PUBLIC NOTICE
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ)
UOP LLC/UOP SHREVEPORT/NO. 1 WASTEWATER HOLDING POND
TECHNICALLY COMPLETE SOLID WASTE PERMIT RENEWAL

The LDEQ, Office of Environmental Services, has determined that the solid waste permit renewal application for UOP LLC, Post Office Box 21566, Shreveport, LA 71120 for the Number 1 Wastewater Holding Pond is technically complete and acceptable for public review. **The facility is located on Louisiana Highway 538 North, 4 miles northwest of Blanchard, Caddo Parish.**

UOP Shreveport proposes to renew the solid waste permit for their wastewater holding pond. UOP operates a catalyst manufacturing facility which includes a holding pond, Industrial Surface Impoundment (Type I) Facility, for wastewater.

Written comments, written requests for a public hearing or written requests for notification of the final decision regarding this permit action may 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 must be received by 12:30 p.m., Monday, February 16, 2009.** Written comments will be considered prior to a final permit decision.

If LDEQ finds a significant degree of public interest, a public hearing will be held. 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 solid waste permit renewal application is 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 Shreve Memorial Library-Main Library, 424 Texas Street, Shreveport, LA, the City of Shreveport Mayor's Office, 505 Travis Street, Suite 200, Shreveport, LA and the LDEQ-Northwest Regional Office, 1525 Fairfield Avenue, Room 529, Shreveport, LA.

Inquiries or requests for additional information regarding this permit action should be directed to Jodie Alexis, LDEQ, Waste Permits Division, P.O. Box 4313, Baton Rouge, LA 70821-4313, phone (225) 219-3089.

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 17846, Permit Number P-0812, and Activity Number PER19970004.

Scheduled for publication: Monday, January 12, 2009

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04/30/07

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Unless there is a catastrophic failure of the perimeter levee, there are no potential adverse impacts to vegetation outside of the pond.

Since the No. 1 Pond is not located in or near wetlands or historic or cultural sites, there are no potential adverse impacts to the areas.

Since the No. 1 Pond is located completely within the UOP site and does not receive waste from offsite, there are no potential adverse impacts to roads or traffic.

5. What are the real (definite) adverse environmental affects of the facility?

Response:

There are minimal adverse environmental affects to air from the No. 1 Pond. Odors are noticeable on the periphery of the No. 1 Pond. However, these odors generally are not noticeable away from the pond and are not noticeable outside of the plant.

Soil and groundwater beneath and downgradient of the No. 1 Pond have been impacted from the No. 1 Pond. Through routine groundwater monitoring, low levels (compared to background) of chlorides, specific conductance, and total dissolved solids (TDS) have been detected and reported to the Louisiana Department of Environmental Quality (LDEQ). Discussion of the impact to groundwater from the No. 1 Pond is provided in Appendix H of the Mandatory Modification Document dated January 1994.

There are no adverse environmental affects to surface water from the No. 1 Pond.

6. Have these environmental effects been avoided to the maximum extent possible? If so, what measures are proposed to protect the environment?

Response:

These environmental effects have been avoided to the maximum extent possible. Water in the No. 1 Pond is processed as expeditiously as possible to minimize residence time in the pond. The pH of process water is adjusted to reduce ammonium compound emissions. Any accumulation of oil is periodically removed from the pond.

To monitor groundwater quality in the vicinity of the No. 1 Pond, UOP has installed a groundwater monitoring system. Groundwater samples are collected and analyzed as required by the LDEQ. Details of the groundwater monitoring program are presented in

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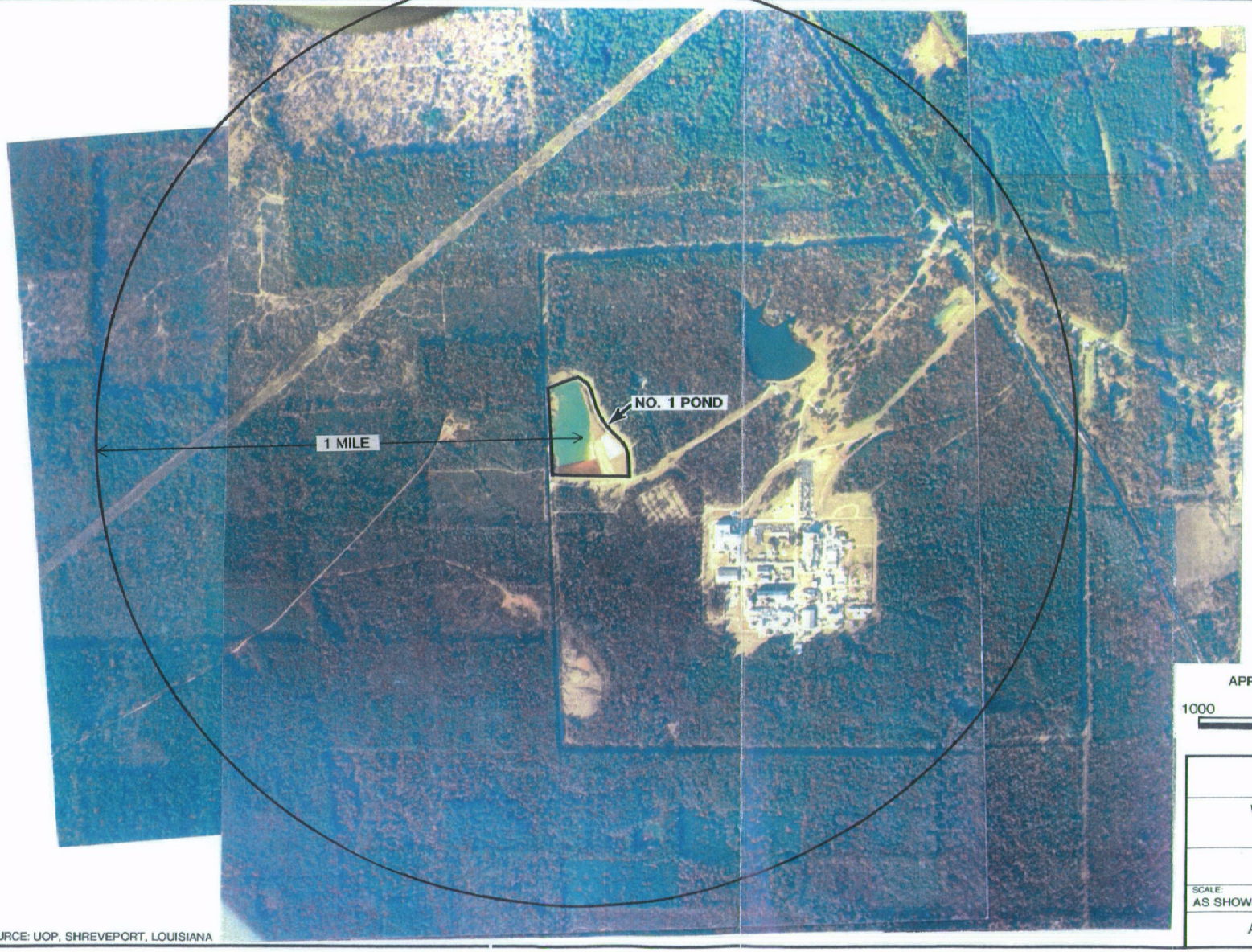

APPROXIMATE SCALE:

1000 0 1000 FEET

SOURCE: UOP, SHREVEPORT, LOUISIANA

Woodward-Clyde Consultants
Consulting Engineers, Geologists
and Environmental Scientists
Baton Rouge, Louisiana

UOP
SHREVEPORT, LOUISIANA

SCALE:	MADE BY: YQ	DATE 10/93	FILE NO.
AS SHOWN	CHECKED BY:	DATE:	93B356C

AERIAL PHOTOGRAPH

FIGURE 3

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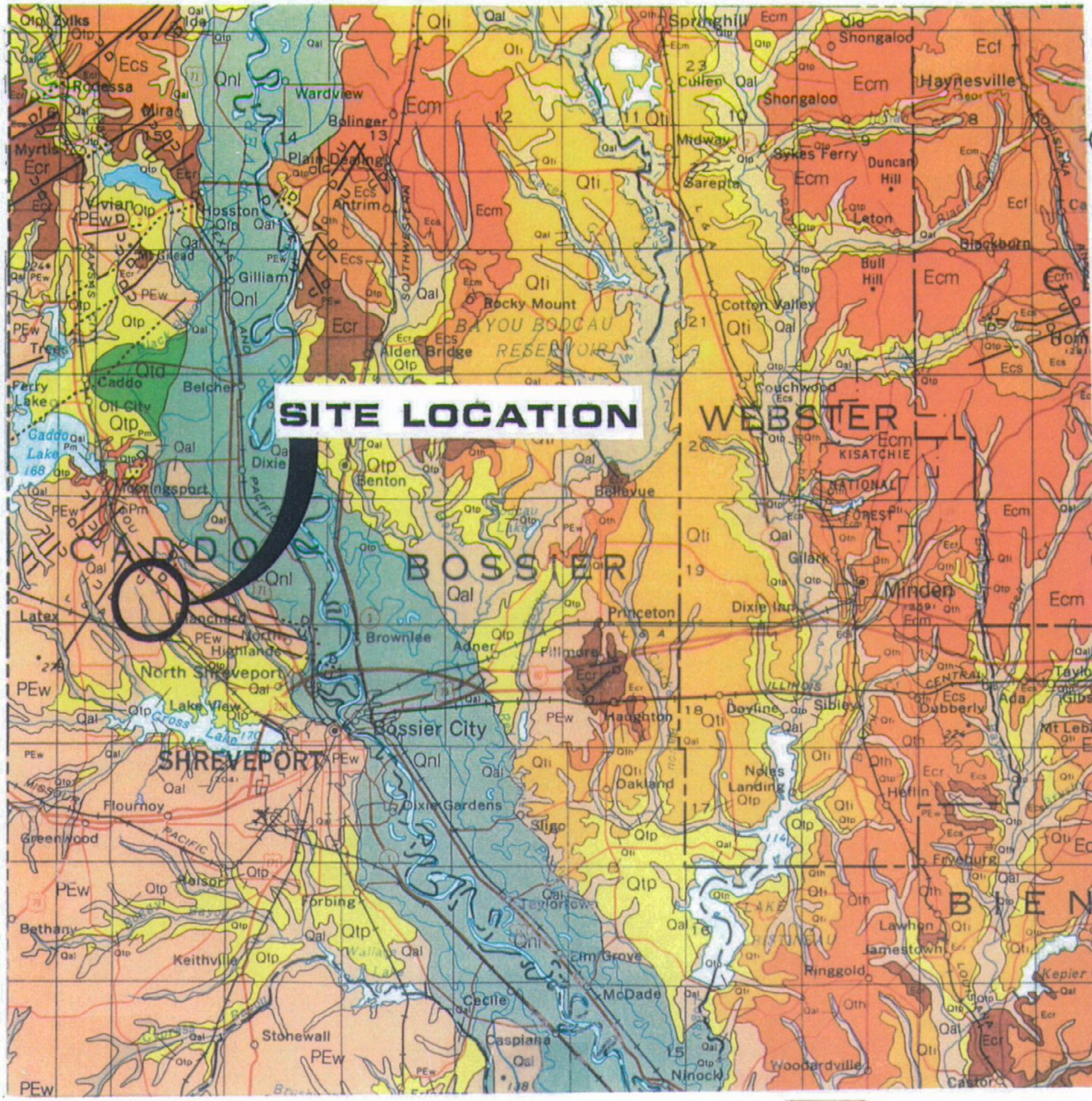


PEw

Wilcox Group (Undifferentiated) — Gray to brown lignitic sands and silty to sandy lignitic clays, many seams of lignite; some limestone and glauconite. Includes small Carrizo Sand (Claiborne Group?) outcrops.

Pm

Midway Group (Undifferentiated) — Dark gray to black shale. Only at surface in northwest Caddo Parish and at Prothro and Rayburns salt domes in Bienville Parish.

Qnl

Natural Levees — Gray and brown silt, silty clay, some very fine sand, reddish brown along the Red River. Shown only on past and present courses of major streams.

D/U FAULT TRACE

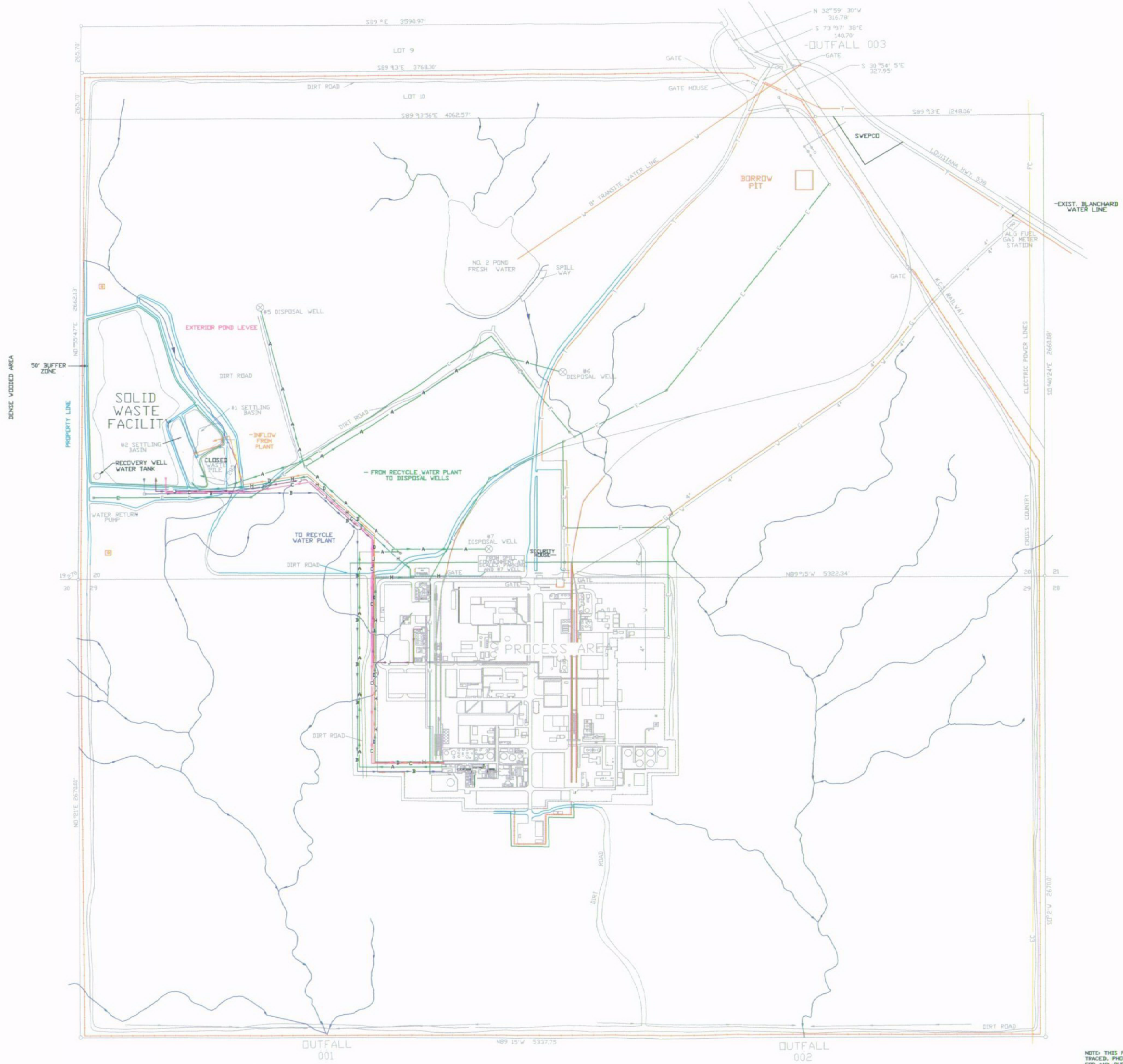
SCALE 1:500,000

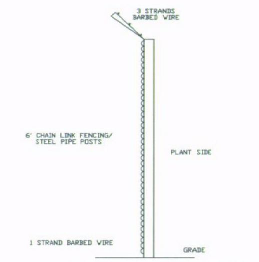
0 10

(1 inch equals approximately 8 miles)

SOURCE: GEOLOGIC MAP OF LOUISIANA 1984.

UOP SHREVEPORT, LOUISIANA	**Woodward-Clyde Consultants** Consulting Engineers, Geologists and Environmental Scientists Baton Rouge, Louisiana		GEOLOGIC MAP WITH FAULT LINES	FILE NO. 93B356C
	SCALE:	DRAWN BY: P.C.G. DATE: 10/7/91		FIG. NO. 6
		CHKD. BY: JLH DATE: 11-91		





TYPICAL FENCE DETAIL

LEGEND

—W—	POTABLE WATER TO PROCESS AREA
—J—	TO POND FROM PROCESS AREA
—H—	TO POND FROM PROCESS AREA
—D—	TO POND FROM PROCESS AREA
—C—	TO RECYCLE WATER PLANT FROM POND
—B—	TO RECYCLE WATER PLANT FROM POND
—A—	TO INJECTION WELLS FROM RECYCLE WATER PLANT
⊗	WASTE DISPOSAL WELLS
	RAILROAD
	FENCE
[B]	#1 POND MONITOR WELLS
—T—	TELEPHONE CABLE
—G—	FUEL GAS SUPPLY LINE
	PLANT BOUNDARY & SECTION LINE
	PLANT BOUNDARY
—E—	OVERHEAD ELECTRICLINE
—EC—	OVERHEAD ELECTRIC CROSS COUNTRY LINES
◎	DRINKING WATER WELL
	SWALE / DITCH

SITE MASTER PLAN
FIGURE NO. 7

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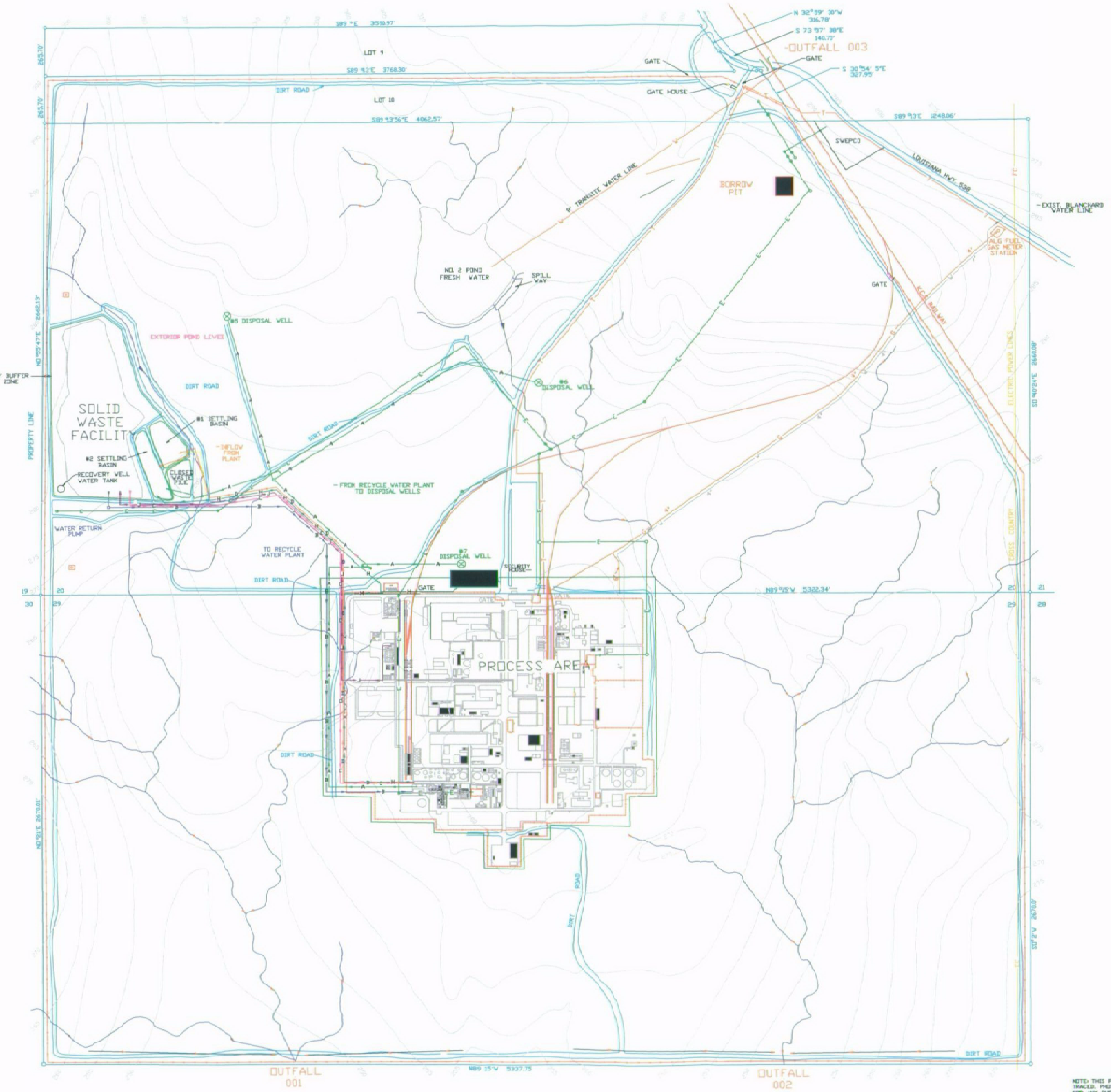
NO.	DATE	DESCRIPTION	BY	CH'D	APP'D
1	12-28-93	ADDED POTABLE WATER LINE	CM		

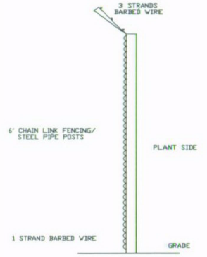
REVISIONS

UOP P.O. BOX 21566 - SHREVEPORT, LOUISIANA 71120 TELEPHONE 318-929-3521 - FAX 318-929-2716

PLOT PLAN OF FACILITY
FOR UOP SOLID WASTE PERMIT
MANDATORY MODIFICATION DOCUMENT

SCALE: 1" = 300' | DR. BY CHRIS | CHK'D | APP'D | DATE 10-28-93 | DRAWING NUMBER SH-8551-F | REV. 1





TYPICAL FENCE DETAIL

LEGEND

- W — POTABLE WATER TO PROCESS AREA
- J — TO POND FROM PROCESS AREA
- H — TO POND FROM PROCESS AREA
- D — TO POND FROM PROCESS AREA
- C — TO RECYCLE WATER PLANT FROM POND
- B — TO RECYCLE WATER PLANT FROM POND
- A — TO INJECTION WELLS FROM RECYCLE WATER PLANT
- ⊗ WASTE DISPOSAL WELLS
- RAILROAD
- FENCE
- ⊞ #1 POND MONITOR WELLS
- T — TELEPHONE CABLE
- G — FUEL GAS SUPPLY LINE
- PLANT BOUNDARY & SECTION LINE
- PLANT BOUNDARY
- E — OVERHEAD ELECTRICLINE
- EC — OVERHEAD ELECTRIC CROSS COUNTRY LINES
- ⊗ DRINKING WATER WELL
- SWALE / DITCH

SITE MASTER PLAN
FIGURE NO. 7-A

NO.	DATE	DESCRIPTION	BY	CH'D	APP'D
2	12-28-93	ADDED POTABLE WATER LINE	CM		
1	11-16-93	CHANGED FENCE LEGEND	CM		

REVISIONS

UOP
P.O. BOX 20546 • SHREVEPORT, LOUISIANA 71120
TELEPHONE 318-929-2501 • FAX 318-929-2514

PLOT PLAN OF FACILITY
FOR UOP SOLID WASTE PERMIT
MANDATORY MODIFICATION DOCUMENT

SCALE: 1" = 300'
DR. BY: CHRIS CHK'D
APP'D DATE: 10-28-93

DRAWING NUMBER: SH-8535-F
REV: 2

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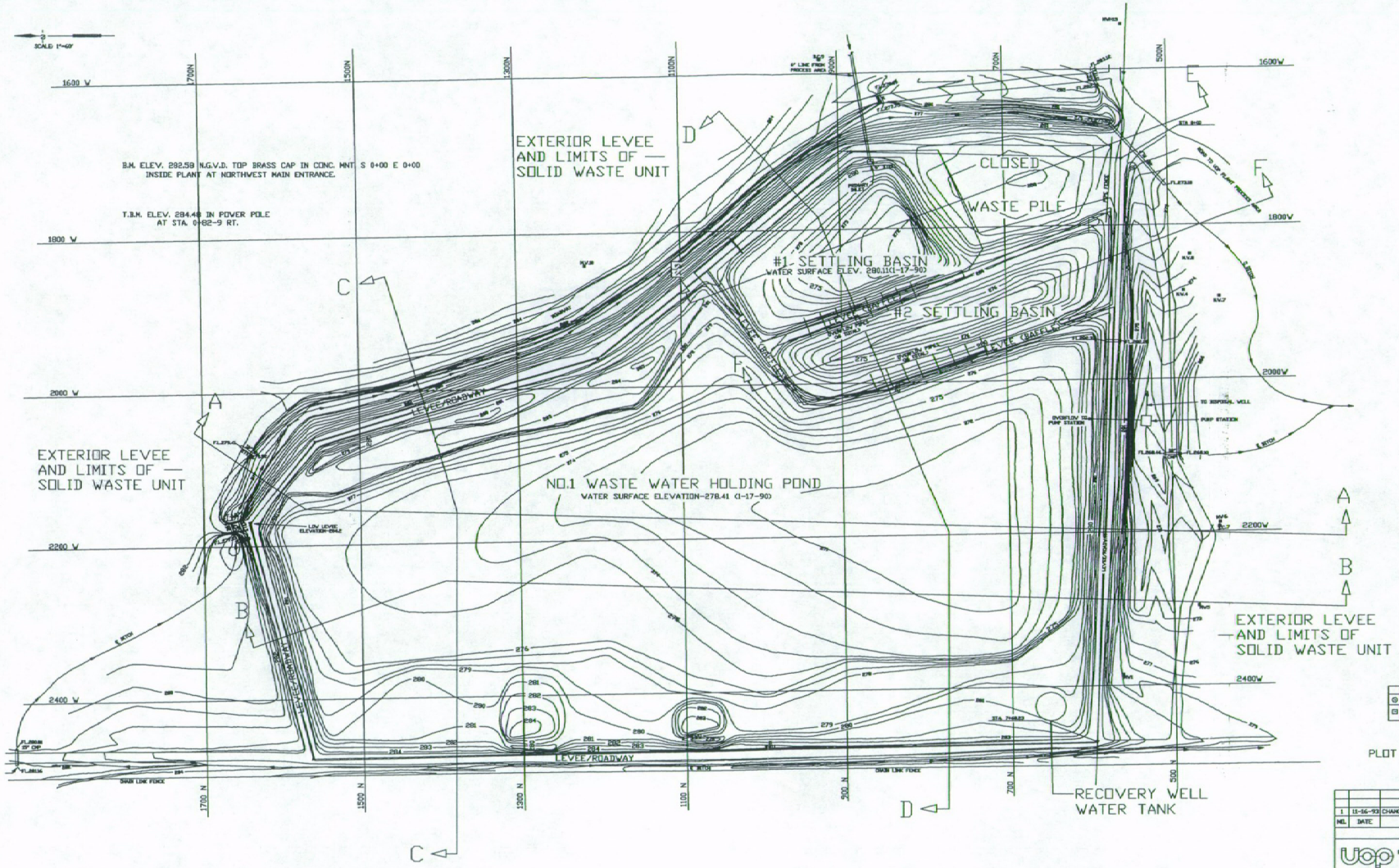

⊙	BRASS CAP	
⊟	MONITORING WELL OR RECOVERY WELL	

PLOT PLAN OF NO. 1 POND
FIGURE NO. 8

NO.	DATE	DESCRIPTION	BY	CH'D	APP'D
1	11-16-93	CHANGED FIGURE NUMBER	CM		

REVISIONS

UOP P.O. BOX 25566 •SHREVEPORT, LOUISIANA 71129
TELEPHONE 318-929-3525• FAX 318-929-2736

PLOT PLAN OF NO. 1 POND
FOR
UOP SOLID WASTE PERMIT
MANDATORY MODIFICATION DOCUMENT

SCALE 1" = 60' | DRAWING NUMBER SH-8548-F | REV. 1
DR. BY JCH CHK'D JCG
APP'D DATE 10-29-93

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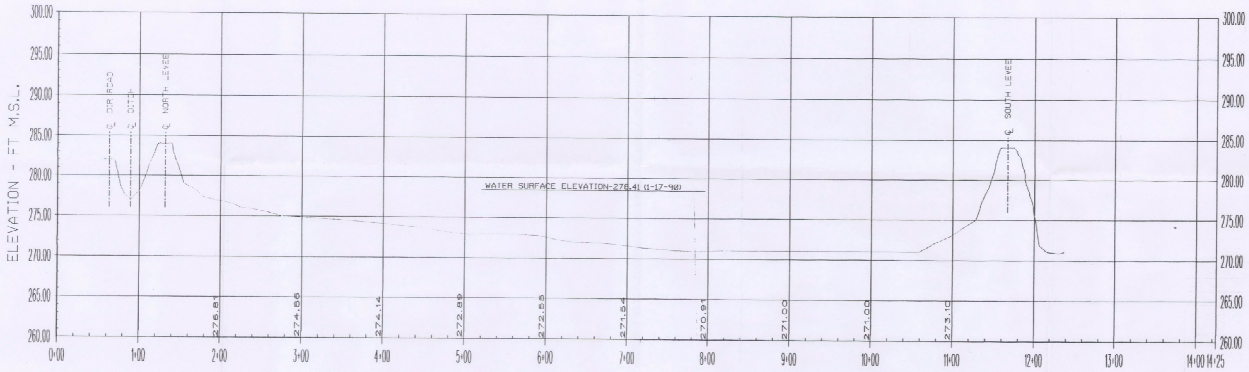
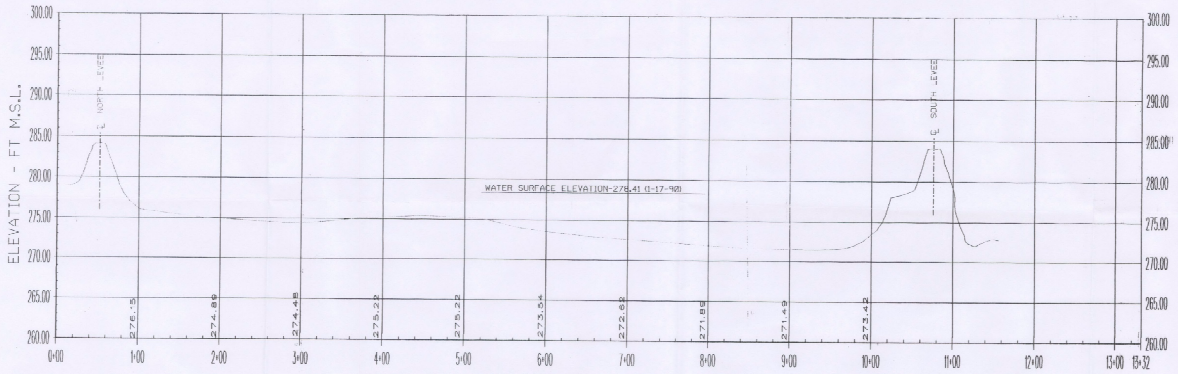


SECTION "A-A"



SECTION "B-B"

NOTE:
GROUND WATER TABLE IS APPROX. 15ft BELOW POND BOTTOM.

SCALE: HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

NO. 1 POND CROSS SECTIONS
FIGURE NO. 9

NO.	DATE	DESCRIPTION	BY	CH'D	APP'D
1	11-19-93	ADDED NOTES	CM		

REVISIONS

UOP
P.O. BOX 21566 SHREVEPORT, LOUISIANA 71120
TELEPHONE 318-929-3821 FAX 318-929-2716

CROSS SECTIONS OF NO. 1 POND
FOR
UOP SOLID WASTE PERMIT
MANDATORY MODIFICATION DOCUMENT

SCALE: AS SHOWN
DR. BY BCM CHK'D JCG
APP'D DATE 10-29-93

DRAWING NUMBER: SH-8549-F
REV: 1

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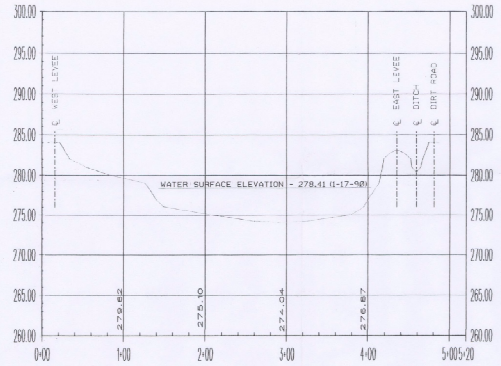
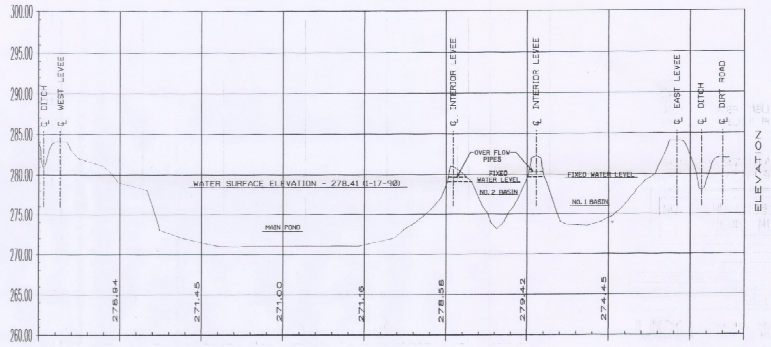


SECTION "C-C"



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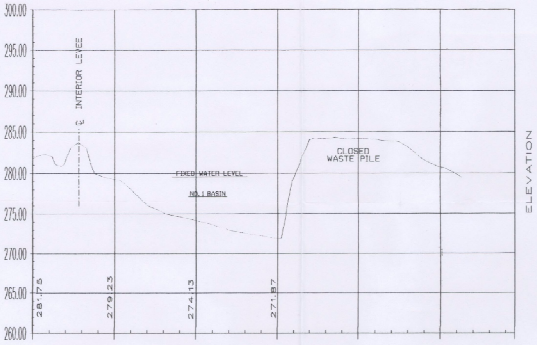
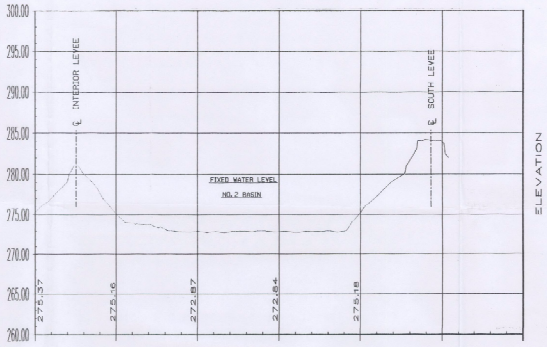


SECTION "E-E"



SECTION "F-F"

NOTE:
GROUND WATER TABLE IS APPROX 15ft BELOW POND BOTTOM.

SCALE: HORIZONTAL: 1" - 50'
VERTICAL: 1" - 5'

NO. 1 POND CROSS SECTIONS
FIGURE NO. 10

NO.	DATE	DESCRIPTION	BY	CH'D	APP'D
1	11-19-93	ADDED NOTES	CM		

REVISIONS

UOP
P.O. BOX 21566 SHREVEPORT, LOUISIANA 71120
TELEPHONE 318-929-3521 FAX 318-929-2716

CROSS SECTIONS OF NO. 1 POND
FOR
UOP SOLID WASTE PERMIT
MANDATORY MODIFICATION DOCUMENT

SCALE: AS SHOWN
DR. BY BCM CHK'D JCC
APP'D DATE 10-29-93

DRAWING NUMBER: SH-8550-F
REV. 1

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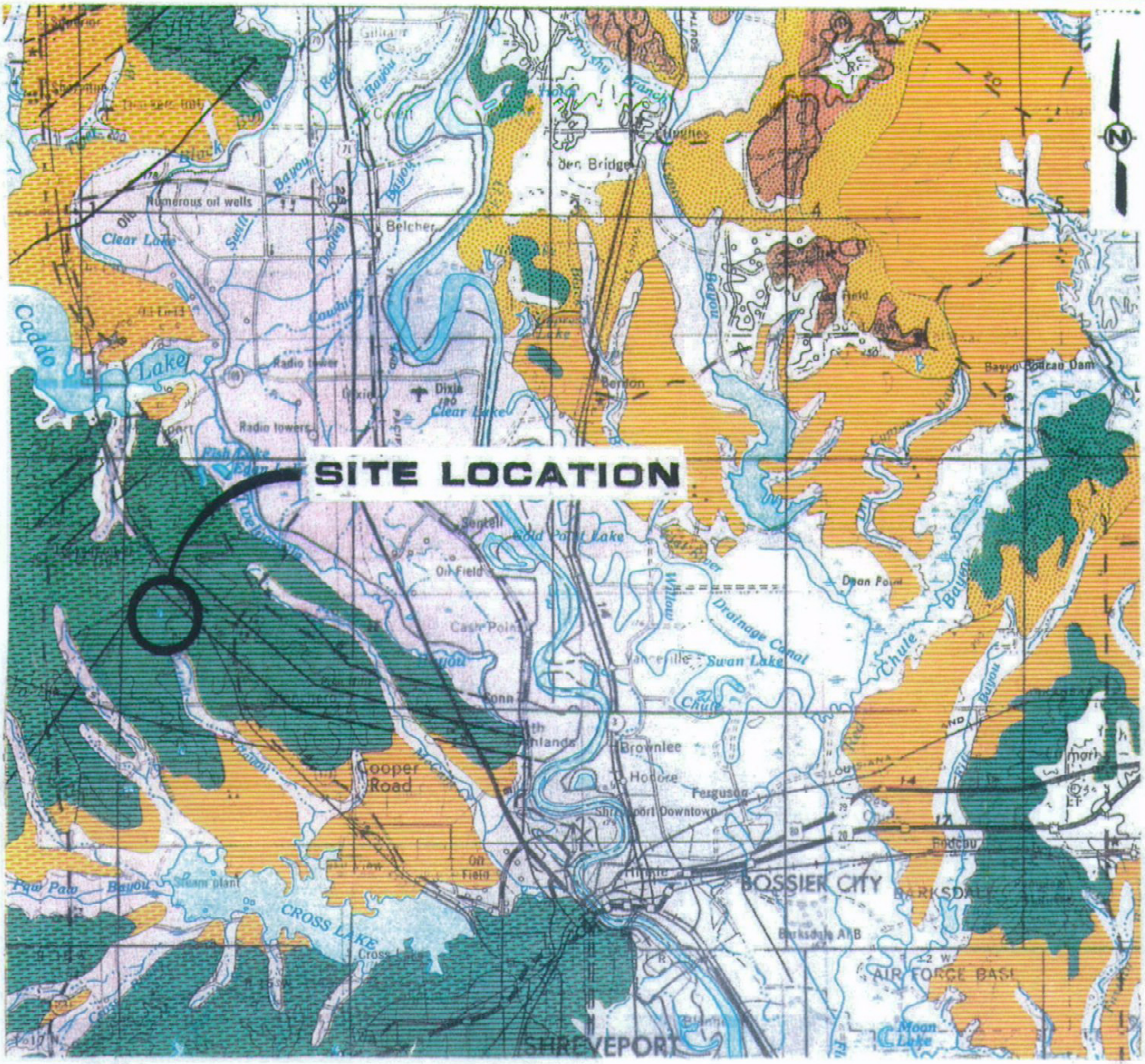


LEGEND:

HIGH RECHARGE POTENTIAL areas generally consist of deep, well- to excessively drained sands and gravels with rapid rates of infiltration and subsoil permeability and low runoff potential.

MODERATE RECHARGE POTENTIAL areas generally consist of moderately to well-drained soils having medium textures and moderate rates of water transmission. They include some soil associations having areas of both high and low recharge characteristics.

LOW RECHARGE POTENTIAL areas generally consist of poorly drained silts and clays with slow to very slow infiltration and permeability rates and high runoff potential. They include shallow soils over nearly impervious materials and soils with a claypan or a thick clay layer at or near the surface.

Areas that do not recharge major Louisiana freshwater aquifers.

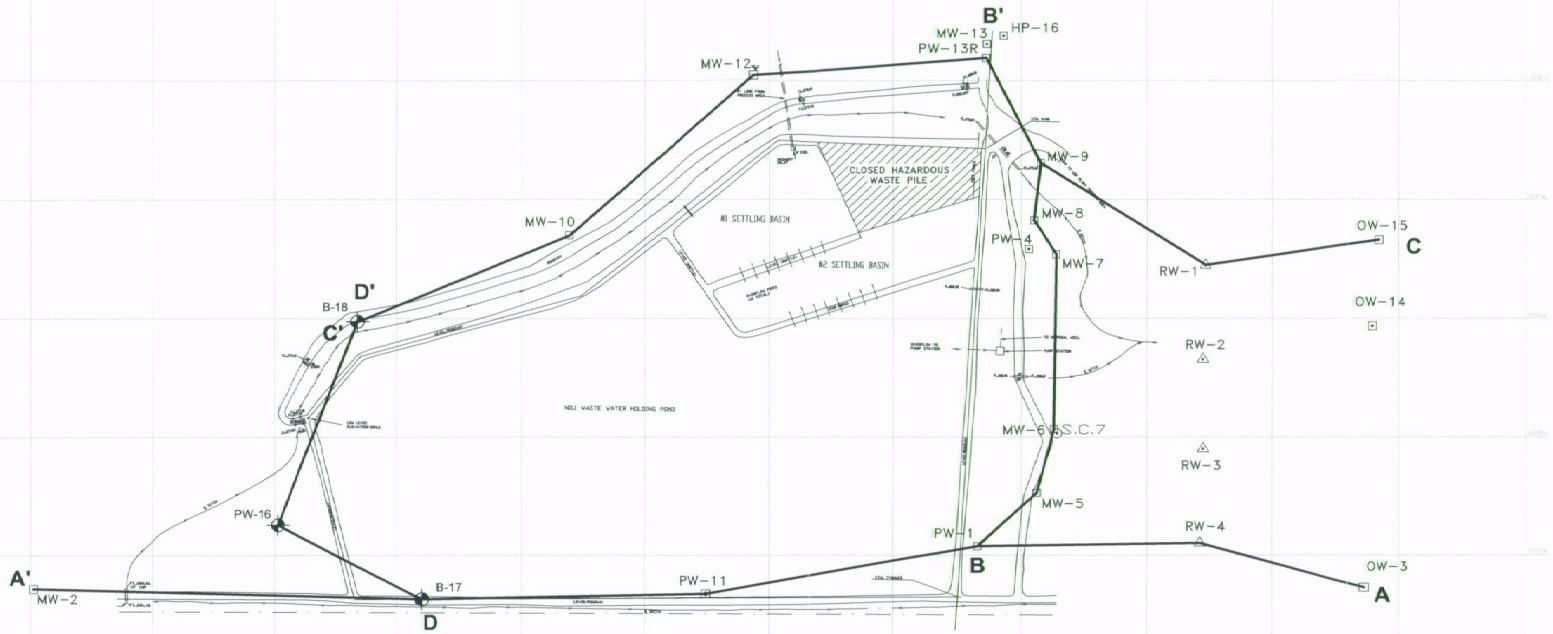
CARRIZO-WILCOX	Eocene & Paleocene	Carrizo & Wilcox	Sand, silt, clay, and lignite. Aquifer units consist of massive, fine to medium sand of the discontinuous Carrizo and a complex sequence of fine sand, silt, clay, and lignite of the Wilcox. Wilcox sands are generally thin and lenticular.

SOURCE: MAP #5 OF THE AQUIFER RECHARGE ATLAS, AQUIFER RECHARGE POTENTIAL OF THE SHREVEPORT QUADRANGLE 1988.

0 5 STATUTE MILES

SCALE

UOP SHREVEPORT, LOUISIANA	**Woodward-Clyde Consultants** Consulting Engineers, Geologists and Environmental Scientists Baton Rouge, Louisiana		AQUIFER RECHARGE POTENTIAL OF THE SHREVEPORT QUADRANGLE	FILE NO. 93B356C
	SCALE: SHOWN	DRAWN BY: P.C.G. / CHKD. BY: JCH	DATE: 10/91 / DATE: 11-91	FIG. NO. 11



LEGEND:

- BRASS CAP
- MONITORING WELL
- CHLORIDE RECOVERY WELL
- BORING LOCATION

SCALE: 1 INCH=200 FEET

200' 0 200'

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REV	DESCRIPTION OF REVISION	BY	DATE
△			
△			
△			
△			
△			
△			

UOP Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

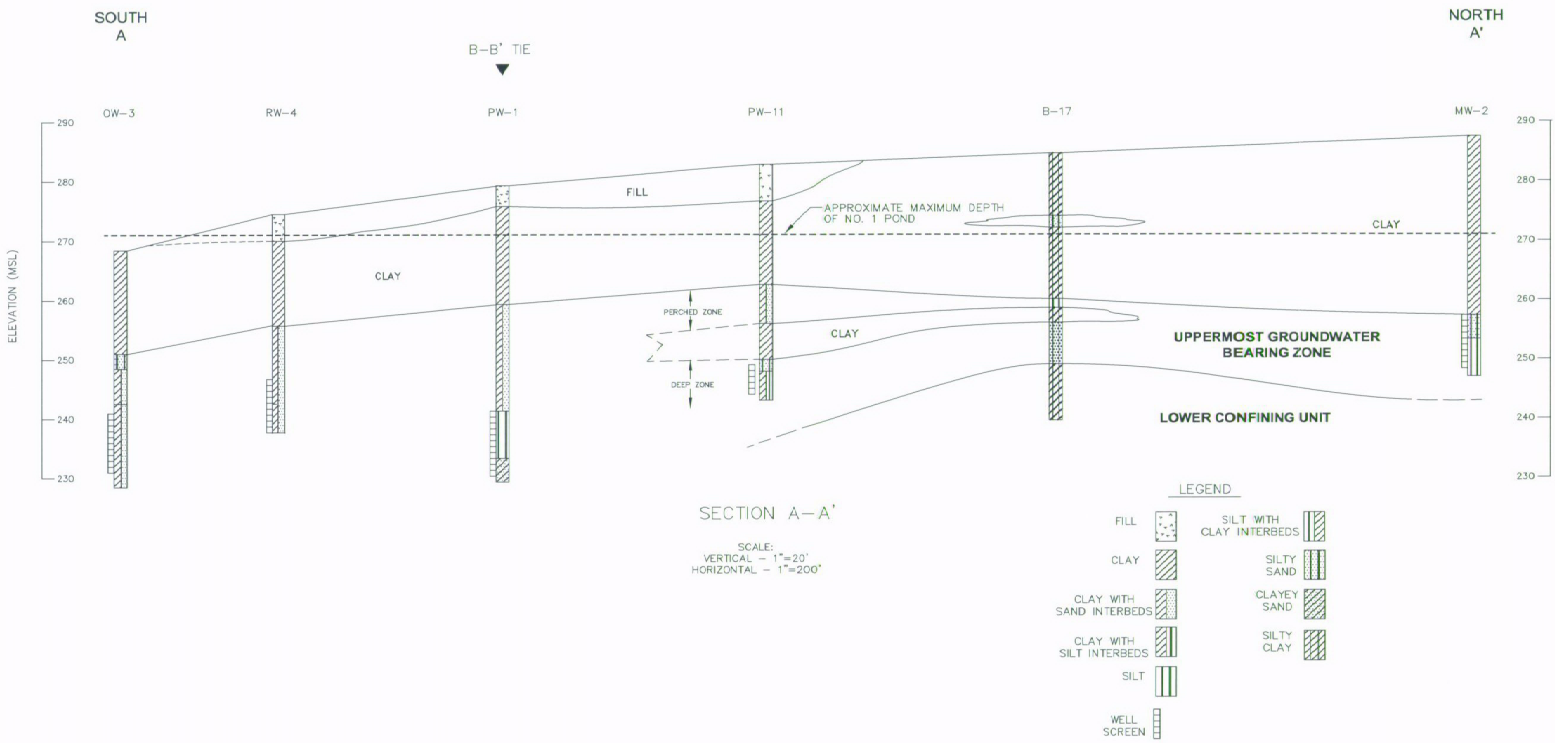
SCALE	1" = 200'
DESIGNED	
DRAWN	PCG
CHECKED	WAB
PEER REVIEWED	MAS
DATE	4/12/97

CROSS SECTION LOCATION MAP

REVISION △

PROJECT 19228153

FIGURE 12A



SECTION A-A'

SCALE:
VERTICAL - 1"=20'
HORIZONTAL - 1"=200'

REV	DESCRIPTION OF REVISION	BY	DATE
△			
△			
△			
△			
△			
△			

UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

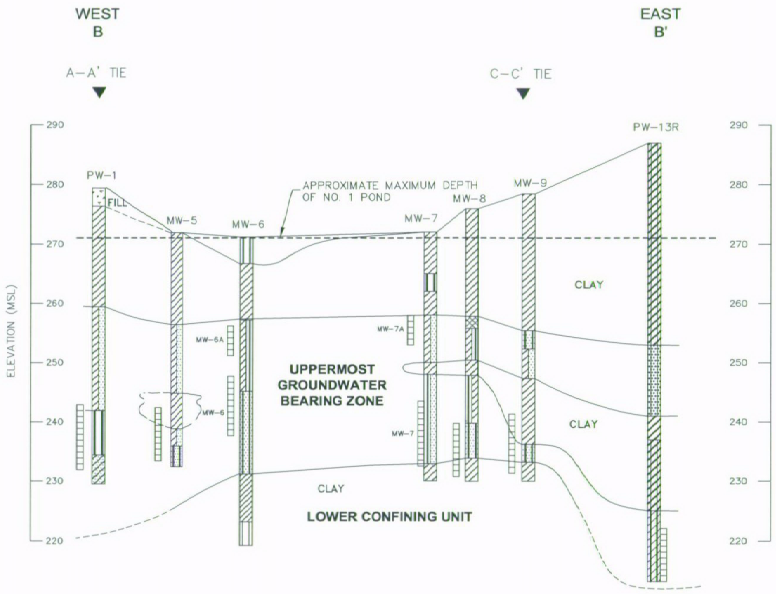
REFERENCE DRAWINGS

SCALE: AS SHOWN
DESIGNED:
DRAWN: PCG
CHECKED: WAB
PEER REVIEWED: MAS
DATE: 4/12/07

CROSS SECTION A-A'

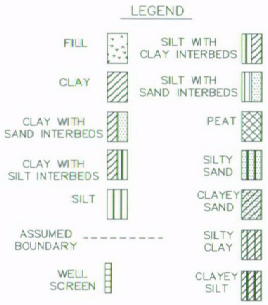
REVISION △
PROJECT 19228153
FIGURE 13A

19228153-00001-01.DWG - A-A - Tuesday, January 08, 2008 9:52:50 AM



SECTION B–B'

SCALE:
VERTICAL – 1"=20'
HORIZONTAL – 1"=200'



REV	DESCRIPTION OF REVISION	BY	DATE
△			
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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

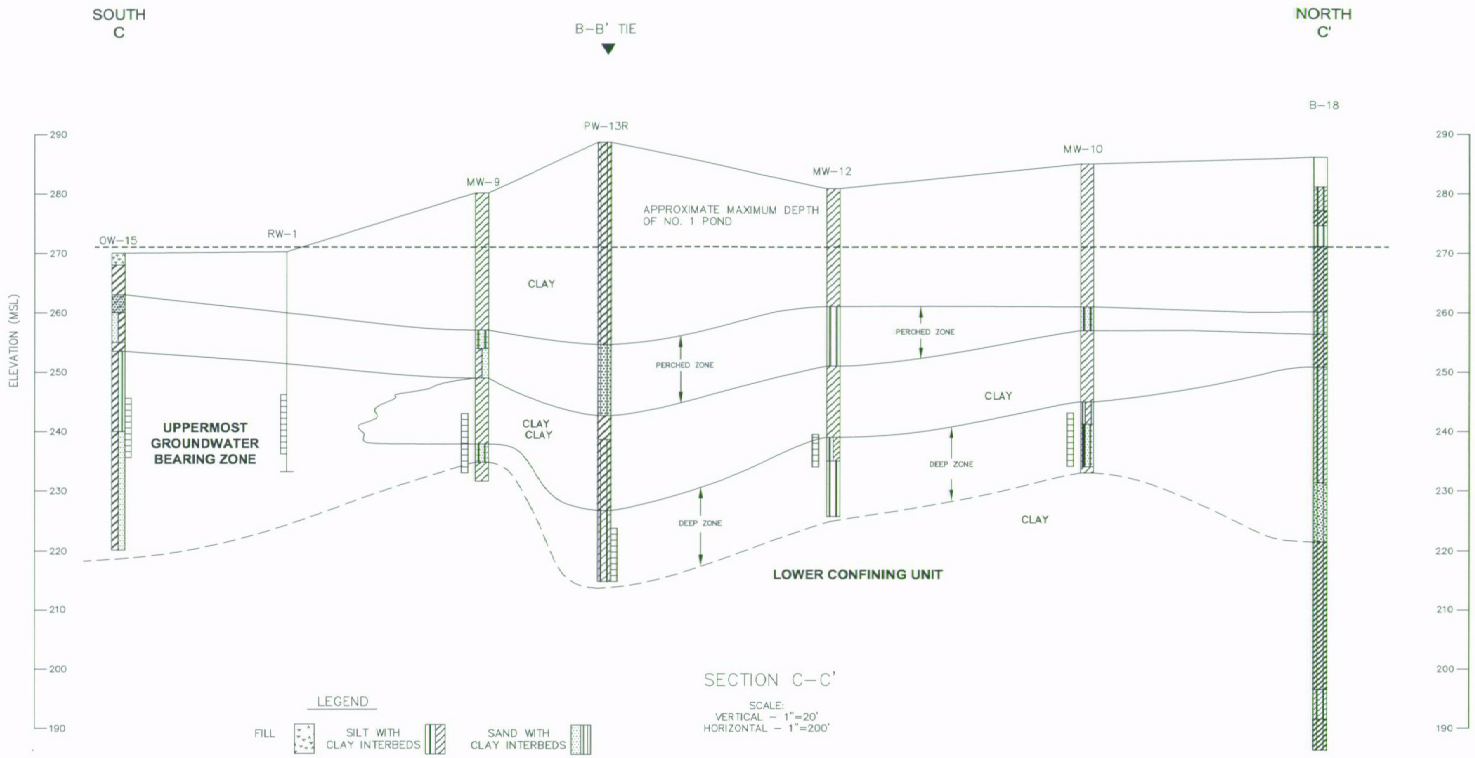
REFERENCE DRAWINGS

SCALE: AS SHOWN
DESIGNED:
DRAWN: PCG
CHECKED: WAB
PEER REVIEWED: MAS
DATE: 4/12/07

CROSS SECTION B–B'

REVISION △
PROJECT 19228153
FIGURE 13B

19228153-00001-01.DWG – BB – Tuesday, January 08, 2008 9:59:19 AM



SECTION C-C'

SCALE:
VERTICAL – 1"=20'
HORIZONTAL – 1"=200'

LEGEND

FILL	SILT WITH CLAY INTERBEDS	SAND WITH CLAY INTERBEDS
CLAY	SILT WITH SAND INTERBEDS	NO RECOVERY
CLAY WITH SAND INTERBEDS	SILTY SAND	
CLAY WITH SILT INTERBEDS	CLAYEY SAND	
SILT	CLAYEY SILT	
ASSUMED BOUNDARY	SILTY CLAY	
WELL SCREEN		

REV	DESCRIPTION OF REVISION	BY	DATE
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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE	AS SHOWN
DESIGNED	
DRAWN	POG
CHECKED	WAB
PEER REVIEWED	MAS
DATE	4/12/07

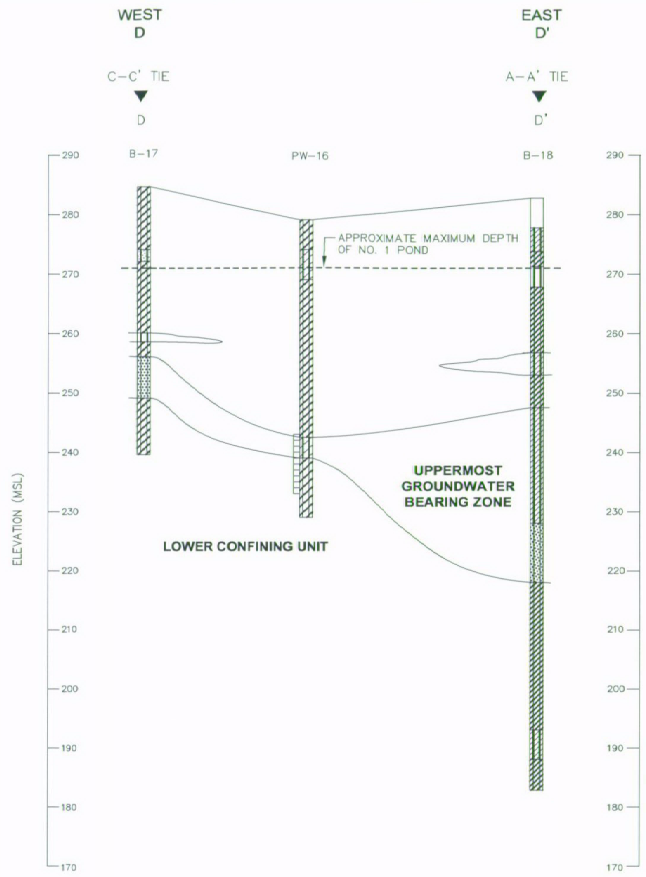
CROSS SECTION C-C'

REVISION △

PROJECT 19228153

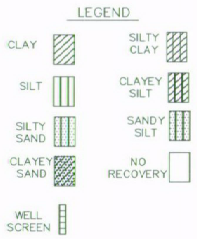
FIGURE 13C

19228153-00001-01.DWG – CC – Tuesday, January 08, 2008 9:59:40 AM



SECTION D–D'

SCALE:
VERTICAL – 1"=20'
HORIZONTAL – 1"=200'



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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

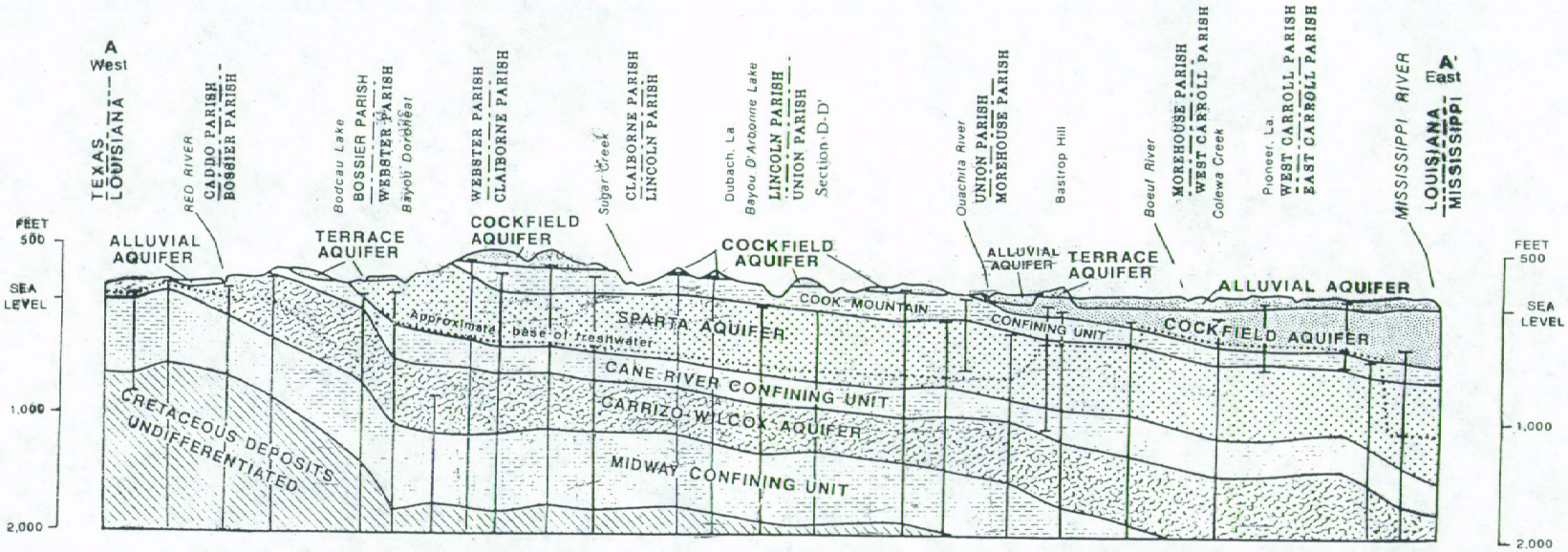
REFERENCE DRAWINGS

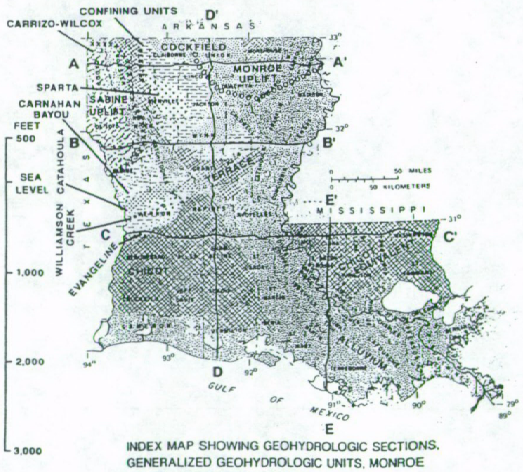
SCALE: AS SHOWN
DESIGNED:
DRAWN: PCG
CHECKED: WAB
PEER REVIEWED: MAS
DATE: 4/12/07

CROSS SECTION D–D'

REVISION: △
PROJECT: 19228153
FIGURE: 13D

19228153-00001-01.DWG – DD – Tuesday, January 08, 2008 10:00:01 AM





INDEX MAP SHOWING GEOHYDROLOGIC SECTIONS, GENERALIZED GEOHYDROLOGIC UNITS, MONROE UPLIFT, AND SABINE UPLIFT, LOUISIANA

EXPLANATION

A —— A' Section trace

Top

Electric Log

Bottom

Maximum depth of occurrence of freshwater (dissolved-solids concentration equal to or less than 1,000 milligrams per liter)

xxxxx Sabine uplift boundary

ooooo Monroe uplift boundary

Vertical exaggeration x 83

0 10 MILES

0 10 KILOMETERS

SOURCE: SMOOT, CHARLES W., 1989

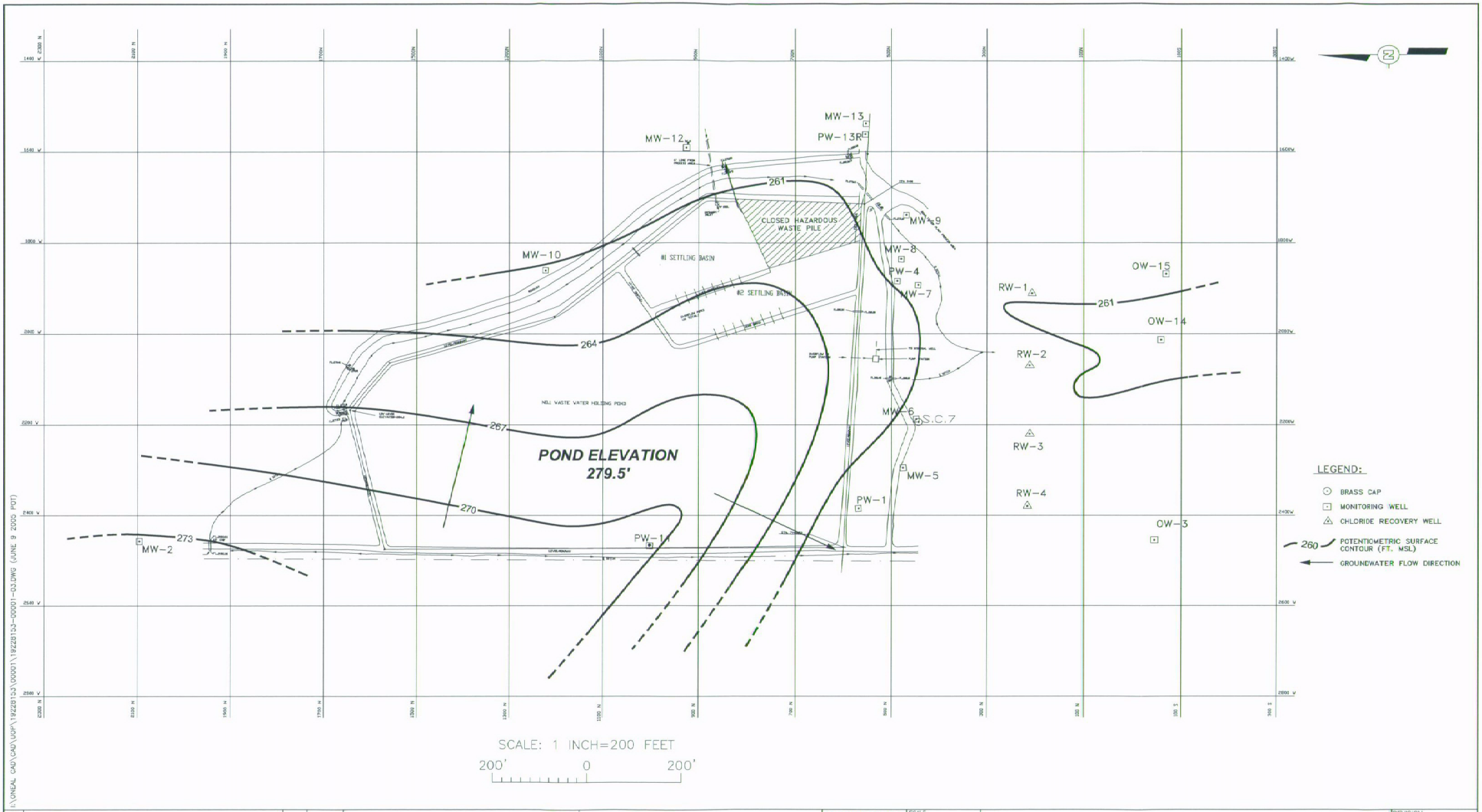
Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana

UOP
SHREVEPORT, LOUISIANA

SCALE:	MADE BY: YQ	DATE: 11/91	FILE NO. 93B356C
	CHECKED BY: JLH	DATE: 11-91	

GEOHYDROLOGIC SECTION

FIGURE 14



I:\ONEAL CAD\CAD\UOP\1922813\00001\1922813-00001-03.DWG (JUNE 9 2005 PDT)

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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

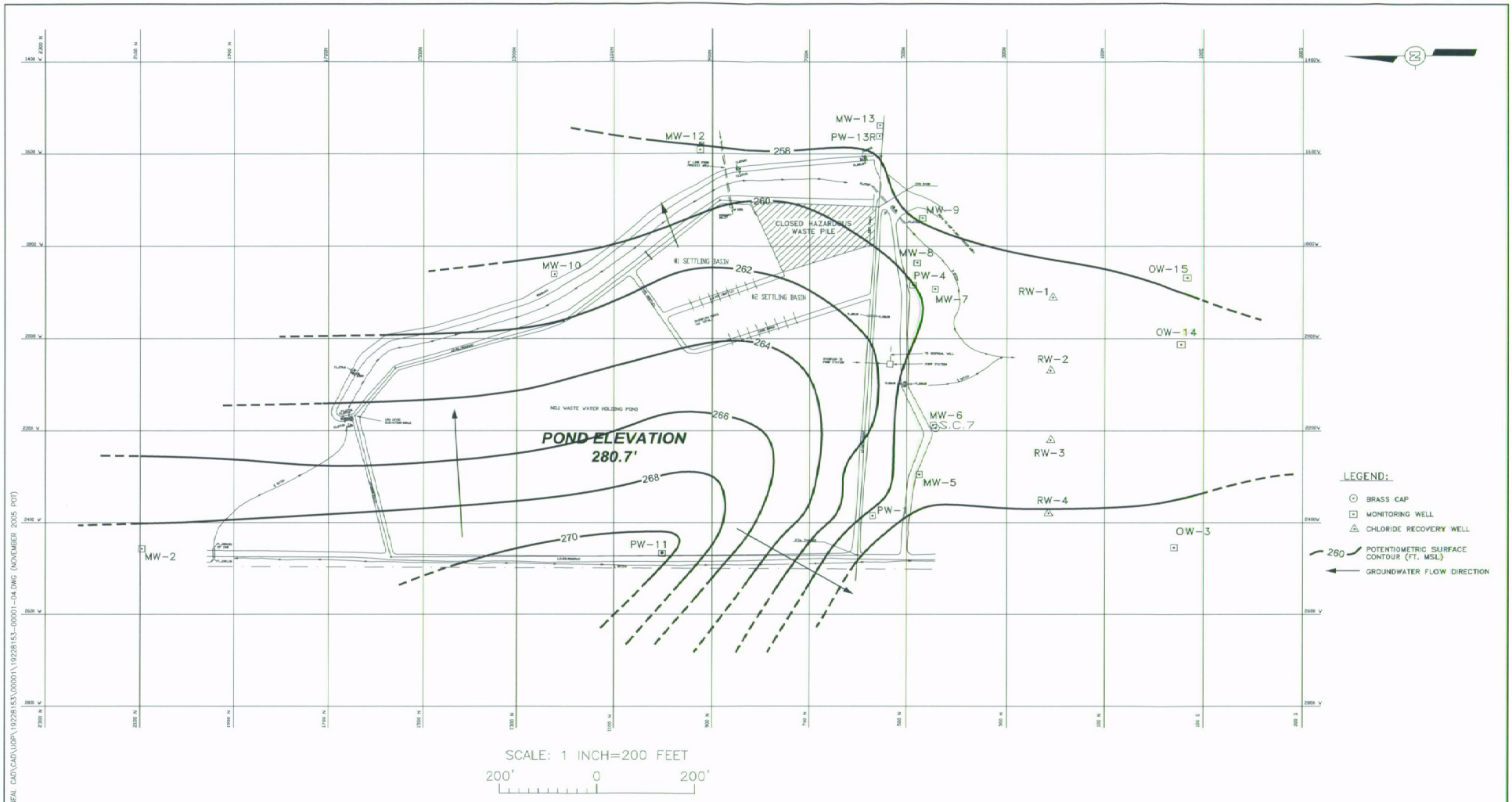
SCALE	1" = 200'
DESIGNED	
DRAWN	PCG
CHECKED	CD
PEER REVIEWED	WAB
DATE	6/12/07

POTENTIOMETRIC SURFACE MAP
JUNE 2005

REVISION △

PROJECT 1928153

FIGURE 15A



I:\ONEAL CAD\CAD\UOP\19228153\00001\19228153-00001-04.DWG (NOVEMBER 2005 POT)

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UOP
Shreveport Plant

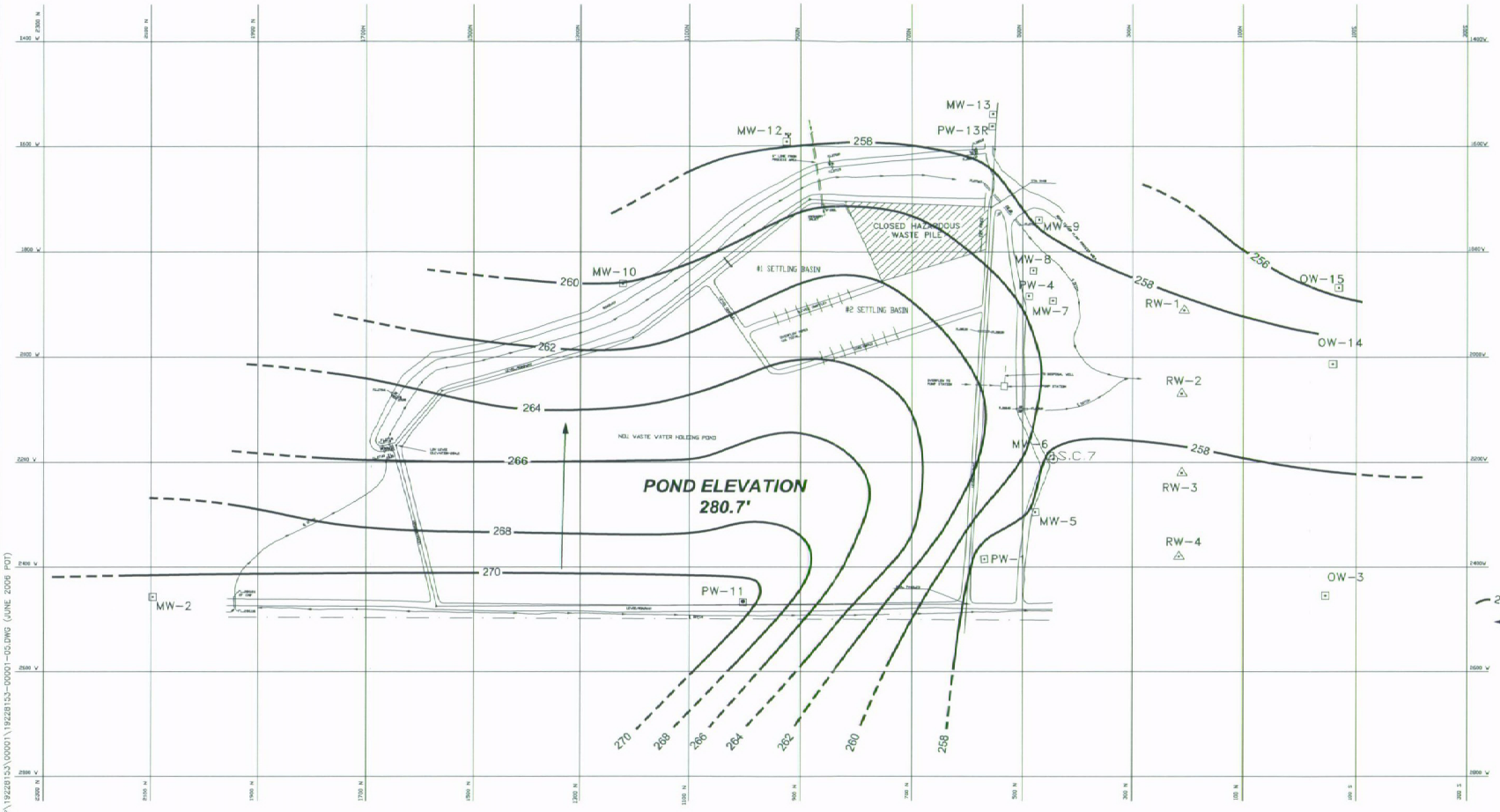
URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE	1" = 200'
DESIGNED	
DRAWN	PCG
CHECKED	CD
PEER REVIEWED	WAB
DATE	4/12/07

POTENTIOMETRIC SURFACE MAP
NOVEMBER 2005

REVISION △
PROJECT 19228153
FIGURE 15B



SCALE: 1 INCH=200 FEET

200' 0 200'

I:\ONGAL CAD\CAD\UOP\19228153\00001\19228153-00001-05.DWG (JUNE 2006 POT)

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UOP Shreveport Plant

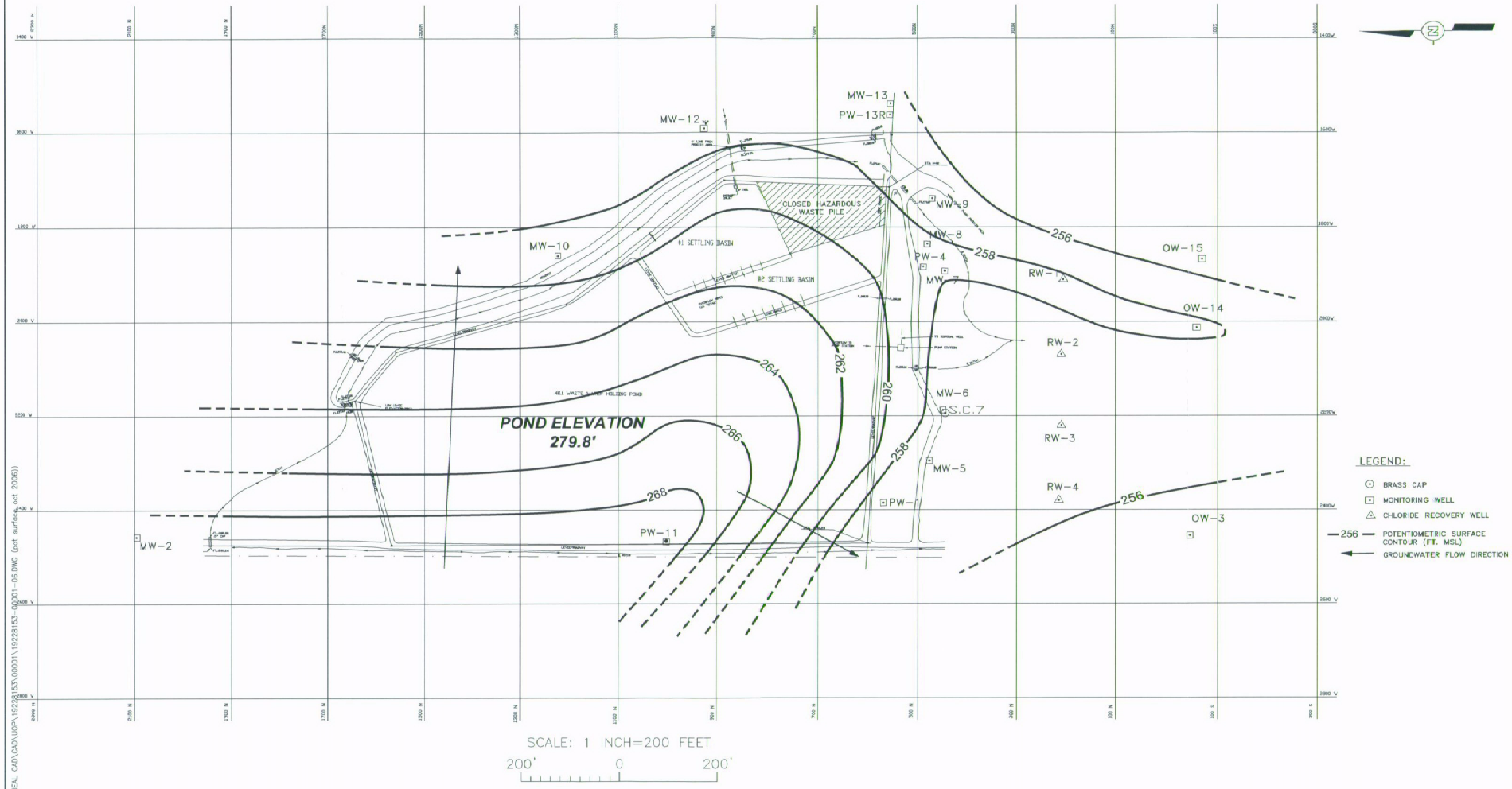
URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE 1" = 200'
DESIGNED
DRAWN GAT
CHECKED CD
PEER REVIEWED WAB
DATE 4/12/07

POTENTIOMETRIC SURFACE MAP
JUNE 2006

REVISION △
PROJECT 19228153
FIGURE 15C



REV	DESCRIPTION OF REVISION	BY	DATE
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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

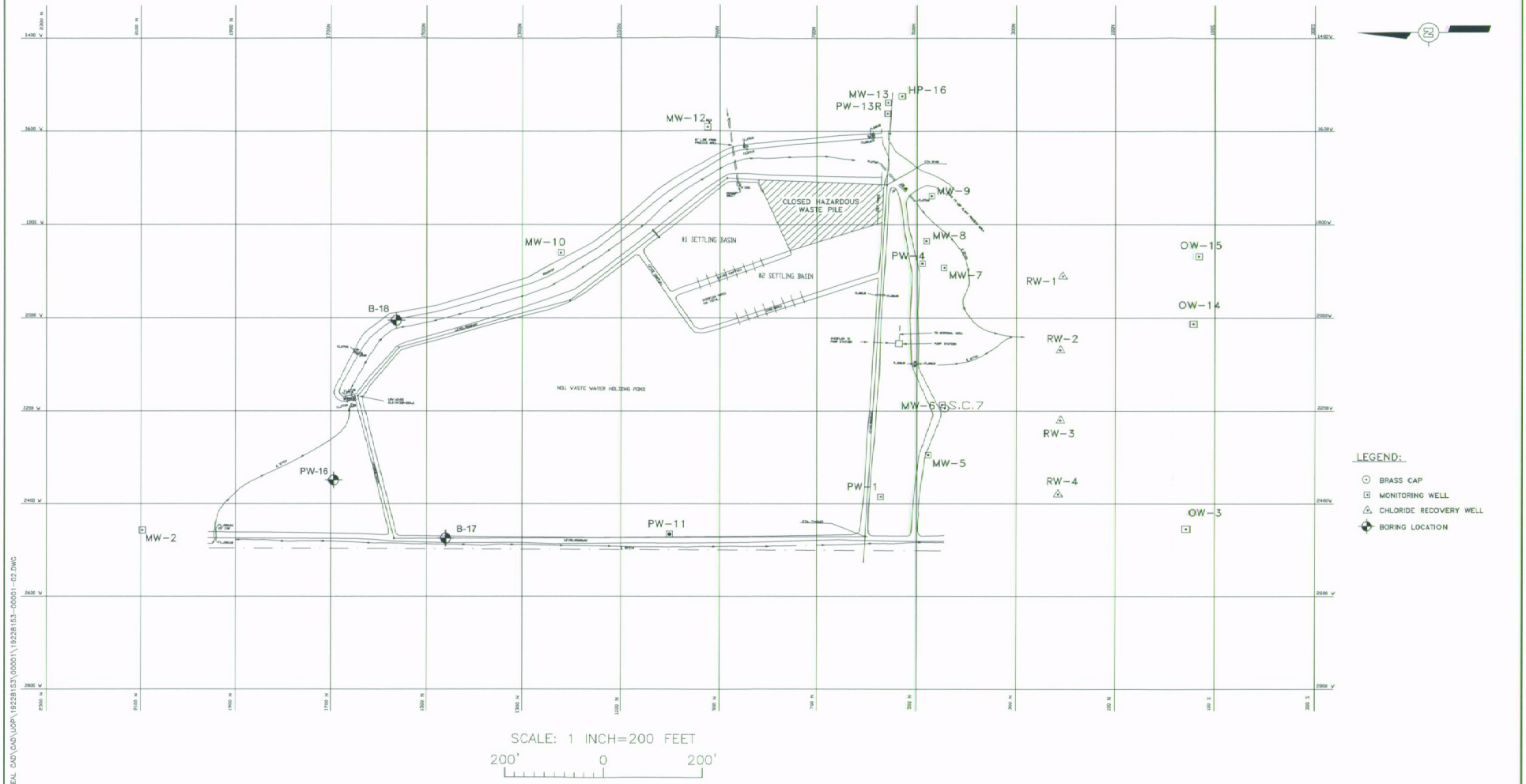
REFERENCE DRAWINGS

SCALE	1" = 200'
DESIGNED	
DRAWN	PCG
CHECKED	CD
PEER REVIEWED	WAB
DATE	4/12/07

POTENTIOMETRIC SURFACE MAP
OCTOBER 2006

REVISION △
PROJECT 19228153
FIGURE 15D

I:\ONEAL CAD\CAD\UOP\19228153\00001\19228153-00001-06.DWG (pot surface, oct 2006))



SCALE: 1 INCH=200 FEET

200' 0 200'

L:\ONEAL CAD\CAD\UOP\19228153\00001\19228153-00001-02.DWG

REV	DESCRIPTION OF REVISION	BY	DATE
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UOP
Shreveport Plant

URS
7389 Florida Blvd., Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

REFERENCE DRAWINGS

SCALE	1" = 200'
DESIGNED	
DRAWN	PCG
CHECKED	WAB
PEER REVIEWED	MAS
DATE	4/12/07

BORING LOCATION MAP

REVISION △

PROJECT 19228153

FIGURE 16A

APPENDIX A

LETTERS OF APPROVAL FROM STATE AGENCIES

MITCHELL J. LANDRIEU
LIEUTENANT GOVERNOR

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

ANGÈLE DAVIS
SECRETARY

PAM BREAUX
ASSISTANT SECRETARY

April 11, 2006

Ms. Ying W. Qualls
URS Corporation
7389 Florida Boulevard, Suite 300
Baton Rouge, LA 70806

Re: Solid Waste Permit Renewal Application
No. 1 Holding Pond
UOP, LLC Shreveport Facility
Caddo Parish, Louisiana

Dear Ms. Qualls:

This is in response to your letter dated March 6, 2006, concerning the above-referenced project. There are no known historic sites located within 1,000' of the Area of Potential Effect of this project. Therefore, we have no objections to the permit renewal.

If you have any questions, please contact Rachel Watson in the Division of Archaeology at (225) 342-8170.

Sincerely,

Pam Breaux

Pam Breaux
State Historic Preservation Officer

PB:RW:s

ITCHELL 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

March 10, 2006

Mr. William A. Beal, P.E.
URS Corporation
7389 Florida Boulevard, Suite 300
Baton Rouge, LA 70806

Re: Review of Recreation Areas
Solid Waste Permit Renewal Application
No. 1 Holding Pond
UOP, LLC Shreveport Facility
Caddo Parish, Louisiana

Dear Mr. Beal:

The Office of State Parks has reviewed your request and determined there are no State Parks' holdings located within 1000' of the above-mentioned project.

If you need further assistance, please let me know.

Sincerely,

Dennis Eilers

Dennis Eilers
Chief of Resource Development

DE:dr

State of Louisiana

DWIGHT LANDRENEAU
SECRETARY

DEPARTMENT OF WILDLIFE & FISHERIES
POST OFFICE BOX 98000
BATON ROUGE, LA 70898-9000
(225) 765-2800

KATHLEEN BABINEAUX BLANCO
GOVERNOR

Date	April 5, 2006
Name	Ying W. Qualls
Company	URS Corporation
Street Address	7389 Florida Blvd., Suite 300
City, State, Zip	Baton Rouge, LA 70806
Project	UOP, LLC Shreveport Facility: Solid Waste Permit Renewal
Invoice Number	06040504

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

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

Sincerely,

Gary Lester

Gary Lester, Coordinator
Natural Heritage Program

URS

RECEIVED
MAR - 8 2006
FISH & WLDL. SERV
LAFAYETTE, LA.

March 6, 2006

Mr. David Frugé, Field Supervisor
US Fish and Wildlife Service
Ecological Services Field Office
646 Cajun Dome Blvd., Suite 400
Lafayette, Louisiana 70506

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
( ) Will have no effect on those resources
(✓) Is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

Acting Supervisor — Date
Louisiana Field Office
U.S. Fish and Wildlife Service

Re: Record Search Request
Solid Waste Permit Renewal Application
No. 1 Holding Pond
UOP, LLC Shreveport Facility
Caddo Parish, Louisiana

Dear Mr. Frugé:

URS Corporation (URS) is in the process of preparing a Solid Waste Permit Renewal Application for their No. 1 Holding Pond at the UOP, LLC Shreveport facility (UOP) in Caddo Parish, Louisiana. The UOP site is located approximately 3 miles northwest of Blanchard, Louisiana.

In accordance with the State of Louisiana solid waste permitting regulations (LAC 33:VII.521.A.1.e), an environmental characteristics survey of the site and surrounding area within 1,000 feet of the facility is required. Enclosed please find an excerpt from the 7.5-minute *Blanchard* and *Mooringsport* topographic quadrangle map Louisiana indicating the facility and the 1,000-foot perimeter boundary (Figure 1). URS is requesting a search of federal database for the following listings in the specified area:

- Designated wildlife-management areas;
- Swamps and marshes;
- Habitats for endangered species; and
- Other sensitive ecological areas.

We are also submitting a parallel request to the Louisiana Department of Wildlife and Fisheries Natural Heritage Program in Baton Rouge.

We appreciate your assistance in this matter. If you have any questions, please contact Willie Beal at (225)-922-5786 or Ying Qualls at (225) 922-5760.

Sincerely,

Ying W. Qualls

William A. Beal, P.E.

YWQ:yq

Attachment: Figure 1 – Site Location Map

URS Corporation
7389 Florida Boulevard, Suite 300
Baton Rouge, LA 70806
Tel: 225.922.5700
Fax: 225.922.5701

URS

May 8, 2006

Mr. Kenneth P. Mosley
Chief, Enforcement Section
Regulatory Branch
Department of the Army
Corps of Engineers
Vicksburg District
4155 Clay Street
Vicksburg MS 39183-3435

Re: Agency Response
Preliminary Jurisdictional Determination
UOP Shreveport Facility
Caddo Parish, Louisiana
URS File No. 19227778

Mr. Mosley:

This letter is in response to the Vicksburg US Army Corps of Engineers (VACOE) Vicksburg District's reply dated March 15, 2006 of URS Corporation (URS) request letter dated March 6, 2006 for an updated Wetland Determination of the above-referenced facility. As stated in your response and indicated on Enclosure 1, URS recognizes and agrees of the presence of other jurisdictional waters (streams) of the United States subject to Section 404 of the Clean Water Act (CWA) located within the 1,000 feet of the facility boundary (No. 1 Pond). The No. 1 Pond is a permitted existing solid waste facility and is approaching its 10-year permit expiration deadline. Pursuant to Louisiana Administrative Code (LAC 33:VII.511.D.2.a), UOP is required to prepare a Solid Waste Permit Renewal application (455 days prior to expiration date) in order to continue operation. Since UOP is not proposing or required by regulations to submit modifications to No. 1 Pond, the renewal permit application will consist of mainly updating information to reflect the facility's current physical and/or operational conditions and providing additional information as required by any new amendment promulgated into the Louisiana Department of Environmental Solid Waste Regulations.

The wetland determination request URS made on behalf of UPO to VACOE for an updated wetland determination of the subject area is the culmination of Solid Waste Regulations requirements in partial fulfillment of the LAC 33:VII.521.A.1.e and 511.D.2.a regulations. UOP plans to retain the No. 1 Pond functions in its original intended purposes and continues to operate the facility under the existing permit conditions, and no construction activities have been planned in and/or around facility. Therefore, no encroachment on other jurisdictional waters in violation of the CWA is expected (administrative record update exercise) that will necessitate formal wetland delineation and/or initiate a permit application for the facility under Section 404 of CWA. UOP will promptly inform VACOE of any potential infraction of CWA regulations and will initiate a permit application process and approval from the agency prior to conducting any field construction activities.

URS Corporation
7389 Florida Boulevard, Suite 300
Baton Rouge, LA 70806
Tel: 225.922.5700
Fax: 225.922.5701

For the above reasons, UOP respectively defers formal wetland delineation on the surrounding property within 1,000 feet of No. 1 Pond facility foot print or initiate a Section 404 wetland permit application. To facilitate the agency review of process, UOP has attached the following planned operational activities, drawings and figures of No. 1 Pond:

1. Continues to operate the facility as a solid waste wastewater treatment surface impoundment;
2. Continues to perform routine maintenance activities on the facility required by its permit conditions;
3. Continues to conduct operational activities within the confine of the facility initial footprint and has no planned activities that will require change or physical modification to the facility physical dimensions or configuration;
4. Facility site location map with a 1,000-foot boundary and surface features depicted on Figure 1;
5. Plot plan showing the facility boundary and associated dike system (Figure 2); and
6. Enclosure 1 showing locations of jurisdictional wetland areas located within 1,000 feet of No. 1 Pond facility boundary.

UOP trusts the information provided above is sufficient for VACOE to reach a decision and issue a letter of concurrence that UOP is not required to conduct formal wetland delineation and/or initiate a wetland permit under Section 404 of CLW.

URS appreciates your assistance in this matter. If you have any questions, please contact Yong Goh at (225) 922-5764 or Willie Beal at (225) 922-5786.

Very truly yours,
URS Corporation

Yong S. Goh, Ph.D. for

William A. Beal, P.E.

WAB:ws

Attachments: Figure 1 Site Location Map with 1,000-foot boundary of the facility footprint
Figure 2 Facility Plot Plan
Enclosure 1 Preliminary Vicksburg ACOE Preliminary JD (Jurisdictional waters of the US)

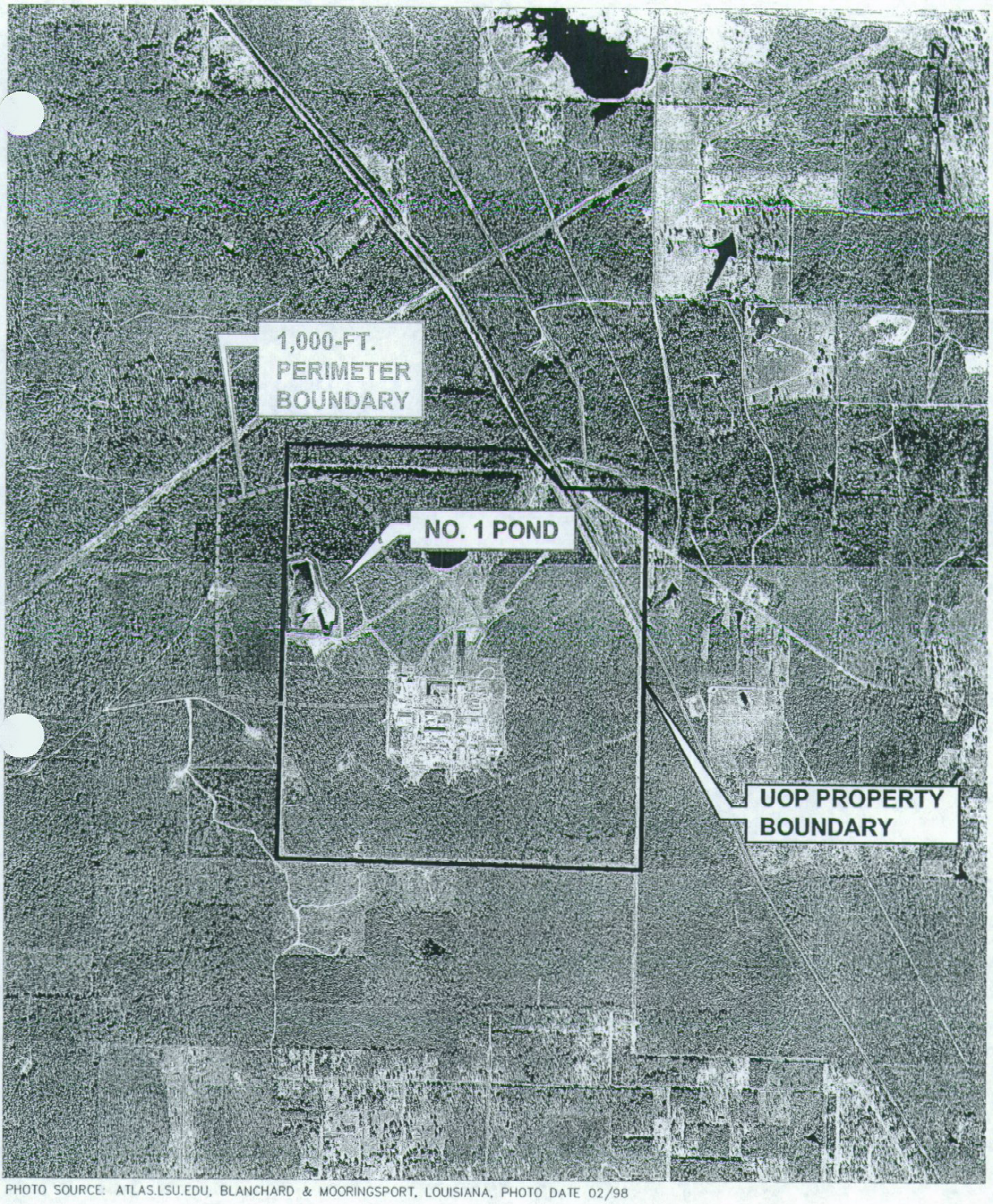

PHOTO SOURCE: ATLAS.LSU.EDU, BLANCHARD & MOORINGSPORT, LOUISIANA, PHOTO DATE 02/98

SCALE: 1 INCH=2,000 FEET

2,000' 0 2,000' 4,000'

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UOP

Shreveport Plant

URS

7389 Florida Blvd. Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

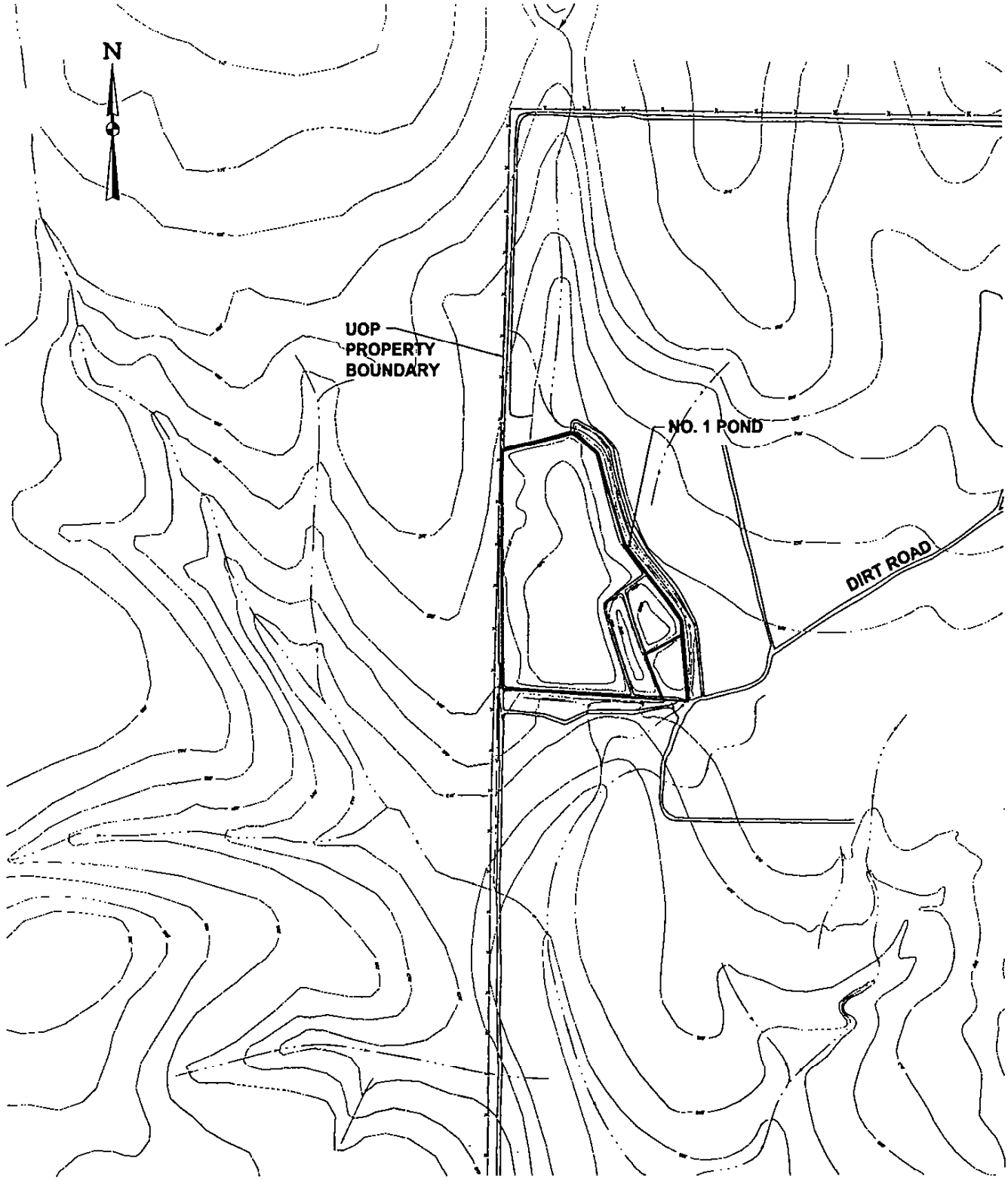
SCALE:	DRAWN BY: ESL	DATE: 02/28/06
1"=2,000'	CHKD. BY: WAB	DATE: 02/28/06

SOLID WASTE
PERMIT RENEWAL

SITE LOCATION MAP

PROJ. NO. 19227778

FIG. NO. 1



SCALE: 1 INCH=600 FEET

600' 0 600'

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Shreveport Plant

URS

7389 Florida Blvd. Suite 300
Baton Rouge, Louisiana 70806
225/922-5700

SCALE:	DRAWN BY: PCG	DATE: 5/10/06
1"=600'	CHKD. BY: YQ	DATE: 5/10/06

SOLID WASTE
PERMIT RENEWAL

PLOT PLAN

PROJ. NO. 19227778

FIG. NO. 2

ENCLOSURE 1

LOCATIONS OF JURISDICTIONAL WETLAND AREAS
LOCATED WITHIN 1,000 FEET
OF NO. 1 POND FACILITY BOUNDARY

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

REPLY TO
ATTENTION OF:

March 15, 2006

Operations Division
Regulatory

SUBJECT: Jurisdictional Determination – UOP Shreveport Facility, Caddo Parish, Louisiana

Ms. Ying W. Qualls
URS Corporation
7389 Florida Boulevard, Suite 300
Baton Rouge, Louisiana 70806

Dear Ms. Qualls:

This is in response to your letter requesting a wetland determination within 1,000-feet of the existing No. 1 Holding Pond located on the subject property. The site is located in sections 19, 20, 29 and 30, T19N-R15W, Caddo Parish, Louisiana.

Based upon the information provided, it appears there are no jurisdictional wetlands located on the property. However, there appears to be other jurisdictional waters of the United States (streams) located on the property subject to regulation pursuant to Section 404 of the Clean Water Act (enclosure 1). Any work involving the discharge of dredged or fill material into jurisdictional waters of the United States will require a Department of the Army Section 404 permit prior to beginning work. Please note that this jurisdictional determination is preliminary and should be used for planning purposes only. A final determination will be made upon your submission of a completed application with project plans. For your information, I have enclosed a copy of an appeals form for this preliminary determination (enclosure 2).

For your convenience, I am enclosing a Department of the Army permit application package with instructions (enclosure 3). Your client's application for any proposed work within the project area should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to identification NO. MVK-2006-390 when submitting the application.

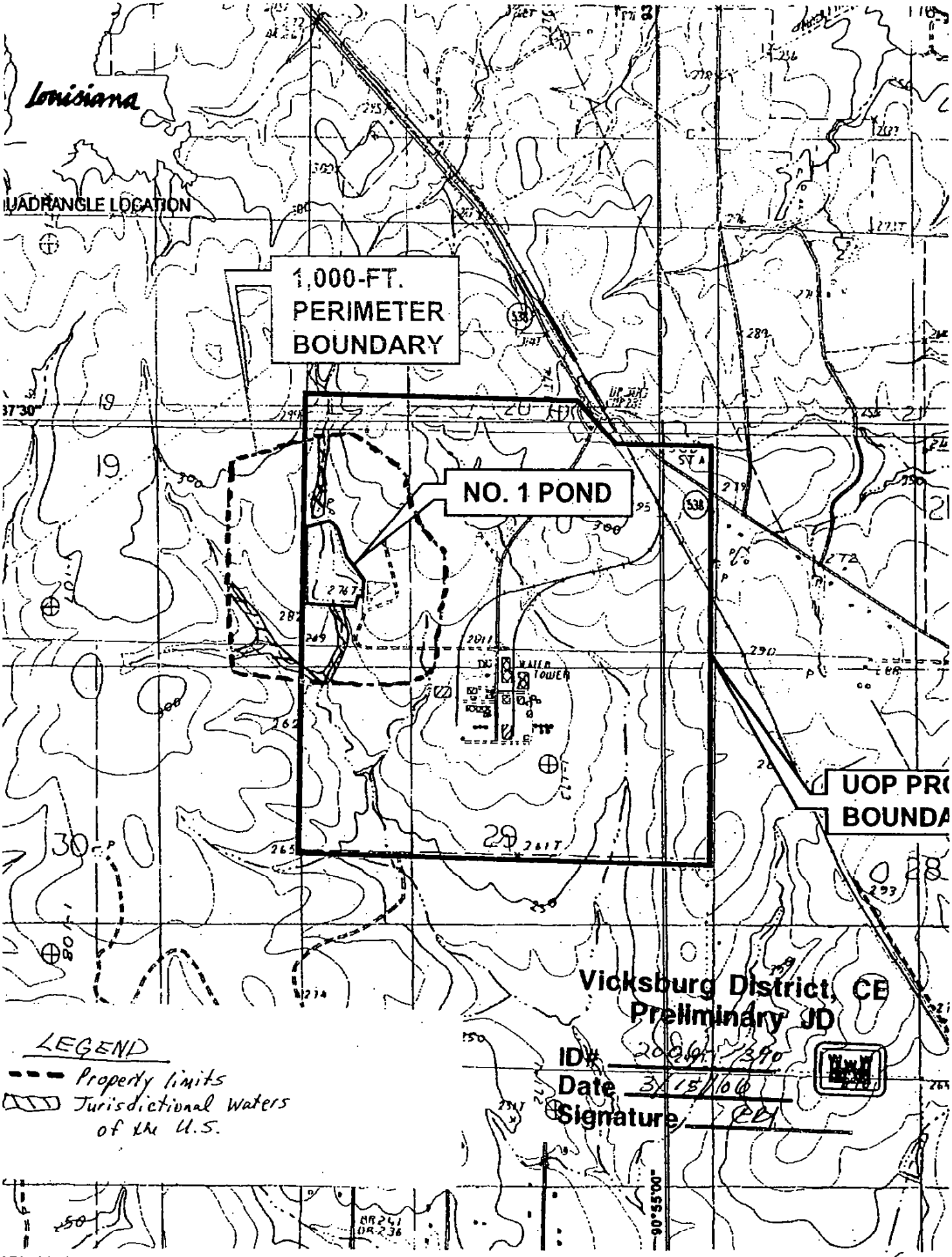
If you have any questions, please contact Mr. Charles R. Allred, Jr., telephone (601) 631-5546, fax (601) 631-5459 or e-mail address: regulatory@mvk02.usace.army.mil.

Sincerely,

for Charles R. Allred, Jr.

Kenneth P. Mosley
Chief, Enforcement Section
Regulatory Branch

Enclosures



OTO SOURCE: USGS QUADRANGLE, 7.5 SERIES, BLANCHARD & MOORINGSPORT, LOUISIANA, PHOTO DATE PRE 1998 DRG.

(Encl 1

SCALE: 1 INCH=2,000 FEET

Louisiana Department of Environmental Quality

PATRICIA L. NORTON
SECRETARY

OFFICE OF SOLID AND HAZARDOUS WASTE

JOHN KOURY
ASSISTANT SECRETA

October 11, 1985

Mr. Richard A. Llorens
Technical Assistant to Director of Mfg.
UOP Process Division (LAD057109449)
Post Office Box 21566
Shreveport, Louisiana 71120

Dear Mr. Llorens:

RE: Surface Impoundment Reclassification

This letter is to formally advise you that based on the test results submitted and on your certification letter dated April 3, 1985, this Division concurs that the subject impoundment is not a hazardous waste unit and therefore not subject to the State's Hazardous Waste Regulations.

The impoundment is subject to the State's Solid Waste Regulations however, and you should immediately advise the Solid Waste Division on the status of this unit.

Sincerely,

GLENN A. MILLER
Administrator

GAM:DJD:pgw

cc: George H. Cramer II
Joan L. Albritton
Jack Daggett
Tom Patterson
B. Delatte, SWD

APPENDIX B

LDOTD REGISTERED WATER WELLS

9/27/91 LOUISIANA DOTD - WATER WELL REGISTRATION SYSTEM PAGE 1

WELLR001 - REGISTERED WATER WELLS IN CADDO -- SORTED BY WELL NUMBER

WOODWARD-CLYDE CONSULTANTS FILE 918526C-2

WITHIN GIVEN COORDINATES: NORTH- 323837 SOUTH- 323623 EAST- 935324 WEST- 935730

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
323721093543201	MCCAIN, F W	- 32		WILCOX GROUP UNKNOWN	021	19N	15W	240	INDUSTRIAL	99	0141	Q
323726093534201	LEE, WANDA	-5304Z		AQUIFER CODE NOT ASSIGNED PRESLEY, ROGER	022	19N	15W	120	DOMESTIC	--	0285	D W
323726093533601	STREETMAN, C	-5318Z		AQUIFER CODE NOT ASSIGNED PRESLEY, ROGER	022	19N	15W	110	DOMESTIC	--	0684	D W
323724093533001	FITZGERALD, KEN	-5491Z		AQUIFER CODE NOT ASSIGNED ARK-LA-TEX	022	19N	15W	160	DOMESTIC	--	1085	D W
323747093534501	ERWIN, J L	-5564Z		AQUIFER CODE NOT ASSIGNED PRESLEY, ROGER	022	19N	15W	157	DOMESTIC	--	0384	D W
323821093540501	GRAVES, MARVIN	-5567Z		AQUIFER CODE NOT ASSIGNED CONTINENTAL	016	19N	15W	80	DOMESTIC	--	0181	D
323822093540701	COLE, DANNY	-5568Z		AQUIFER CODE NOT ASSIGNED CONTINENTAL	016	19N	15W	115	DOMESTIC	--	0983	D W
323704093554901	UOP INC	-5983Z	OW14	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	49	MONITOR	--	1087	D W
323704093554601	UOP INC	-5984Z	OW13	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	50	MONITOR	--	1087	D W
323708093553801	UOP, INC	-5985Z	MW11	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	50	MONITOR	--	1087	D W
323706093555101	UOP INC	-5986Z	O-1	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				35	MONITOR	PA	0687	D
323706093555102	UOP INC	-5987Z	O-1A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				20	MONITOR	PA	0687	D
323706093551003	UOP INC	-5988Z	O-2	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				35	MONITOR	PA	0687	D
323706093551004	UOP INC	-5989Z	O-2A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				21	MONITOR	PA	0687	D
323706093551005	UOP INC	-5990Z	O-3	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				40	MONITOR	PA	0687	D
323706093551006	UOP INC	-5991Z	O-3A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE				25	MONITOR	PA	0687	D
323646093535501	FROMM, ALBERT	-6141Z		AQUIFER CODE NOT ASSIGNED HARDIN	028	19N	15W	180	DOMESTIC	--	0588	D W

WELLRQ01 - REGISTERED WATER WELLS IN JDO -- SORTED BY WELL NUMBER

WOODWARD-CLYDE CONSULTANTS FILE 918526C-2

WITHIN GIVEN COORDINATES: NORTH- 323837 SOUTH- 323623 EAST- 935324 WEST- 935730

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
323720093545101	ROY, ROBERT	-6369Z		AQUIFER CODE NOT ASSIGNED PRESLEY, ROGER	021	19N	15W	175	DOMESTIC	--	0289	D W
323709093555301	UOP INC	-6384Z	MW6A	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	20	MONITOR	PA	0885	
323709093555001	UOP INC	-6385Z	MW7A	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	20	MONITOR	PA	0885	
323704093554801	UOP INC	-6386Z	RW-1	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	37	RECOVERY	--	0489	D W
323704093555001	UOP INC	-6387Z	RW-2	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	35	RECOVERY	--	0489	D W
323704093555201	UOP INC	-6388Z	RW-3	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	38	RECOVERY	--	0489	D W
323704093555401	UOP INC	-6389Z	RW-4	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	40	RECOVERY	--	0489	D W
323709093555401	UOP INC	-6611Z	MW-5	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	40	MONITOR	PA	0885	
323709093554801	UOP INC	-6612Z	MW-9	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	48	MONITOR	PA	0885	
323714093555601	UOP INC	-6613Z	MW11	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	40	MONITOR	PA	0586	
323714093554601	UOP INC	-6614Z	MW12	WILCOX GROUP WOODWARD-CLYDE	020	19N	15W	54	MONITOR	PA	0586	
323709093555402	UOP INC	-6615Z	MW5A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	40	MONITOR	--	0290	D W
323709093554802	UOP INC	-6616Z	MW9A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	54	MONITOR	--	0390	D W
323714093554602	UOP INC	-6617Z	W11A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	40	MONITOR	--	0290	D W
323714093554603	UOP INC	-6618Z	W12A	AQUIFER CODE NOT ASSIGNED WOODWARD-CLYDE	020	19N	15W	54	MONITOR	--	0290	D W
323720093545102	ROY, ROBERT	-6676Z		AQUIFER CODE NOT ASSIGNED UNKNOWN	021	19N	15W	110	PLUGGED	--		
323837093540101	ADAMS, CHARLES	-6754Z		AQUIFER CODE NOT ASSIGNED CONTINENTAL	016	19N	15W	130	DOMESTIC	--	0481	

NUMBER OF WELLS SELECTED IN PARISH = 34

LOUISIANA DEPARTMENT OF TR TATION AND DEVELOPMENT

BATON ROUGE

9/27/91 LOUISIANA DOTD - WATER WELL REGISTRATION SYSTEM PAGE 3

WELLRQ01 - REGISTERED WATER WELLS IN CADDO -- SORTED BY WELL NUMBER

WOODWARD-CLYDE CONSULTANTS FILE 91B526C-2

WITHIN GIVEN COORDINATES: NORTH- 323837 SOUTH- 323623 EAST- 935324 WEST- 935730

IDENTIFICATION NUMBER	OWNER'S NAME	WELL NUMBER	OWNR NO.	GEOLOGIC UNIT DRILLER	SECTION	TOWNSHIP	RANGE	WELL DEPTH	WELL USE	SUB USE	DATE COMPL	AVAILABLE INFO
323603093534101	HEARD, S. K.	- 36		60	DOMESTIC/RURA		--	0141		L		
32360709350130 1	LA PUBLIC WORKS	- 437			OTHER		PH	1966		ELD		
323810093530501	SPRINGLAKE MHP	- 552	1	170	PUBLIC SUPPLY		-C	0881	5000	L	C	R
323810093530701	SPRINGLAKE MHP	- 553	2	170	PUBLIC SUPPLY		-C	1981	5000	L	C	R
323813093530801	SPRINGLAKE MHP	- 554	5	138	PUBLIC SUPPLY		-C	0282	10000	L	C	R
323119093530802	MCCAIN, JAMES	-52232		190	OTHER		PA	0585				
323858093544201	GORE, WILLARD	-52082		130	DOMESTIC/RURA		--	0983	150	L		

APPENDIX C

BORING LOGS

LOG OF BORING PW-16

Client UOP
Project Name Solid Waste Permit
ocation Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/6/07 Ended 3/7/07
Logged By Chad Dupree

Ground Elevation (MSL) 279.6'
N 32°37'21.35" W 93°55'54.79"
Total Depth 50.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
		3/6/07						Grass, Organic Material at top Soft, reddish brown Silty CLAY, low plasticity, some roots, trace of subrounded gravel with ferrous concretions	
2		1605			48	CL		---medium plasticity, trace of gray mottling, moist ---gray, very silty, some yellow ferrous staining, moist	278
4									276
								Soft, gray Clayey SILT, some orange ferrous staining, moist	274
6								---with ferrous concretions	
8		1615			20	ML			272
10									270
								Stiff, gray and brown mottled Silty CLAY, low plasticity, some organic staining (10'-11'), moist	
12		1630		2.25	60			---some orange ferrous staining, trace of fine sand	268
14						CL			266
16								---brown, some gray mottling, trace of orange ferrous staining, moist	264
18		1645			60				262
									260

(continued)

URS Corporation
7389 Florida Boulevard, Suite 300
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Telephone: 225 922-5700
Fax: 225 922-5701

Remarks: Unified Soil Classification Based on Visual Observations.

Monitoring Well Completed (Y/N): Y

Report UOP_8153_Project PROJECTS:G:\NV\PROJECTS\19228153_UOP SPJ_PW-6 Data *.emplate LOG A EWMA05.GDT Printed 4/23/07

LOG OF BORING PW-16

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/6/07 **Ended** 3/7/07
Logged By Chad Dupree

Ground Elevation (MSL) 279.6'
N 32°37'21.35" **W** 93°55'54.79"
Total Depth 50.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
						CL		Medium stiff, gray Silty CLAY, low plasticity, moist	
								---lignite lenses (~1")	
22								Alternating layers of Silty CLAY/SILT (tan), trace of fine sand, moist	258
		1705			40				
						CL/ML			256
24									
		3/7/07						Medium dense, gray Silty SAND, fine-grained, some clay lenses, moist to wet	
						SM			254
26								Stiff, gray Silty CLAY, low plasticity, trace of fine sand, some laminations, moist	
		0900		2.75	60				252
28									
									250
30								---very stiff, moist	
						CL			248
32		0925		3.0	36				
									246
34									
36								---hard, some silt stringers, moist, some laminations	244
								Dense, gray Clayey SILT, some fine sand, moist	
		0940		4.0	38				242
38						ML			
									240

(continued)

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LOG OF BORING PW-16

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

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Total Depth 50.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Hard, gray Silty CLAY, low plasticity, with gray silt laminations, moist	
42		1020		4.0	50				238
44								---some fine sand	236
						CL		---silty sand lenses (~3"), wet	
46		1045		2.25	30			---silt content increasing, laminated, trace of fine sand, moist	234
48								---same laminated silty clay	232
					30				
50								Total depth of boring at 50' bgs. Set well screen (2" diameter) (46'-36'). Riser to ~3' above grade.	230
52									228
54									226
56									224
58									222
									220

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LOG OF BORING B-17

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/6/07 Ended 3/6/07
Logged By Chad Dupree

Ground Elevation (MSL) 284.8'
N 32°37'19.03" W 93°55'56.24"
Total Depth 45.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Gravel at top with grass	
		1000			20			Medium stiff, reddish brown Silty CLAY, low plasticity, some gravel, dry (FILL)	284
2									
		1005			18				282
4								---some tan mottling, some red ferrous staining and concretions, trace of sand seams, dry (FILL)	
						CL			280
6				2.25					
								---stiff, gray silty clay, low plasticity, some orange ferrous staining, trace of silt lenses, dry	278
		1010			54				
8									
				2.75					276
10									
								Medium dense, tan Sandy SILT, trace of gray streaking, trace of orange ferrous staining, moist	274
						ML			
12									
		1020		3.0	50			Stiff, gray Silty CLAY, low plasticity, some gray silt seams, moist	272
14									
									270
16				2.25		CL		---gray and brown mottled, trace of silt seams, trace of blocky texture, moist	
									268
		1030			56				
18									
				3.75					266

(continued)

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Remarks: Unified Soil Classification Based on Visual Observations.

Monitoring Well Completed (Y/N): N

LOG OF BORING B-17

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/6/07 Ended 3/6/07
Logged By Chad Dupree

Ground Elevation (MSL) 284.8'
N 32°37'19.03" W 93°55'56.24"
Total Depth 45.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Stiff, gray Silty CLAY, low plasticity, some gray silt seams, moist *(continued)*	
				4.0				—trace of caliche nodule	264
22		1100			60	CL		---peat seam	262
24				1.75					
						ML		Medium dense, gray SILT, trace of fine sand, moist	260
26									
						CL		Medium stiff, tan with gray mottling Silty CLAY, low plasticity, moist	258
		1300		2.0	48			---silt lenses (~2"), moist	
28								---silt lenses (~2"), moist	
						SM		Medium dense, gray Silty SAND, fine-grained, moist	256
30								---clay lenses (~1"), stiff	254
32		1320			60	SM/CL		Interbedded layers of fine Silty SAND and dark gray CLAY and SILT, some orange ferrous staining, moist	252
34								---clay content increasing downward ---laminated silts and clays	250
36								Medium stiff, dark gray Silty CLAY, low plasticity, laminated with silt partings, moist	248
38		1335		2.0	40	CL			246

(continued)

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LOG OF BORING B-17

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/6/07 Ended 3/6/07
Logged By Chad Dupree

Ground Elevation (MSL) 284.8'
N 32°37'19.03" W 93°55'56.24"
Total Depth 45.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								--same laminated clay, hard, moist	
									244
42		1350		4.0	50				
									242
44									
									240
								Total depth of boring at 45' bgs.	
46									
									238
48									
									236
50									
									234
52									
									232
54									
									230
56									
									228
58									
									226

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Remarks: Unified Soil Classification Based on Visual Observations.

LOG OF BORING B-18

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/8/07 Ended 3/8/07
Logged By Chad Dupree

Ground Elevation (MSL) 282.8'
N 32°37'20.07" W 93°55'50.76"
Total Depth 100.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								NO RECOVERY	282
2		0900			NR				280
4									278
6						MH		Medium dense, gray, Clayey SILT, some tan mottling, dry	276
8				2.25	60				274
10						CL		Stiff, gray Silty CLAY, low plasticity, some orange ferrous staining, dry	272
								---trace of sand lenses	
12				3.5	48	ML		Dense, tan SILT with trace of fine sand, trace of clay lenses, moist	270
14									268
16								Medium stiff, dark gray and tan mottled Silty CLAY, low plasticity, laminated, moist	266
18		0930		1.75	60	CL			264

(continued)

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Remarks: Unified Soil Classification Based on Visual Observations.

Monitoring Well Completed (Y/N): N

LOG OF BORING B-18

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

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Driller Name Dean Letchworth
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Logged By Chad Dupree

Ground Elevation (MSL) 282.8'
N 32°37'20.07" W 93°55'50.76"
Total Depth 100.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Very stiff, dark gray Silty CLAY, low plasticity, laminated, moist	
22		0940		3.75	52	CL			262
24									260
26									258
								Dense, gray Clayey SILT with trace of fine sand, trace of organic staining, moist	256
28		0955			36	ML			254
30								Hard, gray Silty CLAY, low plasticity, laminated, some fine sand, some black organic staining, moist	252
32		1010		>4.5	42	CL		---becoming siltier towards bottom	250
34									248
36								Dense, gray Clayey SILT with trace of clay lenses, trace of black organic staining, moist	246
38		1055			38	ML			244

(continued)

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LOG OF BORING B-18

Client UOP
Project Name Solid Waste Permit
Location Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
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Logged By Chad Dupree

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N 32°37'20.07" W 93°55'50.76"
Total Depth 100.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Very stiff, gray Silty CLAY, low plasticity, laminated, some fine sand, moist	242
42					50				240
44									238
46								—trace of sand lenses (~1")	236
48		1125		4.0	48	CL			234
50								—same laminated silty clay, moist	232
		1135			24				230
52									228
54								Dense, gray Silty SAND, fine-grained, trace of organic material, wet	226
56		1150			10				224
58						SM			

(continued)

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LOG OF BORING B-18

Client UOP
Project Name Solid Waste Permit
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N 32°37'20.07" W 93°55'50.76"
Total Depth 100.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								Dense, gray Silty SAND, fine-grained, some clay lenses, wet	
		1210			20				222
62						SM			
									220
64									
									218
								Stiff, dark gray Silty CLAY, low plasticity, laminated, moist	
66		1230		2.75	18			---trace of silt stone	
									216
68									
									214
70								---same laminated silty clay, dark gray, moist	
		1300		3.25	24				212
72						CL			
									210
74									
									208
								---same laminated clay	
								---sand lenses (~2"), gray, wet	
76		1325			14				
									206
78									
									204

(continued)

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Remarks: Unified Soil Classification Based on Visual Observations.

Report: UOP_8153_ Project: OBJECTS:C:\TWPROJECTS\19228153_UOP GP - B 18 Data Template LOG A EXAMPLE.GDT Printed 4/23/07

LOG OF BORING B-18

Client UOP
Project Name Solid Waste Permit
cation Shreveport, Louisiana
Number 19228153.00001

Drill Contractor Walker-Hill Environmental, Inc.
Driller Name Dean Letchworth
Drilling Started 3/8/07 Ended 3/8/07
Logged By Chad Dupree

Ground Elevation (MSL) 282.8'
N 32°37'20.07" W 93°55'50.76"
Total Depth 100.0'

DEPTH FEET	SAMPLE NO.	TIME	OVM (ppm)	PPN (ts/f)	RECOVERY (inch)	USCS	LITHOLOGY	DESCRIPTION	ELEVATION FEET
								---same laminated silty clay, dark gray, trace of fine sand, moist	
		1405			8				202
82									
									200
84									
						CL		---dark gray, some light gray banding, moist	198
86		1435			12				
									196
88									
									194
90								Dense, dark gray Clayey SILT, laminated, moist	
		1500			10				192
92						ML			
									190
94									
									188
								Stiff, dark gray Silty CLAY, low plasticity, laminated, trace of fine sand lenses, moist	
96		1550		2.25	18				
									186
						CL			
98									
									184

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Remarks: Unified Soil Classification Based on Visual Observations.

BORING DM-1 (MW-1)

SURFACE ELEVATION 279.3'

COORDINATES

OTHER TESTS	STRENGTH TEST RESULTS			% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			SAMPLING	
	TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)				LL (%)	PL (%)	PI (%)	BLOW COUNT	SAMPLE TYPE

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS

DESCRIPTION

- NO SAMPLE FIRST 3 FEET
- CL — MOTTLED TAN AND GRAY SILTY CLAY WITH TRACE FINE SAND (STIFF)
- CH — MOTTLED LIGHT BROWN, TAN, GRAY CLAY WITH TRACE VERY FINE SAND (VERY STIFF)
- GRADES WITH THIN LENSES OF SILTY FINE SAND
- CL — MOTTLED LIGHT BROWN AND GRAY SILTY CLAY WITH TRACE FINE SAND
- GRADES WITH OCCASIONAL LENSES OF YELLOW-WHITE FINE SAND
- CH — GRAY CLAY WITH TRACE VERY FINE SAND (VERY STIFF)
- GRADES HARD
- GRADES WITH OCCASIONAL SILTY FINE SAND LENSES
- ML — DARK GRAY CLAYEY SILT WITH TRACE VERY FINE SAND (VARVED) (DENSE TO VERY DENSE)
- SC — MOTTLED GRAY AND TAN COARSE TO FINE SAND WITH TRACE FINE GRAVEL (DENSE)
- BORING TERMINATED AT A DEPTH OF 50 FEET ON 1/23/80

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ☒ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:

SUBSURFACE CONDITIONS LOGGED BY DRILL CUTTINGS AND STRATIGRAPHIC CORRELATION OF ADJACENT BORINGS AND ARE DESCRIBED IN ACCORDANCE WITH THE U.S.C.S. PLATE A-5.

(REF. DAMES & MOORE REPORT 1980)

LOG OF BORING

FIGURE 8

BORING DM-2 (MW-2)

SURFACE ELEVATION 287.4'

COORDINATES

OTHER TESTS	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING	SYMBOLS	DESCRIPTION
										P	U	0	■	CL	MOTTLED YELLOW-BROWN AND REDDISH-BROWN SILTY CLAY WITH TRACE FINE SAND AND OCCASIONAL ROUNDED GRAVEL (MEDIUM STIFF)
										P	U		■		MOTTLED GRAY AND RED-BROWN PLASTIC CLAY WITH TRACE FINE SAND AND OCCASIONAL FERRUGINOUS NODULES (VERY STIFF)
										P	U	5	■	CH	GRADES WITH TAN MOTTLING (HARD)
PERM 2.0×10^{-8} cm/sec							59	19	39	P	U	10	■		TAN SILTY CLAY VARVED WITH YELLOW SILTY VERY FINE SAND WITH TRACE BLACK ORGANIC
										P	U	15	■	CL	GRADES WITH INCREASING FINE SAND CONTENT
										P	U	20	■		MOTTLED GRAY AND TAN FAT CLAY WITH VERTICAL CRACKS AND ALTERNATING BANDS OF TAN AND GRAY COLOR WITH OCCASIONAL THIN FINE SAND STRINGERS
PERM 1.9×10^{-8} cm/sec							41	20	21	P	U	25	■	CH/CL	
										P	U	30	■	SM	YELLOWISH-BROWN SILTY FINE SAND (DENSE)
										P	U	35	■	ML/CL	GRAY CLAYEY SILT WITH LITTLE FINE SAND (DENSE)
										P	U	40	■		GRADES WITH GRAY CLAYEY LENSE (BANDED)
												45			BORING TERMINATED AT A DEPTH OF 40 FEET ON 1/24/80
												50			
												55			
												60			
												65			
												70			

2

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊗ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:

THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM PLATE A-5.

(REF. DAMES & MOORE REPORT 1980)

LOG OF BORING

FIGURE 9

BORING DM-3(OW-3)

SURFACE ELEVATION 268.8'

COORDINATES

OTHER TESTS	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE	DEPTH IN FEET	SAMPLING	SYMBOLS	DESCRIPTION
							34	15	19	P	U	0	■	CH/CL	YELLOW-BROWN SILTY CLAY WITH FINE SAND (STIFF)
										P	U	5	■	CH	MOTTLED TAN AND GRAY SILTY CLAY WITH TRACE FINE SAND AND OCCASIONAL ROUNDED SMALL GRAVEL (STIFF)
										P	U	10	■	CL	MOTTLED TAN AND GRAY SILTY CLAY WITH TRACE FINE SAND AND ORGANICS (ROOTS). SLICKENSIDES
										P	U	15	■		GRADES WITH FINE SAND VARVES
												20		SM	GRAY SILTY FINE SAND SEAM (DENSE)
										70	SPT	25	■	CL	DARK GRAY AND BROWN SILTY CLAY WITH FINE SAND VARVES AND SAND SEAMS (STIFF TO DENSE)
PERM 5.0×10^{-8} cm/sec										P	U	30	■		
										P	U	35	■		
												40			BORING TERMINATED AT A DEPTH OF 40 FEET ON 1/24/80
												45			
												50			
												55			
												60			
												65			
												70			

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:

THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM. PLATE A-5.

(REF. DAMES & MOORE REPORT 1980)

LOG OF BORING

FIGURE 10

BORING DM-4 (PW-4)

SURFACE ELEVATION 276.1'

COORDINATES

OTHER TESTS	STRENGTH TEST RESULTS: TYPE OF TEST	CONFINING PRESSURE (psf)	PEAK SHEAR STRENGTH (psf)	% PASSING NO 200 SIEVE	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LL (%)	PL (%)	PI (%)	SAMPLING: BLOW COUNT	SAMPLE TYPE
PERM										P	U
										P	U
PERM 2.9×10^{-8} cm/sec							47	19	28	P	U
										P	U
										P	U
										P	U
PERM 9.0×10^{-8} cm/sec										P	U

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70

SAMPLING

SYMBOLS	DESCRIPTION
ML	TAN CLAYEY SILT, TRACE FINE SAND
CH	GREENISH-GRAY CLAY
CL/CH	MOTTLED TAN AND GRAY SILTY CLAY, TRACE FINE SAND, TRACE DARK BROWN STAINING (STIFF)
	GRADING TO LIGHT BROWN-TAN-GRAY, MOTTLED, TRACE FINE SAND-SIZED MICA (VERY STIFF)
	GRADING WITH VERTICAL CRACKS AND ALTERNATING VERTICAL BANDS OF TAN AND GRAY COLOR, WITHOUT TRACE SAND
	GRADING WITHOUT CRACKS AND COLORED BANDING
	GRADING LIGHT BROWN-TAN-GRAY, MOTTLED WITH TRACE FINE SAND
	GRADING GRAY-TAN, MOTTLED, WITH OCCASIONAL LENSES OF YELLOW-WHITE FINE SAND
ML	DARK GRAY CLAYEY SILT, TRACE FINE SAND
SM	GRAY-TAN MOTTLED COARSE TO FINE SAND, TRACE FINE GRAVEL

BORING TERMINATED AT A DEPTH OF 43 FEET ON 1/25/80

KEY

- ■ INDICATES UNDISTURBED SAMPLE
- ⊠ INDICATES DISTURBED SAMPLE
- □ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ◪ INDICATES STANDARD PENETRATION TEST SAMPLE
- P - IN BLOW COUNT COLUMN INDICATES SAMPLER HYDRAULICALLY PUSHED

SAMPLE TYPE

- U - DAMES & MOORE "U" BIT
- T - DAMES & MOORE THIN-WALL
- P - DAMES & MOORE PISTON
- S - STANDARD SPLIT-SPOON

NOTE:

THE SOIL CONDITIONS ARE DESCRIBED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM, PLATE A-5.

LOG OF BORING

DAMES & MOORE

LOG OF BORING

PROJECT UOP, INC. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-5 (MW-5)
FILE 85C5337
DATE 8/4,-5/85
TECHNICIAN CBD
APPROVED TWP
PAGE 1 of 1

DRY AUGERED 0' to 16' WASH BORED 16' to Bottom

Water entered the borehole at 15.5' during dry augering

Ground Surface Elev.=271.5'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Mottled red, gray and tan Silty CLAYS with iron nodules (CL) ---with silt streaks
5								Gray and light gray CLAYS with iron streaks (CH)
10, 15								Gray and orange Silty CLAYS with organics (CL) ---laminated layers ---becoming tan, light brown and gray ---silt seams with organics ---laminated layers
20, 25								Light gray and tan laminated layers of Silty CLAYS and SANDS seams (CL/CL) ---2" sand seam (wet) ---6" light gray SANDS (wet)
30								Light gray and dark gray laminated layers of Silty CLAYS and CLAYS with sand streaks (CH/SP)
35								Alternating layers dark gray CLAYS and white SANDS with iron streaks (CH/SP)
40								Dark gray Silty SANDS with silty clay seams (SM)

Bottom of boring at 40'

Note: Monitor well MW-5 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-6(MW-6)
FILE 85C5337
DATE 8/2,-3/85
TECHNICIAN CBD
APPROVED TDA
PAGE 1 of 2

DRY AUGERED 0' to 14' WASH BORED 14' to Bottom

Water entered the borehole at 14' during dry augering

Ground Surface Elev.= 271.2'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PER. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and orange SILTS with root hairs (MH)
								---becoming tan
5	X							Red, orange and tan Silty CLAYS and tan Sandy SILTS with iron nodules (CL/ML)
10								Tan and light gray CLAYS (fractured) with iron nodules (CL/ML)
15								---alternating layers of silty sands and clays
20								
25								---alternating layers gray and white fine sands and clays
								White medium SANDS with clay lenses and silty SANDS (SP/SM)
30								---laminated layers silty sands and clays
35								---alternating layers sands and silty sands with trace of clay
40								Dark gray and gray Silty SANDS (SM)

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-6 (MW-6)
FILE 85C5337
DATE 8/2,-3/85
TECHNICIAN CBD
APPROVED TMH
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Alternating layers of dark gray CLAYS and gray Sandy SILTS (CL/ML)
45								---with more silt
50								Dark gray SILTS with trace clay (ML)
55								Bottom of boring at 52'

Note:
(1) Hole grouted full depth on completion
(2) Offset 10 feet and drilled new hole for monitor well MW-6

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-6A(MW-6A)
FILE 85C5337
DATE 8-3-85
TECHNICIAN CBD
APPROVED TDA
PAGE 1 of 1

WASH BORED 0' to 20'

Ground Surface Elev.=271.2'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PEN. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
5								
10								Washed to 14'
15								Tan and gray alternating layers of SANDS and CLAYS with iron streaks (SP/CL) ---with sand seam, becoming laminated gray SILTS and CLAYS
20								Bottom of boring at 20'

Note: Monitor well MW-6A set in borehole upon completion

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-7(MW-7)
FILE 85C5336
DATE 8-5-85
TECHNICIAN CBD
APPROVED TWH
PAGE 1 of 2

DRY AUGERED 0' to 16' WASH BORED 16' to 42'

Water entered the borehole at 16' during dry augering

Ground Surface Elev.=272.1'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Orange and tan CLAYS (CH)
								---becoming light gray with iron streaks
5								
								Tan SILTS with clay pockets (ML)
								---becoming silty clay
10								Tan and gray CLAYS with silt and iron streaks (CH)
15								Light gray Silty CLAYS with thin organic layers and iron streaks (CL/PT)
								---with 2" sand seam (SP)
								---laminated layers
20								---becoming silty sand
								Dark gray and light gray laminated layers of Silty CLAYS and CLAY (CL/CH)
25								Gray laminated layers of SILTS (ML)
								---with trace of clay
30								
								---with thin white sand seam (SP)
35								
								---with thin sand seam (SP)
40								Gray laminated layers of Silty CLAYS (CL)

LOG OF BORING

PROJECT UOP Inc. Monitor Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-7 (MW-7)
FILE 85C5336
DATE 8-5-85
TECHNICIAN CBD
APPROVED TDA
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Gray laminated layers of SILTS and Silty CLAYS with trace of sand (ML/CL)
								Bottom of boring at 42'

Note: Monitor well MW-7 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-7A (MW-7A)
FILE 85C5337
DATE 8-10-85
TECHNICIAN CBD
APPROVED TWH
PAGE 1 of 1

WASH BORED 0' to 20'

Ground Surface Elev.=272.49'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
5								
10								
15								Washed to 16'
								Alternating layers tan and gray Silty CLAYS and Silty SANDS (CL/SM)
								---with more silty clay
20								Bottom of boring at 20'

Note: Monitor well MW-7A set in borehole upon completion

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-8 (MW-8)
FILE 85C5336
DATE 8-6-85
TECHNICIAN CBD
APPROVED TJA
PAGE 1 of 2

DRY AUGERED 0' to 20' WASH BORED 20' to 46'

Water entered the borehole at 20' during dry augering

Ground Surface Elev.=275.91

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LL (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and tan CLAYS with roots (CH)
5								Red and tan Silty CLAYS (CL) ---becoming gray and tan with iron streaks ---with trace organics
10								---becoming more silty
15								---with slickensides and iron streaks
20								Gray CLAYS with 2" peat layer (CH/PT)
25								Tan and gray laminated layers of Silty CLAYS and Sandy SILTS with iron streaks (CL/ML) ---with silt seams
30 35								Dark gray and gray laminated layers of SILTS and Silty CLAYS (ML/CL)
								Light gray Silty SANDS with trace of Silty CLAYS (SM/CL)
40								Alternating layers of white SANDS and Silty CLAYS (SP/CL)

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-8(MW-8)
FILE 85C5336
DATE 8-6-85
TECHNICIAN CBD
APPROVED THH
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PCT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Alternating layers of white SANDS and Silty CLAYS (SP/CL)
								Dark gray laminated layers of Silty CLAYS (CL)
45								---with more silts
								Bottom of boring at 46'
50								

Note: Monitor well MW-8 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-9 (MW-9)
FILE 85C5336
DATE 8-7-85
TECHNICIAN CBD
APPROVED [illegible]
PAGE 1 of 1

DRY AUGERED 0' to 24' WASH BORED 24' to Bottom

Water entered the borehole at 23' during dry augering

Ground Surface Elev.=278.5'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PNT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and orange Silty CLAYS (CL)
								Mottled red and tan CLAYS with iron nodules (CH)
5								Tan and light gray Silty CLAYS with organics, fractured (CL)
								---with more silt
								---with silty sand seam
10								---with more silts
								---with 3" silty sand seam at bottom
15								Gray and tan laminated layers of Silty CLAYS and CLAYS (CL/CH)
								---with trace organics
20								Gray CLAYS with iron streaks, slickensided (CH)
								---with silty sand seam and trace organics
25								Bottom of boring at 24' Grouted full depth Offset 5 feet and drilled new hole for monitor well MW-9

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-9A(MW-9)
FILE 85C5336
DATE 8-8-85
TECHNICIAN CRD
APPROVED
PAGE 1 of 1

WASH BORED 0' to Bottom

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
20								Washed to 24'
25								Alternating layers of gray and tan Silty SANDS and Silty CLAYS with iron streaks (SM/CL)
30								Gray and tan laminated layers of Silty CLAYS and SILTS (CL/ML) ---with 3" white sand seam ---with silt seams
35								---becoming dark gray and gray ---with silt seams
40								
45								White and light gray fine SANDS (SP)
50								Dark gray CLAYS with silt streaks (CL) ---becoming laminated silty clays Bottom of boring at 48'

Note: Monitor well MW-9 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-10 (MW-10)
FILE 85C5336
DATE 8-9-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 26' WASH BORED 26' to Bottom

Water entered borehole at 25' during dry augering

Ground Surface Elev.=284.8'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and orange Silty CLAYS with iron nodules (CL)
5								Red and tan CLAYS with silty clay streaks ---with iron streaks (CH/CL)
10								Tan and gray Silty CLAYS with iron streaks and fractures (CL) ---becoming light brown with slickensides
15								Alternating layers tan and gray Sandy SILTS and Silty CLAYS with thin layers of peat at top (ML/CL) ---becoming more silty clay
								Gray and light brown laminated layers of Silty CLAYS (CL)
20								Light gray and gray CLAYS with trace organics and iron streaks (CH/OH) ---with slickensides ---with 3" seam of lignite at 23'
25								Gray Silty SANDS (SM) ---becoming alternating layers of SILTS and and Silty CLAYS
30								Dark gray laminated layers of Silty CLAYS (CL)
35								---with more silts
40								---with trace of sands and organics

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-10 (MW-10)
FILE 85C5336
DATE 8-9-85
TECHNICIAN CBD
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PNT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Dark gray SILTS and Silty CLAYS (ML/CL)
45								Light gray and gray Silty SANDS (SM/SP)
								---becoming sands
50								---becoming silty clays with trace sands
								Bottom of boring at 52'
55								

Note: Monitor well MW-10 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc.

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-11 (PW-11)
FILE 86C5002-2
DATE 5/1/86
TECHNICIAN RAS
APPROVED CWR
PAGE 1 of 1

DRY AUGERED 0 to 14' WASH BORED 14' to 39'

Water was initially encountered at 12 feet. The water level rose to 10 feet after a 15 minute observation period.

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PET. PER. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		1.0						Stiff gray and tan Silty CLAYS with sand and silt seams and iron nodules FILL (CL/CH)
		1.0						
5		1.5						
		2.0		21		57	37	Very stiff gray and tan Silty CLAYS with silt seams and iron nodules (CL/CH)
		2.5						
10		3.0		36	(1)	49	22	
		3.0						
15		3.0						
		3.5		29	(2)	65	40	
		4.5						--with sand seams
20		4.5						Alternating layers of firm gray Sandy SILTS and Silty CLAYS (CL/ML)
		4.5		27		47	23	
25		4.5						--becomes clayey silts and silty clays
		4.5						Very stiff gray Silty CLAYS with silt pockets and seams (CL)
		4.5						
30		4.5						Very stiff dark gray slickensided CLAYS with silt pockets and iron nodules (CL)
				24	(3)			Firm dark gray Silty SANDS with clay seams (SM)
35	X	PSPT						Alternating seams of very stiff gray Silty CLAYS and dense gray SILTS (CL/ML)
		4.5						
40								Bottom of Boring at 39'

(1) $k_{20^oC} = 2.2 \times 10^{-8}$ cm/sec

(2) $k_{20^oC} = 8.6 \times 10^{-9}$ cm/sec

(3) See grain size distribution graph.

Piezometer P-11 installed in Borehole

PSPT - No recovery with Shelby Tube, pushed split spoon sampler.

Unified soil classifications based on limited laboratory test data and visual observations.

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP, Inc.

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-12 (MW-12)
FILE 86C5002-2
DATE 5/2/86
TECHNICIAN RAS
APPROVED CWR
PAGE 1 of 2

DRY AUGERED 0 to 12' WASH BORED 12' to 54'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		1.5	-					Soft to very stiff gray and tan Silty CLAYS with roots and iron nodules (CL)
		1.0						
5		3.5						
		3.0		24		43	23	--with silt seams
		3.0		26		43	21	Very stiff alternating seams of gray and tan Silty CLAYS and SILTS with silt laminations and iron nodules (CL)
10		3.0						Very stiff gray and tan Silty CLAYS with silt seams and pockets and iron nodules (CH)
		3.0		25		54	31	
15		3.5						
		3.0						
		4.5		26	(1)	69	42	
20		4.0						Alternating layers of firm to dense gray Sandy SILTS and very stiff CLAYS (ML/CL)
25		N.R.						--with 18" of lignite
30		3.0						Alternating seams of very stiff dark gray Silty CLAYS and SILTS (CH/ML)
		4.5		25		61	43	
35		4.5						
		4.5						
		4.5						
40								

Continued

N.R. = No Recovery

LOG OF BORING

PROJECT UOP, Inc.

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-12 (MW-12)
FILE 86C5002-2
DATE 5/2/86
TECHNICIAN RAS
APPROVED CWR
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40		4.5						
		4.5						Alternating seams of dense gray Sandy SILTS and very stiff gray CLAYS (ML/CH)
45		PSPT						
		PSPT		26	(2)			Firm to dense gray Sandy SILTS with clay seams (ML)
		PSPT						--becoming more sandy
50		PSPT						--with gray sand traces
								Bottom of Boring at 54' Piezometer P-12 install in Borehole

(1) $k_{20^oC} = 6.2 \times 10^{-9}$ cm/sec

(2) See grain size distribution graph.

Unified soil classifications based on limited laboratory test data and visual observations.

PSPT = No recovery with Shelby Tube, pushed split spoon sampler

LOG OF BORING

PROJECT Well Installation and Plugging of Observation Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-3 (MW-13)
FILE 87B166C-C
DATE 10/15/87
TECHNICIAN RWS
APPROVED
PAGE 1 of 2

EL. 287.2

DRY AUGERED 0' to 2'
WASH BORED 2' to Bottom

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Road base
								Tan and light gray Silty CLAYS (1)
5								---becoming more silty
								Tan and light gray Sandy CLAYS with alternating layers of clays and silt clays
10								---becoming more clayey
								Alternating layers of light gray CLAYS, Sandy CLAYS and Silty CLAYS
								---becoming more laminated and more silty (2)
15								---with more clay laminations at 15'
20								---becoming dark gray and black with organic clays at 19.5'
								Gray CLAYS laminated with light gray silts and sands thin layers and seams
25								---with silt and sand pockets
30								---becoming gray clays with silt pockets from 30' to 32'
35								Light gray SANDS laminated with gray clay seams (moist)
40								Light gray SANDS

CONTINUED

(1) The material appeared to be fill.
(2) Laminated layers appeared to be 1/8" to ¼" thick.
(3) Laminated layers appeared to be 1/8" to ¼" thick.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT Well Installation and Plugging of Observation Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-3 (MW-13)
FILE 87B166C-C
DATE 10/15/87
TECHNICIAN RWS
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PEN. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Light gray SANDS with organic matter
45								Light gray Silty SANDS laminated with clay seams
50								Gray CLAYS laminated with silt and sand seams
								Bottom of boring at 50' Note: Monitor well No. MW-11 was set in this boring.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT Well Installation and Plugging of Observation Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-1 (OW-14)
FILE 87B166C-C
DATE 10/14/87
TECHNICIAN RWS
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 2'
WASH BORED 2' to Bottom

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Tan, brown and light gray Silty CLAYS to Clayey SILTS (dry)
								Brown and tan Sandy CLAYS with some silt and iron and manganese nodules (dry)
5								Tan and light gray Silty CLAYS with a trace of gravel ---with ferrous nodules
10								Gray CLAYS laminated with thin layers of sands, silts, and silty clays and gravel and wood (at 10') (1)
15								---becoming sandy at 17.5'
20								---becoming moist with a 4" layer of sand at 18.5' ---with silt and sand laminations at 21' (2)
								Gray and light gray thin laminated layers of CLAYS and SILTS
25								Gray and light gray laminated layers of SANDS and CLAYS ---with more clay
30								---with more sand ---becoming intermixed and with a trace of organic matter ---becoming laminated
35								---with more sand
40								---with 6" of wet sand at 40'

CONTINUED

(1) Laminated layers appeared to be 1/8" to ¼" thick.
(2) Laminated layers appeared to be 1/16" to ¼" thick.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT: Well Installation and Plugging of Observation Wells
LOCATION: Blanchard, Louisiana
CLIENT: UOP, Inc.

BORING: B-1 (OW-14)
FILE: 87B166C-C
DATE: 10/14/87
TECHNICIAN: RWS
APPROVED:
PAGE: 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B.F.T) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Gray and light gray laminated layers of sands and clays
								---with more silt to 48'
45								---with more clay from 44' to 46'
								Gray and light gray Sandy CLAYS (dry)
50								Bottom of boring at 50'
								Note: Monitor well No. OW-1 was set in this boring.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT Well Installation and Plugging of Observation Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-2 (OW-15)
FILE 87B166C-C
DATE 10/14-10/15/87
TECHNICIAN RWS
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 2' WASH BORED 2' to Bottom

DEPTH (FEET)	SAMPLE	S.P.T. (B-FT) OR PEN. PER (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Gravel, sand and clay mixture (Road base) followed by tan and brown Silty CLAYS -
5								Reddish brown, tan and light gray CLAYS
10								Tan and light gray SANDS with gray and light gray clay layers
15								Laminated layers of tan and gray CLAYS and light gray SILTS and SANDS
								Tan and gray CLAYS
20								Gray CLAYS with laminated layers of light gray SILTS and SANDS
								---with 8" of wet sand at 22'
25								---with 4" of wet sand at 26'
30		(1)						
35								Gray and light gray CLAYS with thin layers of sand (3)
								---becoming sandy clays from 36' to 38'
40								---with silt from 38' to 40'

CONTINUED

(1) Damaged Shelby tube during pushing. Sample could not be extruded.
(2) Silt and sand laminations appeared to be 1/8" to ¼" thick.
(3) Layers appeared to be ½" to 1" thick.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT Well Installation and Plugging of Observation Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-2 (OW-15)
FILE 87B166C-C
DATE 10/14-10/15/87
TECHNICIAN RWS
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B-FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40		(1)						Light gray SANDS with laminated layers of gray clays and a trace of organic matter
45								---with some silt from 44' to 46'
50								Bottom of boring at 50' Note: Monitor well No. OW-2 was set in this boring.

(1) Pushed sample from 40' to 42' but could not recover the Shelby tube sampler. Then moved 5' to the east, redrilled to 40' and completed the boring to 50'. The original borehole was grouted full depth.

Unified Soil Classifications based on limited laboratory test data and visual observations.

LOG OF BORING

PROJECT: Number 1 Pond Chloride Migration Study
LOCATION: UOP - Shreveport, Louisiana
CLIENT: UOP - Shreveport, Louisiana

BORING: HP-16
FILE: 91B402C
DATE: 10/14/91
TECHNICIAN: WWPII
APPROVED: HDL
PAGE: 1 of 2

Dry Augered: 0'- 28' Wash Bored: 28'- 56'

Free water was encountered at a depth of 20' during dry augering. The water level fell to a depth of 27.7' after an observation period of 5 minutes.

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen (tsf)	OVA (ppm)	Recover (inch)				Description of Stratum	
0		4.5+		11				Hard light gray SILTS with roots and ferrous nodules	(ML)
		4.5+		10				—with 4" hard tan Clay with calcareous nodules to hard slightly clayey Silt with ferrous nodules at 2'	
5		4.25		21				—with ferrous streaks and fine sandy silt lenses, damp, 4'-6'	
		4.50		20				—with clay layers, 6'- 8'	
		4.5+		21				—becoming very silty clay at 8'	
10		4.5+		18				—with more clay at 10'	
		4.5+		21				Hard tan and gray very Silty CLAYS with silt streaks, layers and lenses and fine sandy silt lenses	(CL)
15		4.5+		22				—with ferrous streaks and lenses at 14'	
		4.5+		16				—gray below 16'	
		4.5+		18					
20		4.5+		14				—with traces of organics, 20'- 27.5'	
		4.5+		12					
25		4.5+		14					
		4.5+		16					
		4.5+		18				Hard gray CLAYS with silt lenses	(CH)
30		4.5+		16					
		4.5+		12				Dense gray fine Sandy SILTS with clay streaks and lenses	(ML)
								—with traces of organic matter, 32'- 34'	
35		4.5+		16				—laminated layers of fine sandy silt and clay, 34'- 37'	
		4.5+		8					
								Gray LIMESTONE	
40		114 b/ft		2					

Continued Next Page

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT: Number 1 Pond Chloride Migration Study
LOCATION: UOP - Shreveport, Louisiana
CLIENT: UOP - Shreveport, Louisiana

BORING: HP-16
FILE: 91B402C
DATE: 10/14/91
TECHNICIAN: WWPII
APPROVED:
PAGE: 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen (tsf)	OVA (ppm)	Recover (inch)				Description of Stratum
40		4.5+		12				Alternating layers of hard gray Clayey SILTS and Silty CLAYS with fine sandy silt lenses and streaks, traces of organic lenses (ML/CL)
		4.5+		16				
45		4.5+		14				
		4.5+		18				
		4.5+		14				—with fine sandy silt layers, 48'- 52'
50		4.5+		21				
		4.5+		18				Hard gray Silty CLAYS with laminated silt lenses (CL)
55		4.5+		18				
								Bottom of boring at 56'. Borehole grouted full depth.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT: Number 1 Pond Chloride Migration Study
LOCATION: UOP - Shreveport, Louisiana
CLIENT: UOP - Shreveport, Louisiana

BORING: HP-16A
FILE: 91B402C
DATE: 10/15/91
TECHNICIAN: WWPII
APPROVED: [illegible]
PAGE: 1 of 2

Dry Augered: Wash Bored: 0'- 78'

B-16A replaced B-16 due to Shelby tube lost in B16 at 54'- 56'. B-16A located 5' north of B-16 and 10' south of MW-13.

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen (tsf)	OVA (ppm)	Recover (inch)				Description of Stratum
0								(For log 0'- 56' see HP-16) Rotary Washed to 56'
5								
10								
15								
20								
25								
30								
35								
40								

Continued Next Page

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT: Number 1 Pond Chloride Migration Study
LOCATION: UOP - Shreveport, Louisiana
CLIENT: UOP - Shreveport, Louisiana

BORING: HP-16A
FILE: 91B402C
DATE: 10/15/91
TECHNICIAN: WWPII
APPROVED:
PAGE: 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen (tsf)	OVA (ppm)	Recover (inch)				Description of Stratum
40								
45								
50								
55								
		4.5+		18				Hard gray Silty CLAYS with fine sandy silt seams and lenses (CL)
		4.5+		18				—with 1/4" and 1/2" fine sandy silt layers at 58'
60		4.5+		8				
		4.5+		15				Dense to hard gray Clayey SILTS with fine sandy silt lenses, pockets and streaks (ML)
65		4.5+		16				
		4.5+		18				—with traces of clay and clay streaks, 66'- 68'
		4.5+		18				—with traces of silty fine sand lenses and pockets, 68'- 70'
70		4.5+		18				
		4.5+		18				
75		4.5+		16				Alternating layers of hard gray CLAYS and Silty CLAYS with fine sandy silt lenses and streaks (CH/CL)
		4.5+		16				
								Bottom of boring at 78'. Borehole grouted full depth.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT: Modification to Waste Water Impoundment North and East Dikes
LOCATION: Blanchard, Louisiana
CLIENT: UOP Inc.

BORING: B-1
FILE: 86C5134
DATE: 10-1-86
TECHNICIAN: RAS
APPROVED: RAS
PAGE 1 of 1

DRY AUGERED FULL DEPTH

No water entered the borehole during dry augering; at 14' after 30 minute observation period.

DEPTH (FEET)	SAMPLE	S.P.T. (BLFT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		4.00						Very stiff red and gray CLAYS with silt and sand streaks, pockets and seams, ferrous nodules (FILL)
		4.00		17		55	36	
		4.00						
5		3.00	1.38	21	106	24	7	--with trace of gravel
		1.00						--stiff
10		3.00	1.83	26	98			Stiff gray and reddish tan CLAYS with silt streaks and pockets (CH)
		3.00	1.47	26	95	54	29	--with silt and sand seams
15		3.00						
								Bottom of boring at 16 feet Boring grouted full depth

Unified Soil Classifications based on limited laboratory test data and visual observations

LOG OF BORING

PROJECT: Modification to Waste Water Impoundment North and East Dikes
LOCATION: Blanchard, Louisiana
CLIENT: UOP Inc.

BORING: B-2
FILE: 86C5134
DATE: 10-1-86
TECHNICIAN: RAS
APPROVED: RAS
PAGE 1 of 1

DRY AUGERED FULL DEPTH

Water entered the borehole at 11' during dry augering; rose to 6'-8" after 1 hour 45 minute observation period.

DEPTH (FEET)	SAMPLE	S.P.T. (BLFT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		4.50						
		4.50	0.97	20	102	35	12	Very stiff brown and red Silty CLAYS with sandy silt streaks, ferrous nodules, roots (FILL)
		N.R.						Medium to stiff brown and red Silty CLAYS with trace of gravel (FILL)
5		2.00						
		3.00	2.11	30	90	61	34	Very stiff gray and tan CLAYS with silt streaks and pockets, ferrous nodules (CH)
		4.50						
10								
		3.00	(1) 2.11	24	101			Very stiff gray and tan SILTS with clay laminations (ML)
15		4.50						Very stiff gray and tan CLAYS with silt streaks and pockets (CH)
								Bottom of boring at 16 feet Boring grouted full depth

N.R. = No recovery
(1) Unconsolidated undrained triaxial compression test with a confining pressure of 10 psi

Unified Soil Classifications based on limited laboratory test data and visual observations

LOG OF BORING

PROJECT Dike Stability for Waste Water Impoundment

LOCATION Shreveport, Louisiana

CLIENT UOP, Inc.

BORING B-2A
FILE 86C5004
DATE 2-28-86
TECHNICIAN RAS
APPROVED RAS
PAGE 1 of 1

DRY AUGERED 0' to 26' WASH BORED 26' to 40'

No water entered the borehole during dry augering

Approx. Elev. = +283.5'

DEPTH (FEET)	SAMPLE	B.P.T. (BLFT) OR PENT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		2.0						Firm gray, tan, and reddish brown Clayey SILTS with clay pockets, ferrous nodules and trace of sand (ML)
		2.0						
		2.0		15			NP	
5		1.0						Medium to stiff gray, tan, and reddish brown CLAYS with silt and sand seams and pockets, and occasional gravel (CH)
		1.0		33		86	60	
		1.0						
10		1.5	1.22	29	92			
		2.0						
15		1.0						
		1.0	1.89	21	108	56	38	
		3.5						Very stiff gray and tan CLAYS with silt and sand pockets, and ferrous nodules (CH)
20		3.5	2.88	27	97			
		3.5						
25		3.0						
		4.5	0.94 (1)	29	96			Very stiff to hard gray alternating seams and laminations of CLAYS, SILTS, and SANDS (CH/CL/ML)
30		50/3"						
		4.5						
		4.5	4.07	25	96			
35		4.5						
		4.5						
40		51/8"						

Bottom of boring at 40 feet
Borehole grouted full depth

(1) Failure at low strain
NP = Non-plastic

Unified classification based on visual observations only

LOG OF BORING

PROJECT: Modification to Waste Water Impoundment North and East Dikes

LOCATION: Blanchard, Louisiana

CLIENT: UOP Inc.

BORING: B-3
FILE: 86C5134
DATE: 10-1-86
TECHNICIAN: RAS
APPROVED: RAS
PAGE 1 of 1

DRY AUGERED FULL DEPTH

Water entered the borehole at 14' during dry augering; rose to 7'-4" after 2 hour 50 minute observation period.

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		4.50						Very stiff red and tan CLAYS with silt pockets, ferrous nodules (FILL)
		4.50		23		67	42	
5		2.00						--with trace of gravel
		2.50	1.50	30	90	70	44	Stiff gray and tan CLAYS with silt streaks, pockets and seams (CH)
		4.50						
10								
		4.50	1.95	27	96			--with sand pockets and seams
15		4.50						
								Bottom of boring at 16 feet Boring grouted full depth

Unified Soil Classification based on limited laboratory test data and visual observations

LOG OF BORING

PROJECT Dike Stability for Waste Water Impoundment
LOCATION Shreveport, Louisiana
CLIENT UOP, Inc.

BORING B-3A
FILE 86C5004
DATE 2/28/86
TECHNICIAN RAS
APPROVED RAS
PAGE 1 of 1

DRY AUGERED 0' to 12'

No water entered the borehole during dry augering

Approx. Elev. = +283.5'

DEPTH (FEET)	SAMPLE	S.P.T. (BFT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		1.0						Firm gray, tan, and reddish brown Sandy SILTS with clay pockets, sand pockets and seams (ML)
		1.5		16	108		NP	
5		1.0	1.19	28	95	86	61	Stiff reddish brown and red CLAYS with silt streaks, sand pockets, and ferrous nodules (CH)
		1.0						
		1.5	1.19	36	85			
10		1.5	0.77	34	95			---medium
								Bottom of boring at 12 feet Borehole grouted full depth

NP = Non-plastic

Unified classification based on visual observations only

LOG OF BORING

PROJECT: Modification to Waste Water Impoundment North and East Dikes

LOCATION: Blanchard, Louisiana

CLIENT: UOP Inc.

BORING: B-4
FILE: 86C5134
DATE: 10-1-86
TECHNICIAN: RAS
APPROVED: RAS
PAGE 1 of 1

DRY AUGERED FULL DEPTH

No water entered the borehole during dry augering; at 12'-4" after 3 hour 40 minute observation period

DEPTH (FEET)	SAMPLE	S.P.T. (BLFT) OR PEN. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		4.50						Very stiff red and tan CLAYS with roots, silt pockets and seams, ferrous nodules (FILL)
		4.50						
		3.00						
		3.00	2.99	23	99	80	55	
5		4.50						Very stiff to hard gray and tan CLAYS with silt pockets (CH)
		4.50						
		4.50	4.48	18	110	50	31	--with trace of sand
10		4.50						
		4.50	2.21	19	104			--with silt seams below 11'
15		4.50						
								Bottom of boring at 16 feet Boring grouted full depth

Unified Soil Classification based on limited laboratory test data and visual observations

LOG OF BORING

PROJECT UOP, INC. Monitor Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-5
FILE 85C5337
DATE 8/4,-5/85
TECHNICIAN CBD
APPROVED [illegible]
PAGE 1 of 1

DRY AUGERED 0' to 16' WASH BORED 16' to Bottom

Water entered the borehole at 15.5' during dry augering

Ground Surface Elev.=271.5'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Mottled red, gray and tan Silty CLAYS with iron nodules (CL) ---with silt streaks
5								Gray and light gray CLAYS with iron streaks (CH)
10, 15								Gray and orange Silty CLAYS with organics (CL) ---laminated layers ---becoming tan, light brown and gray ---silt seams with organics ---laminated layers
20, 25								Light gray and tan laminated layers of Silty CLAYS and SANDS seams (CL/CL) ---2" sand seam (wet) ---6" light gray SANDS (wet)
30								Light gray and dark gray laminated layers of Silty CLAYS and CLAYS with sand streaks (CH/SP)
35								Alternating layers dark gray CLAYS and white SANDS with iron streaks (CH/SP)
40								Dark gray Silty SANDS with silty clay seams (SM)

Bottom of boring at 40'

Note: Monitor well MW-5 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-6
FILE 85C5337
DATE 8/2,-3/85
TECHNICIAN CBD
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 14' WASH BORED 14' to Bottom

Water entered the borehole at 14' during dry augering

Ground Surface Elev.= 271.2'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PEN. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and orange SILTS with root hairs (MH)
								---becoming tan
5								Red, orange and tan Silty CLAYS and tan Sandy SILTS with iron nodules (CL/ML)
								Tan and light gray CLAYS (fractured) with iron nodules (CL/ML)
10								
								---alternating layers of silty sands and clays
15								
20								
								---alternating layers gray and white fine sands and clays
25								
								White medium SANDS with clay lenses and silty SANDS (SP/SM)
30								---laminated layers silty sands and clays
35								---alternating layers sands and silty sands with trace of clay
								Dark gray and gray Silty SANDS (SM)
40								

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-6
FILE 85C5337
DATE 8/2,-3/85
TECHNICIAN CBD
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PRT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Alternating layers of dark gray CLAYS and gray Sandy SILTS (CL/ML)
45								---with more silt
50								Dark gray SILTS with trace clay (ML)
55								Bottom of boring at 52'

Note:
(1) Hole grouted full depth on completion
(2) Offset 10 feet and drilled new hole for monitor well MW-6

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-6A
FILE 85C5337
DATE 8-3-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 1

WASH BORED 0' to 20'

Ground Surface Elev.=271.2'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
5								
10								Washed to 14'
15								Tan and gray alternating layers of SANDS and CLAYS with iron streaks (SP/CL)
								---with sand seam, becoming laminated gray SILTS and CLAYS
20								Bottom of boring at 20'

Note: Monitor well MW-6A set in borehole upon completion

LOG OF BORING

PROJECT UOP Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-7
FILE 85C5336
DATE 8-5-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 16' WASH BORED 16' to 42'

Water entered the borehole at 16' during dry augering

Ground Surface Elev.=272.1'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Orange and tan CLAYS (CH)
								---becoming light gray with iron streaks
5								
								Tan SILTS with clay pockets (ML)
								---becoming silty clay
10								Tan and gray CLAYS with silt and iron streaks (CH)
15								Light gray Silty CLAYS with thin organic layers and iron streaks (CL/PT)
								---with 2" sand seam (SP)
								---laminated layers
20								---becoming silty sand
								Dark gray and light gray laminated layers of Silty CLAYS and CLAY (CL/CH)
25								Gray laminated layers of SILTS (ML)
								---with trace of clay
30								
35								---with thin white sand seam (SP)
								---with thin sand seam (SP)
40								Gray laminated layers of Silty CLAYS (CL)

LOG OF BORING

PROJECT UOP Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-7
FILE 85C5336
DATE 8-5-85
TECHNICIAN CBD
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Gray laminated layers of SILTS and Silty CLAYS with trace of sand (ML/CL)
								Bottom of boring at 42'

Note: Monitor well MW-7 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-7A
FILE 85C5337
DATE 8-10-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 1

WASH BORED 0' to 20'

Ground Surface Elev.=272.49'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PRT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
5								
10								
15								Washed to 16'
								Alternating layers tan and gray Silty CLAYS and Silty SANDS (CL/SM)
								---with more silty clay
20								Bottom of boring at 20'

Note: Monitor well MW-7A set in borehole upon completion

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-8
FILE 85C5336
DATE 8-6-85
TECHNICIAN CBD
APPROVED TWK
PAGE 1 of 2

DRY AUGERED 0' to 20' WASH BORED 20' to 46'

Water entered the borehole at 20' during dry augering

Ground Surface Elev.=275.91

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and tan CLAYS with roots (CH)
5								Red and tan Silty CLAYS (CL) ---becoming gray and tan with iron streaks ---with trace organics
10								---becoming more silty
15								---with slickensides and iron streaks
20								Gray CLAYS with 2" peat layer (CH/PT)
25								Tan and gray laminated layers of Silty CLAYS and Sandy SILTS with iron streaks (CL/ML) ---with silt seams
30 35								Dark gray and gray laminated layers of SILTS and Silty CLAYS (ML/CL)
								Light gray Silty SANDS with trace of Silty CLAYS (SM/CL)
40								Alternating layers of white SANDS and Silty CLAYS (SP/CL)

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-8
FILE 85C5336
DATE 8-6-85
TECHNICIAN CBD
APPROVED TJT
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Alternating layers of white SANDS and Silty CLAYS (SP/CL)
								Dark gray laminated layers of Silty CLAYS (CL)
45								---with more silts
								Bottom of boring at 46'
50								

Note: Monitor well MW-8 set in borehole upon completion

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-9
FILE 85C5336
DATE 8-7-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 1

DRY AUGERED 0' to 24' WASH BORED 24' to Bottom

Water entered the borehole at 23' during dry augering

Ground Surface Elev.=278.5'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0						-		Red and orange Silty CLAYS (CL)
								Mottled red and tan CLAYS with iron nodules (CH)
5								Tan and light gray Silty CLAYS with organics, fractured (CL)
								---with more silt
								---with silty sand seam
10								---with more silts
								---with 3" silty sand seam at bottom
15								Gray and tan laminated layers of Silty CLAYS and CLAYS (CL/CH)
								---with trace organics
20								Gray CLAYS with iron streaks, slickensided (CH)
								---with silty sand seam and trace organics
25								Bottom of boring at 24' Grouted full depth Offset 5 feet and drilled new hole for monitor well MW-9

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-9A
FILE 85C5336
DATE 8-8-85
TECHNICIAN CBD
APPROVED [illegible]
PAGE 1 of 1

WASH BORED o' to Bottom

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								
20								Washed to 24'
25								Alternating layers of gray and tan Silty SANDS and Silty CLAYS with iron streaks (SM/CL)
								Gray and tan laminated layers of Silty CLAYS and SILTS (CL/ML)
30								---with 3" white sand seam
								---with silt seams
35								---becoming dark gray and gray
								---with silt seams
40								
								White and light gray fine SANDS (SP)
45								Dark gray CLAYS with silt streaks (CL)
								---becoming laminated silty clays
50								Bottom of boring at 48'

Note: Monitor well MW-9 set in borehole upon completion

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells
LOCATION Blanchard, Louisiana
CLIENT UOP, Inc.

BORING B-10
FILE 85C5336
DATE 8-9-85
TECHNICIAN CBD
APPROVED
PAGE 1 of 2

DRY AUGERED 0' to 26' WASH BORED 26' to Bottom

Water entered borehole at 25' during dry augering

Ground Surface Elev.=284.8'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Red and orange Silty CLAYS with iron nodules (CL)
5								Red and tan CLAYS with silty clay streaks ---with iron streaks (CH/CL)
10								Tan and gray Silty CLAYS with iron streaks and fractures (CL) ---becoming light brown with slickensides
15								Alternating layers tan and gray Sandy SILTS and Silty CLAYS with thin layers of peat at top (ML/CL) ---becoming more silty clay
								Gray and light brown laminated layers of Silty CLAYS (CL)
20								Light gray and gray CLAYS with trace organics and iron streaks (CH/OH) ---with slickensides ---with 3" seam of lignite at 23'
25								Gray Silty SANDS (SM) ---becoming alternating layers of SILTS and and Silty CLAYS
30								Dark gray laminated layers of Silty CLAYS (CL)
35								---with more silts
40								---with trace of sands and organics

LOG OF BORING

PROJECT UOP, Inc. Monitor Wells

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING B-10
FILE 85C5336
DATE 8-9-85
TECHNICIAN CBD
APPROVED
PAGE 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								Dark gray SILTS and Silty CLAYS (ML/CL)
45								Light gray and gray Silty SANDS (SM/SP)
								---becoming sands
50								---becoming silty clays with trace sands
								Bottom of boring at 52'
55								

Note: Monitor well MW-10 set in borehole upon completion

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-1
FILE 87B166C
DATE 6/3/87
TECHNICIAN RC
APPROVED KAK
PAGE 1 of 1

WASH BORED 0'-35'

Ground Surface Elevation = 271.39'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
								Wash to 20'
20								Dark gray Silty CLAYS, with layers and laminations of fine gray sand (CL)
								---sand becoming tan to brown
25								Tan to dark gray Silty SANDS with gray clay layers and laminations (SM)
30								---becoming more gray
35								Bottom of boring at 35'

Note:

Piezometer No. 0-1 set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-1A
FILE 87B166C
DATE 6/3/87
TECHNICIAN RC
APPROVED KAK
PAGE 1 of 1

WASH BORED 0'-22'

Ground Surface Elevation = 271.42'

DEPTH (FEET)	SAMPLE	S.P.T. (BLFT) OR PNT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
								Wash to 14'
15								Tan to gray Silty CLAYS with fine sand layers and laminations (CL)
20								
								Bottom of boring at 22'

Note:

Piezometer No. 0-1A set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-2
FILE 87B166C
DATE 6/3/87
TECHNICIAN RC
APPROVED KAL
PAGE 1 of 1

DRY AUGERED

WASH BORED 0'-35'

Ground Surface Elevation = 270.68'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
								Wash to 20'
20								Tan to gray fine Silty SANDS with laminations and layers of gray clay (SM)
25								Dark gray Silty CLAYS, with silt layers and laminations (CL)
								Tan to gray Silty SANDS with dark gray clay layers and laminations (SM)
30								
35								Bottom of boring at 35'

Note:

Piezometer No. 0-2 set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-2A
FILE 87B166C
DATE 6/3/87
TECHNICIAN RC
APPROVED KAL
PAGE 1 of 1

WASH BORED 0'-21'

Ground Surface Elevation = 271.06'

DEPTH (FEET)	SAMPLE	S.P.T. (B.P.F.) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
								Wash to 14'
15								Tan to gray fine SANDS with gray silty clay layers and laminations (SP)
20								Tan Silty CLAYS (CL)
								Bottom of boring at 21'

Note:

Piezometer No.0-2A set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-3
FILE 87B166C
DATE 6/4/87
TECHNICIAN RC
APPROVED KAK
PAGE 1 of 1

WASH BORED 0'-40'

Ground Surface Elevation = 271.47'

DEPTH (FEET)	SAMPLE	S.P.T. (BLOWS) OR PENT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
						-		Wash to 20'
20								Dark gray to tan Silty CLAYS with fine gray sand layers and laminations (CL) ---becoming more tan
25								
30								Tan to gray fine Silty SANDS with gray clay layers and laminations (SM) ---becomes light gray
35								
40								Bottom of boring at 40'

Note:

Piezometer No. 0-3 set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana

CLIENT UOP, Inc.

BORING 0-3A
FILE 87B166C
DATE 6/4/87
TECHNICIAN RC
APPROVED KAC
PAGE 1 of 1

WASH BORED 0'-25'

Ground Surface Elevation = 271.42'

DEPTH (FEET)	SAMPLE	B.P.T. (B/FT) OR PET. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
								Wash to 14'
15								Tan Silty CLAYS (CL) ---with fine gray sand layers, fractured, and gray clay and silt laminations
20								---tan to gray clay with sand layer ---tan clay with silt layers and laminations
25								Bottom of boring at 25'

Note:

Piezometer No. 0-3A set in borehole upon completion.

Unified Soil Classifications based on visual observations.

LOG OF BORING

PROJECT: Ground Water Recovery System
Waste Water Holding Pond

LOCATION: Blanchard, Louisiana

CLIENT: UOP
Shreveport, Louisiana

BORING: RW-1
FILE: 89B143C
DATE: 4/10/89
TECHNICIAN: RMC
APPROVED:
PAGE 1 of 1

DRY AUGERED

WASH BORED 0-38'

Free water level undetermined.

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Wash bored to 20' and began sampling
20								Dark gray and tan Silty CLAYS with alternating tan and gray Silty SANDS
25								
30	X	PSS						Dark gray Silty SANDS with alternating layers of Silty CLAYS and CLAYS
35								
40								B.T. @ 38' Recovery Well RW-1 set in borehole upon completion.

All Soil Classifications based on visual field observations.

PSS - Pushed split spoon.

LOG OF BORING

PROJECT: Ground Water Recovery System
Waste Water Holding Pond

LOCATION: Blanchard, Louisiana

CLIENT: UOP
Shreveport, Louisiana

BORING: RW-2
FILE: 89B143C
DATE: 4/12/89
TECHNICIAN: RMC
APPROVED:
PAGE 1 of 1

DRY AUGERED

WASH BORED 0-36'

Free water level undetermined.

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PNT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LL (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Wash bored to 20' and began sampling
20								Laminated dark gray Silty CLAYS with Sand streaks and pockets
25 30 35								Alternating layers of dark gray Silty SANDS and Sandy CLAYS
								B.T. @ 36' Recovery Well RW-2 set in borehole upon completion.

All Soil Classifications based on visual field observations.

LOG OF BORING

PROJECT: Ground Water Recovery System
Waste Water Holding Pond

LOCATION: Blanchard, Louisiana

CLIENT: UOP
Shreveport, Louisiana

BORING: RW-3
FILE: 89B143C
DATE: 4/13/89
TECHNICIAN: RMC
APPROVED:
PAGE 1 of 1

DRY AUGERED

WASH BORED 0-39'

Free water level undetermined.

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PEN. PER. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0								Wash bored to 20' and began sampling
20								Tan and gray Silty CLAYS with Iron stains
25								
30								Dark gray Silty CLAYS with Sand streaks, pockets, and layers
35								
40								B.T. @ 38.5' Recovery Well RW-3 set in borehole upon completion.

All Soil Classifications based on visual field observations.

LOG OF BORING

PROJECT: Ground Water Recovery System
Waste Water Holding Pond

LOCATION: Blanchard, Louisiana

CLIENT: UOP
Shreveport, Louisiana

BORING: RW-4
FILE: 89B143C
DATE: 4/18/89
TECHNICIAN: RMC
APPROVED:
PAGE 1 of 2

DRY AUGERED

WASH BORED 0-40.5'

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
0		NR						Fill Material
		NR						
5								Tan CLAYS with Iron nodules and Silt pockets
10								Light gray and tan Silty CLAYS with Sand seams and pockets
15								
								---3" silty sand layer @ 18'
20								---becomes dark gray Silty CLAYS with sand pockets and streaks
25								
								Dark gray Silty CLAYS laminated with sand streaks
30								
35								
		PSS						
40								Continued

All Soil Classifications based on visual field observations.

NR=No Recovery
PSS=Pushed Split Spoon

LOG OF BORING

PROJECT: Ground Water Recovery System
Waste Water Holding Pond

LOCATION: Blanchard, Louisiana

CLIENT: UOP
Shreveport, Louisiana

BORING: RW-4
FILE: 89B143C
DATE: 4/18/89
TECHNICIAN: RMC
APPROVED:
PAGE 2 of 2

DRY AUGERED | WASH BORED

DEPTH (FEET)	SAMPLE	S.P.T. (B/FT) OR PKT. PEN. (TSF)	COMPRESSIVE STRENGTH (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	L.L. (%)	P.I. (%)	DESCRIPTION OF STRATUM
40								
								Boring terminated at 40.5' and Recovery Well RW-4 set in borehole upon completion
45								

All Soil Classifications based on visual field observations.

WOODWARD-CLYDE CONSULTANTS

LOG OF BORING

PROJECT: **Piezometer Installation P-13R**
LOCATION: **Universal Oil Products Shreveport, Louisiana**
CLIENT: **Universal Oil Products Shreveport, Louisiana**

BORING: P-13R
FILE: 93B247C-1
DATE: 12/7/93
TECHNICIAN: J.J.G / N.L.M.
APPROVED:
PAGE: 1 of 2

Dry Augered: 0' - 20' Wash Bored: 20' - 74.5'

No free water was encountered during dry augering. However, water was observed at a depth of 66 feet in the split spoon sample.

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen.(tsf)	OVA (ppm)	Recovery (inch)				Description of Stratum
0		2.25		8				Stiff to very stiff tan Silty CLAYS with ferrous stains (CL)
1								
2		3.25		13				—with shell and wood fragments to 2'
3								—gray and tan with silt streaks and more clayey, 2'-4'
4								—tan and gray, 4'-6'
5								
6		3.5		22				—with roots to 6'
7								—brown and tan, 6'-12'
8		3.5		18				—with laminated layers of sand and black organic matter, 6'-8'
9								—more clayey with alternating layers of sand, 8'-10'
10		4.25		19				—with laminated silt layers, 8'-18'
11								—with silt lenses and laminated layers of wood fragments and organic matter, 10'-14'
12		4.5+		20				—brown and reddish brown, 12'-14'
13								
14		4.5+		16				—very stiff to hard and dark gray below 14'
15								
16		4.5+		14				
17								
18		4.5+		14				—with laminated black organic matter, 18'-20'
19								
20		4.5+		10				—with silt laminations below 20'
21								—with fine sand laminations, 20'-22'
22								—with silt pockets, 22'-28'
23		4.5+		12				
24								
25		4.0		18				—with fine sand laminations, 22'-24'
26								
27		3.5		18				
28								
29		4.0		18				—with laminated clay layers, 28'-30'
30								
31		4.0		18				
32								
33		4.0		14				34'
34								
35		4.5+		14				Firm to dense dark gray and gray Sandy SILTS with silty clay laminations (ML)
36								
37		4.5+		7				
38								
39		4.5+		4				
40								

Continued Next Page

Unified Soil Classifications based on visual observations.

Woodward-Clyde Consultants

LOG OF BORING

PROJECT: **Piezometer Installation P-13R**

LOCATION: **Universal Oil Products**
Shreveport, Louisiana

CLIENT: **Universal Oil Products**
Shreveport, Louisiana

BORING: P-13R
FILE: 93B247C-1
DATE: 12/7/93
TECHNICIAN: J.J.G / N.L.M.
APPROVED: KZ
PAGE: 2 of 2

DEPTH (FEET)	SAMPLE	S.P.T.(b/ft) or P.Pen.(tsf)	OVA (ppm)	Recovery (inch)				Description of Stratum
40								
41		4.5+		17				Firm to dense light gray and gray Sandy SILTS with clay laminations (ML)
42								
43		4.5+		18				
44								
45		4.5+		4				
46								
47		3.5		18				Stiff dark gray CLAYS with silt laminations, seams and pockets (CH)
48								
49		3.5		17				
50								
51		4.0		18				Stiff to very stiff dark gray Silty CLAYS with silt laminations (CL)
52								
53		4.5		18				—gray below 52'
54								
55		4.5		6				—3" sandy silt layer at 55.5'
56								—with sandy silt laminations and pockets, 56'-58'
57		3.0		18				
58								---with silt pockets below 58'
59		3.0		10				
60								
61		4.5+		9				
62								
63		4.5+		6				Stiff to very stiff gray Clayey SILTS (ML)
64								
65		4.5+		12				—with fine sand lenses below 64'
66								
67		4.5+		12				
68								
69		4.5+		10				
70								
71		4.5+		12				
72								
73		4.5+		13				---with clay laminations to 72' —with silt pockets and lenses below 72'
74		NR						
								Bottom of boring at 74.5' Piezometer P-13R installed in the borehole

Unified Soil Classifications based on visual observations.

Woodward-Clyde Consultants

APPENDIX D

SLUG TEST RESULTS

SLUG TEST METHODOLOGY

The slug tests were conducted by lowering a pressure transducer approximately nine feet below the water surface in the well. Pressure transducer output is coupled to a chart recorder where an initial reading was obtained prior to injecting a slug of known volume. The slug, which consisted of a metal pipe sealed at both ends, caused a temporary rise in the water level which was recorded as it fell with time.

The test was generally terminated when static water level was reached. At this point, the slug was removed from the well and the recovery was monitored on the strip chart. Since the plot of rising head versus time "mirrors" the plot of falling head with time, running both tests serves to check the individual test results and the performance of the instrumentation.

The values selected for time and transducer output (millivolts) from the strip chart record are shown with the calculated results for permeability and transmissivity in the following computer printouts.

PROGRAM SLUGT, VERSION 3, JAN. 1985

THIS PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3,NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-5

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.54 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 6.00 FEET
FALLING-HEAD INDEX = 1 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 9

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
6.00	6.600	3.351
12.00	6.200	3.148
18.00	6.000	3.046
30.00	5.600	2.843
42.00	5.200	2.640
60.00	4.700	2.386
90.00	4.000	2.031
120.00	3.400	1.726
180.00	2.400	1.218

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
3.3864
3.3874

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.39 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
300E-01	1.000E-01	3.085E-05	5.142E-06	1.216E-06	6.946E-05	2.212039	81.20	.00
300E-02	1.000E-02	7.515E-05	1.253E-05	4.428E-06	1.250E-04	1.604753	44.59	36.61
300E-03	1.000E-03	1.286E-04	2.143E-05	1.691E-05	1.831E-04	1.291980	28.65	15.94
300E-04	1.000E-04	1.828E-04	3.047E-05	3.478E-05	2.391E-04	1.117605	21.04	7.61
300E-05	1.000E-05	2.361E-04	3.934E-05	5.328E-05	2.942E-04	1.020398	17.01	4.03
300E-06	1.000E-06	2.884E-04	4.807E-05	7.140E-05	3.489E-04	.962304	14.61	2.40
300E-07	1.000E-07	3.401E-04	5.668E-05	8.917E-05	4.028E-04	.922279	12.97	1.64
300E-08	1.000E-08	3.913E-04	6.521E-05	1.066E-04	4.565E-04	.894282	11.82	1.15
300E-09	1.000E-09	4.422E-04	7.370E-05	1.240E-04	5.099E-04	.872757	10.95	.87
300E-10	1.000E-10	4.927E-04	8.212E-05	1.409E-04	5.630E-04	.856808	10.29	.67

****

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 1.46E-05 FT/SECONDS = 4.46E-04 CM/SECONDS

TRANSMISSIVITY = 8.79E-05 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 1.87E-05 FT/SECONDS = 5.70E-04 CM/SECONDS

TRANSMISSIVITY = 1.12E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3, NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-5

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.54 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 6.00 FEET
FALLING-HEAD INDEX = 0 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 10

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
3.00	7.000	3.554
6.00	6.800	3.452
18.00	6.400	3.249
30.00	6.200	3.148
42.00	5.800	2.945
54.00	5.400	2.742
60.00	5.100	2.589
90.00	4.400	2.234
120.00	3.800	1.929
180.00	3.200	1.625

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
3.5267
3.6076
3.6108

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.61 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
1.000E-01	1.000E-01	2.511E-05	4.185E-06	3.551E-06	4.611E-05	1.694986	59.70	.00
1.000E-02	1.000E-02	6.585E-05	1.098E-05	1.711E-05	9.727E-05	1.217113	30.14	29.56
1.000E-03	1.000E-03	1.181E-04	1.968E-05	5.766E-05	1.499E-04	.781002	14.95	15.18
1.000E-04	1.000E-04	1.724E-04	2.873E-05	1.109E-04	2.019E-04	.527511	8.66	6.29
1.000E-05	1.000E-05	2.258E-04	3.763E-05	1.649E-04	2.673E-04	.453199	6.36	2.31
1.000E-06	1.000E-06	2.782E-04	4.636E-05	2.178E-04	3.408E-04	.441895	5.71	.65
1.000E-07	1.000E-07	3.299E-04	5.499E-05	2.697E-04	4.138E-04	.436751	5.81	-.10
1.000E-08	1.000E-08	3.811E-04	6.352E-05	3.190E-04	4.854E-04	.436676	6.07	-.26
1.000E-09	1.000E-09	4.320E-04	7.199E-05	3.624E-04	5.566E-04	.449689	6.39	-.32
1.000E-10	1.000E-10	4.826E-04	8.043E-05	4.054E-04	6.270E-04	.459116	6.69	-.30

****

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 1.36E-05 FT/SECONDS = 4.13E-04 CM/SECONDS

TRANSMISSIVITY = 8.13E-05 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 1.73E-05 FT/SECONDS = 5.27E-04 CM/SECONDS

TRANSMISSIVITY = 1.04E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3,NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337

CLIENT: UOP

SITE LOCATION: BLANCHARD, LA

DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-7

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35

LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.51 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 8.00 FEET
FALLING-HEAD INDEX = 1 ("1" IF FALLING, "0" IF RISING)

NUMBER OF HEAD-TIME DATA POINTS = 9

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
6.00	6.800	3.452
12.00	6.400	3.249
18.00	6.200	3.148
30.00	5.600	2.843
42.00	5.200	2.640
60.00	4.700	2.386
90.00	4.000	2.031
120.00	3.400	1.726
180.00	2.600	1.320

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
3.4154
3.4749

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF HØ = 3.47 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
)00E-01	1.000E-01	3.219E-05	4.023E-06	7.310E-07	6.332E-05	1.944455	66.70	.00
)00E-02	1.000E-02	7.778E-05	9.723E-06	2.103E-06	1.159E-04	1.463008	36.68	30.02
)00E-03	1.000E-03	1.319E-04	1.648E-05	8.041E-06	1.713E-04	1.238478	23.68	12.99
)00E-04	1.000E-04	1.864E-04	2.330E-05	1.838E-05	2.296E-04	1.133120	17.37	6.32
)00E-05	1.000E-05	2.401E-04	3.001E-05	2.945E-05	2.884E-04	1.078549	14.20	3.16
)00E-06	1.000E-06	2.929E-04	3.661E-05	4.019E-05	3.520E-04	1.064618	12.34	1.86
)00E-07	1.000E-07	3.450E-04	4.312E-05	5.116E-05	4.147E-04	1.053730	11.13	1.21
)00E-08	1.000E-08	3.966E-04	4.958E-05	6.166E-05	4.779E-04	1.049409	10.30	.83
)00E-09	1.000E-09	4.480E-04	5.599E-05	7.209E-05	5.411E-04	1.047104	9.70	.60
)00E-10	1.000E-10	4.989E-04	6.237E-05	8.231E-05	6.040E-04	1.045665	9.26	.44

****

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 1.54E-05 FT/SECONDS = 4.69E-04 CM/SECONDS

TRANSMISSIVITY = 1.23E-04 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 1.96E-05 FT/SECONDS = 5.99E-04 CM/SECONDS

TRANSMISSIVITY = 1.57E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL. 3, NO. 1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER).
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO. 3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-7

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.51 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 8.00 FEET
FALLING-HEAD INDEX = 0 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 10

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
6.00	6.400	3.249
12.00	6.000	3.046
18.00	5.600	2.843
24.00	5.400	2.742
30.00	5.200	2.640
42.00	4.700	2.386
60.00	4.000	2.031
90.00	3.300	1.675
120.00	2.800	1.422
180.00	2.000	1.015

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
3.2117
3.2784
3.3297

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.33 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
1.000E-01	1.000E-01	4.621E-05	5.776E-06	2.837E-06	8.930E-05	1.871370	61.27	.00
1.000E-02	1.000E-02	1.088E-04	1.360E-05	1.759E-05	1.552E-04	1.264801	29.99	31.28
1.000E-03	1.000E-03	1.823E-04	2.278E-05	5.181E-05	2.252E-04	.951297	16.31	13.69
1.000E-04	1.000E-04	2.564E-04	3.205E-05	9.322E-05	3.072E-04	.834540	10.31	6.00
1.000E-05	1.000E-05	3.292E-04	4.114E-05	1.347E-04	3.880E-04	.769529	7.35	2.96
1.000E-06	1.000E-06	4.006E-04	5.008E-05	1.753E-04	4.680E-04	.730734	5.80	1.56
1.000E-07	1.000E-07	4.713E-04	5.891E-05	2.148E-04	5.469E-04	.704689	5.01	.79
1.000E-08	1.000E-08	5.412E-04	6.765E-05	2.540E-04	6.250E-04	.685360	4.62	.39
1.000E-09	1.000E-09	6.108E-04	7.635E-05	2.928E-04	7.028E-04	.671290	4.47	.15
1.000E-10	1.000E-10	6.799E-04	8.499E-05	3.313E-04	7.833E-04	.664638	4.45	.02

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 2.02E-05 FT/SECONDS = 6.15E-04 CM/SECONDS

TRANSMISSIVITY = 1.61E-04 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 2.58E-05 FT/SECONDS = 7.85E-04 CM/SECONDS

TRANSMISSIVITY = 2.06E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3.NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-10

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.07 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 8.00 FEET
FALLING-HEAD INDEX = 1 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 11

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
3.00	5.800	2.945
6.00	5.600	2.843
12.00	5.200	2.640
18.00	4.800	2.437
24.00	4.400	2.234
30.00	4.100	2.082
42.00	3.600	1.828
60.00	3.000	1.523
90.00	2.200	1.117
120.00	1.300	.660
180.00	.700	.355

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)

3.0409
3.0557

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.06 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
000E-01	1.000E-01	9.979E-05	1.247E-05	1.257E-05	2.669E-04	2.549135	99.41	.00
000E-02	1.000E-02	2.044E-04	2.555E-05	6.856E-05	3.817E-04	1.532004	52.86	46.54
000E-03	1.000E-03	3.257E-04	4.072E-05	1.794E-04	4.943E-04	.966845	32.08	20.79
000E-04	1.000E-04	4.481E-04	5.601E-05	3.057E-04	6.069E-04	.672284	22.29	9.78
000E-05	1.000E-05	5.684E-04	7.105E-05	4.306E-04	7.190E-04	.507465	16.96	5.34
000E-06	1.000E-06	6.868E-04	8.585E-05	5.524E-04	8.303E-04	.404550	13.63	3.33
000E-07	1.000E-07	7.949E-04	9.937E-05	6.727E-04	9.510E-04	.350022	7.84	5.79
000E-08	1.000E-08	9.026E-04	1.128E-04	7.908E-04	1.071E-03	.310533	7.27	.58
000E-09	1.000E-09	1.017E-03	1.272E-04	9.084E-04	1.190E-03	.277217	6.89	.38
000E-10	1.000E-10	1.135E-03	1.419E-04	1.025E-03	1.306E-03	.247678	5.70	1.19

****

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 3.12E-05 FT/SECONDS = 9.51E-04 CM/SECONDS

TRANSMISSIVITY = 2.50E-04 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 3.98E-05 FT/SECONDS = 1.21E-03 CM/SECONDS

TRANSMISSIVITY = 3.19E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3,NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-10

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 9.40 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 25.07 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 8.00 FEET
FALLING-HEAD INDEX = 0 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 10

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
6.00	4.800	2.437
12.00	4.400	2.234
18.00	4.100	2.082
24.00	3.800	1.929
30.00	3.600	1.828
42.00	3.200	1.625
60.00	2.600	1.320
90.00	1.900	.965
120.00	1.400	.711
180.00	.800	.406

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
2.4935
2.5345

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 2.53 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
1.000E-01	1.000E-01	8.425E-05	1.053E-05	7.018E-06	1.926E-04	2.203078	80.32	.00
1.000E-02	1.000E-02	1.761E-04	2.201E-05	3.756E-05	2.940E-04	1.456435	43.14	37.18
1.000E-03	1.000E-03	2.793E-04	3.492E-05	9.677E-05	3.924E-04	1.058401	26.59	16.55
1.000E-04	1.000E-04	3.824E-04	4.781E-05	1.637E-04	4.899E-04	.852869	18.78	7.81
1.000E-05	1.000E-05	4.839E-04	6.048E-05	2.298E-04	5.866E-04	.737369	14.51	4.28
1.000E-06	1.000E-06	5.836E-04	7.295E-05	2.943E-04	6.828E-04	.665776	11.87	2.64
1.000E-07	1.000E-07	6.824E-04	8.530E-05	3.581E-04	7.706E-04	.616180	10.07	1.80
1.000E-08	1.000E-08	7.798E-04	9.748E-05	4.207E-04	8.699E-04	.576051	8.55	1.51
1.000E-09	1.000E-09	8.691E-04	1.086E-04	4.830E-04	9.693E-04	.559526	5.73	2.83
1.000E-10	1.000E-10	9.619E-04	1.202E-04	5.447E-04	1.068E-03	.544402	5.71	.02

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METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 2.74E-05 FT/SECONDS = 8.35E-04 CM/SECONDS

TRANSMISSIVITY = 2.19E-04 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 3.50E-05 FT/SECONDS = 1.07E-03 CM/SECONDS

TRANSMISSIVITY = 2.80E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

:S PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL.3,NO.1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO.3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEI

WELL NO.: MW-6A

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 4.70 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 9.97 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 6.00 FEET
FALLING-HEAD INDEX = 1 ("1" IF FALLING,"0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 11

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
6.00	6.400	3.249
12.00	6.200	3.148
24.00	5.900	2.995
36.00	5.600	2.843
48.00	5.400	2.742
60.00	5.200	2.640
84.00	4.700	2.386
120.00	4.200	2.132
180.00	3.400	1.726
240.00	2.800	1.422
360.00	2.200	1.117

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)

3.1803
3.2578
3.2705

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.27 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
.000E-01	1.000E-01	1.863E-05	3.105E-06	7.332E-07	3.773E-05	1.985785	138.30	.00
.000E-02	1.000E-02	4.541E-05	7.568E-06	2.109E-06	7.127E-05	1.522991	71.82	66.48
.000E-03	1.000E-03	7.799E-05	1.300E-05	8.077E-06	1.062E-04	1.257921	42.15	29.67
.000E-04	1.000E-04	1.114E-04	1.856E-05	1.845E-05	1.408E-04	1.098414	28.70	13.45
.000E-05	1.000E-05	1.441E-04	2.402E-05	2.956E-05	1.746E-04	1.006511	21.87	6.83
.000E-06	1.000E-06	1.763E-04	2.938E-05	4.032E-05	2.081E-04	.951729	18.14	3.73
.000E-07	1.000E-07	2.081E-04	3.469E-05	5.133E-05	2.412E-04	.912161	15.89	2.25
.000E-08	1.000E-08	2.396E-04	3.994E-05	6.186E-05	2.760E-04	.893547	14.51	1.38
.000E-09	1.000E-09	2.709E-04	4.516E-05	7.232E-05	3.115E-04	.882755	13.60	.90
.000E-10	1.000E-10	3.021E-04	5.034E-05	8.257E-05	3.468E-04	.874863	13.03	.58

METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 1.40E-05 FT/SECONDS = 4.26E-04 CM/SECONDS

TRANSMISSIVITY = 8.38E-05 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 1.90E-05 FT/SECONDS = 5.78E-04 CM/SECONDS

TRANSMISSIVITY = 1.14E-04 FT**2/SECONDS

PROGRAM SLUGT, VERSION 3, JAN. 1985

PROGRAM CALCULATES MEAN TRANSMISSIVITIES FROM SLUG-TEST DATA BASED ON TWO ANALYTICAL APPROACHES:
(1) METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS, 1967 (ARTICLE IN VOL. 3, NO. 1 OF WRR ENTITLED RESPONSE OF A FINITE DIAMETER WELL TO AN INSTANTANEOUS CHARGE OF WATER)
(2) METHOD OF BOUWER AND RICE, 1976 (ARTICLE IN VOL. 12, NO. 3 OF WRR ENTITLED A SLUG TEST FOR DETERMINING HYDRAULIC CONDUCTIVITY OF UNCONFINED AQUIFERS WITH COMPLETELY OR PARTIALLY PENETRATING WELLS)

PROJECT NO.: 85C5337 CLIENT: UOP

SITE LOCATION: BLANCHARD, LA DATE OF SLUG TEST: 9-10-85

FIELD INVESTIGATOR: CHARLES DARTEZ

WELL NO.: MW-7A

INPUT DATA ARE:

INNER CASING DIAMETER = 3.00 INCHES
INNER SCREEN OR OPEN-HOLE DIAMETER = 3.00 INCHES
DIAMETER OF DRILLED HOLE = 8.00 INCHES
ESTIMATED POROSITY OF GRAVEL PACK = .35
LENGTH OF SCREEN OR INTAKE PORTION = 4.70 FEET
DEPTH FROM STATIC LEVEL TO BOTTOM OF SCREEN = 11.03 FEET
THICKNESS OF SATURATED AQUIFER ZONE = 4.00 FEET
FALLING-HEAD INDEX = 1 ("1" IF FALLING, "0" IF RISING)
NUMBER OF HEAD-TIME DATA POINTS = 8

SERIAL NO. OF PRESSURE TRANSDUCER USED = ZZZZ
MAXIMUM CALIBRATED VOLTAGE FOR PRESSURE TRANSDUCER = .100 VOLTS
MAXIMUM CALIBRATED PRESSURE = 22.000 PSI

TIME (SECONDS)	VOLTAGE (MILLIVOLTS)	COMPUTED HEAD (FEET)
12.00	6.500	3.300
36.00	6.400	3.249
60.00	6.300	3.198
84.00	6.200	3.148
120.00	6.000	3.046
180.00	5.800	2.945
240.00	5.600	2.843
360.00	5.300	2.691

SUCCESSIVE COMPUTED VALUES FOR H0 (FEET)
3.3059
3.3237

METHOD OF COOPER, BREDEHOEFT AND PAPADOPULOS

COMPUTED RESULTS:

COMPUTED VALUE OF H0 = 3.32 FEET

NOTE: TRANSMISSIVITY UNITS ARE IN FT**2/SECONDS AND PERMEABILITY UNITS ARE IN FT/SECONDS

ALPHA	STORATIVITY	MEAN TRANSMIS-SIVITY	MEAN PERMEA-BILITY	MINIMUM TRANS.	MAXIMUM TRANS.	RATIO OF "T" RANGE TO TBAR	ROOT MEAN SQUARE OF TIME DEVIATIONS	DIFFERENCE IN RMS
000E-01	1.000E-01	1.316E-06	3.291E-07	4.014E-07	2.483E-06	1.581084	130.47	.00
000E-02	1.000E-02	4.940E-06	1.235E-06	1.155E-06	7.382E-06	1.260648	79.55	50.91
000E-03	1.000E-03	1.080E-05	2.699E-06	4.622E-06	1.382E-05	.851704	42.84	36.72
000E-04	1.000E-04	1.732E-05	4.329E-06	1.034E-05	2.083E-05	.605827	25.53	17.30
000E-05	1.000E-05	2.379E-05	5.948E-06	1.642E-05	2.812E-05	.491719	17.79	7.75
000E-06	1.000E-06	3.012E-05	7.530E-06	2.236E-05	3.524E-05	.427665	14.11	3.68
000E-07	1.000E-07	3.630E-05	9.095E-06	2.833E-05	4.227E-05	.383088	12.14	1.96
000E-08	1.000E-08	4.255E-05	1.064E-05	3.410E-05	4.922E-05	.355466	11.19	.95
000E-09	1.000E-09	4.867E-05	1.217E-05	3.984E-05	5.613E-05	.334617	10.71	.48
000E-10	1.000E-10	5.473E-05	1.368E-05	4.544E-05	6.296E-05	.320108	10.50	.21

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METHOD OF BOUWER AND RICE

COMPUTED RESULTS USING DIAMETER OF DRILLED HOLE:

PERMEABILITY = 2.65E-06 FT/SECONDS = 8.07E-05 CM/SECONDS

TRANSMISSIVITY = 1.06E-05 FT**2/SECONDS

COMPUTED RESULTS USING DIAMETER OF CASING AND SCREEN:

PERMEABILITY = 3.58E-06 FT/SECONDS = 1.09E-04 CM/SECONDS

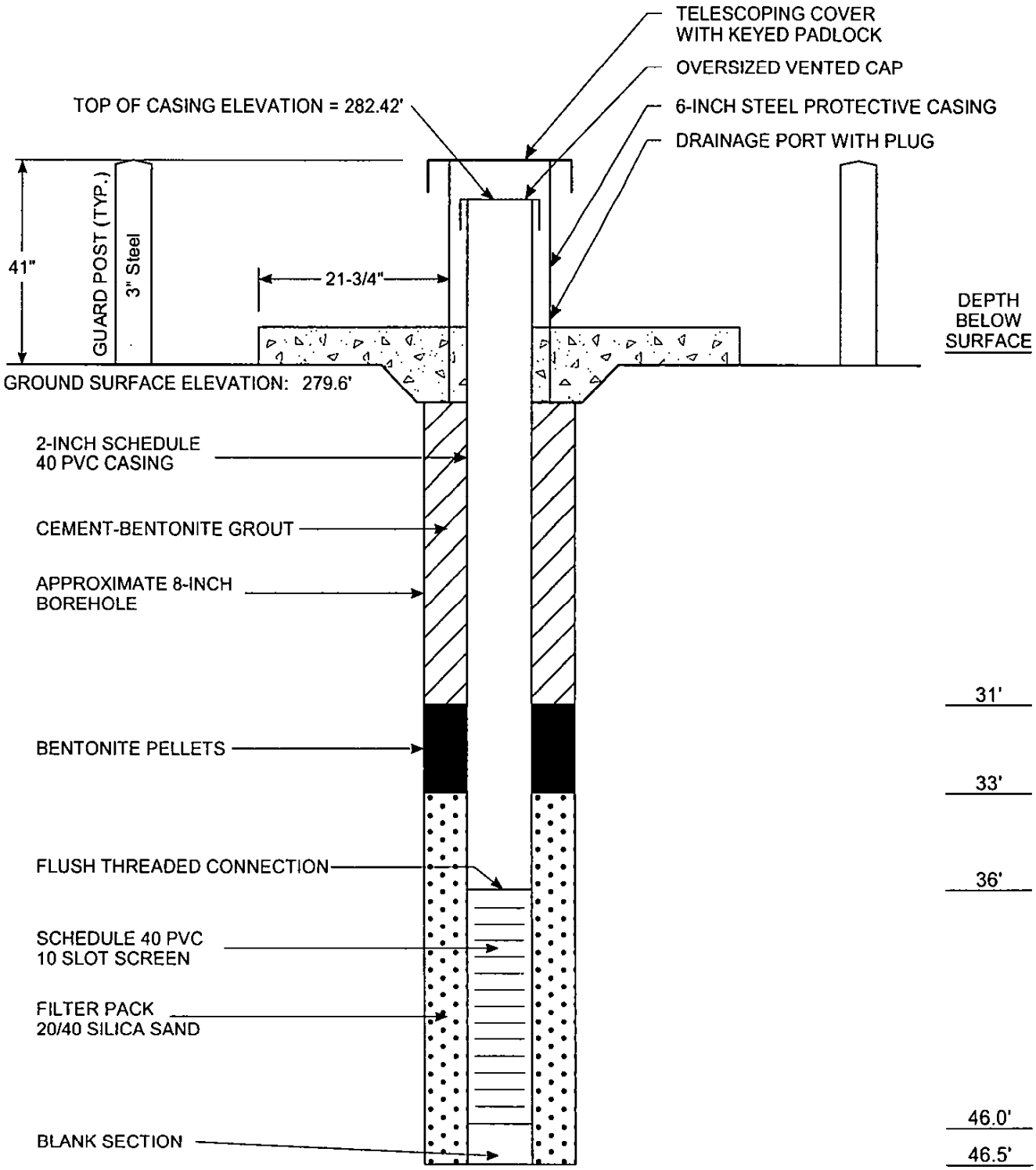
TRANSMISSIVITY = 1.43E-05 FT**2/SECONDS

APPENDIX E

WELL CONSTRUCTION DIAGRAMS

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**PW-16**
Boring Depth	**50'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**3/8/07**	Screen Interval	**36' to 46'**
Latitude (N)	**32°37'21.35"** Longitude (W) **93°55'54.79"**		

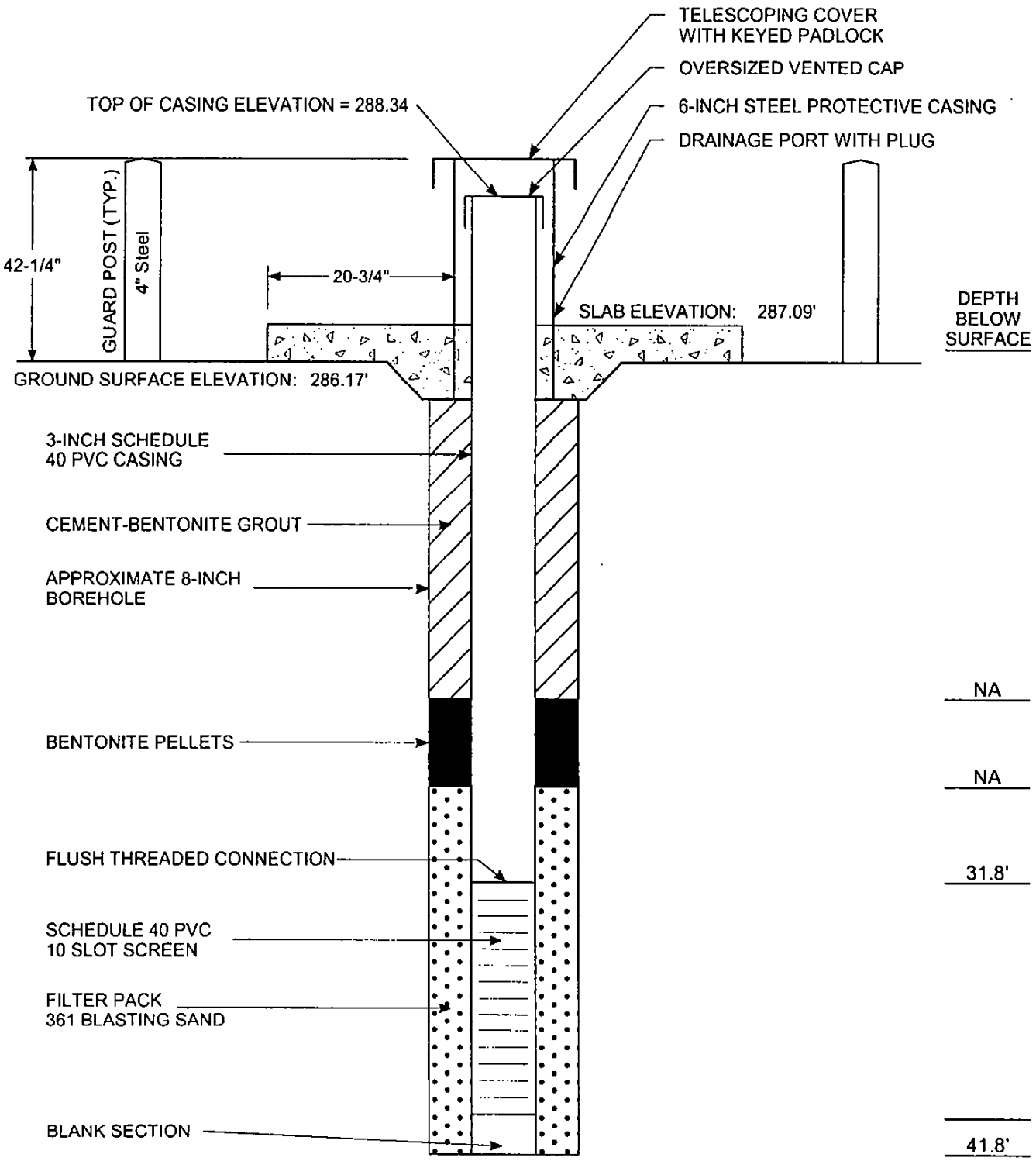


Apr 23, 07 WELL_UOP_SWP_PW-16 19228153_UOP_WELLS.GPJ PW-16

NOT TO SCALE

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**MW-2**
Boring Depth	**40'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**1/24/80**	Screen Interval	**31.8' to 41.8'**
Latitude (N)	**32°37'25.4"** Longitude (W) **93°55'56.1"**		



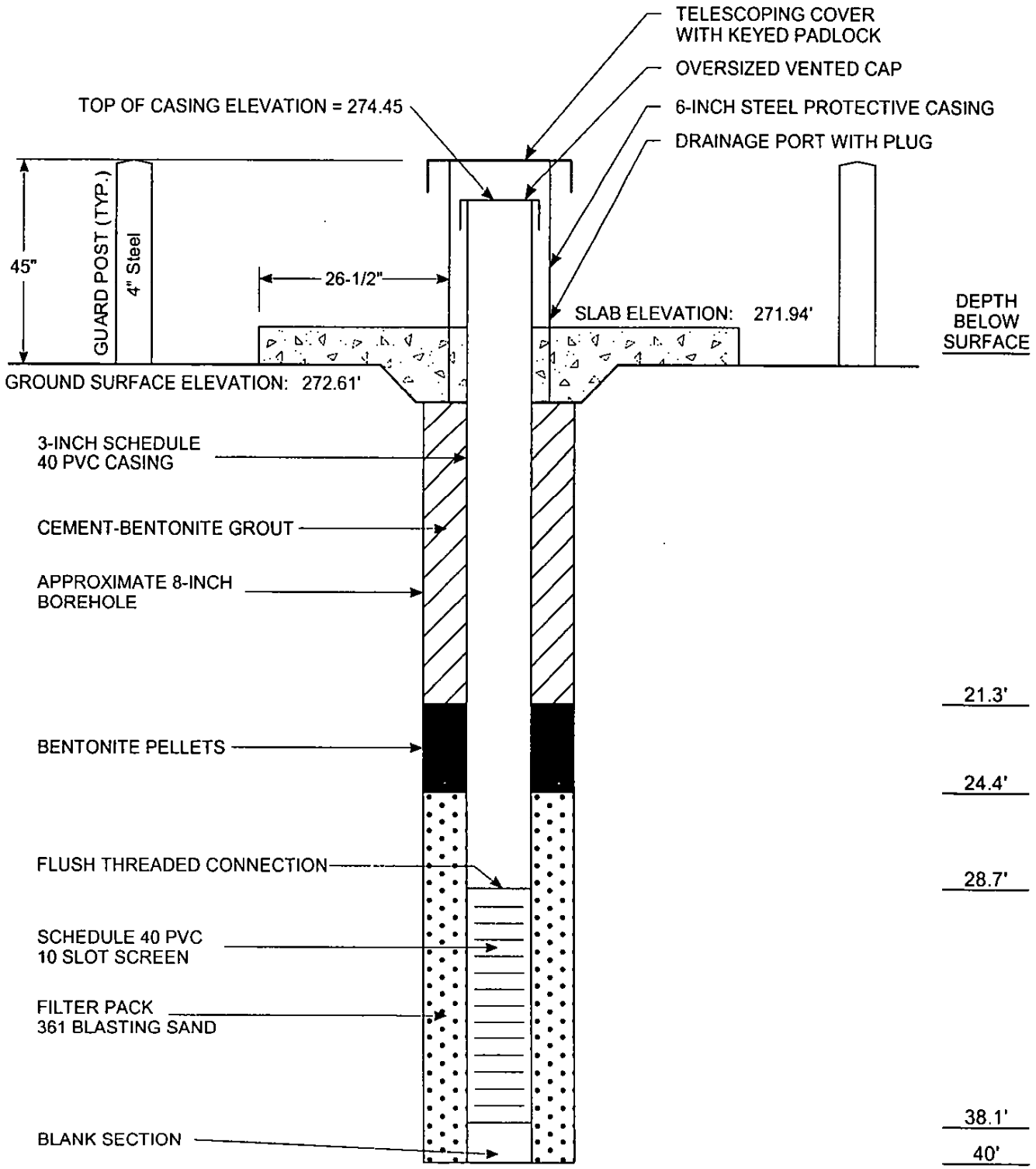
NA = Not Available

Apr 23, 07 WELL_UOP_SWP 19228153_UOP_WELLS.GPJ MW-2

NOT TO SCALE

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**MW-5**
Boring Depth	**40'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**8/5/85**	Screen Interval	**28.7' to 38.1'**
Latitude (N)	**32°37'09"** Longitude (W) **93°55'54"**		

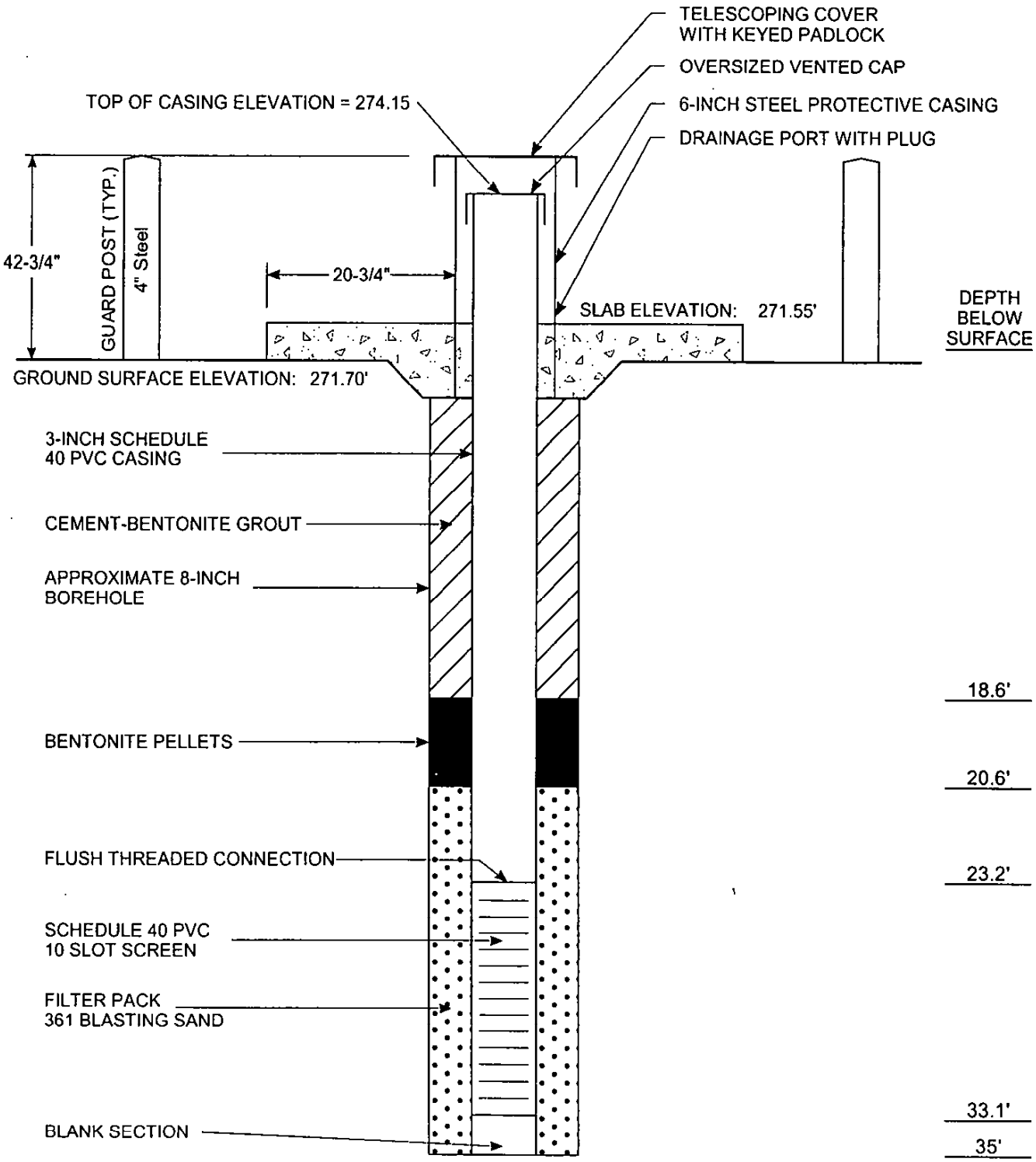


Apr 23, 07 WELL_UOP_SWP 19228153_UOP_WELLS.GPJ MW-5

NOT TO SCALE

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**MW-6**
Boring Depth	**36'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**8/3/85**	Screen Interval	**23.2' to 33.1'**
Latitude (N)	**32°37'09.1"** Longitude (W) **93°55'53"**		

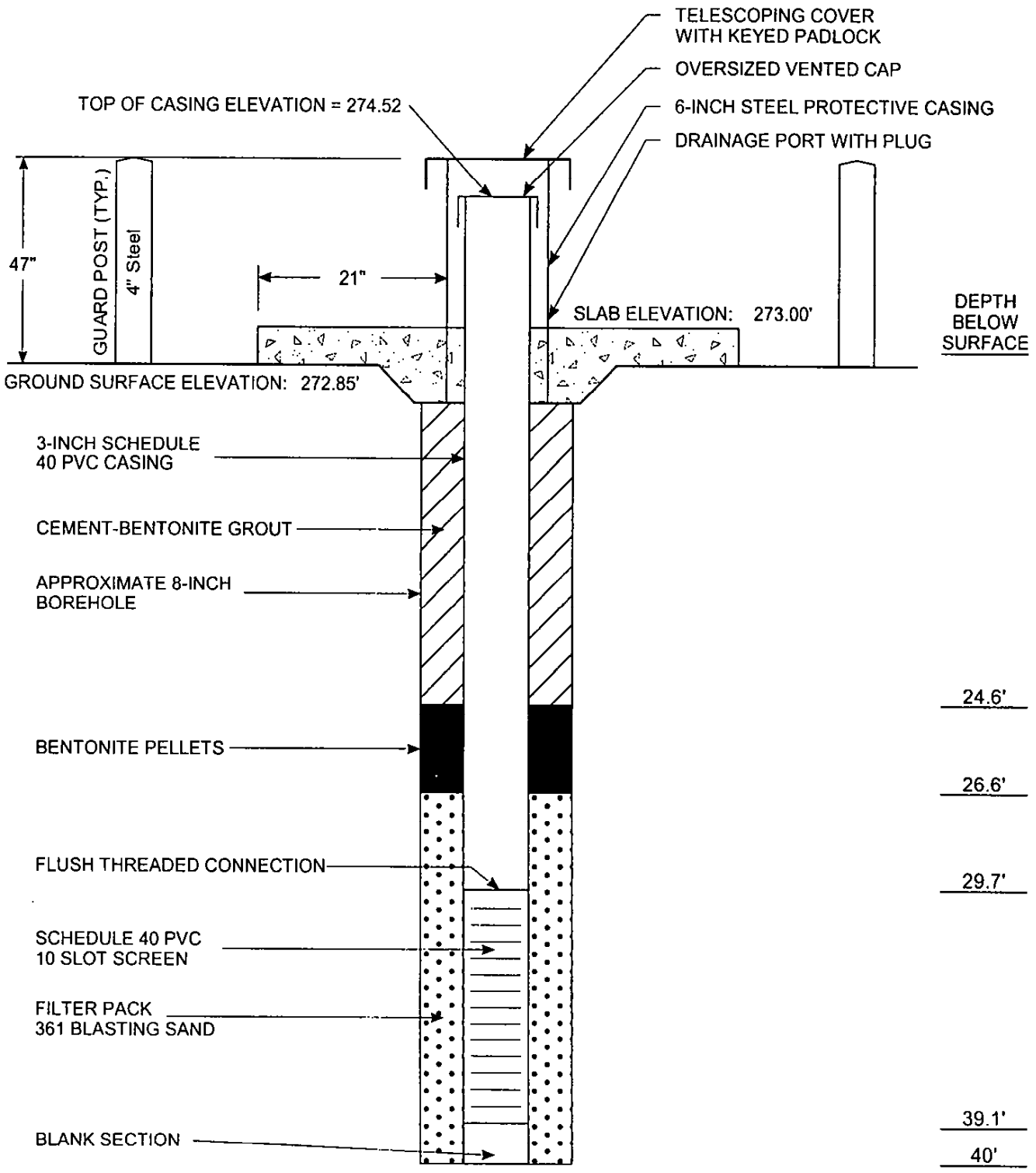


Apr 23, 07 WELL_UOP_SWP 19228153_UOP_WELLS.GPJ MW-6

NOT TO SCALE

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**MW-7**
Boring Depth	**42'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**8/6/85**	Screen Interval	**29.7' to 39.1'**
Latitude (N)	**32°37'09"** Longitude (W) **93°55'49.5"**		

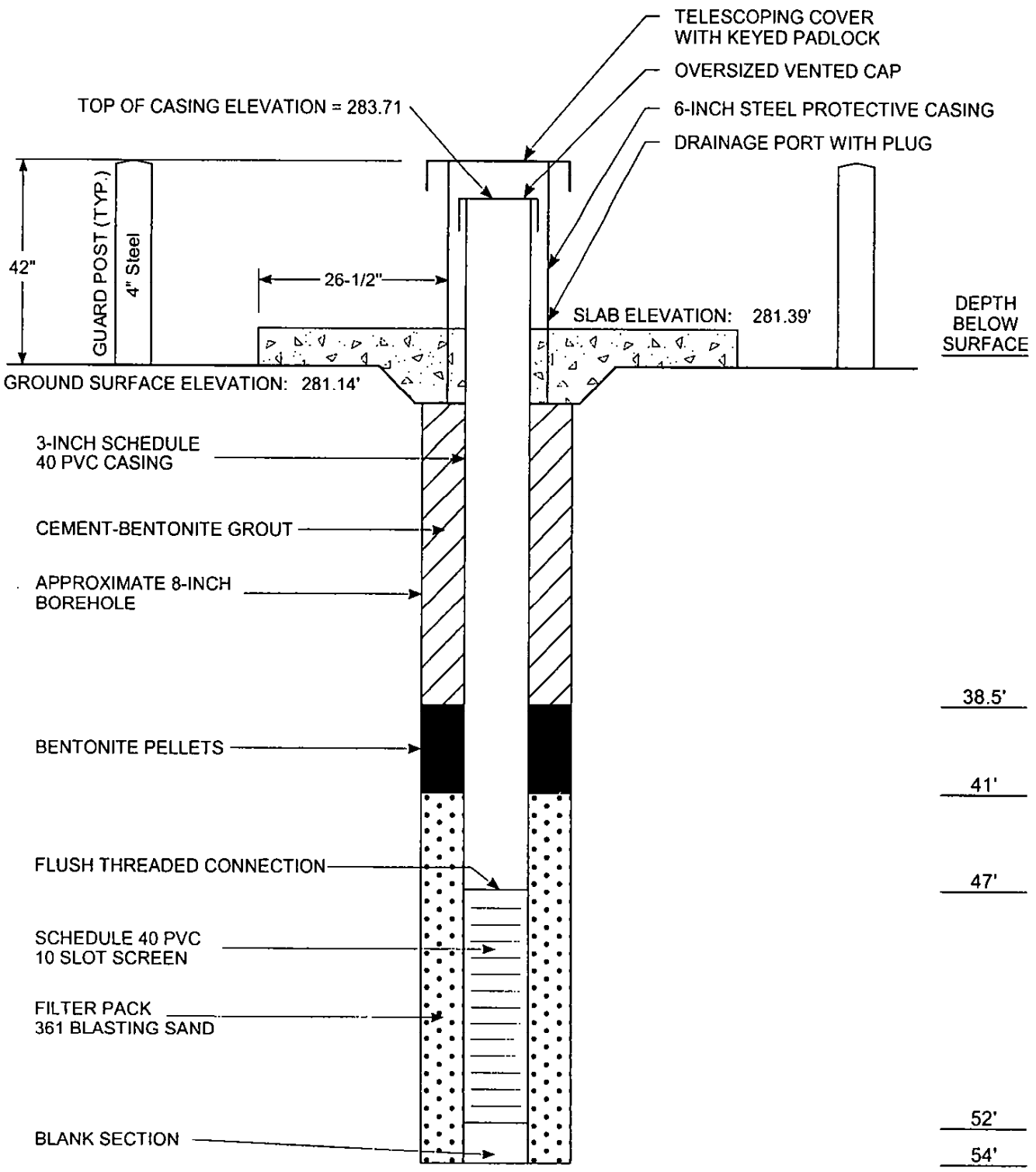


Apr 23, 07 WELL_UOP_SWP 19228153_UOP_WELLS.GPJ MW-7

NOT TO SCALE

MONITOR WELL INSTALLATION REPORT

PROJECT	**UOP Solid Waste Permit - No. 1 Pond**	Page	**1 of 1**
LOCATION	**Shreveport, Louisiana**	Well No.	**MW-12**
Boring Depth	**54'**	Aquifer	**Shallow Wilcox Sands**
Date Completed	**5/2/86**	Screen Interval	**47' to 52'**
Latitude (N)	**32°37'13.9"** Longitude (W) **93°55'45.9"**		



Apr 23, 07 WELL_UOP_SWP 19228153_UOP_WELLS.GPJ MW-12

NOT TO SCALE

GROUND WATER OBSERVATION WELL REPORT

PROJECT UOP Recovery Well System

LOCATION Blanchard, Louisiana - 87B166C

Date Completed 6/3/87 Original Depth 35'

Inspected By Robert Conger Date 6/3/87

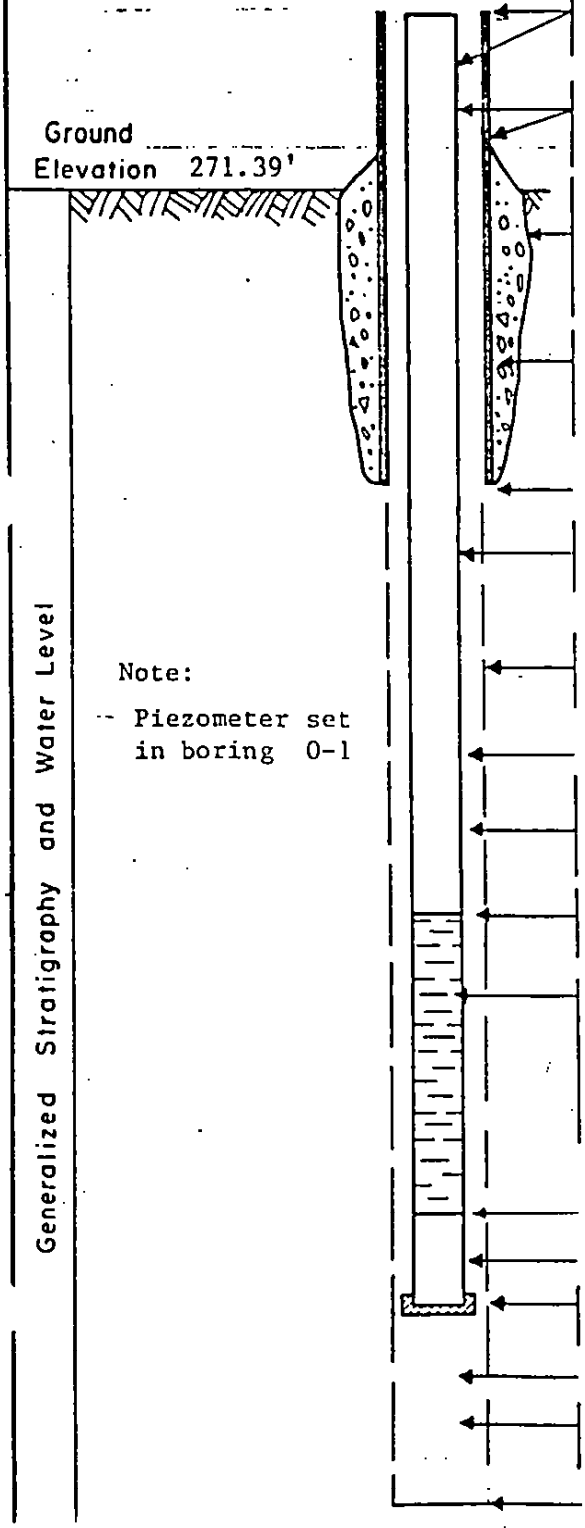
Checked By K.A. Holt Date 7/7/87

Page 1 of 1

Well No. 0-1

Aquifer Deep Wilcox

Depth Interval 24.27'-34.27



Note:

- Piezometer set in boring 0-1

Elevation of top of surface riser pipe.	274.39'
Height of top of surface riser pipe above ground surface	3.0'
Depth of surface seal below ground surface	0
Type of surface seal: Portland cement	
I.D. of surface casing.	NA
Type of surface casing: NA	
Depth of surface casing below ground	NA
I.D. of riser pipe.	2"
Type of riser pipe: Triloc TFJ SCH 40 PVC	
Diameter of borehole	5 5/8"
Depth of borehole	35.0'
Type of backfill: Portland cement	
/depth top of seal.	17.0'
Type of seal: Bentonite Pellets	
/depth bottom of seal.	21.0'
Type of sand pack: .361 Blasting sand	
Depth of top of sand pack.	21.0'
Elev. top of screened section.	247.12'
Type of screened section: SCH 40 PVC	
Describe openings No. 10 slotted	
I.D. of screened section.	2"
Elev. bottom of screened section.	237.12'
Length of blank section.	0.5'
/depth bottom of plugged blank section.	34.77'
/depth bottom of sand column.	35.0'
Type of backfill below observation pipe. .361 Blasting sand	
/depth of hole.	35.0'

GROUND WATER OBSERVATION WELL REPORT

PROJECT: UOP Recovery Well System

LOCATION: Blanchard, Louisiana

Date Completed: 6/3/87 Original Depth: 35.5'

Inspected By: Robert Conger Date: 6/3/87

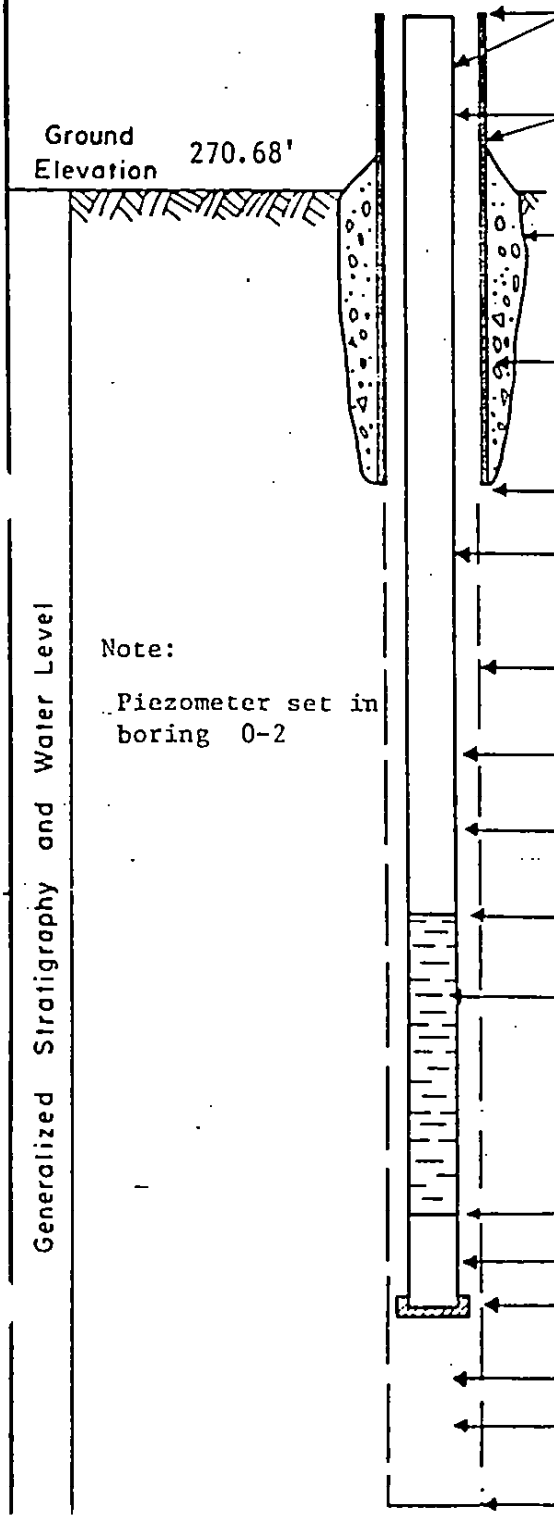
Checked By: K.A. Kelly Date: 7/7/87

Page 1 of 1

Well No. 0-2

Aquifer: Deep Wilcox

Depth Interval: 24.42'-34.4



Note:

Piezometer set in boring 0-2

Elevation of top of surface riser pipe.	273.26'
Height of top of surface riser pipe above ground surface	2.58'
Depth of surface seal below ground surface	0
Type of surface seal: Portland cement	
I.D. of surface casing.	NA
Type of surface casing: NA	
Depth of surface casing below ground	NA
I.D. of riser pipe.	2"
Type of riser pipe: Triloc TFJ SCH 40 PVC	
Diameter of borehole	5 5/8"
Depth of borehole	35.5'
Type of backfill: Portland cement	
depth top of seal.	20.0'
Type of seal: Bentonite pellets	
depth bottom of seal.	23.0'
Type of sand pack. .361 Blasting sand	
Depth of top of sand pack.	23.0'
Elev. top of screened section.	246.26'
Type of screened section: SCH 40 PVC	
Describe openings No. 10 slotted	
I.D. of screened section.	2"
Elev. bottom of screened section.	236.26'
Length of blank section.	0.5'
depth bottom of plugged blank section.	34.92'
depth bottom of sand column.	35.5'
Type of backfill below observation pipe. .361 Blasting sand	
depth of hole.	35.5'

GROUND WATER OBSERVATION WELL REPORT

PROJECT: UOP Recovery Well System

LOCATION: Blanchard, Louisiana

Date Completed: 6/4/87 Original Depth: 40'

Inspected By: Robert Conger Date: 6/4/87

Checked By: K.A. Hoke Date: 7/7/87

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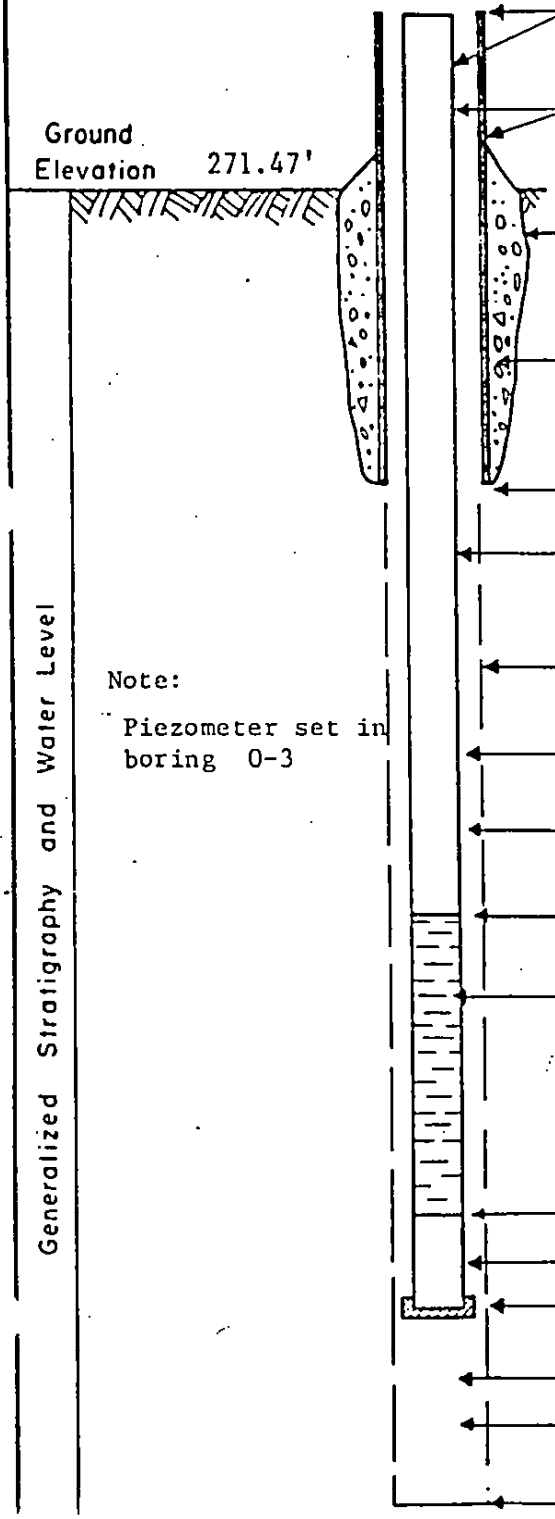
Well No. 0-3

Aquifer: Deep Wilcox

Depth Interval: 29.46'-39.46



Note:

Piezometer set in boring 0-3

Elevation of top of surface riser pipe.	274.59'
Height of top of surface riser pipe above ground surface	3.12'
Depth of surface seal below ground surface	0
Type of surface seal: Portland cement	
I.D. of surface casing.	NA
Type of surface casing: NA	
Depth of surface casing below ground	NA
I.D. of riser pipe.	2"
Type of riser pipe: Triloc TFJ SCH 40 PVC	
Diameter of borehole	5 5/8"
Depth of borehole	40.0'
Type of backfill: Portland cement	
depth top of seal	25.5'
Type of seal: Bentonite Pellets	
depth bottom of seal.	27.0'
Type of sand pack. 361 Blasting sand	
Depth of top of sand pack.	27.0'
Elev. top of screened section.	242.01'
Type of screened section: SCH 40 PVC	
Describe openings No. 10 slotted	
I.D. of screened section.	2"
Elev. bottom of screened section.	232.01'
Length of blank section.	0.5'
depth bottom of plugged blank section.	39.96'
depth bottom of sand column.	40.0'
Type of backfill below observation pipe. NA	
depth of hole.	40.0'

GROUND WATER OBSERVATION WELL REPORT

PROJECT UOP Groundwater Recovery System - 89B143C

LOCATION Blanchard, Louisiana

Date Completed 4/19/89 Original Depth 38 feet

Inspected By Robert Conger Date 4/11/89

Checked By Robert Conger Date 5/30/89

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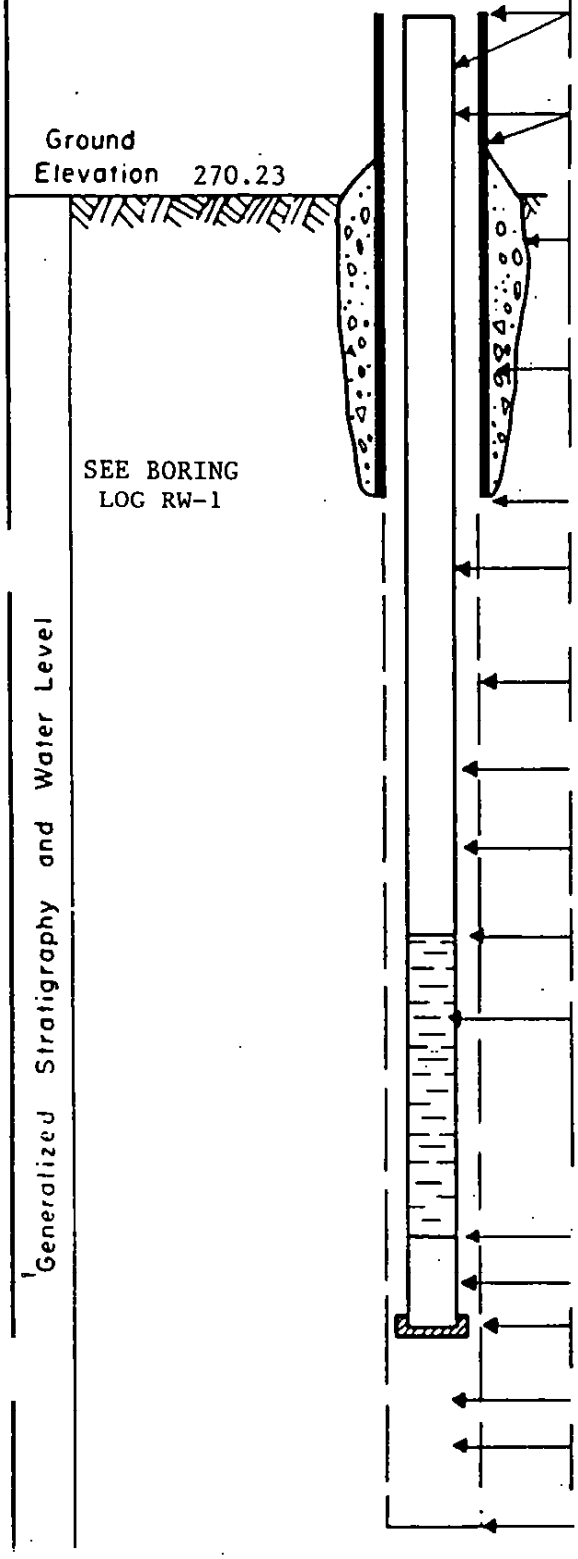
Well No. RW-1

Aquifer Deep WILCOX

Depth Interval 25.33-34.16 feet



Elevation of top of surface riser pipe.	271.44 feet
Height of top of surface riser pipe above ground surface.	1.21 feet
Depth of surface seal below ground surface	AT GL
Type of surface seal: Portland Cement + 4% Bentonite	
I.D. of surface casing.	NA
Type of surface casing: None	
Depth of surface casing below ground	NA
I.D. of riser pipe.	8 inches
Type of riser pipe: SCH 80 PVC TFJ	
Diameter of borehole	16 inches
Depth of borehole	38 feet
Type of backfill: Portland Cement + 4% Bentonite	
depth top of seal.	22.5 feet
Type of seal: Bentonite Pellets	
depth bottom of seal.	24.0 feet
Type of sand pack. 16/30 Colorado Silica	
Depth of top of sand pack.	24.0 feet
depth top of screened section.	25.33 feet
Type of screened section: SCH 80 PVC TFJ	
Describe openings No. 20 slotted horizontally	
I.D. of screened section.	8 inches
depth bottom of screened section.	34.16 feet
Length of blank section.	2.46 feet
depth bottom of plugged blank section.	36.96 feet
depth bottom of sand column.	38.0 feet
Type of backfill below observation pipe. 16/30 Colorado Silica	
depth of hole.	38 feet

GROUND WATER OBSERVATION WELL REPORT

PROJECT UOP Recovery System - 89B143C

LOCATION Blanchard, Louisiana

Date Completed 4/20/89 Original Depth 36.5 feet

Inspected By Robert Conger Date 4/12/89

Checked By Robert Conger Date 5/30/89

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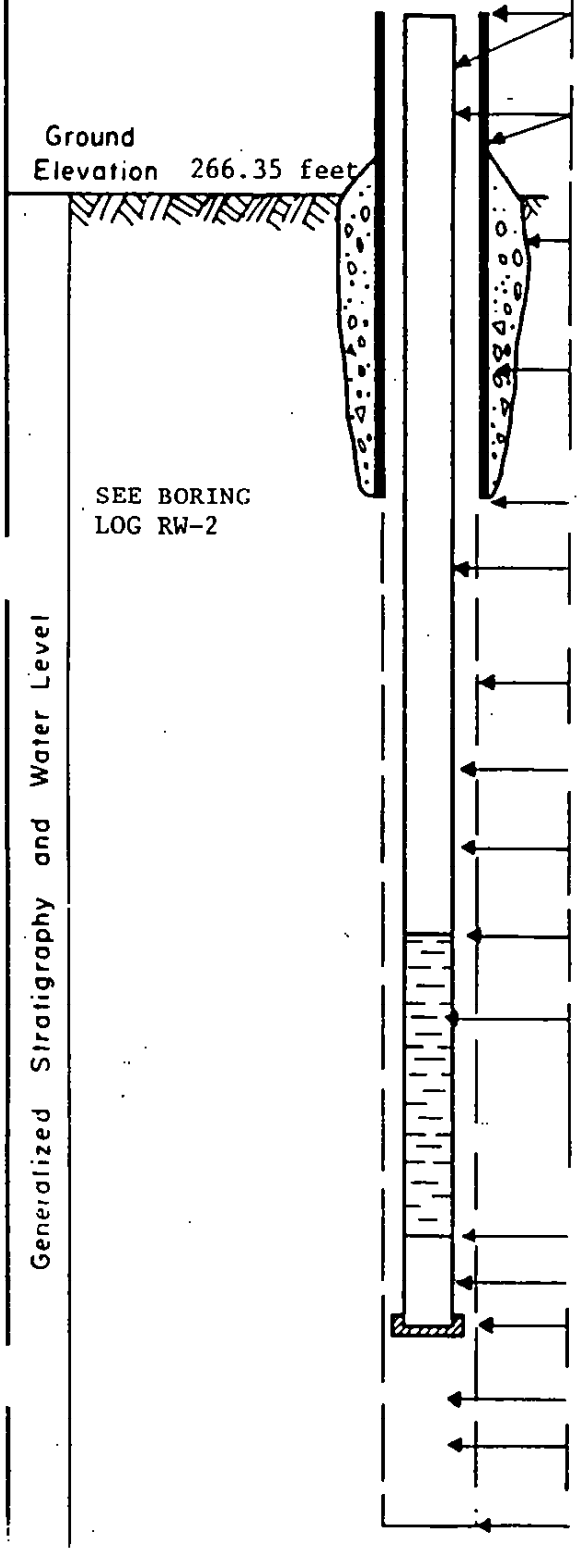
Well No. RW-2

Aquifer Deep WILCOX

Depth Interval 23.21- 32.09 feet



Elevation of top of surface riser pipe.	267.81 feet
Height of top of surface riser pipe above ground surface.	1.46 feet
Depth of surface seal below ground surface	AT GL
Type of surface seal: Portland Cement + 4% Bentonite	
I.D. of surface casing.	None
Type of surface casing: None	
Depth of surface casing below ground	None
I.D. of riser pipe.	8 inches
Type of riser pipe: SCH 80 PVC TFJ	
Diameter of borehole	16 inches
Depth of borehole	36.5 feet
Type of backfill: Portland Cement + 4% Bentonite	
depth top of seal.	19.5 feet
Type of seal: Bentonite Pellets	
depth bottom of seal.	21 feet
Type of sand pack. 16/30 Colorado Silica	
Depth of top of sand pack.	21 feet
depth top of screened section.	23.21 feet
Type of screened section: SCH 80 PVC TFJ	
Describe openings No. 20 slotted horizontally	
I.D. of screened section.	8 inches
depth bottom of screened section.	32.09 feet
Length of blank section.	2.46 feet
depth bottom of plugged blank section.	34.84 feet
depth bottom of sand column.	36.5 feet
Type of backfill below observation pipe. 16/30 Colorado Silica	
depth of hole.	36.5 feet

GROUND WATER OBSERVATION WELL REPORT

PROJECT UOP Groundwater Recovery System - 89B143C

LOCATION Blanchard, Louisiana

Date Completed 4/19/89 Original Depth 38.5 feet

Inspected By Robert Conger Date 4/13/89

Checked By Robert Conger Date 5/30/89

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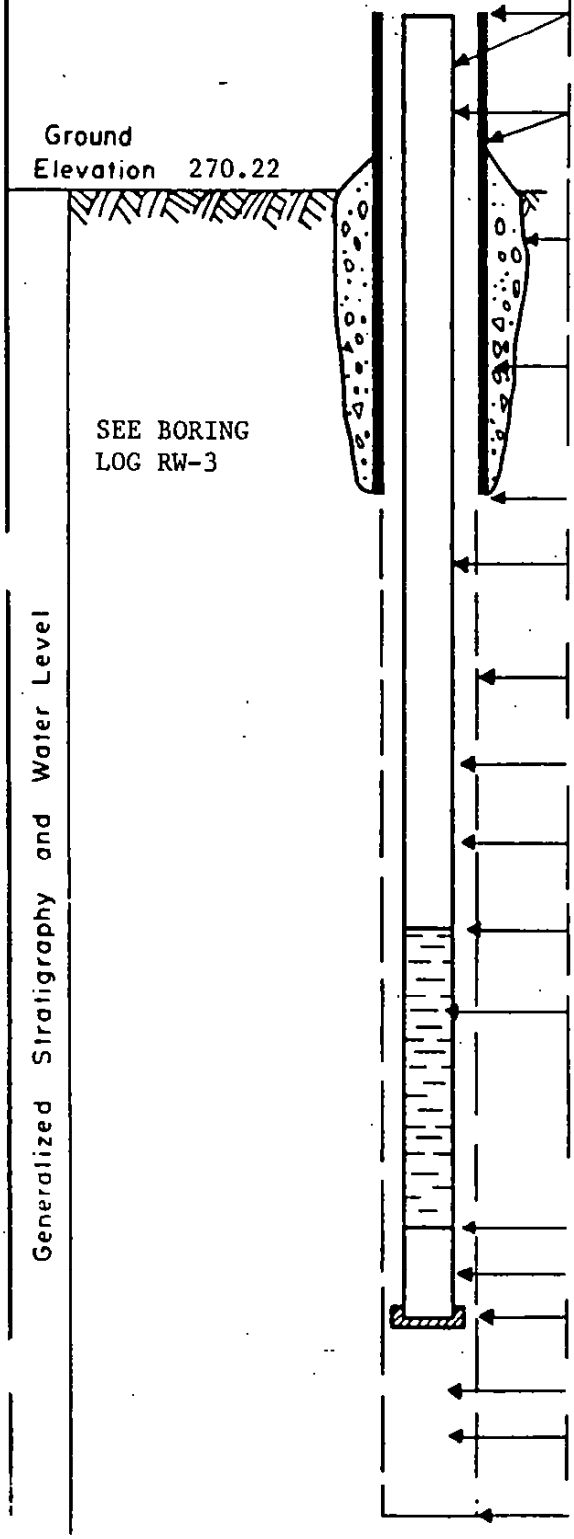
Well No. RW-3

Aquifer Deep WILCOX

Depth Interval 26.09-34.99 feet



Elevation of top of surface riser pipe. 272.88 feet

Height of top of surface riser pipe above ground surface. 2 feet

Depth of surface seal below ground surface AT GL

Type of surface seal: Portland Cement + 4% Bentonite

I.D. of surface casing. None

Type of surface casing: None

Depth of surface casing below ground None

I.D. of riser pipe. 8 inches

Type of riser pipe: SCH 80 PVC TFJ

Diameter of borehole 16 inches

Depth of borehole 38.5 feet

Type of backfill: Portland Cement + 4% Bentonite

depth top of seal. 22.5 feet

Type of seal: Bentonite Pellets

depth bottom of seal. 24.0 feet

Type of sand pack. 16/30 Colorado Silica

Depth of top of sand pack. 24.0 feet

depth top of screened section. 26.09 feet

Type of screened section: SCH 80 PVC TFJ

Describe openings No. 20 Slotted Horizontally

I.D. of screened section. 8 inches

depth bottom of screened section. 34.99 feet

Length of blank section. 2.42 feet

depth bottom of plugged blank section. 37.68 feet

depth bottom of sand column. 38.5 feet

Type of backfill below observation pipe. 16/30 Colorado Silica

depth of hole. 38.5 feet

GROUND WATER OBSERVATION WELL REPORT

PROJECT 89B143C

LOCATION Blanchard, Louisiana

Date Completed 4/19/89 Original Depth 40.5 feet

Inspected By Robert Conger Date 4/18/89

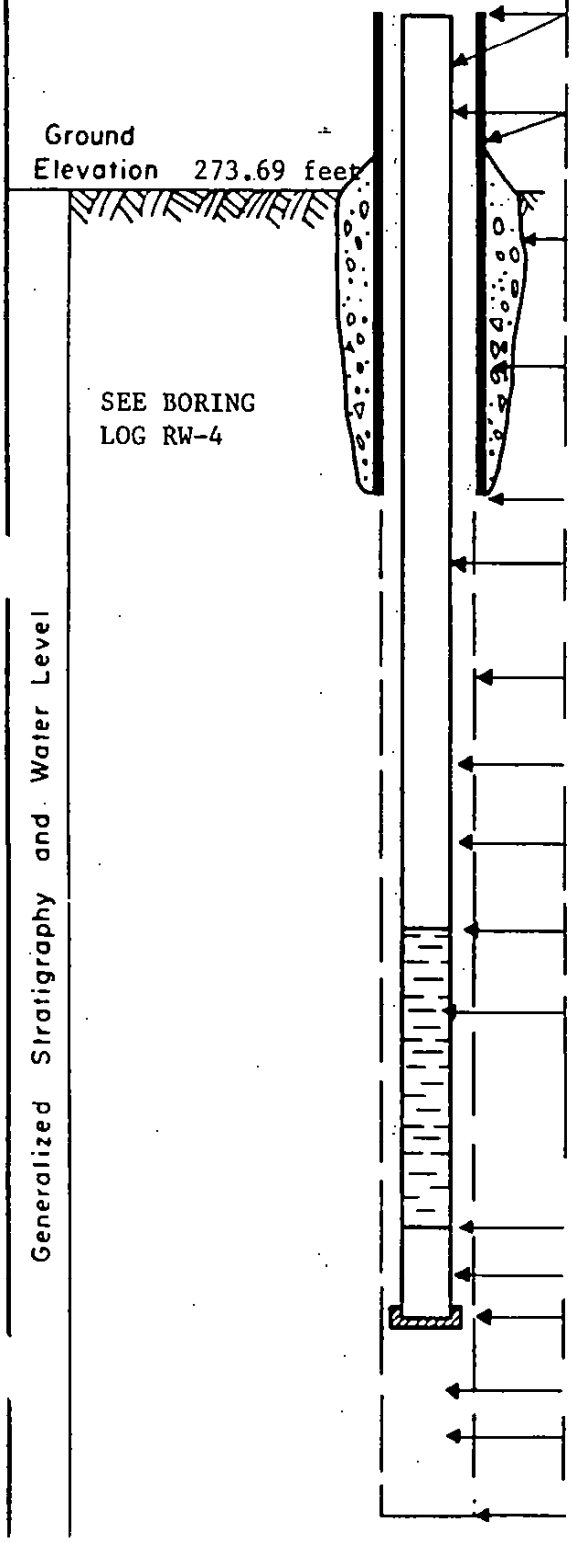
Checked By Robert Conger Date 5/30/89

Page 1 of 1

Well No. RW-4

Aquifer Deep WILCOX

Depth Interval 28.02-36.88 feet



Elevation of top of surface riser pipe. 275.23 feet

Height of top of surface riser pipe above ground surface 1.54 feet

Depth of surface seal below ground surface AT GL

Type of surface seal: Portland Cement + 4% Bentonite

I.D. of surface casing. None

Type of surface casing: None

Depth of surface casing below ground None

I.D. of riser pipe. 8 inches

Type of riser pipe: SCH 80 PVC TFJ

Diameter of borehole 16 inches

Depth of borehole 40.5 feet

Type of backfill: Portland Cement + 4% Bentonite

depth top of seal. 24.5 feet

Type of seal: Bentonite Pellets

depth bottom of seal. 26 feet

Type of sand pack. 16/30 Colorado Silica

Depth of top of sand pack. 26 feet

depth top of screened section. 28.02 feet

Type of screened section: SCH 80 PVC TFJ

Describe openings No. 20 Slotted Horizontally

I.D. of screened section. 8 inches

depth bottom of screened section. 36.88 feet

Length of blank section. 2.42 feet

depth bottom of plugged blank section. 39.61 feet

depth bottom of sand column. 40.5 feet

Type of backfill below observation pipe. 16/30 Colorado Silica

depth of hole. 40.5 feet

GROUND WATER OBSERVATION WELL REPORT

PROJECT: Permit Application - UOP

LOCATION: Shreveport, LA. 86C5002-2

Date Completed: 5-1-86 Original Depth: 39.5'

Inspected By: Robert A. SeGall Date: 5/1/86

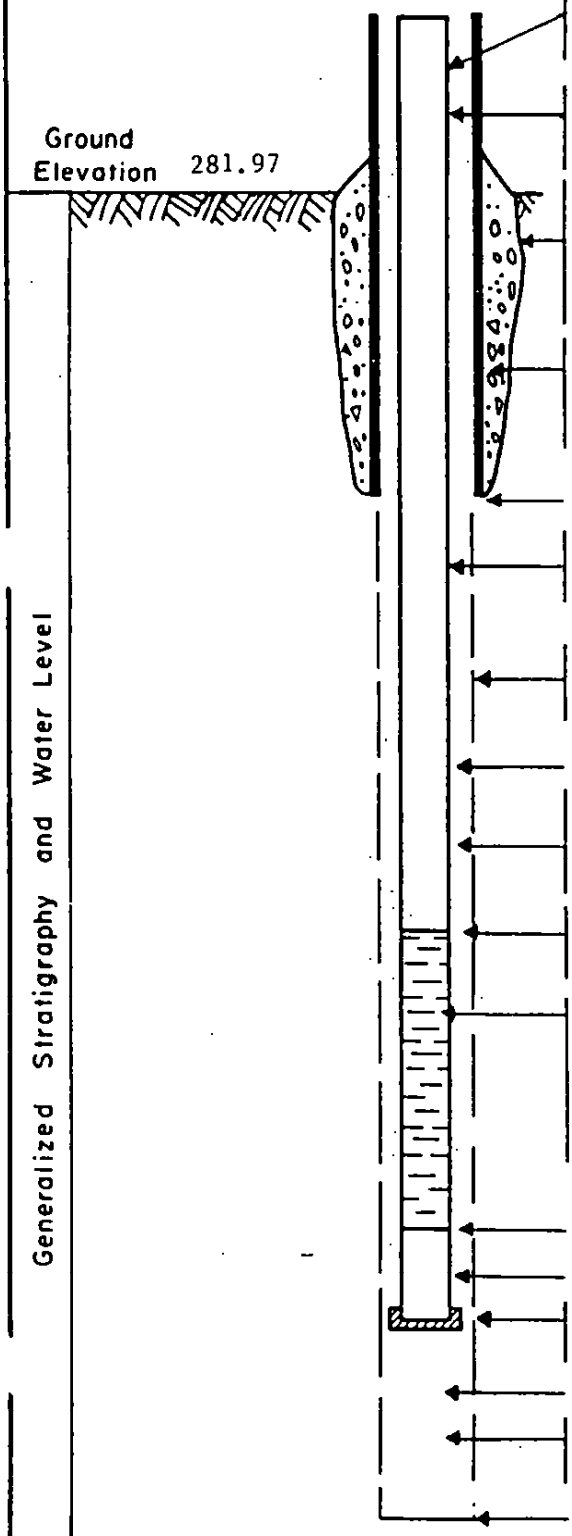
Checked By: C.W. Russell Date: 6/17/86

Page 1 of 1

Well No. P-11

Aquifer: Silty sands with silty clays and silts

Depth Interval: 32.5-37.5'



Elevation of top of riser pipe.	284.47
Height of top of riser pipe above ground surface	2'6"
Depth of surface seal below ground surface	2.0'
Type of surface seal: concrete mix	
I.D. of surface casing.	8"
Type of surface casing: steel	
Depth of surface casing below ground	approx. 1.5'
I.D. of riser pipe.	3"
Type of riser pipe: 3" schedule 40 PVC Triloc	
Diameter of borehole	6"
Depth of borehole	39'6"
Type of backfill: cement grout	
depth top of seal.	26'
Type of seal: Bentonite pellets	
depth bottom of seal.	28'
Type of sand pack. #361 sand	
Depth of top of sand pack.	28'
depth top of screened section.	32'6"
Type of screened section: PVC	
Discribe openings 0.010" horizontal slot, Triloc	
I.D. of screened section.	3"
depth bottom of screened section.	37'6"
Length of blank section.	2'
depth bottom of plugged blank section.	39'6"
depth bottom of sand column.	39'6"
Type of backfill below observation pipe. #361 sand	
depth of hole.	39'6"

APPENDIX F

EMERGENCY RESPONSE PLAN

UOP SHREVEPORT
EMERGENCY RESPONSE PLAN

INDEX

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APPENDICES

A. Emergency Notification Information

A.1 UOP Management

A.2 Spills and Releases - Agencies

A.3 Permit Excursions - Agencies

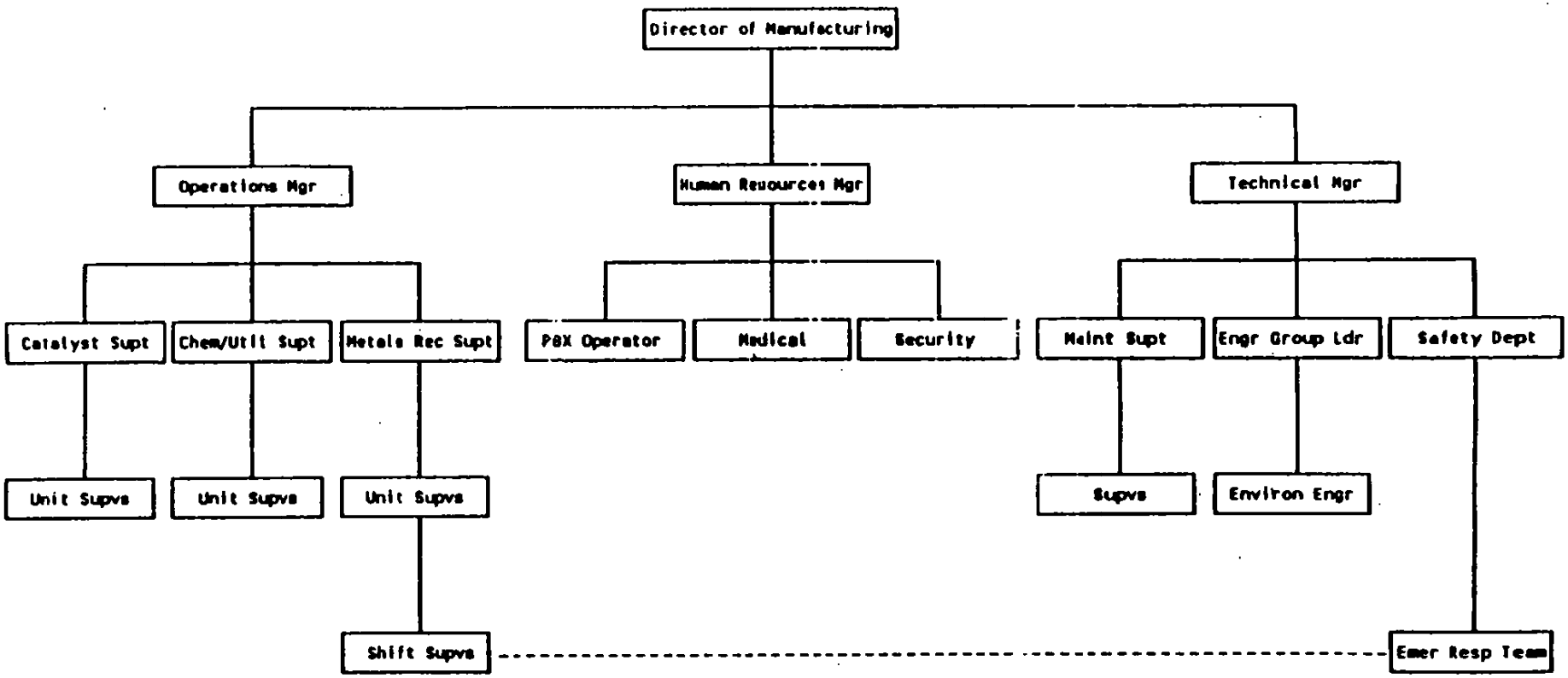
B. Fire System Layout and Evacuation

C. Emergency Medical Plan

D. Contingency Plan for Chemical and Waste Spills

E. Other Resources

Emergency Response
Organization Chart
UOP Shreveport Plant



UOP SHREVEPORT

EMERGENCY RESPONSE PLAN

Purpose: To provide a systematic approach to deal with emergency events involving plant personnel, operations or materials.

Definition: An emergency event is an unplanned or ruinous incident, severe injury, fire, explosion, chemical release or permit excursion that interrupts normal operations or presents a potential danger to life, property or surrounding community or harm to the environment. It may be anticipated as a result of natural causes such as tornado or hurricane.

The priorities of emergency response are minimization of: (1) injuries, (2) environmental damage, (3) loss of property.

Introduction: The procedures set forth herein should be used as a guide rather than fixed policy since the nature of each occurrence will dictate to some extent the exact procedure required. The one procedure on which there can be no deviation is the one concerned with release of information. The written procedure on this must be followed explicitly, particularly with regard to the news media.

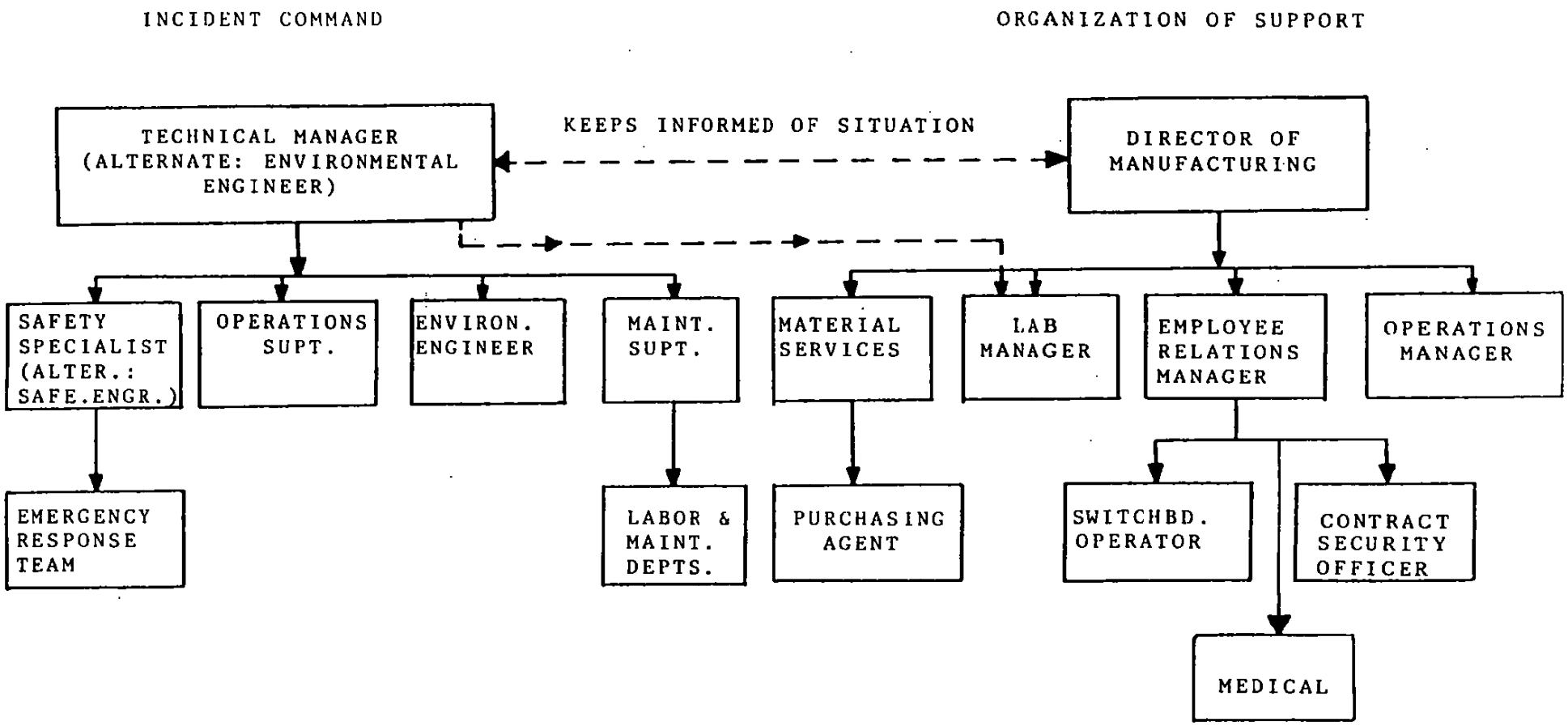
The plan contains a body of response organization and communication information and responsibility assignments. Appendices provide more detailed information for specific events.

Testing This plan will be tested using a mock critical event which will be conducted annually.

References:

UOP and Shreveport HS&EP Policy 2.0 and 2.0.A
UOP Emergency Notification Plan
UOP Shreveport SPCC Plan
Shreveport Plant Safety and Environmental Manuals

INCIDENT COMMAND SYSTEM



I. Control Center

The Director of Manufacturing's office is designated as the Control Center when an emergency has been declared. During off-shifts, weekends, holidays, and so on, the Shift Supervisor's office in the maintenance building will be the Control Center. It will also serve as the alternate Control Center in the event the Administration Building is involved in an emergency.

II. Notification of Local Management

In case of fire, explosion, significant spills, or other occurrence of more than minor consequence during normal working hours, the Manager or Superintendent concerned will be responsible for notifying the switchboard operator, who will in turn notify the following:

A. Shreveport Director of Manufacturing

B. Technical Manager

C. Operations Manager

D. Human Resources Manager (and Plant Nurse if an injury)

E. Maintenance Superintendent

F. Safety Engineer

G. Environmental Engineer

III. Notification During Off Hours

In case of occurrence during off-hours (nights, holidays and weekends), the Shift Supervisor who is not directing the Emergency Response Crew will be responsible for informing the Security Officer with a concise message relating to the incident that the Security Officer will use to notify the following as quickly as possible:

A. Shreveport Director of Manufacturing

B. Technical Manager

C. Operations Manager

D. Safety Specialist

E. Human Resources Manager (who will notify Plant Nurse)

F. Staff Member or Superintendent concerned

G. Maintenance Superintendent

H. Safety Engineer

I. Environmental Engineer

IV. Summary of Responsibilities and Duties (Emergency Organization)

A. Director of Manufacturing

1. Direct response operations

2. Notify appropriate Des Plaines UOP Management, in accordance with current emergency notification plan

3. Determine necessity of notifying state or federal agencies

4. Authorize photographs

5. Issue media release communications related to the incident.

B. Technical Manager (Emergency Coordinator)

1. Coordinate incident response for chemical spill/release (see Spill Control Contingency Plan, Appendix C) or other incidents

2. Notify appropriate regulatory agencies as required by law and UOP policy in coordination with Director of Manufacturing

3. Second alternate for handling media.

4. Notify outside agencies for any required assistance

C. Human Resources Manager

1. Assist in identification of injured

2. Assure treatment of injured and maintain records of injuries and disposition of cases

3. Provide for appropriate notification of relatives

4. First alternate for media contact in absence of Director of Manufacturing

5. Give appropriate information to evacuees

6. Assist in notifying outside agencies for assistance (sheriff's department, state police, ambulance service, hospitals, adjacent community officials, and so on) in coordination with Technical Manager

7. Security

8. Accounting for all personnel.

D. Operations Manager

1. Determine the immediate effect and possible future effects of the event on Plant operations

2. Decide what operations should continue and which should be suspended and keep the Director of Manufacturing informed

3. Coordinate operations activities with Emergency Response Controller.

E. Maintenance Superintendent

1. Coordinate maintenance personnel and equipment requirements with Emergency Response Controller

2. Arrange for outside equipment and contract services as requested.

F. Safety Department (Includes Safety Specialist)

1. Give direction in field to Emergency Response Crew (Primary -- Safety Specialist; Backup -- Safety Engineer)

2. Ensure that Emergency Response personnel are informed as to the particular hazards of the Emergency Event

3. Assist Technical Manager in coordinating Emergency Response

4. Notify OSHA regional office in event of fatality or hospitalization of four or more persons as directed by Director of Manufacturing or Technical Manager.

G. Telephone Operator

1. Maintain control of switchboard

2. Refer all inquiries relating to the incident to the Director of Manufacturing.

H. Security (Human Resources Manager)

1. Maintain control and limit access to Plant

2. Assist in notifying appropriate personnel during off-shifts in accordance with Section III.

3. Direct requested emergency equipment to the scene of incident as requested by Emergency Response Coordinator

4. Keep record of all emergency personnel entering and leaving the property

5. Turn away all incoming freight shipments

6. Keep accurate time log of events concerning the emergency

7. Assist in accounting for all personnel.

I. Emergency Response Crew

1. Perform rescue, fire fighting, and other emergency operations in accordance with prior training under direction of the Emergency Response Team Leader.

2. Assist outside emergency personnel as directed by UOP coordinator.

J. Shift Facilitators

During night shift, weekends and holidays, the shift facilitator supervisor in affected area will decide if initiating emergency response is appropriate, and, if so, he will direct the response activities until relieved by other appropriate management personnel as referred to herein.

K. Area Superintendents/Facilitators

1. Assist the Emergency Response Crew by informing them of potential hazards involved (when Event is in your area)

2. Direct the orderly shutdown of operations as required

3. Assist in the control of Emergency Event as required

4. Inform Director of Manufacturing as soon as practical of the possible cause of the incident; assess injuries and amount of damage; and relay other pertinent information about the incident.

L. Environmental Engineer

1. Provide technical coordination for chemical spill or release

2. Monitor Emergency Response activities for potential environmental effects.

3. Alternate for Technical Manager as Emergency Coordinator

Unless Otherwise directed, administrative reporting while carrying out these duties will be the same as shown in the organization chart on the following page.

V. Attendance at Scene of Occurrence

In case of fire, explosion, or other incident the emergency alarm will be activated Emergency Response Crew will assemble as quickly as possible. On day shift, the Safety Specialist (or in his absence the Safety Engineer) will take charge (only one of the two in charge.) Technical direction will be given by the Technical Manager. During off-shifts (afternoons, midnights and weekends) the Emergency Response Crew will be directed by one Shift Supervisor at the scene where the emergency occurs until relieved by appropriate personnel. The company ambulance will be dispatched for stand by in case of injury.

The personnel at the area involved will be limited to the supervisory group of the area, the Emergency Response crew, and the management group previously listed. All other personnel are to remain at their regular stations unless called upon for assistance or ordered to evacuate. The congregation of personnel at the scene will not be allowed because of the potential danger and possible interference with the necessary functions of authorized personnel. Violation of this rule will not be tolerated.

VI. Alarm System and Emergency Equipment

A. The emergency telephone, 333, sounds in

1. Guard House Ext. 229, 500
2. Switchboard
3. Control Lab* Ext. 264
4. Emergency Response Area Ext. 320
5. Nurse's Office Ext. 410
6. Safety Engineer Ext. 422
7. Safety Specialist Ext. 415

*24-Hour Coverage

B. The plant emergency alarm, which initiates assembly of the Emergency Response Team, may be activated throughout the plant via fire alarm stations or by the control lab (Ext. 333 or 264).

1. After activating an alarm, an employee should call Ext. 333 or 320 to provide initial response requirements.

   (a) Name of person calling
   (b) What is emergency?
   (c) Where is emergency?
   (d) Assistance needed?
   (e) Injuries known?

C. Fire fighting equipment is strategically located throughout the Plant. Additional hoses, wrenches, and so on are located in the electric pump house, and on the fire cart at the assembly building.

1. Emergency equipment for chemical spills is located in the assembly building and warehouse. Designated personnel will move the necessary equipment to the emergency site as quickly as possible

2. Only trained personnel should operate emergency response equipment to avoid injury and/or interference.

VII. Injury to Personnel

In case of injury to personnel during normal hours, the Plant Nurse, or Human Resources Manager will be responsible for seeing that proper action is taken in preliminary treatment, transporting, or getting medical assistance when required. Treatment at the scene of the incident must be coordinated with the Emergency Response Team Leader.

In case of injury during off-hours the Shift Supervisor in the affected area will be responsible for preliminary treatment, transporting or obtaining medical assistance. Notification of the Safety Engineer, Safety Specialist, Nurse, or the Human Resources Manager and other management personnel will be at the discretion of the Shift Supervisor.

In case of injury requiring hospitalization, the Human Resources Manager shall be notified as quickly as possible. He will then notify the family of the injured and will also handle other personal matters such as:

1. Disposition of personal auto at plant

2. Return personal belongings at locker and

3. Mail paycheck, if necessary.

VIII. Responsibility of Security Officers

In case of disastrous occurrence, the Security Officer on duty must remain at the Security Office and immediately call an additional Security Officer for assistance to man the outer guard house. If outside equipment or services such as fire fighting equipment or ambulances are called in, the Security Officer shall direct them to the proper place as quickly as possible, without the need for passes, permits, and so on. The facilitator in charge of the emergency and who calls the equipment in will be responsible for notifying the Security Officer who is coming and where they should be sent.

If the location or nature of the accident makes it desirable to isolate the entire plant property (rather than just the process area), the Security Officer located at the outer guard house shall control plant access from there if directed to do so by the Shift Facilitator, Human Resources Manager, Safety Specialist, Director, or other Manager in charge of handling the emergency. It may also be desirable to close the outer gate if needed for proper control, making sure that the emergency vehicles that have been called can obtain prompt passage when needed. If control by the Security Officer is moved to the outer guard house, then the Security Officer should handle responsibilities outlined in these procedures from the outer guard house. (Note that phone extension 229 is hooked up to both guard houses.)

It will be the responsibility of the Security Officer to see that outsiders who have <u>not</u> been called for assistance are not allowed inside the fenced area or beyond the guard house being used as the access control point. All unauthorized visitors are to be denied entrance to the premises in a polite but firm manner.

IX. Release of Information

In the unlikely event of a serious fire, explosion or injury to a number of personnel, the various news media may converge on the plant to get a story. This is understandable because such accidents are news. The way these people are handled sometime determines whether the Company and its employees receive favorable or unfavorable publicity. The media have a legitimate interest in reporting an emergency, and authorized news representatives should be treated courteously. Security Officers should:

A. Thoroughly and politely check press credentials

B. Politely, but firmly, keep news representation out of danger areas.

C. Never interfere with the media outside company property. They should be warned, however, if they are in danger.

D. Refer all questions to the spokespersons and volunteer no information.

The following procedure must be followed strictly by all personnel:

A. The Director of Manufacturing will be the official spokesperson and will issue all statements concerning any accident that occurs. In the absence of the Director, the alternate spokesperson will be the Human Resources Manager, the Technical Manager, and the Operations Manager, in that order.

B. All media representatives of the newspaper, radio, television, and so on, will be allowed to wait in the Security Office until such time as the official spokesperson can determine the preliminary extent of the accident. The Security Officer will be responsible for keeping the visitors in the Security Office until such time as the spokesperson will be available. The Human Resources Manager and/or other appropriate manager will direct the Security Officers in this function. It may be appropriate for the media to be asked to come to the office conference room or other designated location upon the decision of the spokesperson or Human Resources Manager.

C. As soon as possible, the official spokesperson will inform the media about the accident. Names of injured employees, if any, will not be released until their families have been properly notified by the Company. The official spokesperson will tell what happened, what we are doing about it, and when it will be complete. Each official spokesperson has received training on handling media situations.

D. It is the responsibility of the official spokesperson to immediately inform UOP upper management. The representatives of the various news media will be most persistent in trying to get information whether it be right or wrong. The only answer to their questions on the part of personnel coming in contact with them will be that the official spokesperson will give them all possible information as soon as he is able to do so. These visitors must be treated courteously, but it will also be necessary to treat them firmly.

It is required that appropriate management in Des Plaines be informed immediately about situations that could cause the media to contact us or situations of actual media contact. In the case of local media exposure, it is desired for Des Plaines management to be contacted before the official spokesperson talks with the media, but circumstances may not allow this. If the media contacts the spokesperson first, it is his responsibility to immediately advise Des Plaines after the contact. The spokesperson will inform upper management primary or alternate contacts. If an accident or environmental matter is involved, the UOP Health, Safety and Environmental Group should also be contacted. (cf. Appendix A for details)

Some government agencies require notification of events (usually environmental related) in a timely manner; in some cases within one (1) hour of occurrence. Although Des Plaines approval of such release of information is part of Company policy, an exception is made where legal requirements conflict with those of Company policy. (Appendix A also gives details for reporting to government agencies.)

E. Severe Weather Alerts

Should severe weather occur and threaten the normal operation of the Plant, the following procedures shall be followed:

1. Monitoring weather reports from the National Weather Service by weather alert radio, commercial radio, television and newspaper is essential for whatever advance notice may be available.

2. Weather alert radios are located in the Plant in the following locations:

   a. Main Guard House
   b. Laboratory Control Lab*

   * 24-hour coverage

3. Advance notice of flash flooding and hard freezes is given by weather reports. After being made aware of flooding or freeze, Plant supervision shall initiate the operational action plan for that condition.

4. Other than notice from weather reports that conditions are conducive for lightening, no notice is available. When the effects of lightening cause an electrical power outage at the Plant, supervision will initiate the operational action plan for that condition.

5. Other than reports from weather service that conditions are conducive for tornadoes, there may be only a short notice or no notice. The following precautionary measures shall be initiated to safeguard life and property:

   a. Tornado characteristics
   A tornado usually develops from a severe thunderstorm. Tornado winds turn counter clockwise at speeds varying from less than 100 mph to approximately 300 mph. Tornadoes move forward at an average speed of approximately 35 mph. The distinctive, funnel-shaped cloud is either gray or black in color and is easy to recognize.

   As it touches the earth, it writhes and twists, throwing debris in all directions. It is usually accompanied by hail, violent thunderstorms, and strong winds.

   b. Tornado Watch/Tornado Warning
   A tornado watch and a tornado warning are terms used by the National Weather Service, and knowing the difference between the two can save life and property.

   A tornado watch means that weather conditions are right for the development of tornadoes. If a tornado watch is broadcast by the local weather alert radio, commercial radio or by television, stay tuned for further advisories and be prepared to take cover.

   If a tornado warning is issued, a tornado has actually been sighted. Warnings are issued for individual parishes and include the location of the tornado, its direction and speed. Persons in the path of a tornado should take cover immediately.

c. Tornado Alarm - Shreveport Plant

To alert Plant personnel that there is intimate danger of a tornado striking the Plant (this being determined by either an actual sighting or information from an electronic communication source), call the Plant emergency telephone number (333) and make the report in the following manner:

(1) Your name
(2) Your location
(3) Your knowledge of the tornado
(4) Give the report quickly and efficiently

The Control Lab person will activate the tornado audio alarm which is mounted on top of the laboratory. The horn alarm will sound intermittently, cycling one second on, two seconds off. The alarm is to be left on until "all clear" is declared by the Supervisor in charge.

d. When the tornado alert sounds, the following basic safety rules shall apply:

(1) Do not panic. This simple safety rule and taking immediate action can save lives and protect property.
(2) If time allows, shut down any operation that could be detrimental at that time, remembering that human safety has first priority.
(3) Personnel who are inside should stay away from windows and outside walls, and more to ground level if in a multilevel structure. Use stairways. Do not use personnel elevators. Any area where personnel could be endangered due to glass piping, toxic or other chemicals should leave that area. Personnel should stay indoors until the tornado alert is over. Hallways and stairways can afford some protection. Sit next to hall internal wall or under staircases.
(4) Personnel who are outside of building protection and do not have enough time to seek more suitable shelter should lie face down in the nearest depression, such as a ditch or ravine, with their hands and arms over their head. Do not stay in or under an automotive vehicle.

(5) After a tornado alert is over, supervision in charge shall contact the Control Lab and direct them to turn off the tornado alert horn.

(6) If a tornado strikes the Plant and causes damage, the Emergency Response Plan will be activated accordingly.

APPENDIX A

Emergency Notification Information

Index

Emergency Telephone Numbers

Telephone Report Forms

A.1 UOP Management

A.2 Spills and Releases - Agencies

A.3 Permit Excursions - Agencies

UOP
FACILITY EMERGENCY NOTIFICATION INFORMATION

Facility Name: UOP SHREVEPORT PLANT

Address: P. O. BOX 21566

SHREVEPORT, LA 71120

Telephone Number: 318/929-3521

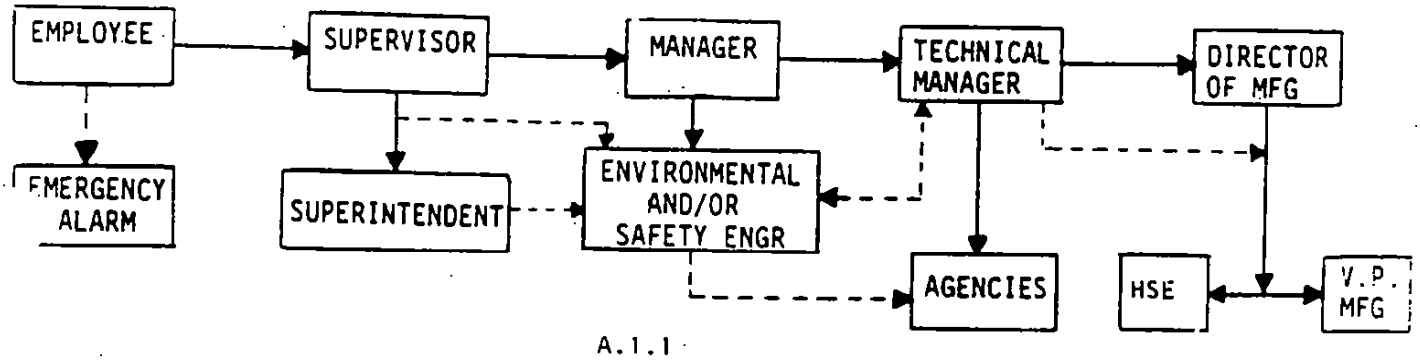
Facsimile Number: 318/929-2716 Fax Manual or Auto? AUTO

KEY PERSONNEL FOR EMERGENCY NOTIFICATION

(Attach Facility Organizational Table)

Position Title	Name	Telephone Business	Telephone Home
Facility Director	V. B. Chance, Jr.	318/929-3521	318/797-9982
Operations Manager	R. A. Capell	318/929-3521	318/747-7077
Technical Manager	M. E. Brossette	318/929-3521	318/797-1958
Material/Services Manager	R. A. Llorens	318/929-3521	318/861-0046
Human Resources Manager	H. M. Phelps	318/929-3521	318/686-8188
Safety Engineer	J. P. Taylor	318/929-3521	318/742-6843
Safety Specialist	R. E. Guth	318/929-3521	318/996-7253
Environmental Engineer	R. W. Newberry	318/929-3521	318/965-0503
Nurse	B. P. Hindsman	318/929-3521	318/375-4509
Vice President - Mfg.		312/391-3205	

BRIEFLY SUMMARIZE OR DIAGRAM THE FACILITY EMERGENCY NOTIFICATION PROCEDURE



UOP

MEMORANDUM

Date: September 23, 1993

To: Memorandum

From: J. P. Taylor

Subject: Emergency Response Paging

There are two systems for paging emergency response personnel who carry pagers off plant; statewide pagers and regional pagers.

Statewide Paging System

The following personnel are on the statewide system.

Primary Safety Pager	J. P. Taylor	Access Code 17749
Secondary Safety Pager	R. E. Guth	Access Code 07377
Medical Pager	B. P. Hindsman	Access Code 17750

To use the statewide paging system:

1. Dial 1-800-255-7236 from a push button or touchtone phone.

2. When the system answers and you hear a two-pitch series of tones, enter the pager access code that you are calling followed by touching the # sign.

3. Following the access code a series of signals will be heard.

4. You then enter the numeric message of up to twelve digits. Please enter the telephone number where you will be located, including the extension if at UOP. Example: 9293521422 would mean that you are presently located at UOP in the Safety office, extension 422.

5. After entering your numeric message, touch the # sign and hang up the phone. Your message will be sent.

Regional Paging System

The following are personnel who carry regional pagers:

Primary Environmental Pager	R. W. Newberry	Access Code 309910
Backup HS&E Pager	M. E. Brossette	Access Code 309911

To use the regional paging system:

1. Dial 1-800-332-7028.

2. You will get a voice - Enter the identification number (Access Code). After you enter the identification number you will hear one tone.

3. Then enter your numerical message (up to twelve digits). A series of tones will be heard. Then hang up. Your message will be sent.

SHREVEPORT EMERGENCY NOTIFICATION INFORMATION FOR OUTSIDE AGENCIES

	Notification For	Telephone Nos.	Notification By Dept.
Doctors Hospital	Incoming Patient	227-1211*	Medical, Supervisor
Dr. A. R. Ebrahim		222-6441	
	If no answer	677-5827	
Fire District #1	Ambulance, Paramed.,Fire	929-3575*	Medical, Supervisor
Life Air Helicopter	Medical Trans.	1-800-543-3247*	Medical
Caddo Parish Sheriff	Community Alert	226-6555*	Dir. of Man.
State Police	Community Alert HAZMAT	741-7411* 504-925-6595*	Dir. of Man.
State DEQ Office (SERC)	HAZMAT	504-765-0634	Tech. Mgr.
State DEQ-Water Pollution	Water Pollution	504-765-0634	Tech. Mgr.
State DEQ Haz. Waste	Disposal Wells	504-765-0355	Tech. Mgr.
State DEQ Office	Air,Water,Wells	504-342-1234*	Tech. Mgr.
State DNR Office	Disposal Wells	504-925-6595	Tech. Mgr.
Local DEQ Office	HAZMAT	676-7476	Tech. Mgr.
Civil Defense (LEPC)	HAZMAT	425-5351	Tech. Mgr.
National Resonse Ctr	HAZMAT	1-800-424-8802*	Tech. Mgr.
EPA Region VI	HAZMAT	214-655-6444*	Tech. Mgr.
SWEPCO	Emergency	868-0551*	Tech. Mgr.
ARKLA	Emergency	227-2560*	Tech. Mgr.
KCS Dispatcher	Emergency	227-7026*	Tech. Mgr.

*24-Hour or Off-Shift Coverage

NOTE: HAZMAT CALLS ARE REPORTING TO GOVERNMENT AGENCIES IN ACCORDANCE WITH REGULATIONS (a.2) AND UOP POLICY.

HAZARDOUS MATERIAL EMERGENCY REPORT FORM

1. UOP Caller _____

2. Agency Called/Time _____

3. Person Contacted _____

4. Facility: UOP Shreveport Plant
   8725 Old Mooringsport Road
   P. O. Box 21566
   Shreveport, LA 71120
   (318) 929-3521

5. Facility Operator: UOP
   20 UOP Plaza Algonquin Road
   Des Plaines, IL 60016

6. Type of incident (Fire, explosion, and so on):

7. Date and time of incident:

8. Type of hazardous material involved:

9. Quantity:

10. Extent of injuries:

11. Actual or potential health or environmental hazards

12. Corrective actions being taken:

13. Quantity of hazardous material recovered:

14. Disposition of recovered material:

Introduction

Reporting Requirements For Health, Safety & Environmental Incidents/Events

Type Of Incident/Event:	Reportability		
	UOP	MC/OSC	
OSHA-recordable injury or illness of employee ("employee" = full time, part time, permanent, temporary ***and*** contractor ***IF*** UOP provides the only supervision of said person's work activities).	24	m	
Work-related serious injury or illness of employee or fatality	i	i	
(Note that all work-related employee fatalities, and/or hospitalization of 5 or more employees because of work-related causes requires notification of OSHA within 48 hours)			
Third-party injury/illness, if UOP may be held liable	i or 24	i or 24 or m	(severity)
Fires, explosions or other accidents at UOP locations	i or 24	i or 24	(severity)
Fires, explosions or other accidents at UOP rented/leased operations (warehouses, offices, etc.)	i or 24	i or 24	(severity)
Fires, explosions or other accidents at facilities owned or operated by UOP clients where:			
a licensed UOP process appears to be involved	i or 24	24 or m	(severity)
UOP field operations personnel are involved in unit operations and those operations ***appear*** to be involved	i or 24	24 or m	(severity)
Releases of toxic or hazardous substances (typically in U.S.A. these are regulated substances having an RQ)	i	i or 24 or m	(severity)

Introduction

Reporting Requirements For Health, Safety & Environmental Incidents/Events *(cont.)*

Type Of Incident/Event:	Reportability UOP	Reportability MC/OSC	
Any litigation against UOP, its officers, or employees that has arisen from an HSE incident/event	24	24	
Government investigations of UOP business activities or operations which ***appear*** to have an HSE origin, or notices of violation/citation, or other enforcement actions, or requests for information, if such information could be used adversely against the Company	i or 24	i or 24	(severity)
Substantial media coverage (substantial in this context is taken to mean information gathering by media reporters, or news bulletins/stories focused upon UOP and having an HSE subject matter, the content of which is negative or hostile to the Company)	i	i	
Damage of $250,000 or more to UOP property	i or 24	i or 24 or m	(severity)
Damage to private property if UOP ***may*** be held liable	i or 24 or m	i or 24 or m	(severity)
Spills/incidents/releases that meet ***any*** of the following criteria:			
Was reported to a government agency as required by law	i or 24	i or 24 or m	(severity)
Worker (UOP or contractor) recordable injury or illness associated with the spill/incident/release	i or 24	i or 24 or m	(severity)
Community impact or awareness reported (neighbor complaints)	24	24 or m	(severity)

Introduction

Reporting Requirements For Health, Safety & Environmental Incidents/Events *(cont.)*

Type Of Incident/Event:	Reportability: UOP	Reportability: MC/OSC
News media involvement (resulted or anticipated)	i or 24 (see above)	i or 24
Release of 5,000 pounds (2,270 kilograms) or more of a process material, waste or product (total weight of mixtures, including aqueous mixtures, ***must*** be considered). See also requirement (above) for reporting toxic/hazardous substance releases	i or 24	i or 24 or m
U.S. Toxic Substances Control Act (TSCA) Section 8(c) allegations of adverse health or environmental effects (allegations may be made by UOP employees, customers, neighbors, etc.)	24 (Fax report to ESG)	
U.S. Toxic Substances Control Act (TSCA) Section 8(e) substantial risk notification of U.S. EPA	24	5 days before notification of EPA
Note: All UOP locations, domestic and overseas, are required by Company policy to comply with the TSCA reporting provisions.		

Code For Temporal Requirements For Reporting:

i = immediately upon obtaining knowledge of the incident or event. "Immediately" may, with justification, extend to several hours, and should not exceed 6 hours.

24 = within 24 hours, or next business day if event/incident occurs on weekend or holiday

m = must be reported in a monthly written report only.

Initial reports may be telephoned, telexed, faxed; initial reports are to be followed up with a written report as soon as possible.

severity = Severity of incident or event will determine whether reports are to be made immediately, within 24 hours, or by monthly written report.

Introduction

Reporting Requirements For Health, Safety & Environmental Incidents/Events *(cont.)*

Initial and follow-up reports are to be made to:

UOP = Department (Vice president or alternate) and ESG. Vice president/alternate to notify president. If insurance is involved, contact loss control manager; if there is legal involvement, contact law department, etc.

MC/OSC = UOP Management Committee and UOP HSE Oversight Council. The president or his alternate is responsible for notifying the Management Committee. ESG is responsible for notifying the Oversight Council.

A significant event will require immediate reporting to the Oversight Council under the following circumstances:

1. Release of toxic or hazardous substances with the potential for serious adverse effects on human health or the environment;
2. Fire explosion or other incidents which result in the shutting down of a facility, loss of life or serious injury;
3. Death or serious injury or serious adverse health effects on employees or the public;
4. Any criminal action being brought against the company, its officers, or employees; or
5. Potential for or substantial media coverage for any reason.

Department Notification Procedures

Refining and Petrochemical Products

(See Attached Notification Diagram)

- Persons to be Notified: K. D. Vesely
  Alternates: D. L. Brucker (Primary Contact for Manufacturing incidents)
  ~~J. F. Pittas~~

- When Traveling: K. D. Vesely's secretary (Ellen Ursin) and D. L. Brucker's secretary (Nancy Von Bergen) keep their travel itineraries. J. F. Pittas' secretary (Marianne Winsor) keeps his travel itinerary.

- Notifying Refining & Petrochemical Products management of HSE incidents and events:

  1. Refining & Petrochemical Products management must be notified of those incidents and events that are listed on pages 4–7 of the Plan. Should an HSE incident or event occur that is not listed in the table, use judgement in reporting it.

  2. Depending upon the severity of the incident or event, Refining & Petrochemical Products management must be notified within a time scale that ranges from ***immediate*** (as soon as possible after discovery of the incident or event, and normally not later than 6 hours after such discovery) to twenty four (24) hours after the discovery of an incident or event. Reporting within 24 hours means 'next business day' when incidents or events occur on weekends or holidays.

  3. The first report may be made by telephone, especially in the case of immediately-reportable incidents and events. A written follow-up report is always required. The written report may be sent by facsimile, with a second copy sent by mail or courier.

- Notifying government agencies.

  1. The location at which the incident or event occurred is responsible for the ***timely*** notification of government agencies in accordance with applicable laws and regulations.

- Notifying the Environmental Sciences Group:

  1. Notify the Environmental Sciences Group of an incident or event in the same manner and time frame that Refining & Petrochemical Products management was notified.

- Notifying the UOP President, Management Committee and Oversight Council:

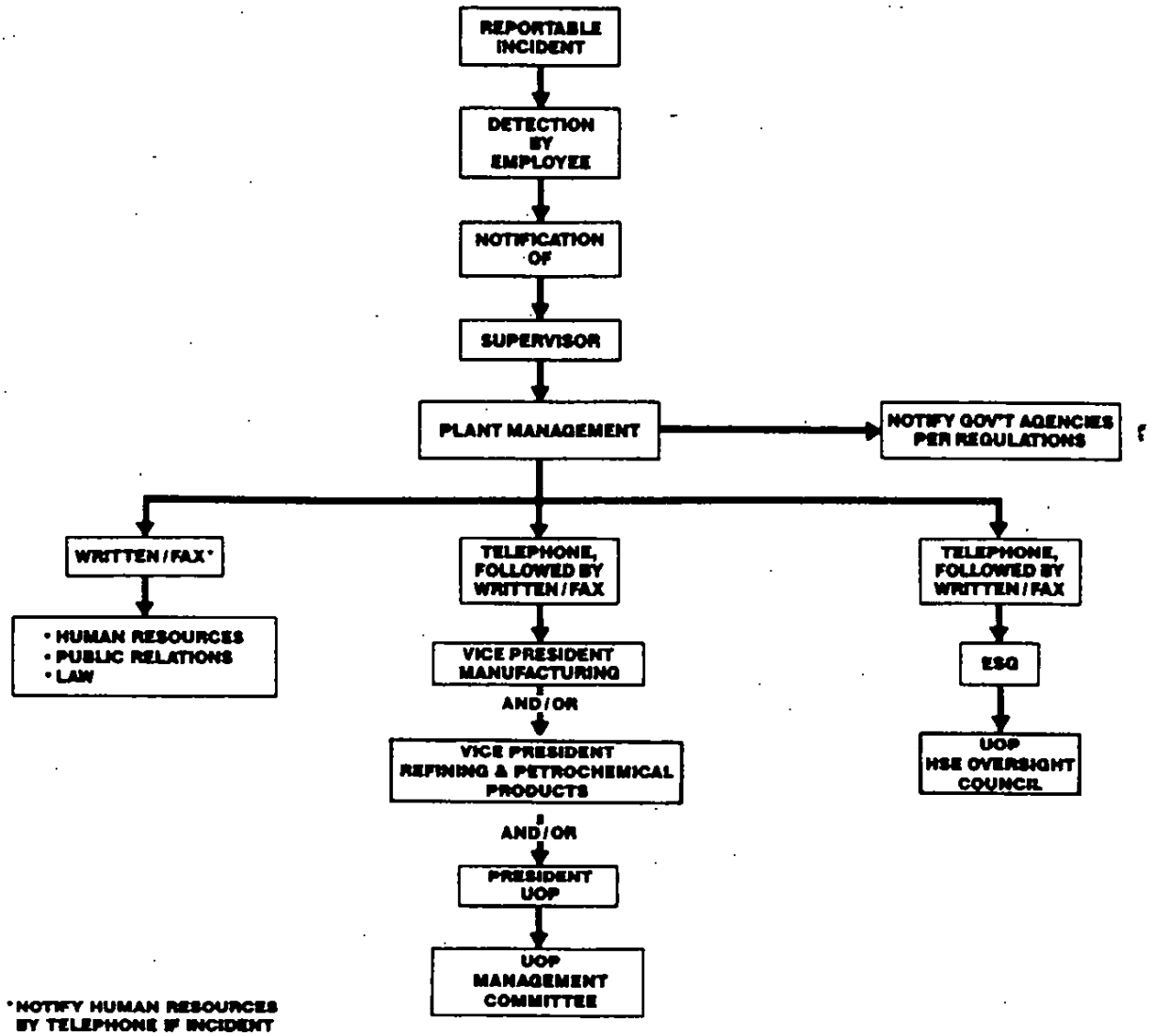
  1. Refining & Petrochemical Products management is responsible for notifying the President.

  2. The President is responsible for notifying the Management Committee.

  3. ESG is responsible for notifying the Oversight Council.

UOP REFINING & PETROCHEMICAL PRODUCTS

EMERGENCY NOTIFICATION SEQUENCE FOR MANUFACTURING PLANTS



*NOTIFY HUMAN RESOURCES BY TELEPHONE IF INCIDENT INVOLVES SERIOUS INJURY OR DEATH OF EMPLOYEE

Telephone Numbers of Key UOP Personnel

Department	Name	Telephone Business	Telephone Home
Accounting & Computer	H. G. Lawrence	(708) 391-3050	(708) 381-2883
	C. N. Miller (Risk Management)	(708) 391-2998	(312) 743-2027
	J. L. Rospond	(708) 391-3064	(708) 790-0828
	E. B. Viohl	(708) 391-2918	(708) 213-2456
	M. L. Winsor (Sec'y)	(708) 391-3034	(708) 991-6832
Communications Coordinator	F. Faulkner	(708) 391-2682	(708) 383-3621
Engineering Products and Diversified Business	J. M. Anthony (Sec'y)	(708) 391-2466	(708) 632-0164
	K. J. Gustafson	(708) 391-2473	(203) 792-7987
	D. P. Traviss	(708) 391-2465	(708) 381-5387
	R. E. Wozniak	(708) 391-2209	(708) 991-9736
Environmental Sciences Group	P. F. Aronian	(708) 391-3095	(312) 528-3675
	J. K. Koelper	(708) 391-3017	(708) 577-6493
	R. A. Palmer	(708) 391-2643	(312) 871-6476
	D. M. Regent	(708) 391-2196	(708) 540-6014
	W. O. Salivar	(708) 391-3117	(815) 455-1585
	D. R. Sullivan	(708) 391-3189	(708) 354-0665
Fluid Systems	C. M. Cummings	(619) 695-3840	(619) 789-1057
	C. Hakeman (Sec'y)	(619) 695-3840	(619) 789-8156
	W. G. Light	(619) 695-3840	(619) 298-9318
	P. H. Turnock	(619) 695-3840	(616) 629-5376
Human Resources & Administration	R. M. Elliott	(708) 391-3187	(708) 882-4907
	J. P. Gorman	(708) 442-7400, ext. 331	(708) 529-5230
	M. S. Heynis (Sec'y)	(708) 391-3023	(708) 991-7324
	J. B. Mickey	(708) 391-3080	(708) 913-8618
	R. F. Tutton	(708) 391-3026	(708) 355-8286
	J. B. Wells	(708) 391-3183	(708) 394-4652
Law	H. W. Bergendorf	(708) 391-2518	(708) 577-3578
	W. E. Parry	(708) 391-2521	(312) 549-1939
	C. M. Slowdowy (Sec'y)	(708) 391-2519	(708) 827-3494
	M. E. Van de Kerckhove	(708) 391-2066	(708) 948-5851
Medical Director		(708) 391-2312	

Telephone Numbers of Key UOP Personnel

Department	Name	Telephone Business	Telephone Home
Nikki-Universal Japan	F. Akimoto	0463-55-3404	0463-32-9392
	T. Fujii	03-212-8150	045-772-3530
	Z. Suzuki	03-212-8164	045-621-0854
	Y. Yamaguchi (Sec'y)	03-212-8166	045-574-0566
President	J. F. Pittas	(708) 391-3033	(708) 398-2838
	M. L. Winsor (Sec'y)	(708) 391-3034	(708) 991-6832
Refining & Petrochemical Processes & Services Including Engineering, Process Licensing and Technical Services	S. Forbes (Sec'y)	(708) 391-2976	(708) 635-7685
	P. Jackson	(708) 391-2393	(708) 392-8067
	D. T. Kjerland	(708) 391-2622	(708) 253-6578
	W. L. Liggin	(708) 391-3385	(708) 884-8671
	W. R. Sedlacek	(708) 391-2975	(708) 945-9017
	G. Wetterling	(708) 391-2637	(708) 893-8016
	M. D. Winfield	(708) 391-2636	(708) 529-6670
Refining & Petrochemical Products	G. Bonoli (Reggio Calabria)	011-39-965-640671	011-39-965-21812
	D. L. Brucker	(708) 391-3205	(708) 540-9721
	V. B. Chance, Jr. (Shreveport)	(318) 929-3521	(318) 797-9982
	J. E. Conway	(708) 391-3148	(708) 579-0223
	G. M. J. Cooper (Brimsdown)	011-44-1-804-8232	011-44-1-337-6324
	M. T. Ferraro (Savannah)	(912) 234-1874	(912) 897-3917
	J. G. Gottstine (Mobile)	(205) 457-8611	(205) 649-0932
	F. de Kok (Delfzijl)	011-31-5960-11912	011-31-5970-13804
	B. M. Lok (Shanghai)	011-86-21-512512 ext. 201	011-892-5812-7055
	C. L. Moore	(708) 391-3149	(708) 359-9532
	B. A. Oeltgen	(708) 391-2722	(708) 259-3923
	W. P. Schultz (McCook)	(708) 442-7400, ext. 463	(708) 398-2929
	E. K. Ursin (Sec'y)	(708) 391-3208	(708) 392-2601
	K. D. Vesely	(708) 391-3207	(708) 382-7832
	N. J. Von Bergen (Sec'y)	(708) 391-3386	(708) 398-1309
	G. J. Weidenhammer	(708) 381-2180	(708) 816-6690

Telephone Numbers of Key UOP Personnel

Department	Name	Telephone Business	Telephone Home
Research & Development, including Des Plaines Research Center, Riverside Technical Center and Tarrytown Technical Center	W. R. Bauldrick	(708) 391-2292	(708) 963-4453
	B. Kruegar (Sec'y)	(708) 391-2321	(708) 825-4652
	S. M. Lambert (Sec'y)	(708) 391-2232	(708) 296-5301
	E. H. Lebedin (Sec'y)	(914) 789-3687	(914) 946-4829
	R. A. Lengemann	(708) 391-2370	(708) 398-0542
	G. N. Long	(914) 789-3123	(914) 526-2513
	L. D. Mayer	(708) 391-2175	(708) 344-5363
	P. Palmese	(708) 391-3426	(708) 231-3163
	R. A. Reber	(914) 789-3289	(914) 737-4929
	M. Roberts (Sec'y)	(708) 391-2371	(708) 255-2314
	E. Schmelzer	(708) 391-2532	(708) 676-4096
	J. P. Sicard	(914) 789-2271	(914) 528-1765
	E. T. Wolynic	(708) 391-2230	(914) 725-1246
Union Showa K.K.	J. Futatsugi (Sec'y)	011-81-3-432-7553	011-81-45-542-9033
	N. Kikawada	011-81-3-432-7553	011-81-473-76-6767
	Y. Kimura	011-81-3-432-7553	011-81-3-329-6785
	K. Saito	011-81-593-45-1480	011-81-593-52-1543
UOP Processes International	K. C. Blane	011-44-1-839-7022	011-44-535-403426
	O. Kocoglu	011-44-1-839-7022	011-44-1-998-5492
UOP Management Committee	F. M. Poses (A-S)	(201) 455-3500	(212) 996-1499
	J. C. Soviero (UCC)	(203) 794-2566	(203) 797-9454
UOP HSE Oversight Council (OSC)	G. E. Crawford (A-S)	(201) 455-2371	(201) 236-9040
	D. Liebeskind (UCC)	(203) 794-2688	(203) 329-9876
	S. K. Phillips (UCC)	(203) 794-4063	(203) 355-8836
	L. R. Taunton (A-S)	(201) 455-5790	(201) 267-7204
Oversight Council's Advisory Committee	J. M. Cleverdon (UCC)	(203) 794-3406	(203) 746-5527
	W. E. Yanovitch (A-S)	(201) 455-3675	(201) 729-1237

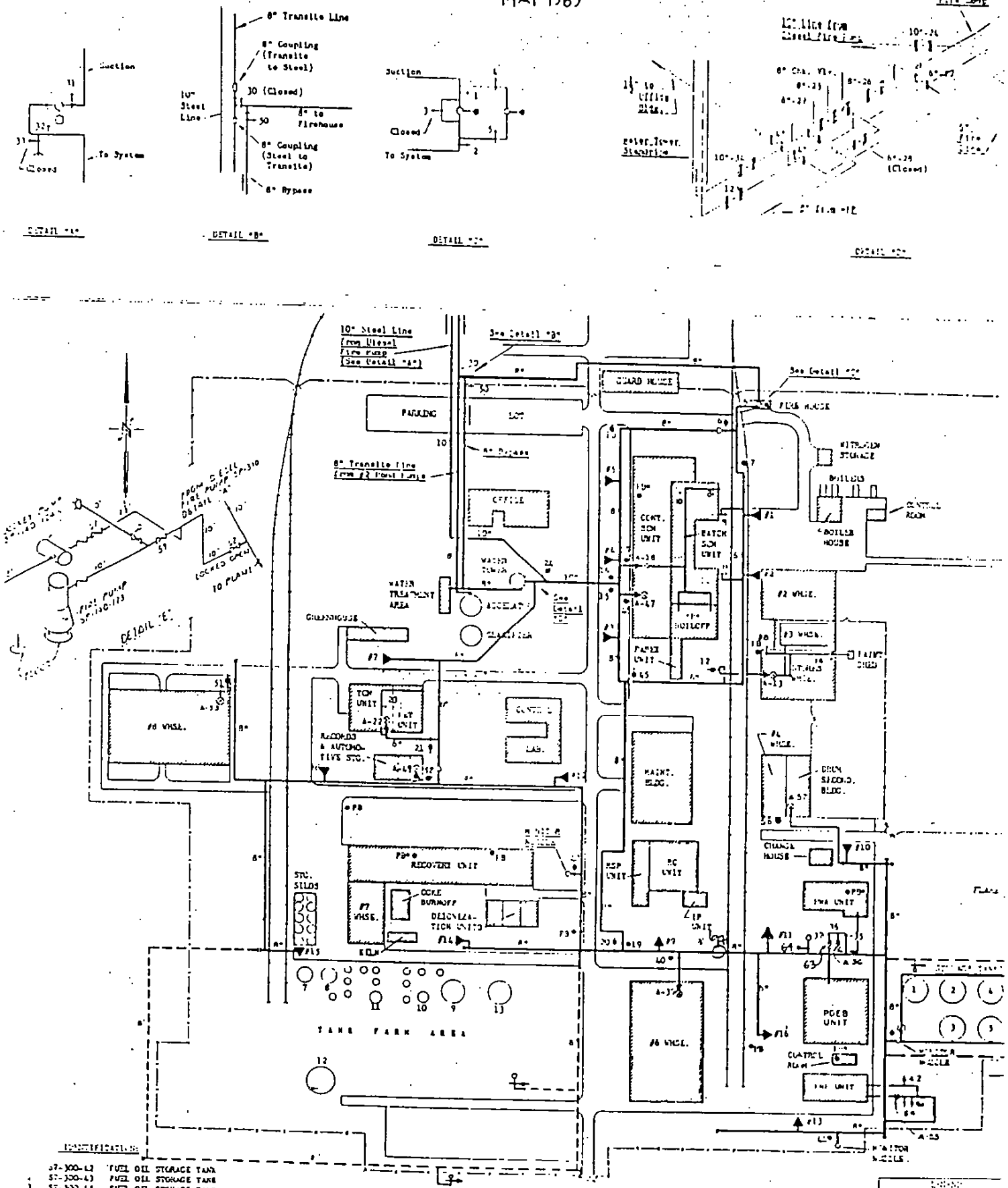
APPENDIX B

FIRE SYSTEM LAYOUT AND EVACUATION

OOF PROCESS DIVISION
SHREVEPORT, LOUISIANA

FIRE PROTECTION SYSTEM

MAY 1989

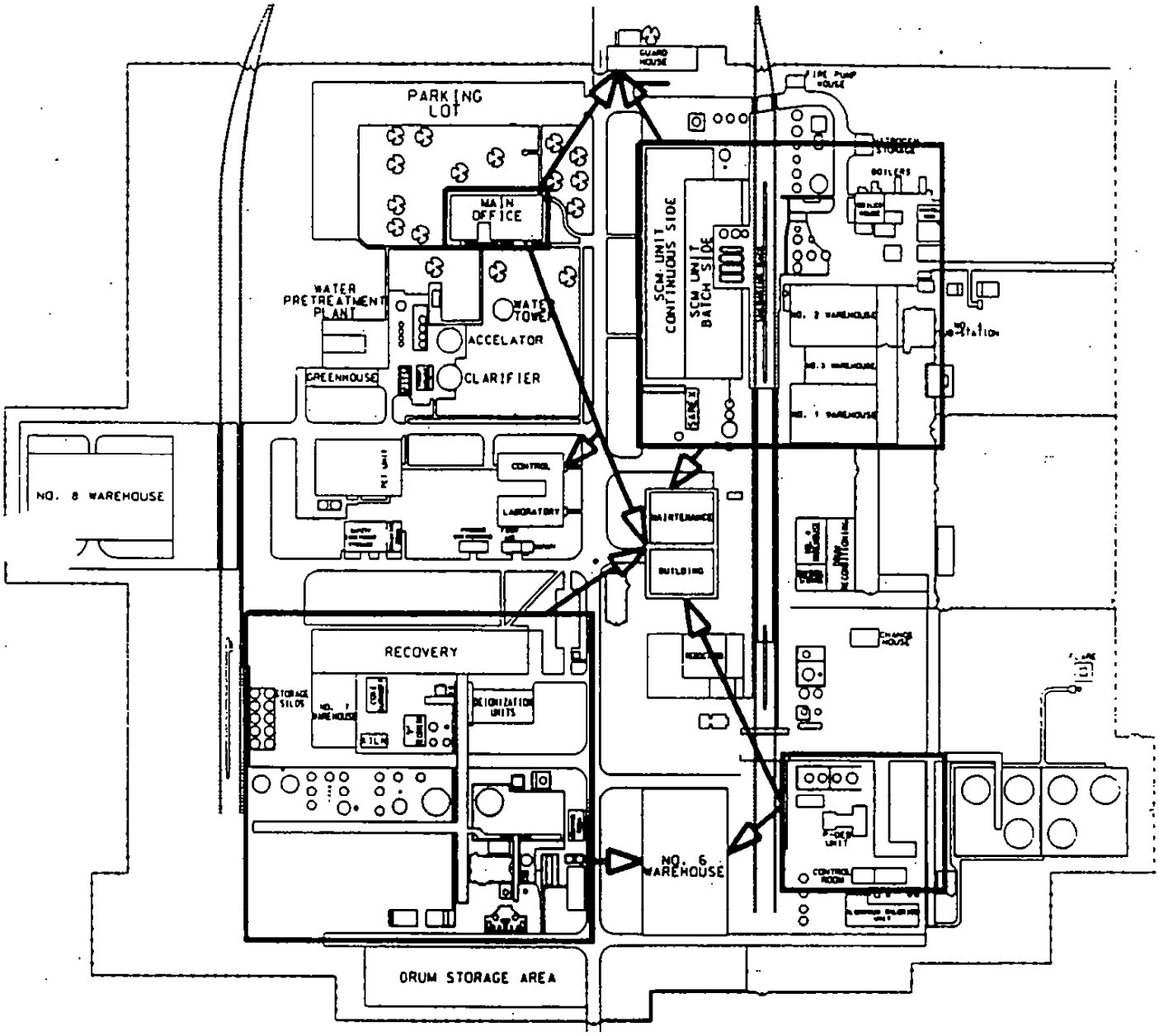


1	57-300-43	FUEL OIL STORAGE TANK
2	57-300-43	FUEL OIL STORAGE TANK
3	57-300-45	FUEL OIL STORAGE TANK
4	57-300-47	POEB STORAGE TANK
5	57-300-49	POEB STORAGE TANK
6	57-270-49	HEAVY METALS STORAGE TANK
7	57-272-10	ALUMINUM SULFATE STORAGE TANK
8	57-272-11	ALUMINUM SULFATE STORAGE TANK
9	57-250-6	DEIONIZED WATER STORAGE TANK
10	57-280-7	LOW IRON WATER STORAGE TANK
11	57-280-26	SULFURIC ACID STORAGE TANK
12	57-280-83	FUEL OIL STORAGE TANK

LAST VALVE NUMBER 64
ALL VALVES NUMBERED CONSECUTIVELY
FIRE HOUSE #16 WHSE #8

Fire House
Fire Hydr. Valve
Fire Hydrant
Gate Valve

UOP
SHREVEPORT PLANT



EVACUATION ROUTES

THE EVACUATION ROUTES SHOWN ARE BASED ON PREVAILING WIND DIRECTION AND AN INCIDENT OCCURRING IN ANY OF THE OUTLINED AREAS.

EVACUATION FROM THE AREAS HIGHLIGHTED BY BOLD LINES SHOULD BE BASED ON THE NATURE OF THE INCIDENT AND THE WIND DIRECTION.

ARROWS INDICATE POINTS OF ASSEMBLY IN THE EVENT OF A MAJOR INCIDENT IN OTHER AREAS.

NOTE: CHECK THE WIND DIRECTION BY OBSERVING THE WIND SOCK INDICATOR WITHIN SIGHT OF YOUR LOCATION.

APPENDIX C

EMERGENCY MEDICAL PLAN

EMERGENCY MEDICAL PLAN

Shreveport Plant, UOP Medical Department

I. Medical Plan of Action for emergencies involving one or two employees.

II. Medical Plan of Action for emergencies potential or real involving a group of employees.

III. Medical Plan of Action for a major plant disaster, potential or real. Include contingencies if the Medical Facility becomes inoperable in the event of fire.

I. Communications

A. Sound emergency alarm

1. Remain on telephone to convey and verify the following information:

   a. Name of caller
   b. Location of emergency
   c. Type of emergency
   d. Number of injuries involved and extent of injuries if available

B. Safe entry to scene will be determined by Emergency Response Team Leader and Medical Person in Charge will be notified.

C. Medical Person in Charge will be the Triage Officer in order of availability:

1. Plant Nurse
2. Human Resources Manager
3. Person designated by Emergency Response Team Leader

II. Treatment

A. Triage officer will

1. Request assistance from outside sources as needed to care for casualties
2. Sort patients into categories of priority for care and transport based on severity of injuries and medical treatment needed

   a. fast, primary assessment
   b. brief, immediate treatment of life threatening injuries
   c. tagging according to Triage priority
   d. prepare for transport

B. Transportation Officer

1. Arrange for transport to outside medical facility after proper emergency treatment and stabilization
2. According to Triage priority tagging
3. Keep record of facility patient was transported to and by whom

III. Emergency Notification

A. Triage officer will notify proper plant authorities in the following order:

1. Director of Manufacturing
2. Human Resources Manager

B. Next of kin notification will be made by Human Resources Manager

C. Company internal officials will be notified by the Human Resources Manager

D. Local hospital emergency room and company Doctor will be notified by Medical Person in Charge of Triage officer of incoming patients

IV. General Information

A. Plant Medical facility will be used as Triage/Treatment area

B. If Medical facility is in danger due to fire, explosion or hazardous fumes, alternate facility will be designated by Emergency Response Group Leader

C. Media information will only be given out by appropriate Company official (Plant Manager or his designee)

V. Duties of Triage Officer/Medical Control

A. Triage Officer will request help from First Responders, Emergency Response Team, EMT's and any other trained plant personnel available

B. Duties will be assigned by Triage Officer to include care and treatment of injured persons according to their level of training

C. Community volunteers and off-plant assistance will be requested if needed by Triage Officer

D. Triage officer will supervise trained emergency personnel providing treatment, stabilization, splinting and packaging for transport

E. Assist transportation officer in proper transport according to priority tagging

F. Triage according to priority will be made as follows

1. Highest priority (must be treated and stabilized and transported as quickly as possible):

   a. Airway and breathing difficulties
   b. Witnessed cardiac arrest
   c. Uncontrolled or suspected hidden bleeding (shock)
   d. Open (sucking) chest wound or abdominal wound
   e. Severe head injuries with evidence of brain damage (unconscious patient)
   f. Medical complications (poisonings, cardiac disease, diabetes, etc.)
   g. Burns involving the respiratory tract or severe burns (whole body)
   h. Open wound to the eye
   i. Fractured femur or pelvis

2. Second priority (transportation can be delayed with treatment and stabilization maintained in the field)

   a. Burns without complications (small body area, first and second degree burns)
   b. Major fractures or multiple fractures (controlled bleeding)
   c. Back injuries with or without spinal damage

3. Lowest priority (transported or treated last)

   a. Minor fractures or minor injuries
   b. Mortally wounded or where death is imminent

Care During Transport

A. Occupational Health nurse and assistants have brief note on each patient transported so a brief, concise report can be given to emergency room personnel on arrival.

B. Remember to give information to emergency room.

C. Have at least two First Responders ride with ambulance if short of ambulance personnel and insure that they are CPR trained.

D. Avoid news media. The Plant Manager or his designee will be responsible for conveying information to the news media.

APPENDIX D

CONTINGENCY PLAN FOR CHEMICAL AND CHEMICAL WASTE SPILLS

Other Emergency UOP Telephone Numbers

	Organization/Purpose	Telephone
UOP Product Emergencies (Not intended for products at UOP plants)	UOP 24-Hour Product Emergency Number	(708) 391-2123
	CHEMTREC (Within U.S.A.)	(800) 424-9300
	CHEMTREC (Outside of U.S.A.)	(202) 483-7616
	CANUTEC (Emergencies in Canada)	(613) 996-6666
Physical Plant Emergencies (Des Plaines Complex ONLY)	During Non-Business Hours:	(708) 391-2000

Selected U.S. EPA and OSHA Addresses and Telephone Numbers

Region 6

Arkansas, Louisiana, New Mexico, Oklahoma, Texas

EPA: 1445 Ross Avenue, 12th Floor, Dallas, TX. 75202-2733
Telephone: (214) 655-6444

OSHA: 555 Griffin Street (Room 602), Dallas, TX. 75202
Telephone: (214) 767-4731

Region 7

Iowa, Kansas, Missouri, Nebraska

EPA: 726 Minnesota Ave., Kansas City, Kansas 66101
Telephone: (913) 236-2800

OSHA: 911 Walnut Street (Room 406), Kansas City, Missouri 64106
Telephone: (816) 374-5861

Region 8

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

EPA: 999 18th Street, Suite 1300, Denver, Colorado 80202-2413
Telephone: (303) 293-1603

OSHA: 1961 Stout Street (Federal Bldg., Room 1576) Denver, Colorado 80294
Telephone: (303) 844-3061

Region 9

Arizona, California, Hawaii, Nevada, American Samoa, Guam, Pacific Trust Territories

EPA: 215 Fremont Street, San Francisco, CA. 94105
Telephone: (415) 974-8071

OSHA: P.O. Box 36017, 11349 Federal Bldg., 450 Golden Gate Ave., San Francisco, CA. 94102
Telephone: (415) 556-7260

Region 10

Alaska, Idaho, Oregon, Washington

EPA: 1200 Sixth Avenue, Seattle, WA. 98101
Telephone: (206) 442-5810

OSHA: 909 First Avenue, Room 6003, Seattle, WA. 98174
Telephone: (206) 442-5930

OSHA AREA OFFICE: 7807 Convoy Court, Suite 160, San Diego, CA. 92111
Telephone: (619) 569-9071

Selected U.S. State/County/Local Government Agencies

	Agency	Telephone
Illinois	Cook County Environmental Control Agency	(312) 865-6165
	Chicago Metropolitan Sanitary District	(312) 787-3575
	Illinois Commerce Commission (Railroad Emergency)	(217) 782-4971
	Village of McCook Public Works Dept.	(312) 447-2776
	Village of McCook Environmental Board	(312) 447-4971
Louisiana	Air Quality Division	(504) 342-1206
	Water Pollution Control Division	(504) 342-6363
	Hazardous Waste Division	(504) 342-1227
	Solid Waste Division	(504) 342-1216
	Nuclear Energy Division	(504) 925-4518
	Department of Public Safety	(504) 925-6595
	Injection & Mining Division	(504) 342-5515
	State Police, Hazardous Substance Control Section, Right-To-Know	(504) 342-1206
	LA Dept. of Environ. Quality, Shreveport Office for Spill Notification	(318) 342-4685
Maryland	Maryland Dept. of the Environment (MDE): Air Management Administration	(301) 225-5259
	Waste Management Administration	(301) 225-5647
	Water Management Administration	(301) 225-6300
	Toxics, Environmental Science and Health	(301) 225-5780

cc: W.O. Salivar, C.E. McGrew/McCook, [redacted] R. Demarest/Shreveport, DRS

UOP

XC: MEB, MLP, DJF, AJA, KAm
PCH
11/27/87

interoffice correspondence

date November 18, 1987

to T. K. Sugihara unit

from D. R. Sullivan unit

subject UOP Products Containing Hazardous Substances with EPA CERCLA Reportable Quantities (RQ)

Attached is a list of UOP products (including intermediates) which have RQ's and would be affected by the Department of Transportation Hazardous Materials Regulations. The list indicates the following: the hazardous substance, the hazardous substance RQ, the UOP product containing the hazardous substance, the associated RQ for the UOP product and whether or not the UOP product RQ is proprietary information.

As you are aware, when a UOP product is shipped in a single container in which the product RQ is exceeded, then the shipping documents must indicate both the RQ notation and the name of the hazardous substance itself.

D. R. Sullivan

Dennis R. Sullivan

Attachment

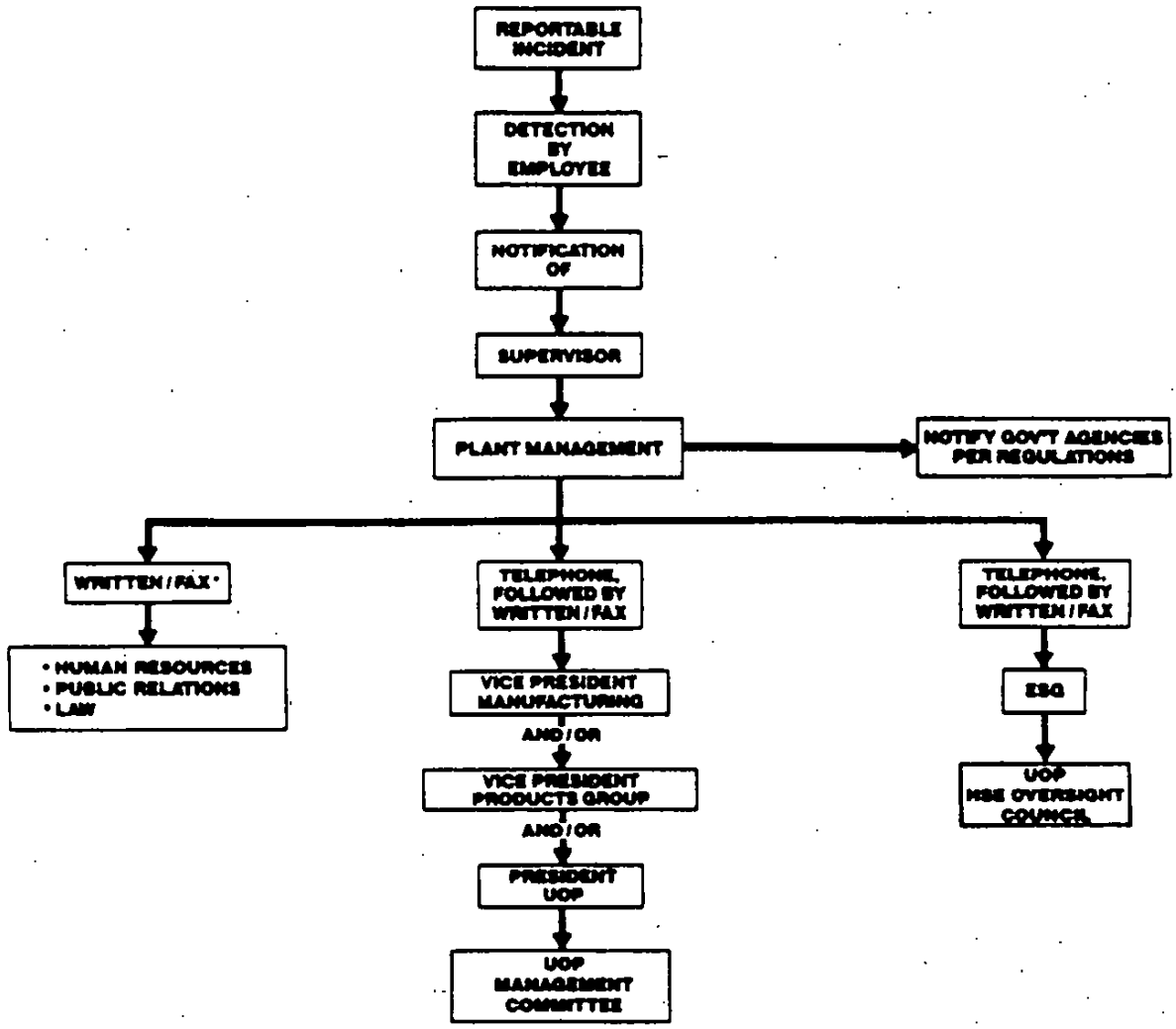
DRS:lp

UOP Products with RQ's

Hazardous Substance	RQ (#)	UOP Product	Product RQ(#)	Proprietary
Xylenes	1,000	AW-50	>2,100	No
Xylenes	1,000	Copper Deactivator (Reg)	5,000	No
Xylenes	1,000	Unocal FDX	12,800	No
Xylenes	1,000	Unocal FDX-M	13,000	No
Xylenes	1,000	Polyflo 121	55,560	No
Xylenes	1,000	Polyflo 122	69,500	No
Xylenes	1,000	Polyflo 124	21,740	No
Xylenes	1,000	Polyflo 128	84,750	No
Xylenes	1,000	Polyflo 196	50,000	No
Xylenes	1,000	Polyflo 197	62,500	No
Toluene	1,000	UOP No.3408	5,000	No
Toluene	1,000	Polyflo 2130	2,000	No
Toluene	1,000	Polyflo 2140	2,000	No
Sodium Hydroxide	1,000	Merox Plus	25,000	Yes
Aluminum Sulfate	5,000	Alum, Acidized	>20,000	No
Sulfuric Acid	1,000	Alum, Acidized	>66,000	No
Hydrochloric Acid	5,000	Chloroplatinic Acid (CPA)	>90,000	No
Methanol	5,000	BHA/MEOH	>7,100	No
Methanol	5,000	BHT/MEOH	6,250	No
Methanol	5,000	BHT/MEOH/CA	7,100	No
2,6 Toluene Diisocyanate	100	2,6 - TDI	100	No

UOP PRODUCTS GROUP

EMERGENCY NOTIFICATION SEQUENCE FOR MANUFACTURING PLANTS



* NOTIFY HUMAN RESOURCES BY TELEPHONE IF INCIDENT INVOLVES SERIOUS INJURY OR DEATH OF EMPLOYEE

A.2 SPILLS AND RELEASES -- AGENCIES

A. When certain chemicals or wastes are spilled, the Shreveport Plant must notify Des Plaines, Federal, State and local agencies within one hour of the occurrence or when the occurrence first becomes known, if the "reportable quantity" is spilled outside of a building.

A list of these chemicals in the Shreveport Plant, with reportable quantities at the concentrations normally used, is tabulated at the end of this section. If a spill occurs, consider the following guidelines and decision tree on the following pages:

1. Does the substance contain a chemical listed or identified by name in the "Reportable Quantity" (RQ) tables" If it is designated in the tables (listed), then go by the RQ for that chemical or chemicals.

2. If a non-designated chemical (not listed) is spilled, then ask if it was a <u>waste prior</u> to the release. For substances classified as waste prior to their release, ask whether they have the characteristics identified under RCRA, which include ignitability, corrosivity, and reactivity (ICR characteristic waste). If the non-designated substance exhibits an ICR characteristic, then the release is a hazardous substance if the substance is a waste. (CERCLA regulates these unlisted substances by virtue of their classification as RCRA hazardous wastes.) In this case, the RQ is 100 pounds.

3. If any ICR substance, which is <u>not</u> a waste <u>prior to</u> release is released and only partially cleaned up, the release needs to be reported <u>only</u> if the total <u>amount not recovered and not usable</u> equals or exceeds the RQ of 100 pounds.

NOTE: If a new chemical is not on the attached table, check the complete listing of chemicals in the latest copy of the UOP Emergency Notification Plan.

B. If an emergency telephone report is required, contact all of the following:

1. UOP Management

2. EPA National Response Center (NRC)

3. State Emergency Response Commission (SERC)

4. Local Emergency Planning Commission (Civil Defense)

Be prepared with a telephone report form and for follow-up written reports or public notices (requirements for the latter are described under "Reporting Chemical Spills") in the UOP Emergency Notification Plan.

It is also a good idea politically to notify the local Louisiana DEQ office and EPA Region IV by telephone.

C. Written follow-up reports must be submitted to SERC, LEDC, and DEQ within seven calendar days of the verbal report. The Technical Manager is responsible for the written reporting

1. The follow-up shall update information included in the initial report and provide additional information on actual response actions taken, any known or anticipated data on chronic health risks associated with the release, and advise regarding medical attention necessary for exposed individuals.

2. Written reports shall be transmitted by certified mail, return-receipt requested.

UOP SHREVEPORT PLANT
REPORTABLE QUANTITIES FOR HAZARDOUS MATERIAL RELEASES

TABLE 2 Potential ICR Hazardous Materials

CHEMICAL	Reportable Quantity Pure Soln. (LB)		Concentrations (Wt. %)	Reportable Quantity Mixture (LB)	Average Density (LB/GAL)	Approximate Reportable Quantity Mixture (GAL)
Aluminum Sulfate	5000	23.5	7	71429	10.85	6583
(Conversion from		25				
Alumina to Aluminum		27	7.5	66667	10.85	6144
Sulfate=3.356)						
(WT.% =ALUMINA)			8	62500	10.85	5760
Ammonia	100		100	100	6.43	16
Ammonium Bifluoride	100		100	100	N/A	N/A
Ammonium Hydroxide	1000		1	100000	8.32	12019
			14	7143	7.97	896
			28	3571	7.6	470
Antimony Powder	1		100	1000	N/A	N/A
Asbestos	1		N/A	1	N/A	N/A
Benzene	10		100	10	7.32	1.37
Bromine	1		100	1	N/A	N/A
Chlorine	10		100	10	N/A	N/A
Chromium Chloride	1		100	1	N/A	N/A
Cupric Nitrate	100		100	100	N/A	N/A
Cyclopentane	1		100	1	N/A	N/A
Formaldehyde	100		45	222	9.5	23.4
			46	217	9.5	22.9
			47.5	210	9.51	22.1
Hydrochloric Acid	5000		20	25000	9.64	2593
			23	21739	9.64	2255
			30	16667	9.64	1729
			35	14286	9.85	1450
Hydrofluoric Acid	100		70	143	8.29	17

UOP SHREVEPORT PLANT
REPORTABLE QUANTITIES FOR HAZARDOUS MATERIAL RELEASES

TABLE 1 CERCLA or EHS Listed Hazardous Materials

CHEMICAL	Reportable Quantity Pure Soln. (LB)	Concentrations (Wt %)	Reportable Quantity Mixture (LB)	Average Density (LB/GAL)	Approximate Reportable Quantity Mixture (GAL)
Hydrogen Sulfide	100	100	100	N/A	N/A
Mercuric Acetate	1	100	1	N/A	N/A
Mercuric Chloride	1	100	1	N/A	N/A
Mercury Cyanide	1	100	1	N/A	N/A
Mercury	1	100	1	N/A	34 ml
Mesitylene	1	100	1	N/A	N/A
Nickel Nitrate	100	100	100	N/A	N/A
Nitric Acid	1000	50	2000	10.45	191
		60	1667	10.87	153
		70	1429	11.29	127
Phosphoric Acid	5000	75	6667	15.76	423
Potassium Hydroxide (Solid)	1000	90+%	1111	N/A	N/A
Silver Nitrate	1	100	1	N/A	N/A
Sodium Hydroxide	1000	10	10000	10.5	952
		25	4000	11.33	353
		50	2000	12.7	157
Sulfuric Acid	1000	98	1020	15.36	66
1,1,1,2 Tetrachloroethane	100	100	100	13.25	N/A
Thioacetimide	10	100	10	N/A	N/A
Thiourea	10	100	10	N/A	N/A
Toluene	1000	100	1000	7.2	139
Trichloroethane	1000	100	1000	10.91	92
Xylene	1000	100	1000	7.18	139

c:\123r3\b

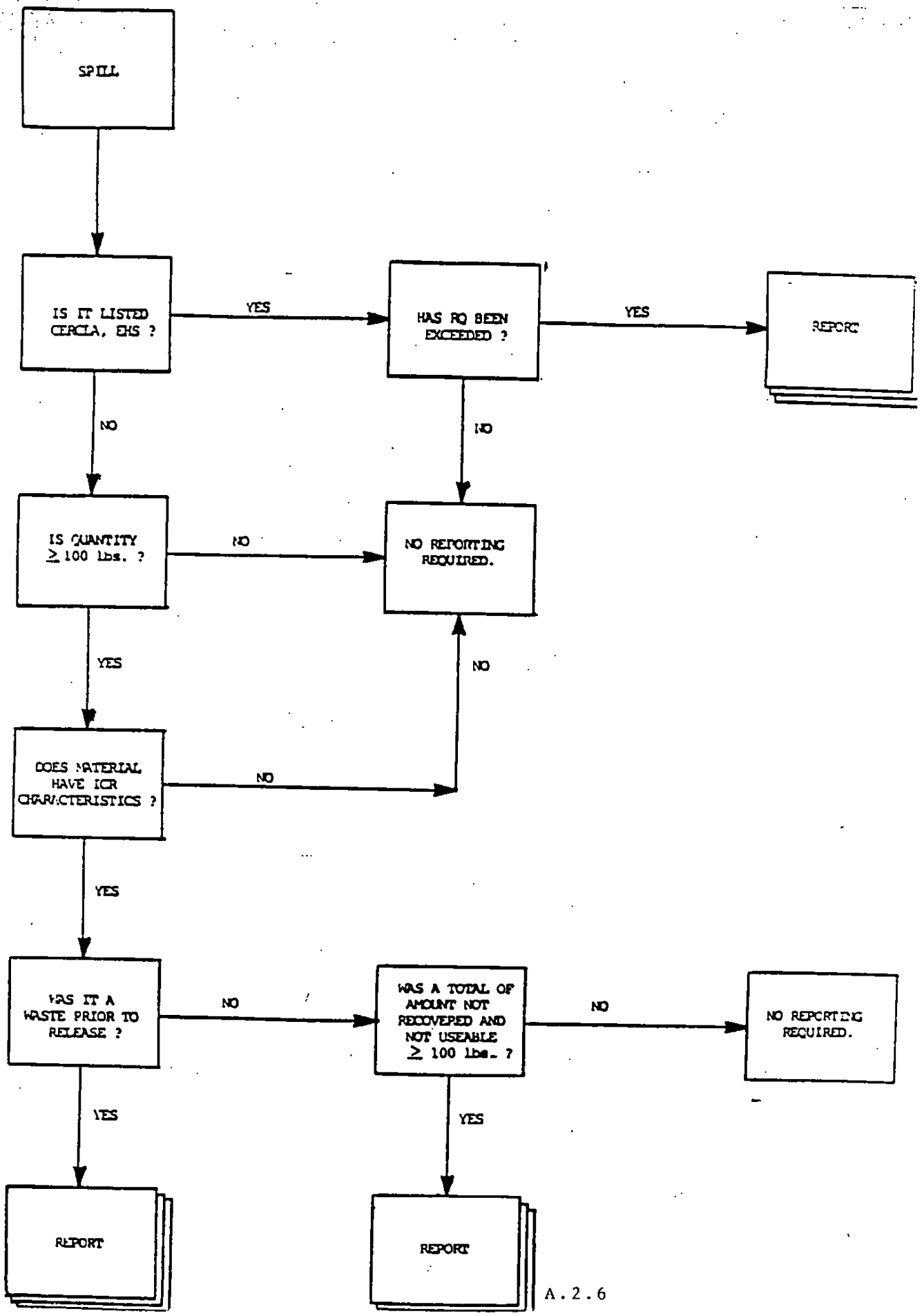
UOP SHREVEPORT PLANT
REPORTABLE QUANTITIES FOR HAZARDOUS MATERIAL RELEASES

TABLE 2 Potential ICR Hazardous Materials

CHEMICAL	Reportable Quantity Pure Soln. (LB)	Concentrations (Wt. %)	Reportable Quantity Mixture (LB)	Average Density (LB/GAL)	Approximate Reportable Quantity Mixture (GAL)
Aluminum Hydroxy Chloride (SOL) (When ph <2.0)	100	Any	100	N/A	N/A
Or Aluminum Chloride (When ph <2.0)	100	Any	100	N/A	N/A
Diethylbenzene (Mixed or Single Isomers or Lights/Heavies) Flash Point <140 F	100	Any	100	N/A	N/A
ICR Wastes or Materials	100	Any	100	N/A	N/A

(Ignitable) <140 F Flash Point (Corrosive) 2>=12.5 (Reactive) Oxidizer, Pyrophoric, or Water Reactive

UCP
SHREVEPORT PLANT
SPILL REPORT
DECISION TREE



A.3 PERMIT EXCURSIONS - AGENCIES

A. INJECTION WELLS

1. The Shreveport Plant is permitted to inject nonhazardous wastewater into it's wells subject to certain limitations. The following represent reportable excursions from the permit.

   a. Annulus pressure _< 200 PSIG

   b. Injection pressure #5 and #6 wells >_ 520 PSIG; #7 > 2461 PSIG

   c. Leakage in wastewater disposal piping

   d. Pressure or flow chart malfunctions greater than 4 hours

   e. Communication between annulus and tubing in well

2. An excursion from any of these limits is to be reported immediately to the Louisiana DEQ, Injection and Mining Division.

3. An Environmental Engineer or Technical Manager must be immediately notified of an excursion so they can satisfy the reporting requirements.

B. AIR EMISSIONS

1. Some accidental air emissions qualify as a release of a hazardous "Reportable Quantity" material. These are identified in A.2 and must be handled accordingly.

2. Excursions from Shreveport Plant air emission permits must be reported to Louisiana DEQ Air Quality Division no later than 24 hours after being discovered.

3. Any unauthorized emission which causes an adverse off-site impact, such as odor, impairment of visibility caused by smoke opacity, or visible deposits of emitted material, must be reported to the DEQ Air Quality Division no later than 24 hours after being discovered.

C. GROUNDWATER

Evidence of groundwater contamination detected in Shreveport Plant monitor wells must be reported to the Louisiana DEQ Water Pollution Control Division no later than 24 hours after being discovered.

D. SURFACE WATER

The Shreveport Plant is permitted to discharge only storm water runoff from the property. Any contaminated runoff must be reported to the DEQ Water Pollution Control Division no later than 24 hours after being discovered.

E. SOLID WASTE

The Shreveport Plant must report to the DEQ Solid Waste Division within 24 hours of discovery, any unauthorized discharge which does or may possibly be expected to result in a violation of Louisiana Solid Waste Rules and Regulations.

F. NUCLEAR SOURCES

1. The Shreveport Plant must report to the DEQ Nuclear Energy Division immediately after the following occurrences, or threat of, become known:

   a. Theft or loss of any source of radiation

   b. A dose to the whole body of any individual of 25 REMS or more of radiation; a dose to the skin of the whole body of any individual of 150 REMS or more of radiation; or a dose to the feet, ankles, hands or forearms of any individual of 375 REMS or more of radiation

G. The Louisiana DEQ requires written follow-up reports to the verbal reports above. Refer to Title 33, Chapter 39 for detailed instructions on written reports.

H. Initial verbal reports may be made to the main DEQ office if that is more practical.

EMERGENCY RESPONSE PLAN

APPENDIX D

CONTINGENCY PLAN FOR CHEMICAL AND CHEMICAL WASTE SPILLS

I. GENERAL:

The operating personnel in charge of the waste water holding pond, the waste landfill, and the various operating units are trained to inspect these areas for the unlikely occurrence of unexpected discharges or releases of chemicals or chemical wastes into the environment. In the event of a chemical or chemical waste spill, these employees or any other plant employee shall immediately report the spill to the Plant supervisor(s) in charge of the area(s) in which the spill occurs. All plant supervisors and the Emergency Response Team are trained in emergency procedures for handling chemical and chemical waste spills.

The supervisor(s) in charge of the area(s) where a spill occurs will initiate the proper emergency measures which include the notification of Plant Management and supervisory personnel. Notification should follow the same procedure as for an accident requiring implementation of telephone number 333. Personnel to be notified include the Operations Manager, Technical Manager, Utilities Superintendent, Safety Engineer, Maintenance Superintendent, Labor Supervisor, and the Environmental Engineer. The Emergency Response Team which is on-site 24-hours per day will be marshalled through the use of the in-plant emergency alarm system for on-site occurrences or spills.

All measures will be taken to contain spills of chemicals or chemical wastes within the plant site. Emergency portable pumps will be set up to capture any uncontained materials and return them to the containment area from which safe and proper reuse or disposal can take place. Sandbagging, temporary ditching and/or diking will be conducted to prevent runoff prior to and during the collection of liquids. Water from emergency response operations will be collected and disposed of properly. Controlled wash and decontamination procedures will be used. Samples of the liquids and/or solids will be taken and analyzed until proper flushing and decontamination has been accomplished. In the event of fire, the normal fire-fighting techniques will be employed within the plant with appropriate fire-fighting personnel handling the fire and containment of chemical runoff.

Any spills which exceed the reportable quantities listed in the Comprehensive Hazardous Substance List will be reported as required in accordance with the UOP Notification Plan.

II. EMERGENCY PROCEDURES

The following procedures are to be followed in the event of an emergency or a spill of chemicals or chemical waste that could threaten human health or the environment.

A. Spotting an Emergency Situation or Spill

1. Immediately notify the Plant Supervisor(s) in charge of the area(s) in which the emergency situation or spill has occurred. If possible, take measures to alleviate the situation (e.g., close valves, block drainage, and so on).

2. In the event that the spill leaves the secondary spill containment area, containment and countermeasure activities will become the responsibility of the Utilities Operations area (Lauritzen and Berry).

3. Responsibility for initiating implementation of emergency response procedures in each plant area is as follows:

Area No.	Description	Supervisory Responsibilities
1	N. W. Utilities	Brian/Ridge
2.	Forming & Aging	Pharis/Bickham
3.	Drying & Finishing	Pharis/Snell
4.	Old Alum Storage	Pharis/Hill
5.	N.E. Utilities	Lauritzen/Ridge
6.	No. 8 Warehouse	Sandifer/Horton
7.	Spent Catalyst	Sandifer/Godfrey
8.	Laboratory	Greening/Schreiber
9.	Maintenance	Gasway/Davis
10.	Main Warehouse	Sandifer/Horton
11.	Metals Recovery S. Utilities	Pharis/Hill
12.	Reduction	Boike/Chelette
13.	Old PNA Area Unloading Racks	Ridge
14.	No. 6 Warehouse	Sandifer/Horton
15.	$AlCl_3$ Area/PDEB	Lauritzen/Ridge
16.	Wastewater Plant	Brian/Ridge
17.	Line 3 SCM	Pharis/Bickham/Snell

Plant areas are delineated in sketch on following page showing "Spill Containment Area."

2. Plant Supervisor(s) will institute appropriate emergency procedures and notify other Plant Management via the Shreveport Plant Emergency Response Procedure or by telephone directly.

3. As soon as possible, compare the amount spilled with the Emergency Response Plan Appendix A.2 to determine emergency notification requirements.

Emergency telephone numbers for Plant Management are given in Appendix A.

B. On-Site Emergency Response Procedures

The following procedures are to be followed at the actual site of the emergency or spill.

1. Immediately dispatch the in-house Emergency Response Team.

2. Be certain the secondary spill control system is activated and close the dam gates at the south fence. Also, be certain that the roving utilities operator keeps watch on the spill control system during the emergency. Keep the control center board (located in shift supervisor's office) indicating equipment position up-to-date.

3. Contain the spill (i.e. sandbagging, diking, and/or ditching. Equipment location is shown in Attachment No. 1, "List of Emergency Response Equipment."

4. Set up portable pumps.

5. Check for escaping waste or chemicals. Capture and contain.

6. Sample and analyze waste or chemicals which escape off-site.

7. Sample and analyze liquids and/or solids as needed to determine when flushing and decontamination have been accomplished.

8. If danger of fire, notify fire fighters to move in.

9. In case of fire

   a. contain runoff from fire water spray, and

   b. pump fire water to containment of disposal area.

10. Keep an accurate log of the event including sample results.

11. Management will consult with local authorities, if needed, to evacuate surrounding residents. If evacuation is imminent:

    a. Immediately notify local authorities:

       (1) Louisiana State Police
       (2) Sheriff's Department
       (3) Fire District No. 1
       (4) Civil Defense - Community Alert Network (CAN)

12. UOP Management in Des Plaines should be notified in accordance with the UOP Emergency Notification Plan.

13. For hazardous waste spills, the authorities should also be notified in accordance with Appendix A.

Note: The Shreveport Plant Director of Manufacturing will contact UOP Management and relay all information to the news media as required. In the event that the Director of Manufacturing is unavailable, the alternates to handle these duties are identified in the Emergency Response Plan, "Release of Information."

14. After the emergency is over, the following steps must be taken:

    a. Notify Plant Management, appropriate authorities, and UOP Management that the emergency has ended.
    b. Be sure stormwater monitoring and control system and dam gates are returned to normal operating positions.
    c. Clean and decontaminate equipment
    d. Properly segregate and dispose of washings and waste material
    e. Critique the event
    f. Prepare a written report of the incident.

Attachments:

1. Emergency Response Equipment Listing and Inspection Form
2. Stormwater Monitoring Control System Layout and Details
3. Chemical Spill Report Form - Excursion/Incident Report Form
4. Shreveport Plant Area Map

Environmental Engineer_____ Time:_____

MECHANICAL EQUIPMENT

BI-WEEKLY INSPECTION FORM

Operating Conditions		Items
Good	Poor	
		6 - Gas Engine-Driven Portable Teel Pumps
		1 - Gas Engine-Driven Diaphragm Pump with Dolly
		1 - Air-Operated Portable Pump
		3 - Small Gould Sewage Pumps
		1 - Trailer Equipped with Large Compressor and Air-Operated Pump
		1 - Trailer Equipped with Electrical Generator and Six Flood Lights
		1 - Bow Saw
		3 - Battery Lanterns (Portable)
		1 - Portable Electric Vacuum
		2 - O_2 Monitor Units
		2 - Submersible Pumps
		1 - Vacuum Trailer

Inspector: _____ Date: _____

Environmental Engineer _____ Time: _____

MECHANICAL EQUIPMENT

BI-MONTHLY INSPECTION FORM

Quantity	Quality Good	Quality Poor	Items
			1. METAL CABINET
			10 - Shovels
			1 - Double-Bit Axe
			1 - Sledgehammer
			4 - Brooms
			2 - Brush Blades
			2 - Pitchforks
			1 - Rake, Steel Teeth
			2 - Fire Flaps
			1 - Long-Handled Shovel (Special Attachment)
			2. FIRE BRIGADE EQUIPMENT
			2 - Environmental Suits (Viton) (Large & Medium)
			12 - Firehats (1-White, 11-Yellow)
			11 - Firemen's Uniforms 2 - Size 48 2 - Size 46 2 - Size 44 2 - Size 42 2 - Size 40 2 - Size 38 1 - Size 38

Quantity	Quality Good	Quality Poor	Items
			2. FIRE BRIGADE EQUIPMENT(CONTD)
			12 - Firemen's Boots 1 - Size 13 2 - Size 12 4 - Size 11 2 - Size 10 2 - Size 9 1 - Size 8
			2 - Pairs of Chest Waders 1 - Size 12 1 - Size 10
			3. WOODEN SHELVES #1
			4 - Gas Cans 1 - 5 Gallon 2 - 2.5 Gallon 1 - 1 Gallon
			2 - Cans Motor Oil
			1 - Chain, Double Hooks
			2 - Wheel Rims
			1 - Saw
			2 - Boxes of Lab Sample Jars with Lids 1 Bx - Half-Pint Jars 1 Bx - One-Pint Jars
			2 Bx - Oil Adsorbant
			1 - Tool Box (Empty)
			4 - Full Circle Pipe Clamps 1 - 6" 1 - 8" 2 - 12"

Quantity	Quality Good	Quality Poor	Items
			3. WOODEN SHELVES #1 (Continued)
			11 - Hazorb Pillows
			Hose Clamps, Pipe Fittings, Oil Funnels, and Parts Variety)
			4. HOSE REEL
			1 - 4" Vinyl Hose
			5. WOODEN HOSE RACK
			8 - Vinyl Hoses (Quick-Connect)
			2 - Vinyl Hoses (Fire)
			11 - Vinyl Hoses (No Connectors)
			1 - Non-Collapsible Chemical Transfer Hose
			6. WOODEN SHELVES #2
			9 - 2" Vinyl Hoses (Quick-Connect)
			8 - 4" Noncollapsible Hoses (Fire)
			2 - 4" Vinyl Hoses (Quick-Connect)
			3 - Insta-Foam Package Canisters
			6 - Gas Engine-Driven Portable Teel Pumps
			1 - Gas Engine-Driven-Diaphragm Pumps with Dolly
			1 - Air-Operated Portable Pump
			1 - Pallet, Burlap Sandbags

Good	Poor	
		6. WOODEN SHELVES #2 (Continued)
		3 - Small Gould Sewage Pumps
		6 - 50 Ft., 2½" Firehose
		7. PORTABLE TRAILER #1
		1 - Trailer Equipped with Large Compressor, 3 Fuel Drums, Small Hose, and Air-Operated Pump
		8. PORTABLE TRAILER #2
		1 - Trailer Equipped with Electrical Generator and 6 Flood Lights
		9. CHALKBOARD (1)
		10. DRAIN PLUGS
		1 - 5" Drain Plug
		1 - 12" Drain Plug

Quantity	Quality Good	Quality Poor	Items
			11. DRUM PALLETS
			1 - 55 Gal. Drum, 3% Foam Additive
			1 - 55 Gal. Drum of Water
			4 - 55 Gal. Drums, Empty
			12. WOODEN CABINET
			4 - Air Cylinders
			1 - Megaphone
			Gaskets (Several)
			5 - Firehose Valves
			1 pr. - Environmental Gloves
			2 pr. - Neoprene Gloves
			"Ziplock" Enclosure Bags (Several)
			Glove Cuffs (Several)
			1 - Soft-Bristle Brush
			13. OUTSIDE CABINET
			2 - Cans of Foam Additive
			1 - Basket-Type Stretcher
			1 - Container, Chemical Goggles (4)
			5 - MSA Self-contained Breathing Apparatus 2 - Fire Extinguishers 1 - Large 1 - Small
			1 - Push Broom

Quantity	Quality Good	Quality Poor	Items
			13. OUTSIDE CABINET (Continued)
			1 - Box Respiratory Filters
			14. FIRE BRIGADE WAGON
			12 - Fire Hoses
			"Y" Hose Couples (Several)
			1 - Hose Clamp - Spanner Wrenches
			15. BOX ON BACK
			1 - Hand Lantern
			1 - Spanner Wrenches
			1 - Cotton Gloves
			16. METAL SHELVES
			2 - 36-Volt Battery Chargers
			17. FOAM CART (1)

Quantity	Quality Good	Quality Poor	Items
			18. WOODEN TABLE
			1 - 7.5 HP Outboard Motor
			1 - Outboard Motor Fuel Tank
			1 - Crowbar
			1 - Pair of Bolt Cutters
			1 - Respirator
			2 - Water Vests
			2 pr. - Rubber Overshoes
			19. METAL CABINETS
			26 - 6-Volt Batteries
			1 - Tent
			1 - Heater (Portable)
			5 - Fluorescent Lanterns
			10 - Cans of Motor Oil
			5 - Cans of Insect Repellent
			3 - Tubes of Caulking Compound
			2 - Electrical Extension Cords
			2 - Self-Contained Well Monitoring Device
			Cotton Gloves - Several Pairs
			Leather Firemen's Gloves - Several
			1 - Firehat
			Several Respirator Filters
			Several Cloth Dust Filters
			Several Hose Clamps
			1 - Bow Saw (24 Inch)

Quantity	Quality Good	Quality Poor	Items
			19. METAL CABINETS (Continued)
			2 - Machetes and Belts
			3 - Portable Battery Lantern
			1 - Come-a-long
			Several Paper Suits
			6 - Cans of Yellow Spray Paint
			3 - Cans of Blue Spray Paint
			2 - Compasses
			2 - Rolls of Duct Tape
			Several Gaskets
			2 - Gaging Tapes
			1 - 18" Pipe Wrench
			1 - Ball Peen Hammer
			1 - Hacksaw Blade
			2 - Chisels
			1 - Allen-Wrench Set
			1 - Deep Socket Set
			2 - 8" Crescent
			2 - 12" Crescents
			1 - 10" Screwdriver
			1 - 4" Screwdriver
			2 - Soft-Bristle Brushes
			1 - Bundle of Lead Wool
			1 - Wire Brush
			1 - Long Taper Punch Set
			1 - Pair of Tinning Shears
			4 - Ignition Kits for Gasoline Engines

Quantity	Quality Good	Quality Poor	Items
			19. METAL CABINETS (Continued)
			1 - Can of Lubricating Oil
			2 - Pin Wrenches
			2 - 2" Putty Knife
			1 - Tube of Adhesive
			Several Brass Pipe Fittings
			1 - Pair of Wire Cutters
			1 - Roll of Thread Sealer
			1 - Hatchet
			Several Gaskets
			1 - 8" Pipe Wrench
			1 - File
			20. REMAINDER OF STORAGE ROOM
			1 - Plastic Water Jug
			1 - Portable Electric Vacuum
			2 - Portable Respiratory Units O_2 Monitors
			1 - Igloo Cooler
			1 - Box of Sodasorb Canisters
			1 - Gott Water Cooler
			7 - Boxes of Red Cross Booklets
			2 - Submersible Pumps
			2 - Extension Cords
			2 - Extra-Heavy Extension Cords
			with Ground Fault
			2 - Scott Air Packs

Quantity	Quality Good	Quality Poor	Items
			21. TOOL BOX (ENVIRONMENTAL)
			1 - 18" Pipe Wrench
			2 - 14" Pipe Wrenches
			1 - 8" Pipe Wrench
			1 - 12" Crescent Wrench
			1 - 10" Crescent Wrench
			1 - 8" Crescent Wrench
			1 - 8" Screwdriver
			1 - 4" Screwdriver (Phillips)
			1 - 10" Screwdriver
			1 - 6" Screwdriver (Phillips)
			1 - 2" Putty Knife
			2 - Pairs of Pliers
			2 - Pairs of Vise Grips
			1 - Claw Hammer
			1 - 21-Piece Socket Set
			1 - Hacksaw
			1 - Non-Spark Ball Peen Hammer
			1 - Wire Brush
			1 - 50 Ft. Cloth Measuring Tape
			1 - Dead-Blow Hammer
			1 pr. - Cotton Gloves
			1 pr. - Neoprene Gloves
			1 - Black Marker

Quantity	Quality Good	Quality Poor	Items
			21. TOOL BOX (ENVIRONMENTAL) (CONTINUED)
			1 - Roll of Thread Sealer
			5 - Box & End Combination Wrenches
			1 - Small Punch
			22. PICKUP TOOL BOX
			1 - 18" Pipe Wrench
			1 - Flashlight
			1 - Set of Jumper Cables
			1 - Raincoat
			1 - Can of Insect Repellent
			1 - Can of Motor Oil
			1 - Shovel
			1 - Machete and Belt
			8 pr. - Neoprene Gloves
			1 - Tube of Adhesive Sealant
			Hose Clamps (Several)
			1 pr. - Chemical Goggles
			1 - Double-Bit Axle
			1 pr. - Bolt Cutters
			1 - 24" Pipe Wrench
			1 - Writing Marker
			1 - Electrical Extension Cord

Quantity	Quality Good	Quality Poor	Items
			23. TOOL BOX (ENVIRONMENTAL) (INSIDE, PORTABLE)
			1 - 18" Pipe Wrench
			2 - 14" Pipe Wrenches
			1 - 8" Pipe Wrench
			1 - 12" Crescent Wrench
			1 - 10" Crescent Wrench
			1 - 8" Crescent Wrench
			1 - 8" Screwdriver
			1 - 10" Screwdriver
			1 - 8" Screwdriver (Phillips)
			1 - 2" Putty Knife
			1 - Pairs of Pliers
			2 - Pairs of Vise Grips
			1 - Claw Hammer
			1 - 21-Piece Socket Set
			1 - Hacksaw with 3 Blades
			1 - Non-Spark Ball Peen Hammer
			1 - Wire Brush
			1 - 50 Ft. Cloth Measuring Tape
			1 - Dead-Blow Hammer
			1 pr. - Cotton Gloves
			1 pr. - Neoprene Gloves
			1 - Black Marker
			1 - Roll of Thread Sealer

Quantity	Quality Good	Quality Poor	Items
			23. TOOL BOX (ENVIRONMENTAL) (INSIDE, PORTABLE) 5 - Box & End Combination Wrenches
			1 - Small Punch
			1 - Pair of Channelocks

SPILL CONTROL CHECKLIST

A. Sound Emergency Alarm

B. Establish Communications

1. Base station in shift supervisor's office in Maintenance Building

2. Appoint dispatcher and logkeeper (use operations supervisor on days)

C. Containment is Top Priority

1. Close gates at south fence until emergency is over

2. Properly align spill control loop

3. Check spill control loop for leaks.

D. Consider Transportation

1. Utilities operator to maintain control of plant pickup

2. Be sure all vehicles do not end up at point of spill leaving no way to get manpower or equipment to spill area.

E. Notification in Accordance with UOP Emergency Notification Plan

1. Upper Management

2. Government agencies (if required)

F. Clean-up of Spill

1. Determine and initiate procedures to be used

2. Establish criteria for determining when complete

3. Coordinate required samples and analyses.

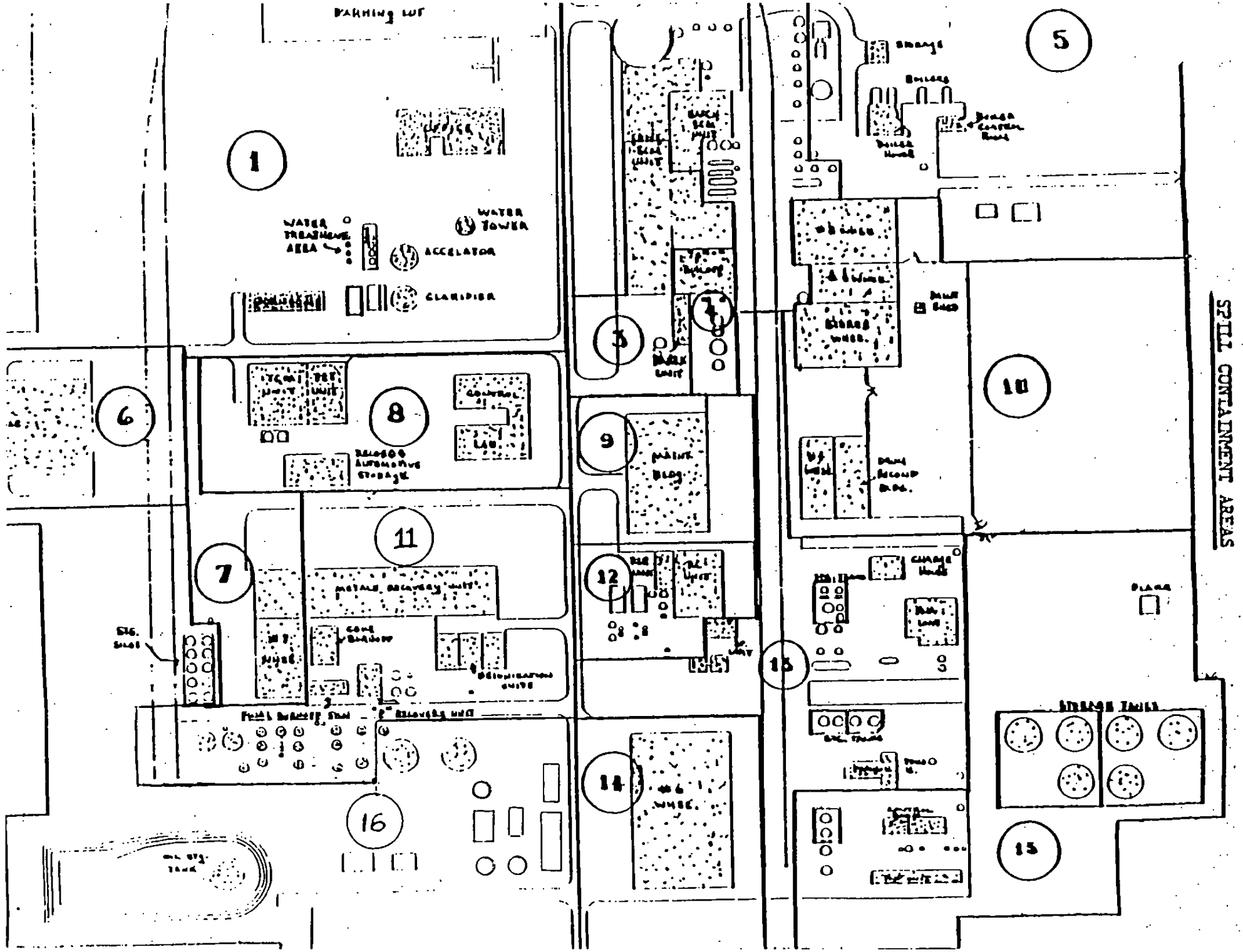
G. Follow-Up

1. Notify Management that emergency is over

2. Return spill containment system to normal

3. Clean up and return of environmental equipment to storage, including proper maintenance of equipment to assure good operating condition

4. Timely review of spill.


SPILL CONTAINMENT AREAS
PARKING LOT
WATER TREATMENT AREA
WATER TOWER
ACCELATOR
CLARIFIER
LAB
MAINT. BLDG
STORAGE TANKS
1
2
3
4
5
6
7
8
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11
12
13
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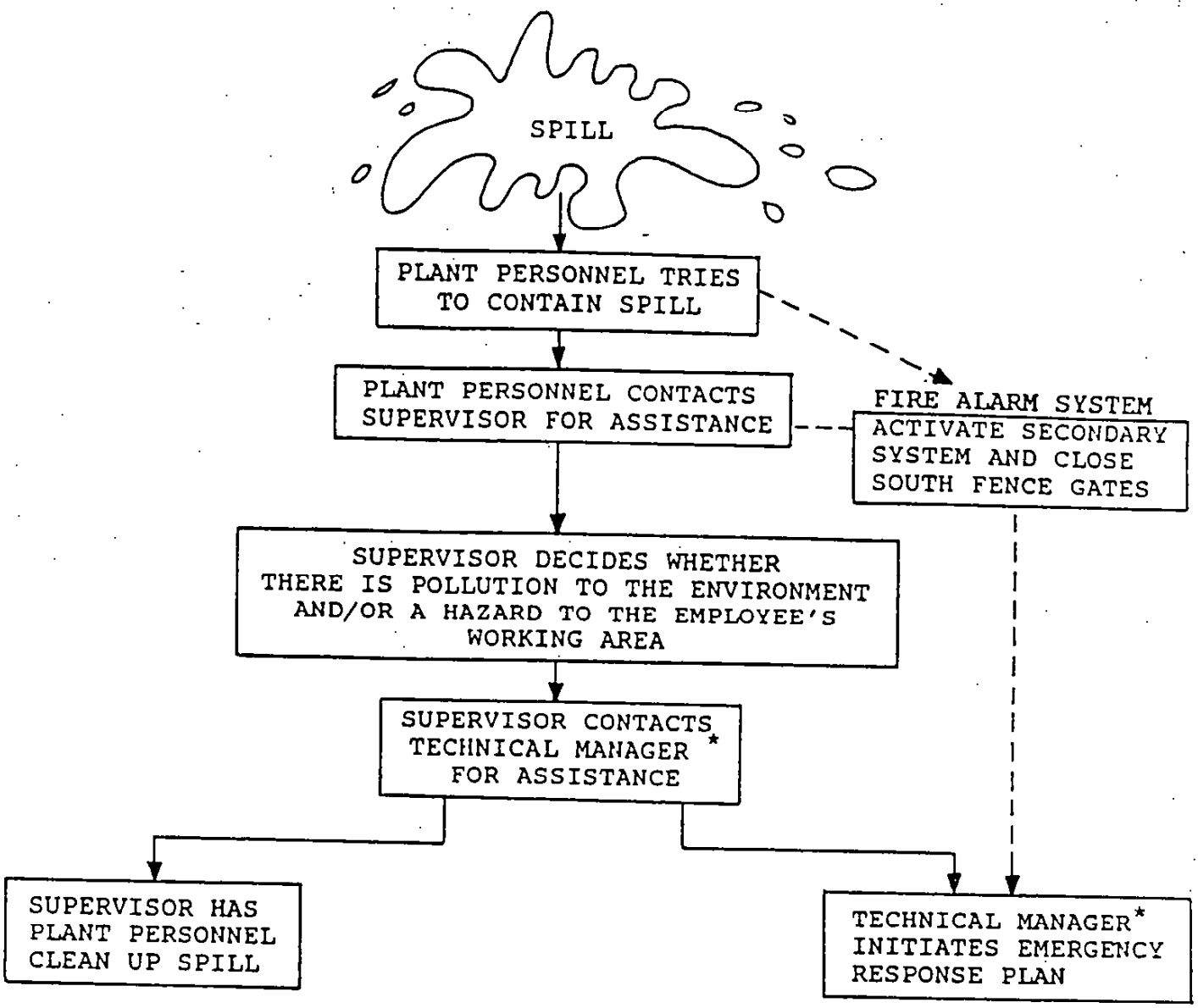
15
16

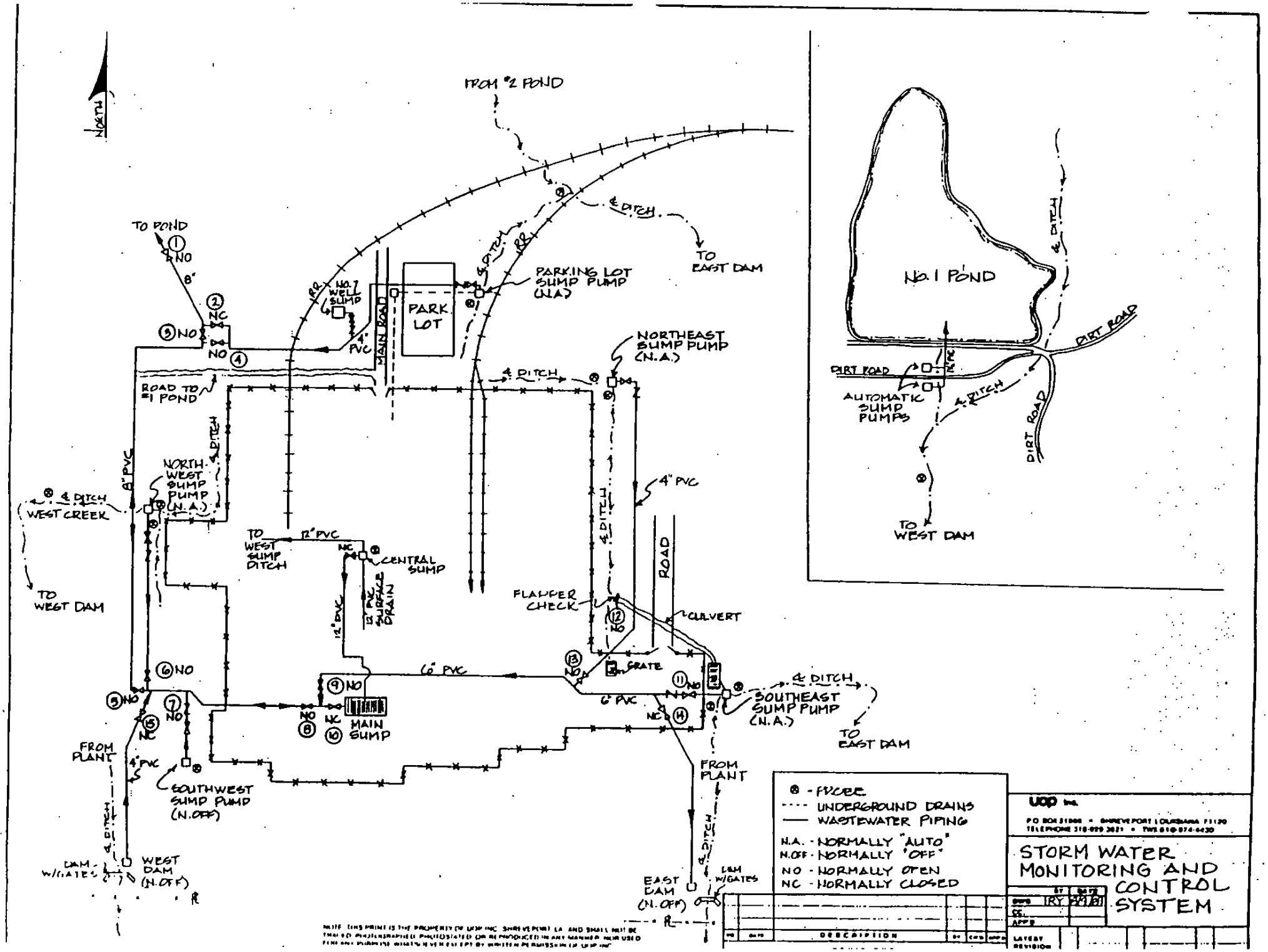
EMERGENCY RESPONSE PROCEDURE



THIS EMERGENCY RESPONSE PROCEDURE COULD BE USED AT ANY TIME OF THE DAY -- DAYS, AFTERNOONS, OR MIDNIGHT SHIFT

* ENVIRONMENTAL ENGINEER IS THE ALTERNATE IN THE ABSENCE OF THE TECHNICAL MANAGER.

SH-4627-A


NORTH
FROM #2 POND
TO POND
NO
8"
NC
NO
NO
NO. 7 WELL SUMP
4" PVC
MAIN ROAD
PARK LOT
PARKING LOT SUMP PUMP (N.A.)
TO EAST DAM
4" DITCH
NORTHEAST SUMP PUMP (N.A.)
ROAD TO #1 POND
NORTH-WEST SUMP PUMP (N.A.)
WEST CREEK
TO WEST DAM
8" PVC
12" PVC
TO WEST SUMP DITCH
CENTRAL SUMP
12" PVC
NO SURFACE DRAIN
FLAPPER CHECK
CULVERT
ROAD
GRATE
6" PVC
MAIN SUMP
SOUTHEAST SUMP PUMP (N.A.)
FROM PLANT
SOUTHWEST SUMP PUMP (N.OFF)
DAM W/GATES
WEST DAM (N.OFF)
EAST DAM (N.OFF)
No. 1 POND
DIRT ROAD
AUTOMATIC SUMP PUMPS
TO WEST DAM
- FVCBE
UNDERGROUND DRAINS
WASTEWATER PIPING
N.A. - NORMALLY "AUTO"
N.OFF - NORMALLY "OFF"
NO - NORMALLY OPEN
NC - NORMALLY CLOSED
UOP INC.
STORM WATER MONITORING AND CONTROL SYSTEM
DESCRIPTION
LATEST REVISION

UOP INC. -- PROCESS DIVISION
SHREVEPORT PLANT
PRIMARY
CHEMICAL SPILL REPORT

3/83 REV. 1
2/87 REV. 2

DATE _____

*Chemical Spilled (Identify) _____

*Quantity Spilled _____ (____Actual ____Estimate)

*Calculation for Reportable Quantity (RQ) % Solution (_____) _____

RQ at 100% (_____ lbs.) Calculation of RQ = _____

*Date/Time Spill _____ Location _____

*What caused the spill? _____

_____

_____

_____

Operator or Worker Reporting Spill _____

Operator or Worker Responsible for Area _____

Time Supervisor Notified _____ Delay___Yes ___ No

Reason for Delay in Notification (If Yes) _____

_____

*Was Chemical Waste contained in Disposal System? ___Yes ___ No

If No, Explain _____

_____

_____

*Was Secondary (___ Yes ___No) or Emergency (___ Yes ___No) System Used?

Notification (as required):

Supervisor _____ Date _____ Time _____

Environmental Engineer _____ Date _____ Time _____

Superintendent _____ Date _____ Time _____

Manager _____ Date _____ Time _____

Director _____ Date _____ Time _____

*Was Clean-up Help Required? ___Yes ___ No

If Yes, Explain: _____

_____

_____

Suggestions on how to prevent spill or simplify clean-up in the future:

_____

_____

SIGNATURES

Shift Supervisor _____ Manager _____

Supervisor _____ Director _____

Superintendent _____ Engr.Group Ldr. _____

Env. Engr. _____

*Items that are needed prior to contacting the Environmental Engineer.

UOP Form No. 381926

uop

'CURSION / INCIDENT REPORT

MUST BE COMPLETED	
REPORT NO	
EXCURSION	INCIDENT

'ION

2. DATE | AND TIME | OF OCCURRENC

2A DATE | AND TIME | OCCURRENCE BECAME KNOW

2B NUMBER OF INDICATIONS OF OCCURRENCE.

3 TYPE OF EXCURSION / INCIDENT | IF CODE 80 ("OTHER"), DESCRIBE.

4 SOURCE:

5 CAUSE | COMMENTS ON CAUSE—IF CODE 88 ("OTHER"), DESCRIBE.

6. PARAMETER(S) OR CHEMICAL(S) INVOLVED (NO MORE THAN 5)

7 PERMITTED OR NON-REPORTABLE LEVEL(S) OF DISCHARGE / RELEASE.

8 PERMITTED OR NON-REPORTABLE LEVEL(S) ESTABLISHED BY

9. AMOUNT OF ACTUAL DISCHARGE OR RELEASE (USE SAME UNITS AS ITEM 8)

9A AMOUNT OF DISCHARGE OR RELEASE RECOVERED:

10 REGULATORY AGENCIES NOTIFIED. | DATE | TIME: | PERSON.

HOW

11 ADVERSE ENVIRONMENTAL IMPACT (IF ANY). WHERE REPORTABLE UNDER TSCA, CONTACT LOCATION TSCA COORDINATOR

12 IMMEDIATE REMEDIAL ACTIONS TAKEN AT TIME OF EXCURSION / INCIDENT

13. MEASURES TAKEN OR PLANNED TO PREVENT RECURRENCE.

14 ADDITIONAL COMMENTS:

THIS REPORT PREPARED BY.

(SIGNATURE)

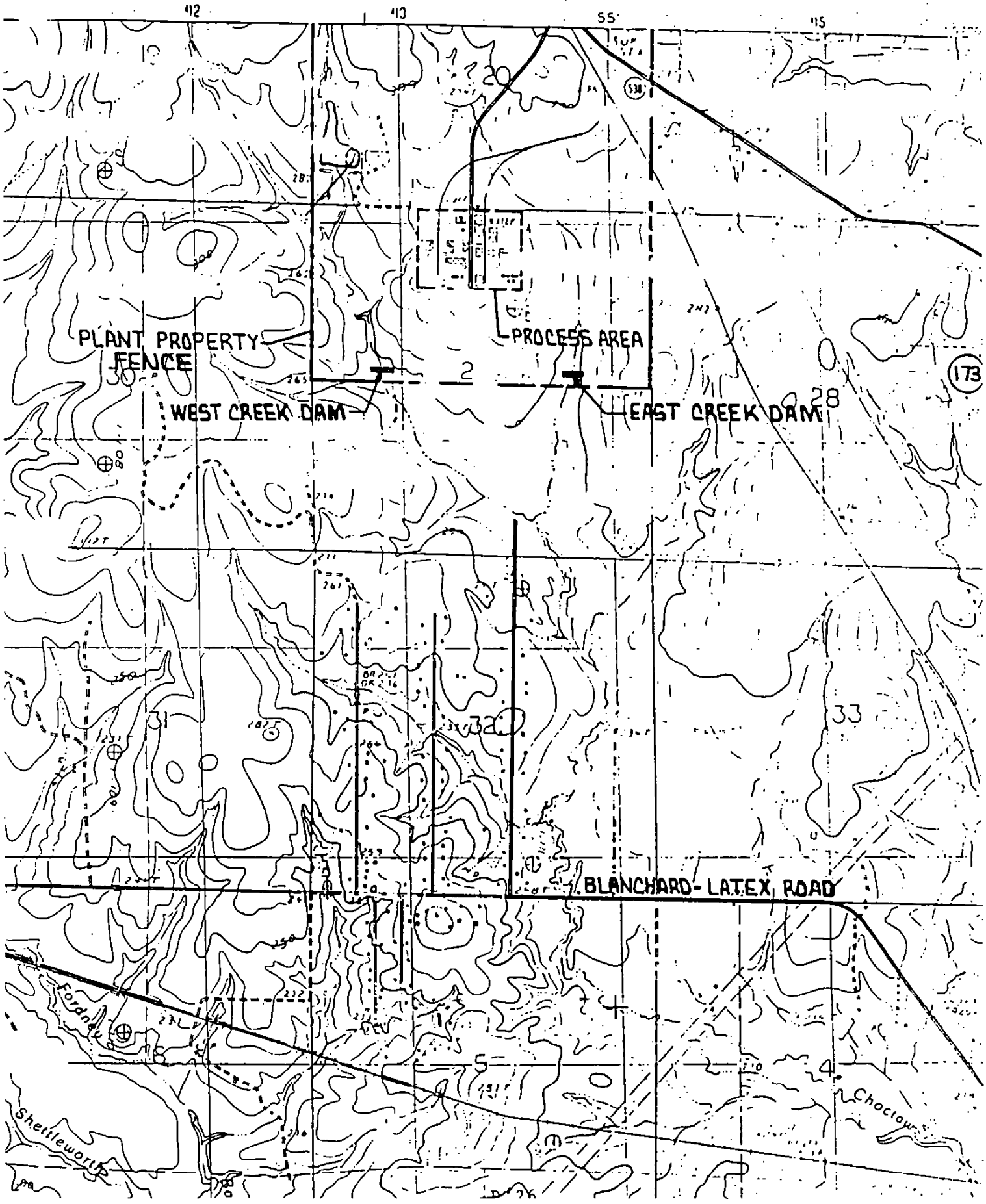
(TYPED OR PRINTED NAME)

(DATE)

(JOB TITLE)

IMPORTANT NOTE: IF THIS REPORT CONCERNS A RELEASE OF A HAZARDOUS SUBSTANCE TO THE ENVIRONMENT WHICH IS REPORTABLE UNDER SUPERFUND FEDERAL LAW (CERC

SHREVEPORT PLANT AREA
(BLANCHARD 7½ TOPO)



APPENDIX E

OTHER RESOURCES

EMERGENCY RESPONSE PLAN

APPENDIX E

OTHER RESOURCES

A. Shreveport SPCC Plan

1. Drawing - Oil and hazardous substance storage tank location
2. Drawing - Chemical sewer system
3. Drawing - Stormwater sewer and stormwater monitoring and control system

B. Spill Clean-Up Contractors

1.	Chemical Waste Management Sulphur, LA	318-583-2144
2.	Browning-Ferris, Inc. Lake Charles, LA	318-882-1477
3.	Rollins Environmental Service Baton Rouge, LA	504-778-1234
4.	IT Corporation Baton Rouge, LA	504-922-4510

C. Drafting Room

1. Current Plant drawings
2. USGS maps of area

D. Material Safety Data Sheets

Purpose: To insure effective use of the emergency alarm, fire protection equipment, and emergency response team personnel in order to protect human life and minimize property loss at the Shreveport Plant.

Scope: Applicable to all subject equipment and personnel at the Shreveport Plant.

Accountabilities:

Employees

All Shreveport Plant employees are to be knowledgeable of how to report an emergency and are to refrain from misuse of the emergency alarm system.

Safety Department

Inspect and maintain emergency response equipment, conduct training for all Plant personnel in emergency reporting procedures, conduct training for emergency response team members and function as the emergency response team leader.

Operations Shift Supervisors

To function as an emergency response team leader during night shift, weekends and holidays.

Emergency Response Team Members

Be knowledgeable of written procedures and attend scheduled emergency response training sessions to develop skills required to function as an emergency response team member.

I. POLICY

Basic Requirement

Programs must exist and be designed to enable employees to perform their work-related responsibilities safely. Program requirements are listed below.

II. PROCEDURES

A. If practical, when reporting an emergency, use the Plant emergency telephone number (#333), which will ring telephones at the following locations:

1.	Laboratory control lab (Note: This location has 24-hour telephone coverage, and the ability to activate the emergency sirens).	Ext. 264
2.	Switchboard	Ext. 0
3.	Guard house	Ext. 229 or 500
4.	Emergency response team assembly area	Ext. 320
5.	Nurse's station	Ext. 410
6.	Safety Engineer	Ext. 422
7.	Safety Specialist	Ext. 415

B. When initiating an emergency alarm by telephone, provide the following initial response information:

1. Caller's name

2. Location of the emergency

3. Nature of the emergency (injuries, if any)

4. Assistance needed

5. Allow receiving party/parties to conclude the telephone conversation.

C. When it is impractical to use emergency telephone number to report an emergency, the emergency alarm sirens push button alarm stations may be used to initiate the plant emergency alarm alert. Immediately follow up this action with a person knowledgeable of the emergency calling #333 or #320, giving the appropriate details of the emergency, providing the preceding telephone initial response information.

D. The Emergency Response Team shall be composed of the following:

1. A Team Leader (See Section E.2 below)

2. O-5 - Utilities Operator

3. L-1 - Laboratory Leaderman

4. L-2 - Platinum Laboratory Analyst

5. L-3 - Control Laboratory Technician

6. L-2 - PDEB Laboratory Technician

7. O-6 - Operator Assistant (all stations)

8. - Environmental Labor

E. When the Plant emergency alarm is activated

1. The Emergency Response Team will report immediately to the team assembly area (emergency response equipment room) west of the training room.

2. One of the following persons will be in charge:

a. Normal hours - Safety Specialist or Safety Engineer.

b. After hours - One of the Shift Facilitators.

F. Emergency response equipment supplies are stored in the emergency response equipment room and in strategic locations throughout the plant. These supplies are for emergency response use only unless otherwise authorized.

G. FIRE PUMPS are normally set on fully automatic. Should the water pressure drop below the minimum setting, the pump will start automatically. Once started, the fire pumps must be shut down manually. The pressure with fire pumps running and one hose stream flowing is approximately 150 psi. Flowing pressure on a 2-1/2" fire hose requires approximately four persons per hose team. A 1-1/2" hose requires three persons per hose team.

H. Normal pressure on the fire system (without leaks) is 145-160 psi. This pressure is maintained by small jockey pumps located in the 2000 GPM electric driven fire pump house at no. 2 pond and 1000 GPM booster pump fire pump house east of the main change house.

I. Fire pumps will start automatically in this sequence:

1. 1000 GPM electric powered booster pump will start automatically when the line pressure drops to approximately 130 psi.

2. 2000 GPM electric powered fire pump will start automatically when the line pressure drops to approximately 125 psi.

3. The 1000 GPM diesel powered fire pump will start automatically when the line pressure drops to approximately 70 psi. To stop the pump, the panel switch located in the pump house must be switched from "automatic" to "off" position. The diesel motor will stop running. If pressure on the fire system (no water use anywhere) is being maintained above 90 psi, the pump panel should be switched back to "automatic". The motor should not start unless line pressure is below approximately 70 psi. Note: Refer to Attachment I for specific pump operating instructions and diagrams for fire system pumps:

   a. SP-140-289 - 1000 GPM electric powered booster pump
   b. SP-140-290 - Jockey pump at 1000 GPM booster pump house east of main change house
   c. SP-140-123 - 2000 GPM electric powered fire pump
   d. SP-140-124 - Jockey pump at 2000 GPM fire pump house at no. 2 pond

J. Fire pump signal lights locations are:

1. Electric powered 1000 GPM booster fire pump located east of main guard house.

a. Green light above the double doors burns continuously indicating that the electric circuits are closed from the transformer through the electric panel into the fire pump house. This assures automatic operation of the fire pump since the pump starting equipment should always be kept on "automatic" starting position.

b. Red light above the single door, when burning, indicates that the fire pump is running.

c. No lights burning above the door of the fire pump house indicates that there is no electric power to the fire pump house.

2. Diesel powered 1000 GPM fire pump house located at no. 2 pond:

a. White light located outside above the entrance door of the pump house which burns continuously indicates that there is electrical power to the diesel powered fire pump operating control panel.

b. Red light located outside and to the left of the white light. When the red light is on and flashing it indicates that the pump control switch has been turned off the "automatic" position or that the diesel fire pump is running.

3. Electric powered 2000 GPM fire pump located at No. 2 pond:

   a. Green light located outside on southeast corner of pump house building burns continuously indicating that the electric circuits are closed and the pump controls are set on the automatic position.

   b. Red light located on the west side of green light. When burning, indicates that the fire pump is running.

   c. When the audio gong alarm is sounding, it indicates that the fire pump is running or that there is no electric power to the pump.

ATTACHMENT I

OPERATING INSTRUCTIONS AND DIAGRAMS
FOR
FIRE SYSTEM PUMPS