 232.49 | 232.78 | 213.11 | 78.95 | 399.12 | 3.236E+07 |
| 9. | 1.714 | 242.61 | 244.88 | 228.80 | 78.95 | 419.62 | 3.676E+07 |
| 10. | 1.724 | 195.06 | 256.20 | 236.72 | 31.58 | 372.88 | 3.779E+07 |

* * * END OF FILE * * *

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*****
*           X S T A B L           *
*           *                     *
*           Slope Stability Analysis *
*           using the               *
*           Method of Slices        *
*           *                     *
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Problem Description : 3:1 Slope, 20' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 4 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 5 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 75.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 53.95 | 80.00 |
| 2 | 61.04 | 72.95 |

| | | |
|----|--------|--------|
| 3 | 68.48 | 66.27 |
| 4 | 76.26 | 59.98 |
| 5 | 84.35 | 54.11 |
| 6 | 92.73 | 48.66 |
| 7 | 101.39 | 43.64 |
| 8 | 110.29 | 39.08 |
| 9 | 119.41 | 34.99 |
| 10 | 128.73 | 31.37 |
| 11 | 138.23 | 28.24 |
| 12 | 147.87 | 25.60 |
| 13 | 157.64 | 23.46 |
| 14 | 167.51 | 21.83 |
| 15 | 177.44 | 20.71 |
| 16 | 187.43 | 20.10 |
| 17 | 197.43 | 20.01 |
| 18 | 207.42 | 20.43 |
| 19 | 217.37 | 21.37 |
| 20 | 227.27 | 22.82 |
| 21 | 237.07 | 24.78 |
| 22 | 246.77 | 27.24 |
| 23 | 256.32 | 30.19 |
| 24 | 265.71 | 33.64 |
| 25 | 274.90 | 37.57 |
| 26 | 283.89 | 41.96 |
| 27 | 292.63 | 46.81 |
| 28 | 301.11 | 52.11 |
| 29 | 309.31 | 57.83 |
| 30 | 317.20 | 63.97 |
| 31 | 324.77 | 70.51 |
| 32 | 331.99 | 77.44 |
| 33 | 338.84 | 84.72 |
| 34 | 345.31 | 92.35 |
| 35 | 351.14 | 100.00 |

**** Simplified BISHOP FOS = 1.373 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.373 | 194.21 | 213.89 | 193.91 | 53.95 | 351.14 | 2.760E+07 |
| 2. | 1.374 | 186.81 | 221.58 | 201.50 | 43.42 | 347.43 | 2.917E+07 |
| 3. | 1.380 | 196.27 | 258.84 | 238.71 | 38.16 | 374.39 | 3.738E+07 |
| 4. | 1.380 | 202.59 | 215.67 | 195.49 | 61.84 | 360.18 | 2.789E+07 |
| 5. | 1.380 | 189.80 | 211.63 | 191.07 | 51.32 | 344.79 | 2.689E+07 |
| 6. | 1.381 | 181.76 | 221.89 | 201.88 | 38.16 | 342.61 | 2.926E+07 |
| 7. | 1.382 | 205.43 | 241.58 | 221.48 | 53.95 | 375.73 | 3.350E+07 |
| 8. | 1.383 | 194.79 | 212.17 | 191.24 | 56.58 | 349.60 | 2.686E+07 |
| 9. | 1.383 | 184.21 | 216.90 | 196.37 | 43.42 | 342.00 | 2.801E+07 |
| 10. | 1.384 | 207.23 | 239.50 | 219.40 | 56.58 | 376.56 | 3.304E+07 |

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*           *                     *
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Problem Description : 3:1 Slope, 25' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 100.0 | 75.0 | 3 |
| 2 | 100.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 4 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 5 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 6 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 105.00 | 74.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft
 10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 42.11 | 75.00 |
| 2 | 49.98 | 68.83 |

| | | |
|----|--------|--------|
| 3 | 58.12 | 63.03 |
| 4 | 66.53 | 57.61 |
| 5 | 75.17 | 52.59 |
| 6 | 84.04 | 47.97 |
| 7 | 93.11 | 43.76 |
| 8 | 102.37 | 39.98 |
| 9 | 111.79 | 36.62 |
| 10 | 121.36 | 33.71 |
| 11 | 131.05 | 31.24 |
| 12 | 140.84 | 29.22 |
| 13 | 150.72 | 27.65 |
| 14 | 160.66 | 26.54 |
| 15 | 170.63 | 25.89 |
| 16 | 180.63 | 25.70 |
| 17 | 190.63 | 25.97 |
| 18 | 200.60 | 26.71 |
| 19 | 210.53 | 27.90 |
| 20 | 220.39 | 29.54 |
| 21 | 230.17 | 31.65 |
| 22 | 239.84 | 34.20 |
| 23 | 249.38 | 37.19 |
| 24 | 258.77 | 40.62 |
| 25 | 268.00 | 44.48 |
| 26 | 277.04 | 48.76 |
| 27 | 285.87 | 53.45 |
| 28 | 294.47 | 58.55 |
| 29 | 302.83 | 64.03 |
| 30 | 310.93 | 69.90 |
| 31 | 318.75 | 76.13 |
| 32 | 326.27 | 82.72 |
| 33 | 333.49 | 89.65 |
| 34 | 340.37 | 96.90 |
| 35 | 343.05 | 100.00 |

**** Simplified BISHOP FOS = 1.210 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|---------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.210 | 179.74 | 242.48 | 216.78 | 42.11 | 343.05 | 3.049E+07 |
| 2. | 1.218 | 170.02 | 231.02 | 205.13 | 36.84 | 327.77 | 2.807E+07 |
| 3. | 1.221 | 175.87 | 264.39 | 238.10 | 31.58 | 348.05 | 3.484E+07 |
| 4. | 1.222 | 176.11 | 202.64 | 177.60 | 52.63 | 320.96 | 2.288E+07 |
| 5. | 1.222 | 194.18 | 236.35 | 211.21 | 57.89 | 355.44 | 2.948E+07 |
| 6. | 1.224 | 170.54 | 250.39 | 223.77 | 31.58 | 336.17 | 3.171E+07 |
| 7. | 1.225 | 180.43 | 277.53 | 251.35 | 31.58 | 358.29 | 3.776E+07 |
| 8. | 1.226 | 168.40 | 244.27 | 217.65 | 31.58 | 331.32 | 3.045E+07 |
| 9. | 1.228 | 159.62 | 243.51 | 218.17 | 21.05 | 323.87 | 3.086E+07 |
| 10. | 1.229 | 189.04 | 209.79 | 184.42 | 63.16 | 337.20 | 2.412E+07 |

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XSTABL File: SG4_15ST 6-25-07 13:59

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*                               *
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*                               *
*           Slope Stability Analysis *
*             using the           *
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Problem Description : 4:1 Slope, 15' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 135.0 | 85.0 | 2 |
| 2 | 135.0 | 85.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 4 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 5 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 140.00 | 84.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft
and x = 100.0 ft

Each surface terminates between x = 300.0 ft
and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 41 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 56.58 | 85.00 |
| 2 | 63.73 | 78.01 |
| 3 | 71.18 | 71.33 |
| 4 | 78.90 | 64.98 |
| 5 | 86.89 | 58.97 |
| 6 | 95.13 | 53.31 |

| | | |
|----|--------|--------|
| 7 | 103.61 | 48.00 |
| 8 | 112.31 | 43.07 |
| 9 | 121.21 | 38.51 |
| 10 | 130.30 | 34.34 |
| 11 | 139.55 | 30.56 |
| 12 | 148.97 | 27.18 |
| 13 | 158.52 | 24.21 |
| 14 | 168.18 | 21.66 |
| 15 | 177.95 | 19.52 |
| 16 | 187.80 | 17.80 |
| 17 | 197.72 | 16.51 |
| 18 | 207.68 | 15.64 |
| 19 | 217.67 | 15.21 |
| 20 | 227.67 | 15.20 |
| 21 | 237.66 | 15.62 |
| 22 | 247.63 | 16.47 |
| 23 | 257.55 | 17.75 |
| 24 | 267.40 | 19.45 |
| 25 | 277.17 | 21.57 |
| 26 | 286.84 | 24.11 |
| 27 | 296.40 | 27.07 |
| 28 | 305.82 | 30.43 |
| 29 | 315.08 | 34.19 |
| 30 | 324.18 | 38.35 |
| 31 | 333.08 | 42.89 |
| 32 | 341.79 | 47.82 |
| 33 | 350.27 | 53.11 |
| 34 | 358.52 | 58.76 |
| 35 | 366.52 | 64.76 |
| 36 | 374.26 | 71.10 |
| 37 | 381.71 | 77.76 |
| 38 | 388.88 | 84.74 |
| 39 | 395.73 | 92.02 |
| 40 | 402.27 | 99.59 |
| 41 | 402.60 | 100.00 |

**** Simplified BISHOP FOS = 1.758 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.758 | 222.86 | 247.98 | 232.83 | 56.58 | 402.60 | 3.829E+07 |
| 2. | 1.763 | 219.24 | 241.11 | 225.45 | 56.58 | 395.00 | 3.640E+07 |
| 3. | 1.765 | 232.92 | 239.68 | 222.94 | 72.37 | 406.65 | 3.556E+07 |
| 4. | 1.770 | 241.83 | 240.69 | 224.37 | 80.26 | 416.59 | 3.600E+07 |
| 5. | 1.773 | 219.78 | 260.83 | 245.34 | 48.68 | 405.03 | 4.125E+07 |
| 6. | 1.779 | 225.18 | 243.58 | 225.78 | 64.47 | 399.38 | 3.598E+07 |
| 7. | 1.782 | 220.27 | 241.05 | 223.31 | 60.53 | 393.33 | 3.542E+07 |
| 8. | 1.784 | 247.57 | 260.70 | 245.35 | 76.32 | 432.97 | 4.129E+07 |
| 9. | 1.785 | 232.90 | 245.52 | 227.01 | 72.37 | 407.08 | 3.610E+07 |
| 10. | 1.786 | 243.52 | 263.38 | 247.21 | 72.37 | 429.02 | 4.153E+07 |

* * * END OF FILE * * *

XSTABL File: SG4_20ST 6-25-07 14:01

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*****
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*                                     *
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*           using the               *
*       Method of Slices           *
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*                                     *
*****

```

Problem Description : 4:1 Slope, 20' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 4 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 5 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft
and x = 100.0 f

Each surface terminates between x = 350.0 ft
and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees

Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 37 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 52.63 | 80.00 |
| 2 | 60.02 | 73.26 |
| 3 | 67.72 | 66.88 |
| 4 | 75.70 | 60.86 |
| 5 | 83.96 | 55.21 |

| | | |
|----|--------|--------|
| 6 | 92.47 | 49.96 |
| 7 | 101.21 | 45.11 |
| 8 | 110.17 | 40.66 |
| 9 | 119.32 | 36.64 |
| 10 | 128.66 | 33.05 |
| 11 | 138.15 | 29.90 |
| 12 | 147.77 | 27.19 |
| 13 | 157.52 | 24.94 |
| 14 | 167.35 | 23.13 |
| 15 | 177.26 | 21.79 |
| 16 | 187.22 | 20.91 |
| 17 | 197.21 | 20.49 |
| 18 | 207.21 | 20.54 |
| 19 | 217.20 | 21.05 |
| 20 | 227.15 | 22.02 |
| 21 | 237.05 | 23.46 |
| 22 | 246.87 | 25.35 |
| 23 | 256.59 | 27.70 |
| 24 | 266.19 | 30.50 |
| 25 | 275.65 | 33.74 |
| 26 | 284.95 | 37.42 |
| 27 | 294.07 | 41.53 |
| 28 | 302.98 | 46.05 |
| 29 | 311.68 | 50.99 |
| 30 | 320.14 | 56.32 |
| 31 | 328.34 | 62.04 |
| 32 | 336.27 | 68.14 |
| 33 | 343.90 | 74.60 |
| 34 | 351.23 | 81.40 |
| 35 | 358.23 | 88.54 |
| 36 | 364.90 | 96.00 |
| 37 | 368.15 | 100.00 |

**** Simplified BISHOP FOS = 1.425 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.425 | 201.21 | 235.57 | 215.12 | 52.63 | 368.15 | 3.202E+07 |
| 2. | 1.426 | 201.78 | 222.96 | 202.83 | 57.89 | 363.01 | 2.944E+07 |
| 3. | 1.428 | 202.57 | 225.67 | 205.31 | 57.89 | 364.87 | 2.992E+07 |
| 4. | 1.431 | 216.33 | 245.65 | 225.62 | 63.16 | 388.56 | 3.444E+07 |
| 5. | 1.431 | 196.89 | 239.28 | 218.46 | 47.37 | 365.13 | 3.266E+07 |
| 6. | 1.435 | 194.81 | 219.00 | 198.84 | 52.63 | 354.04 | 2.859E+07 |
| 7. | 1.436 | 197.61 | 228.49 | 207.53 | 52.63 | 360.53 | 3.027E+07 |
| 8. | 1.437 | 202.49 | 213.13 | 192.71 | 63.16 | 358.44 | 2.726E+07 |
| 9. | 1.437 | 193.82 | 216.11 | 196.11 | 52.63 | 351.83 | 2.805E+07 |
| 10. | 1.438 | 186.92 | 251.33 | 231.26 | 31.58 | 361.76 | 3.570E+07 |

* * * END OF FILE * * *

XSTABL File: SG4_25ST 6-25-07 14:03

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*****
  
```

Problem Description : 4:1 Slope, 25' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 95.0 | 75.0 | 3 |
| 2 | 95.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 4 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 5 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 6 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 57.89 | 75.00 |

| | | |
|----|--------|--------|
| 2 | 65.68 | 68.73 |
| 3 | 73.76 | 62.84 |
| 4 | 82.11 | 57.33 |
| 5 | 90.71 | 52.23 |
| 6 | 99.54 | 47.53 |
| 7 | 108.58 | 43.27 |
| 8 | 117.82 | 39.43 |
| 9 | 127.23 | 36.04 |
| 10 | 136.78 | 33.09 |
| 11 | 146.47 | 30.60 |
| 12 | 156.26 | 28.57 |
| 13 | 166.14 | 27.01 |
| 14 | 176.08 | 25.92 |
| 15 | 186.06 | 25.30 |
| 16 | 196.06 | 25.15 |
| 17 | 206.05 | 25.48 |
| 18 | 216.02 | 26.27 |
| 19 | 225.94 | 27.54 |
| 20 | 235.79 | 29.28 |
| 21 | 245.54 | 31.48 |
| 22 | 255.18 | 34.14 |
| 23 | 264.68 | 37.25 |
| 24 | 274.03 | 40.81 |
| 25 | 283.19 | 44.81 |
| 26 | 292.16 | 49.24 |
| 27 | 300.91 | 54.09 |
| 28 | 309.42 | 59.34 |
| 29 | 317.66 | 65.00 |
| 30 | 325.64 | 71.03 |
| 31 | 333.31 | 77.44 |
| 32 | 340.68 | 84.20 |
| 33 | 347.72 | 91.31 |
| 34 | 354.41 | 98.74 |
| 35 | 355.44 | 100.00 |

**** Simplified BISHOP FOS = 1.277 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|---------|---------------|---------|--------|---------|----------|-----------|
| | BISHOP) | x-coord | y-coord | | x-coord | x-coord | Moment |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft-lb) |
| 1. | 1.277 | 194.18 | 236.35 | 211.21 | 57.89 | 355.44 | 2.948E+07 |
| 2. | 1.278 | 179.74 | 242.48 | 216.78 | 42.11 | 343.05 | 3.049E+07 |
| 3. | 1.280 | 180.43 | 277.53 | 251.35 | 31.58 | 358.29 | 3.776E+07 |
| 4. | 1.285 | 175.87 | 264.39 | 238.10 | 31.58 | 348.05 | 3.484E+07 |
| 5. | 1.300 | 201.74 | 324.04 | 298.68 | 36.84 | 399.26 | 4.905E+07 |
| 6. | 1.301 | 170.54 | 250.39 | 223.77 | 31.58 | 336.17 | 3.171E+07 |
| 7. | 1.305 | 189.04 | 209.79 | 184.42 | 63.16 | 337.20 | 2.412E+07 |
| 8. | 1.305 | 170.02 | 231.02 | 205.13 | 36.84 | 327.77 | 2.807E+07 |
| 9. | 1.305 | 193.89 | 227.71 | 201.03 | 63.16 | 349.14 | 2.708E+07 |
| 10. | 1.306 | 202.64 | 233.64 | 207.80 | 68.42 | 361.71 | 2.862E+07 |

* * * END OF FILE * * *

XSTABL File: SG5_15ST 6-25-07 14:07

```

*****
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*****

```

Problem Description : 5:1 Slope, 15' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 140.0 | 85.0 | 2 |
| 2 | 140.0 | 85.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 4 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 5 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 265.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|-------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 145.00 | 84.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 50.0 ft
and x = 125.0 ft

Each surface terminates between x = 325.0 ft
and x = 425.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 41 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 73.68 | 85.00 |
| 2 | 80.88 | 78.05 |
| 3 | 88.36 | 71.42 |
| 4 | 96.12 | 65.11 |
| 5 | 104.13 | 59.13 |
| 6 | 112.39 | 53.49 |

| | | |
|----|--------|--------|
| 7 | 120.88 | 48.21 |
| 8 | 129.59 | 43.29 |
| 9 | 138.49 | 38.74 |
| 10 | 147.59 | 34.57 |
| 11 | 156.84 | 30.80 |
| 12 | 166.25 | 27.41 |
| 13 | 175.80 | 24.43 |
| 14 | 185.46 | 21.85 |
| 15 | 195.22 | 19.68 |
| 16 | 205.07 | 17.93 |
| 17 | 214.98 | 16.59 |
| 18 | 224.94 | 15.67 |
| 19 | 234.92 | 15.18 |
| 20 | 244.92 | 15.11 |
| 21 | 254.92 | 15.46 |
| 22 | 264.89 | 16.23 |
| 23 | 274.82 | 17.42 |
| 24 | 284.68 | 19.03 |
| 25 | 294.48 | 21.05 |
| 26 | 304.18 | 23.49 |
| 27 | 313.76 | 26.34 |
| 28 | 323.22 | 29.58 |
| 29 | 332.53 | 33.23 |
| 30 | 341.68 | 37.26 |
| 31 | 350.66 | 41.68 |
| 32 | 359.43 | 46.47 |
| 33 | 368.00 | 51.63 |
| 34 | 376.34 | 57.14 |
| 35 | 384.44 | 63.00 |
| 36 | 392.29 | 69.20 |
| 37 | 399.87 | 75.73 |
| 38 | 407.16 | 82.57 |
| 39 | 414.16 | 89.71 |
| 40 | 420.85 | 97.14 |
| 41 | 423.22 | 100.00 |

**** Simplified BISHOP FOS = 1.790 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.790 | 241.65 | 251.80 | 236.71 | 73.68 | 423.22 | 3.923E+07 |
| 2. | 1.792 | 239.34 | 255.49 | 240.48 | 69.74 | 422.73 | 4.017E+07 |
| 3. | 1.795 | 240.37 | 258.65 | 243.46 | 69.74 | 425.01 | 4.086E+07 |
| 4. | 1.800 | 236.15 | 258.89 | 243.44 | 65.79 | 420.53 | 4.078E+07 |
| 5. | 1.803 | 231.69 | 248.70 | 233.07 | 65.79 | 411.14 | 3.823E+07 |
| 6. | 1.805 | 234.94 | 240.76 | 224.19 | 73.68 | 409.43 | 3.590E+07 |
| 7. | 1.805 | 233.02 | 252.90 | 236.98 | 65.79 | 414.03 | 3.909E+07 |
| 8. | 1.809 | 246.93 | 243.00 | 225.87 | 85.53 | 421.76 | 3.616E+07 |
| 9. | 1.810 | 225.18 | 241.34 | 226.11 | 61.84 | 401.60 | 3.665E+07 |
| 10. | 1.813 | 235.69 | 236.24 | 218.76 | 77.63 | 406.79 | 3.443E+07 |

* * * END OF FILE * * *

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*           *                     *
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*      Ver. 5.206                 *
*           *                     *
*****

```

Problem Description : 5:1 Slope, 20' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 4 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 5 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified.

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft
and x = 100.0 ft

Each surface terminates between x = 375.0 ft
and x = 490.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 39 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 60.53 | 80.00 |
| 2 | 68.18 | 73.56 |
| 3 | 76.09 | 67.44 |
| 4 | 84.24 | 61.66 |

| | | |
|----|--------|--------|
| 5 | 92.63 | 56.21 |
| 6 | 101.24 | 51.12 |
| 7 | 110.05 | 46.40 |
| 8 | 119.05 | 42.04 |
| 9 | 128.22 | 38.05 |
| 10 | 137.55 | 34.45 |
| 11 | 147.02 | 31.24 |
| 12 | 156.62 | 28.43 |
| 13 | 166.32 | 26.01 |
| 14 | 176.12 | 24.00 |
| 15 | 185.99 | 22.39 |
| 16 | 195.92 | 21.20 |
| 17 | 205.89 | 20.42 |
| 18 | 215.88 | 20.05 |
| 19 | 225.88 | 20.10 |
| 20 | 235.87 | 20.56 |
| 21 | 245.83 | 21.43 |
| 22 | 255.75 | 22.71 |
| 23 | 265.60 | 24.41 |
| 24 | 275.38 | 26.51 |
| 25 | 285.06 | 29.02 |
| 26 | 294.63 | 31.92 |
| 27 | 304.07 | 35.22 |
| 28 | 313.37 | 38.90 |
| 29 | 322.50 | 42.97 |
| 30 | 331.46 | 47.41 |
| 31 | 340.23 | 52.22 |
| 32 | 348.79 | 57.39 |
| 33 | 357.13 | 62.91 |
| 34 | 365.23 | 68.77 |
| 35 | 373.09 | 74.96 |
| 36 | 380.68 | 81.47 |
| 37 | 387.99 | 88.29 |
| 38 | 395.02 | 95.41 |
| 39 | 399.19 | 100.00 |

**** Simplified BISHOP FOS = 1.475 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.475 | 219.77 | 261.40 | 241.38 | 60.53 | 399.19 | 3.803E+07 |
| 2. | 1.475 | 216.30 | 273.70 | 253.58 | 52.63 | 400.98 | 4.087E+07 |
| 3. | 1.479 | 204.12 | 251.45 | 231.42 | 48.68 | 379.07 | 3.575E+07 |
| 4. | 1.479 | 208.97 | 286.25 | 266.13 | 40.79 | 399.01 | 4.388E+07 |
| 5. | 1.480 | 209.94 | 247.72 | 227.27 | 56.58 | 382.58 | 3.470E+07 |
| 6. | 1.480 | 212.18 | 243.22 | 222.79 | 60.53 | 382.81 | 3.372E+07 |
| 7. | 1.482 | 209.52 | 235.49 | 215.35 | 60.53 | 376.84 | 3.214E+07 |
| 8. | 1.482 | 212.70 | 233.65 | 213.49 | 64.47 | 379.12 | 3.173E+07 |
| 9. | 1.483 | 202.05 | 267.58 | 247.37 | 40.79 | 384.00 | 3.938E+07 |
| 10. | 1.483 | 202.15 | 257.42 | 237.19 | 44.74 | 379.51 | 3.701E+07 |

* * * END OF FILE * * *

XSTABL File: SG5_25ST 6-25-07 14:11

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*****
*                               *
*           X S T A B L         *
*                               *
*           Slope Stability Analysis *
*           using the           *
*           Method of Slices     *
*                               *
*           Copyright (C) 1992 - 2004 *
*           Interactive Software Designs, Inc. *
*           Moscow, ID 83843, U.S.A. *
*                               *
*           All Rights Reserved   *
*                               *
*           Ver. 5.206           96 - 1969 *
*****

```

Problem Description : 5:1 Slope, 25' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 90.0 | 75.0 | 3 |
| 2 | 90.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 4 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 5 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 6 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 95.00 | 74.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 100.0 ft

Each surface terminates between x = 350.0 ft and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees

Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 38 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 36.84 | 75.00 |
| 2 | 45.05 | 69.29 |
| 3 | 53.47 | 63.90 |
| 4 | 62.09 | 58.83 |

| | | |
|----|--------|--------|
| 5 | 70.90 | 54.09 |
| 6 | 79.88 | 49.69 |
| 7 | 89.02 | 45.64 |
| 8 | 98.31 | 41.94 |
| 9 | 107.74 | 38.60 |
| 10 | 117.28 | 35.61 |
| 11 | 126.93 | 33.00 |
| 12 | 136.68 | 30.75 |
| 13 | 146.50 | 28.87 |
| 14 | 156.39 | 27.37 |
| 15 | 166.32 | 26.25 |
| 16 | 176.30 | 25.51 |
| 17 | 186.29 | 25.15 |
| 18 | 196.29 | 25.16 |
| 19 | 206.28 | 25.56 |
| 20 | 216.25 | 26.34 |
| 21 | 226.18 | 27.50 |
| 22 | 236.07 | 29.04 |
| 23 | 245.88 | 30.95 |
| 24 | 255.62 | 33.23 |
| 25 | 265.26 | 35.89 |
| 26 | 274.79 | 38.91 |
| 27 | 284.20 | 42.29 |
| 28 | 293.48 | 46.02 |
| 29 | 302.61 | 50.11 |
| 30 | 311.57 | 54.54 |
| 31 | 320.36 | 59.31 |
| 32 | 328.96 | 64.41 |
| 33 | 337.36 | 69.83 |
| 34 | 345.55 | 75.57 |
| 35 | 353.52 | 81.62 |
| 36 | 361.24 | 87.97 |
| 37 | 368.72 | 94.60 |
| 38 | 374.36 | 100.00 |

**** Simplified BISHOP FOS = 1.328 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.328 | 190.81 | 287.61 | 262.50 | 36.84 | 374.36 | 4.061E+07 |
| 2. | 1.338 | 193.78 | 323.49 | 298.19 | 28.95 | 391.18 | 4.895E+07 |
| 3. | 1.338 | 191.24 | 267.42 | 241.84 | 44.74 | 365.71 | 3.585E+07 |
| 4. | 1.339 | 203.16 | 278.68 | 253.27 | 52.63 | 382.64 | 3.843E+07 |
| 5. | 1.340 | 185.69 | 274.73 | 249.10 | 36.84 | 363.17 | 3.743E+07 |
| 6. | 1.343 | 182.87 | 303.16 | 277.45 | 25.00 | 371.76 | 4.386E+07 |
| 7. | 1.344 | 178.01 | 285.32 | 260.09 | 25.00 | 360.44 | 4.002E+07 |
| 8. | 1.344 | 208.30 | 317.91 | 292.84 | 44.74 | 403.88 | 4.774E+07 |
| 9. | 1.345 | 190.54 | 267.47 | 241.46 | 44.74 | 364.46 | 3.565E+07 |
| 10. | 1.346 | 189.49 | 314.15 | 288.04 | 28.95 | 382.10 | 4.621E+07 |

* * * END OF FILE * * *

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*****
*           X S T A B L           *
*           *                     *
*      Slope Stability Analysis   *
*      using the                 *
*      Method of Slices          *
*           *                     *
*      Copyright (C) 1992 - 2004 *
*      Interactive Software Designs, Inc. *
*      Moscow, ID 83843, U.S.A.    *
*           *                     *
*      All Rights Reserved        *
*           *                     *
*      Ver. 5.206                 *
*           *                     *
*****

```

Problem Description : 4:1 Slope, 20' Cut, Stp, Final Cover

SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 100.0 | 200.0 | 100.0 | 2 |
| 2 | 200.0 | 100.0 | 400.0 | 150.0 | 1 |
| 3 | 400.0 | 150.0 | 650.0 | 165.0 | 1 |
| 4 | 650.0 | 165.0 | 800.0 | 156.0 | 1 |

8 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 200.0 | 100.0 | 240.0 | 90.0 | 2 |
| 2 | .0 | 90.0 | 240.0 | 90.0 | 3 |
| 3 | 240.0 | 90.0 | 340.0 | 90.0 | 3 |
| 4 | 340.0 | 90.0 | 380.0 | 80.0 | 4 |
| 5 | .0 | 80.0 | 380.0 | 80.0 | 4 |
| 6 | 380.0 | 80.0 | 800.0 | 80.0 | 4 |
| 7 | .0 | 50.0 | 800.0 | 50.0 | 5 |
| 8 | .0 | .0 | 800.0 | .0 | 6 |

ISOTROPIC Soil Parameters

6 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 65.0 | 65.0 | 300.0 | 23.00 | .000 | .0 | 1 |
| 2 | 110.0 | 110.0 | 700.0 | 3.00 | .000 | .0 | 1 |
| 3 | 115.0 | 115.0 | 600.0 | 3.00 | .000 | .0 | 1 |
| 4 | 100.0 | 100.0 | 400.0 | 3.00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | 3.00 | .000 | .0 | 1 |
| 6 | 105.0 | 105.0 | 400.0 | 3.00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 93.00 |
| 2 | 195.00 | 93.00 |
| 3 | 235.00 | 88.00 |
| 4 | 380.00 | 78.00 |
| 5 | 800.00 | 78.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 100.0 ft and x = 200.0 ft

Each surface terminates between x = 300.0 ft and x = 600.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 50 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 131.58 | 100.00 |
| 2 | 138.65 | 92.93 |
| 3 | 146.00 | 86.15 |
| 4 | 153.60 | 79.65 |
| 5 | 161.44 | 73.45 |
| 6 | 169.52 | 67.56 |
| 7 | 177.83 | 61.98 |
| 8 | 186.34 | 56.73 |
| 9 | 195.04 | 51.81 |
| 10 | 203.94 | 47.24 |
| 11 | 213.00 | 43.01 |
| 12 | 222.22 | 39.13 |
| 13 | 231.58 | 35.61 |
| 14 | 241.07 | 32.46 |
| 15 | 250.67 | 29.68 |
| 16 | 260.38 | 27.27 |
| 17 | 270.17 | 25.24 |
| 18 | 280.03 | 23.58 |
| 19 | 289.95 | 22.31 |
| 20 | 299.91 | 21.43 |
| 21 | 309.90 | 20.93 |
| 22 | 319.90 | 20.81 |
| 23 | 329.89 | 21.09 |
| 24 | 339.87 | 21.75 |
| 25 | 349.82 | 22.79 |
| 26 | 359.71 | 24.22 |
| 27 | 369.55 | 26.03 |
| 28 | 379.31 | 28.22 |
| 29 | 388.97 | 30.78 |
| 30 | 398.53 | 33.72 |
| 31 | 407.97 | 37.02 |
| 32 | 417.27 | 40.69 |
| 33 | 426.43 | 44.71 |
| 34 | 435.42 | 49.08 |
| 35 | 444.24 | 53.80 |

| | | |
|----|--------|--------|
| 36 | 452.87 | 58.86 |
| 37 | 461.29 | 64.24 |
| 38 | 469.50 | 69.95 |
| 39 | 477.49 | 75.97 |
| 40 | 485.24 | 82.30 |
| 41 | 492.73 | 88.91 |
| 42 | 499.97 | 95.82 |
| 43 | 506.93 | 103.00 |
| 44 | 513.61 | 110.44 |
| 45 | 519.99 | 118.13 |
| 46 | 526.08 | 126.07 |
| 47 | 531.85 | 134.24 |
| 48 | 537.30 | 142.62 |
| 49 | 542.43 | 151.21 |
| 50 | 546.57 | 158.79 |

**** Simplified BISHOP FOS = 1.604 ****

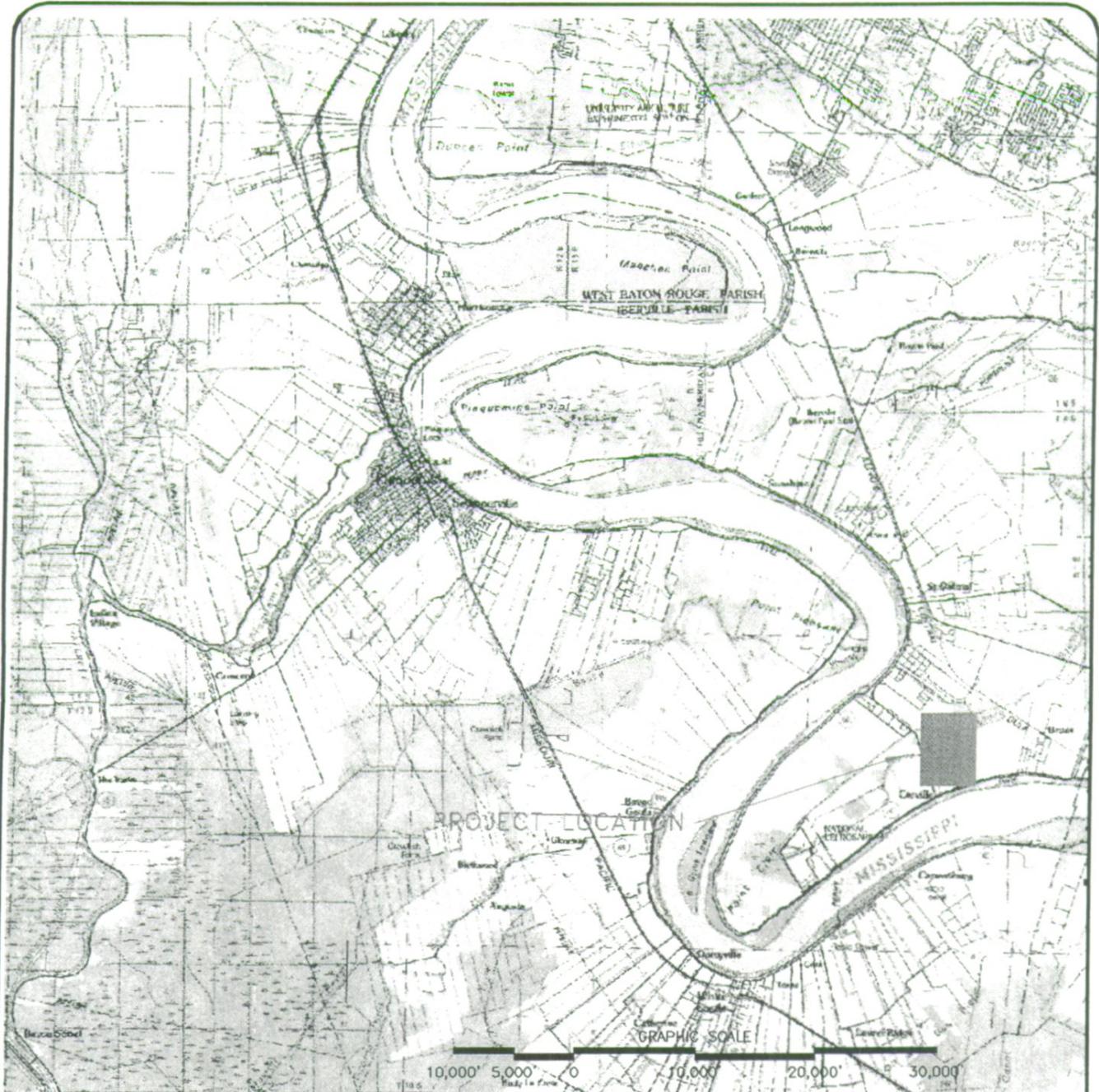
The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 20' Cut, Stp, Final Cover

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.604 | 317.83 | 279.42 | 258.62 | 131.58 | 546.57 | 9.421E+07 |
| 2. | 1.613 | 310.18 | 290.83 | 268.67 | 121.05 | 544.04 | 9.868E+07 |
| 3. | 1.616 | 326.75 | 295.96 | 272.89 | 136.84 | 563.18 | 1.022E+08 |
| 4. | 1.617 | 300.19 | 278.42 | 256.59 | 115.79 | 526.50 | 9.115E+07 |
| 5. | 1.619 | 304.44 | 281.71 | 258.16 | 121.05 | 530.95 | 9.164E+07 |
| 6. | 1.621 | 325.08 | 274.68 | 249.19 | 147.37 | 545.63 | 8.761E+07 |
| 7. | 1.621 | 335.85 | 334.57 | 314.53 | 126.32 | 598.75 | 1.306E+08 |
| 8. | 1.623 | 326.99 | 268.26 | 242.31 | 152.63 | 543.02 | 8.382E+07 |
| 9. | 1.624 | 338.52 | 309.67 | 287.30 | 142.11 | 584.37 | 1.124E+08 |
| 10. | 1.624 | 343.00 | 305.15 | 283.48 | 147.37 | 587.22 | 1.109E+08 |

* * * END OF FILE * * *

FIGURES



TRC SOLUTIONS, INC.

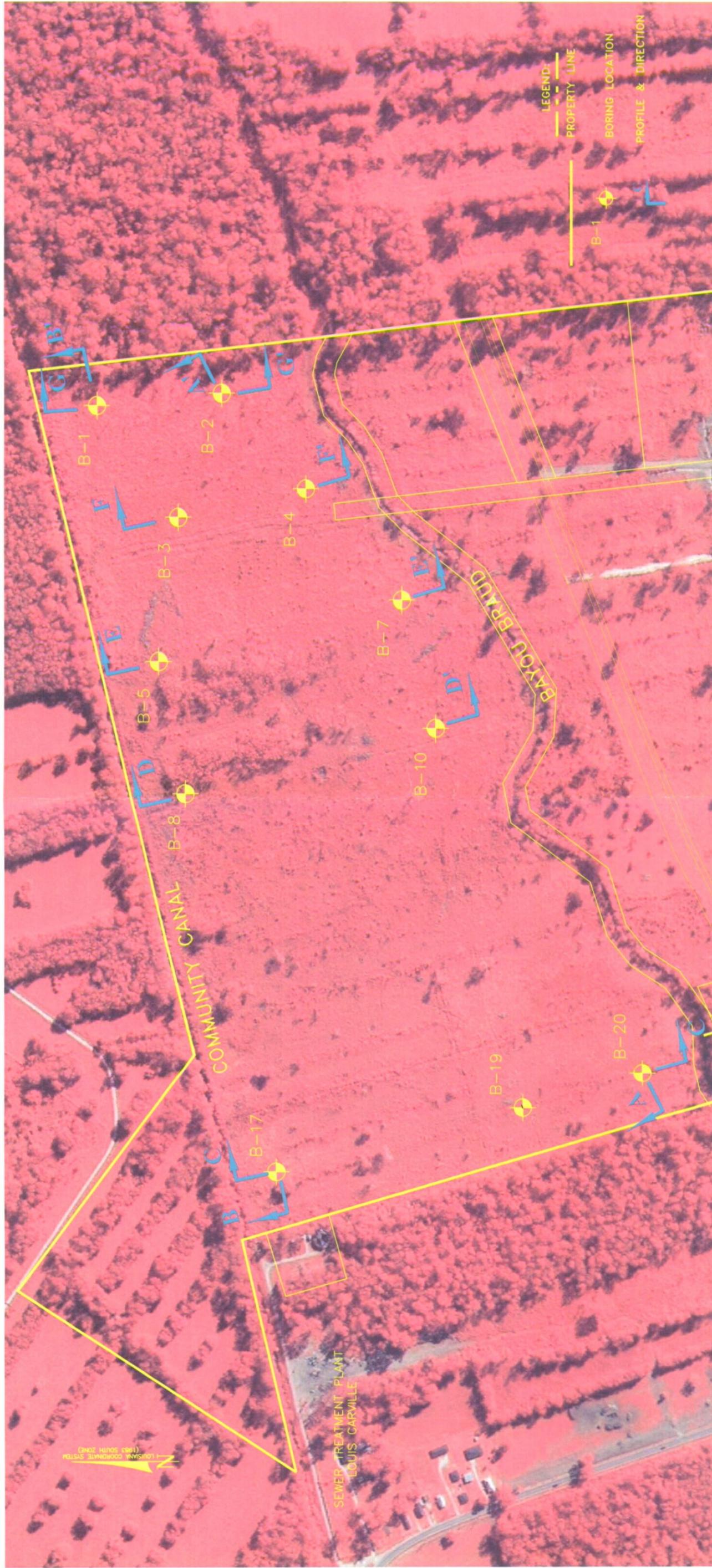
VICINITY MAP
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

KENDRICK
 ENGINEERING, LLC

LETC, 8000 GSRI AVE., BLDG 3000
 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211

| NO. | DATE | REVISION | DESCRIPTION |
|-----|------|----------|-------------|
| | | | |
| | | | |
| | | | |

| | |
|--------------------------|-----------------|
| DRAWN BY: S. KENDRICK | FIGURE: 1 |
| CHECKED BY: B. KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B. KENDRICK | DATE: 6/29/07 |
| CAD FILE: | |



| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |
| | | |

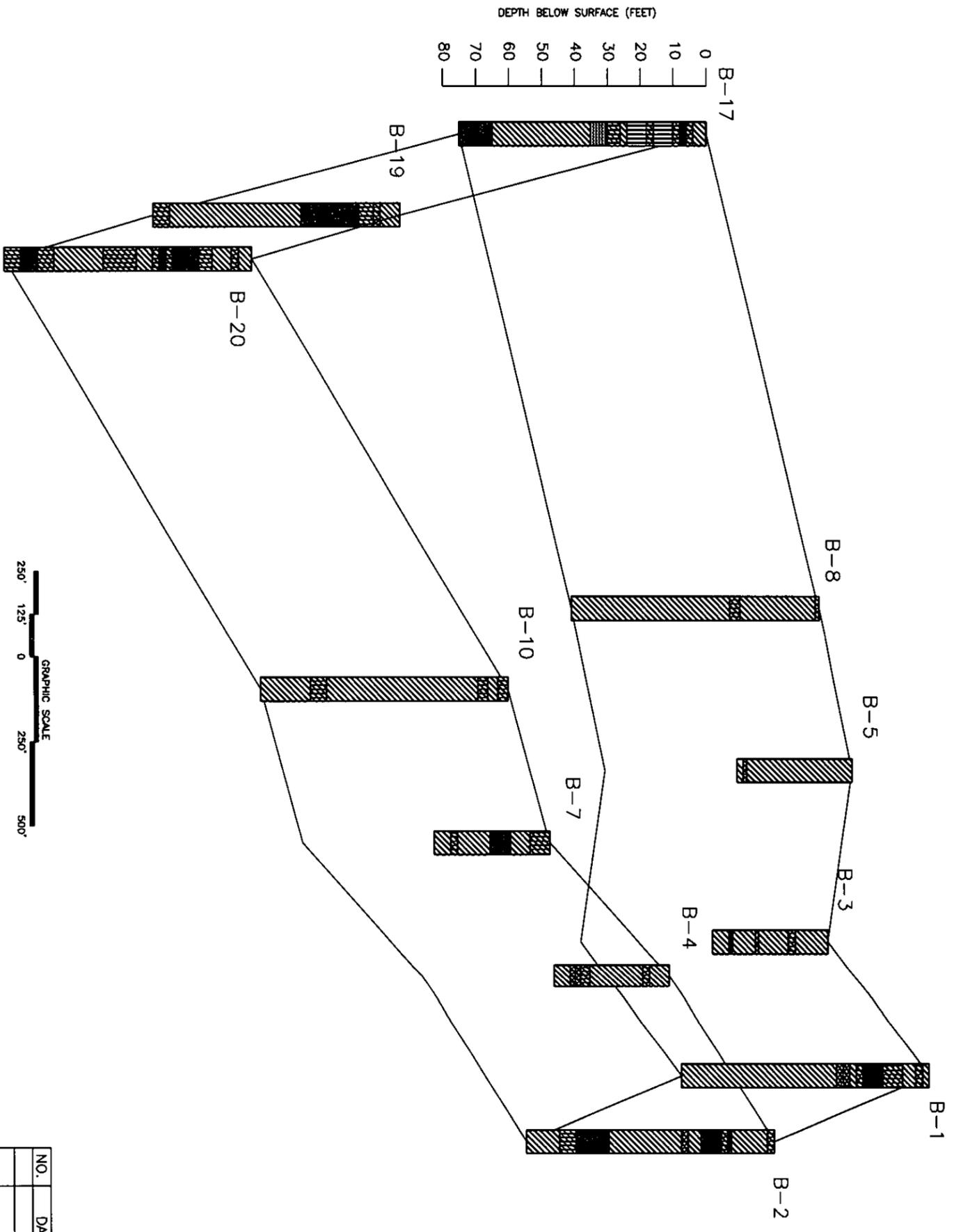
| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 2 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |



KENDRICK ENGINEERING, LLC
 LBTC, 8000 GSRI AVE., BUILDING 3000
 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211

TRC SOLUTIONS, INC.
 BORING LOCATION MAP
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

KENDRICK ENGINEERING, LLC
 LBTC, 8000 GSRI AVE., BUILDING 3000
 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211

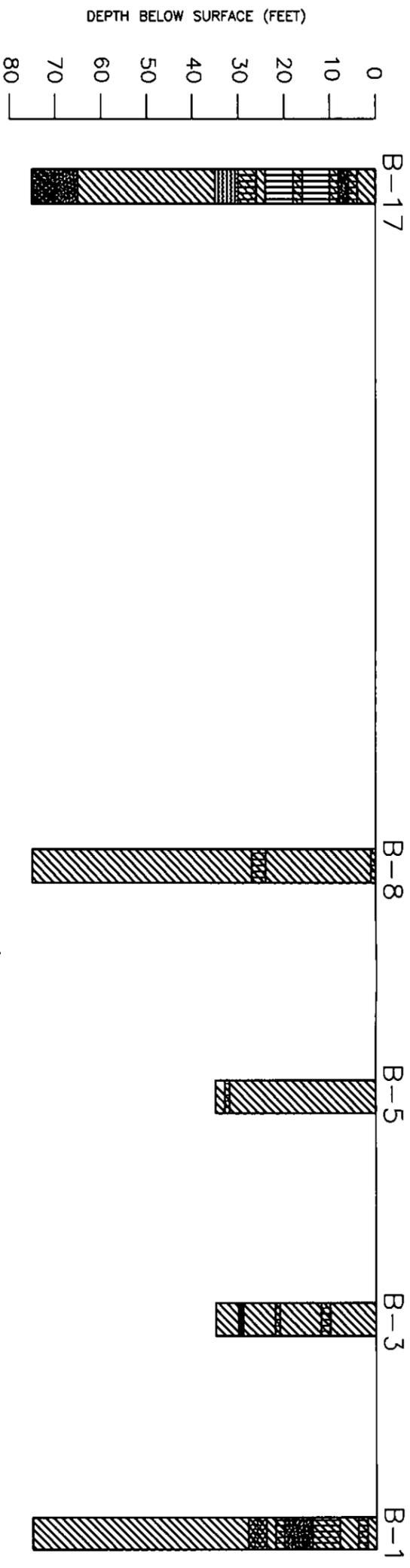


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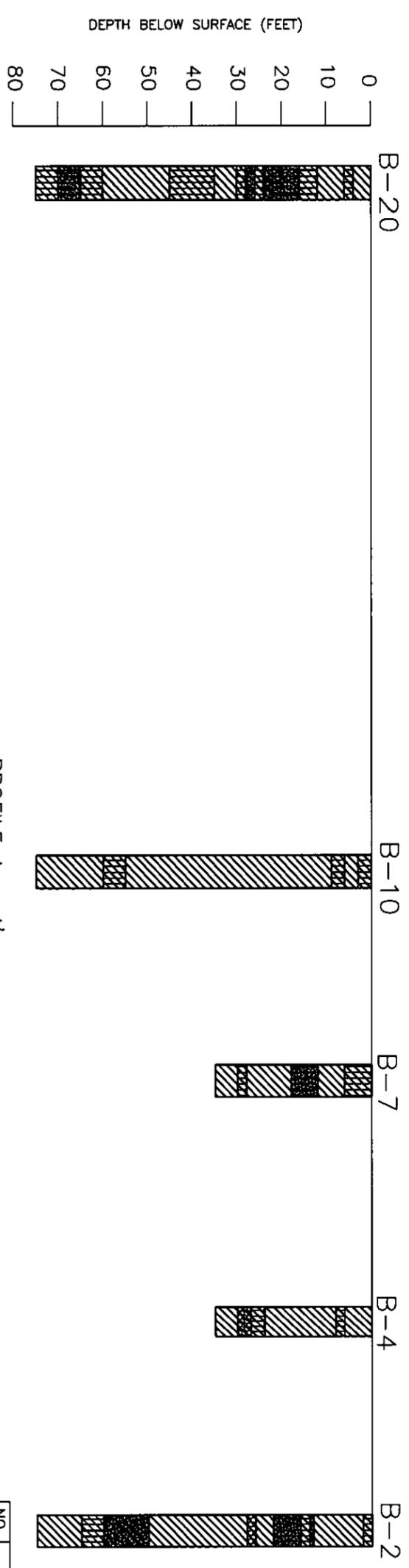
TRC SOLUTIONS, INC.
 BORING LOG PROFILE
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |
| | | |

| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 3 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |



PROFILE B - B'
SCALE AS SHOWN



PROFILE A - A'
SCALE AS SHOWN

- LEGEND**
- HIGH PLASTICITY CLAY (CH)
 - HIGH PLASTICITY ORGANIC CLAYS (OH)
 - LOW PLASTICITY SILTY CLAY (CL)
 - CLAYEY SILT (ML)
 - SANDY SILT (ML)
 - SILTY SAND (SM)
 - POORLY GRADED SAND (SP)
 - PEAT

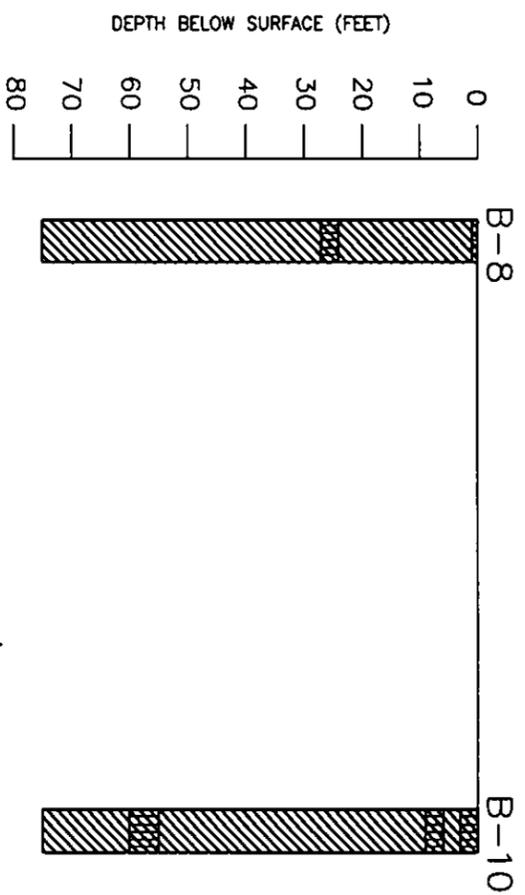


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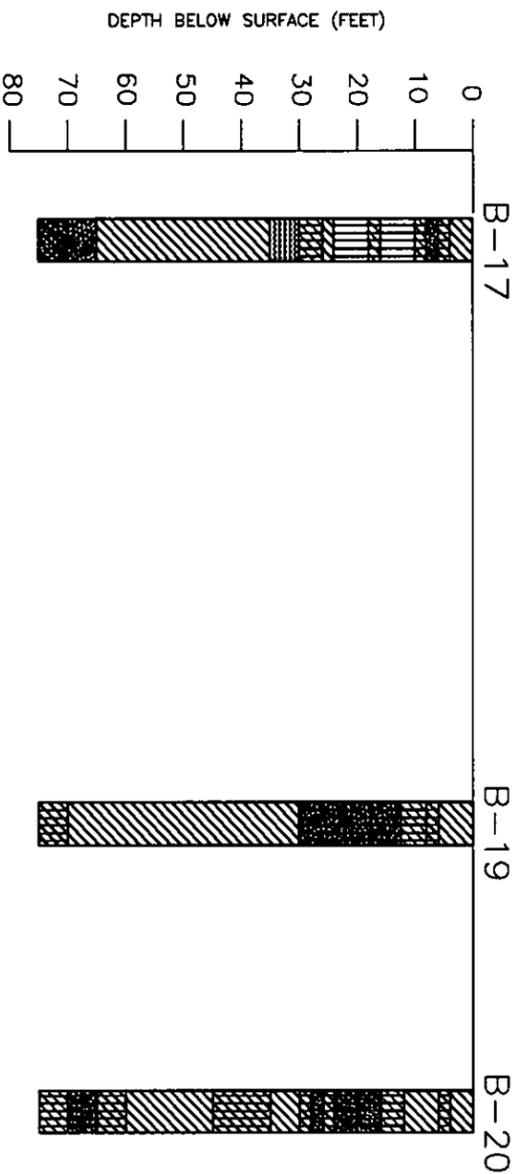
TRC SOLUTIONS, INC.
 BORING LOG PROFILE
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |
| | | |

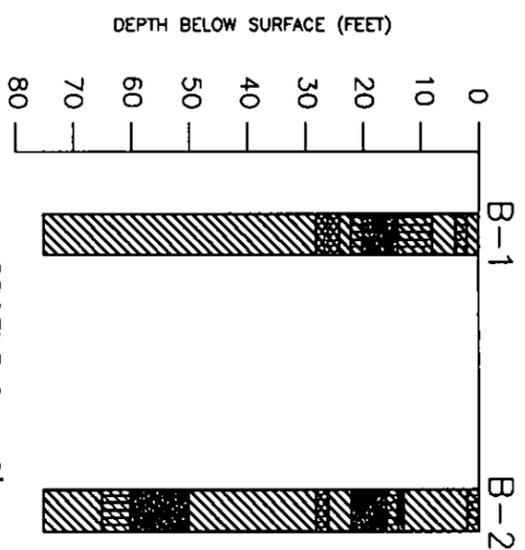
| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 4 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |



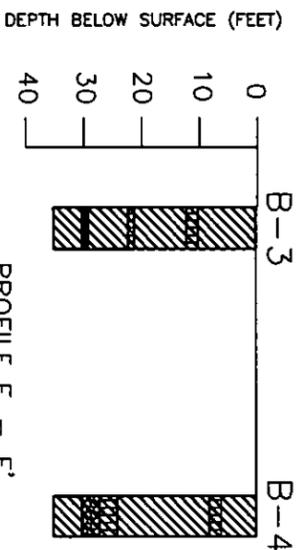
PROFILE D - D'
SCALE AS SHOWN



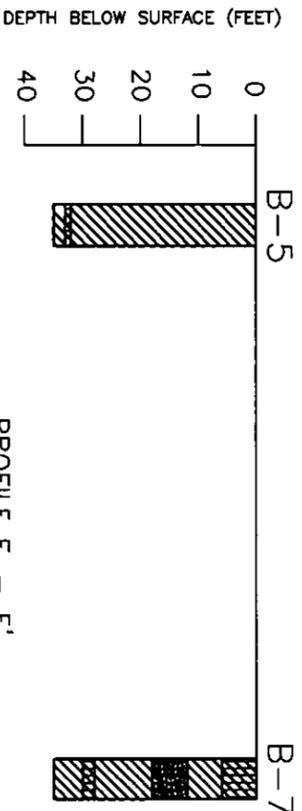
PROFILE C - C'
SCALE AS SHOWN



PROFILE G - G'
SCALE AS SHOWN



PROFILE F - F'
SCALE AS SHOWN



PROFILE E - E'
SCALE AS SHOWN

- LEGEND**
- HIGH PLASTICITY CLAY (CH)
 - HIGH PLASTICITY ORGANIC CLAYS (OH)
 - LOW PLASTICITY SILTY CLAY (CL)
 - CLAYEY SILT (ML)
 - SANDY SILT (ML)
 - SILTY SAND (SM)
 - POORLY GRADED SAND (SP)
 - PEAT

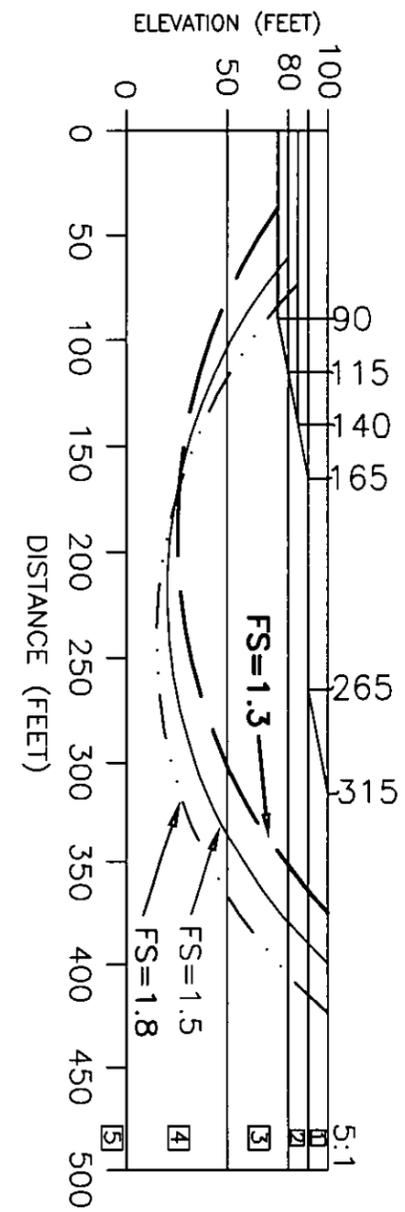
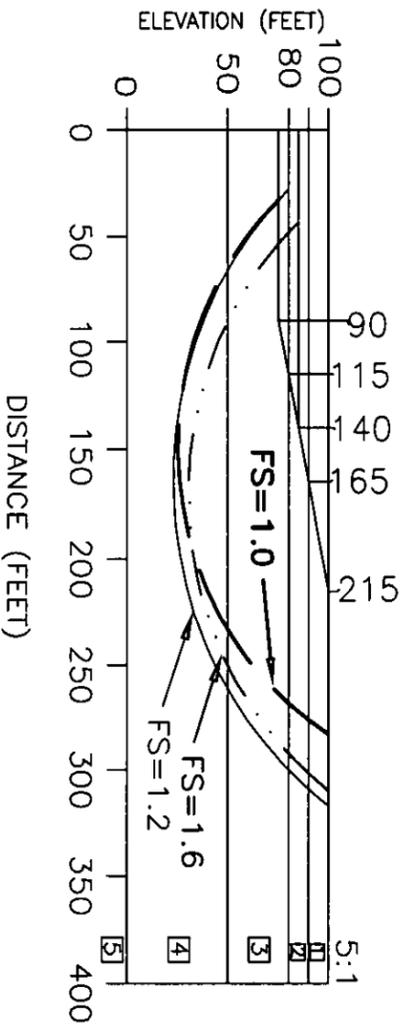
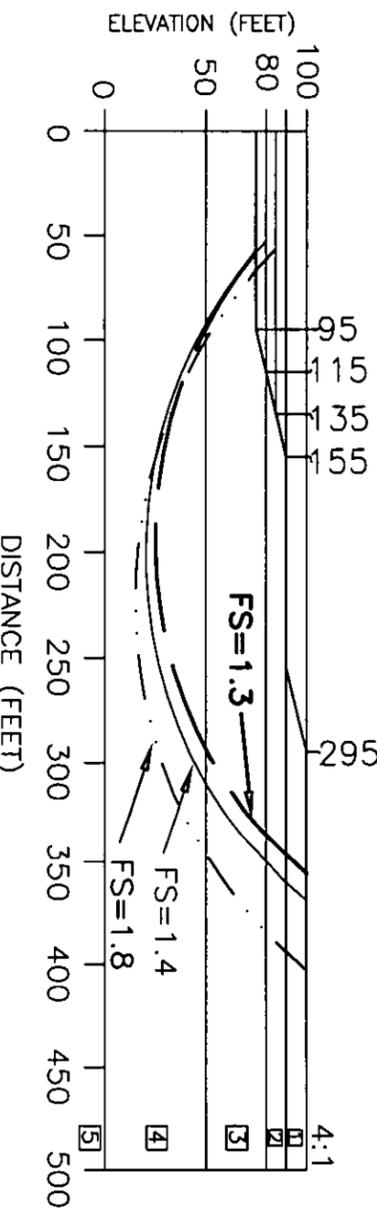
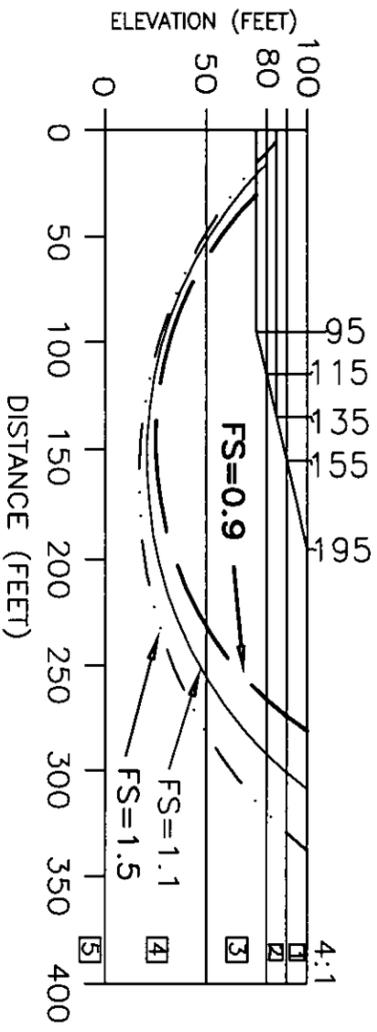
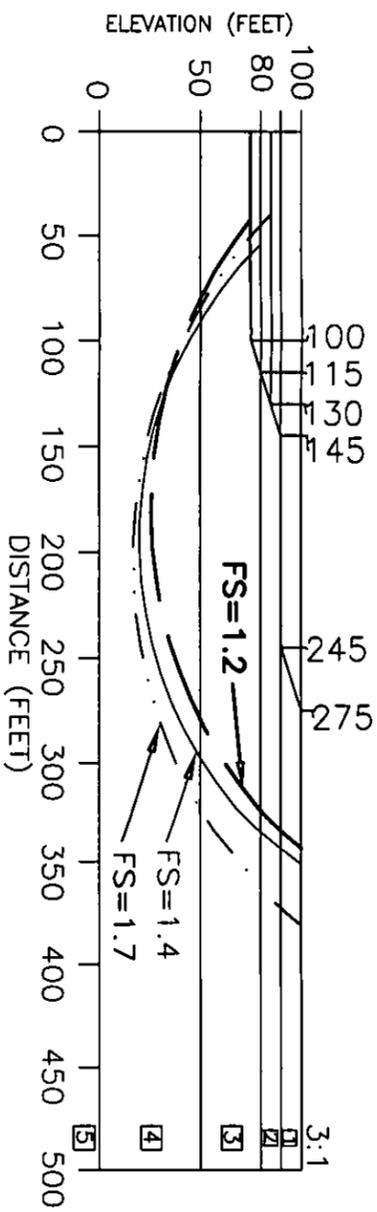
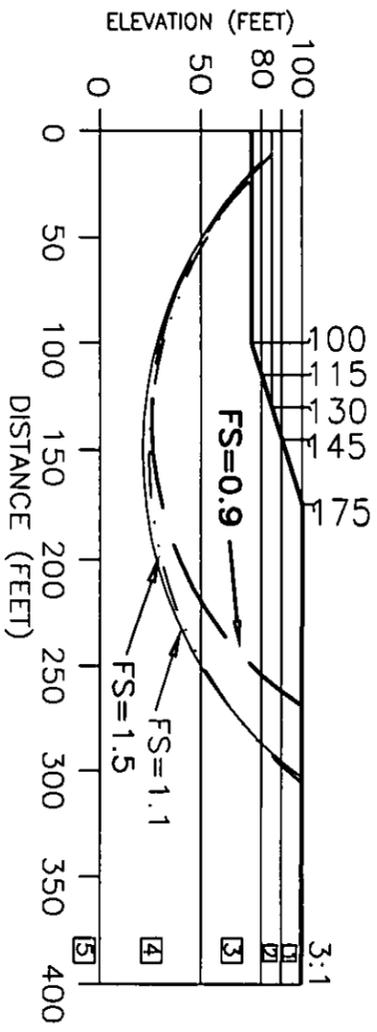


KENDRICK ENGINEERING, LLC
 LBTC, 8000 GSRI AVE., BUILDING 3000
 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211

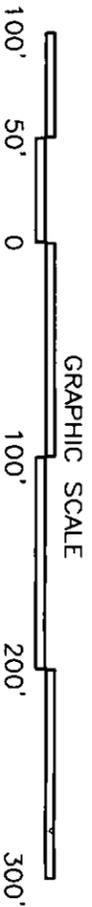
TRC SOLUTIONS, INC.
 BORING LOG PROFILES C-C' THRU G-G'
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
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| | | |

| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 5 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |



| LAYER | UNIT WEIGHT (PCF) | COHESION (PSF) | FRICTION ANGLE (DEGREES) |
|-------|-------------------|----------------|--------------------------|
| 1 | 110 | 700 | 0 |
| 2 | 115 | 600 | 0 |
| 3 | 100 | 400 | 0 |
| 4 | 105 | 400 | 0 |
| 5 | 105 | 400 | 0 |



KENDRICK ENGINEERING, LLC

LBTC, 8000 GSRI AVE., BUILDING 3000
 BATON ROUGE, LOUISIANA 70820
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TRC SOLUTIONS, INC.

SLOPE STABILITY - EXCAVATION SIDE SLOPES
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 6 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |
| | | |



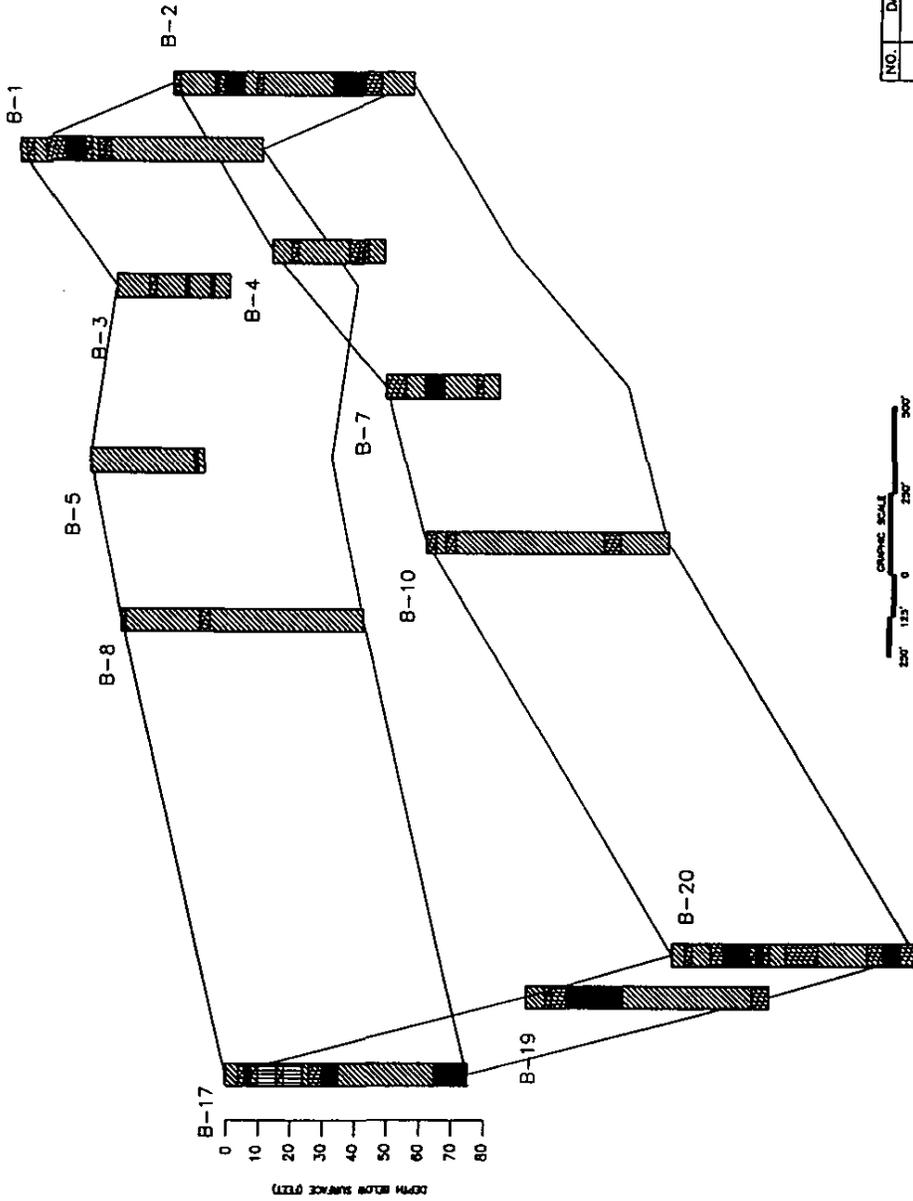
| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
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|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 2 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |



TRC SOLUTIONS, INC.
 BORING LOCATION MAP
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISISANA

KENDRICK ENGINEERING, LLC
 LBTC, 8000 GSRI AVE., BUILDING 3000
 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211



| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
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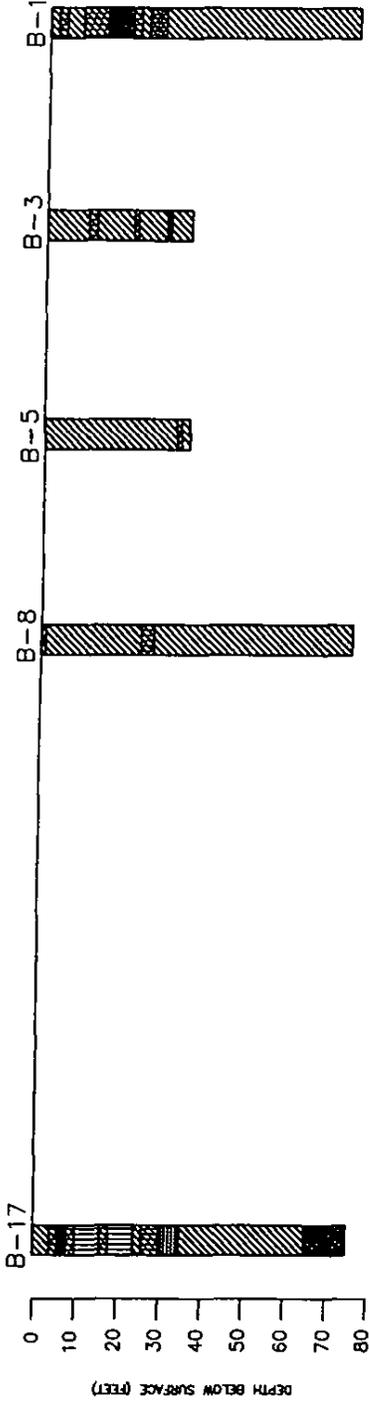
| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 3 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 06/29/07 |
| CAD FILE: | |

TRC SOLUTIONS, INC.
BORING LOG PROFILE
POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
ST. GABRIEL, LOUISISANA

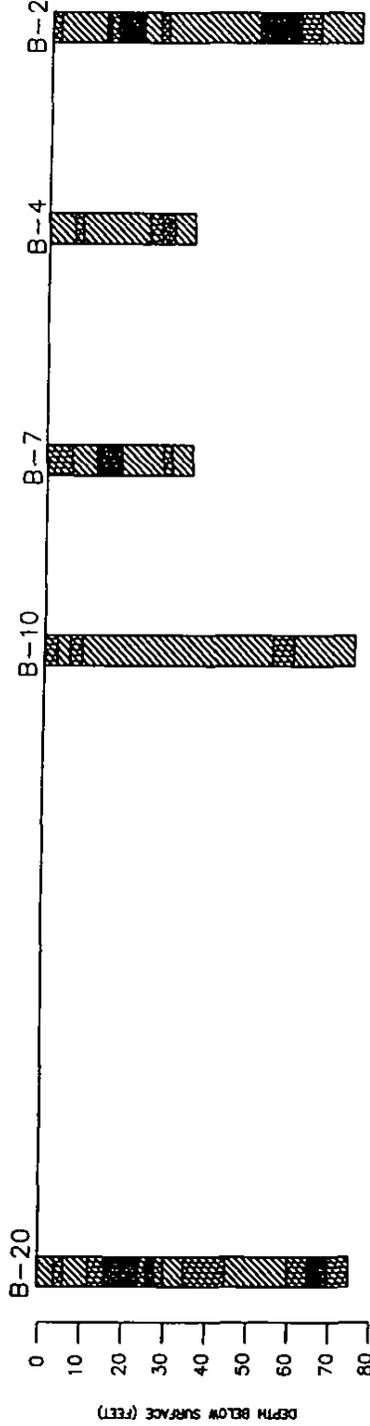
KENDRICK ENGINEERING, LLC
LETC, 8000 GSRI AVE., BUILDING 3000
BATON ROUGE, LOUISISANA 70820
(225) 578-8577 (225) 205-7211

LEGEND

-  HIGH PLASTICITY CLAY (CH)
-  HIGH PLASTICITY ORGANIC CLAYS (OH)
-  LOW PLASTICITY SILTY CLAY (CL)
-  CLAYEY SILT (ML)
-  SANDY SILT (ML)
-  SILTY SAND (SM)
-  POORLY GRADED SAND (SP)
-  PEAT



PROFILE B - B'
SCALE AS SHOWN



PROFILE A - A'
SCALE AS SHOWN



| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
| | | |

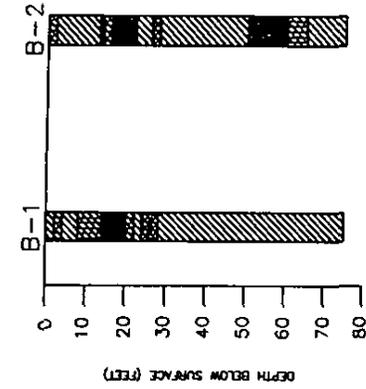
| | |
|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 4 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 05/29/07 |
| CAD FILE: | |

TRC SOLUTIONS, INC.
BORING LOG PROFILE
POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
ST. GABRIEL, LOUISISANA

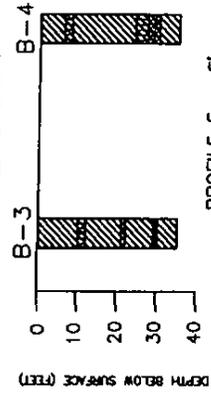
KENDRICK ENGINEERING, LLC
187C, 8000 GSRI AVE., BUILDING 3000
BATON ROUGE, LOUISISANA 70820
(225) 578-8577 (225) 205-7211

LEGEND

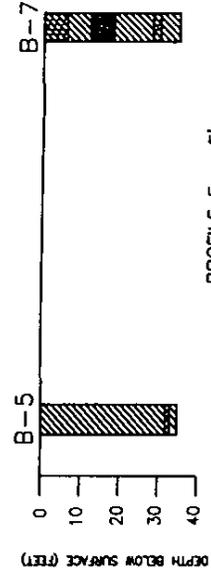
-  HIGH PLASTICITY CLAY (CH)
-  HIGH PLASTICITY ORGANIC CLAYS (OH)
-  LOW PLASTICITY SILTY CLAY (CL)
-  CLAYEY SILT (ML)
-  SANDY SILT (ML)
-  SILTY SAND (SM)
-  POORLY GRADED SAND (SP)
-  PEAT



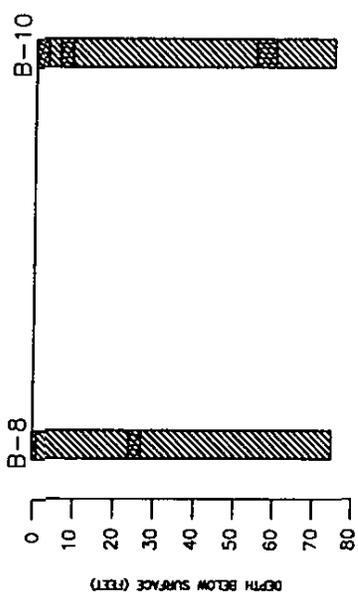
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SCALE AS SHOWN



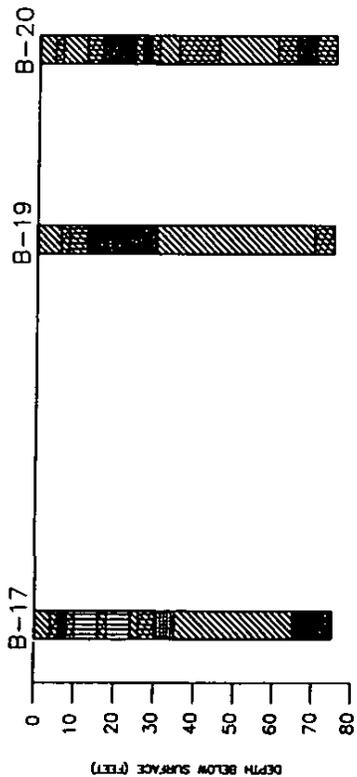
PROFILE F - F'
SCALE AS SHOWN



PROFILE E - E'
SCALE AS SHOWN



PROFILE D - D'
SCALE AS SHOWN



PROFILE C - C'
SCALE AS SHOWN

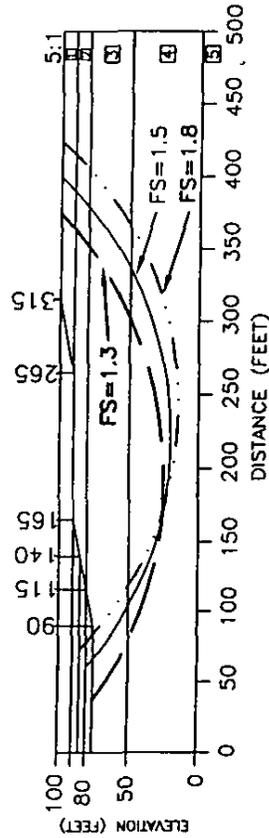
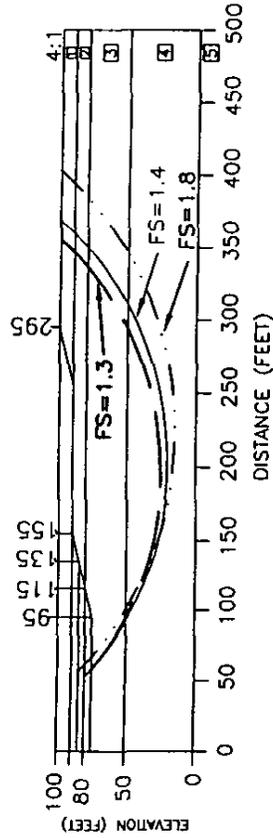
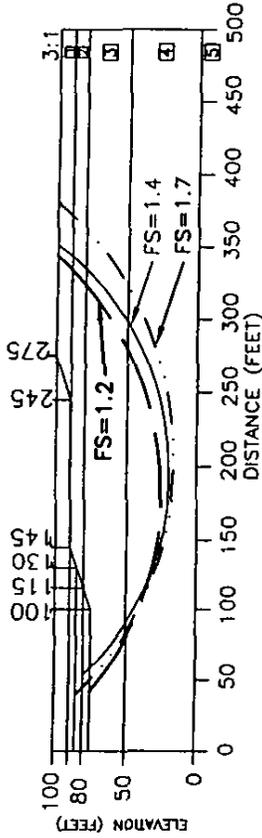
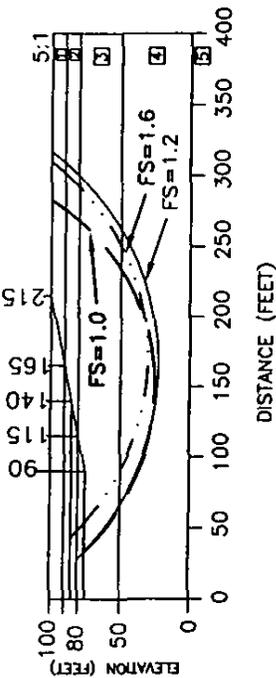
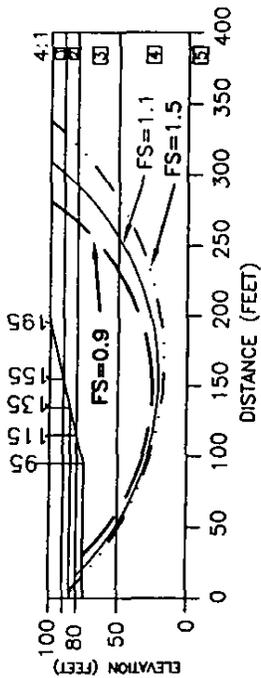
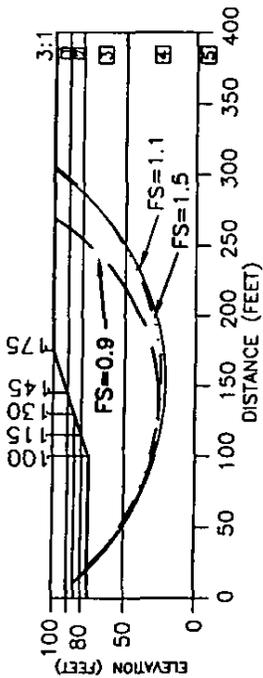


| NO. | DATE | REVISION DESCRIPTION |
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|-------------------------|-----------------|
| DRAWN BY: S KENDRICK | FIGURE: 5 |
| CHECKED BY: B KENDRICK | SCALE: AS SHOWN |
| APPROVED BY: B KENDRICK | DATE: 08/29/07 |
| CAD FILE: | |

TRC SOLUTIONS, INC.
BORING LOG PROFILES C-C' THRU G-G'
POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
ST. GABRIEL, LOUISIANA

KENDRICK ENGINEERING, LLC
LBTC, 8000 GSRI AVE., BUILDING 3000
BATON ROUGE, LOUISIANA 70820
(225) 578-8577 (225) 205-7211



| LAYER | UNIT WEIGHT (PCF) | COHESION (PSF) | FRICTION ANGLE (DEGREES) |
|-------|-------------------|----------------|--------------------------|
| 1 | 110 | 700 | 0 |
| 2 | 115 | 600 | 0 |
| 3 | 100 | 400 | 0 |
| 4 | 105 | 400 | 0 |
| 5 | 105 | 400 | 0 |



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 BATON ROUGE, LOUISIANA 70820
 (225) 578-8577 (225) 205-7211

TRC SOLUTIONS, INC.
 SLOPE STABILITY - EXCAVATION SIDE SLOPES
 POINT CLEAR INDUSTRIAL PARK CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

| NO. | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
| | | |
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DRAWN BY: S KENDRICK FIGURE: 6
 CHECKED BY: B KENDRICK SCALE: AS SHOWN
 APPROVED BY: B KENDRICK DATE: 08/29/07
 CAD FILE:

APPENDIX A
BORING LOGS



**LEGEND AND NOTES FOR
LOG OF BORING AND TEST RESULTS**

PP Pocket penetrometer: Resistance in tons per square foot

SPT Standard Penetration Test: Number of blows of a 140-lb hammer dropped 30 inches required to drive 2-in. O.D., 1.4-in. I.D. sampler a distance of 1 foot into the soil after first seating it 6 inches

SPLR Type of Sampling  Shelby  SPT  Auger  No sample

SYMBOL Clay  Silt  Sand  Peat/Humus  Shells  Stone/Gravel 
Predominant type shown heavy; Modifying type shown light

USC Unified Soil Classification

DENSITY Unit weight in pounds per cubic foot

SHEAR TESTS

TYPE

- UC Unconfined compression shear
- OB Unconsolidated undrained triaxial compression shear on one specimen confined at the approximate overburden pressure
- UU Unconsolidated undrained triaxial compression shear
- CU Consolidated undrained triaxial compression shear
- DS Direct shear

- ϕ Angle of internal friction in degrees
- c Cohesion in pounds per square foot

ATTERBERG LIMITS

- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index

OTHER TESTS

- CON Consolidation
- PD Particle size distribution (sieve and/or hydrometer)
- k Coefficient of permeability in centimeters per second
- SP Swelling pressure in pounds per square foot

Other laboratory test results reported on separate figures

GENERAL NOTES

- (1) If a ground water depth is shown on the boring log, these observations were made at the time of drilling and were measured below the existing ground surface. These observations are shown on the boring logs. However, ground water levels may vary due to seasonal fluctuations and other factors. If important to construction, the depth to ground water should be determined by those persons responsible for construction immediately prior to beginning work.
- (2) While the individual logs of borings are considered to be representative of subsurface conditions at their respective locations on the dates shown, it is not warranted that they are representative of subsurface conditions at other locations and times.

EUSTIS ENGINEERING COMPANY, INC. **LOG OF BORING AND TEST RESULTS**
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale In Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/07 & 09/07 | Boring: 1 | | | Refer to "Legends & Notes" | | |
|---------------------|------|-----|--------|--|-----|---------------------------|----------------|----------------------------|-------------|------------------|-----|----------------------------|----|----|
| | | | S | P | R | | | | Shear Tests | Atterberg Limits | | Other Tests | | |
| | | | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Type | c | LL | PL | PI |
| 50 | | | | | | | | | | | | | | |
| | 1.00 | | | Stiff gray clay w/concretions & silt pockets | CH | 5 | 54-55 | 34 | 89 | UC | 153 | 85 | 25 | 60 |
| | 1.00 | | | Soft gray clay w/silt pockets | CH | 6 | 59-60 | | | | | | | |
| | 0.75 | | | | | 7 | 64-65 | 48 | 71 | UC | 289 | | | |
| | 0.50 | | | | | 8 | 69-70 | | | | | | | |
| | 0.50 | | | | | 9 | 74-75 | 42 | 76 | UC | 297 | 55 | 25 | 30 |
| 80 | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | | |

Comments:



| Scale In Feet | PP | SPT | Datum: | | Gr. Water Depth: | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests | | |
|---------------------|------|-----|--------|---|------------------|---|-----|------------------|------------------|-----------------------------|---------|-----|-------------|---|---|------------------|----|----|----------------|--|--|
| | | | S | P | | | | | | | Dry | Wet | Type | e | C | LL | PL | PI | | | |
| 0 | 0.50 | | | | | Medium stiff tan silty clay w/roots | CL | 1 | 0-2 | 28 | | | | | | | | | | | |
| | 1.25 | | | | | Stiff gray & tan clay w/silty clay layers & roots | CH | 2 | 2-4 | 34 | | | | | | | | | | | |
| | 1.25 | | | | | | | 3 | 4-6 | 30 | | | | | | | | | | | |
| | 3.25 | | | | | | | 4 | 6-8 | 42 | | | | | | | | | | | |
| | 3.25 | | | | | | | 5 | 8-10 | 43 | | | | | | | | | | | |
| 10 | 1.25 | | | | | Medium stiff gray & tan clay | CH | 6 | 10-12 | 48 | | | | | | | | | | | |
| | 0.25 | | | | | Loose gray sandy silt | ML | 7 | 12-14 | 26 | | | | | | | | | | | |
| | 0.25 | | | | | Soft gray silty clay | CL | 8 | 14-16 | 38 | | | | | | | | | | | |
| | 0.25 | | | | | Loose gray sandy silt | ML | 9 | 16-18 | 29 | | | | | | | | | | | |
| | | | | | | w/roots | | 10 | 16-20 | 27 | | | | | | | | | | | |
| 20 | | | | | | | | 11 | 20-22 | 28 | | | | | | | | | | | |
| | 0.50 | | | | | Soft gray clay w/silt lenses & roots | CH | 12 | 22-24 | 58 | | | | | | | | | | | |
| | 1.25 | | | | | | | 13 | 24-28 | 69 | | | | | | | | | | | |
| | 1.25 | | | | | Stiff gray organic clay w/roots | OH | 14 | 26-28 | 103 | | | | | | | | | | | |
| | 1.25 | | | | | Medium stiff gray clay w/silt lenses | CH | 15 | 28-30 | 53 | | | | | | | | | | | |
| 30 | 0.50 | | | | | | | 16 | 30-32 | | | | | | | | | | | | |
| | 0.50 | | | | | Medium stiff gray clay | CH | 17 | 32-34 | | | | | | | | | | | | |
| | 0.50 | | | | | | | 18 | 34-35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | | |

Ground Elev.: Datum: Gr. Water Depth: Job No.: 19695 Date Drilled: 3/02/07 Boring: 2 Referto "Legends & Notes"

Comments: Latitude: N 30° 13.759'
 Longitude: W 91° 05.246'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests | | |
|---------------------|----|-----|--------|---|---|-----------------------|-----|------------------|------------------|-----------------------------|---------|-----|-------------|---|---|------------------|----|----|----------------|--|--|
| | | | S | P | R | | | | | | Dry | Wet | Type | φ | C | LL | PL | PI | | | |
| 0 | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | |
| 0.25 | | | | | | | 1 | 34-35 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | 2 | 39-40 | | 72 | 58 | 99 | | | | 83 | 19 | 64 | | | |
| 0.75 | | | | | | | 3 | 44-45 | | | | | | | | | | | | | |
| 1.00 | | | | | | | 4 | 49-50 | | 48 | 72 | 107 | | | | 96 | 25 | 71 | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale In Feet | PP | SPT | S P L R | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|-----|------------------|---|-----|------------------|------------------|-----------------------------|---------|-----|-------------|--------|-----|------------------|----|----|----------------|
| | | | | | | | | | Dry | Wet | Type | ϕ | C | LL | PL | PI | |
| 50 | | | | Soft gray sandy clay w/silty sand layers | CL | | | | | | | | | | | | |
| | 0.25 | | | | | 5 | 54-55 | | | | | | | | | | |
| | 1.25 | | | Very loose gray clayey silt | ML | 6 | 59-60 | 29 | 92 | 119 | UC | - | 338 | | | | |
| | | | | Soft to medium stiff gray clay w/wood & concretions | CH | 7 | 84-85 | | | | | | | | | | |
| | 1.25 | | | | | 8 | 69-70 | 57 | 65 | 102 | UC | - | 438 | | | | |
| | 0.50 | | | | | 9 | 74-75 | | | | | | | | | | |

Ground Elev.: Datum: Gr. Water Depth: See Text Job No.: 19728 Date Drilled: 5/07/07 Boring: 2 Refer to "Legends & Notes"

Comments:

LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA



| Scale in Feet | PP | SPT | Datum: | | Gr. Water Depth: | Job No.: 19695 | Date Drilled: 3/02/07 | Boring: 3 | | | Refer to "Legends & Notes" | | | | |
|---------------------|------|-----|--------|---|--|----------------|-----------------------|-------------|------------------|-------------|----------------------------|---------|-----------------------|---------------|------------------------|
| | | | S | P | | | | Other Tests | Atterberg Limits | Shear Tests | | Density | Water Content Percent | Depth In Feet | Sample Number |
| | | | S | P | Visual Classification | USC | Dry | Wet | Type | ϕ | C | LL | PL | PI | |
| 0 | 1.25 | | | | Medium stiff to stiff gray & tan clay w/silt pockets & roots | CH | | | | | | 83 | 24 | 59 | ORGANIC CONTENT = 5.1% |
| | 1.50 | | | | | | | | | | | | | | |
| | 1.50 | | | | | | | | | | | | | | |
| | 1.50 | | | | | | | | | | | | | | |
| | 1.50 | | | | | | | | | | | | | | |
| 10 | 1.50 | | | | Medium stiff gray & tan silty clay w/clay layers & roots | CL | | | | | | | | | ORGANIC CONTENT = 3.9% |
| | 2.00 | | | | Silt to very stiff gray & tan clay w/silt lenses | CH | | | | | | | | | |
| | 2.25 | | | | | | | | | | | | | | |
| | 2.00 | | | | Stiff gray clay w/silt lenses & concretions | CH | | | | | | | | | |
| | 2.00 | | | | | | | | | | | | | | |
| 20 | 0.50 | | | | Medium stiff gray silty clay | CL | | | | | | | | | |
| | 0.50 | | | | Soft to medium stiff gray clay w/silt pockets & roots | CH | | | | | | | | | |
| | 0.50 | | | | | | | | | | | | | | |
| | 0.50 | | | | | | | | | | | | | | |
| 30 | 1.00 | | | | Very stiff brown & black peat w/roots | PI | | | | | | | | | |
| | 1.00 | | | | Medium stiff gray clay w/organic clay & wood w/wood | CH | | | | | | | | | ORGANIC CONTENT = 2.6% |
| | 1.00 | | | | | | | | | | | | | | |
| | 1.00 | | | | | | | | | | | | | | |

Comments: Latitude: N 30° 13.823'
 Longitude: W 91° 05.360'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 BORROW INVESTIGATION
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 1)



| Scale in Feet | PP | Datum: | | SPT | Visual Classification | USC | Sample Number | Depth in Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|--------|---|-----|--|-----|------------------|---------------------|-----------------------------|---------|-----|-------------|---|---|------------------|----|----|-------------------------------|
| | | S | P | | | | | | | Dry | Wet | Type | c | ϕ | LL | PL | PI | |
| 0 | 0.50 | | | | Stiff gray & tan clay w/silty clay layers & roots | CH | 1 | 0-2 | 45 | | | | | | | | | ORGANIC CONTENT = 3.0% |
| | 1.25 | | | | Medium Stiff gray & tan clay w/silty sand layers | CH | 2 | 2-4 | 32 | | | | | | | | | |
| | 0.50 | | | | Medium stiff gray & tan silty clay | CL | 3 | 4-6 | 40 | | | | | | | | | |
| | 0.50 | | | | Medium stiff to stiff gray & tan clay w/silt lenses & roots | CH | 4 | 6-8 | 34 | | | | | | | | | ORGANIC CONTENT = 3.6% |
| 10 | 0.50 | | | | Medium stiff gray clay w/silt layers & roots | CH | 5 | 8-10 | 47 | | | | | | | | | |
| | 3.00 | | | | Stiff gray clay w/concretions | CH | 6 | 10-12 | 53 | | | | | | | | | |
| | 1.50 | | | | Medium stiff gray & tan clay w/silt lenses & concretions | CH | 7 | 12-14 | 41 | | | | | | | | | |
| | 1.25 | | | | Stiff gray clay w/silt pockets & roots | CH | 8 | 14-16 | 50 | | | | | | | | | ORGANIC CONTENT = 3.3% |
| | 0.50 | | | | Medium stiff gray clay | CH | 9 | 16-18 | 44 | | | | | | | | | |
| | 0.50 | | | | Soft gray silty clay | CH | 10 | 18-20 | 49 | | | | | | | | | ORGANIC CONTENT = 3.4% |
| | 0.50 | | | | Stiff gray organic clay w/roots | OH | 11 | 20-22 | 50 | | | | | | | | | |
| | 0.25 | | | | Medium stiff gray clay | CH | 12 | 22-24 | 60 | | | | | | | | | |
| | 0.50 | | | | Medium stiff gray clay | CH | 13 | 24-26 | 43 | | | | | | | | | |
| | 0.50 | | | | | | 14 | 26-28 | 141 | | | | | | | | | ORGANIC CONTENT = 28.9% |
| | 0.50 | | | | | | 15 | 28-30 | 119 | | | | | | | | | |
| | 0.50 | | | | | | 16 | 30-32 | | | | | | | | | | |
| | 0.50 | | | | | | 17 | 32-34 | | | | | | | | | | |
| | 0.50 | | | | | | 18 | 34-35 | | | | | | | | | | |

Ground Elev.: Datum: Gr. Water Depth: Job No.: 19995 Date Drilled: 3/03/07 Boring: 4 Refer to "Legends & Notes"

Comments: Latitude: N 30° 13.743'
 Longitude: W 91° 05.347'



| Ground Elev.: Scale In Feet | Datum: | | SPT | S P L R Symbol | Visual Classification | USC | Sample Number | Depth in Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|--------------------------------------|--------|----|-----|----------------------------|---|-----|------------------|---------------------|-----------------------------|---------|-----|-------------|---|-----|------------------|----|------------------------------|----------------|
| | PP | SL | | | | | | | | Dry | Wet | Type | σ | C | LL | PL | PI | |
| 0 | 0.50 | | | | Stiff gray & tan silty clay w/roots | CL | 1 | 0-2 | 26 | | | | | 50 | 21 | 29 | ORGANIC CONTENT = 3.5% | |
| | 0.50 | | | | | | 2 | 2-4 | 26 | | | | | | | | | |
| | 2.00 | | | | | | 3 | 4-6 | 31 | | | | | | | | | |
| | 2.25 | | | | Stiff gray & tan clay w/silty sand lenses & roots | CH | 4 | 6-8 | 35 | | | | | 68 | 21 | 47 | ORGANIC CONTENT = 2.7% | |
| 10 | 1.50 | | | | Medium stiff gray & tan clay w/silty sand layers | CH | 5 | 8-10 | 46 | | | | | | | | | |
| | 1.25 | | | | Stiff gray & tan clay w/silty clay layers | CH | 6 | 10-12 | 46 | | | | | | | | | |
| | 0.25 | | | | Loose gray sandy silt | ML | 7 | 12-14 | 28 | | | | | N/P | | | ORGANIC CONTENT = 1.0% | |
| | 0.25 | | | | | | 8 | 14-16 | 28 | | | | | | | | | |
| | 0.25 | | | | | | 9 | 16-18 | 30 | | | | | | | | | |
| | 0.25 | | | | Soft gray clay | CH | 10 | 18-20 | 51 | | | | | 72 | 22 | 50 | ORGANIC CONTENT = 4.1% | |
| | 0.50 | | | | | | 11 | 20-22 | 65 | | | | | | | | | |
| | 0.50 | | | | Medium stiff gray clay w/roots & concretions | CH | 12 | 22-24 | 57 | | | | | | | | | |
| | 0.25 | | | | | | 13 | 24-26 | 52 | | | | | | | | | |
| | 0.50 | | | | Medium stiff gray clay | CH | 14 | 26-28 | 52 | | | | | | | | | |
| | 0.50 | | | | Soft gray silty clay | CL | 15 | 28-30 | 37 | | | | | | | | | |
| | 0.50 | | | | Medium stiff gray clay w/silty clay layers | CH | 16 | 30-32 | | | | | | | | | | |
| | 0.50 | | | | | | 17 | 32-34 | | | | | | | | | | |
| | 0.50 | | | | w/organic matter | | 18 | 34-35 | | | | | | | | | | |

Job No.: 19995 Date Drilled: 3/03/07 Boring: 7 Refer to "Legends & Notes"

Comments: Latitude: N 30° 13.691'
Longitude: W 91° 05.422'

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/15/07 | Boring: 8 | | | | Other Tests | | | | | | |
|---------------------|------|-----|--------|---|---|--|----------------|-----------------------|------------------|-----------------------------|------------------|-----|----------------|----|------|-----|----|----|--------------------------|
| | | | S | P | R | | | | Density | Shear Tests | Atterberg Limits | | | | | | | | |
| | | | | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Dry | Wet | Type | φ | C | LL | PL | PI | |
| 0 | | | | | | | USC | 1 | 0-1 | 36 | | | | | | | | | |
| | 2.00 | | | | | Stiff gray silty clay w/roots | CL | 2 | 2-3 | 44 | | | | | | 100 | 35 | 65 | ORG. CONT. = 4.733 |
| | 2.00 | | | | | Stiff brown & gray clay w/silt pockets & roots | CH | 3 | 5-6 | 44 | 75 | 108 | UC | -- | 1021 | | | | |
| 10 | 2.75 | | | | | Medium stiff gray & brown clay w/silt pockets | CH | 4 | 8-9 | 39 | | | | | | 106 | 35 | 71 | ORG. CONT. = 5.011 |
| | 0.50 | | | | | | | 5 | 11-12 | 51 | | | | | | | | | |
| | 0.25 | | | | | Medium stiff gray clay w/sandy silt layers | CH | 6 | 14-15 | 42 | 77 | 110 | UC | -- | 956 | 87 | 24 | 63 | ORG. CONT. = 3.811 |
| | 1.25 | | | | | Medium stiff tan & gray clay w/concretions | CH | 7 | 17-18 | 41 | | | | | | | | | |
| | 1.00 | | | | | Soft gray clay | CH | 8 | 20-21 | 39 | | | | | | 74 | 27 | 47 | ORG. CONT. = 4.291 |
| | | | | | | Very soft gray silty clay w/wood | CL | 9 | 23-24 | 66 | 60 | 100 | UC | -- | 263 | | | | |
| | | | | | | Very soft gray clay w/sandy silt layers | CH | 10 | 26-27 | 37 | | | | | | 43 | 19 | 24 | ORG. CONT. = 3.036 |
| | | | | | | w/silty sand pockets & wood | | 11 | 29-30 | 53 | | | | | | | | | |
| | | | | | | | | 12 | 34-35 | 71 | 58 | 99 | | | | 64 | 20 | 44 | |
| | | | | | | | | 13 | 39-40 | | | | | | | | | | |
| | 0.25 | | | | | | | 14 | 44-45 | 72 | 56 | 96 | UC | -- | 204 | | | | PERM |
| 50 | | | | | | | | 15 | 49-50 | | | | | | | | | | PERM |

Comments:

LOG OF BORING AND TEST RESULTS

POINT CLEAR INDUSTRIAL PARK
CLASS III LANDFILL
ST. GABRIEL, LOUISIANA



| Scale In Feet | PP | SPT | Datum: S P L R | Visual Classification | USC | Sample Number | Depth in Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|-----|----------------------------|---|-----|------------------|---------------------|-----------------------------|---------|-----|-------------|---|-----|------------------|----|----|----------------|
| | | | | | | | | | Dry | Wet | Type | φ | C | LL | PL | PI | |
| 50 | | | | Very soft gray clay w/silt pockets, shell fragments, & organic matter | CH | 16 | 54-55 | 70 | 57 | 96 | UC | - | 184 | 108 | 26 | 82 | |
| 60 | 0.25 | | | | | 17 | 59-60 | | | | | | | | | | |
| 70 | 0.75 | | | w/silt pockets & organic matter | | 18 | 64-65 | 77 | 53 | 94 | UC | - | 166 | | | | |
| 80 | | | | | | 19 | 69-70 | | | | | | | | | | |
| 90 | | | | w/silt pockets | | 20 | 74-75 | 59 | 64 | 102 | UC | - | 187 | 75 | 24 | 51 | |
| 100 | | | | | | | | | | | | | | | | | |

Comments:

Boring: 8 Refer to "Legends & Notes"

Job No.: 19728 Date Drilled: 5/15/07

Gr. Water Depth: See Text

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale In Feet | Ground Elev.: | Datum: | | Gr. Water Depth: | Job No.: 19728 | Date Drilled: 5/15/07 | Boring: 10 | | | | Refer to "Legends & Notes" | | | | | | | |
|---------------------|---------------|--------|--------|------------------|----------------|-----------------------|-----------------------|-----|---------------|---------------|----------------------------|---------|-----|-------------|----|------------------|----|-------------|
| | | SPT | Symbol | | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | Atterberg Limits | | Other Tests |
| | | | | | | | | | | | | Dry | Wet | Type | σ | C | LL | |
| 50 | | | | | | | | | | | | | | | | | | |
| 0.75 | | | | | 16 | 54-55 | 44 | 75 | 108 | UC | - | 304 | | | | | | |
| 0.50 | | | | | 17 | 59-60 | | | | | | | | | | | | |
| 0.75 | | | | | 18 | 64-65 | | | | | | | | | | | | |
| 0.75 | | | | | 19 | 69-70 | 51 | 68 | 103 | UC | - | 1600 | 92 | 24 | 68 | | | |
| 0.75 | | | | | 20 | 74-75 | | | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale in Feet | Ground Elev.: | Datum: | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/11/07 | Boring: 17 | | | Refer to "Legends & Notes" | | | | | | | | | | |
|---------------------|---------------|--------|----|---------------------------|----------------|-----------------------|---|---------------|---------------|----------------------------|-----------------------|---------|-------------|------------------|-------------|-----|----|----|----------------|----------------|
| | | SPT | PP | | | | USC | Sample Number | Depth In Feet | | Water Content Percent | Density | Shear Tests | Atterberg Limits | Other Tests | | | | | |
| | | S | P | L | R | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Dry | Wet | Type | UC | LL | PL | PI | Other Tests | |
| 0 | 1.00 | | | | | | Medium stiff gray clay w/silt pockets | CH | 1 | 0-2 | 38 | 77 | 106 | UC | - | 97 | 22 | 75 | ORG%= 5.148 | |
| | 0.75 | | | | | | Medium stiff tan & gray clay | CH | 2 | 2-4 | 43 | | | | | | | | | |
| | 0.25 | | | | | | Stiff light gray & tan silty clay | CL | 3 | 4-6 | 30 | | | | | | | | | |
| | 0.25 | | | | | | Soft light gray & tan sandy clay | CL | 4 | 6-8 | 33 | | | | | | | | | |
| | 0.25 | | | | | | Very loose tan & gray clayey silt | ML | 5 | 8-10 | 26 | | | | | | | | | |
| 10 | 0.25 | | | | | | Loose to medium compact gray sandy silt w/clay pockets | ML | 6 | 10-12 | 31 | 91 | 119 | OB | 0 | 667 | | | | |
| | 0.25 | | | | | | | | 7 | 12-14 | 31 | | | | | | | | | |
| | 0.25 | | | | | | | | 8 | 14.5-16 | 30 | | | | | | | | | |
| | 0.25 | | | | | | | | 9 | 16.5-18 | 34 | | | | | | | | | |
| 20 | 1.50 | | | | | | Loose to medium compact gray sandy silt w/clay pockets & layers | ML | 10 | 18-20 | 29 | 94 | 121 | OB | 0 | 469 | 25 | 14 | 11 | ORG%= 1.490 |
| | 1.25 | | | | | | | | 11 | 20-22 | 25 | | | | | | | | | |
| | 1.25 | | | | | | | | 12 | 22-24 | 31 | 65 | 103 | UC | - | 73 | 22 | 51 | ORG%= 5.844 | |
| | 1.25 | | | | | | | | 13 | 24-26 | 58 | | | | | | | | | |
| | 0.50 | | | | | | Wood w/clay layers | WD | 14 | 26.5-28 | 33 | | | | | | | | | |
| | 0.50 | | | | | | | | 15 | 28.5-30 | 35 | | | | | | | | | |
| | 0.25 | | | | | | Soft gray clay w/silty sand pockets & wood | CH | 16 | 34-35 | 359 | | | | | | | | | |
| 40 | 0.25 | | | | | | | | 17 | 39-40 | | | | | | | | | | |
| | 0.25 | | | | | | Soft dark gray clay w/humus layers | CH | 18 | 44-45 | 46 | 72 | 105 | UC | - | 333 | | | | |
| | 0.25 | | | | | | | | 19 | 49-50 | | | | | | | | | | |
| 50 | 1.00 | | | | | | Soft gray clay w/sand pockets & lenses | CH | | | | | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: S P L R | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | | Shear Tests | | | Atterberg Limits | | | Other Tests |
|---------------------|------|-----|----------------------------|--------|---|-----|------------------|------------------|-----------------------------|---------|-----|-------------|---|------|------------------|----|----|----------------|
| | | | | | | | | | | Dry | Wet | Type | σ | C | LL | PL | PI | |
| 0 | 0.25 | | | | Soft gray clay w/roots | CH | 1 | 0-2 | 49 | | | | | | | | | ORG%= 6.916 |
| | 0.50 | | | | Soft gray clay | | 2 | 2-4 | 45 | | | | | | | | | |
| | 0.75 | | | | Medium stiff tan & gray clay w/silt pockets | CH | 3 | 4-6 | 36 | 83 | 113 | UC | - | 759 | | | | |
| | 0.50 | | | | Soft gray silty clay | CL | 4 | 6-8 | 36 | | | | | | | | | |
| | | 7 | | | Loose gray clayey silt | ML | 5 | 8.5-10 | 31 | | | | | | | | | |
| | | 9 | | | w/clay pockets | | 6 | 11-12.5 | 34 | | | | | | | | | |
| | | 11 | | | Loose to medium compact gray sandy silt w/clay pockets | ML | 7 | 13.5-15 | 30 | | | | | | | | | |
| | | 9 | | | Medium dense to very dense gray silty sand w/clay pockets | SM | 8 | 16-17.5 | 32 | | | | | | | | | |
| | | | | | | | 9 | 18-20 | 26 | | | | | | | | | |
| | | 11 | | | Loose to medium compact gray sandy silt | ML | 10 | 20-22 | 27 | 96 | 122 | OB | 0 | 3736 | | | | |
| | | 12 | | | | | 11 | 22.5-24 | 29 | | | | | | | | | |
| | | 12 | | | | | 12 | 25-26.5 | 28 | | | | | | | | | |
| | | | | | | | 13 | 27.5-29 | 28 | | | | | | | | | |
| | 0.25 | | | | Soft gray clay w/silt pockets | CH | 14 | 34-35 | | | | | | | | | | |
| | 0.25 | | | | Medium stiff dark gray clay w/silt pockets & organic matter | CH | 15 | 39-40 | 63 | 61 | 100 | UC | - | 383 | 81 | 21 | 60 | |
| | 0.75 | | | | Soft to medium stiff gray clay w/silt pockets, shell fragments, & wood | CH | 16 | 44-45 | | | | | | | | | | |
| 50 | 0.25 | | | | | | 17 | 49-50 | 49 | 69 | 103 | UC | - | 302 | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 1 of 2)



| Scale In Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/10-11/07 | Boring: 20 | Refer to "Legends & Notes" | | | | | | | |
|---------------------|------|-----|--------|---|---|---|----------------|--------------------------|------------------|-----------------------------|----------------|------------------|------------------|----|----|----------------|----------------|
| | | | S | P | L | | | | | R | Other Tests | Atterberg Limits | | | | | |
| | | | | | | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Shear Tests | Atterberg Limits | | | Other Tests | |
| | | | | | | | | | | | Dry | Type | LL | PL | PI | | |
| 0 | 1.25 | | | | | Medium stiff brown & gray clay w/wood | CH | 1 | 0-2 | 40 | | | | | | | ORG%= 6.998 |
| | 1.00 | | | | | Medium stiff brown clay w/wood | CH | 2 | 2-4 | 51 | | | | | | | |
| | 1.50 | | | | | Medium stiff light gray & tan silty clay w/concretions | CL | 3 | 4-6 | 40 | 79 | UC | 89 | 28 | 61 | | |
| | 1.00 | | | | | Medium stiff brown clay w/silt pockets | CH | 4 | 6-8 | 48 | | | | | | | |
| 10 | 1.00 | | | | | Medium stiff brown & tan clay w/silt pockets | CH | 5 | 8-10 | 44 | | | | | | | ORG%= 5.484 |
| | 1.00 | | | | | Medium compact gray & tan clayey silt | ML | 6 | 10-12 | 34 | | | | | | | |
| | 0.75 | | | | | | | 7 | 14-16 | 32 | 90 | OB | 23 | 17 | 6 | | ORG%= 1.357 |
| | 1.00 | | | | | Medium dense gray silty sand w/clay pockets | SM | 8 | 16-18 | 26 | | | | | | | |
| | 1.00 | | | | | | | 9 | 18-20 | 41 | | | | | | | |
| | 0.25 | | | | | Very loose gray sandy silt | ML | 10 | 20-22 | 32 | | | | | | | |
| | 1.00 | | | | | Soft gray sandy clay w/wood | CL | 11 | 22-24 | 30 | | | | | | | |
| | | | | | | Soft gray silty clay | CL | 12 | 24-26 | 39 | 83 | UC | 29 | 16 | 13 | | ORG%= 2.461 |
| | 0.25 | | | | | Loose gray clayey sand | SC | 13 | 26-28 | 29 | | | | | | | |
| | | | | | | Very soft gray silty clay | CL | 14 | 28-30 | 38 | | | | | | | |
| | | | | | | Very soft gray clay w/silt pockets & shell fragments | CH | 15 | 34-35 | 67 | 59 | UC | 39 | 24 | 15 | | ORG%= 2.976 |
| | | | | | | Very soft gray silty clay w/wood | CL | 16 | 39-40 | | | | | | | | |
| | 0.25 | | | | | w/roots | | 17 | 44-45 | 40 | 80 | OB | 32 | 16 | 16 | | |
| | 0.25 | | | | | Very soft gray clay w/silt pockets & concretions | CH | 18 | 47-48 | | | | | | | | |
| 50 | | | | | | | | 19 | 49-50 | | | | | | | | |

Comments:

EUSTIS ENGINEERING COMPANY, INC. LOG OF BORING AND TEST RESULTS
 POINT CLEAR INDUSTRIAL PARK
 CLASS III LANDFILL
 ST. GABRIEL, LOUISIANA

(Sheet 2 of 2)



| Scale in Feet | PP | SPT | Datum: | | | Gr. Water Depth: See Text | Job No.: 19728 | Date Drilled: 5/10-11/07 | Boring: 20 | | | Refer to "Legends & Notes" | | | | | | | |
|---------------------|------|-----|--------|---|---|--|----------------|--------------------------|------------|-----------------------|-----|----------------------------|---------------|-----------------------|---------|-------------|------------------|-------------|--|
| | | | S | P | L | | | | Symbol | Visual Classification | USC | Sample Number | Depth In Feet | Water Content Percent | Density | Shear Tests | Atterberg Limits | Other Tests | |
| | | | IR | | | | | | | Dry | Wet | Type | φ | C | LL | PL | PI | | |
| 50 | | | | | | Very soft gray clay w/wood | CH | 20 | 54-55 | 87 | 50 | 93 | OB | 0 | 137 | | | | |
| 60 | 0.25 | | | | | w/silt pockets & roots Soft gray silty clay | CI | 21 | 59-60 | | | | | | | | | | |
| 70 | | 15 | | | | Medium compact gray sandy silt w/clay pockets | ML | 22 | 64-65 | 26 | 96 | 122 | OB | 0 | 1150 | 25 | 14 | 11 | |
| 80 | | 18 | | | | Medium compact gray clayey silt | ML | 23 | 68.5-70 | | | | | | | | | | |
| 90 | | | | | | | | 24 | 73.5-75 | 30 | | | | | | | | | |
| 100 | | | | | | | | | | | | | | | | | | | |

Comments:

APPENDIX B

LABORATORY TEST RESULTS

All borings logs and the laboratory test summary sheets for the landfill borings were classified using the Unified Soil Classification System. The laboratory test summary sheets for the borrow investigation were classified using the following U. S. Army correlation Chart.

CORRELATION CHART

| SOIL CLASSIFICATION | | LETTER AND COR-RELATION SUBSCRIPT | GRAIN SIZE PERCENTAGES | | APP PLASTICITY RANGE N.Q. DIST | | STRATIGRAPH SYMBOL | MATCH ING | COLOR | |
|---------------------|-------------------|-----------------------------------|--|--|----------------------------------|----------------------------------|------------------------------------|--------------------------------|---|--------|
| | | | SAND | CLAY | LIQUID LIMIT | PLASTICITY INDEX | | | | |
| FINE GRAINED SOILS | HIGH | FAT CLAY | FAT CLAY MEDIUM CLAY SILTY CLAY High | CH ₄ CH ₃ CH ₂ | 0-20 0-20 0-20 | 70-100 50-70 40-50 | 70-110 55-80 50-60 | 45-75 30-55 25-40 |  | BLUE |
| | | FAT CLAY (SANDY) | MED. CLAY SANDY SILTY CLAY H-S SANDY CLAY High | CH _{3-s} CH _{2-s} CH ₁ | 20-50 20-30 30-60 | 50-70 40-60 40-50 | 50-70 50-60 50 | 25-50 25-40 30 | | |
| | | FAT ORGANIC CLAY | SLIGHTLY ORGANIC ORGANIC HIGHLY ORGANIC | ABOVE A LINE BELOW CH _{0a} CH _{0b} CH _{0c} | | 40-80 | ABOVE A LINE 50+ 75+ 100+ | 22+ 40+ 60+ | | |
| FINE GRAINED SOILS | LOW | LEAN CLAY | SILTY CLAY Low CLAY SILT | CL ₄ CL ₃ | 0-20 0-20 | 30-40 20-30 | 40-50 28-43 | 20-35 10-25 |  | GREEN |
| | | SANDY CLAY | SILTY CLAY Low-S SANDY CLAY Low CLAY SILT SANDY CLAY SAND | CL _{6-s} CL ₅ CL _{4-s} CL ₃ | 20-30 30-60 20-38 38-60 | 30-40 30-40 20-30 20-30 | 40-50 30-45 25-40 20-35 | 20-35 15-30 8-20 3-15 | | |
| | | LEAN ORG-ANIC CLAY | SLIGHTLY ORGANIC ORGANIC HIGHLY ORGANIC | CL _{0a} CL _{0b} CL _{0c} | | 10-40 | 30+ 50+ 70+ | 10+ 25+ 40+ | | |
| | | SILT | SILT SANDY SILT | ML ₃ ML ₂ | 0-20 0-20 | 5-15 5-20 | 25-28 22-28 | 2-6 0-6 | | |
| FINE GRAINED SOILS | SLIGHT | SANDY SILT | SANDY SILT SANDY SILTY SAND | ML _{2-s} ML ₁ | 20-45 45-60 | 5-20 0-15 | 17-28 15-20 | 0-6 0-6 |  | GREEN |
| | | ORGANIC SILT | ORG. CLAY SILT ORG. SANDY SILT | OL ₄ OL ₂ | 0-20 0-20 | 20-30 5-20 | 30-40 28-40 | 6-15 2-10 | | |
| | | ORGANIC SANDY SILT | ORG. SANDY SILT Sand ORG. SILTY SAND | OL _{2-s} OL ₁ | 20-45 45-60 | 5-20 0-15 | 28-35 30 | 0-6 0-5 | | |
| | | CLAYEY SAND | SANDY CLAY Low-S CLAY SAND SANDY SILTY SAND SANDY | SC _{6-s} SC _{3-s} SC ₁ | 60-70 60-80 60-90 | 30-40 20-30 10-20 | >28 | >6 | | |
| FINE GRAINED SOILS | SLIGHT PLASTICITY | SILTY SAND | SILTY SAND SANDY | SM ₁ | 60-80 | 0-15 | <28 | <6 |  | YELLOW |
| | | SAND | SAND | SM _{1-s} SP | 80-90 90-100 | 0-20 0-10 | NONE PLASTIC | | | |
| | | PEAT | PEAT, HUMUS, & MATTED VEGETATION | PL | | | 200+ | | | |

SHELLS

SI

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 1

Current Date: 3/26/2007

| Sample Number | Depth In Feet | Visual Classification | USCS | E (t) | Wt | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (pcf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|----------------------------|-------|-------|----|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|-----|-------------|-------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ARS ML, RT | CH4 | 43 | | | | | | | | 40 | 16 | 24 | | ORGANIC CONTENT = 1.8% | |
| 2 | 2-4 | ST GR & T CL6-S W/RT | CL6-S | 26 | | | | | | | | 47 | 18 | 29 | | ORGANIC CONTENT = 2.0% | |
| 3 | 4-6 | M GR & T CH4 W/RT | CH4 | 49 | | | | | | | | | | | | | |
| 4 | 6-8 | M GR & T CH2 | CH2 | 38 | | | | | | | | | | | | | |
| 5 | 8-10 | M GR & T CL6 W/RT | CL6 | 33 | | | | | | | | | | | | | |
| 6 | 10-12 | M GR & T CL6 W/RT | CL6 | 34 | | | | | | | | | | | | | |
| 7 | 12-14 | SO GR CL4 | CL4 | 37 | | | | | | | | | | | | | |
| 8 | 14-16 | GR ML2 | ML2 | 27 | | | | | | | | N/P | | | | | |
| 9 | 16-18 | GR SM1 | SM1 | 23 | | | | | | | | | | | | | |
| 10 | 18-20 | GR SM1 | SM1 | 25 | | | | | | | | | | | | | |
| 11 | 20-22 | SO GR CL6 | CL6 | 38 | | | | | | | | 41 | 21 | 20 | | ORGANIC CONTENT = 2.2% | |
| 12 | 22-24 | SO GR CH4 W/LNS ML | CH4 | 70 | | | | | | | | | | | | | |
| 13 | 24-26 | ST GR & BR CHOC W/WD | CHOC | 186 | | | | | | | | | | | | | |
| 14 | 26-28 | ST GR & BR CHOC W/WD | CHOC | 179 | | | | | | | | 258 | 89 | 169 | | ORGANIC CONTENT = 42.1% | |
| 15 | 28-30 | SO GR CH4 W/WD | CH4 | 65 | | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: _____
EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-1

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|---------------------------------|------|-------|------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|-------------|
| NS | 0 | | | | | | | | | | | | | | | | |
| 1 | 34 | MST G CL W/ RT (FLOC) | CH | 3 | 64 | 81 | 100 | 98 | UC | - | 1079 | 539 | 106 | 27 | 79 | 0.400 | |
| 2 | 39 | | | | | | | | | | | | | | | | |
| 3 | 44 | MST G CL W/ SI POC, CONC (FLOC) | CH | 5 | 33 | 89 | 119 | 100 | UC | - | 1866 | 933 | | | | 0.700 | |
| 4 | 49 | | | | | | | | | | | | | | | | |
| 5 | 54 | ST G CL W/ CONC, SI POC (FLOC) | CH | 3 | 34 | 89 | 118 | 100 | UC | - | 3073 | 1536 | 85 | 25 | 60 | 0.900 | |
| 6 | 59 | | | | | | | | | | | | | | | | |
| 7 | 64 | SO G CL W/ SI POC | CH | 2 | 48 | 71 | 105 | 94 | UC | - | 578 | 289 | | | | 0.260 | |
| 8 | 69 | | | | | | | | | | | | | | | | |
| 9 | 74 | SO G CL W/ SI POC | CH | 9 | 42 | 76 | 108 | 93 | UC | - | 594 | 297 | 55 | 25 | 30 | 0.300 | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 2

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes | |
|---------------|---------------|-------------------------------|------|-------|------|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|----|-------------|------------------------|--------------|--|
| 1 | 0-2 | MT CL6 W/ RT | CL6 | | 28 | | | | | | | | | | | | | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | | 34 | | | | | | | | | | | | | |
| 3 | 4-6 | ST GR & T CH2 W/ RT | CH2 | | 30 | | | | | | | 53 | 17 | 36 | | ORGANIC CONTENT = 2.5% | | |
| 4 | 6-8 | ST GR & T CH4 W/ ARS ML, RT | CH4 | | 42 | | | | | | | | | | | | | |
| 5 | 8-10 | ST GR & T CH4 W/ ARS ML | CH4 | | 43 | | | | | | | | | | | | | |
| 6 | 10-12 | M GR & T CH4 W/ ARS ML | CH4 | | 48 | | | | | | | | | | | | | |
| 7 | 12-14 | GR ML2 | ML2 | | 26 | | | | | | | | | | | | | |
| 8 | 14-16 | SO GR CL4 | CL4 | | 38 | | | | | | | | | | | | | |
| 9 | 16-18 | GR ML2 | ML2 | | 29 | | | | | | | N/P | | | | | | |
| 10 | 18-20 | GR ML2 | ML2 | | 27 | | | | | | | | | | | | | |
| 11 | 20-22 | GR ML2 W/ RT | ML2 | | 28 | | | | | | | | | | | | | |
| 12 | 22-24 | SO GR CH3 W/ LNS ML, RT | CH3 | | 58 | | | | | | | 69 | 22 | 47 | | ORGANIC CONTENT = 0.7% | | |
| 13 | 24-26 | SO GR CH4 W/ LNS & LYS ML, RT | CH4 | | 69 | | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CHOA W/ RT | CHOA | | 103 | | | | | | | | | | | | | |
| 15 | 28-30 | M GR CH4 W/ ARS & LNS ML | CH4 | | 53 | | | | | | | 107 | 34 | 73 | | ORGANIC CONTENT = 3.1% | | |
| 16 | 30-32 | - | | | | | | | | | | | | | | | | |
| 17 | 32-34 | - | | | | | | | | | | | | | | | | |
| 18 | 34-35 | - | | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-2

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests | |
|---------------|---------------|-----------------------------------|------|-------|------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|----|---------------|-------------|--|
| NS | 0 | | | | | | | | | | | | | | | | | |
| 1 | 34 | | | | | | | | | | | | | | | | | |
| 2 | 39 | XSO G CL W/ SI POC, SH FRAG, CONC | CH | 9 | 72 | 58 | 99 | 100 | UC | - | 69 | 34 | 83 | 19 | 64 | 0.080 | | |
| 3 | 44 | | | | | | | | | | | | | | | | | |
| 4 | 49 | MST G CL W/ WD, SI POC (FLOC) | CH | 5 | 48 | 72 | 107 | 97 | UC | - | 1167 | 583 | 96 | 25 | 71 | 0.500 | | |
| 5 | 54 | | | | | | | | | | | | | | | | | |
| 6 | 59 | SO G SA CL W/ SISA LAY | CL | 5 | 29 | 92 | 119 | 96 | UC | - | 676 | 338 | | | | 0.120 | | |
| 7 | 64 | | | | | | | | | | | | | | | | | |
| 8 | 69 | SO G CL W/ WD, CONC (FLOC) | CH | 3 | 57 | 65 | 102 | 97 | UC | - | 877 | 438 | | | | 0.500 | | |
| 9 | 74 | | | | | | | | | | | | | | | | | |

Remarks: _____
EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 3

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (¢) | Wt % | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|-----------------------------|-------|-------|------|-------------------|-------------------|-------|-----------------|-------|----------------|----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ ARS ML, RT | CH4 | | 45 | | | | | | | 83 | 24 | 59 | | ORGANIC CONTENT = 5.1% | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | | 40 | | | | | | | | | | | | |
| 3 | 4-6 | M GR & T CH3 W/ ARS ML, RT | CH3 | | 46 | | | | | | | | | | | | |
| 4 | 6-8 | ST GR & T CH4 W/ ARS ML | CH4 | | 48 | | | | | | | 93 | 23 | 70 | | ORGANIC CONTENT = 3.9% | |
| 5 | 8-10 | M GR & T CH4 W/ ARS ML | CH4 | | 51 | | | | | | | | | | | | |
| 6 | 10-12 | M GR & T CL6-S W/ RT | CL6-S | | 39 | | | | | | | | | | | | |
| 7 | 12-14 | ST GR & T CH3 W/ ARS ML | CH3 | | 41 | | | | | | | 70 | 19 | 51 | | ORGANIC CONTENT = 3.1% | |
| 8 | 14-16 | VST GR & T CH3 W/ ARS ML | CH3 | | 36 | | | | | | | | | | | | |
| 9 | 16-18 | ST GR CH4 W/ CC | CH4 | | 47 | | | | | | | | | | | | |
| 10 | 18-20 | ST GR & T CH3 W/ ARS ML, CC | CH3 | | 39 | | | | | | | 76 | 23 | 53 | | ORGANIC CONTENT = 3.8% | |
| 11 | 20-22 | M GR CL6 | CL6 | | 40 | | | | | | | | | | | | |
| 12 | 22-24 | M GR CH3 W/ ARS ML, RT | CH3 | | 45 | | | | | | | | | | | | |
| 13 | 24-26 | SO GR CH2 | CH2 | | 44 | | | | | | | 51 | 19 | 32 | | ORGANIC CONTENT = 2.6% | |
| 14 | 26-28 | SO GR CH2 W/ RT | CH2 | | 43 | | | | | | | | | | | | |
| 15 | 28-30 | VST BR & BK PT W/ RT | PT | | 179 | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 4

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (pcf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|------------------------------|-------|-------|------|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|-----|-------------|-------------------------|--------------|
| 1 | 0-2 | ST GR & T CH4 W/ ARS ML | CH4 | 45 | | | | | | | | 71 | 17 | 54 | | ORGANIC CONTENT = 3.0% | |
| 2 | 2-4 | ST GR & T CH3 W/ ARS ML, RT | CH3 | 32 | | | | | | | | | | | | | |
| 3 | 4-6 | M GR & T CH3 W/ ARS SM | CH3 | 40 | | | | | | | | | | | | ORGANIC CONTENT = 3.6% | |
| 4 | 6-8 | M GR & T CH2-S | CH2-S | 34 | | | | | | | | | | | | | |
| 5 | 8-10 | ST GR & T CH4 W/ RT | CH4 | 47 | | | | | | | | 88 | 30 | 58 | | | |
| 6 | 10-12 | M GR & T CH4 W/ ARS ML, RT | CH4 | 53 | | | | | | | | | | | | ORGANIC CONTENT = 3.3% | |
| 7 | 12-14 | M GR CH3 W/ ARS & LYS ML, RT | CH3 | 41 | | | | | | | | | | | | | |
| 8 | 14-16 | ST GR CH4 W/ CC | CH4 | 50 | | | | | | | | 78 | 22 | 56 | | | |
| 9 | 16-18 | M GR & T CH3 W/ ARS ML, CC | CH3 | 44 | | | | | | | | | | | | ORGANIC CONTENT = 3.4% | |
| 10 | 18-20 | ST GR CH4 W/ ARS ML, RT | CH4 | 49 | | | | | | | | | | | | | |
| 11 | 20-22 | ST GR CH4 W/ RT | CH4 | 50 | | | | | | | | 95 | 25 | 70 | | | |
| 12 | 22-24 | M GR CH4 | CH4 | 60 | | | | | | | | | | | | | |
| 13 | 24-26 | SO GR CL6 | CL6 | 43 | | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CHOC W/ RT | CHOC | 141 | | | | | | | | 256 | 75 | 181 | | ORGANIC CONTENT = 28.9% | |
| 15 | 28-30 | ST GR CHOA W/ RT | CHOA | 119 | | | | | | | | | | | | | |
| 16 | 30-32 | - | | | | | | | | | | | | | | | |
| 17 | 32-34 | - | | | | | | | | | | | | | | | |
| 18 | 34-35 | - | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 5

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|-----------------------------|------|-------|----|-------------------|-------------------|-------|-----------------|-------|----------------|----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR CH4 W/ ARS ML, RT | CH4 | | 42 | | | | | | | 92 | 26 | 66 | | ORGANIC CONTENT = 4.6% | |
| 2 | 2-4 | ST GR & T CH4 W/ ARS ML, RT | CH4 | | 43 | | | | | | | 76 | 23 | 53 | | ORGANIC CONTENT = 3.2% | |
| 3 | 4-6 | ST GR & T CH4 W/ RT | CH4 | | 42 | | | | | | | 97 | 30 | 67 | | ORGANIC CONTENT = 3.4% | |
| 4 | 6-8 | ST GR CH4 W/ ARS ML | CH4 | | 44 | | | | | | | 82 | 25 | 57 | | ORGANIC CONTENT = 2.9% | |
| 5 | 8-10 | ST GR & T CH4 W/ CC | CH4 | | 44 | | | | | | | 66 | 21 | 45 | | ORGANIC CONTENT = 4.8% | |
| 6 | 10-12 | ST GR CH4 W/ ARS ML | CH4 | | 41 | | | | | | | | | | | | |
| 7 | 12-14 | ST GR & T CH4 W/ ARS ML, CC | CH4 | | 43 | | | | | | | | | | | | |
| 8 | 14-16 | M GR CH4 W/ RT | CH4 | | 54 | | | | | | | | | | | | |
| 9 | 16-18 | M GR CH4 W/ ARS ML, RT | CH4 | | 58 | | | | | | | | | | | | |
| 10 | 18-20 | M GR CH3 W/ ARS ML, RT | CH3 | | 55 | | | | | | | | | | | | |
| 11 | 20-22 | ST GR CH4 W/ ARS SM, CC | CH4 | | 45 | | | | | | | | | | | | |
| 12 | 22-24 | ST GR & T CH4 W/ ARS SM, CC | CH4 | | 47 | | | | | | | | | | | | |
| 13 | 24-26 | ST GR CH4 W/ ARS SM, CC | CH4 | | 48 | | | | | | | | | | | | |
| 14 | 26-28 | ST GR CH4 W/ ARS SM, CC | CH4 | | 52 | | | | | | | | | | | | |
| 15 | 28-30 | SO GR CH3 W/ ARS SM, RT | CH3 | | 60 | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: BORROW INVESTIGATION

Assigned By: _____

Project Number: 19695
Boring: 7

Current Date: 3/26/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% Density (pcf) | Dry Density (pcf) | Wet Density (pcf) | Sat % | Shear Test Type | Angle | Cohesion (psf) | LL | PL | PI | Torvane TSF | Other Tests | Sample Notes |
|---------------|---------------|-------------------------------|-------|-------|---------------------|-------------------|-------------------|-------|-----------------|-------|----------------|-----|----|----|-------------|------------------------|--------------|
| 1 | 0-2 | ST GR & T CL6 W/ RT | CL6 | 28 | | | | | | | | 50 | 21 | 29 | | ORGANIC CONTENT = 3.5% | |
| 2 | 2-4 | ST GR & T CL6-S W/ RT | CL6-S | 26 | | | | | | | | | | | | | |
| 3 | 4-6 | ST GR & T CH2-S W/ ARS SM, RT | CH2-S | 31 | | | | | | | | | | | | | |
| 4 | 6-8 | ST GR & T CH3 W/ ARS SM, RT | CH3 | 35 | | | | | | | | 68 | 21 | 47 | | ORGANIC CONTENT = 2.7% | |
| 5 | 8-10 | M GR & T CH3 W/ ARS SM | CH3 | 46 | | | | | | | | N/P | | | | ORGANIC CONTENT = 1.0% | |
| 6 | 10-12 | ST GR & T CH4 W/ ARS ML | CH4 | 46 | | | | | | | | | | | | | |
| 7 | 12-14 | GR ML2 | ML2 | 28 | | | | | | | | | | | | | |
| 8 | 14-16 | GR ML2 | ML2 | 26 | | | | | | | | | | | | | |
| 9 | 16-18 | GR ML2 | ML2 | 30 | | | | | | | | | | | | | |
| 10 | 18-20 | SO GR CH3 W/ ARS ML, RT | CH3 | 51 | | | | | | | | 72 | 22 | 50 | | ORGANIC CONTENT = 4.1% | |
| 11 | 20-22 | SO GR CH4 W/ ARS & LNS ML | CH4 | 65 | | | | | | | | | | | | | |
| 12 | 22-24 | M GR CH4 W/ RT, CC | CH4 | 57 | | | | | | | | | | | | | |
| 13 | 24-26 | M GR CH4 W/ RT, CC | CH4 | 52 | | | | | | | | | | | | | |
| 14 | 26-28 | M GR CH4 W/ ARS SM, CC | CH4 | 52 | | | | | | | | | | | | | |
| 15 | 28-30 | SO GR CL6 | CL6 | 37 | | | | | | | | | | | | | |
| 16 | 30-32 | -- | | | | | | | | | | | | | | | |
| 17 | 32-34 | -- | | | | | | | | | | | | | | | |
| 18 | 34-35 | -- | | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File name: 19695

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-8

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | B (f) | W% (pcf) | Dry Dens (pcf) | Wet Dens (pcf) | Sat & (pcf) | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|--------------------------------|------|-------|-------------|-------------------|-------------------|----------------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|--------------------|
| 1 | 0 | ST G S1CL W/ VEG, RT | CL | | 36 | | | | | | | | 100 | 35 | 65 | | ORG. CONT. = 4.733 |
| 2 | 2 | ST BR & G CL W/ SI POC | CH | | 44 | | | | | | | 1021 | 106 | 35 | 71 | 0.750 | ORG. CONT. = 5.011 |
| 3 | 5 | ST G & BR CL W/ SI POC, RT | CH | 5 | 44 | 75 | 108 | 95 | UC | - | 2041 | | | | | | |
| 4 | 8 | ST BR & G CL W/ SI POC | CH | | 39 | | | | | | | | | | | | |
| 5 | 11 | MST G & BR CL W/ SI POC | CH | 5 | 51 | 77 | 110 | 96 | UC | - | 1912 | 956 | 87 | 24 | 63 | 0.700 | ORG. CONT. = 3.811 |
| 6 | 14 | MST G & T CL W/ SI POC | CH | | 42 | | | | | | | | | | | | ORG. CONT. = 4.291 |
| 7 | 17 | MST G CL W/ SASI LAY | CH | 4 | 41 | 60 | 100 | 99 | UC | - | 526 | 263 | 74 | 27 | 47 | 0.200 | ORG. CONT. = 4.291 |
| 8 | 20 | MST T & G CL W/ CONC (FLOC) | CH | | 39 | | | | | | | | 43 | 19 | 24 | | ORG. CONT. = 3.036 |
| 9 | 23 | SO G CL (FLOC) | CH | | 66 | | | | | | | | | | | | |
| 10 | 26 | VSO G S1CL W/ WD | CL | | 37 | | | | | | | | | | | | |
| 11 | 29 | VSO G CL W/ SASI LAY | CL | | 53 | | | | | | | | | | | | |
| 12 | 34 | XSO G CL W/ SISA POC, WD | CH | 9 | 71 | 58 | 99 | 100 | UC | - | 86 | 43 | 64 | 20 | 44 | 0.120 | |
| 13 | 39 | | | | | | | | | | | | | | | | |
| 14 | 44 | XSO G CL W/ SISA POC, WD | CH | 6 | 72 | 56 | 96 | 97 | UC | - | 408 | 204 | | | | 0.140 | |
| 15 | 49 | | | | | | | | | | | | | | | | |
| 16 | 54 | VSO G CL W/ SI POC, SH FRAG, O | CH | 12 | 70 | 57 | 96 | 94 | UC | - | 368 | 184 | 108 | 26 | 82 | 0.220 | |
| 17 | 59 | | | | | | | | | | | | | | | | |
| 18 | 64 | VSO G CL W/ O, SI POC | CH | 10 | 77 | 53 | 94 | 95 | UC | - | 332 | 166 | | | | 0.140 | |
| 19 | 69 | | | | | | | | | | | | | | | | |
| 20 | 74 | VSO G CL W/ SI POC | CH | 19 | 59 | 64 | 102 | 97 | UC | - | 375 | 187 | 75 | 24 | 51 | 0.200 | |

Remarks: _____

EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____

File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-10

Current Date: 5/29/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt % | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|---------------------------------|------|-------|------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|-----|---------------|-------------|
| 1 | 0 | VST BR SICL W/ VEG, OM | CL | | 26 | 89 | 115 | 88 | UC | - | 1308 | 654 | 70 | 21 | 49 | 0.500 | |
| 2 | 2 | MST BR & G SICL | CL | 5 | 29 | 89 | 115 | 88 | UC | - | 1308 | 654 | 70 | 21 | 49 | 0.500 | |
| 3 | 5 | ST G & BR CL W/ SI POC, RTS | CH | | 28 | | | | | | | | | | | | |
| 4 | 8 | MST T & G SICL W/ CL LEN | CH | | 34 | | | | | | | | | | | | |
| 5 | 11 | MST G & T CL W/ SI POC | CH | 10 | 45 | 75 | 108 | 96 | UC | - | 1736 | 868 | 83 | 22 | 61 | 0.800 | |
| 6 | 14 | SO G & T CL W/ SI POC | CH | | 38 | | | | | | | | | | | | |
| 7 | 17 | VSO G CL W/ RT, SI POC | CH | | 63 | | | | | | | | | | | | |
| 8 | 20 | VSO G CL W/ SISA POC & SICL LAY | CH | 1 | 49 | 71 | 106 | 97 | UC | - | 345 | 173 | 93 | 26 | 67 | 0.300 | |
| 9 | 23 | VSO G CL W/ RTS | CH | | 66 | | | | | | | | | | | | |
| 10 | 26 | VSO G CL W/ SI POC | CH | | 70 | | | | | | | | | | | | |
| 11 | 29 | SO G CL W/ OM & WD | CH | 7 | 100 | 44 | 89 | 96 | UC | - | 688 | 344 | 149 | 37 | 112 | 0.300 | |
| 12 | 34 | | CH | | | | | | | | | | | | | | |
| 13 | 39 | SO G CL W/ SI POC (FLOC) | CH | 3 | 52 | 69 | 105 | 97 | UC | - | 715 | 358 | | | | 0.400 | |
| 14 | 44 | | CH | | | | | | | | | | | | | | |
| 15 | 49 | VSO G CL W/ SI POC, SH FRAG, WD | CH | 11 | 58 | 63 | 100 | 95 | UC | - | 429 | 214 | 91 | 22 | 69 | 0.200 | |
| 16 | 54 | | CH | | | | | | | | | | | | | | |
| 17 | 59 | SO G SICL | CL | 11 | 44 | 75 | 108 | 95 | UC | - | 610 | 304 | | | | 0.260 | |
| 18 | 64 | | CH | | | | | | | | | | | | | | |
| 19 | 69 | ST G CL W/ SI POC, CONC (FLOC) | CH | 4 | 51 | 88 | 103 | 94 | UC | - | 3199 | 1600 | 92 | 24 | 68 | 0.460 | |
| 20 | 74 | | CH | | | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-17

Current Date: 5/31/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W _s | Dry Dens (pcf) | Wet Dens (pcf) | Sat & | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | IL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|-----------------------------|------|-------|----------------|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|----|---------------|-------------|
| 1 | 0 | MST G CL W/ SI POC | CH | 4 | 38 | 77 | 106 | 86 | UC | - | 1056 | 528 | 97 | 22 | 75 | 0.620 | ORG%=5.148 |
| 2 | 2 | MST T & G CL | CH | 43 | 43 | | | | | | | | | | | | |
| 3 | 4 | ST LT G & T SACL | CL | 30 | 30 | | | | | | | | | | | | |
| 4 | 6 | SO LT G & T SACL | CL | 33 | 33 | | | | | | | | | | | | |
| 5 | 8 | VLO T & G CLSI | ML | 26 | 26 | | | | | | | | | | | | |
| 6 | 10 | MC G SASI W/ CL POC | ML | 8 | 31 | 91 | 119 | 100 | OB | 0 | | 667 | | | | 0.200 | |
| 7 | 12 | LO G SASI | ML | 31 | 31 | | | | | | | | | | | | |
| 8 | 14.5 | MC G SASI | ML | 30 | 30 | | | | | | | | | | | | |
| 9 | 16.5 | MC G CLSI | ML | 34 | 34 | | | | | | | | | | | | |
| 10 | 18 | LO G SASI W/ CL POC | ML | 4 | 29 | 94 | 121 | 99 | OB | 0 | | 469 | | | | 0.200 | ORG%=1.490 |
| 11 | 20 | MC G SASI W/ CL POC | ML | 25 | 25 | | | | | | | | 25 | 14 | 11 | | |
| 12 | 22 | MC G SASI W/ CL LAY | ML | 31 | 31 | | | | | | | | | | | | |
| 13 | 24 | MST G CL | CH | 3 | 58 | 65 | 103 | 97 | UC | - | 1300 | 650 | 73 | 22 | 51 | 0.300 | ORG%=5.844 |
| 14 | 26.5 | MC G CLSI | ML | 33 | 33 | | | | | | | | | | | | |
| 15 | 28.5 | MC G CLSI | ML | 35 | 35 | | | | | | | | | | | | |
| 16 | 34 | WD W/ CL LAY | WD | 359 | 359 | | | | | | | | | | | | |
| 17 | 39 | - | | | | | | | | | | | | | | | |
| 18 | 44 | SO G & DK G CL W/ HUMUS LAY | CH | 14 | 46 | 72 | 105 | 92 | UC | - | 665 | 333 | | | | 0.300 | |
| 19 | 49 | - | | | | | | | | | | | | | | | |
| 20 | 54 | XSO G & BR CL W/ SISA LEN | CH | 2 | 67 | 60 | 100 | 99 | OB | 0 | | 84 | 73 | 13 | 60 | 0.110 | |
| 21 | 59 | - | | | | | | | | | | | | | | | |
| 22 | 64 | MST G CL W/ SASI POC | CL | 60 | 60 | | | | | | | | | | | | |
| 23 | 69 | - | | | | | | | | | | | | | | | |
| 24 | 74 | SO G SACL | CL | 5 | 29 | 92 | 119 | 94 | OB | 0 | | 343 | 29 | 18 | 11 | 0.210 | |

Remarks:

EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: I9728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-19

Current Date: 5/31/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | W% | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|--|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|-----|----|----|---------------|-------------|
| 1 | 0 | SO G CL W/ RTS | CH | | 49 | | | | | | | | 101 | 29 | 72 | | ORG%=6.916 |
| 2 | 2 | SO G CL | CH | | 45 | | | | | | | | | | | | |
| 3 | 4 | MST T & G CL W/ SI POC | CH | 5 | 36 | 83 | 113 | 94 | UC | - | 1518 | 759 | 40 | 19 | 21 | 0.550 | ORG%=2.740 |
| 4 | 6 | SO G SICI | CL | | 36 | | | | | | | | | | | | |
| 5 | 8.5 | LO G CLSI | ML | | 31 | | | | | | | | | | | | |
| 6 | 11 | LO G CLSI W/ CL POC | ML | | 34 | | | | | | | | | | | | |
| 7 | 13.5 | MC G SASI W/ CL POC | ML | | 30 | | | | | | | | | | | | |
| 8 | 16 | LO G SASI W/ CL POC | ML | | 32 | | | | | | | | 28 | 16 | 12 | | ORG%=1.629 |
| 9 | 18 | MD G SISA | SM | | 26 | | | | | | | | | | | | |
| 10 | 20 | VD G SISA W/ CL POC | SM | 7 | 27 | 96 | 122 | 98 | OB | 0 | | 3736 | 25 | 16 | 9 | | ORG%=1.125 |
| 11 | 22.5 | LO G SASI | ML | | 29 | | | | | | | | | | | | |
| 12 | 25 | MC G SASI | ML | | 28 | | | | | | | | | | | | |
| 13 | 27.5 | MC G SASI | ML | | 28 | | | | | | | | | | | | |
| 14 | 34 | - | | | | | | | | | | | | | | | |
| 15 | 39 | SO G CL W/ SI POC (FLOC) | CH | 3 | 63 | 61 | 100 | 97 | UC | - | 765 | | 81 | 21 | 60 | 0.300 | |
| 16 | 44 | - | | | | | | | | | | | | | | | |
| 17 | 49 | SO G CL W/ SI POC, SH FRAG, WD | CH | 10 | 49 | 69 | 103 | 92 | UC | - | 604 | | | | | 0.280 | |
| 18 | 54 | - | | | | | | | | | | | | | | | |
| 19 | 59 | SO G & T CL W/ WD, CONC (FLOC) | CH | 4 | 47 | 74 | 109 | 100 | UC | - | 824 | | 94 | 24 | 70 | 0.450 | |
| 20 | 64 | - | | | | | | | | | | | | | | | |
| 21 | 69 | SO G CL W/ SI POC, SH FRAG, RTS (FLOC) | CH | 7 | 39 | 81 | 112 | 95 | OB | 0 | | | | | | 0.300 | |
| 22 | 74 | - | | | | | | | | | | | | | | | |

Remarks:

EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728

SUMMARY OF LABORATORY TEST RESULTS

Project: POINT CLEAR INDUSTRIAL PARK

Assigned By: _____

Project Number: 19728
Boring: B-20

Current Date: 6/4/2007

| Sample Number | Depth in Feet | Visual Classification | USCS | E (f) | Wt | Dry Dens (pcf) | Wet Dens (pcf) | Sat % | Shear Test Type | Angle | Unconf. Comp. Str. | Cohesion (psf) | LL | PL | PI | TORVANE (tsf) | Other Tests |
|---------------|---------------|-----------------------------|------|-------|----|----------------|----------------|-------|-----------------|-------|--------------------|----------------|----|----|----|---------------|-------------|
| 1 | 0 | MST BR & G CL W/WD | CH | | 40 | | | | | | | | | | | | ORG%=6.998 |
| 2 | 2 | MST BR CL W/WD | CH | | 51 | | | | | | | | | | | | |
| 3 | 4 | MST LT G & T SICL W/ CONC | CL | 3 | 40 | 79 | 111 | 95 | UC | - | 1348 | 674 | 89 | 28 | 61 | 0.065 | |
| 4 | 6 | MST BR CL | CH | | 48 | | | | | | | | | | | | |
| 5 | 8 | MST BR CL W/ SI POC | CH | | 44 | | | | | | | | | | | | ORG%=5.484 |
| 6 | 10 | MST BR & T CL W/ SI POC | CH | | 34 | | | | | | | | | | | | |
| 7 | 14 | MC G & T CLSI | ML | 14 | 32 | 90 | 118 | 100 | OB | 0 | | 528 | 23 | 17 | 6 | | ORG%=1.357 |
| 8 | 16 | MD G SISA W/ CL POC | SM | | 26 | | | | | | | | | | | | |
| 9 | 18 | MD G SISA W/ CL POC | SM | | 41 | | | | | | | | | | | | |
| 10 | 20 | VLO G SASI | ML | | 32 | | | | | | | | | | | | |
| 11 | 22 | SO G SACL W/ WD | CL | | 30 | | | | | | | | | | | | |
| 12 | 24 | SO G SICL | CL | 10 | 39 | 83 | 114 | 100 | UC | - | 502 | 251 | 29 | 16 | 13 | 0.200 | ORG%=2.461 |
| 13 | 26 | LO G CLSA | SC | | 29 | | | | | | | | | | | | |
| 14 | 28 | VSO G SICL | CL | | 38 | | | | | | | | | | | | |
| 15 | 34 | VSO G CL W/ SI POC, SH FRAG | CH | 9 | 67 | 59 | 99 | 97 | UC | - | 345 | 172 | 39 | 24 | 15 | 0.200 | ORG%=2.976 |
| 16 | 39 | | | | | | | | | | | | | | | | |
| 17 | 44 | VSO G SICL W/ RTS | CL | 6 | 40 | 80 | 111 | 96 | OB | 0 | | 218 | 32 | 16 | 16 | 0.140 | |
| 18 | 47 | | | | | | | | | | | | | | | | |
| 19 | 49 | | | | | | | | | | | | | | | | |
| 20 | 54 | VSO G CL W/ SI POC, RTS | CH | 5 | 87 | 50 | 93 | 98 | OB | 0 | | 137 | 25 | 14 | 11 | | |
| 21 | 59 | | | | | | | | | | | | | | | | |
| 22 | 64 | C G SASI W/ CL POC | ML | 6 | 26 | 96 | 122 | 96 | OB | 0 | | 1150 | | | | | |
| 23 | 68.5 | | | | | | | | | | | | | | | | |
| 24 | 73.5 | MC G SASI | ML | | 30 | | | | | | | | | | | | |

Remarks: EUSTIS ENGINEERING COMPANY, INC.

Checked by: _____
File Name: 19728



EUSTIS ENGINEERING SERVICES, L.L.C.

3011 28TH STREET
METAIRIE, LOUISIANA 70002-6019
PN 504-834-0157 / FN 504-834-0354
EMAIL: INFO@EUSTISENG.COM / SITE: WWW.EUSTISENG.COM

12 June 2007

Chapel Hill, LLC
Post Office Box 14310
Monroe, Louisiana 71207

Attention Mr. Jack Singleton

Gentlemen:

Additional Laboratory Tests
Borrow Investigation
Point Clear Industrial Park
St. Gabriel, Louisiana
Eustis Project No. 19695

Transmitted are the results of additional laboratory test results for the Phase I borrow borings. Two hydrometer tests were performed on Boring 1, Sample 6 (10-ft depth) and Boring 7, Sample 2 (2-ft depth). The results are shown graphically on a separate sheet. In addition, Boring 4, Sample 4 (6-ft depth) was washed on a No. 200 mesh sieve to determine the percentage passing. The results indicate 98.2% passed the No. 200 mesh sieve.

Thank you for asking us to perform these services. Should you have any questions or require further information, please contact us.

Yours very truly,

EUSTIS ENGINEERING SERVICES, L.L.C.

JOHN R. EUSTIS, P.E.

JRE:aln/jkd

Enclosure

- 1 -

Chapel Hill, LLC
12 June 2007

Copy w/Enclosure to:
Kendrick Engineering, LLC
LSU Business & Technology Center
8000 GSRI Avenue, Building 3000
Baton Rouge, Louisiana 70820
Attention Mr. Brian Kendrick, P.E.

TRC Companies, Inc.
Two United Plaza
Suite 502
8550 United Plaza Boulevard
Baton Rouge, Louisiana 70809
Attention Mr. Michael K. Daigle, P.E.

POINT CLEAR INDUSTRIAL PARK - CLASS III LANDFILL,
 ST. GABRIEL (IBERVILLE PARISH), LOUISIANA
 EUSTIS PROJECT NO. 19728

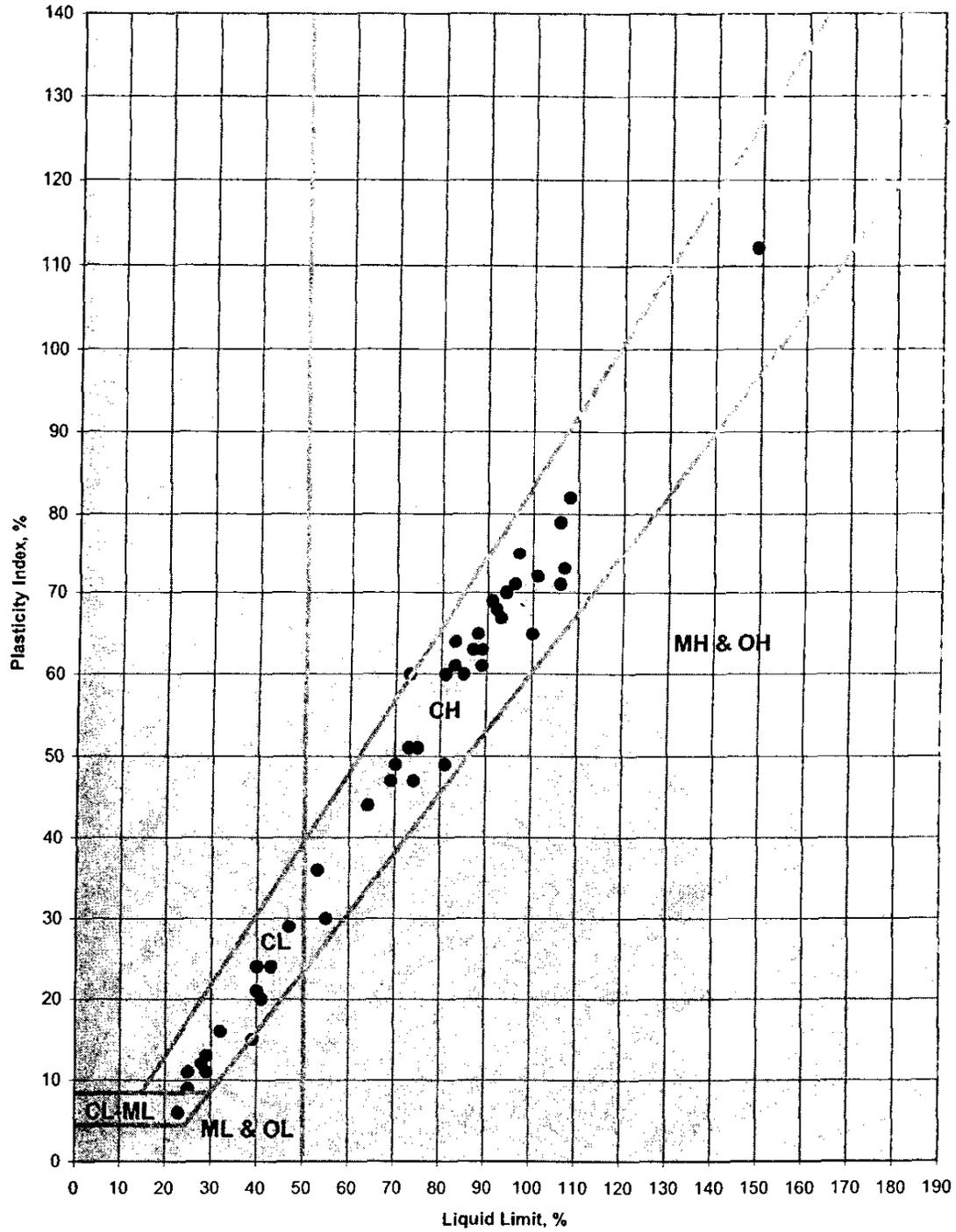
RESULTS OF SOIL MECHANICS LABORATORY TESTS

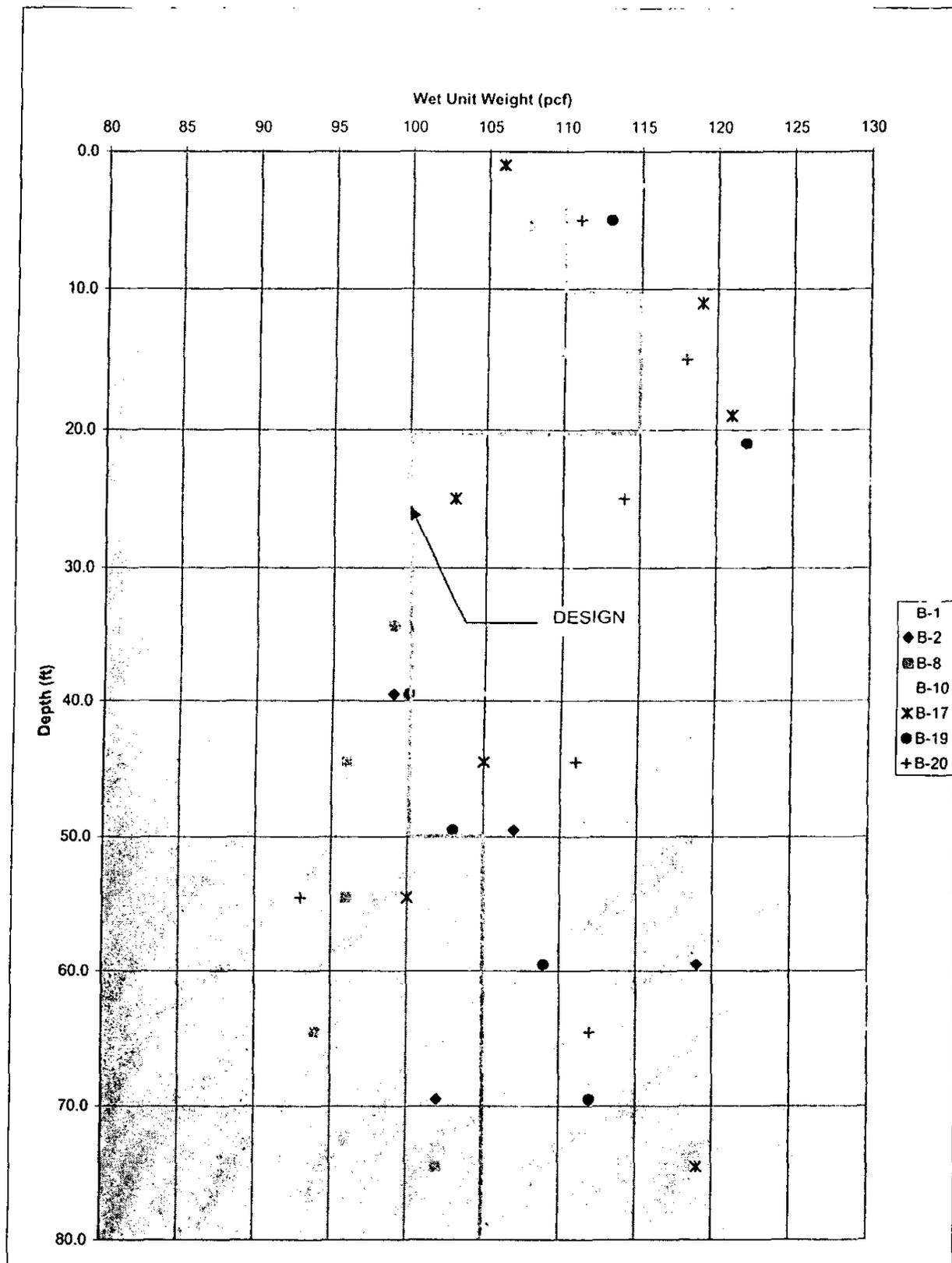
| BORING NUMBER | SAMPLE NUMBER | CLASSIFICATION ASTM D 2485 | INITIAL MOISTURE CONTENT ASTM D 2216 | DENSITY PCF | | COEFFICIENT OF PERMEABILITY AT 20° C CM / SEC. ASTM D 5084 | INITIAL SATURATION PERCENT |
|---------------|---------------|---|---|-------------|-------|--|----------------------------|
| | | | | DRY | WET | | |
| 8 | 13 | Soft gray clay w/ organic lens & roots (CH) | 62.0 | 64.6 | 104.6 | 6.9×10^{-8} | 100 |
| 8 | 15 | Soft gray clay w/ silt pockets & lenses, roots & organic layer (CH) | 63.1 | 62.3 | 101.6 | 1.0×10^{-7} | 100 |

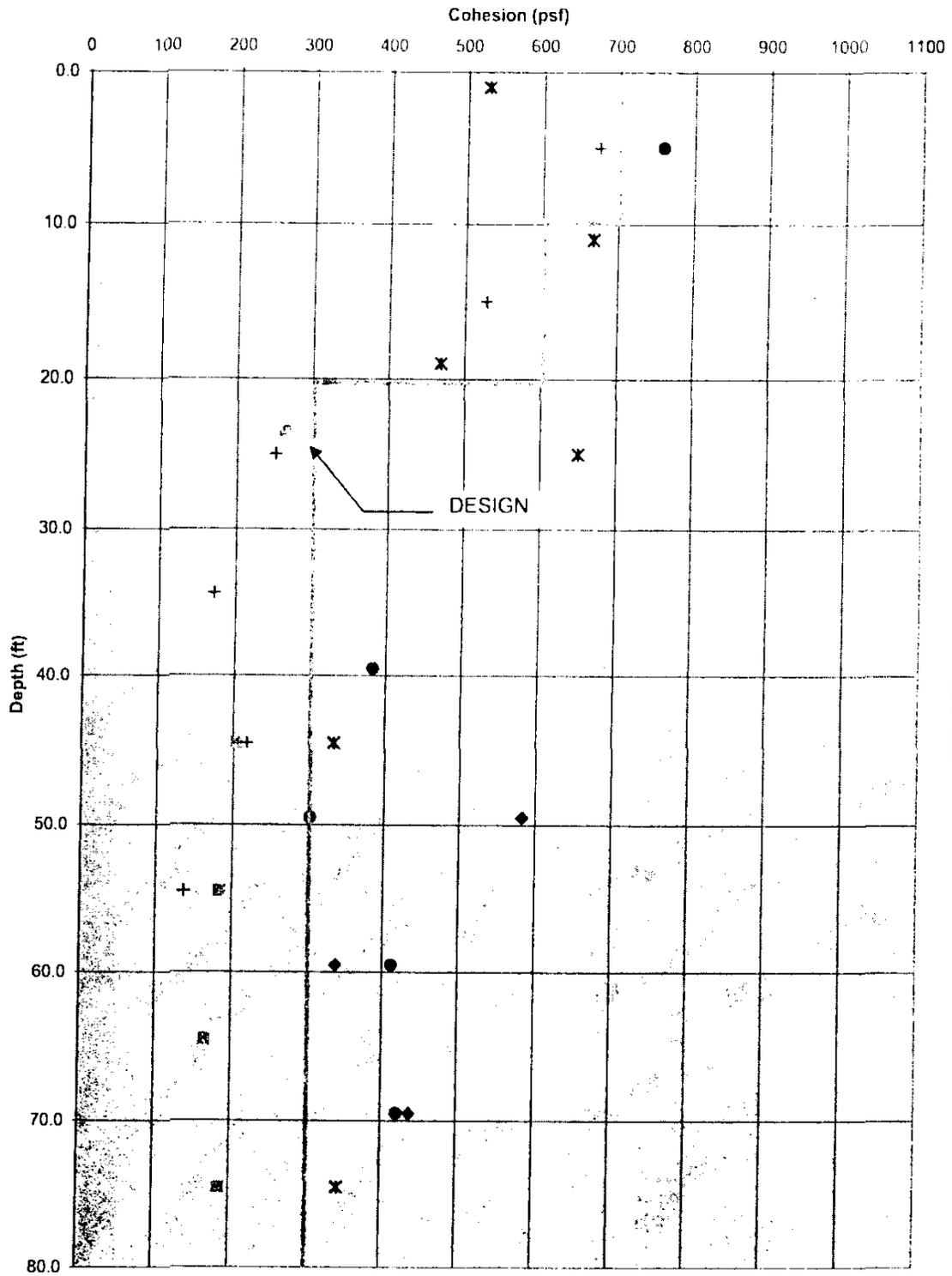
EUSTIS ENGINEERING COMPANY, INC.

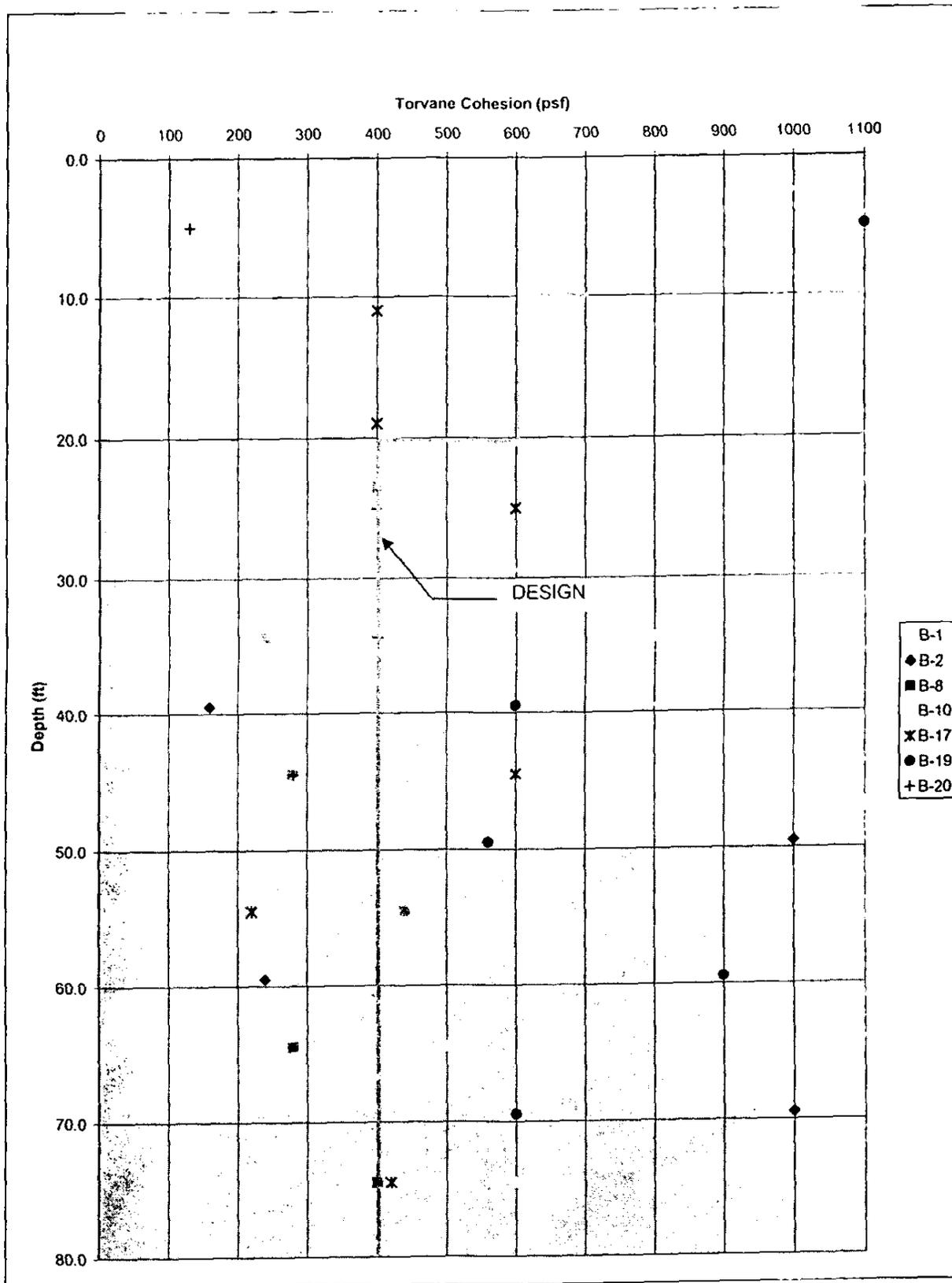
APPENDIX C
DESIGN PARAMETERS

ATTERBERG LIMITS PLOT (ASTM D 4318)

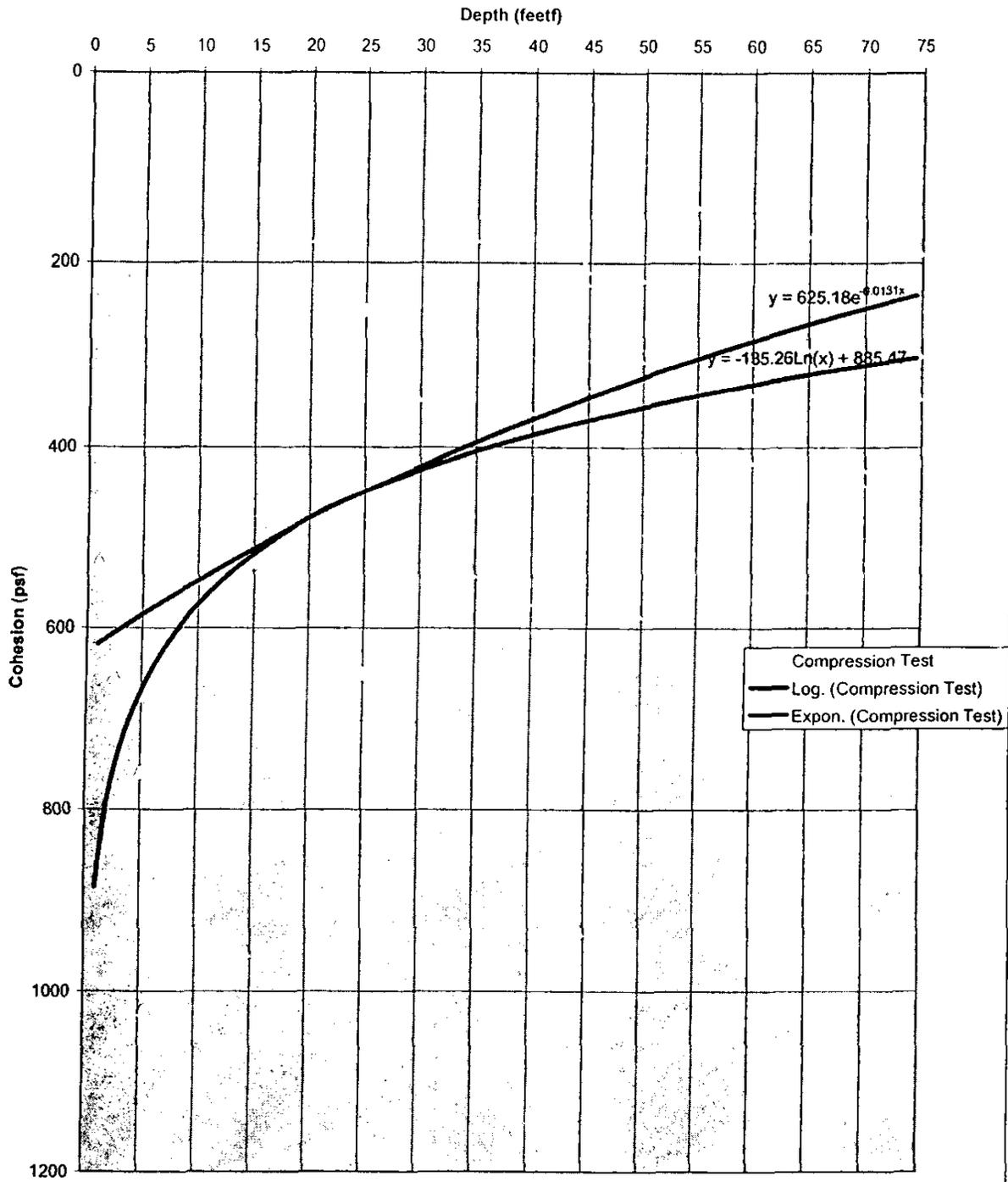




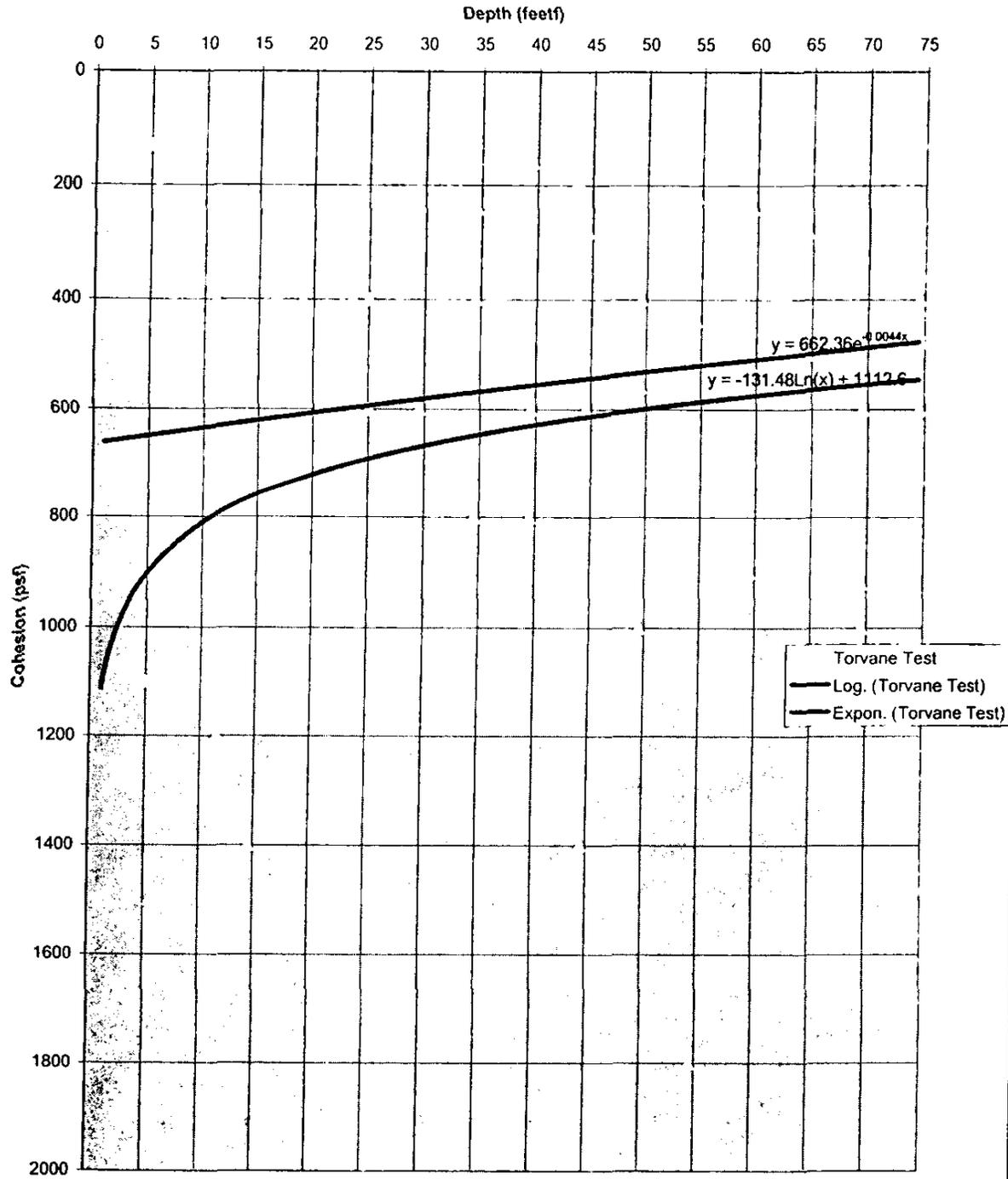




Correlation of Compression Test Results vs Depth



Correlation of Torvane Test Results vs Depth



APPENDIX D
ENGINEERING ANALYSES

```

*****
*           X S T A B L           *
*                               *
*      Slope Stability Analysis   *
*      using the                 *
*      Method of Slices         *
*                               *
*      Copyright (C) 1992 - 2004 *
*      Interactive Software Designs, Inc. *
*      Moscow, ID 83843, U.S.A.   *
*                               *
*      All Rights Reserved      *
*                               *
*      Ver. 5.206                96 - 1969 *
*****
    
```

Problem Description : 3:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 130.0 | 85.0 | 2 |
| 2 | 130.0 | 85.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 4 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 135.00 | 84.00 |
| 3 | 150.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 200.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 10.53 | 85.00 |
| 2 | 17.60 | 77.93 |

| | | |
|----|--------|--------|
| 3 | 25.03 | 71.23 |
| 4 | 32.79 | 64.93 |
| 5 | 40.86 | 59.03 |
| 6 | 49.23 | 53.55 |
| 7 | 57.86 | 48.51 |
| 8 | 66.75 | 43.92 |
| 9 | 75.85 | 39.79 |
| 10 | 85.16 | 36.13 |
| 11 | 94.65 | 32.96 |
| 12 | 104.28 | 30.28 |
| 13 | 114.04 | 28.10 |
| 14 | 123.90 | 26.42 |
| 15 | 133.83 | 25.25 |
| 16 | 143.81 | 24.59 |
| 17 | 153.81 | 24.44 |
| 18 | 163.80 | 24.81 |
| 19 | 173.76 | 25.69 |
| 20 | 183.66 | 27.08 |
| 21 | 193.48 | 28.98 |
| 22 | 203.19 | 31.38 |
| 23 | 212.76 | 34.28 |
| 24 | 222.17 | 37.66 |
| 25 | 231.40 | 41.52 |
| 26 | 240.41 | 45.85 |
| 27 | 249.19 | 50.64 |
| 28 | 257.71 | 55.87 |
| 29 | 265.95 | 61.53 |
| 30 | 273.90 | 67.61 |
| 31 | 281.51 | 74.08 |
| 32 | 288.79 | 80.94 |
| 33 | 295.70 | 88.17 |
| 34 | 302.24 | 95.74 |
| 35 | 305.55 | 100.00 |

**** Simplified BISHOP FOS = 1.528 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 15' Cut, No Pumping, t

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|----------|---------------|---------|--------|---------|----------|-----------|
| | (BISHOP) | x-coord | y-coord | | x-coord | x-coord | Moment |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft-lb) |
| 1. | 1.528 | 151.64 | 219.11 | 194.67 | 10.53 | 305.55 | 2.769E+07 |
| 2. | 1.529 | 154.75 | 217.01 | 191.67 | 15.79 | 306.54 | 2.690E+07 |
| 3. | 1.532 | 164.58 | 237.28 | 220.39 | 5.26 | 336.93 | 3.493E+07 |
| 4. | 1.535 | 161.96 | 224.96 | 202.37 | 15.79 | 321.07 | 2.968E+07 |
| 5. | 1.541 | 155.95 | 186.51 | 148.64 | 47.37 | 276.73 | 1.681E+07 |
| 6. | 1.542 | 144.17 | 201.64 | 169.60 | 21.05 | 279.84 | 2.138E+07 |
| 7. | 1.544 | 163.29 | 246.02 | 229.33 | .00 | 340.06 | 3.707E+07 |
| 8. | 1.544 | 142.53 | 217.53 | 190.80 | 5.26 | 292.76 | 2.645E+07 |
| 9. | 1.544 | 170.52 | 232.71 | 213.92 | 15.79 | 338.23 | 3.303E+07 |
| 10. | 1.547 | 160.97 | 191.90 | 155.99 | 47.37 | 286.93 | 1.834E+07 |

* * * END OF FILE * * *

```

*****
*                               *
*           X S T A B L         *
*                               *
*       Slope Stability Analysis *
*           using the           *
*       Method of Slices       *
*                               *
*       Copyright (C) 1992 - 2004 *
*       Interactive Software Designs, Inc. *
*       Moscow, ID 83843, U.S.A. *
*                               *
*       All Rights Reserved     *
*                               *
*       Ver. 5.206              *
*                               *
*****

```

Problem Description : 3:1 Slope, 20' Cut, No Pumping, t

SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 4 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 150.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 10.0 ft
and x = 50.0 ft

Each surface terminates between x = 250.0 ft
and x = 325.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 14.21 | 80.00 |
| 2 | 21.28 | 72.93 |

| | | |
|----|--------|--------|
| 3 | 28.72 | 66.24 |
| 4 | 36.50 | 59.97 |
| 5 | 44.61 | 54.11 |
| 6 | 53.01 | 48.69 |
| 7 | 61.70 | 43.73 |
| 8 | 70.63 | 39.24 |
| 9 | 79.79 | 35.23 |
| 10 | 89.15 | 31.71 |
| 11 | 98.69 | 28.70 |
| 12 | 108.37 | 26.20 |
| 13 | 118.17 | 24.21 |
| 14 | 128.06 | 22.75 |
| 15 | 138.02 | 21.82 |
| 16 | 148.01 | 21.42 |
| 17 | 158.01 | 21.56 |
| 18 | 167.99 | 22.22 |
| 19 | 177.92 | 23.42 |
| 20 | 187.77 | 25.14 |
| 21 | 197.51 | 27.38 |
| 22 | 207.12 | 30.14 |
| 23 | 216.58 | 33.41 |
| 24 | 225.84 | 37.18 |
| 25 | 234.89 | 41.43 |
| 26 | 243.70 | 46.16 |
| 27 | 252.25 | 51.35 |
| 28 | 260.51 | 56.99 |
| 29 | 268.45 | 63.06 |
| 30 | 276.07 | 69.54 |
| 31 | 283.32 | 76.42 |
| 32 | 290.20 | 83.68 |
| 33 | 296.69 | 91.29 |
| 34 | 302.76 | 99.24 |
| 35 | 303.27 | 100.00 |

**** Simplified BISHOP FOS = 1.122 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 20' Cut, No Pumping, t

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|----------|---------------|---------|--------|---------|----------|-----------|
| | (BISHOP) | x-coord | y-coord | (ft) | x-coord | x-coord | Moment |
| | | (ft) | (ft) | | (ft) | (ft) | (ft-lb) |
| 1. | 1.122 | 150.51 | 209.23 | 187.82 | 14.21 | 303.27 | 2.607E+07 |
| 2. | 1.124 | 142.29 | 194.80 | 167.35 | 20.53 | 280.15 | 2.104E+07 |
| 3. | 1.124 | 149.08 | 204.24 | 180.30 | 18.42 | 296.14 | 2.411E+07 |
| 4. | 1.124 | 152.74 | 207.25 | 185.02 | 18.42 | 303.43 | 2.535E+07 |
| 5. | 1.125 | 150.96 | 201.56 | 176.77 | 22.63 | 295.57 | 2.327E+07 |
| 6. | 1.125 | 153.96 | 210.69 | 189.81 | 16.32 | 308.08 | 2.657E+07 |
| 7. | 1.125 | 140.99 | 200.56 | 174.95 | 14.21 | 284.13 | 2.278E+07 |
| 8. | 1.126 | 153.64 | 213.29 | 192.89 | 14.21 | 309.70 | 2.730E+07 |
| 9. | 1.127 | 140.00 | 190.55 | 161.23 | 22.63 | 273.35 | 1.963E+07 |
| 10. | 1.127 | 148.55 | 211.70 | 189.63 | 12.11 | 301.78 | 2.632E+07 |

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Problem Description : 3:1 Slope, 25' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 100.0 | 75.0 | 3 |
| 2 | 100.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 4 | 145.0 | 90.0 | 175.0 | 100.0 | 1 |
| 5 | 175.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 145.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 120.00 | 79.00 |
| 4 | 150.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 15.0 ft and x = 60.0 ft

Each surface terminates between x = 250.0 ft and x = 290.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 30 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 22.11 | 75.00 |
| 2 | 29.18 | 67.93 |
| 3 | 36.69 | 61.33 |
| 4 | 44.61 | 55.22 |
| 5 | 52.90 | 49.63 |
| 6 | 61.53 | 44.59 |
| 7 | 70.47 | 40.11 |
| 8 | 79.68 | 36.20 |
| 9 | 89.12 | 32.90 |
| 10 | 98.75 | 30.21 |
| 11 | 108.53 | 28.14 |
| 12 | 118.43 | 26.70 |
| 13 | 128.40 | 25.89 |
| 14 | 138.40 | 25.73 |
| 15 | 148.38 | 26.21 |
| 16 | 158.32 | 27.32 |
| 17 | 168.17 | 29.07 |
| 18 | 177.88 | 31.45 |
| 19 | 187.42 | 34.44 |
| 20 | 196.75 | 38.04 |
| 21 | 205.83 | 42.22 |
| 22 | 214.63 | 46.98 |
| 23 | 223.10 | 52.30 |
| 24 | 231.21 | 58.14 |
| 25 | 238.94 | 64.49 |
| 26 | 246.24 | 71.33 |
| 27 | 253.09 | 78.61 |
| 28 | 259.45 | 86.33 |
| 29 | 265.32 | 94.43 |
| 30 | 268.83 | 100.00 |

**** Simplified BISHOP FOS = .916 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 25' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center | | Radius (ft) | Initial Terminal | | Resisting Moment (ft-lb) |
|-----|--------------|---------------|--------------|-------------|------------------|--------------|--------------------------|
| | | x-coord (ft) | y-coord (ft) | | x-coord (ft) | x-coord (ft) | |
| 1. | .916 | 135.95 | 181.83 | 156.12 | 22.11 | 268.83 | 1.886E+07 |
| 2. | .916 | 137.01 | 183.08 | 157.74 | 22.11 | 271.06 | 1.921E+07 |
| 3. | .916 | 134.96 | 180.78 | 154.68 | 22.11 | 266.77 | 1.854E+07 |
| 4. | .916 | 134.28 | 182.52 | 157.11 | 19.74 | 267.91 | 1.908E+07 |
| 5. | .917 | 140.31 | 184.34 | 159.29 | 24.47 | 275.41 | 1.953E+07 |
| 6. | .918 | 137.95 | 176.84 | 148.98 | 29.21 | 265.49 | 1.730E+07 |
| 7. | .918 | 142.83 | 181.81 | 155.94 | 29.21 | 275.50 | 1.880E+07 |
| 8. | .918 | 132.05 | 180.25 | 153.92 | 19.74 | 263.32 | 1.838E+07 |
| 9. | .919 | 137.34 | 174.02 | 144.88 | 31.58 | 261.83 | 1.644E+07 |
| 10. | .920 | 131.11 | 185.12 | 160.03 | 15.00 | 266.58 | 1.965E+07 |

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Problem Description : 4:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 135.0 | 85.0 | 2 |
| 2 | 135.0 | 85.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 4 | 195.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 140.00 | 84.00 |
| 3 | 160.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 50.0 ft

Each surface terminates between x = 275.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 39 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 5.26 | 85.00 |
| 2 | 12.33 | 77.93 |
| 3 | 19.72 | 71.18 |
| 4 | 27.40 | 64.78 |
| 5 | 35.36 | 58.73 |
| 6 | 43.59 | 53.05 |
| 7 | 52.06 | 47.74 |
| 8 | 60.77 | 42.82 |
| 9 | 69.69 | 38.30 |
| 10 | 78.81 | 34.19 |
| 11 | 88.10 | 30.50 |
| 12 | 97.55 | 27.23 |
| 13 | 107.14 | 24.38 |
| 14 | 116.84 | 21.98 |
| 15 | 126.65 | 20.02 |
| 16 | 136.53 | 18.50 |
| 17 | 146.48 | 17.43 |
| 18 | 156.46 | 16.81 |
| 19 | 166.46 | 16.64 |
| 20 | 176.45 | 16.92 |
| 21 | 186.42 | 17.66 |
| 22 | 196.35 | 18.84 |
| 23 | 206.22 | 20.48 |
| 24 | 216.00 | 22.55 |
| 25 | 225.68 | 25.07 |
| 26 | 235.23 | 28.02 |
| 27 | 244.65 | 31.40 |
| 28 | 253.89 | 35.21 |
| 29 | 262.96 | 39.42 |
| 30 | 271.83 | 44.05 |
| 31 | 280.48 | 49.06 |
| 32 | 288.89 | 54.47 |
| 33 | 297.05 | 60.25 |
| 34 | 304.95 | 66.39 |
| 35 | 312.55 | 72.88 |
| 36 | 319.86 | 79.71 |
| 37 | 326.85 | 86.86 |
| 38 | 333.50 | 94.32 |
| 39 | 338.13 | 100.00 |

**** Simplified BISHOP FOS = 1.531 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 15' Cut, No Pumping, t

| | FOS (BISHOP) | Circle x-coord (ft) | Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|---------------------------|---------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.531 | 165.17 | 237.84 | 221.21 | 5.26 | 338.13 | 3.518E+07 |
| 2. | 1.532 | 170.34 | 240.43 | 224.83 | 7.89 | 345.86 | 3.627E+07 |
| 3. | 1.532 | 164.20 | 234.30 | 216.15 | 7.89 | 333.54 | 3.368E+07 |
| 4. | 1.534 | 167.10 | 238.08 | 220.86 | 7.89 | 339.41 | 3.497E+07 |
| 5. | 1.534 | 172.13 | 239.89 | 223.84 | 10.53 | 346.85 | 3.594E+07 |
| 6. | 1.534 | 163.64 | 237.36 | 219.76 | 5.26 | 335.11 | 3.463E+07 |
| 7. | 1.537 | 166.30 | 220.55 | 196.75 | 23.68 | 321.76 | 2.825E+07 |
| 8. | 1.538 | 159.75 | 227.89 | 206.60 | 10.53 | 321.94 | 3.087E+07 |
| 9. | 1.538 | 168.59 | 223.31 | 200.32 | 23.68 | 326.39 | 2.916E+07 |
| 10. | 1.539 | 170.89 | 234.55 | 215.46 | 15.79 | 339.10 | 3.331E+07 |

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XSTABL File: SG4_20T 6-25-07 14:38

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Problem Description : 4:1 Slope, 20' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 4 | 195.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 160.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft
and x = 50.0 ft

Each surface terminates between x = 250.0 ft
and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 15.79 | 80.00 |
| 2 | 22.87 | 72.94 |

| | | |
|----|--------|--------|
| 3 | 30.31 | 66.26 |
| 4 | 38.09 | 59.97 |
| 5 | 46.19 | 54.10 |
| 6 | 54.58 | 48.67 |
| 7 | 63.25 | 43.68 |
| 8 | 72.16 | 39.15 |
| 9 | 81.30 | 35.10 |
| 10 | 90.64 | 31.53 |
| 11 | 100.16 | 28.45 |
| 12 | 109.82 | 25.88 |
| 13 | 119.61 | 23.81 |
| 14 | 129.49 | 22.26 |
| 15 | 139.43 | 21.23 |
| 16 | 149.42 | 20.73 |
| 17 | 159.42 | 20.74 |
| 18 | 169.41 | 21.28 |
| 19 | 179.35 | 22.34 |
| 20 | 189.22 | 23.92 |
| 21 | 199.00 | 26.02 |
| 22 | 208.66 | 28.62 |
| 23 | 218.16 | 31.73 |
| 24 | 227.49 | 35.33 |
| 25 | 236.62 | 39.42 |
| 26 | 245.52 | 43.97 |
| 27 | 254.17 | 48.99 |
| 28 | 262.55 | 54.45 |
| 29 | 270.63 | 60.34 |
| 30 | 278.39 | 66.65 |
| 31 | 285.80 | 73.36 |
| 32 | 292.86 | 80.44 |
| 33 | 299.54 | 87.89 |
| 34 | 305.81 | 95.67 |
| 35 | 308.94 | 100.00 |

**** Simplified BISHOP FOS = 1.133 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 20' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.133 | 154.11 | 211.58 | 190.91 | 15.79 | 308.94 | 2.684E+07 |
| 2. | 1.135 | 150.13 | 213.22 | 192.97 | 10.53 | 306.34 | 2.735E+07 |
| 3. | 1.135 | 160.30 | 212.62 | 192.30 | 21.05 | 316.10 | 2.719E+07 |
| 4. | 1.137 | 161.12 | 207.85 | 185.79 | 26.32 | 312.34 | 2.554E+07 |
| 5. | 1.137 | 158.78 | 205.78 | 182.67 | 26.32 | 307.64 | 2.472E+07 |
| 6. | 1.139 | 153.32 | 197.50 | 171.10 | 28.95 | 293.83 | 2.191E+07 |
| 7. | 1.139 | 145.81 | 208.51 | 186.59 | 10.53 | 297.57 | 2.573E+07 |
| 8. | 1.140 | 154.12 | 201.96 | 176.66 | 26.32 | 298.33 | 2.316E+07 |
| 9. | 1.140 | 153.21 | 216.10 | 195.29 | 13.16 | 310.19 | 2.772E+07 |
| 10. | 1.140 | 152.37 | 203.03 | 178.03 | 23.68 | 297.47 | 2.347E+07 |

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Problem Description : 4:1 Slope, 25' Cut, No Pumping, t

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 95.0 | 75.0 | 3 |
| 2 | 95.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 4 | 155.0 | 90.0 | 195.0 | 100.0 | 1 |
| 5 | 195.0 | 100.0 | 400.0 | -100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 155.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 120.00 | 80.00 |
| 4 | 160.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 50.0 ft

Each surface terminates between x = 250.0 ft and x = 300.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 31 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 30.26 | 75.00 |
| 2 | 37.35 | 67.95 |
| 3 | 44.87 | 61.35 |
| 4 | 52.79 | 55.24 |
| 5 | 61.07 | 49.64 |
| 6 | 69.69 | 44.57 |
| 7 | 78.61 | 40.05 |
| 8 | 87.80 | 36.10 |
| 9 | 97.21 | 32.73 |
| 10 | 106.82 | 29.96 |
| 11 | 116.58 | 27.80 |
| 12 | 126.46 | 26.26 |
| 13 | 136.42 | 25.34 |
| 14 | 146.42 | 25.04 |
| 15 | 156.41 | 25.37 |
| 16 | 166.37 | 26.33 |
| 17 | 176.24 | 27.92 |
| 18 | 186.00 | 30.11 |
| 19 | 195.59 | 32.92 |
| 20 | 205.00 | 36.32 |
| 21 | 214.17 | 40.31 |
| 22 | 223.07 | 44.86 |
| 23 | 231.67 | 49.97 |
| 24 | 239.93 | 55.60 |
| 25 | 247.83 | 61.74 |
| 26 | 255.32 | 68.36 |
| 27 | 262.38 | 75.44 |
| 28 | 268.98 | 82.95 |
| 29 | 275.10 | 90.86 |
| 30 | 280.72 | 99.14 |
| 31 | 281.22 | 100.00 |

**** Simplified BISHOP FOS = .938 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 25' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | .938 | 146.11 | 184.34 | 159.30 | 30.26 | 281.22 | 1.953E+07 |
| 2. | .938 | 147.58 | 182.88 | 157.45 | 32.89 | 281.40 | 1.914E+07 |
| 3. | .939 | 142.79 | 182.02 | 156.25 | 28.95 | 275.70 | 1.887E+07 |
| 4. | .939 | 149.15 | 181.55 | 155.76 | 35.53 | 281.76 | 1.878E+07 |
| 5. | .940 | 141.47 | 180.51 | 154.25 | 28.95 | 272.96 | 1.845E+07 |
| 6. | .940 | 151.27 | 182.73 | 157.16 | 36.84 | 284.84 | 1.907E+07 |
| 7. | .941 | 140.23 | 180.57 | 154.35 | 27.63 | 271.78 | 1.847E+07 |
| 8. | .941 | 150.01 | 180.11 | 153.48 | 38.16 | 280.86 | 1.826E+07 |
| 9. | .942 | 151.80 | 180.35 | 154.00 | 39.47 | 283.09 | 1.839E+07 |
| 10. | .942 | 140.23 | 179.22 | 152.47 | 28.95 | 270.47 | 1.807E+07 |

* * * END OF FILE * * *

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Problem Description : 5:1 Slope, 15' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 140.0 | 85.0 | 2 |
| 2 | 140.0 | 85.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 4 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 145.00 | 84.00 |
| 3 | 170.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft
and x = 75.0 ft

Each surface terminates between x = 270.0 ft
and x = 310.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 32 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 43.42 | 85.00 |
| 2 | 50.49 | 77.93 |

| | | |
|----|--------|--------|
| 3 | 57.96 | 71.28 |
| 4 | 65.80 | 65.07 |
| 5 | 73.97 | 59.31 |
| 6 | 82.47 | 54.04 |
| 7 | 91.25 | 49.25 |
| 8 | 100.30 | 44.98 |
| 9 | 109.57 | 41.24 |
| 10 | 119.04 | 38.03 |
| 11 | 128.68 | 35.37 |
| 12 | 138.46 | 33.27 |
| 13 | 148.34 | 31.73 |
| 14 | 158.29 | 30.76 |
| 15 | 168.28 | 30.36 |
| 16 | 178.28 | 30.53 |
| 17 | 188.25 | 31.28 |
| 18 | 198.16 | 32.59 |
| 19 | 207.99 | 34.47 |
| 20 | 217.68 | 36.92 |
| 21 | 227.22 | 39.91 |
| 22 | 236.58 | 43.44 |
| 23 | 245.72 | 47.51 |
| 24 | 254.60 | 52.09 |
| 25 | 263.22 | 57.17 |
| 26 | 271.52 | 62.74 |
| 27 | 279.50 | 68.77 |
| 28 | 287.11 | 75.25 |
| 29 | 294.34 | 82.16 |
| 30 | 301.17 | 89.47 |
| 31 | 307.56 | 97.16 |
| 32 | 309.66 | 100.00 |

**** Simplified BISHOP FOS = 1.563 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 15' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.563 | 170.25 | 204.84 | 174.49 | 43.42 | 309.66 | 2.259E+07 |
| 2. | 1.563 | 170.27 | 204.97 | 174.59 | 43.42 | 309.70 | 2.260E+07 |
| 3. | 1.565 | 171.68 | 204.14 | 173.14 | 46.05 | 309.97 | 2.222E+07 |
| 4. | 1.565 | 170.43 | 202.31 | 170.97 | 46.05 | 307.35 | 2.176E+07 |
| 5. | 1.566 | 166.06 | 208.46 | 179.67 | 35.53 | 309.25 | 2.386E+07 |
| 6. | 1.567 | 165.11 | 210.20 | 182.09 | 32.89 | 309.98 | 2.445E+07 |
| 7. | 1.567 | 179.45 | 195.53 | 161.39 | 61.84 | 309.45 | 1.956E+07 |
| 8. | 1.568 | 173.22 | 197.55 | 164.00 | 53.95 | 304.96 | 2.011E+07 |
| 9. | 1.568 | 167.40 | 204.70 | 174.24 | 40.79 | 306.59 | 2.252E+07 |
| 10. | 1.568 | 166.34 | 209.39 | 180.51 | 35.53 | 309.87 | 2.400E+07 |

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XSTABL File: SG5_20T 6-25-07 14:51

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Problem Description : 5:1 Slope, 20' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

4 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 4 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 170.00 | 90.00 |
| 4 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 10.0 ft and x = 75.0 ft

Each surface terminates between x = 275.0 ft and x = 350.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 23.68 | 80.00 |
| 2 | 30.77 | 72.95 |

| | | |
|----|--------|--------|
| 3 | 38.22 | 66.27 |
| 4 | 45.99 | 59.98 |
| 5 | 54.09 | 54.11 |
| 6 | 62.47 | 48.66 |
| 7 | 71.12 | 43.64 |
| 8 | 80.02 | 39.09 |
| 9 | 89.15 | 34.99 |
| 10 | 98.47 | 31.38 |
| 11 | 107.97 | 28.25 |
| 12 | 117.61 | 25.61 |
| 13 | 127.38 | 23.47 |
| 14 | 137.25 | 21.84 |
| 15 | 147.19 | 20.72 |
| 16 | 157.17 | 20.12 |
| 17 | 167.17 | 20.03 |
| 18 | 177.16 | 20.46 |
| 19 | 187.11 | 21.40 |
| 20 | 197.01 | 22.85 |
| 21 | 206.81 | 24.81 |
| 22 | 216.50 | 27.28 |
| 23 | 226.06 | 30.24 |
| 24 | 235.44 | 33.69 |
| 25 | 244.64 | 37.62 |
| 26 | 253.62 | 42.02 |
| 27 | 262.36 | 46.88 |
| 28 | 270.84 | 52.18 |
| 29 | 279.03 | 57.91 |
| 30 | 286.92 | 64.05 |
| 31 | 294.48 | 70.60 |
| 32 | 301.70 | 77.52 |
| 33 | 308.54 | 84.81 |
| 34 | 315.00 | 92.44 |
| 35 | 320.76 | 100.00 |

**** Simplified BISHOP FOS = 1.150 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 20' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.150 | 163.89 | 213.83 | 193.82 | 23.68 | 320.76 | 2.758E+07 |
| 2. | 1.151 | 167.48 | 210.20 | 188.96 | 30.53 | 320.92 | 2.634E+07 |
| 3. | 1.152 | 159.82 | 209.36 | 187.79 | 23.68 | 312.47 | 2.604E+07 |
| 4. | 1.154 | 171.22 | 206.79 | 184.37 | 37.37 | 321.43 | 2.519E+07 |
| 5. | 1.155 | 156.11 | 208.85 | 187.23 | 20.26 | 308.45 | 2.592E+07 |
| 6. | 1.157 | 153.54 | 209.74 | 188.47 | 16.84 | 306.71 | 2.623E+07 |
| 7. | 1.158 | 154.24 | 206.91 | 184.55 | 20.26 | 304.58 | 2.523E+07 |
| 8. | 1.159 | 175.21 | 207.78 | 185.47 | 40.79 | 326.07 | 2.542E+07 |
| 9. | 1.161 | 163.37 | 204.71 | 179.74 | 33.95 | 309.37 | 2.381E+07 |
| 10. | 1.161 | 164.55 | 215.08 | 192.71 | 27.11 | 319.06 | 2.688E+07 |

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Problem Description : 5:1 Slope, 25' Cut, No Pumping, t

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 90.0 | 75.0 | 3 |
| 2 | 90.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 4 | 165.0 | 90.0 | 215.0 | 100.0 | 1 |
| 5 | 215.0 | 100.0 | 400.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 400.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 400.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 400.0 | 50.0 | 4 |
| 4 | .0 | .0 | 400.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 74.00 |
| 2 | 95.00 | 74.00 |
| 3 | 120.00 | 80.00 |
| 4 | 170.00 | 90.00 |
| 5 | 400.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 30.0 ft
 and x = 45.0 ft

Each surface terminates between x = 255.0 ft
 and x = 295.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 31 coordinate points

| Point | x-surf | y-surf |
|-------|--------|--------|
|-------|--------|--------|

| No. | (ft) | (ft) |
|-----|--------|--------|
| 1 | 33.16 | 75.00 |
| 2 | 40.24 | 67.94 |
| 3 | 47.75 | 61.33 |
| 4 | 55.66 | 55.22 |
| 5 | 63.94 | 49.62 |
| 6 | 72.56 | 44.54 |
| 7 | 81.48 | 40.03 |
| 8 | 90.67 | 36.08 |
| 9 | 100.09 | 32.73 |
| 10 | 109.71 | 29.97 |
| 11 | 119.47 | 27.83 |
| 12 | 129.36 | 26.31 |
| 13 | 139.32 | 25.41 |
| 14 | 149.31 | 25.14 |
| 15 | 159.31 | 25.51 |
| 16 | 169.26 | 26.50 |
| 17 | 179.12 | 28.12 |
| 18 | 188.87 | 30.36 |
| 19 | 198.45 | 33.21 |
| 20 | 207.84 | 36.66 |
| 21 | 216.99 | 40.70 |
| 22 | 225.87 | 45.30 |
| 23 | 234.44 | 50.46 |
| 24 | 242.66 | 56.14 |
| 25 | 250.51 | 62.34 |
| 26 | 257.96 | 69.01 |
| 27 | 264.97 | 76.15 |
| 28 | 271.51 | 83.71 |
| 29 | 277.57 | 91.67 |
| 30 | 283.11 | 99.99 |
| 31 | 283.11 | 100.00 |

**** Simplified BISHOP FOS = .968 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 25' Cut, No Pumping, t

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | .968 | 148.53 | 183.55 | 158.41 | 33.16 | 283.11 | 1.936E+07 |
| 2. | .969 | 154.58 | 188.05 | 163.04 | 37.11 | 291.71 | 2.020E+07 |
| 3. | .969 | 156.17 | 183.90 | 158.47 | 41.05 | 290.58 | 1.932E+07 |
| 4. | .969 | 158.14 | 183.04 | 157.58 | 43.42 | 292.02 | 1.916E+07 |
| 5. | .970 | 153.22 | 182.52 | 156.52 | 39.47 | 286.13 | 1.888E+07 |
| 6. | .970 | 149.09 | 180.71 | 154.57 | 36.32 | 280.83 | 1.852E+07 |
| 7. | .970 | 147.43 | 186.55 | 161.40 | 30.79 | 283.59 | 1.988E+07 |
| 8. | .971 | 146.12 | 182.52 | 157.10 | 31.58 | 279.74 | 1.908E+07 |
| 9. | .971 | 150.81 | 180.15 | 153.72 | 38.68 | 281.90 | 1.833E+07 |
| 10. | .971 | 148.10 | 181.55 | 155.58 | 34.74 | 280.49 | 1.872E+07 |

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Problem Description : 3:1 Slope, 15' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 130.0 | 85.0 | 3 |
| 2 | 130.0 | 85.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 4 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 5 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 84.00 |
| 2 | 135.00 | 84.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 150.0 ft

Each surface terminates between x = 300.0 ft and x = 500.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 40 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 39.47 | 85.00 |
| 2 | 46.67 | 78.05 |
| 3 | 54.16 | 71.43 |
| 4 | 61.93 | 65.13 |
| 5 | 69.96 | 59.18 |
| 6 | 78.25 | 53.58 |
| 7 | 86.77 | 48.34 |
| 8 | 95.51 | 43.48 |
| 9 | 104.45 | 39.00 |
| 10 | 113.57 | 34.92 |
| 11 | 122.87 | 31.23 |
| 12 | 132.32 | 27.95 |
| 13 | 141.90 | 25.08 |
| 14 | 151.59 | 22.64 |
| 15 | 161.38 | 20.61 |
| 16 | 171.26 | 19.01 |
| 17 | 181.19 | 17.84 |
| 18 | 191.16 | 17.10 |
| 19 | 201.15 | 16.79 |
| 20 | 211.15 | 16.92 |
| 21 | 221.14 | 17.48 |
| 22 | 231.09 | 18.47 |
| 23 | 240.99 | 19.89 |
| 24 | 250.81 | 21.74 |
| 25 | 260.55 | 24.02 |
| 26 | 270.18 | 26.71 |
| 27 | 279.69 | 29.82 |
| 28 | 289.05 | 33.34 |
| 29 | 298.25 | 37.26 |
| 30 | 307.27 | 41.57 |
| 31 | 316.09 | 46.28 |
| 32 | 324.71 | 51.36 |
| 33 | 333.09 | 56.81 |
| 34 | 341.23 | 62.61 |
| 35 | 349.11 | 68.77 |
| 36 | 356.72 | 75.26 |
| 37 | 364.04 | 82.08 |
| 38 | 371.05 | 89.20 |
| 39 | 377.76 | 96.62 |
| 40 | 380.55 | 100.00 |

**** Simplified BISHOP FOS = 1.675 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle x-coord (ft) | Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|---------------------------|---------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.675 | 203.23 | 247.44 | 230.66 | 39.47 | 380.55 | 3.704E+07 |
| 2. | 1.688 | 216.20 | 232.67 | 212.67 | 63.16 | 382.38 | 3.219E+07 |
| 3. | 1.694 | 234.27 | 261.80 | 246.04 | 63.16 | 419.60 | 4.099E+07 |
| 4. | 1.694 | 199.46 | 243.91 | 225.50 | 39.47 | 373.00 | 3.544E+07 |
| 5. | 1.702 | 207.56 | 279.35 | 262.18 | 31.58 | 398.75 | 4.459E+07 |
| 6. | 1.703 | 220.67 | 228.99 | 207.65 | 71.05 | 383.31 | 3.079E+07 |
| 7. | 1.706 | 206.32 | 232.41 | 211.06 | 55.26 | 370.62 | 3.154E+07 |
| 8. | 1.711 | 232.49 | 232.78 | 213.11 | 78.95 | 399.12 | 3.236E+07 |
| 9. | 1.714 | 242.61 | 244.88 | 228.80 | 78.95 | 419.62 | 3.676E+07 |
| 10. | 1.724 | 195.06 | 256.20 | 236.72 | 31.58 | 372.88 | 3.779E+07 |

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*           *                     *
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Problem Description : 3:1 Slope, 20' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 3 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 4 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 5 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pore Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 75.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 53.95 | 80.00 |
| 2 | 61.04 | 72.95 |

| | | |
|----|--------|--------|
| 3 | 68.48 | 66.27 |
| 4 | 76.26 | 59.98 |
| 5 | 84.35 | 54.11 |
| 6 | 92.73 | 48.66 |
| 7 | 101.39 | 43.64 |
| 8 | 110.29 | 39.08 |
| 9 | 119.41 | 34.99 |
| 10 | 128.73 | 31.37 |
| 11 | 138.23 | 28.24 |
| 12 | 147.87 | 25.60 |
| 13 | 157.64 | 23.46 |
| 14 | 167.51 | 21.83 |
| 15 | 177.44 | 20.71 |
| 16 | 187.43 | 20.10 |
| 17 | 197.43 | 20.01 |
| 18 | 207.42 | 20.43 |
| 19 | 217.37 | 21.37 |
| 20 | 227.27 | 22.82 |
| 21 | 237.07 | 24.78 |
| 22 | 246.77 | 27.24 |
| 23 | 256.32 | 30.19 |
| 24 | 265.71 | 33.64 |
| 25 | 274.90 | 37.57 |
| 26 | 283.89 | 41.96 |
| 27 | 292.63 | 46.81 |
| 28 | 301.11 | 52.11 |
| 29 | 309.31 | 57.83 |
| 30 | 317.20 | 63.97 |
| 31 | 324.77 | 70.51 |
| 32 | 331.99 | 77.44 |
| 33 | 338.84 | 84.72 |
| 34 | 345.31 | 92.35 |
| 35 | 351.14 | 100.00 |

**** Simplified BISHOP FOS = 1.373 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|-----------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.373 | 194.21 | 213.89 | 193.91 | 53.95 | 351.14 | 2.760E+07 |
| 2. | 1.374 | 186.81 | 221.58 | 201.50 | 43.42 | 347.43 | 2.917E+07 |
| 3. | 1.380 | 196.27 | 258.84 | 238.71 | 38.16 | 374.39 | 3.738E+07 |
| 4. | 1.380 | 202.59 | 215.67 | 195.49 | 61.84 | 360.18 | 2.789E+07 |
| 5. | 1.380 | 189.80 | 211.63 | 191.07 | 51.32 | 344.79 | 2.689E+07 |
| 6. | 1.381 | 181.76 | 221.89 | 201.88 | 38.16 | 342.61 | 2.926E+07 |
| 7. | 1.382 | 205.43 | 241.58 | 221.48 | 53.95 | 375.73 | 3.350E+07 |
| 8. | 1.383 | 194.79 | 212.17 | 191.24 | 56.58 | 349.60 | 2.686E+07 |
| 9. | 1.383 | 184.21 | 216.90 | 196.37 | 43.42 | 342.00 | 2.801E+07 |
| 10. | 1.384 | 207.23 | 239.50 | 219.40 | 56.58 | 376.56 | 3.304E+07 |

* * * END OF FILE * * *

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```

Problem Description : 3:1 Slope, 25' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 100.0 | 75.0 | 3 |
| 2 | 100.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 145.0 | 90.0 | 2 |
| 4 | 145.0 | 90.0 | 245.0 | 90.0 | 2 |
| 5 | 245.0 | 90.0 | 275.0 | 100.0 | 1 |
| 6 | 275.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 245.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Pressure Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|-------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 4 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 105.00 | 74.00 |
| 3 | 250.00 | 90.00 |
| 4 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft
 10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 42.11 | 75.00 |
| 2 | 49.98 | 68.83 |

| | | |
|----|--------|--------|
| 3 | 58.12 | 63.03 |
| 4 | 66.53 | 57.61 |
| 5 | 75.17 | 52.59 |
| 6 | 84.04 | 47.97 |
| 7 | 93.11 | 43.76 |
| 8 | 102.37 | 39.98 |
| 9 | 111.79 | 36.62 |
| 10 | 121.36 | 33.71 |
| 11 | 131.05 | 31.24 |
| 12 | 140.84 | 29.22 |
| 13 | 150.72 | 27.65 |
| 14 | 160.66 | 26.54 |
| 15 | 170.63 | 25.89 |
| 16 | 180.63 | 25.70 |
| 17 | 190.63 | 25.97 |
| 18 | 200.60 | 26.71 |
| 19 | 210.53 | 27.90 |
| 20 | 220.39 | 29.54 |
| 21 | 230.17 | 31.65 |
| 22 | 239.84 | 34.20 |
| 23 | 249.38 | 37.19 |
| 24 | 258.77 | 40.62 |
| 25 | 268.00 | 44.48 |
| 26 | 277.04 | 48.76 |
| 27 | 285.87 | 53.45 |
| 28 | 294.47 | 58.55 |
| 29 | 302.83 | 64.03 |
| 30 | 310.93 | 69.90 |
| 31 | 318.75 | 76.13 |
| 32 | 326.27 | 82.72 |
| 33 | 333.49 | 89.65 |
| 34 | 340.37 | 96.90 |
| 35 | 343.05 | 100.00 |

**** Simplified BISHOP FOS = 1.210 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 3:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord ft) | Circle Center y-coord ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|---------------------------------|---------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.210 | 179.74 | 242.48 | 216.78 | 42.11 | 343.05 | 3.049E+07 |
| 2. | 1.218 | 170.02 | 231.02 | 205.13 | 36.84 | 327.77 | 2.807E+07 |
| 3. | 1.221 | 175.87 | 264.39 | 238.10 | 31.58 | 348.05 | 3.484E+07 |
| 4. | 1.222 | 176.11 | 202.64 | 177.60 | 52.63 | 320.96 | 2.288E+07 |
| 5. | 1.222 | 194.18 | 236.35 | 211.21 | 57.89 | 355.44 | 2.948E+07 |
| 6. | 1.224 | 170.54 | 250.39 | 223.77 | 31.58 | 336.17 | 3.171E+07 |
| 7. | 1.225 | 180.43 | 277.53 | 251.35 | 31.58 | 358.29 | 3.776E+07 |
| 8. | 1.226 | 168.40 | 244.27 | 217.65 | 31.58 | 331.32 | 3.045E+07 |
| 9. | 1.228 | 159.62 | 243.51 | 218.17 | 21.05 | 323.87 | 3.086E+07 |
| 10. | 1.229 | 189.04 | 209.79 | 184.42 | 63.16 | 337.20 | 2.412E+07 |

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XSTABL File: SG4_15ST 6-25-07 13:59

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Problem Description : 4:1 Slope, 15' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 135.0 | 85.0 | 2 |
| 2 | 135.0 | 85.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 4 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 5 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 140.00 | 84.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 100.0 ft

Each surface terminates between x = 300.0 ft and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 41 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 56.58 | 85.00 |
| 2 | 63.73 | 78.01 |
| 3 | 71.18 | 71.33 |
| 4 | 78.90 | 64.98 |
| 5 | 86.89 | 58.97 |
| 6 | 95.13 | 53.31 |

| | | |
|----|--------|--------|
| 7 | 103.61 | 48.00 |
| 8 | 112.31 | 43.07 |
| 9 | 121.21 | 38.51 |
| 10 | 130.30 | 34.34 |
| 11 | 139.55 | 30.56 |
| 12 | 148.97 | 27.18 |
| 13 | 158.52 | 24.21 |
| 14 | 168.18 | 21.66 |
| 15 | 177.95 | 19.52 |
| 16 | 187.80 | 17.80 |
| 17 | 197.72 | 16.51 |
| 18 | 207.68 | 15.64 |
| 19 | 217.67 | 15.21 |
| 20 | 227.67 | 15.20 |
| 21 | 237.66 | 15.62 |
| 22 | 247.63 | 16.47 |
| 23 | 257.55 | 17.75 |
| 24 | 267.40 | 19.45 |
| 25 | 277.17 | 21.57 |
| 26 | 286.84 | 24.11 |
| 27 | 296.40 | 27.07 |
| 28 | 305.82 | 30.43 |
| 29 | 315.08 | 34.19 |
| 30 | 324.18 | 38.35 |
| 31 | 333.08 | 42.89 |
| 32 | 341.79 | 47.82 |
| 33 | 350.27 | 53.11 |
| 34 | 358.52 | 58.76 |
| 35 | 366.52 | 64.76 |
| 36 | 374.26 | 71.10 |
| 37 | 381.71 | 77.76 |
| 38 | 388.88 | 84.74 |
| 39 | 395.73 | 92.02 |
| 40 | 402.27 | 99.59 |
| 41 | 402.60 | 100.00 |

**** Simplified BISHOP FOS = 1.758 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center | | Radius (ft) | Initial | Terminal | Resisting Moment (ft-lb) |
|-----|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|--------------------------------|
| | | x-coord (ft) | y-coord (ft) | | x-coord (ft) | x-coord (ft) | |
| 1. | 1.758 | 222.86 | 247.98 | 232.83 | 56.58 | 402.60 | 3.829E+07 |
| 2. | 1.763 | 219.24 | 241.11 | 225.45 | 56.58 | 395.00 | 3.640E+07 |
| 3. | 1.765 | 232.92 | 239.68 | 222.94 | 72.37 | 406.65 | 3.556E+07 |
| 4. | 1.770 | 241.83 | 240.69 | 224.37 | 80.26 | 416.59 | 3.600E+07 |
| 5. | 1.773 | 219.78 | 260.83 | 245.34 | 48.68 | 405.03 | 4.125E+07 |
| 6. | 1.779 | 225.18 | 243.58 | 225.78 | 64.47 | 399.38 | 3.598E+07 |
| 7. | 1.782 | 220.27 | 241.05 | 223.31 | 60.53 | 393.33 | 3.542E+07 |
| 8. | 1.784 | 247.57 | 260.70 | 245.35 | 76.32 | 432.97 | 4.129E+07 |
| 9. | 1.785 | 232.90 | 245.52 | 227.01 | 72.37 | 407.08 | 3.610E+07 |
| 10. | 1.786 | 243.52 | 263.38 | 247.21 | 72.37 | 429.02 | 4.153E+07 |

*** END OF FILE ***

XSTABL File: SG4_20ST 6-25-07 14:01

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Problem Description : 4:1 Slope, 20' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 3 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 4 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 5 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft
and x = 100.0 f

Each surface terminates between x = 350.0 ft
and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *
The most critical circular failure surface
is specified by 37 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 52.63 | 80.00 |
| 2 | 60.02 | 73.26 |
| 3 | 67.72 | 66.88 |
| 4 | 75.70 | 60.86 |
| 5 | 83.96 | 55.21 |

| | | |
|----|--------|--------|
| 6 | 92.47 | 49.96 |
| 7 | 101.21 | 45.11 |
| 8 | 110.17 | 40.66 |
| 9 | 119.32 | 36.64 |
| 10 | 128.66 | 33.05 |
| 11 | 138.15 | 29.90 |
| 12 | 147.77 | 27.19 |
| 13 | 157.52 | 24.94 |
| 14 | 167.35 | 23.13 |
| 15 | 177.26 | 21.79 |
| 16 | 187.22 | 20.91 |
| 17 | 197.21 | 20.49 |
| 18 | 207.21 | 20.54 |
| 19 | 217.20 | 21.05 |
| 20 | 227.15 | 22.02 |
| 21 | 237.05 | 23.46 |
| 22 | 246.87 | 25.35 |
| 23 | 256.59 | 27.70 |
| 24 | 266.19 | 30.50 |
| 25 | 275.65 | 33.74 |
| 26 | 284.95 | 37.42 |
| 27 | 294.07 | 41.53 |
| 28 | 302.98 | 46.05 |
| 29 | 311.68 | 50.99 |
| 30 | 320.14 | 56.32 |
| 31 | 328.34 | 62.04 |
| 32 | 336.27 | 68.14 |
| 33 | 343.90 | 74.60 |
| 34 | 351.23 | 81.40 |
| 35 | 358.23 | 88.54 |
| 36 | 364.90 | 96.00 |
| 37 | 368.15 | 100.00 |

**** Simplified BISHOP FOS = 1.425 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.425 | 201.21 | 235.57 | 215.12 | 52.63 | 368.15 | 3.202E+07 |
| 2. | 1.426 | 201.78 | 222.96 | 202.83 | 57.89 | 363.01 | 2.944E+07 |
| 3. | 1.428 | 202.57 | 225.67 | 205.31 | 57.89 | 364.87 | 2.992E+07 |
| 4. | 1.431 | 216.33 | 245.65 | 225.62 | 63.16 | 388.56 | 3.444E+07 |
| 5. | 1.431 | 196.89 | 239.28 | 218.46 | 47.37 | 365.13 | 3.266E+07 |
| 6. | 1.435 | 194.81 | 219.00 | 198.84 | 52.63 | 354.04 | 2.859E+07 |
| 7. | 1.436 | 197.61 | 228.49 | 207.53 | 52.63 | 360.53 | 3.027E+07 |
| 8. | 1.437 | 202.49 | 213.13 | 192.71 | 63.16 | 358.44 | 2.726E+07 |
| 9. | 1.437 | 193.82 | 216.11 | 196.11 | 52.63 | 351.83 | 2.805E+07 |
| 10. | 1.438 | 186.92 | 251.33 | 231.26 | 31.58 | 361.76 | 3.570E+07 |

* * * END OF FILE * * *

XSTABL File: SG4_25ST 6-25-07 14:03

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Problem Description : 4:1 Slope, 25' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 95.0 | 75.0 | 3 |
| 2 | 95.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 155.0 | 90.0 | 2 |
| 4 | 155.0 | 90.0 | 255.0 | 90.0 | 2 |
| 5 | 255.0 | 90.0 | 295.0 | 100.0 | 1 |
| 6 | 295.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 255.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight Moist (pcf) | Unit Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------------|------------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |

| | | | | | | | |
|---|-------|-------|-------|-----|------|----|---|
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

 PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 74.00 |
| 2 | 100.00 | 74.00 |
| 3 | 160.00 | 89.00 |
| 4 | 260.00 | 89.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = .0 ft and x = 100.0 ft

Each surface terminates between x = 300.0 ft and x = 400.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft

10.0 ft line segments define each trial failure surface.

 ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
 Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 35 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 57.89 | 75.00 |

| | | |
|----|--------|--------|
| 2 | 65.68 | 68.73 |
| 3 | 73.76 | 62.84 |
| 4 | 82.11 | 57.33 |
| 5 | 90.71 | 52.23 |
| 6 | 99.54 | 47.53 |
| 7 | 108.58 | 43.27 |
| 8 | 117.82 | 39.43 |
| 9 | 127.23 | 36.04 |
| 10 | 136.78 | 33.09 |
| 11 | 146.47 | 30.60 |
| 12 | 156.26 | 28.57 |
| 13 | 166.14 | 27.01 |
| 14 | 176.08 | 25.92 |
| 15 | 186.06 | 25.30 |
| 16 | 196.06 | 25.15 |
| 17 | 206.05 | 25.48 |
| 18 | 216.02 | 26.27 |
| 19 | 225.94 | 27.54 |
| 20 | 235.79 | 29.28 |
| 21 | 245.54 | 31.48 |
| 22 | 255.18 | 34.14 |
| 23 | 264.68 | 37.25 |
| 24 | 274.03 | 40.81 |
| 25 | 283.19 | 44.81 |
| 26 | 292.16 | 49.24 |
| 27 | 300.91 | 54.09 |
| 28 | 309.42 | 59.34 |
| 29 | 317.66 | 65.00 |
| 30 | 325.64 | 71.03 |
| 31 | 333.31 | 77.44 |
| 32 | 340.68 | 84.20 |
| 33 | 347.72 | 91.31 |
| 34 | 354.41 | 98.74 |
| 35 | 355.44 | 100.00 |

**** Simplified BISHOP FOS = 1.277 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 4:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS | Circle Center | | Radius | Initial | Terminal | Resisting |
|-----|---------|---------------|---------|--------|---------|----------|-----------|
| | BISHOP) | x-coord | y-coord | | x-coord | x-coord | Moment |
| | | (ft) | (ft) | (ft) | (ft) | (ft) | (ft-lb) |
| 1. | 1.277 | 194.18 | 236.35 | 211.21 | 57.89 | 355.44 | 2.948E+07 |
| 2. | 1.278 | 179.74 | 242.48 | 216.78 | 42.11 | 343.05 | 3.049E+07 |
| 3. | 1.280 | 180.43 | 277.53 | 251.35 | 31.58 | 358.29 | 3.776E+07 |
| 4. | 1.285 | 175.87 | 264.39 | 238.10 | 31.58 | 348.05 | 3.484E+07 |
| 5. | 1.300 | 201.74 | 324.04 | 298.68 | 36.84 | 399.26 | 4.905E+07 |
| 6. | 1.301 | 170.54 | 250.39 | 223.77 | 31.58 | 336.17 | 3.171E+07 |
| 7. | 1.305 | 189.04 | 209.79 | 184.42 | 63.16 | 337.20 | 2.412E+07 |
| 8. | 1.305 | 170.02 | 231.02 | 205.13 | 36.84 | 327.77 | 2.807E+07 |
| 9. | 1.305 | 193.89 | 227.71 | 201.03 | 63.16 | 349.14 | 2.708E+07 |
| 10. | 1.306 | 202.64 | 233.64 | 207.80 | 68.42 | 361.71 | 2.862E+07 |

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```

Problem Description : 5:1 Slope, 15' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 85.0 | 140.0 | 85.0 | 2 |
| 2 | 140.0 | 85.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 4 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 5 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 265.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | .0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Moist (pcf) | Weight Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|------------------|-------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 84.00 |
| 2 | 145.00 | 84.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 50.0 ft and x = 125.0 ft

Each surface terminates between x = 325.0 ft and x = 425.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 15.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 41 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 73.68 | 85.00 |
| 2 | 80.88 | 78.05 |
| 3 | 88.36 | 71.42 |
| 4 | 96.12 | 65.11 |
| 5 | 104.13 | 59.13 |
| 6 | 112.39 | 53.49 |

| | | |
|----|--------|--------|
| 7 | 120.88 | 48.21 |
| 8 | 129.59 | 43.29 |
| 9 | 138.49 | 38.74 |
| 10 | 147.59 | 34.57 |
| 11 | 156.84 | 30.80 |
| 12 | 166.25 | 27.41 |
| 13 | 175.80 | 24.43 |
| 14 | 185.46 | 21.85 |
| 15 | 195.22 | 19.68 |
| 16 | 205.07 | 17.93 |
| 17 | 214.98 | 16.59 |
| 18 | 224.94 | 15.67 |
| 19 | 234.92 | 15.18 |
| 20 | 244.92 | 15.11 |
| 21 | 254.92 | 15.46 |
| 22 | 264.89 | 16.23 |
| 23 | 274.82 | 17.42 |
| 24 | 284.68 | 19.03 |
| 25 | 294.48 | 21.05 |
| 26 | 304.18 | 23.49 |
| 27 | 313.76 | 26.34 |
| 28 | 323.22 | 29.58 |
| 29 | 332.53 | 33.23 |
| 30 | 341.68 | 37.26 |
| 31 | 350.66 | 41.68 |
| 32 | 359.43 | 46.47 |
| 33 | 368.00 | 51.63 |
| 34 | 376.34 | 57.14 |
| 35 | 384.44 | 63.00 |
| 36 | 392.29 | 69.20 |
| 37 | 399.87 | 75.73 |
| 38 | 407.16 | 82.57 |
| 39 | 414.16 | 89.71 |
| 40 | 420.85 | 97.14 |
| 41 | 423.22 | 100.00 |

**** Simplified BISHOP FOS = 1.790 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 15' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.790 | 241.65 | 251.80 | 236.71 | 73.68 | 423.22 | 3.923E+07 |
| 2. | 1.792 | 239.34 | 255.49 | 240.48 | 69.74 | 422.73 | 4.017E+07 |
| 3. | 1.795 | 240.37 | 258.65 | 243.46 | 69.74 | 425.01 | 4.086E+07 |
| 4. | 1.800 | 236.15 | 258.89 | 243.44 | 65.79 | 420.53 | 4.078E+07 |
| 5. | 1.803 | 231.69 | 248.70 | 233.07 | 65.79 | 411.14 | 3.823E+07 |
| 6. | 1.805 | 234.94 | 240.76 | 224.19 | 73.68 | 409.43 | 3.590E+07 |
| 7. | 1.805 | 233.02 | 252.90 | 236.98 | 65.79 | 414.03 | 3.909E+07 |
| 8. | 1.809 | 246.93 | 243.00 | 225.87 | 85.53 | 421.76 | 3.616E+07 |
| 9. | 1.810 | 225.18 | 241.34 | 226.11 | 61.84 | 401.60 | 3.665E+07 |
| 10. | 1.813 | 235.69 | 236.24 | 218.76 | 77.63 | 406.79 | 3.443E+07 |

* * * END OF FILE * * *

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*****
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*****
    
```

Problem Description : 5:1 Slope, 20' Cut, No Pumping, Stpt

 SEGMENT BOUNDARY COORDINATES

5 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 80.0 | 115.0 | 80.0 | 3 |
| 2 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 3 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 4 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 5 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

 ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|--------------|-----------------|-----------------|
| 1 | .00 | 79.00 |
| 2 | 120.00 | 79.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft
and x = 100.0 ft

Each surface terminates between x = 375.0 ft
and x = 490.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 20.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 39 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|--------------|----------------|----------------|
| 1 | 60.53 | 80.00 |
| 2 | 68.18 | 73.56 |
| 3 | 76.09 | 67.44 |
| 4 | 84.24 | 61.66 |

| | | |
|----|--------|--------|
| 5 | 92.63 | 56.21 |
| 6 | 101.24 | 51.12 |
| 7 | 110.05 | 46.40 |
| 8 | 119.05 | 42.04 |
| 9 | 128.22 | 38.05 |
| 10 | 137.55 | 34.45 |
| 11 | 147.02 | 31.24 |
| 12 | 156.62 | 28.43 |
| 13 | 166.32 | 26.01 |
| 14 | 176.12 | 24.00 |
| 15 | 185.99 | 22.39 |
| 16 | 195.92 | 21.20 |
| 17 | 205.89 | 20.42 |
| 18 | 215.88 | 20.05 |
| 19 | 225.88 | 20.10 |
| 20 | 235.87 | 20.56 |
| 21 | 245.83 | 21.43 |
| 22 | 255.75 | 22.71 |
| 23 | 265.60 | 24.41 |
| 24 | 275.38 | 26.51 |
| 25 | 285.06 | 29.02 |
| 26 | 294.63 | 31.92 |
| 27 | 304.07 | 35.22 |
| 28 | 313.37 | 38.90 |
| 29 | 322.50 | 42.97 |
| 30 | 331.46 | 47.41 |
| 31 | 340.23 | 52.22 |
| 32 | 348.79 | 57.39 |
| 33 | 357.13 | 62.91 |
| 34 | 365.23 | 68.77 |
| 35 | 373.09 | 74.96 |
| 36 | 380.68 | 81.47 |
| 37 | 387.99 | 88.29 |
| 38 | 395.02 | 95.41 |
| 39 | 399.19 | 100.00 |

**** Simplified BISHOP FOS = 1.475 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 20' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|-----------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.475 | 219.77 | 261.40 | 241.38 | 60.53 | 399.19 | 3.803E+07 |
| 2. | 1.475 | 216.30 | 273.70 | 253.58 | 52.63 | 400.98 | 4.087E+07 |
| 3. | 1.479 | 204.12 | 251.45 | 231.42 | 48.68 | 379.07 | 3.575E+07 |
| 4. | 1.479 | 208.97 | 286.25 | 266.13 | 40.79 | 399.01 | 4.388E+07 |
| 5. | 1.480 | 209.94 | 247.72 | 227.27 | 56.58 | 382.58 | 3.470E+07 |
| 6. | 1.480 | 212.18 | 243.22 | 222.79 | 60.53 | 382.81 | 3.372E+07 |
| 7. | 1.482 | 209.52 | 235.49 | 215.35 | 60.53 | 376.84 | 3.214E+07 |
| 8. | 1.482 | 212.70 | 233.65 | 213.49 | 64.47 | 379.12 | 3.173E+07 |
| 9. | 1.483 | 202.05 | 267.58 | 247.37 | 40.79 | 384.00 | 3.938E+07 |
| 10. | 1.483 | 202.15 | 257.42 | 237.19 | 44.74 | 379.51 | 3.701E+07 |
| | | | * * * | END OF FILE | * * * | | |

```

*****
*           X S T A B L           *
*                               *
*      Slope Stability Analysis   *
*      using the                 *
*      Method of Slices         *
*                               *
*      Copyright (C) 1992 - 2004 *
*      Interactive Software Designs, Inc. *
*      Moscow, ID 83843, U.S.A.   *
*                               *
*      All Rights Reserved       *
*                               *
*      Ver. 5.206                96 - 1969 *
*****

```

Problem Description : 5:1 Slope, 25' Cut, No Pumping, Stpt

SEGMENT BOUNDARY COORDINATES

6 SURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | .0 | 75.0 | 90.0 | 75.0 | 3 |
| 2 | 90.0 | 75.0 | 115.0 | 80.0 | 3 |
| 3 | 115.0 | 80.0 | 165.0 | 90.0 | 2 |
| 4 | 165.0 | 90.0 | 265.0 | 90.0 | 2 |
| 5 | 265.0 | 90.0 | 315.0 | 100.0 | 1 |
| 6 | 315.0 | 100.0 | 500.0 | 100.0 | 1 |

4 SUBSURFACE boundary segments

| Segment No. | x-left (ft) | y-left (ft) | x-right (ft) | y-right (ft) | Soil Unit Below Segment |
|-------------|-------------|-------------|--------------|--------------|-------------------------|
| 1 | 165.0 | 90.0 | 500.0 | 90.0 | 2 |
| 2 | 115.0 | 80.0 | 500.0 | 80.0 | 3 |
| 3 | .0 | 50.0 | 500.0 | 50.0 | 4 |
| 4 | .0 | .0 | 500.0 | .0 | 5 |

ISOTROPIC Soil Parameters

5 Soil unit(s) specified

| Soil Unit No. | Unit Weight (pcf) | Moist Sat. (pcf) | Cohesion Intercept (psf) | Friction Angle (deg) | Pore Pressure Parameter Ru | Water Surface Constant (psf) | Water Surface No. |
|---------------|-------------------|------------------|--------------------------|----------------------|----------------------------|------------------------------|-------------------|
| 1 | 110.0 | 110.0 | 700.0 | .00 | .000 | .0 | 1 |
| 2 | 115.0 | 115.0 | 600.0 | .00 | .000 | .0 | 1 |
| 3 | 100.0 | 100.0 | 400.0 | .00 | .000 | .0 | 1 |
| 4 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |
| 5 | 105.0 | 105.0 | 400.0 | .00 | .000 | .0 | 1 |

1 Water surface(s) have been specified

Unit weight of water = 62.40 (pcf)

Water Surface No. 1 specified by 5 coordinate points

PHREATIC SURFACE,

| Point No. | x-water (ft) | y-water (ft) |
|-----------|--------------|--------------|
| 1 | .00 | 74.00 |
| 2 | 95.00 | 74.00 |
| 3 | 170.00 | 85.00 |
| 4 | 265.00 | 90.00 |
| 5 | 500.00 | 93.00 |

A critical failure surface searching method, using a random technique for generating CIRCULAR surfaces has been specified.

400 trial surfaces will be generated and analyzed.

20 Surfaces initiate from each of 20 points equally spaced along the ground surface between x = 25.0 ft and x = 100.0 ft

Each surface terminates between x = 350.0 ft and x = 450.0 ft

Unless further limitations were imposed, the minimum elevation at which a surface extends is y = 25.0 ft
10.0 ft line segments define each trial failure surface.

ANGULAR RESTRICTIONS

The first segment of each failure surface will be inclined within the angular range defined by :

Lower angular limit := -45.0 degrees
Upper angular limit := -5.0 degrees

Factors of safety have been calculated by the :

* * * * * SIMPLIFIED BISHOP METHOD * * * * *

The most critical circular failure surface is specified by 38 coordinate points

| Point No. | x-surf (ft) | y-surf (ft) |
|-----------|-------------|-------------|
| 1 | 36.84 | 75.00 |
| 2 | 45.05 | 69.29 |
| 3 | 53.47 | 63.90 |
| 4 | 62.09 | 58.83 |

| | | |
|----|--------|--------|
| 5 | 70.90 | 54.09 |
| 6 | 79.88 | 49.69 |
| 7 | 89.02 | 45.64 |
| 8 | 98.31 | 41.94 |
| 9 | 107.74 | 38.60 |
| 10 | 117.28 | 35.61 |
| 11 | 126.93 | 33.00 |
| 12 | 136.68 | 30.75 |
| 13 | 146.50 | 28.87 |
| 14 | 156.39 | 27.37 |
| 15 | 166.32 | 26.25 |
| 16 | 176.30 | 25.51 |
| 17 | 186.29 | 25.15 |
| 18 | 196.29 | 25.16 |
| 19 | 206.28 | 25.56 |
| 20 | 216.25 | 26.34 |
| 21 | 226.18 | 27.50 |
| 22 | 236.07 | 29.04 |
| 23 | 245.88 | 30.95 |
| 24 | 255.62 | 33.23 |
| 25 | 265.26 | 35.89 |
| 26 | 274.79 | 38.91 |
| 27 | 284.20 | 42.29 |
| 28 | 293.48 | 46.02 |
| 29 | 302.61 | 50.11 |
| 30 | 311.57 | 54.54 |
| 31 | 320.36 | 59.31 |
| 32 | 328.96 | 64.41 |
| 33 | 337.36 | 69.83 |
| 34 | 345.55 | 75.57 |
| 35 | 353.52 | 81.62 |
| 36 | 361.24 | 87.97 |
| 37 | 368.72 | 94.60 |
| 38 | 374.36 | 100.00 |

**** Simplified BISHOP FOS = 1.328 ****

The following is a summary of the TEN most critical surfaces

Problem Description : 5:1 Slope, 25' Cut, No Pumping, Stpt

| | FOS (BISHOP) | Circle Center x-coord (ft) | Circle Center y-coord (ft) | Radius (ft) | Initial x-coord (ft) | Terminal x-coord (ft) | Resisting Moment (ft-lb) |
|-----|-----------------|----------------------------------|----------------------------------|----------------|----------------------------|-----------------------------|--------------------------------|
| 1. | 1.328 | 190.81 | 287.61 | 262.50 | 36.84 | 374.36 | 4.061E+07 |
| 2. | 1.338 | 193.78 | 323.49 | 298.19 | 28.95 | 391.18 | 4.895E+07 |
| 3. | 1.338 | 191.24 | 267.42 | 241.84 | 44.74 | 365.71 | 3.585E+07 |
| 4. | 1.339 | 203.16 | 278.68 | 253.27 | 52.63 | 382.64 | 3.843E+07 |
| 5. | 1.340 | 185.69 | 274.73 | 249.10 | 36.84 | 363.17 | 3.743E+07 |
| 6. | 1.343 | 182.87 | 303.16 | 277.45 | 25.00 | 371.76 | 4.386E+07 |
| 7. | 1.344 | 178.01 | 285.32 | 260.09 | 25.00 | 360.44 | 4.002E+07 |
| 8. | 1.344 | 208.30 | 317.91 | 292.84 | 44.74 | 403.88 | 4.774E+07 |
| 9. | 1.345 | 190.54 | 267.47 | 241.46 | 44.74 | 364.46 | 3.565E+07 |
| 10. | 1.346 | 189.49 | 314.15 | 288.04 | 28.95 | 382.10 | 4.621E+07 |

* * * END OF FILE * * *

APPENDIX I

Letter from Fire Department, Hospital, Etc.



Acadian

Ambulance Service



NATIONALLY
ACCREDITED

P.O. Box 98000 • LAKE CHARLES, LA • 70509-8000

EMPLOYEE
OWNED

AMBULANCE
DISPATCH
311
800-259-1111

ADMINISTRATION
337-291-3333
800-259-3333

BILLING
800-259-2222

December 21, 2007

Mr. Claude Klein
St. Gabriel Redevelopment, L.L.C.
114 Schlieff Drive
Belle Chasse, LA 70037

Dear Mr. Klein:

As requested by Mr. Michael Daigle of TRC, I am forwarding to you the following information concerning Acadian Ambulance Service, Inc.

Should the need arise for emergency ambulance service at St. Gabriel Redevelopment's facility in St. Gabriel, LA, we suggest you call 911 and request our services. We will, upon receipt of your request, immediately dispatch our closest ambulance to this location. Our response time will be based on the location of the ambulance that is dispatched when the request for help enters our dispatch center. We do have an ambulance based in St. Gabriel.

All of our ambulances are staffed with Nationally Registered Paramedics and are equipped at the ACLS level. This includes emergency cardiac care medications and ECG/defibrillator monitors.

Should you need any further information, you may call me at (225) 761-3330.

Sincerely,

Daniel J. Lennie
Vice President, Operations

DJL/jj

Cc: Mr. Michael K. Daigle, TRC



ST. GABRIEL HEALTH CLINIC, INC.

EASTSIDE COMMUNITY HEALTH CENTER

Box 209
5760 MONTICELLO DRIVE
ST. GABRIEL, LA 70776

Board of Directors August 16, 2007

Mrs. Wilfred Lorraine
Board President

Mrs. Paula Lewis
Vice President

Mrs. Hazel Schexnayder
Past President

Mr. Larry Rouse
Treasurer

Mrs. Rose Mary Brown
Secretary

Rev. Alfred Thomas
Chaplain

Ernest Dennis
Member

Dr. Susan Steele
Member

Mr. Bobby Acaldo
Member

Mrs. Thelma Ruffin
Member

Mrs. Mary Thomas
Member

Mrs. Gertrude Robinson
Member

Mr. Claude Klein
St. Gabriel Redevelopment, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

Re: Letter of August 9, 2007. Request for Statement of Emergency
Medical Services for the Proposed St. Gabriel Construction & Demolition
Landfill St. St. Gabriel, Iberville Parish, Louisiana

Dear Mr. Klein:

St. Gabriel Eastside Community Health Center has the ability to serve and is willing to accept and treat your employees who are injured/ill who will need medical care. We are able to accept and treat patients who are contaminated with hazardous materials.

Thank you for considering our organization and we look forward to providing quality medical services to your employees.

If you have any questions, please contact me at 225.642-9652.

Sincerely,

Phyllis J. Adams, CEO
St. Gabriel Health Clinic, Inc.
padams@stgabrielchc.org



MITCHELL J. LANDRIEU
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF STATE PARKS

ANGÈLE DAVIS
SECRETARY

STUART JOHNSON, PH.D.
ASSISTANT SECRETARY

Mr. Claude Klein
St. Gabriel Redevelopment, LLC
114 Schlieff Drive
Belle Chasse, LA 70037

Re: Construction and demolition landfill, Iberville Parish

Dear Sir:

Louisiana Office of State Parks has no facilities near your proposed St. Gabriel landfill site. Our closest park to this proposed landfill is Plaquemine Lock State Historic Site located at 57730 Main Street, Plaquemine, LA.

Best regards,

A handwritten signature in cursive script, appearing to read "John Lavin".

John Lavin
Land Officer



**Two United Plaza
8550 United Plaza Boulevard, Suite 502
Baton Rouge, LA 70809**

225.216.7483 PHONE
225.216.0732 FAX

www.TRCSolutions.com

February 8, 2008

Mr. Floyd J. Sanchez, Jr., Chief
St. Gabriel Fire Department
P.O. Box 597
5035 Iberville Street
St. Gabriel, LA 70776

Re: Contingency Plan and Emergency Response Plan
St. Gabriel Redevelopment, LLC,
Construction and Demolition Debris Landfill (AI 152065)
Iberville Parish, LA

On behalf of our client, St. Gabriel Redevelopment, LLC, we are transmitting the Contingency Plan and Emergency Response Plan for St. Gabriel Redevelopment, LLC, Construction and Demolition Debris Landfill. The Plan is submitted for the use of the St. Gabriel Fire Department in planning and preparation in the event of an emergency that may occur at the facility.

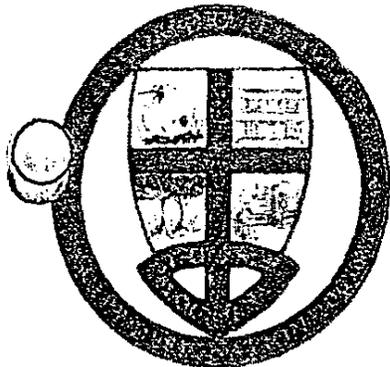
I appreciate your consideration in this matter and if you should have any questions, please call me at (225) 247-6704.

Sincerely,

A handwritten signature in black ink, appearing to read "Douglas Bradford".

Douglas Bradford.
Senior Geologist

attachment



CITY OF ST. GABRIEL

*Incorporated in 1994 - Team City 1998
City Designation, 2001*

George L. Grace, Sr.
Mayor

CITY COUNCIL
*André L. Jones - Mayor Pro Tempore
Flora L. Danieljicic
Freddie "Carl" Frazier
Lionel Johnson, Jr.
Nyra D. Taylor*

CITY CLERK
Yolanda L. Andrews-Mattain

CHIEF OF POLICE
Kevin J. Ambrose, Sr.

July 18, 2007

TRC
Michael K. Daigle, P.E.
Principal Environmental Consultant
Two United Plaza, Suite 502
8550 United Plaza Boulevard
Baton Rouge, LA 70809

RE: Permit application information request for construction and debris facility

Dear Mr. Daigle:

This letter is in regard to the property located in St. Gabriel, LA, which is a part of the Bear Industries' industrial park.

This property is zoned Heavy Industrial and is conducive for locating a construction and debris facility. The Planning and Zoning Commission has no issues with the site, which must be constructed according to the existing building codes in effect at the state and local level.

If any additional information is needed, please feel free to contact my office at 225-642-9600, Ext. 2222.

Sincerely,

Atkins Williams, Jr., Director of Public Works
City of St. Gabriel

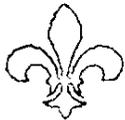


**CITY
GOVERNMENT**

George L. Grace, Sr.
Mayor

CITY COUNCIL
Freddie C. Frazier, Sr.
Mayor Pro-Tempore
Deborah R. Alexander
Flora J. Danielfield
Melvin Hastren, Sr.
Ralph Johnson, Sr.

CITY CLERK
Yolanda L.
Andrews-Mattaur



Main Telephone:
(225) 642-9600
Mayor's Fax Line
(225) 642-9670
City Clerk's Fax Line:
(225) 642-0043



**POLICE
DEPARTMENT**

Kevin J. Ambeau, Sr.
Chief of Police

Main Telephone:
(225) 642-9600
2253/2254/2259
FAX: (225) 642-9622

January 16, 2008

TRC
Mr. Michael K. Daigle, P.O.
Principal Environmental Consultant
Two United Plaza, Suite 502
8550 United Plaza Boulevard
Baton Rouge, LA 70809

Re: Construction/Demolition Waste Disposal Site in St. Gabriel, LA

Dear Mr. Daigle:

Please be advised that the East Iberville Fire Department is well capable to respond to any emergency that may occur in the East Iberville/St. Gabriel area. Our fire department meets all local and state safety and response requirements including emergency medical first response. We are in compliance with 29 CFR 1910.120. The implementation of a construction and demolition waste disposal site will not cause any undue hardship to the department.

If you have any further questions or concerns, please feel free to contact the fire department at 225-642-9980.

Sincerely,

Floyd J. Sanchez, Jr., Fire Chief
East Iberville Fire Department

Mailing Address: P. O. Box 597

Physical Address: 5035 Iberville Street, St. Gabriel, Louisiana 70776 * Website: cityofstgabriel.us

An Equal Opportunity Employer

APPENDIX J

Closure Cost Table

CLOSURE AND POST-CLOSURE COSTS-ST. GABRIEL REDEVELOPMENT, LLC

Note: No more than 10 acres will at any time require final cover

Closure Costs

| Item | Quantity | Units | Unit Cost | Total Cost |
|--|----------|---------------|--------------|------------------|
| Remove Standing Water | 5,000 | Gallons | \$0.08 | \$400 |
| Complete Insect and Rodent Inspection | 1 | Inspection | \$300 | \$300 |
| Compact and Grade Waste to Final Contours | 10 | Acres | \$2,000 | \$20,000 |
| Place 24-inch Silty Clay Cap | 32,267 | Cubic Yards | \$3.50 | \$112,933 |
| Place 6-inch Topsoil Layer | 8,067 | Cubic Yards | \$3.50 | \$28,233 |
| Plant Vegetative Cover | 10 | Acres | \$200 | \$2,000 |
| Prepare and Submit Engineering Closure Certification to LDEQ | 1 | Certification | \$2,500 | \$2,500 |
| | | | TOTAL | \$166,366 |

Post-Closure Care Costs

| Item | Quantity | Units | Unit Cost | Total Cost |
|---------------------|----------|------------------------|------------|------------------|
| Mowing | 8 | Events/year | \$4,000.00 | \$32,000 |
| Annual Report | 1 | Events/year | \$2,000 | \$2,000 |
| General Maintenance | 1 | Events/year | \$2,000 | \$2,000 |
| | | TOTAL (3 years) | | \$108,000 |

Total Cost (Closure and Post-Closure Care)

\$274,366

CONTRACTORS

| EXPLAIN ALL "YES" RESPONSES (For past or present operations) | YES | NO | EXPLAIN ALL "YES" RESPONSES (For past or present operations) | YES | NO |
|---|-----|----|--|-----|----|
| 1. DOES APPLICANT DRAW PLANS, DESIGNS, OR SPECIFICATIONS? | | | 4. DO YOUR SUBCONTRACTORS CARRY COVERAGES OR LIMITS LESS THAN YOURS? | | |
| 2. DO ANY OPERATIONS INCLUDE BLASTING OR UTILIZE OR STORE EXPLOSIVE MATERIAL? | | | 5. ARE SUBCONTRACTORS ALLOWED TO WORK W/O CERT OF INS? | | |
| 3. DO ANY OPERATIONS INCLUDE EXCAVATION, TUNNELING, UNDERGROUND WORK OR EARTH MOVING? | | | 6. DOES APPLICANT LEASE EQUIPMENT TO OTHERS WITH OR WITHOUT OPERATORS? | | |

REMARKS/DESCRIBE THE TYPE OF WORK SUBCONTRACTED

% OF WORK SUBCONTRACTED: # FULL TIME STAFF: # PART TIME STAFF:

PRODUCTS/COMPLETED OPERATIONS

| PRODUCTS | ANNUAL GROSS SALES | # OF UNITS | TIME IN MARKET | EXPECTED LIFE | INTENDED USE | PRINCIPAL COMPONENTS |
|----------|--------------------|------------|----------------|---------------|--------------|----------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |

| EXPLAIN ALL "YES" RESPONSES (For any past or present product or operation) | YES | NO | EXPLAIN ALL "YES" RESPONSES (For any past or present product or operation) | YES | NO |
|--|-----|----|--|-----|----|
| 1. DOES APPLICANT INSTALL, SERVICE OR DEMONSTRATE PRODUCTS? | | | 6. PRODUCTS RECALLED, DISCONTINUED, CHANGED? | | |
| 2. FOREIGN PRODUCTS SOLD, DISTRIBUTED, USED AS COMPONENTS? | | | 7. PRODUCTS OF OTHERS SOLD OR RE-PACKAGED UNDER APPLICANT LABEL? | | |
| 3. RESEARCH AND DEVELOPMENT CONDUCTED OR NEW PRODUCTS PLANNED? | | | 8. PRODUCTS UNDER LABEL OF OTHERS? | | |
| 4. GUARANTEES, WARRANTIES, HOLD HARMLESS AGREEMENTS? | | | 9. VENDORS COVERAGE REQUIRED? | | |
| 5. PRODUCTS RELATED TO AIRCRAFT/SPACE INDUSTRY? | | | 10. DOES ANY NAMED INSURED SELL TO OTHER NAMED INSUREDS? | | |

PLEASE ATTACH LITERATURE, BROCHURES, LABELS, WARNINGS, ETC

ADDITIONAL INTERESTS/CERTIFICATE RECIPIENTS (Attach ACORD 45 for additional names)

| INTEREST | RANK: | NAME AND ADDRESS | REFERENCE #: | CERTIFICATE REQUIRED | INTEREST IN ITEM NUMBER |
|--------------------|-------|------------------|--------------|----------------------|--------------------------|
| ADDITIONAL INSURED | | | | | LOCATION: BUILDING: |
| LOSS PAYEE | | | | | VEHICLE: BOAT: |
| MORTGAGEE | | | | | SCHEDULED ITEM NUMBER: |
| LIENHOLDER | | | | | OTHER |
| EMPLOYEE AS LESSOR | | | | | |
| ITEM DESCRIPTION: | | | | | |

GENERAL INFORMATION

| EXPLAIN ALL "YES" RESPONSES (For all past or present operations) | YES | NO | EXPLAIN ALL "YES" RESPONSES (For all past or present operations) | YES | NO |
|--|-----|----|--|-----|----|
| 1. ANY MEDICAL FACILITIES PROVIDED OR MEDICAL PROFESSIONALS EMPLOYED OR CONTRACTED? | | | 9. RECREATION FACILITIES PROVIDED? | | |
| 2. ANY EXPOSURE TO RADIOACTIVE/NUCLEAR MATERIALS? | | | 10. IS THERE A SWIMMING POOL ON THE PREMISES? | | |
| 3. DO/HAVE PAST, PRESENT OR DISCONTINUED OPERATIONS INVOLVE(D) STORING, TREATING, DISCHARGING, APPLYING, DISPOSING, OR TRANSPORTING OF HAZARDOUS MATERIAL? (e.g. landfills, wastes, fuel tanks, etc) | | | 11. SPORTING OR SOCIAL EVENTS SPONSORED? | | |
| 4. ANY OPERATIONS SOLD, ACQUIRED, OR DISCONTINUED IN LAST 5 YEARS? | | | 12. ANY STRUCTURAL ALTERATIONS CONTEMPLATED? | | |
| 5. MACHINERY OR EQUIPMENT LOANED OR RENTED TO OTHERS? | | | 13. ANY DEMOLITION EXPOSURE CONTEMPLATED? | | |
| 6. ANY WATERCRAFT, DOCKS, FLOATS OWNED, HIRED OR LEASED? | | | 14. HAS APPLICANT BEEN ACTIVE IN OR IS CURRENTLY ACTIVE IN JOINT VENTURES? | | |
| 7. ANY PARKING FACILITIES OWNED/RENTED? | | | 15. DO YOU LEASE EMPLOYEES TO OR FROM OTHER EMPLOYERS? | | |
| 8. IS A FEE CHARGED FOR PARKING? | | | 16. IS THERE A LABOR INTERCHANGE WITH ANY OTHER BUSINESS OR SUBSIDIARIES? | | |
| | | | 17. ARE DAY CARE FACILITIES OPERATED OR CONTROLLED? | | |

REMARKS

OTHER COVERAGES, RESTRICTIONS, AND/OR ENDORSEMENTS (Cont. from page 1)

EACH POLLUTION CONDITION LIMIT: \$1,000,000
Claims-made basis - retro date: policy inception.
DEDUCTIBLE: \$10,000 per pollution condition.

POLICY AGGREGATE LIMIT: \$2,000,000

COMMENTS / REMARKS (Continued from pages 1 & 2)

(Continuation of Claims Made Remarks.)
LAND).

Proposed Letter of Credit



JPMorgan Chase Bank, N.A.
c/o JPMorgan Treasury Services
Global Trade Services
10420 Highland Manor Drive
Tampa, FL 33610

NOV 30, 2007
OUR L/C NO.: CTCS-261291

IRREVOCABLE STANDBY LETTER OF CREDIT NO. CTCS-261291

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
GALVEZ BUILDING
602 N. FIFTH ST.
BATON ROUGE, LA 70802
ATTN: BIJAN SHARAFKHAN, ADMINISTRATOR
OFFICE OF ENVIRONMENTAL SERVICES
WASTE PERMITS DIVISION

RE: FACILITY PERMIT NO. AII52065/D-047-127451PER20070001

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO: CTCS-261291 IN FAVOR OF LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY AT THE REQUEST AND FOR THE ACCOUNT OF ST. GABRIEL REDEVELOPMENT COMPANY, LLC, C/O MIDDLEBERG RIDDLE & GIANNA, 201 ST CHARLES AVE., 31ST FLOOR, NEW ORLEANS, LA 70170 FOR THE CLOSURE FUND FOR ITS FACILITY PERMIT NO. AII52065/D-047-127451PER20070001 AT TOWN OF ST. GABRIEL, LOUISIANA, FOR ANY SUM OR SUMS UP TO THE AGGREGATE AMOUNT OF U.S. \$275,000.00 (TWO HUNDRED SEVENTY FIVE THOUSAND AND NO/100 U.S. DOLLARS) UPON PRESENTATION OF:

1. A SIGHT DRAFT, BEARING REFERENCE TO THE LETTER OF CREDIT NO. CTCS-261291 DRAWN BY THE ADMINISTRATIVE AUTHORITY, TOGETHER WITH:
2. A STATEMENT, SIGNED BY THE ADMINISTRATIVE AUTHORITY, DECLARING THAT THE AMOUNT OF THE DRAFT IS PAYABLE INTO THE STANDBY TRUST FUND PURSUANT TO THE LOUISIANA ENVIRONMENTAL QUALITY ACT, R.S. 30:2001, ET SEQ.

THE LETTER OF CREDIT IS EFFECTIVE AS OF NOVEMBER 30, 2007 AND WILL EXPIRE ON NOVEMBER 26, 2008, BUT SUCH EXPIRATION DATE WILL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF AT LEAST ONE YEAR ON THE ABOVE EXPIRATION DATE OF NOVEMBER 26, 2008 AND ON EACH SUCCESSIVE EXPIRATION DATE THEREAFTER, UNLESS, AT LEAST 120 DAYS BEFORE THE THEN-CURRENT EXPIRATION DATE WE NOTIFY TO BOTH THE ADMINISTRATIVE AUTHORITY AND ST. GABRIEL REDEVELOPMENT COMPANY, LLC BY CERTIFIED MAIL OR HAND DELIVERED COURIER, THAT WE ELECT NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE THEN-CURRENT EXPIRATION DATE. IN THE EVENT THAT WE GIVE SUCH NOTIFICATION, ANY UNUSED PORTION OF THIS LETTER OF CREDIT SHALL BE AVAILABLE UPON PRESENTATION OF YOUR SIGHT

JPMorganChase 

JPMorgan Chase Bank, N.A.
c/o JPMorgan Treasury Services
Global Trade Services
10420 Highland Manor Drive
Tampa, FL 33610

NOV 30, 2007
OUR L/C NO.: CTCS-261291

DRAFT BY BOTH THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY AND ST. GABRIEL REDEVELOPMENT COMPANY, LLC AS SHOWN ON THE SIGNED RETURN RECEIPTS. HOWEVER, IN NO EVENT SHALL THIS LETTER OF CREDIT BE AUTOMATICALLY EXTENDED BEYOND NOVEMBER 26, 2012.

WHenever this letter of credit is drawn under and in compliance with the terms and conditions of this credit, we shall duly honor upon presentation to us, providing said documents are presented on or before the expiration at our counters at 300 South Riverside Plaza, Mail Code IL1-0236, Attn: Standby Letter of Credit Unit, Chicago, IL 60606-0236.

EXCEPT TO THE EXTENT OTHERWISE EXPRESSLY AGREED TO, THE (2007 REVISION) PUBLICATION NO. 600 EDITION OF THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS, PUBLISHED AND COPYRIGHTED BY THE INTERNATIONAL CHAMBER OF COMMERCE.

WE CERTIFY THAT THE WORDING OF THIS LETTER OF CREDIT IS SUBSTANTIALLY SIMILAR TO THE WORDING SPECIFIED IN LAC 33:VII.1399.APPENDIX G, EFFECTIVE ON NOVEMBER 30, 2007.

PLEASE ADDRESS ALL CORRESPONDENCE REGARDING THIS LETTER OF CREDIT TO THE ATTENTION OF THE STANDBY LETTER OF CREDIT UNIT, 300 S. RIVERSIDE PLAZA, MAIL CODE IL1-0236, CHICAGO, IL 60606-0236, INCLUDING THE LETTER OF CREDIT NUMBER MENTIONED ABOVE.



JPMorgan Chase Bank, N.A.
c/o JPMorgan Treasury Services
Global Trade Services
10420 Highland Manor Drive
Tampa, FL 33610

NOV 30, 2007
OUR L/C NO.: CTCS-261291

FOR TELEPHONE ASSISTANCE, PLEASE CONTACT THE STANDBY CLIENT SERVICE UNIT
AT 1-800-634-1969, SELECT OPTION 1, AND HAVE THIS LETTER OF CREDIT NUMBER
AVAILABLE.

VERY TRULY YOURS,
JPMORGAN CHASE BANK, N.A.

BY: *[Handwritten Signature]*

TITLE: ASSISTANT VICE PRESIDENT

APPENDIX K

Closure Document

**Document to be Filed in the Parish Records Upon final Closure of a Solid
Waste Disposal Facility**

St. Gabriel Redevelopment, LLC hereby notifies the public that the following described property was used for the disposal of solid waste. This site was closed on (xx/xx/xxxx) in accordance with the Louisiana Administrative Code, Title 33 Part VII. Inquiries regarding the contents of St. Gabriel Redevelopment Construction and Demolition Landfill (Type III) may be directed to Claude Klein at 114 Schlieff Drive, Belle Chase, LA 70037.

Property Description

St. Gabriel Redevelopment Construction and Demolition Landfill is located at 5981 Louisiana State Highway 75 (LA HWY 75) Carville, LA 70721. The only access to the site is from LA HWY 75 via ICI Road. The primary site drainage feature is Community Canal that flows east into Bayou Braud. The site is located outside of the 100 year flood plain. The facility is approximately 100 acres and rectangular in shape with one access road (ICI Road) from LA HWY 75. Roads to the working face/processing area are all weather roads to maintain satisfactory conditions

Signature of Person Filing Parish Record

Mr. Claude Klein, President (Owner)
Typed Name and Title of Person Filing Parish Record

Date

(A true copy of the document certified by the parish clerk of court must be sent to the Solid Waste Division, Post Office Box 4313, Baton Rouge, LA 70821-4313)

APPENDIX L

D&J Landfill Order to Close
And Annual Report

16432 Bluff Rd
Barracouta, LA -

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF ENVIRONMENTAL SERVICES

IN THE MATTER OF

D & J FILL, INC.

CONSTRUCTION AND DEMOLITION
DEBRIS LANDFILL

D-005-2831
ASCENSION PARISH

PROCEEDINGS UNDER THE LOUISIANA
ENVIRONMENTAL QUALITY ACT,
La. R.S. 30:2001, ET SEQ.

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PERMITS TRACKING NO.

OC-0354

AGENCY INTEREST NO.

28092

ORDER TO CLOSE

The following **ORDER TO CLOSE** is issued to D & J Fill, Inc (**RESPONDENT**) by the Louisiana Department of Environmental Quality (the Department), under the authority granted by the Louisiana Environmental Quality Act (the Act), Louisiana Revised Statutes (La R.S.) 30:2001, et seq., and particularly by La R.S. 30:2011 D(6) and (14) of the Act.

FINDINGS OF FACT

PERMIT-RELATED FACTS

I.

On or about August 5, 1994, the Department issued Order to Upgrade OU-0163 which required the facility to submit a permit application within 120 days. The Respondent requested

an extension for submittal of a Solid Waste Permit Application on or about December 1, 1994. On or about January 5, 1995, the Department amended OU-0163 to Order to Upgrade OU-0163A, which required the facility to submit the permit application on or before March 22, 1995. On or about March 3, 1995, the Respondent requested an additional sixty (60) days to submit the application. This request was denied by the Department.

II.

On or about March 22, 1995, an incomplete permit application for the Site was received by the Department. The Respondent stated in the cover letter that the application is not complete and additional information would be submitted.

III.

On or about May 4, 1998 the Department sent a Notice of Deficiency (NOD) letter #1 to the Respondent concerning its Solid Waste Permit Application. In correspondence sent to the Respondent on July 7, 1998, the Department approved a 120 day extension for the completion of responses to the Department's NOD letter #1. As a condition of the extension, the Respondent was to submit monthly status reports. These status reports were not received by the Department.

IV.

The Respondent submitted several incomplete submittals in response to the Department's May 4, 1998 NOD letter #1. These included partial responses received on or about September 14, 1998, September 25, 1998, September 26, 1998, October 4, 1998 and October 14, 1998. On or about September 15, 1999, the Department requested a completed, stand-alone bound response to NODs for the application to be submitted within thirty (30) days. The Respondent submitted partial responses on or about October 27, 1999, November 1, 1999, and December 19, 1999.

V.

On or about October 25, 2005, preliminary NOD letter #2 was emailed to the Respondent pertaining to the partial submittals dated September 14, 1998, September 25, 1998, September 26, 1998, October 4, 1998, October 14, 1998, October 27, 1999, November 1, 1999, and December 19, 1999. A meeting was conducted on or about March 22, 2006, between the Department and the Respondent. During the course of the meeting, the Respondent was informed that a new, updated Solid Waste Permit Application would be required, due to the fact that much of the application information submitted during 1998 and 1999 was out-dated and/or not included as a stand-alone bound document.

VI.

On or about June 21, 2006, another meeting between the Respondent and the Department was conducted to discuss the Respondent's permit application. During the course of the meeting, the Department required the Respondent to submit a Status Report on the permit application by August 4, 2006, and a report on the final decision for the future of the Site by August 28, 2006. The Department sent follow-up correspondence dated July 21, 2006, to the Respondent documenting the June meeting. A status report for the application was received August 4, 2006. In correspondence dated January 8, 2007, the Respondent indicated the Site would be closed.

COMPLIANCE-RELATED FACTS

I.

On or about September 14, 1995, a Notice of Violation with the Enforcement Tracking No. SE-N-95-0257 was issued to the Respondent which was based upon the following finding of facts:

- A. A compliance inspection of the Site was conducted on or about May 23, 1995. Upon arrival, the inspector found the open face engulfed in fire. Fire personnel were on-site and attempting to control the fire. Approximately 15 minutes after arrival, the Fire Department Chief removed his personnel from the fire and suggested Mr. Rodosta spread the material and to keep the open area saturated. At that time, Mr. Rodosta began to pump water from an adjacent area onto the face. He did this for the next several days.
- B. Upon following inspection on May 26, 1995, the fire was partially extinguished with only small hot spots remaining. The fire flared again on Monday, May 29, 1995. The Respondent pumped water onto the face for the next week. During this time, no waste was accepted at the Site.
- C. A follow up inspection was conducted on or about June 6, 1995. The inspector noted there was no sign of fire.

II.

On July 28, 1998, a Compliance Order with the Enforcement Tracking No. SE-C-98-0194 was issued to the Respondent which was based upon the following finding of facts:

- A. A compliance inspection of the Site was conducted on or about May 12, 1998. At the time of inspection, it was noted that the Respondent was not providing earthen cover over all portions of waste material every fourteen (14) days, as required in Item #6 of the facility's Interim Operation Plan. This failure to properly cover waste is a violation of the Interim Operational Plan (IOP), LAC 33:VII.901 and Section 2155 of the Act.
- B. On or about August 17, 1998, the Respondent requested the Department inspect the Site to confirm conformity with the Compliance Order.
- C. On or about August 24, 1998, the Department inspected the Site to determine conformity with this Compliance Order. The inspector noted the violations documented in the May 12, 1998 inspection had been corrected. It was recommended that a violation clear letter be issued to the Respondent.
- D. On or about October 2, 1998, a violation clear letter was issued to the Respondent.

III.

On or about May 5, 2005, a Notice of Deficiency Letter was issued to the Respondent for the following findings of fact:

- A. On or about March 23, 2005, an inspection of the Site was conducted to determine compliance with the Louisiana Environmental Quality Act and supporting regulations. The following area of concern was noted in the inspection report and/or subsequent file review:

LAC 33.VII.721.A.2.b and IOP #6: The logbook indicates that interim cover is not being applied as required and a large amount of uncovered waste is found adjacent to and surrounding the working face.

- B. A follow-up inspection was conducted on or about June 17, 2005. The inspector noted that a large amount of waste that was uncovered at the March, 23, 2005, inspection was now covered, but there still remained a large amount of waste that needed to be covered.

IV.

On or about January 16, 2006, a Notice of Corrected Violation with the Enforcement Tracking No. SE-CV-05-0086 was issued to the Respondent which was based upon the following findings of fact:

- A. On or about March 23, 2005, June 17, 2005, July 8, 2005, October 20, 24, 27 and 28, 2005, inspections of the Site were performed to determine the degree of compliance with the Act, the Site's Interim Operational Plan and the Solid Waste Regulations.
- B. During the course of the inspections, it was noted that the Respondent failed to provide adequate interim cover at least every fourteen (14) days applied at a minimum of twelve (12) inches thick. This is in violation of the facility's Order to Upgrade, OU-0163A IOP #6 and LAC 33:VII.721.A. Specifically, the inspections revealed areas of waste uncovered for greater than fourteen (14) days. Upon follow up inspection, the violation was corrected.

V.

On or about January 26, 2006, a Compliance Order with the Enforcement Tracking No. WE-C-05-0506 was issued to the Respondent based upon the following findings of fact:

- A. The Respondent submitted DEQ Form SCC-2 Application for an NPDES water discharge permit to the Department on or about September 16, 1991. On or about August 31, 1993, the Department requested via mail that the Respondent submit an updated SCC-2 application. On or about October 8, 1993, the Department submitted a second request to the Respondent for an updated application. As of the date of this order, the Respondent had not submitted an updated permit application. Therefore, the Respondent does not have a Louisiana Pollutant Discharge Elimination System (LPDES) permit or other authority to discharge wastes and/or other substance (pollutants) to the waters of the state.
- B. An inspection conducted by the Department on or about October 27, 2005, as a result of a citizen complaint, disclosed the following areas of concern:
 - i. The operations at the Respondent's facility are activities subject to permitting. The Respondent is required to submit an application for and obtain permit coverage under the LPDES Storm Water Multi-Sector General Permit for Industrial Activities. The Respondent's failure to submit a completed application for obtaining permit coverage is in violation of La. R.S 30:2076 (A) (3), LAC 33:IX.501.A, C, D and LAC 33:IX.2341.C.1.

- ii. The Respondent was not using the best management practices. Specifically, stained soil was observed around the two (2) diesel tanks and no secondary containment was being provided.

C. A follow up inspection was conducted by the Department on or about January 29, 2007, to evaluate compliance with this compliance order. The inspection noted that the following elements of the compliance order were not being met :

- i. A hose was observed running from the holding pond to a vegetated area. There were impressions in the ground, as if a piece of equipment had been recently removed from the area.
- ii. Erosion and sediment controls were not maintained and were inadequate for this site.
- iii. Sediment was observed off-site, specifically in the woods and along the property boundary by the I-10 interstate.
- iv. The South slope was eroding into adjacent property.
- v. A Storm Water Pollution Prevention Plan had not been developed or implemented.
- vi. The facility was not sampling as per the compliance order: WE-C-05-0506. Samples had only been pulled once in December 2006.
- vii. Facility has not submitted the required Discharge Monitoring Report as required since June 1, 2006.
- viii. Facility failed to submit a Notice of Intent for the proper Storm Water general permit.

VI.

On February 6, 2006, a Compliance Order and Notice of Potential Penalty with the Enforcement Tracking No. SE-CN-06-0026 was issued to the Respondent based on the following violations/findings of fact:

- A. On or about November 3, 2005, a Notice of Deficiency was issued to the Respondent, which noted numerous areas of smoke emitting from the landfill.
- B. On or about December 9, 2005, the Department received correspondence from the Respondent indicating the Notice of Deficiency had been addressed. The Respondent implemented the following actions to address the area of concern: increased compaction efforts through equipment tracking; application of additional cover materials and grading, including bringing in an outside contractor to supplement routine cover material transport capabilities; and temporary cessation of disposal activities in the areas of observed smoke emissions, and shifting the working area to more northerly portions of the site, so as to isolate the area of concern from additional waste depositions.
- C. On or about November 7, 2005, and January 31, 2006, inspections were conducted by representatives of the Department which revealed the following violation:

The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii. Specifically, numerous areas of the landfill were emitting smoke and smoldering.

The Respondent was ordered to:

- A. To immediately, upon receipt of the Compliance Order, address the smoking, smoldering areas of the landfill by locating, identifying and extinguishing the source of combustion so as to prevent any reoccurrence of smoldering;
- i. To notify the Enforcement Division within one (1) day prior to implementation of any actions taken to locate, identify or permanently extinguish the source of combustion at the landfill to allow Department personnel to be present to witness the actions taken;
 - ii. To immediately take, upon receipt of the Compliance Order, any and all steps necessary to meet and maintain compliance with the Solid Waste Regulations;
 - iii. To submit to the Enforcement Division, within thirty (30) days after receipt of the Compliance Order, a written report that includes a detailed description of the circumstances surrounding the cited violation and actions taken or to be taken to achieve compliance with the Order
Portion of the Compliance Order.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

VII.

On May 18, 2006, a Consolidated Compliance Order and Notice of Potential Penalty, Enforcement Tracking No. SE-CN-06-0160 was issued to the Respondent, which was based on the following violations/findings of fact:

- A. On February 6, 2006, the Department issued Compliance Order & Notice of Potential Penalty SE-CN-06-0026. The Order was received by the Respondent on

February 8, 2006.

- B. On or about March 1, 2006, and May 17, 2006, inspections were conducted by representatives of the Department that revealed the following violations:
- i. The Respondent caused and/or allowed the deposition of regulated solid waste without a permit and/or authority from the Department, in violation of La. R.S. 30:2155, and LAC 33:VII.315.A. Specifically, the Respondent had a 5-gallon container of diesel fuel at the Site. On March 1, 2006, and May 17, 2006, fuel stains were observed on the soil surrounding the container.
 - ii. The Respondent failed to keep a solid waste container properly closed, in violation of LAC 33:VII.721.C.4 and Interim Operation Plan (IOP) Item #7. Specifically, on March 1, 2006, the container holding diesel fuels was not properly closed.
 - iii. The Respondent failed to provide adequate security to the site, in violation of LAC 33:VII.721.B.2 and IOP Item 1. Specifically, on May 17, 2006, no personnel were posted at the front gate of the facility.
 - iv. The Respondent failed to deposit solid waste in the smallest practical area, in violation of LAC 33:VII.721.A.2.b and IOP Item 6. Specifically, on May 17, 2006, the Respondent had two (2) working faces on the landfill.
 - v. The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii and Compliance Order and Notice of Potential

Penalty SE-CN-06-0026. Specifically, on May 17, 2006, several locations on the eastern and southeastern portion of the landfill were emitting smoke and smoldering, and areas throughout the landfill had scorched and/or burnt grass.

- vi. The Respondent failed to minimize erosion, in violation of LAC 33:VII.721.A.2.a.ii.b. Specifically, on March 1, 2006, and May 17, 2006, areas on the eastern and southeastern portions of the landfill had inadequate vegetative cover to prevent erosion and cracks were observed in the existing cover that exposed a small amount of waste.
- vii. The Respondent failed to reduce noxious odors, in violation of LAC 33:VII.721.A.2.a.v.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

VIII.

On July 31, 2006, a Notice of Potential Penalty with the Enforcement Tracking No. SE-PP-06-0169 was issued to the Respondent which was based on the following violations/findings of fact:

- A. On or about May 30, 2006, an inspection of the Site was performed to determine the degree of compliance with the Act and the Solid Waste Regulations. It was determined the Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii, Compliance Order and Notice of Potential Penalty SE-CN-06-0026, and Compliance Order and Notice of Potential Penalty SE-CN-06-0160.

The basis for Penalty Assessment SE-P-06-0166 in the amount of \$22,609.75, includes but is not limited to, the violations contained in this Compliance Order.

IX.

On or about January 12, 2007, a Penalty Assessment with the Enforcement Tracking No. SE-P-06-0166 in the amount of \$22,609.75 was issued to the Respondent which was based upon the following findings of fact:

On or about November 7, 2005, January 31, 2006, March 1, 2006, May 17, 2006 and May 30, 2006, inspections were conducted by representatives of the Department which revealed the following violations:

- A. The Respondent failed to deposit solid waste in the smallest practical area, in violation of LAC 33:VII.721.A.2.b and IOP Item 6. Specifically, on May 17, 2006, the Respondent had two (2) working faces on the landfill
- B. The Respondent failed to reduce fire-hazard potential by minimizing inward movement of atmospheric oxygen, in violation of LAC 33:VII.721.A.2.iii and Compliance Order & Notice of Potential Penalty SE-CN-06-0026 on February 6, 2006. Specifically, on May 17, 2006, several locations on the eastern and southeastern portion of the landfill were smoldering and areas throughout the landfill had scorched and/or burned grass. This violation was also noted in inspections conducted on November 7, 2005, January 31, 2006 and May 30, 2006.
- C. The Respondent failed to minimize erosion, in violation of LAC 33:VII.721.A.2.a.ii.b. Specifically, on March 1, 2006 and May 17, 2006 areas on the eastern and southeastern portions of the landfill did not have adequate

vegetative cover to prevent erosion. Cracks were observed in the existing cover exposing a small amount of waste.

- D. The Respondent failed to minimize noxious odors, in violation of LAC 33:VII.721.A.2.a.v. This violation was noted in the inspection conducted on May 17, 2006.

The Respondent is appealing this action.

X.

From July 28, 2005 to May 22, 2007, Single Point of Contact has logged in fifty (50) complaints on the Site. The last complaint was received on May 2, 2007. A total of seventy-eight (78) inspections have been conducted at the Site. Fourteen (14) Enforcement actions have been issued the Site since 1989.

ORDER

Based on the foregoing, the Respondent is hereby ordered:

I.

To submit to the Waste Permits Division, within thirty (30) days after receipt of this **ORDER TO CLOSE**, six bound copies of a plan to close the facility. The closure plan shall address applicable sections of LAC 33:VII.721.D and E. The Plan shall provide for initiating closure activities immediately and to cease accepting waste within twelve (12) months of receipt of this order. Closure activities shall be completed within ninety (90) days of final waste acceptance.

II.

To immediately establish financial assurance for closure and post closure costs in the form of a Stand-By Trust as per LAC 33:VII.727.A.2. The closure and post closure costs must be based on the cost estimate of hiring a third party to perform closure and post closure activities. The cost of closure and post closure cost shall be covered by the Trust. The Trust shall be funded monthly by the Respondent until the end of the twelve (12) month operation period.

III.

To regrade all areas of the landfill such that the maximum slopes are no steeper than 3(H):1(V) as required by LAC 33:VII.721.D3.a.ii and within the allotted twelve (12) month time frame.

IV.

To remove all solid waste deposited in the wetland and surrounding area. The slope encroaching upon the wetland area must be regraded by removing waste such that the maximum slope is no steeper than 3(H):1(V) as required by LAC 33:VII.721.D3.a.ii. The procedure shall follow a plan that ensures no exposed waste remains at the end of each construction day.

V.

To operate the facility in accordance with the **ORDER TO CLOSE** and approved closure plan.

VI.

In accordance with LAC 33:VII.517.A, no modification to the facility shall be affected without the approval of the Assistant Secretary of the Office of Environmental Services, Louisiana Department of Environmental Quality.

VII.

To submit to the Louisiana Department of Environmental Quality - Office of Management and Finance, Fiscal Services Division, a complete "Disposer Annual Report" by August 1st annually in accordance with LAC 33:VII.721.B.1.a as required by the Department's regulations.

THE RESPONDENT SHALL FURTHER BE ON NOTICE THAT:

I.

This **ORDER TO CLOSE** shall serve as the Respondent's permit to operate the facility. Thus the Respondent is henceforth subject to the annual maintenance and monitoring fee provided in LAC 33:VII.529. This **ORDER TO CLOSE** shall replace the **ORDER TO UPGRADE (OU-0164A)** issued to the Respondent on January 5, 1995.

II.

The Respondent shall notify the Office of Environmental Services, Permits Division in writing at least ten (10) days before closure or intent to close, seal, or abandon any individual units within a facility.

III.

This **ORDER TO CLOSE** shall become final and not subject to further administrative review by the Department unless the Respondent files, no later than thirty (30) days after receipt of the **ORDER TO CLOSE**, a written request for hearing. Failure to timely request a hearing constitutes a waiver of the Respondent's right to a hearing on a disputed issue of material fact or of law under Section 2025 (E) of the Act.

IV.

The request for adjudicatory hearing shall describe the basis for the hearing request. The request should reference the Permits Tracking Number, Facility Identification Number and Agency Interest Number, which are located on the first page of this document and should be directed to the following:

Department of Environmental Quality
Office of the Secretary
Post Office Box 4302
Baton Rouge, LA 70821-4302
Attn: Hearings Clerk, Legal Division
Re: Permits Tracking No. OC-0354
Agency Interest No. 29082

V.

Upon the Respondent's timely filing a request for a hearing, a hearing on the disputed issue of material fact or of law regarding this **ORDER TO CLOSE** may be scheduled. The hearing shall be governed by the Act, the Administrative Procedure Act (La. R.S. 49:950, et seq.), and the Department's Rules of Procedure. The Department may amend or supplement this **ORDER TO CLOSE** prior to the hearing, after providing sufficient notice and an opportunity for the preparation of a defense for the hearing.

VI.

The Respondent's failure or refusal to comply with this **ORDER TO CLOSE** and the provisions herein will subject the Respondent to possible enforcement procedures under LA R.S. 30:2025, which could result in the assessment of a civil penalty in an amount of not more than fifty thousand dollars (\$50,000) for each day of continued violation or noncompliance.

VII.

This **ORDER TO CLOSE** is effective upon receipt.

Baton Rouge, Louisiana, this _____ day of _____, 2007

Chuck Carr Brown, Ph.D.
Assistant Secretary
Office of Environmental Services

Copies of a request for a hearing and/or
Related correspondence should be sent to:

Louisiana Department of Environmental Quality
Office of Environmental Compliance
Enforcement Division
P.O. Box 4312
Baton Rouge, LA 70821-4312
Attention: Hearings Clerk

**D&J LANDFILL
LDEQ SW DISPOSER ANNUAL REPORT**

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY SOLID WASTE DISPOSER ANNUAL REPORT

TYPE I AND II LANDFILLS, LANDFARMS, SURFACE IMPOUNDMENTS AND
TYPE III CONSTRUCTION DEMOLITION DEBRIS AND WOODWASTE LANDFILLS
(Please Refer to the Detailed Instructions)

1. Site Identification No. D-005-2831 July 1, '05 thru June 30, '06

2. Permit Number CU-0163-A Agency Interest Number 28092

3. Name of Permit Holder D + J FILL, INC.

4. Name of Disposal Facility D + J FILL, INC. CONST. + DEMO LANDFILL

5. Mailing Address P.O. Box 77164 B.R., LA 70879 Parish E. A. R.

6. Contact JOE Rodota Telephone (225) 445-5396

7. Type of Facility: Landfill Landfarm Surface Impoundment
 Construction/Demolition Debris Landfill Woodwaste Landfill

8. **Surface Impoundments.** This section applies only to surface impoundments.

A. Indicate the quantity of waste (solids/sludge) that has been removed from the surface impoundments during the past year (July 1 - June 30).
Wet-weight Tons _____

B. Provide the identification number and permit number of the facility used to dispose of the waste.
Site Identification Number _____
Facility Permit Number _____

9. **Type I, II and III Landfills, Landfarms and Surface Impoundments.** This section applies only to Type I, II and III landfills, landfarms and surface impoundments.

A. Estimated remaining permitted capacity (expressed in wet-weight tons) 300,000 TONS

B. Estimated life of facility (expressed in months and based on the permitted capacity of the facility)
36-42 MONTHS

10. **Construction/Demolition and Woodwaste Landfills.** This section applies only to construction/demolition and woodwaste landfills. Please mark all that apply.

This facility receives only woodwaste that are beneficially used in accordance with a Best Management Practice Plan that has been approved in writing by the Department of Agriculture and submitted to the Office of Environmental Services, Permits Division.

This facility receives only woodwaste resulting from utility right-of-way clearings. These woodwaste are only received from utility companies or their authorized contractors.

This construction/demolition debris facility receives only wastes that have been generated on-site.

This woodwaste facility receives only waste generated by the owner of the property on which this facility is located.

This form is to be returned to Financial Services Division at the following address no later than August 1 of each reporting year. Questions regarding the form may be directed to the Financial Services Division at 225-219-3863.

Financial Services Division
Attn: SW Reports
P. O. Box 4303
Baton Rouge, LA 70821-4303

RECEIVED

AUG 17 2006

SW-FSD-2

July 1, 05 thru June 30, 06

Page 4 of 4

Site Identification Number D-005-2831

Permit Number CU-0163-A

14. All Facilities: Provide all calculations used to compute the quantity (expressed in wet-weight tons) of solid waste received at the facility. Landfarm facilities must provide the calculations used to compute the quantity (in dry-weight tons) of solid waste received at the facility. Surface impoundments must provide all calculations used to compute the quantity of total suspended solid disposed in the facility.

Debris all received in trucks
measured by yardage. Yardage
converted to tons by using
 $\frac{1}{3}$ factor

DETAILED INSTRUCTIONS FOR TYPE I AND II FACILITIES
 LANDFILLS, LANDFARMS, SURFACE IMPOUNDMENTS AND CLASS III
 CONSTRUCTION DEMOLITION DEBRIS AND WOODWASTE DISPOSER ANNUAL REPORT

- 1 Identification Number: Indicate the identification number that has been assigned to the site by the administrative authority. Also, enter the year in which the report applies.
- 2 Permit Number: Enter the permit number for the facility in which this report applies. Each individual permitted facility is to be reported on a separate form.
- 3 Name of the Permit Holder: Enter the name of which the permit has been issued.
- 4 Name of Facility: Enter the name of the facility for which this report applies.
- 5 Mailing Address: Enter the mailing address for the facility, and the parish location.
- 6 Contact: Enter the name of the person knowledgeable of the information submitted on the report and his/her telephone number.
- 7 Type of Facility: Place a check by the type of facility being reported.
- 8 *This section applies only to Surface Impoundments:*
 - A. Indicate the quantity of waste removed from the surface impoundment(s).
 - B. Provide the identification number and permit number of the facility used to dispose of the waste removed from the surface impoundment(s).

NOTE: Permit holders of surface impoundments shall report the quantity (expressed in wet-weight tons) of total suspended solids received by the facility.
- 9 *This section applies only to Type I and II Landfills, Landfarms and Surface Impoundments.*
 - A. Estimated remaining permitted capacity. Enter the amount of remaining permitted capacity for the facility in wet-weight tons.
 - B. Estimated life of facility. Enter the life of the facility in months and based on the permitted capacity of the facility.
- 10 *This section applies only to construction/demolition debris and woodwaste facilities only. Place a check by the appropriate statement(s).*
- 11 Summary of non-industrial waste disposed.
 - (A) Enter the two digit waste number that applies.

| | | |
|-----------------------------------|-----------------------------|-----------------------------|
| 01 Residential | 06 Incinerator Ash | 10 Stable |
| 02 Commercial | 07 Domestic Sewage Sludge | 11 Infectious Waste |
| 03 Trash | 08 Underground Storage Tank | 12 Friable Asbestos |
| 04 Woodwaste | Corrective Action Waste | 13 Other, also specify name |
| 05 Construction/Demolition Debris | 09 Agricultural Waste | |
 - (B) Enter the amounts of non-industrial waste received in wet-weight tons. No other methods of reporting will be accepted.
 - (C) This section applies only to landfarms. Enter the quantity of waste received in dry-weight tons.
 - (D) Total: Enter the totals of wet-weight tons and dry-weight tons (landfarms must also enter dry-weight).
 - (E) Quantity of Waste (In-State): Enter the total amount of waste received from in-state sources in wet-weight tons.
 - (F) Quantity of Waste (Out-of-State): Enter the total amount of waste received from out-of-state sources in wet-weight tons.
- 12 Certification: The facility's legally authorized representative for the site operations should sign the form. Enter the date, name and the title of the person signing this form.
- 13 *This section applies to Type I facilities. Provide a summary of all industrial solid waste received for disposal.*
 - (A) Industrial Waste Number: Enter the seven-digit number assigned to each waste stream by the administrative authority.
 - (B) Quantity of Waste Received: Enter the quantity of waste received in wet-weight tons.
 - (C) Quantity Dry-Weight Tons: This section applies only to landfarm facilities. Enter the quantity of waste received in dry-weight tons.
 - (D) Subtotal of Like Industrial Wastes: Enter the subtotals of each like industrial waste received by the facility.
 - (E) Subtotal: Enter the subtotals for each page of this section of the report. Subtotals of the amounts received by the facility in wet-weight tons (Column B) and dry-weight tons must be provided.
 - (F) Total: Enter the total of waste received by the facility in wet-weight tons and dry-weight tons.
 - (G) Quantity of Waste Received (In-State): Enter the total amount of waste received from in-state sources.
 - (H) Quantity of Waste Received (Out-of-State): Enter the total amount of waste received from out-of-state sources.
- 14 Provide all calculations used to compute the quantity of solid waste received at the facility.