20102-RP-0001

2062

CONSTRUCTION QUALITY ASSURANCE
FINAL REPORT
ON-SITE DISPOSAL FACILITY
PHASE II CELL 2

REVISION 0
DECEMBER 1998
VOLUME V

United States Department of Energy
Fernald Environmental Management Project
Fernald, Ohio

prepared by
GeoSyntec Consultants
1100 Lake Hearn Drive, NE, Suite 200
Atlanta, Georgia 30342

under
Fluor Daniel Fernald
Subcontract 95PS005028

000001

Contractor / Installers Submittals (Cont.)

SUPPLIER DOCUMENT SUBMITTAL

FDF PROJECT NOS.:	20102 X 20402	CONTRACT NUMBER.: FSC-614	SUBMITTAL NO.: 13005-3	REV.: 0	DATE: July 20, 1998	PAGE 1 OF 1

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

SIGNATURE: J. Richard Schaubman

RECEIVED BY: Melissa Clines DATE: 7-20-98

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5	614-PET-043C	0						X			X	Proposed Welding Procedures	X		13005-1.04.A.3.b	X		

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RECEIVED BY: James C. Jenkins DATE: 7/29/98 NO COMMENTS ✓ COMMENTS ATTACHED ___
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FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-3 (Rev. 0)

PROPOSED WELDING PROCEDURES
Section 13005-1.04.A.3.b

Document No. 614-PET-043C (Rev. 0)

July 20, 1998

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment - Incorporate and Resubmit
[ ] C - Revise and Resubmit
Sig: C. Jenkins Date: 7/29/98

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RECOMMENDED PROCEDURE FOR WELDING WITH HAND HELD EXTRUSION WELDING TOOL

PREPARATION OF MATERIALS:

All areas to be welded must be clean and free from dirt, dust, water, oil or grease. Use only a dry, clean lint-free cloth to accomplish this. To remove grease or paint, use only MEK or Acetone. In addition, welding rod must be absolutely clean and dry at all times.

The weld seam area must now be scraped before welding by use of the hand scraping tool. Welds into grooves will require a 45 bevel.

THE WELDING PROCESS:

The extrusion welding process is a modified form of hot-gas welding in which the weld filler material is plasticized in an extruder with controllable temperature and forced into the welding seam (which is pre-heated by the air heater) by means of a teflon pressure ram called a welding shoe and homogeneously welded with the parent material.

TO PREPARE HAND EXTRUSION WELDING TOOL:

1. Connect the machine to an air supply line with a capacity of 7 CFM. Desired air pressure for shop welding is 20 to 25 psi to enhance penetration. The air supply is absolutely essential to prevent over-heating of the air blower and the driving unit (in handhold). Do not use less than 6 CFM. The air should be oil free and dry from any type of moisture.

2. Ensure that the main drive unit is switched off before plugging in the electrical plug into the main supply (rotary piston can break down).

3. Adjust the temperature regulator on the operating mechanism to about 240° C (464° F). Having reached this temperature at the operating mechanism, it is necessary to wait another five minutes before using the tool. When the temperature regulator on the operating mechanism is set at 240° C (464° F), using a pyrometer, the temperature of the plasticized welding material can be checked. Take the temperature reading right at the tip end of the welding shoe. When the regulator is set at 240° C (464° F), the weld material should be 420° F to 430° F. This is the correct temperature. **It may be necessary to adjust the regulator to a different setting to keep the proper temperature when welding in extreme cold or heat.**

4. Adjust the hot air blower to maximum efficiency. This should be approximately the No. 9 setting on the selector on the hot air blower.

5. Now regulate the air supply so that the temperature in the hot air tube is approximately 250° C (482° F). NOTE: Use a pyrometer to check the temperature of the hot air at the tip end of the welding shoe; it should be 475° F to 510°F when the air thermometer in the hot air tube is reading 250° C (482°F) and the ambient room temperature is 70°F. This is the correct temperature for a proper fusion between the weld bead and the surfaces being welded. **It may be necessary to adjust the hot air blower and the air supply to a different setting to keep a proper welding temperature when welding in extreme cold or hot conditions.** Too low a temperature will prevent a good bonding and too high a temperature will cause oxidation and an inferior weld.

6. Feed a 4mm welding rod into the conveyance wheel. Do not use the machine without welding rod. For best results, the filler rod should be made from the same material as the parent material. The maximum feed rate is approximately 4.2 lbs. per hour on the standard model extruder.

7. Adjust the tip of the welding shoe according to the materials to be welded.

8. Now everything should be ready for welding. Hold the welding tool in such a way that the preheating nozzle is heating the area in front of the welding shoe. The preheating nozzle should be adjusted so that it always precedes the welding shoe in the direction of welding.

9. Preheat a small area of the joint seam approximately two to three inches. Heat the parent material surface until material allows slight, soft penetration (approximately 200°C). Then, move the welding shoe to the preheated area and turn on the extruder by pulling the trigger on the handle of the drive unit. As the plasticized weld begins to extrude out of the welding shoe, slowly move the tool forward along the joint seam, filling the entire joint seam area. The travel speed of the welder should not exceed the capability of the air heater to properly preheat the downstream parent material. To seal and produce an attractive weld, tilt the tool back such that the flat portion on the back edge of the welding shoe is applying pressure to the weld. This packs in the weld and causes the edges to be sealed along the joint seam. The weld is to be packed such that the weld edge is sealed to the parent material without a lip between the two materials.

10. Whenever possible, it is recommended that an entire joint seam be welded with one continuous weld bead. If this is not possible, it is necessary to preheat and overlap the previous weld by approximately two to three inches. When restarting or finishing a joint seam from beginning to end, always overlap by about two to three inches. Also, check to see that the weld is properly sealed in this area. It may be necessary to use a packing tool to apply pressure to any overlap in a weld which requires the desired seal and appearance. Larger weld seams will require slower movement of the tool while smaller seams can be welded more rapidly.

11. All welds should be allowed to remain still and cool for approximately 30 minutes before proceeding further. After welds cool, make a visual inspection. Look for cracked welds, poor adhesion, stress marks or improperly filled joint seams. Repair immediately if possible

by following the procedures as outlined above.

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The quality of the welded seam is influenced by:

1. The similarity of the filler rod and the parent material;
2. Form and construction of the seam;
3. Welding conditions (temperatures, speed);
4. Cleanliness of the joint surfaces of parent and filler materials;
5. Notches and grooves, and;
6. Careful execution by trained welders.

SUPPLIER DOCUMENT SUBMITTAL

FDF PROJECT NOs.:	20102	X	CONTRACT NUMBER.: FSC-614	SUBMITTAL NO.: 13005-4	REV.: 0	DATE: August 4, 1998	PAGE 1 OF 1
	20402						

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

SIGNATURE: J. Richard Schaubaum

RECEIVED BY: Melissa Lewis DATE: 8.4.98

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5	614-PET-047	0						X			X	Installation Proc. for Electrofusion Couplings	X		13005-1.04.A.1.e	X		

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SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-4 (Rev. 0)

INSTALLATION PROCEDURES FOR
ELECTROFUSION PIPE COUPLINGS
Section 13005-1.04.A.1.e

Document No. 614-PET-047 (Rev. 0)

August 4, 1998

If a different manufacturer of couplings or a different process is used, Contractor must submit procedures accordingly. CB. Bodine

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment/Incorporate and Resubmit
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The recommended joining procedures for the Central Electrofusion System detailed in this manual have been qualified in accordance with D.O.T. 192.283.

Persons responsible for the joining of polyethylene pipe by fusion methods must qualify according to the requirement of Title 49 of the Code of Federal Regulations, Section 192.285.

The regulations require that each operator performing fusion joining be qualified in the use of the recommended fusion procedure(s) by the following:

I. Appropriate training or experience in the use of the applicable fusion procedures, and . . .

II. Making a sample joint according to the said procedure that passes the following inspections and tests:

   A. The joint must be visually examined during and after joining and found to have the same appearance as a photograph or sample of an acceptable joint that was joined in accordance with the applicable procedure; and . . .

   B. The joint must be tested or examined by an authorized instructor using one of the following methods:
      1. Pressure and tensile test as described in 49 C.F.R. § 192.283; or
      2. Cut into at least three longitudinal straps, each of which is:
         a. Visually examined and found to be free of voids or unbonded areas on the cut surface of the joint, and . . .
         b. Deformed by bending, torque or impact and if failure occurs, it must not initiate in the joint area.

   C. A person must be requalified under an applicable procedure if, during any twelve-month period, he —
      1. Does not make any joints under the applicable procedures or
      2. Has three joints or three percent of the joints he has made, whichever is greater, that are found unacceptable by testing under 40 C.F.R. § 192.513.

Photographs of acceptable and unacceptable joints and illustrations showing the use of cut straps for inspection and testing of the joint are provided in the Qualification Procedures on Page 25 of this manual.

Individuals who demonstrate their ability to follow the recommended joining procedures and produce acceptable electrofusion joints as illustrated in this manual should meet the requirements for qualification under 49 C.F.R. § 192.285 and be eligible for certification.

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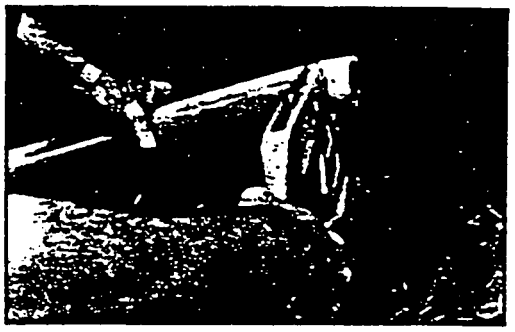
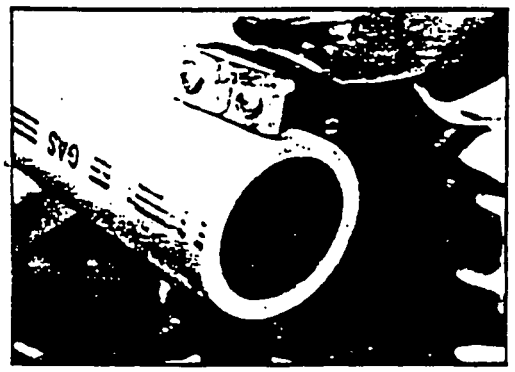
Standard Joining Procedures

Standard joining procedures describe the steps necessary to join similar or dissimilar polyethylene piping materials with the Central Electrofusion System. For pipe sizes 2" and over, Central recommends using Repair Procedures (page 17) for standard joining due to the difficulty of stabbing larger diameter pipes.

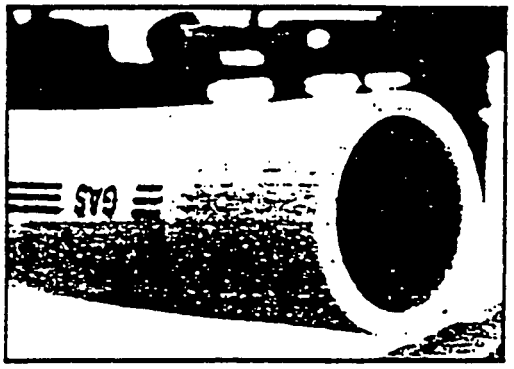


1. The pipe must have a square, even cut.
2. Remove any burrs or shaving from the pipe ends that may have developed during the cutting process.
3. Clean pipe ends inside and out with a clean cloth to remove any dirt or contaminants.

   Pipe preparation and contamination are very important considerations in the electrofusion process. Therefore, careful attention should be given to proper scraping and cleaning procedures.



4. Scrape pipe ends to remove any oxidation or surface contamination. For best results, secure tool on pipe and make two revolutions.

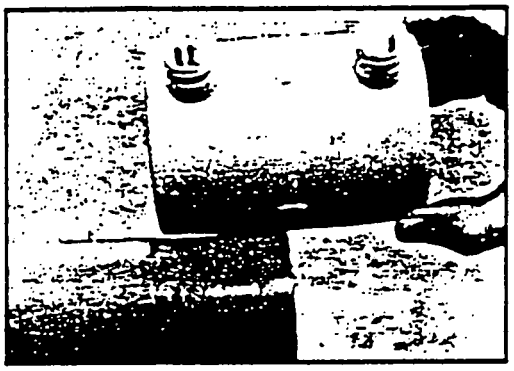


5. Remove scraping tools and clean blade area with a clean, dry cloth. Repeat this procedure several times during the scraping operation to remove build-up of material.

Refer to **Note** on page 16.

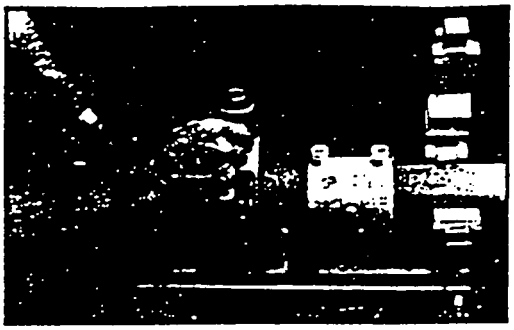
6. Continue scraping until only a virgin surface remains.

   Caution: Avoid all possible recontamination of the prepared surface. Do not touch inside of fitting or scraped pipe surfaces with your hands as perspiration and body oils could contaminate jointing areas and affect joint performance.



7. To determine stab depth, measure half the length of the coupling and mark the pipe ends an equivalent length. For ease of installation, a stab depth indicator and internal fitting stops are a molded part of Central Electrofusion couplings and reducers.

8. Slide fitting onto pipe until pipe ends meet with the stops in the I.D. of the fitting. Check measurement mark for proper stab depth.



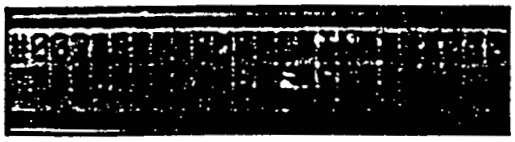
9. Maintaining stab depth, place into the proper clamping tool to secure the pipe from movement during the fusion cycle. For best results, alignment clamps should be placed as close to the fitting as possible.

10. The sequence processor should be connected to an adequate AC power source (110 volt).

    Note: If utilizing a generator, the generator should be engaged before plugging the sequence processor in.

    Refer to the Electrical Data shown on page 12 for the precise electrical requirements of the size and type of Central Electrofusion fitting being joined.

11. The sequence processor will automatically run a quick diagnostic check of its operational functions (voltage input/output, etc.). When diagnostic check is complete "Attach Fitting" will appear on the visual display.



12. Attach leads from the sequence processor to the fitting terminals. When proper connection is made, the required "Fusion Cycle Time" will appear on the visual display.

13. Press start button to begin fusion cycle. Fusion cycle time will countdown on the visual display. Proper voltage readout should remain between 39.8 and 40.2 volts.

14. When the fusion cycle is complete, "Fusion Complete and Recommended Cooling Time" will appear on the visual display.

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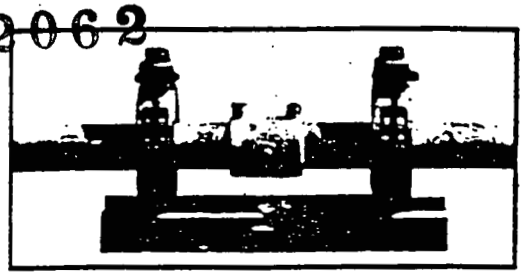


15. Disconnect leads from fitting. Clamping device should remain in place to secure pipe and fitting during the recommended cooling time. After removing clamp, additional cooling time should be allowed before subjecting the joint to bending, burying, pressure testing, or similar handling and backfill stress.

Refer to page 12 for the recommended cooling times for the size and type of Central Electrofusion Fitting being joined.

NOTE: In the event of out-of-round pipe, it is important to assure an adequate and even scrape is achieved around the entire circumference of the pipe. A rubber pipe stopper can be placed in the end of the pipe to aid in rounding the area to be scraped.

1. Sequence Processor

Input Voltage:	90 to 150 VAC; 50 to 70 HZ
Output Voltage:	40 Volts ± .2 Volts
Input Current:	20 Amps Average Maximum
Output Current:	50 Amps Maximum (Automatically limited by the processor)
Operating Temperature:	−10°F to 120°F (−23°C to 49°C)
Timer Range:	15 to 600 Seconds
Input Protection:	Dual Circuit Breakers
Output Safety Trip:	41 Volts
Weight:	52 lbs. (23.6 kg)
Dimensions:	12" x 15" x 10" (30.48 cm x 38.1 cm x 25.4 cm)

2. Cable Length

Input Cable:	15 ft. (4.6m) 30 Amp 125V Twistlock Plug (Std) NEMA L-5
Output Cable:	12 ft. (3.7m) and 25 ft. (7.6m) Other output lengths available upon request

Performance:

Central Electrofusion Fittings typically achieve the following performance test results.

Temperature	Internal Pressure	Hours to Failure
176°F (80°C)	130 PSI	1000+
68°F (20°C)	275 PSI	2500+

Saddle Impact: Falling Weight 10 lb. from 7 ft.

Safe Operating Temperature: −10°F to 120°F (−23°C to 49°C)

Safe Operating Pressure: 125 PSI

Compliance With Standards: Central Electrofusion Fittings meet the requirements of ASTM F1055.

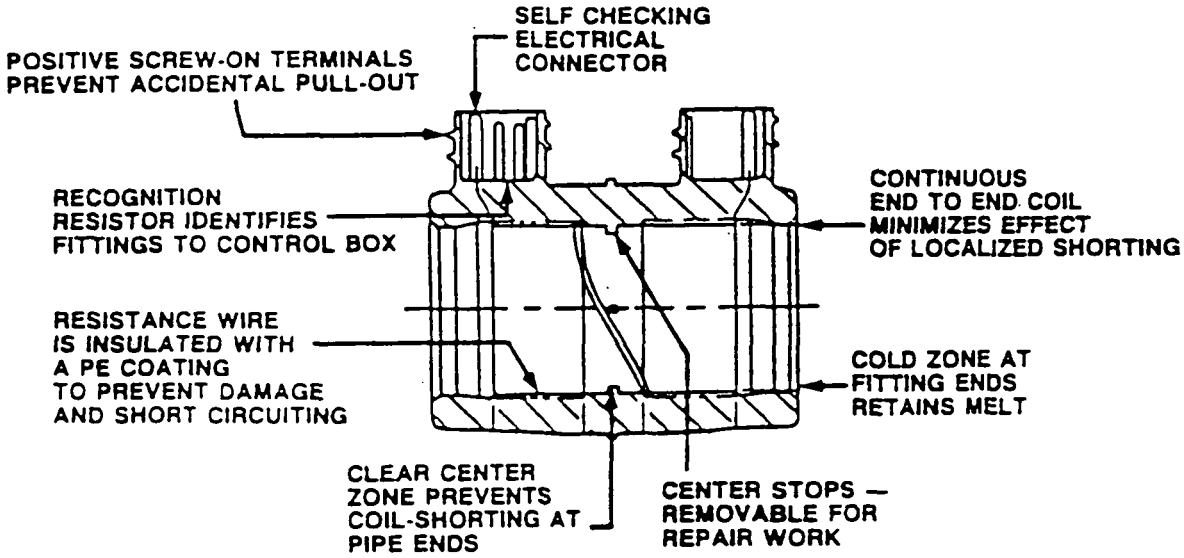
Electrical Requirements and Cooling Times

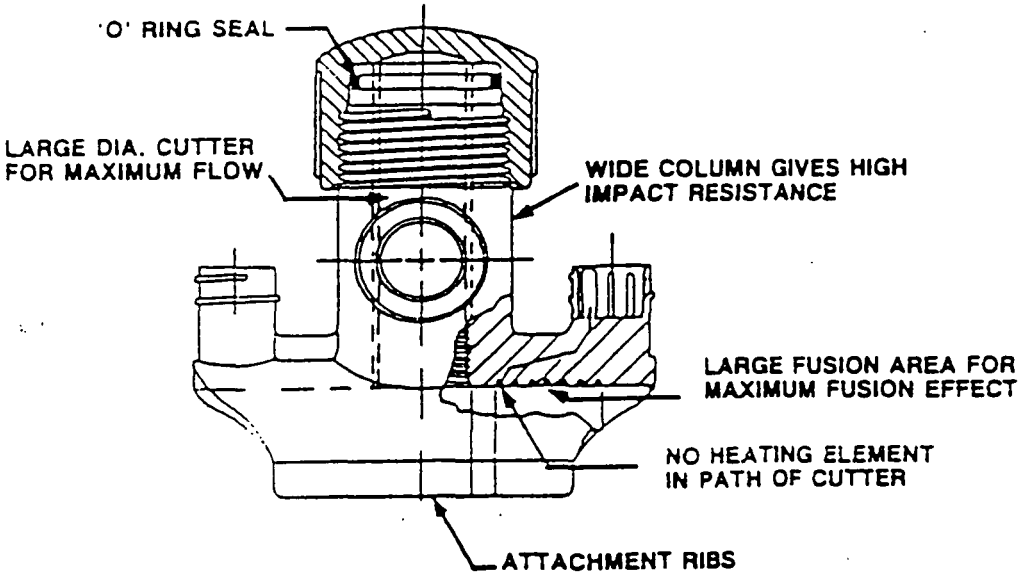
Fitting	Fusion time in seconds	Clamped time in minutes	Total cooling time	KVA	Generator Breaker minimum	Extension cord size 25 ft.	Extension cord size 50 ft.
COUPLINGS:							
1/2 CTS	20	5	30	1.0	10	#12/3	#10/3
1/2 IPS	20	5	30	1.0	10	#12/3	#10/3
3/4 IPS	25	5	30	1.0	10	#12/3	#10/3
1 CTS	25	5	30	1.0	10	#12/3	10
1 IPS	40	5	30	1.0	10	#12/3	10
1 1/4 IPS	45	10	30	1.5	10	#12/3	#10/3
2 IPS	45	10	30	2.5	20	#10/3	# 8/3
3 IPS	90	10	30	2.5	20	#10/3	# 8/3
4 IPS	120	10	45	2.5	20	#10/3	# 8/3
6 IPS	500	15	1 hour	2.5	20	#10/3	# 8/3
REDUCERS:							
3/4 x 1/2 CTS	20	5	30	1.0	10	#12/3	#10/3
1 IPS x 1/2 CTS	25	5	30	1.0	10	#12/3	10
1 IPS x 1/2 IPS	30	5	30	1.0	10	#12/3	#10/3
1 IPS x 3/4 IPS	30	5	30	1.0	10	#12/3	#10/3
1 IPS x 1 CTS	30	5	30	1.0	10	#12/3	#10/3
TAPPING TEES:							
1 1/4 x 1	45	10	30	1.0	10	#12/3	#10/3
2 x 1	90	10	30	1.0	10	#12/3	#10/3
3 x 1	90	10	30	1.0	10	#12/3	#10/3
4 x 1	90	10	30	1.0	10	#12/3	#10/3
6 x 1	90	10	30	1.0	10	#12/3	#10/3
VOLTAGES:	90 Volt Minimum		150 Volt Maximum				
FREQUENCY:	45 to 75 Hertz						
INVERTERS:	Yes.						

WARNING: A.C. current only. D.C. current can result in damage to processor.

Property	Method of Test	Value	Units
Melt Flow Rate	ASTM D1238-79 Condition E	0.2	g/10min
Density	ASTM D1505	940	Kg/m
Tensile Strength At Yield	ASTM D638-80 Type 4 50 mm/min	19	MN/m
Elongation At Break	ASTM D638-80 Type 4 50 mm/min	300	%
Impact Strength		93	J/m notch

Fitting Diagrams:





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CENTRAL ELECTROFUSION SYSTEMS

Computer Controlled Fusion

575-2-34 B
REV. 5/24/94

COUPLINGS THRU 12" IPS "INDUSTRIAL"

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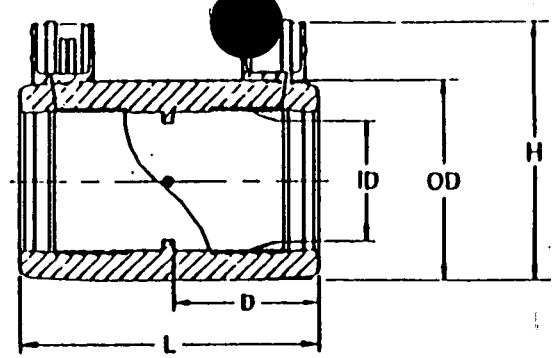
NOT A PRODUCTION

ELECTROFUSION FULL COUPLINGS – "INDUSTRIAL"



LEE SUPPLY CO. INC.
• DIVERSIFIED PIPING SYSTEMS
• INDUSTRIAL • MINING • ENVIRONMENTAL PRODUCTS
P.O. Box 35 Charleroi, PA 15022
Phone: 412-483-3543 FAX: 412-483-0577

NOMINAL SIZE	INSIDE DIA. (MAXIMUM) ID	INSIDE DIA. (MINIMUM) ID	OUTSIDE DIA. (NOMINAL) OD	STAB DEPTH (NOMINAL) "D"	OVERALL HEIGHT (NOMINAL) "H"	OVERALL LENGTH (NOMINAL) "L"
1" IPS	1.339	1.315	1.88	1.57	2.56	3.30
(33.40 mm)	34.01 mm	34.40 mm	47.75 mm	39.89 mm	65.02 mm	83.82 mm
1 1/4" IPS	1.694	1.660	2.27	1.82	3.00	3.70
(42.16 mm)	43.03 mm	42.16 mm	57.66 mm	46.36 mm	76.20 mm	93.98 mm
1 1/2" IPS	1.934	1.894	2.60	1.89	3.27	3.90
(48.26 mm)	49.12 mm	48.11 mm	66.04 mm	48.01 mm	83.06 mm	99.06 mm
2" IPS	2.415	2.375	3.16	2.09	3.82	4.31
(60.33 mm)	61.34 mm	60.33 mm	80.26 mm	53.09 mm	97.03 mm	109.47 mm
2 1/2" IPS CONDUIT	2.925	2.875	3.50	2.06	4.60	4.25
(73.85 mm)	74.29 mm	73.03 mm	88.90 mm	52.32 mm	116.84 mm	107.95 mm
3" IPS	3.570	3.500	4.54	2.72	5.18	5.59
(88.90 mm)	90.68 mm	88.90 mm	115.32 mm	69.09 mm	131.57 mm	141.99 mm
4" IPS CONDUIT	4.534	4.500	5.36	3.03	6.18	6.18
(114.30 mm)	115.16 mm	114.30 mm	136.14 mm	76.96 mm	156.97 mm	156.97 mm
4" IPS	4.534	4.500	5.75	3.00	6.50	6.10
(114.30 mm)	115.16 mm	114.30 mm	146.05 mm	76.20 mm	165.10 mm	154.94 mm
6" IPS	6.715	6.625	8.54	4.10	9.38	8.35
(168.27 mm)	170.56 mm	168.27 mm	216.92 mm	104.22 mm	238.13 mm	212.09 mm
8" IPS	8.715	8.625	10.60	• 4.18	11.15	8.48
(219.07 mm)	221.36 mm	219.07 mm	269.24 mm	• 106.17 mm	283.21 mm	215.39 mm
10" IPS	10.850	10.750	13.00	5.69	14.38	11.50
(273.05 mm)	275.59 mm	273.05 mm	330.20 mm	144.53 mm	365.25 mm	292.10 mm
12" IPS	12.850	12.750	15.00	4.94	16.38	10.00
[illegible]	326.39 mm	323.85 mm	381.00 mm	125.48 mm	416.05 mm	254.00 mm

[illegible] MAY NOT HAVE CENTER STOPS

000017

2062

DOCUMENT ROUTING SHEET
ON-SITE DISPOSAL FACILITY
PROJECT NO. 20102

Date: 8/7/98

Project/Contract/P.O. Name OSDF - Phase II Project/Contract/P.O. No. FSC-614

Document Title _____

To Reviewers:

1. Review the attached Document/Submittal/DCN/RCI and return to: [illegible] DUE DATE 8/13/98
2. Date and initial the appropriate "box" on this card.
3. Complete review by the date assigned to you and HAND CARRY the attached document and this card to the next person on th sequence. Last person on the routing sequence to HAND CARRY the attachment and this card and return to the person noted

Submittal/DCN/RCI No. 13005-4 Rev. 0 Date: 8/4/98 Submittal/DCN/RCI Title Installation Procedures for Electrofusion Couplings

Routing Sequence	Reviewing Discipline	Review To B Completed By	Review Completed By	Document/DCN/RC Approved	Document/DCN/RC Disapproved	Sumittal Status "A"	"B"	"C"	"10"	Remarks
(1) Reviewer: HEATH/BERRETZ	Engineering	8/11/98	VAN ARSDALE			X				
Reviewer:	Construction									
Reviewer:	Safety									
(2) Reviewer: GODBER	Quality	8/12/98	MK			X				
Reviewer:	Procurement									
Reviewer:	Project Controls									
Reviewer:	Envir. Compliance									
(3) Reviewer: KUMTHEKAR	Proj. Manager	8/12/98	JCG 8/12/98			✓				
Reviewer:	Estimating									
Reviewer:	Title III A-E									
Reviewer:										
Reviewer:										

Special Instruction/Additional Comments:

Document Originator/DCN/RCI Requester: Petro

Sent to ECDC: Date: 8/12/98

Submittal/DCN/RCI Sent to Contractor: Date: _____

Status	Definition
A	Reviewed
B	Reviewed , proceed with work incorporating comments. Change submittal as noted and resubmit
C	Change submittal as noted and resubmitt
10	Information only

a:Udaycard

SUPPLIER DOCUMENT SUBMITTAL

FDF PROJECT NOs.:	20102	X	CONTRACT NUMBER.: FSC-614	SUBMITTAL NO.: 13005-5	REV.: 1	DATE: August 21, 1998	PAGE 1 OF 1
	20402						

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

SIGNATURE: J. Richard Jakubauskas

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

RECEIVED BY: Melissa Crews DATE: 8-21-98

			DOCUMENT FAMILY							RESUBMITTAL			SUBMITTAL TYPE			SUBMITTAL ACTION		
QTY	DOCUMENT NUMBER	REV	PRO	H&S	MED	TRG	CON	ENG	QAC	YES	NO	TITLE/DESCRIPTION	CFC	INF	ASSOCIATED SPECIFICATION	A	B	C
5	614-PET-043D	1						X		X		Installation Procedures for Penetration Boxes	X		13005-1.04.B.2	X		

RECEIVED
SEP 03 1998
RGuzman

DISTRIBUTION

REVIEW DISTRIBUTION				CFC DISTRIBUTION			
Distribution	MS	Distribution	MS	Distribution	MS	Distribution	MS
Jim Jenkins (Approver)	64	Vern Taylor 1998	52-0	Jim Jenkins	64	OSDF Station	64
Bruce Schweitzer	64			Bruce Schweitzer	64	ECDC	52-7
Dan Bodine	38			Mike Godber	64	Vern Taylor	52-0
ECDC	52-7			Dan Bodine	38		

0000019

RECEIVED BY: James C. Jenkins DATE: 8/28/98 NO COMMENTS ✓ COMMENTS ATTACHED ___
(SIGN/DATE AND RETURN A COPY TO ECDC, MS 52-7)

2062

RESUBMIT ENTIRE DOCUMENT NUMBER AS: _____ (REV. #) OR RESUBMIT CHANGED DOCUMENT PAGES AS: DOC. NO.: _____ (REV. #) PCN: _____ (PCN. #)

COMMENTS

ORIGINAL

SUBMITTAL ACTION CODE: (BY SUPPLIER)

CFC - CERTIFIED FOR CONSTRUCTION

INF - INFORMATION/RECORD

"X" APPROPRIATE SUBMITTAL ACTION ABOVE

SUPPLIER ACTION CODE: (ECDC) SUPPLIER ACTION ABOVE

A - ACCEPTED DOCUMENT - CONFORMS WITH REQUIREMENTS

B - MINOR COMMENTS - REVISE & RESUBMIT AS CFC OR INF

C - REVISE & RESUBMIT

ENTERED

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FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-5 (Rev. 1)

INSTALLATION PROCEDURES FOR PENETRATION BOXES
Section 13005-1.04.B.2

Document No. 614-PET-043D (Rev. 1)

August 21, 1998

ECDC CONTROLLED
COPY NO. 1

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment - Incorporate and Resubmit
[ ] C - Revise and Resubmit
Sig: C. [illegible] Date: 8/28/98

000020

Fernald Site Office: P.O. Box 249 • Ross, Ohio 45061-0249 • 513.648.3402 • Fax 648.3407
7851 Palace Drive • Cincinnati, Ohio 45249 • 513.489.6789 • Fax 489.7208
8200 Seville Road • Lodi, Ohio 44254 • 330.948.1494 • Fax 948.1933

Petro Environmental Technologies, Inc. will install the liner penetration boxes as described herewith. The procedures described reference Technical Specification Section 13005 and Construction Drawing 90X-6000-G-00217.

1.0 PREPARATION OF SUBGRADE

Construction of the compacted clay liner will be completed to the lines and grades required prior to actual placement of the liner penetration boxes. The LDS, LCS and Redundant LCS pipes will have been previously installed and stubbed out at the approximate tie-in location with the liner penetration box/pipe assembly for each respective piping system. Construction of the compacted clay liner on the West Berm immediately around the piping sections, as shown in Sections C-D on the plan drawing, will be completed after electrofusion coupling tie-in with the penetration boxes. Delaying placement of the compacted clay around these stubbed pipe sections will prevent excavation of the compacted clay, ease in installation of the liner penetration boxes and ease in the installation of the electrofusion couplings at the specified tie-in points.

Once the compacted clay liner has been completed to the specified grade over the footprint of each liner penetration box, the surface area shall be made smooth to obtain close contact between the clay liner and the penetration box. Should there be poor contact between the two, the clay surface will be re-graded by hand and recompacted as necessary. Upon achieving the required intimate contact with the clay, bentonite granules at a rate of 1 lb/ft^2 will then be applied to the compacted clay liner over the footprint of the liner penetration box immediately prior to installation.

2.0 BOX INSTALLATION

The liner penetration boxes will be installed at the locations indicated on the Construction Drawings. The penetration box/pipe assembly will then be welded to the stubbed out portions of the LDS, LCS and Redundant LCS piping, as appropriate, using electrofusion couplings as stipulated. The fixed end seals will also be installed where required. Where indicated in the drawings, or as required to ease in the installation of the HDPE liner, piping joints on the Cell-side of the piping system will be constructed within approximately 6-inches from the edge of the penetration boxes. This will ease installation of the HDPE liner and the required extrusion welding to the lip of the penetration boxes. Once all pipe connections, associated welding, and the required control points have been surveyed, the area immediately around the LDS, LCS and Redundant LCS pipes will be backfilled using a soil-bentonite mix containing at least 10 percent granulated bentonite by weight. The same mix shall also be utilized to backfill directly around the liner penetration boxes. Any interface existing between the compacted clay liner and the liner penetration box will be filled with bentonite granules. Following the completed installation of the boxes and prior to installation of the HDPE liner, each penetration box will be air ***pressure*** tested in accordance with Technical Specification Section 13005 and any applicable issued Design Change Notices. In the event of any unexplained pressure loss during the course of this test, the liner penetration box shall be excavated ***and*** investigated for leaks. Any liner penetration box with a pressure leak in which the leak cannot be found and repaired shall be replaced. Upon the successful completion of the air pressure test, the 10-in. containment pipe with field-installed fixed end seals, will be air ***pressure*** tested using the same procedures as liner penetration boxes.

After all ***air pressure*** testing has been completed ***and the geomembrane liner has been seamed to the liner penetration boxes, the air pressure test chamber shall be backfilled with bentonite granules. Fill holes will be drilled into the liner penetration box's chamber as required to complete this phase of work. Once the air pressure test chamber has been completely filled with the bentonite granules, all test openings and fill holes will be beveled, a beveled-HDPE plug inserted, and the liner penetration box and plug field-welded with HDPE extrudate.***

SUPPLIER DOC[illegible] SUBMITTAL

FDF PROJECT N[illegible]	20102	X	CONTRACT NUMBER:: FSC-614	[illegible]TTAL NO.: 13005-6	REV.: 0	DATE: August 19, 1998	PAGE 1 OF 1
	20402						

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

SIGNATURE: J. Richard Schaubauer

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

RECEIVED BY: Penny Dragos DATE: 8-20-98

			DOCUMENT FAMILY							RESUBMITTAL			SUBMITTAL TYPE			SUBMITTAL ACTION		
QTY	DOCUMENT NUMBER	REV	PRO	H&S	MED	TRG	CON	ENG	QAC	YES	NO	TITLE/DESCRIPTION	CFC	INF	ASSOCIATED SPECIFICATION	A	B	C
6	614-PET-043E	0							X		X	Fabricator's QC Test Results	X		13005-1.04.B.1	X		

RECEIVED
SEP 03 1998
R Wusman

DISTRIBUTION

REVIEW DISTRIBUTION				CFC DISTRIBUTION			
Distribution	MS	Distribution	MS	Distribution	MS	Distribution	MS
Mike Godber (Approver)	64	ECDC	52-7	Jim Jenkins	64	OSDF Station	64
Bruce Schweitzer	64	Vern Taylor	52-0	Bruce Schweitzer	64	ECDC	52-7
Jim Jenkins	64			Mike Godber	64	Vern Taylor	52-0
Dan Bodine	38			Dan Bodine	38		

RECEIVED BY: Michael W. Godber DATE: 8/21/98 NO COMMENTS X COMMENTS ATTACHED ____
(SIGN/DATE AND RETURN A COPY TO ECDC, MS 52-7)

RESUBMIT ENTIRE DOCUMENT NUMBER AS: _____ (REV. #) OR RESUBMIT CHANGED DOCUMENT PAGES AS: DOC. NO.: _____ (REV. #) PCN: _____ (PCN. #)

COMMENTS
EF
MG 8/21-98

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SUBMITTAL ACTION CODE: (BY SUPPLIER)
CFC - CERTIFIED FOR CONSTRUCTION
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"X" APPROPRIATE SUBMITTAL ACTION ABOVE

SUPPLIER ACTION CODE: (ECDC) SUPPLIER ACTION ABOVE
A - ACCEPTED DOCUMENT - CONFORMS WITH REQUIREMENTS
B - MINOR COMMENTS - REVISE & RESUBMIT AS CFC OR INF
C - REVISE & RESUBMIT

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FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-6 (Rev. 0)

FABRICATOR'S QUALITY CONTROL TEST RESULTS OF LINER PENETRATION BOXES

Section 13005-1.04.B.1

Document No. 614-PET-043E (Rev. 0)

August 19, 1998

INFORMATION ONLY

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment - incorporate and Resubmit
[ ] C - Revise and Resubmit
Sig: [illegible] Date: 9/28/98

000024

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7851 Palace Drive • Cincinnati, Ohio 45249 • 513.489.6789 • Fax 489.7208
8200 Seville Road • Lodi, Ohio 44254 • 330.948.1494 • Fax 948.1933

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

2062

I, Kevin Carder, have witnessed the air pressure test on Penetration Box #1. It was tested at 15 psi for a period of 30 minutes and had zero leaks.

Date 7-29-98

Time From: 3:00pm To: 3:45 pm

Location Plastek Werks, Inc.
2401 Franklin Boulevard
Gainesville, Georgia 30504

Signature Kevin Carder

Title Fabricator

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

I, Kevin Carder, have witnessed the air pressure test on Penetration Box #2-A. It was tested at 15 psi for a period of 30 minutes and had zero leaks.

Date 8-4-98

Time From: 8:30 am. To: 3:30 pm.

Location Plastek Werks, Inc.
2401 Franklin Boulevard
Gainesville, Georgia 30504

Signature Kevin Carder

Title Fabricator

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

2062

I, Kevin Carder, have witnessed the air pressure test on Penetration Box #2-B. It was tested at 15 psi for a period of 30 minutes and had zero leaks.

Date 8-6-98

Time From: 11:30 A.m To: 3:30 pm

Location Plastek Werks, Inc.
2401 Franklin Boulevard
Gainesville, Georgia 30504

Signature Kevin Carder

Title Fabricator

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

I, Kevin Carder, have witnessed the air pressure test on Penetration Box #3. It was tested at 15 psi for a period of 30 minutes and had zero leaks.

Date 8-10-98

Time From: 2:00 pm To: 4:00 pm

Location Plastek Werks, Inc.
2401 Franklin Boulevard
Gainesville, Georgia 30504

Signature Kevin Carder

Title Fabricator

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

2062

I, Kevin Carder, have witnessed the air pressure test on Penetration Box #4. It was tested at 15 psi for a period of 30 minutes and had zero leaks.

Date 8-11-98

Time From: 11:30 A.m. To: 12.45 p.m.

Location Plastek Werks, Inc.
2401 Franklin Boulevard
Gainesville, Georgia 30504

Signature Kevin Carder

Title Fabricator

DOCUMENT ROUTING SHEET
ON-SITE DISPOSAL FACILITY
PROJECT NO. 20102

Date: 8/28/98

Project/Contract/P.O. Name OSDF - Phase II Project/Contract/P.O. No. FSC-614

Document Title _____

Review the attached Document/Submittal/DCN and return to: Jerkins DUE DATE Sept. 1

Submittal/DCN No. B005-6 Rev. 0 Date: 8/19/98 Submittal/DCN Title Fabrication QC Test Results

Routing Sequence	Reviewing Discipline	Review To Be Completed By	Review Completed By	Document/DCN Approved	Document/DCN Disapproved	Sumittal Status "A"	"B"	"C"	"10"	Remarks
(1)	Engineering Reviewer: Heath Vanderdale		8/31			✓				
	Construction Reviewer:									
	Safety Reviewer:									
	Quality Reviewer:									
	Procurement Reviewer:									
	Project Controls Reviewer:									
	Envir. Compliance Reviewer:									
(2)	Proj. Manager Reviewer: Kim Weber		8/31			✓				
	Estimating Reviewer:									
	Title III A-E Reviewer:									
	Reviewer:									
	Reviewer:									

Special Instruction/Additional Comments: Dodhe is approver
Dessopter has approved (no comments)

Dcocument Originator/DCN Requester: Petio
Sent to ~~ECDS:~~ Dodhe Date: 8/31/98

Submittal/DCN Sent to Contractor: Date: _____

Status	Defination
A	Reviewed
B	Reviewed , proceed with work incorporating comments. Change submittal as noted and resubmit
C	Change submittal as noted and resubmitt
10	Information only

a:Udaycard

SUPPLIER DOCUMENT SUBMITTAL

FDF PROJECT NO.	20102 / 20402	X	CONTRACT NUMBER.: FSC-614	SUBMITTAL NO.: 13005-7	REV.: 0	DATE: August 19, 1998	PAGE 1 OF 1

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

SIGNATURE: J. Richard Schlaubaum

RECEIVED BY: Penny D Raggio DATE: 8-20-98

QTY	DOCUMENT NUMBER	REV	DOCUMENT FAMILY: PRO	H&S	MED	TRG	CON	ENG	QAC	RESUBMITTAL: YES	NO	TITLE/DESCRIPTION	SUBMITTAL TYPE: CFC	INF	ASSOCIATED SPECIFICATION	SUBMITTAL ACTION: A	B	C
7	614-PET-043F	0					X				X	Name of Mfg. of Flat Stock & Origin/ID of Resin		X	13005-1.04.A.2.a & 13005-1.04.A.2.b	X		

RECEIVED AUG 28 1998 R. Hudman

DISTRIBUTION

REVIEW DISTRIBUTION: Distribution	MS	Distribution	MS	CFC DISTRIBUTION: Distribution	MS	Distribution	MS
Lou Wehlitz (Approver)	64	Dan Bodine	38	Jim Jenkins	64	Dan Bodine	38
Bruce Schweitzer	64	ECDC	52-7	Bruce Schweitzer	64	OSDF Station	64
Jim Jenkins	64	Vern Taylor	52-0	Mike Godber	64	ECDC	52-7
Bill Zebick	64			Vern Taylor	52-0		

RECEIVED BY: Lou R. Wehlitz DATE: 8/24/98 NO COMMENTS ✓ COMMENTS ATTACHED ___
(SIGN/DATE AND RETURN A COPY TO ECDC, MS 52-7) J. L. Jenkins 8/28/98

RESUBMIT ENTIRE DOCUMENT NUMBER AS: _____ (REV. #) OR RESUBMIT CHANGED DOCUMENT PAGES AS: DOC. NO.: _____ (REV. #) PCN: _____ (PCN. #)

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COMMENTS	SUBMITTAL ACTION CODE: (BY SUPPLIER)	SUPPLIER ACTION CODE: (ECDC) SUPPLIER ACTION ABOVE
ORIGINAL	CFC - CERTIFIED FOR CONSTRUCTION INF - INFORMATION/RECORD "X" APPROPRIATE SUBMITTAL ACTION ABOVE	A - ACCEPTED DOCUMENT - CONFORMS WITH REQUIREMENTS B - MINOR COMMENTS - REVISE & RESUBMIT AS CFC OR INF C - REVISE & RESUBMIT

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FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-7 (Rev. 0)

NAME OF MANUFACTURER OF HDPE FLAT STOCK
& ORIGIN/IDENTIFICATION OF PE RESIN
Sections 13005-1.04.A.2.a & -A.2.b

Document No. 614-PET-043F (Rev. 0) INFORMATION ONLY

August 19, 1998

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment - Incorporate and Resubmit
[ ] C - Revise and Resubmit
Signature: Date: 8/24/98
8/28/98

000032

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7851 Palace Drive • Cincinnati, Ohio 45249 • 513.489.6789 • Fax 489.7208
8200 Seville Road • Lodi, Ohio 44254 • 330.948.1494 • Fax 948.1933

The manufacturer of the HDPE flat stock is:

Polymer Industries
P.O. Box 32
Henagar, AL 35978
(205) 657-5197 (Phone)
(205) 657-5189 (Fax)

Polymer Industries is also a member of the National Association of Plastic Distributors. The product manufactured by Polymer Industries is identified as Black Densetec 500 HDPE pipe grade material, and is supplied by Ain Plastics. The resin used in the manufacture of the flat stock sheets is HDPE pipe grade, Marlex HHMTR-480ZC, as manufactured by the Phillips Petroleum Company. The flat stock sheet is distributed to various fabricators requiring such sheet by:

Thyssen Plastic
830 Pickens Industrial Drive, N.E.
Marietta, GA 30062
(404) 427-8152 (Phone)
(404) 427-8879 (Fax)

HDPE Welding Rod is manufactured by:

V&A Process, Inc.
1230 Colorado Ave.
Lorain, OH 44052
(440) 288-8137 (Phone)

The resin used in the welding rod manufacturing process is identified as HMW Black Resin 3407B, and is provided by:

Fina Oil and Chemical Company
Bayport Plant
P.O. Box 5010
LaPorte, TX 77572
(281) 474-6000 (Phone)

The quality control certifications for all these materials will be submitted upon receipt by Petro Environmental and completion of the construction of the liner penetration boxes by Plastek Werks, Inc.

SUPPLIER DOCUMENT SUBMITTAL

FDF PROJECT NO.	20102 / 20402	X	CONTRACT NUMBER: FSC-614	SUBMITTAL NO.: 13005-8	REV.: 1	DATE: August 21, 1998	PAGE 1 OF 1

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

SIGNATURE: J. Richard Schaubman

RECEIVED BY: Melissa Lewis DATE: 8-21-98

			DOCUMENT FAMILY							RESUBMITTAL			SUBMITTAL TYPE			SUBMITTAL ACTION		
QTY	DOCUMENT NUMBER	REV	PRO	H&S	MED	TRG	CON	ENG	QAC	YES	NO	TITLE/DESCRIPTION	CFC	INF	ASSOCIATED SPECIFICATION	A	B	C
6	614-PET-043G.3	0							X		X	Resin Supplier's QC Certs., Cert. of Reclaimed Polymer (HDPE Piping)	X		13005-1.04.A.2.c & e	~~X~~	~~X~~	
																X		

0000034

RECEIVED
SEP 03 1998
R.G. Hummel

DISTRIBUTION

REVIEW DISTRIBUTION				CFC DISTRIBUTION			
Distribution	MS	Distribution	MS	Distribution	MS	Distribution	MS
Mike Godber (Approver)	64	ECDC	52-7	Jim Jenkins	64	OSDF Station	64
Bruce Schweitzer	64	Vern Taylor	52-0	Bruce Schweitzer	64	ECDC	52-7
Jim Jenkins	64			Mike Godber	64	Vern Taylor	52-0
Dan Bodine	38			Dan Bodine	38		

RECEIVED BY: MICHAEL W GODBER DATE: 8/22/98 NO COMMENTS X COMMENTS ATTACHED ____
(SIGN/DATE AND RETURN A COPY TO ECDC, MS 52-7)

RESUBMIT ENTIRE DOCUMENT NUMBER AS: _____ (REV. #) OR RESUBMIT CHANGED DOCUMENT PAGES AS: DOC. NO.: _____ (REV. #) PCN: _____ (PCN. #)

COMMENTS
WHEN REVIEWING THE DELIVERED PIPING THE FOLLOWING WAS STAMPED ON THE MATERIAL [illegible] ORIGINAL [illegible] PB, SDR11, ASTM [illegible] & WHICH IS ACCEPTABLE.

SUBMITTAL ACTION CODE: (BY SUPPLIER)
CFC - CERTIFIED FOR CONSTRUCTION
INF[illegible]ORMATION/RECORD

SUPPLIER ACTION CODE: (ECDC) SUPPLIER ACTION ABOVE
A - ACCEPTED DOCUMENT - CONFORMS WITH REQUIREMENTS
B - MINOR COMMENTS - REVISE & RESUBMIT [illegible]FC OR INF

ACCEPTED

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FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-8 (Rev. 1)

RESIN SUPPLIER'S QC CERTIFICATES & CERTIFICATION OF RECLAIMED POLYMER FOR HDPE PIPING

Sections 13005-1.04.A.2.c, & -A.2.e

Document No. 614-PET-043G.3 (Rev. 0)

INFORMATION ONLY

August 21, 1998

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment, Incorporate and Resubmit
[ ] C - Revise and Resubmit
Sig: Date: 8/31/98

000035

Fernald Site Office: P.O. Box 249 • Ross, Ohio 45061-0249 • 513.648.3402 • Fax 648.3407
7851 Palace Drive • Cincinnati, Ohio 45249 • 513.489.6789 • Fax 489.7208
8200 Seville Road • Lodi, Ohio 44254 • 330.948.1494 • Fax 948.1933

CSR PolyPipe
P.O. Box 199
Erwin, Tennessee 37650

Phone: 423/743-9116 Fax: 423/743-8419

PRODUCT CERTIFICATION

Invoice No.: X

Customer Name:
Mark Kines
Plastek Werks
Gainsville, GA 30504

Fax: 770-287-3284

Dear Customer:

Attention:

CSR PolyPipe certifies that the listed piping products were produced from resins and concentrates as determined by and defined in ASTM D1248 or ASTM D3350. Routine implant inspection, quality control sampling, and long term testing meets or exceeds the cutsomer specifications or standards listed below:

- ___ API Spec 15LE
- ___ CFR Title 49, Part 192
- ___ AWWA C901/C905
- ___ ASMF B31 8
- ___ NSF 14/61
- ___ CSA
- ___ IAPMO
- X ASTM D2513
- ___ Customer Specification
- ___ _____

- X PPI Rating for PE3408
- ___ PE2406 Type II, Grade P24 Category 5 with Cell Classification of 234433C, D, or E HDB 1250 @ 23°C
- X PE3408 Type III, Grade P34 Category 5 with Cell Classification of 345434C, D, or E HDB 1500 @ 23°c

* All blocks that apply to this shipment

Products: 6" IPS SDR 11 ASTM D2513 x 40'

NOTE: Pipe was certified on Date made ONLY

Certified By: [signature] Position: Q.C. Lab Technician Date: 08/20/98

Level III
Revised 9/6/96
HG

2062

QAIM1
Rev 4/89

POLY PIPE INDUSTRIES, INC.
INCOMING MATERIALS QUALITY CONTROL REPORT

TEST NUMBER 930128

SUPPLIER: Union Carbide MATERIAL: DFNF 0092 LOT NUMBER: 651840

DATE RECEIVED: 1-27-93 CAR NUMBER: 19 Boxes

GENERAL APPEARANCE: GOOD ✓ FAIR ____ POOR ____

EXPLANATION: 28,500#

	P.P. SPEC.	VENDOR CERT.	P. P. TEST
MELT INDEX			.18 / 8.18
MELT INDEX RATIO			45.4:1
SWELL RATIO			
PERCENT MEMORY			
DENSITY			
% CARBON BLACK			35.2%
TENSILE/ELONGATION Yield			
Break			
ESCR			
SIGMA FIVE			

DATE OF TESTS: 1-27-93 APPROVED FOR PRODUCTION BY: Jim Moore

RUN BY: Jim Moore CODE NO.: 707 DATE: 1-27-93

VEHICLE INSPECTION (Gainesville only) OK: ____ DATE: ____

CORRECTIONS REQUIRED: ____

NOTE: Must be conducted a minimum of once per week.

Note: This form shall be utilized per QAIM I paragraphs 5.1.1, 5.1.2 and 5.1.3.

QAIM1
Rev 4/89

POLY PIPE INDUSTRIES, INC.
INCOMING MATERIALS QUALITY CONTROL REPORT

TEST NUMBER 930210

SUPPLIER: NOVALOR MATERIAL: HD2007 H LOT NUMBER: 7-1-18380-1

DATE RECEIVED: 2-10-93 CAR NUMBER: UNPX 123181

GENERAL APPEARANCE: GOOD ✓ FAIR ____ POOR ____

EXPLANATION: 18189 lb

	P.P. SPEC.	VENDOR CERT.	P. P. TEST
MELT INDEX			.056 / .32 / 7.87
MELT INDEX RATIO		24.193	24.6 : 1
SWELL RATIO			
PERCENT MEMORY			
DENSITY		.9467	.947
% CARBON BLACK			
TENSILE/ELONGATION Yield		3234	
Break		4815 / 750.0	
ESCR		> 192 hrs	
SIGMA FIVE			

DATE OF TESTS: 2-10-93 APPROVED FOR PRODUCTION BY: Jim Moore

RUN BY: Jim Moore CODE NO.: N39 DATE: 2-10-93

VEHICLE INSPECTION (Gainesville only) OK: ____ DATE: ____

CORRECTIONS REQUIRED: ____

NOTE: Must be conducted a minimum of once per week.

Note: This form shall be utilized per QAIM paragraphs 5.1.1, 5.1.2 and 5.1.3.

2062

Novacor

Novacor Chemicals Ltd.
PO Box 3042
Sarnia, Ontario, Canada N7T 7M1
(519) 862-2961
Fax (519) 862-1011

CERTIFICATE OF ANALYSIS

MR. CHARLES JOHNSON
POLY PIPE INDUSTRIES INC.
RIVER VIEW
INDUSTRIAL PARK
ERWIN, TN, UNITED STATES, 37650
Fax: (615) 743-8419

January 29, 1993

NOVACOR CHEMICALS INC. certifies that the polyethylene product described herein meets the requirements of Novacor Product Specifications:

Customer P.O. Number:	3805
Novacor Product Designation:	HD-2007-H
Novacor Lot Number:	7-1-18380-1
Novacor Blend Number:	R24483
Container Number:	UNPX123181
Product Weight:	82508 kg 181899 lb
Novacor Order Number:	70983-1
Shipment Number/Date:	165588 / January 28, 1993

The following test results were obtained:

PROPERTY	UNITS	METHOD	RESULTS
FLOW RATE RATIO(5.0)	G/10 MIN		24.193
DENSITY	G/CM3		0.9467
COLOR			B-
GEL RATING	PER 100 SQ		150
ESCR	% FAIL	> 192 HRS	P
TENSILE STRENGTH	PSI		4815
TENSILE ELONGATION	%		750.0
YIELD STRENGTH	PSI		3234

JOSEPH GRAVEL
QUALITY CONTROL SUPERVISOR

jm Made
ok
2-10-93
N39

a subsidiary of
NOVA Corporation of Alberta

DAILY PIPE INSPECTION

DATE MADE: 2-17-93 DATE CHECKED: 2-17-93 LINE: 3 SHIFT: CB8-4

COIL NO	SIZE	SDR	WALL	AVG. OD.	IN SPEC.	OUT OF SPEC.	REASON
SPEC	6"	11	602/.674	6.595/6.655			
4			638/.669	6.629	✓		

CHECKED BY: Tim Moore APPROVED BY Tim Moore

MAT'L SPEC. PE 3408 N39507 PIPE SPEC D2513 PRINT PIC

QUICK BURST RESULTS

COIL NO.	SIZE	SDR	MIN. WALL	TIME	BURST	HOOP STRESS	TYPE

RUN BY: _____ DATE: _____

BEND BACK TEST RESULTS

	Good	Slight Crazing	Severe Crazing	Break
Line 1				
Line 2				
Line 3				
Line 4				
Line 5				

NOTE: This form shall be utilized per ★ QAIM ★ paragraph 5.3 ?

PRODUCTION REPORT 2062

Date 2-17-93 Day of Week Wed Hours 8-4 Shift B Line 3

Size 6" SDR 11 Length 40 No. of Units 4

Grade 3408/PE3710 ASTM D2513 Color B Actual Stalk Length 40' 1/2"

Prod. in Feet 160 Scrap Produced 5 Code 9

Prod. in Lbs 792 Scrap Reclaimed Ø

Theo. Los Prod. 786 Pounds of Pipe Split Ø

Theo. Wt/Ft 4.91 Min./Max. Wall 602/674 Target 6.625

% Wt (Loss) Gain 6 O.D. Tolerance 6.614/6.636

Downtime. Hours Ø Minutes Ø Man Hours Ø Nitrogen Ø

Coil Nos.	Log Time	Act. O.D.	Wall Min./Max	Length	Coil Weight	Monitor Calibration	Auto Cont. Yes/No	Ovality Go/No Go	
1/4	—	6.628	639/655	40'	1981	4.95	NO	GO	792

PROCESS DATA:

Extrusion Rate Ft./Min 2.72'/min Lbs./Hr. 808 Screw Speed 50.6 Dcl 278

Drive Amp 93 Head Pressure 3570 Stock Temp. 449° Cooling Temperature N/a

Vacuum Tank Settings 55 Pin No. Coil Bushing No. 6

NOTES OD at VDC 6.805

OPERATOR: Tony Schell SUPERVISOR Mr. Sn. To.

Date 2-17-93 Day of the Week Wed. Hours Worked 8-4 Shift B

YELLOW COMPOUNDING DATA

MATERIAL IS BEING DRAWN FROM SILO NO. 3
RAIL CAR NO. UTCX59223 TYPE DC-DA-2480 CODE NO. P00
CONCENTRATE BEING USED IS TYPE TS 1004 LOT 92898 CODE A93

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES	36	33		
VIRGIN WEIGHT IN OUNCES	865	789		
REGRIND WEIGHT IN OUNCES	31	40		
TOTAL WEIGHT	901 933	821 861		
PERCENT MIXTURE VIRGIN/COLOR	96% 4%	96% 4%		
PERCENT MIXTURE REGRIND TOTAL WEIGHT	3.3%	4.6%		

BLACK COMPOUNDING DATA — Blender No. 1

MATERIAL IS BEING DRAWN FROM SILO NO. 1
RAIL CAR NO. UNPX-123181 TYPE HD 2007 CODE NO. N39
CONCENTRATE BEING USED IS TYPE ____ LOT 651840 CODE T07

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES	86	82		
VIRGIN WEIGHT IN OUNCES	1281	1212		
REGRIND WEIGHT IN OUNCES	68	66		
TOTAL WEIGHT	1367 1435	1294 1360		
PERCENT MIXTURE VIRGIN/COLOR	93.7% 6.3%	93.7% 6.3%		
PERCENT MIXTURE REGRIND TOTAL WEIGHT	4.7%	4.9%		

BLACK COMPOUNDING DATA — Blender No. 2

MATERIAL IS BEING DRAWN FROM SILO NO. ____
RAIL CAR NO. ____ TYPE ____ CODE NO. ____
CONCENTRATE BEING USED IS TYPE ____ LOT ____ CODE ____

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES				
VIRGIN WEIGHT IN OUNCES				
REGRIND WEIGHT IN OUNCES	DOWN			
TOTAL WEIGHT				
PERCENT MIXTURE VIRGIN/COLOR				
PERCENT MIXTURE REGRIND TOTAL WEIGHT				

BEND BACK TEST RESULTS

	Good	Slight Crazing	Severe Crazing	Break
Line 1				
Line 2				
Line 3	✓ NM			
Line 4				
Line 5				

I certify that I have personally carried out all of the above checks, and I have checked the print on each line and the code used are as follows:

LINE #1 PE3408 N39 T07 #2 PE2406 P00 A93 #3 PE3408 N39 T07 #4 — #5 —

SIGNED: Norman Miller

Southwest Chemical Services

DATE: JUNE 10, 1997

2062

TO: CSR POLY PIPE
995 WACO MILL ROAD
SANDERSONVILLE, GA 31082

ATTN: QUALITY MANAGER FAX: (912) 553-0579

FROM: SOUTHWEST CHEMICAL SERVICES

RE: CERTIFICATE OF ANALYSIS

PRODUCT TYPE:	2153		2231
LOT NUMBER:	1710094-1	169771-2	1610096-1
CUSTOMER P/O #:	CONSIGNMENT		
POUNDS SHIPPED	28,000	2,000	12,000
PELLET WEIGHT	2.6	2.4	2.4
CARBON BLACK %	34.9	N/A	N/A
ASH %	N/A	13.9	13.8
MELT INDEX	N/A	3.1	3.4
MELT INDEX 10X	13.1	N/A	N/A
T.V.	0.01	0.04	0.06

THANK YOU,

GERRY ALTMAN
CUSTOMER SERVICE

W-D9
6-30-97

Continual Quality Program

P.O. Box 478 (Highway 146)
4 Miles South of La Porte
Seabrook, Texas 77586
(281) 474-2831

Date 2-17-93 Day of the Week Wed. Hours Worked 8-4 Shift B

YELLOW COMPOUNDING DATA

MATERIAL IS BEING DRAWN FROM SILO NO. 3
RAIL CAR NO. UTCX59223 TYPE DCDA-2400 CODE NO. P00
CONCENTRATE BEING USED IS TYPE TS 1004 LOT 92898 CODE A93

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES	36	33		
VIRGIN WEIGHT IN OUNCES	865	789		
REGRIND WEIGHT IN OUNCES	31	40		
TOTAL WEIGHT	901 933	821 861		
PERCENT MIXTURE VIRGIN/COLOR	96 % 4%	96 % 4 %		
PERCENT MIXTURE REGRIND TOTAL WEIGHT	3.3 %	4.6 %		

BLACK COMPOUNDING DATA — Blender No. 1

MATERIAL IS BEING DRAWN FROM SILO NO. 1
RAIL CAR NO. UNPX-123181 TYPE HD 2007 CODE NO N39
CONCENTRATE BEING USED IS TYPE LOT 651840 CODE T07

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES	86	82		
VIRGIN WEIGHT IN OUNCES	1281	1212		
REGRIND WEIGHT IN OUNCES	68	66		
TOTAL WEIGHT	1367 1435	1294 1360		
PERCENT MIXTURE VIRGIN/COLOR	93.7 % 6.3%	93.7 % 6.3%		
PERCENT MIXTURE REGRIND TOTAL WEIGHT	4.7 %	4.9 %		

BLACK COMPOUNDING DATA — Blender No. 2

MATERIAL IS BEING DRAWN FROM SILO NO.
RAIL CAR NO TYPE CODE NO.
CONCENTRATE BEING USED IS TYPE LOT CODE

	1st Check	2nd Check	3rd Check	4th Check
CONCENTRATE WEIGHT IN OUNCES				
VIRGIN WEIGHT IN OUNCES				
REGRIND WEIGHT IN OUNCES				
TOTAL WEIGHT	DOWN			
PERCENT MIXTURE VIRGIN/COLOR				
PERCENT MIXTURE REGRIND TOTAL WEIGHT				

BEND BACK TEST RESULTS

	Good	Slight Crazing	Severe Crazing	Break
Line 1				
Line 2				
Line 3	✓ NM			
Line 4				
Line 5				

I certify that I have personally carried out all of the above checks, and I have checked the print on each line and the code used are as follows:

LINE #1 PE3408 N39 T07 #2 PE2406 P00 A93 #3 PE3408 N39 T07 #4 — #5 —

SIGNED: Naomi Miller

Southwest Chemical Services

DATE: JUNE 10, 1997

2062

TO: CSR POLY PIPE
995 WACO MILL ROAD
SANDERSONVILLE, GA 31082

ATTN: QUALITY MANAGER FAX: (912) 553-0579

FROM: SOUTHWEST CHEMICAL SERVICES

RE: CERTIFICATE OF ANALYSIS

PRODUCT TYPE:	2153		2231
LOT NUMBER:	1710094-1	169771-2	1610096-1
CUSTOMER P/O #:	CONSIGNMENT		
POUNDS SHIPPED	28,000	2,000	12,000
PELLET WEIGHT	2.6	2.4	2.4
CARBON BLACK %	34.9	N/A	N/A
ASH %	N/A	13.9	13.8
MELT INDEX	N/A	3.1	3.4
MELT INDEX 10X	13.1	N/A	N/A
T.V.	0.01	0.04	0.06

THANK YOU,

GERRY ALTMAN
CUSTOMER SERVICE

W-D9
6-30-97

Continual Quality Improvement

P.O. Box 478 (Highway 146)
4 Miles South of La Porte
Seabrook, Texas 77586
(281) 474-2831

NOVA Chemicals

NOVA Chemicals Ltd.
Post Office Box 3042
Sarnia, Ontario, Canada N7T 8C8
Offices and Plant: 510 Moore Line Road
Mooretown, Ontario, Canada N0N 1M0
Telephone (519) 862-2981

CERTIFICATE OF ANALYSIS

June 19, 1997

CSR POLYPIPE
995 WACO MILL RD
SANDERSVILLE,GA
US

NOVA CHEMICALS LTD., certifies that the polyethylene product described herein, meets the requirements of Nova's product specification(s) for such product.

Customer P.O. Number:	CSRSANDERSCONSIGN
Nova Product Designation:	HD2007H HOPPER CAR
Nova Batch Number:	MP00002951
Container Number:	NCIX1537
Product Weight(LB):	185881
Nova Order Number	300002898
Delivery Note Number/Item No.	400043021/10
Shipment Date	6/19/97

Tapped on 7-11-97

N45

THE FOLLOWING TEST RESULTS WERE OBTAINED:

CHARACTERISTIC NAME	UNITS	RESULTS
Density	G/CM3	0.9473
Bulk Density	LB/FT3	36.3
Flow Rate 190/5.0	G/10 MIN	0.35
Flow Rate 190/21.6	G/10 MIN	9.0
Melt Flow Rate 21.6/5.0	RATIO	25.7
Colour Code	-	B+
Colour	-	114
Gel Count	-	95

Mike Spicer per

Joe Gravel
Quality Control Coordinator

CONTACT(S):

CHRIS MASSENGALE
912-553-0579

A Responsible Care® Company

NOVA Chemicals

Sarnia, Ontario, Canada N7T 8C9
Offices and Plant: 510 Moore Line Road
Mooretown, Ontario, Canada N0N 1M0
Telephone: (519) 862-2961

CERTIFICATE OF ANALYSIS

2062

February 23, 1998

CSR POLYPIPE
995 WACO MILL RD
SANDERSVILLE,GA
US 31082

NOVA CHEMICALS LTD., certifies that the polyethylene product described herein, meets the requirements of Nova's product specification(s) for such product.

N18

Customer P.O. Number:	crsanderesville
Nova Product Designation:	HD2007H
Nova Batch Number:	MP00009751
Container Number:	
Product Weight(LB)	46000 (estimate) 45620
Nova Order Number	40267
Delivery Note Number/Item No.	400089181/10
Shipment Date	22-Feb-98

2-24-98

THE FOLLOWING TEST RESULTS WERE OBTAINED.

CHARACTERISTIC NAME	UNITS	RESULTS
Flow Rate 190/5.0	G/10 MIN	0.36
Flow Rate 190/21.6	G/10 MIN	9.0
Melt Flow Ratio 21 6/5.0	RATIO	25.0
Density	G/CM3	0.9472
Bulk Density	LB/FT3	35.4
Oxidation Induction Time@210C	MIN	53.3
Tensile Strength @ Break	PSI	5685
Tensile Strength @ Yield	PSI	3147
Elongation	%	900
Thermal Stability	DEGC	264.4
ESCR, Cond C, F20	HOUR	> 600

NOTE: This material meets Cell Class 345444 of ASTM D-3350-96.
ESCR result is a minimum value tested once per each 500 tonnes produced.

Joe Gravel
Lab Systems Coordinator

CONTACT(S):
JIM MASSENGALE
912-553-0579

2/0 2

Southwest Chemical Services

DATE: FEBRUARY 27, 1998

TO: CSR POLY PIPE
995 WACO MILL ROAD
SANDERSONVILLE, GA 31082

ATTN: QUALITY MANAGER FAX: (912) 553-0579

FROM: SOUTHWEST CHEMICAL SERVICES

RE: CERTIFICATE OF ANALYSIS

WO6
3-3-98

PRODUCT TYPE:	2153		
LOT NUMBER:	1172064-2	1172064-9	1172064-11
CUSTOMER P/O #:	CONSIGNMENT		
POUNDS SHIPPED	2,000	25,000	14,000
PELLET WEIGHT	2.3	2.4	2.7
CARBON BLACK	35.0	38.8	34.9
MELT INDEX 10X	11.5	12.9	14.6
MOISTURE	0.02	0.03	0.03

THANK YOU,

GERRY ALTMAN
CUSTOMER SERVICE

Continual Quality Progression

P.O. Box 478 (Highway 146)
4 Miles South of La Porte
Seabrook, Texas 77586
(281) 474-2831

Southwest Chemical Services

2062

DATE: FEBRUARY 24, 1998

TO: CSR POLY PIPE
995 WACO MILL ROAD
SANDERSONVILLE, GA 31082

ATTN: QUALITY MANAGER FAX: (912) 553-0579

FROM: SOUTHWEST CHEMICAL SERVICES

RE: CERTIFICATE OF ANALYSIS

WO7
2-25-98

PRODUCT TYPE:	2153
LOT NUMBER:	1172064-10
CUSTOMER P/O #:	CONSIGNMENT
POUNDS SHIPPED	42,000
PELLET WEIGHT	2.5
CARBON BLACK	34.4
MELT INDEX 10X	12.6
MOISTURE	0.0

THANK YOU,

GERRY ALTMAN
CUSTOMER SERVICE

Continual Quality Improvement

P.O. Box 478 (Highway 146)
4 Miles South of La Porte
Seabrook, Texas 77586
(281) 474-2531

NOVA Chemicals
Sarnia, Ontario, Canada N7T 8C9
Offices and Plant: 510 Moore Line Road
Moorsbrom, Ontario, Canada N0N 1M0
Telephone: (519) 862-2961

CERTIFICATE OF ANALYSIS

February 17, 1998

CSR POLYPIPE
995 WACO MILL RD
SANDERSVILLE,GA
US 31082

NOVA CHEMICALS LTD., certifies that the polyethylene product described herein, meets the requirements of Nova's product specification(s) for such product.

N22
3-9-98

Customer P.O. Number:	CSRSANDERSCONSIGN
Nova Product Designation:	HD2007H
Nova Batch Number:	MP00009716
Container Number:	NCDX823
Product Weight(LB):	188789
Nova Order Number	300005432
Delivery Note Number/Item No.	4000088151/10
Shipment Date	17-Feb-98

THE FOLLOWING TEST RESULTS WERE OBTAINED:

CHARACTERISTIC NAME	UNITS	RESULTS
Flow Rate 190/5.0	G/10 MIN	0.35
Flow Rate 190/21.6	G/10 MIN	9.2
Melt Flow Ratio 21.6/5.0	RATIO	26.3
Density	G/CM3	0.9475
Bulk Density	LB/FT3	35.4
Oxidation Induction Time@210C	MIN	46.7
Tensile Strength @ Break	PSI	6033
Tensile Strength @ Yield	PSI	3263
Elongation	%	925
Thermal Stability	DEGC	266.0
ESCR, Cond C, F20	HOUR	> 600

NOTE: This material meets Cell Class 345444 of ASTM D-3350-96.
ESCR result is a minimum value tested once per each 500 tonnes produced.

Joe Gravel
Lab Systems Coordinator

CONTACT(S):
JIM MASSENGALE
912-553-0579

2062

DO
ON

Date: 8/28/98

Project/Contract/P.O. Name 0-SDF-F

Document Title

Review the attached Document/Submittal/DCN and ret

Submittal/DCN No. 13005-B Rev 1 Date: 8/21 (8

Routing Sequence	Reviewing Discipline	Review To Be Completed By	Review Completed
(1) Reviewer:	Engineering		
Reviewer:	Construction		8/31
Reviewer:	Safety		
Reviewer:	Quality		
Reviewer:	Procurement		
Reviewer:	Project Controls		
Reviewer:	Envir. Compliance		
(2) Reviewer:	Proj. Manager		
Reviewer:	Estimating		8/31
Reviewer:	Title III A-E		
Reviewer:			
Reviewer:			

Special Instruction/Additional Comments:

Dcocument Originator/DCN Requester: Peter

Sent to ~~ECDC~~: Date: 8/31/98

Submittal/DCN Sent to Contractor: Date:

Status	Defination
A	Reviewed
B	Reviewed , proceed with work incorporating comments. Ch
C	Change submittal as noted and resubmitt
10	Information only

a:Udaycard

SUPPLIER DC ENT SUBMITTAL

FDF PROJECT NUs.:	20102	X	CONTRACT NUMBER.: FSC-614	SUBMITTAL NO.: 13005-9	REV.: 0	DATE: August 21, 1998	PAGE 1 OF 1
	20402						

FROM: PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
7400 WILLEY ROAD, MAILSTOP 52-7; TRAILER NO. 504
HAMILTON, OHIO 45013-9402

SIGNATURE: J. Richard Schairbaum

TO: FDF ENGINEERING/CONSTRUCTION DOCUMENT CONTROL, MS 52-7

RECEIVED BY: Melissa Crews DATE: 8·21·98

			DOCUMENT FAMILY							RESUBMITTAL			SUBMITTAL TYPE			SUBMITTAL ACTION		
QTY	DOCUMENT NUMBER	REV	PRO	H&S	MED	TRG	CON	ENG	QAC	YES	NO	TITLE/DESCRIPTION	CFC	INF	ASSOCIATED SPECIFICATION	A	B	C
6	614-PET-043H	0							X		X	Fabricator's Cert. of Liner Penetration Boxes	X		13005-1.04.B.3	X		

RECEIVED
SEP 03 1998
R. Gudman

000052

DISTRIBUTION

REVIEW DISTRIBUTION				CFC DISTRIBUTION			
Distribution	MS	Distribution	MS	Distribution	MS	Distribution	MS
Mike Godber (Approver)	64	ECDC	52-7	Jim Jenkins	64	OSDF Station	64
Bruce Schweitzer	64	Vern Taylor	52-0	Bruce Schweitzer	64	ECDC	52-7
Jim Jenkins	64			Mike Godber	64	Vern Taylor	52-0
Dan Bodine	38			Dan Bodine	38		

RECEIVED BY: Michael M. Godber DATE: 8/28/98 NO COMMENTS X COMMENTS ATTACHED ____
(SIGN/DATE AND RETURN A COPY TO ECDC, MS 52-7)

RESUBMIT ENTIRE DOCUMENT NUMBER AS: _____ (REV. #) OR RESUBMIT CHANGED DOCUMENT PAGES AS: DOC. NO.: _____ (REV. #) PCN: _____ (PCN. #)

COMMENTS
NONE

ORIGINAL

SUBMITTAL ACTION CODE: (BY SUPPLIER)
CFC - CERTIFIED FOR CONSTRUCTION
INFORMATION/RECORD
"X" APPROPRIATE SUBMITTAL ACTION ABOVE

SUPPLIER ACTION CODE: (ECDC) SUPPLIER ACTION ABOVE
A - ACCEPTED DOCUMENT - CONFORMS WITH REQUIREMENTS
B - MINOR COMMENTS - REVISE & RESUBMIT CFC OR INF
C - REVISE & RESUBMIT

PETRO
environmental
technologies

2062

FLUOR DANIEL FERNALD

SOUTHERN WASTE UNITS (SWUs) EXCAVATION/
ON-SITE DISPOSAL FACILITY (OSDF) (PHASE II) PROJECT
Project Nos. 20102/20402; Contract No. FSC-614

SUPPLIER SUBMITTAL No.: 20102-614-13005-9 (Rev. 0)

FABRICATOR'S CERTIFICATION OF LINER PENETRATION BOXES
Section 13005-1.04.B.3

Document No. 614-PET-043H (Rev. 0)

August 21, 1998

INFORMATION ONLY

[X] A - Conforms to the Subcontract Requirements
[ ] B - Minor Comment - Incorporate and Resubmit
[ ] C - Revise and Resubmit
Sig: Date: 8/18/98

OC0053

Fernald Site Office: P.O. Box 249 • Ross, Ohio 45061-0249 • 513.648.3402 • Fax 648.3407
7851 Palace Drive • Cincinnati, Ohio 45249 • 513.489.6789 • Fax 489.7208
8200 Seville Road • Lodi, Ohio 44254 • 330.948.1494 • Fax 948.1933

PLASTEK WERKS, INC.
2401 Franklin Blvd.
P.O. Box 5906
Gainesville, Georgia 30504
Phone (770) 287-8286
Fax (770) 287-3284

August 20, 1998

Mr. Rick Schairbaum
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.
P.O. Box 249
Ross, Ohio 45061-0249

Dear Mr. Schairbaum:

This letter is to certify that Plastek Werks, Inc. has fabricated five (5) Liner Penetration Boxes in July 1998 for your Project #20102. The Liner Penetration Boxes meet all specifications per Section 13005 and all HDPE pipe and fittings used in the Liner Penetration Boxes meet all specifications per Section 02605.

Sincerely,

Mark Kirves

Mark Kirves
Vice-President
Plastek Werks, Inc.

DOCUMENT ROUTING SHEET
ON-SITE DISPOSAL FACILITY
PROJECT NO. 20102

2062

Date: 8/24/98

Project/Contract/P.O. Name OSDF - Phase II Project/Contract/P.O. No. FSC-614

Document Title

To Reviewers:

1. Review the attached Document/Submittal/DCN/RCI and return to: [illegible] DUE DATE ASAP
2. Date and initial the appropriate "box" on this card.
3. Complete review by the date assigned to you and HAND CARRY the attached document and this card to the next person on the r sequence. Last person on the routing sequence to HAND CARRY the attachment and this card and return to the person noted abo

Submittal/DCN/RCI No. 13005-9 Date: 8/21/98 Submittal/DCN/RCI Title Fabricator Cert. of Line Pe

Routing Sequence	Reviewing Discipline	Review To B Completed By	Review Completed By	Document/DCN/RCI Approved	Document/DCN/RCI Disapproved	Sumittal Status "A"	"B"	"C"	"10"	Remarks
1	Engineering Reviewer: [illegible]	ASAP	CW 8/25/98			CW				
	Construction Reviewer:									
	Safety Reviewer:									
3	Quality Reviewer: Gotber	ASAP				[illegible]				
	Procurement Reviewer:									
	Project Controls Reviewer:									
	Envir. Compliance Reviewer:									
2	Proj. Manager Reviewer: [illegible]	ASAP	8/25/98			[illegible]				See comment - (2)
	Estimating Reviewer:									
	Title III A-E Reviewer:									
	Reviewer:									
	Reviewer:									

Special Instruction/Additional Comments:

(1) "Boxes" are on site

(2) Jim: As the boxes are on site, we should (along with QA) shortly inspect the ass.

Document Originator/DCN/RCI Requester: Petro

Sent to ~~ECDC~~ Godber Date: 8/26/98

Submittal/DCN/RCI Sent to Contractor: Date:

Status	Definition
A	Reviewed
B	Reviewed , proceed with work incorporating comments. Change submittal as noted and resubmit
C	Change submittal as noted and resubmitt
10	Information only

a:Udaycard

APPENDIX I:

CELL 2 GEOSYNTHETIC CONFORMANCE TEST RESULTS

Geosynthetic Clay Liner
- Hydraulic Conductivity Test Results
- Direct Shear Test Results
- Direct Shear Bentofix Compliance Packages

Geomembrane

Geotextile

Geosynthetic Clay Liner

- **Material Inventory**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: Colloid Enviro. Tech. Co.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
13 Aug	00007554	CS					06 Aug	10 Aug		
	7557	CS								
	7568	CS								
	7569	CS								
	7570	CS								
	7579	CS								
	7586	CS								
	7587	CS								
	7588	CS								
	7589	CS								
	7594	CS								
	7595	CS								
	7623	CS	20/7	GCL-31	✓	TBD				
	7636	CS								
	7555	CS								
	7556	CS								
	7561	CS								
	7563	CS								
	7564	CS								
	7565	CS								
	7566	CS								
	7575	CS	20/7	GCL-30	✓	TBD				
	7576	CS								
	7577	CS								
	7581	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 25

CUMULATIVE AREA: 56,250 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat (GCL) MANUFACTURER: Getco

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
13 Aug	00007582	CS								
	7584	CS								
	7591	CS								
17 Aug	7592	CS								
	~~76~~7596	CS								
	7599	CS								
	7601	CS								
	7602	CS								
	7603	CS								
	7604	CS								
	7606	CS								
	7610	CS								
	7612	CS								
	7615	CS								
	7624	CS								
	7625	CS								
	7627	CS								
18 Aug	7558	CS								
	7559	CS								
	7562	CS								
	7571	CS								
	7572	CS								
	7573	CS								
	7574	CS								
	7578	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 50

CUMULATIVE AREA: 112,500 NO. OF CONFORMANCE TESTS (page/total): 0 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: GeoSynthetic Clay Liner (Bentomat) MANUFACTURER: Cetco

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
18 Aug	00007580	CS								
	7583	CS								
	7585	CS								
	7590	CS								
	7593	CS								
	7597	CS								
	7600	CS								
	7605	CS								
	7607	CS								
	7608	CS								
	7609	CS								
	7613	CS								
	7614	CS								
	7619	CS								
	7626	CS								
	7629	CS								
	7630	CS								
	7631	CS								
	7633	CS								
	7634	CS								
19 Aug	7611	CS								
	7616	CS								
	7617	CS								
	7618	CS								
	7620	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 75

CUMULATIVE AREA: 168,750 NO. OF CONFORMANCE TESTS (page/total): 0 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: GeoSynthetic Clay Liner-Bentomat MANUFACTURER: Cetco

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
19 Aug	00007621	CS								
	7622	CS								
	7628	CS								
	7632	CS								
	7635	CS								
	7730	CS								
	7733	CS								
	7735	CS								
	7745	CS								
27 Aug	7883	CS								
	7654	CS								
	7656	CS								
	7700	CS								
	7701	CS								
	7709	CS								
	7711	CS								
	7713	CS								
	7715	CS								
	7718	CS								
	7719	CS								
	7724	CS								
	7726	CS								
	7729	CS								
28 Aug	7639	CS								
	7640	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 100

CUMULATIVE AREA: 225,000 NO. OF CONFORMANCE TESTS (page/total): 0 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
28 Aug	00007641	CS								
	00007644	CS								
	00007657	CS								
	7667	CS								
	7673	CS								
	7674	CS								
	7677	CS								
	7679	CS								
	7680	CS								
	7684	CS								
	7686	CS								
	7687	CS								
	7650	CS								
	7658	CS								
	7661	CS								
	7662	CS								
	7663	CS								
	7669	CS								
	7675	CS								
	7678	CS								
	7682	CS								
	7683	CS								
	7739	CS								
	7744	CS								
	7750	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 125

CUMULATIVE AREA: 281,250 NO. OF CONFORMANCE TESTS (page/total): 0 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
28 Aug	00007751	CS								
31 Aug	7651	CS								
	7652	CS								
	7653	CS								
	7660	CS								
	7664	CS								
	7666	CS								
	7668	CS								
	7670	CS								
	7672	CS								
	7681	CS								
	7728	CS								
	7743	CS								
	7886	CS								
	7888	CS								
1 Sept	7646	CS								
	7688	CS								
	7690	CS								
	7692	CS								
	7706	CS								
	7731	CS								
	7738	CS								
	7742	CS		~~GCL-34~~	✓	TBY				
	7746	CS	22/7	GCL-34	✓	TBY				
	7829	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 150

CUMULATIVE AREA: 337,500 NO. OF CONFORMANCE TESTS (page/total): ~~0~~/1/2/3

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
1 Sept	00007838	CS								
	7860	CS	22/7	GCL-35	✓	TBY				
	7871	CS								
	7873	CS								
	7647	CS								
	7648	CS								
	7655	CS								
	7671	CS	22/7	GCL-32	✓	TBY				
	7691	CS								
	7695	CS								
	7698	CS								
	7699	CS								
	7704	CS								
	7721	CS								
	7727	CS								
	7859	CS								
	7861	CS								
	7882	CS								
2 Sept	7643	CS								
	7649	CS								
	7676	CS								
	7694	CS								
	7697	CS								
	7712	CS								
	7716	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 175

CUMULATIVE AREA: 393,750 NO. OF CONFORMANCE TESTS (page/total): 2 ~~2~~ 3/4 5

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
2 Sept	00007722	CS								
	7723	CS								
	7732	CS								
	7734	CS								
	7736	CS								
	7747	CS								
	7884	CS								
3 Sept	7702	CS								
	7703	CS								
	7707	CS	22/7	GCL-33	✓	TBW				
	7708	CS								
	7737	CS								
	7844	CS								
	7845	CS								
	7858	CS								
	7870	CS								
	7872	CS								
	7874	CS								
	7880	CS								
	7893	CS	22/7	GCL-36	✓	TBW				
	7897	CS								
	7642	CS								
	7825	CS								
	7826	CS								
	7827	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 200

CUMULATIVE AREA: 450,000 NO. OF CONFORMANCE TESTS (page/total): ~~225~~ 8/67

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
3 Sept	00007842	CS								
	7843	CS								
	7854	CS								
	7856	CS								
	7857	CS								
	7863	CS								
	7892	CS								
	7894	CS								
	7895	CS								
	7896	CS								
	7659	CS								
	7665	CS								
	7685	CS								
	7693	CS								
	7696	CS								
	7705	CS								
	7710	CS								
	7717	CS								
	7720	CS								
	7725	CS								
	7740	CS								
	7741	CS								
	7748	CS								
	7749	CS								
9 Sept	7814	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 225

CUMULATIVE AREA: 506,250 NO. OF CONFORMANCE TESTS (page/total): 0 / 7

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
9 Sept	00007823	CS								
	7824	CS								
	7839	CS								
	7840	CS								
	7841	CS								
	7846	CS								
	7855	CS								
	7864	CS								
	7865	CS								
	7866	CS								
	7887	CS								
	7889	CS								
	7891	CS								
10 Sept	7645	CS								
	7822	CS								
	7831	CS								
	7832	CS								
	7847	CS								
	7848	CS								
	7849	CS								
	7850	CS								
	7862	CS								
	7875	CS								
	7876	CS								
	7881	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: 150.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 250

CUMULATIVE AREA: ~~508500~~ 562500 NO. OF CONFORMANCE TESTS (page/total): 0 087

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04·1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: Bentomat MANUFACTURER: CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
10 Sept	00007885	CS								
	7689 ~~78~~	CS								
	7819	CS								
	7820	CS								
	7821	CS								
	7830	CS								
	7836	CS								
	7851	CS								
	7852	CS								
	7853	CS								
	7867	CS								
	7868	CS								
	7869	CS								
	7877	CS								
	7878	CS								
	7816	CS								
	7817	CS								
	7818	CS								
	7833	CS								
	7835	CS								
27 Oct 1998	13539	CS	Sept	GCL 37	P	CS				
	13541	CS								
	13543	CS								
	13544	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: ~~24~~ 150.0

NUMBER OF ROLLS ABOVE: 24 ACCUMULATIVE NUMBER OF ROLLS: 274

CUMULATIVE AREA: 616,500 NO. OF CONFORMANCE TESTS (page/total): 1 / 8

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: (GCL) Bentomat MANUFACTURER: ~~Bentomat~~ CETCO

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
12 Sept	00007816	CS								
12 Sept	00007817	CS								
12 Sept	00007818	CS								
12 Sept	00007833	CS								
12 Sept	00007835	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: 150.0 ft

NUMBER OF ROLLS ABOVE: 5 ACCUMULATIVE NUMBER OF ROLLS: 279

CUMULATIVE AREA: 627,750 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 8

- **Hydraulic Conductivity Test Results**

TABLE 1 (Continued)

GEOSYNTHETIC CLAY LINER TEST RESULTS

FLUOR DANIEL FERNALD
FDF-OSDF-PHASE I CONSTRUCTION

Site Sample ID			Lab Sample No.	Microwave Moisture Content ASTM D 4643 (%)	Moisture Content ASTM D 2216 (%)	Free Swell USP-NF-XVII			Average Mass Per Unit Area ASTM D 3776		Hydraulic Conductivity [X]GRI GCL-2 [ ]ASTM D 5084 [ ]ASTM D 5887	
Sample No.	Roll No.	Lot No				Weight of Bentonite (g)	Approx. Elapsed Time (hr)	Swell Volume (ml)	Moist (lbs/ft²)	Dry (lbs/ft²)	Hydraulic[1] Conductivity (cm/s)	Index Flux q [(m₁/m₂)/s]
GCL-16	37360	97090502	97J37								2.3E-9	
GCL-17	37386	97090512	97J38								1.3E-9	
GCL-18	37604	97090612	97J36								4.4E-9	
GCL-19	37624	97090702	97J39								1.7E-9	
GCL-20	34941	97081302	97J38								2.2E-9	
GCL-21	34407	97080802	97J34								2.0E-9	
GCL-22	40667	97101002	97J98								2.3E-9	
GCL-23	40698	97101002	97J99								2.1E-8	
			97J99.A								1.7E-8	
GCL-24	41651	97102302	97K06								1.6E-9	
GCL-25	41676	97102302	97K07								1.3E-9	
GCL-26	41729	97102402	97K08								1.6E-9	
GCL-27	41753	97102402	97K09								1.5E-9	
GCL-28	40697	97101002	97J258								9.3E-10	
GCL-29	40699	97101002	97J259								1.0E-9	

Note:

1. The test specimens were consolidated at a consolidation pressure of 5 psi.

000072

2062

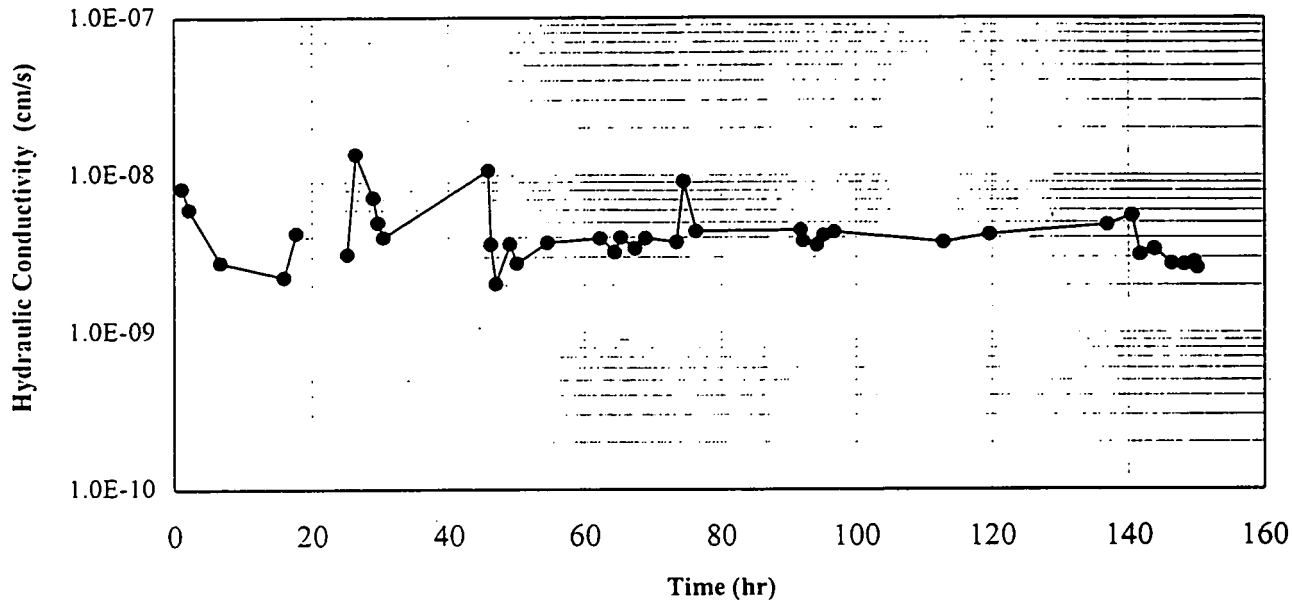
GQ0166/F974G007.CD A

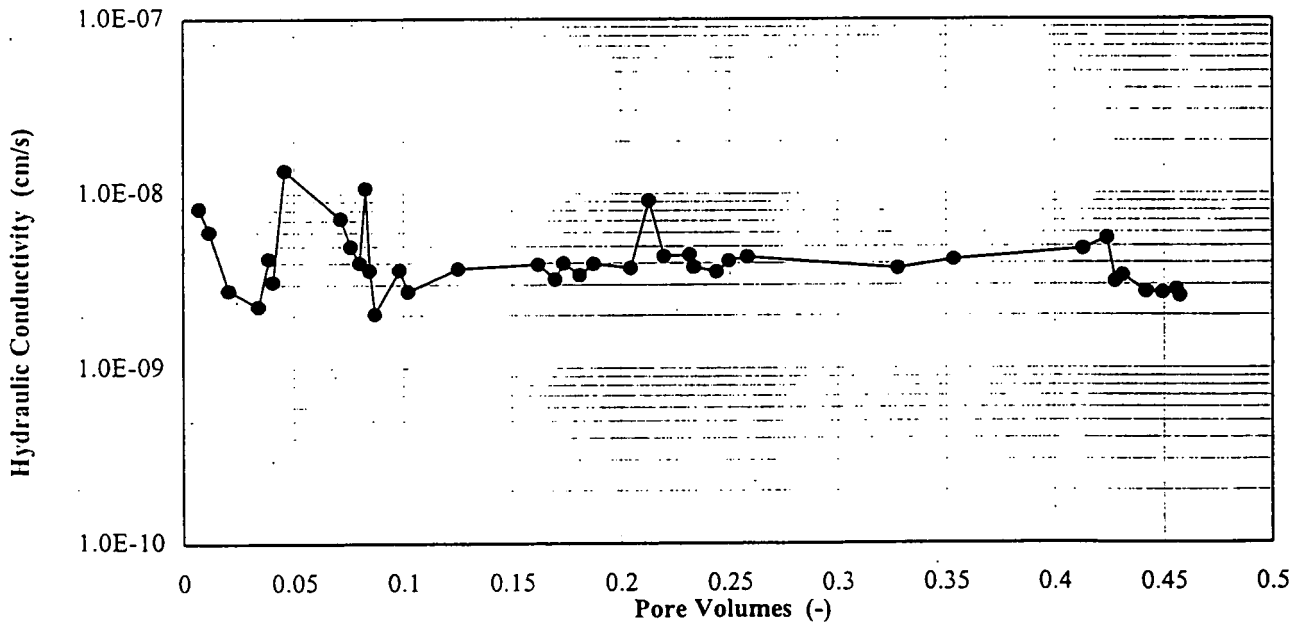
GeoSyntec Consultants
Geomechanics and Environmental Laboratory

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-30
Project Name: OSDF Phase II
Project No.: GQ0409

ASTM D 5887 | HYDRAULIC CONDUCTIVITY TESTING | Figure





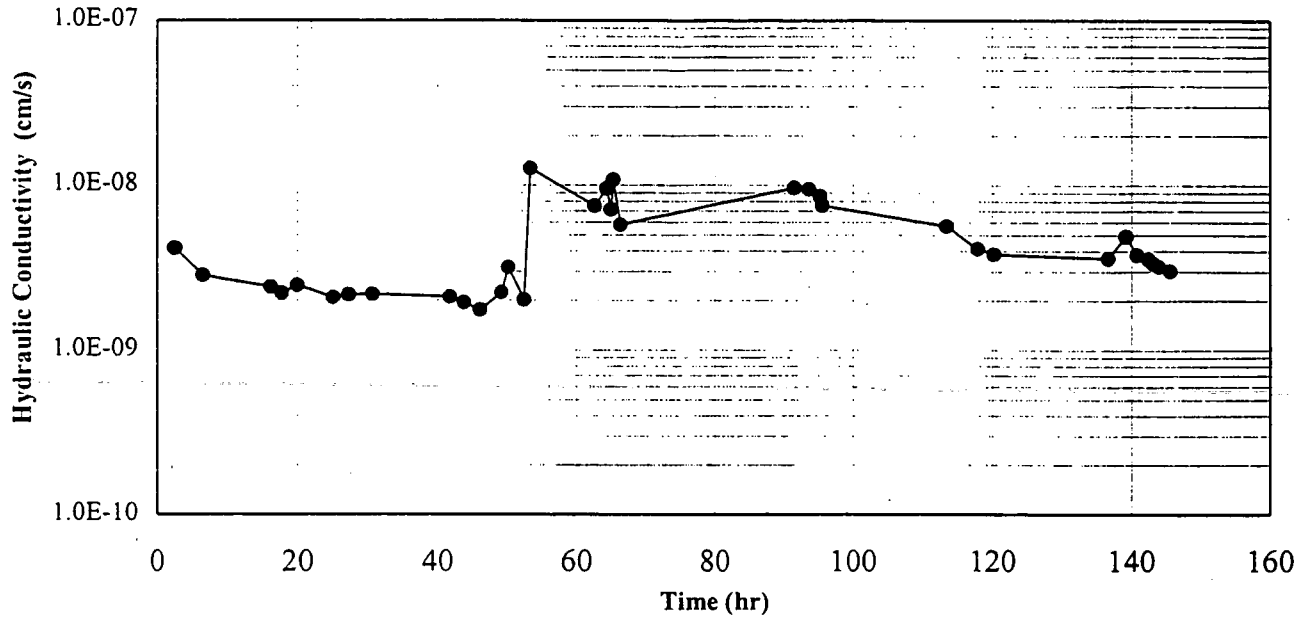
Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-30	98G237	52.2	21.9	5	2.7E-9

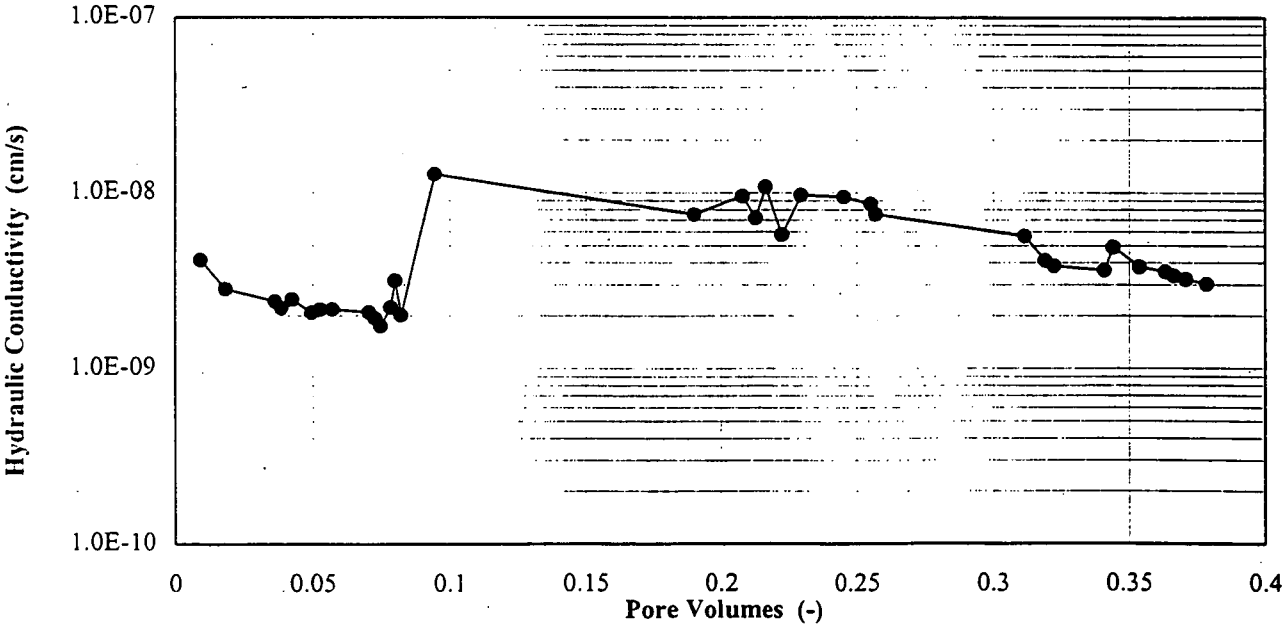
Note(s): Lot No.: 199829030 / Roll No.: 7575
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-31
Project Name: OSDF Phase II
Project No.: GQ0[illegible] 2062

ASTM D 5887 | HYDRAULIC CONDUCTIVITY TESTING | Figure





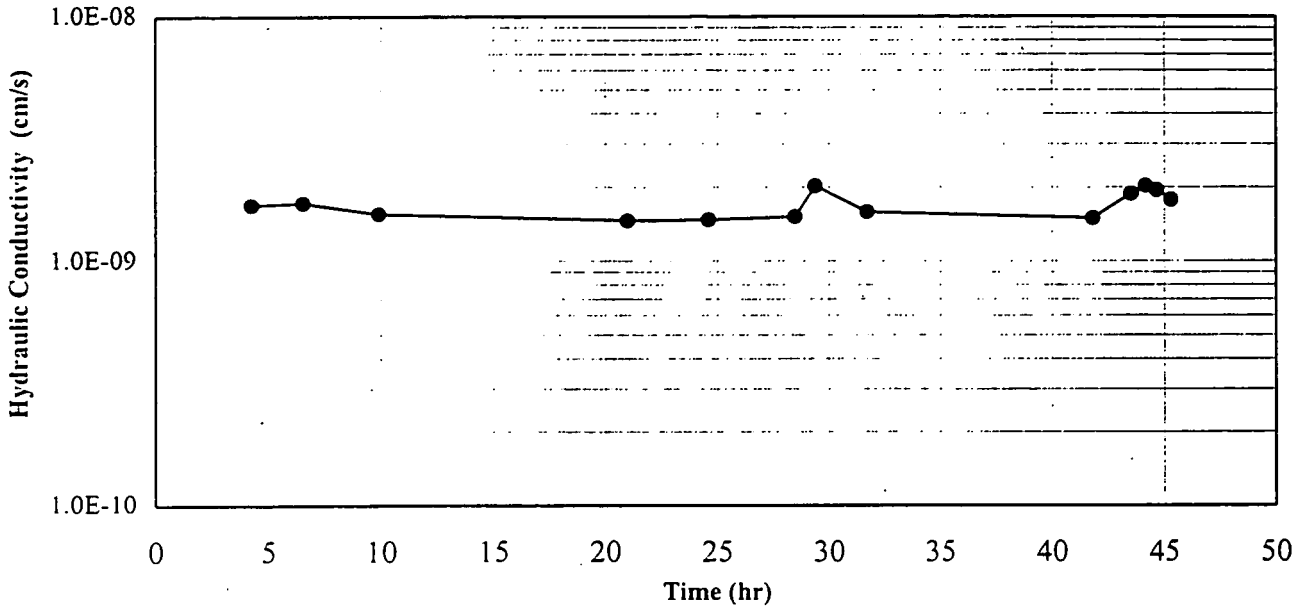
Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-31	98G238	49.3	19.5	5	3.3E-9

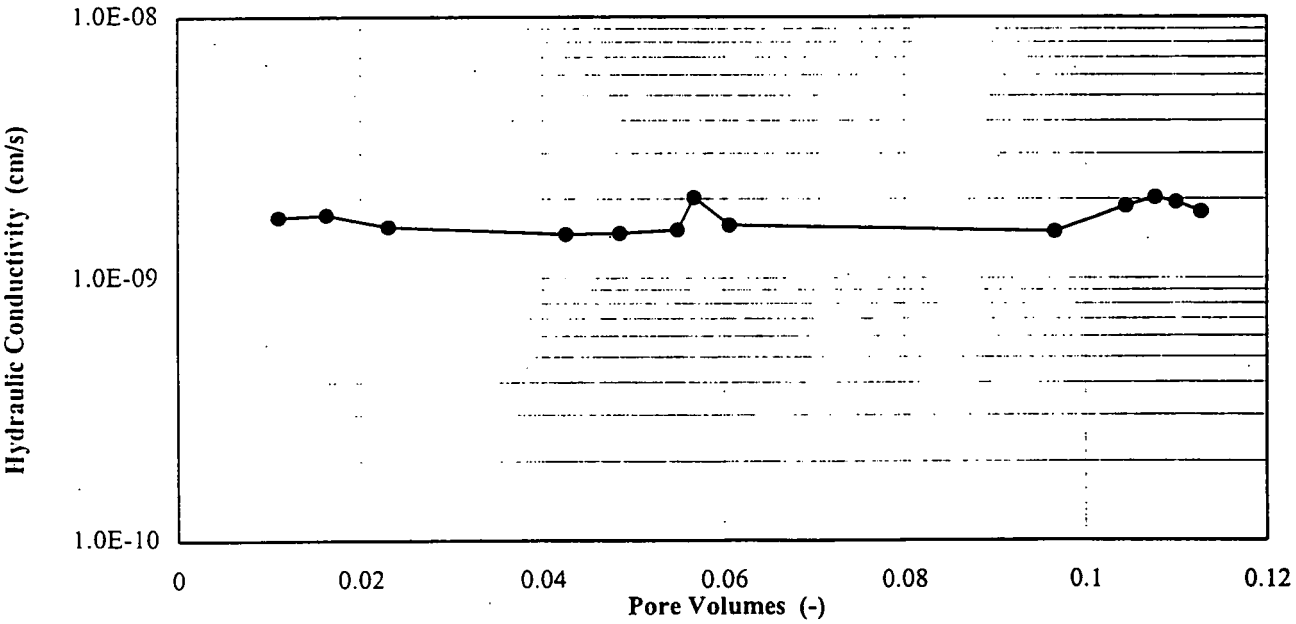
Note(s): Lot No.: 199829030 / Roll No.: 7623
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-32
Project Name: OSDF-Phase II
Project No.: GQ0409

ASTM D 5887 | **HYDRAULIC CONDUCTIVITY TESTING** | **Figure**





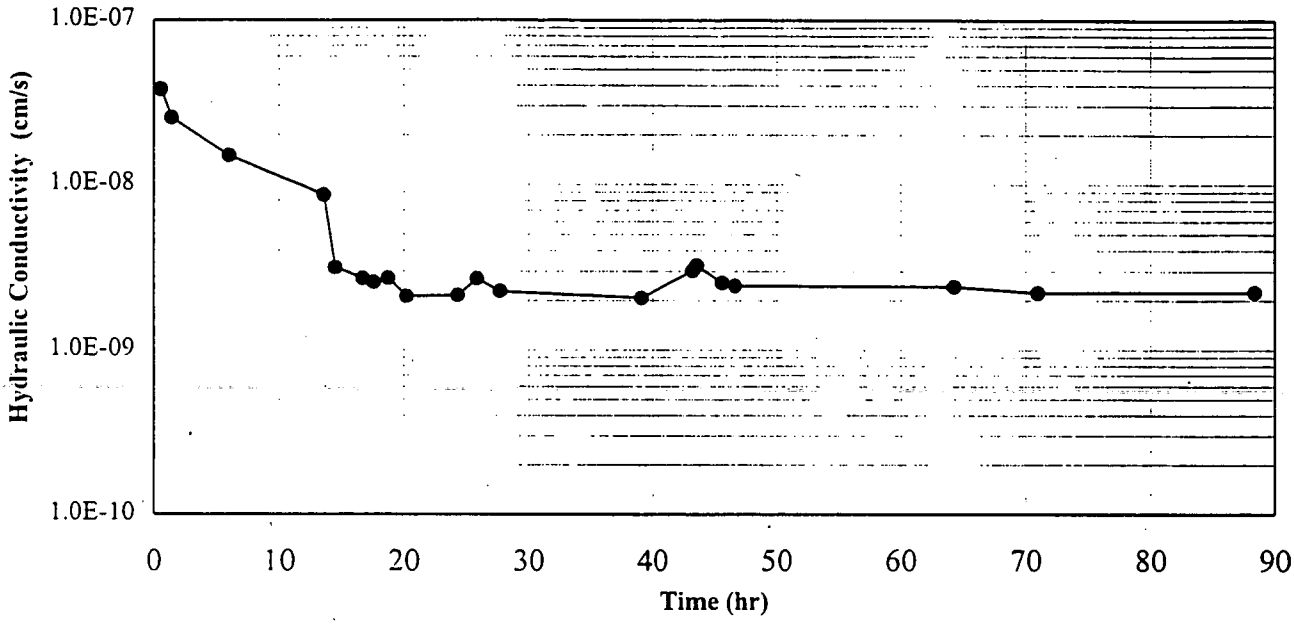
Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-32	98G239	49.7	18.0	5	1.9E-9

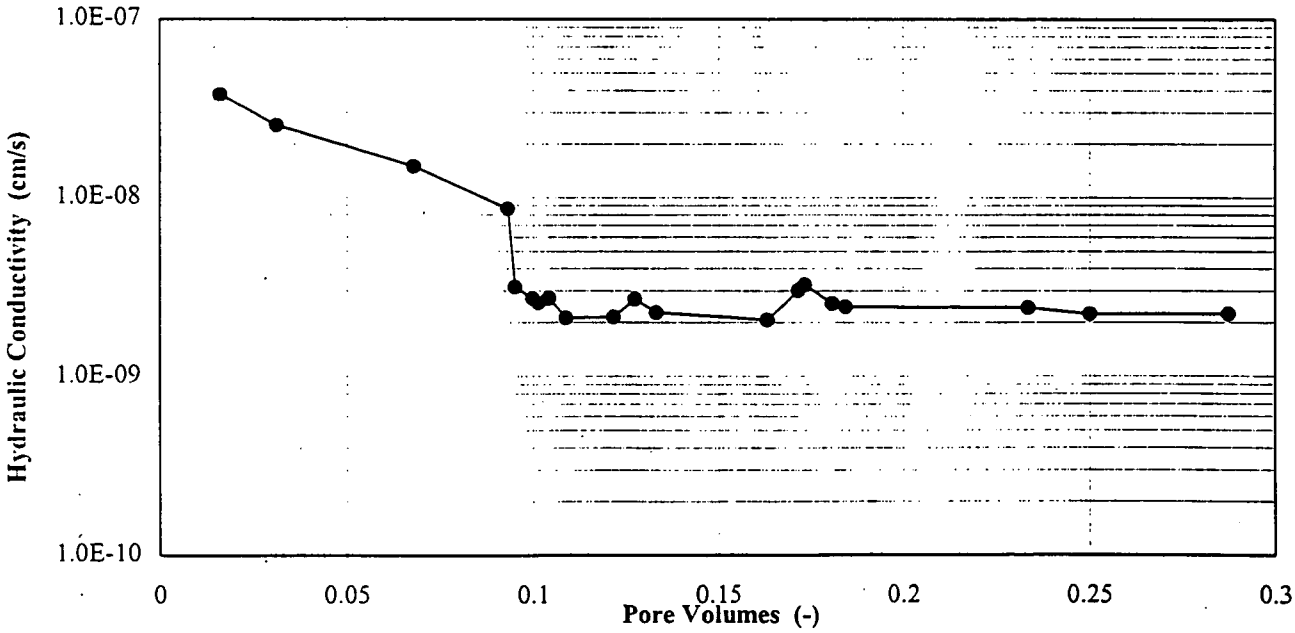
Note(s): Lot No.: 199830030 / Roll No.: 7671
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-33
Project Name: OSDF -Phase II
Project No.: GQ0409 2062

ASTM D 5887 | **HYDRAULIC CONDUCTIVITY TESTING** | **Figure**





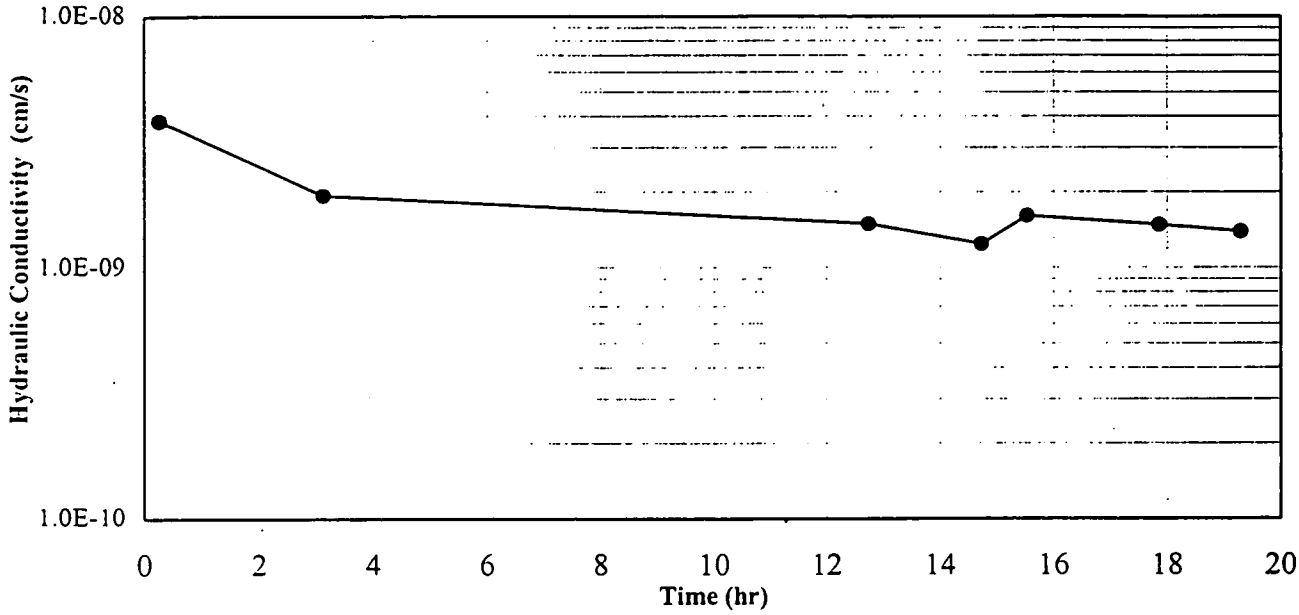
Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-33	98G240	47.6	18.4	5	2.3E-9

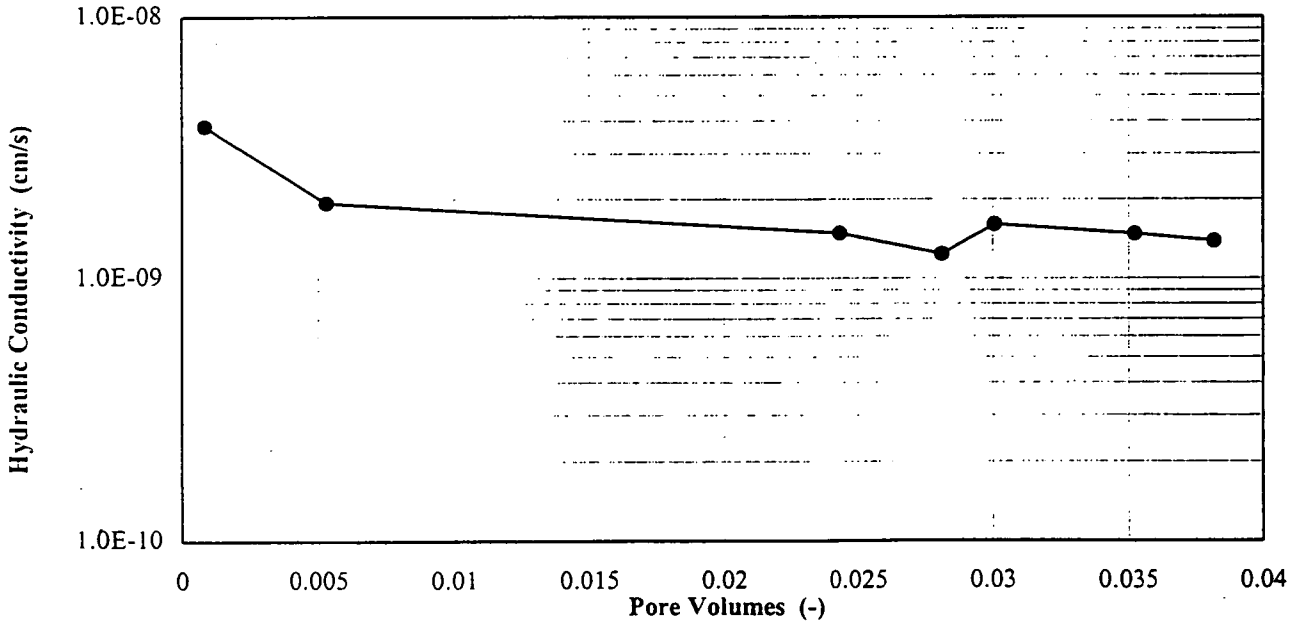
Note(s): Lot No.: 199830030 / Roll No.: 7707
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-34
Project Name: OSDF-Phase II
Project No.: GQ0409

ASTM D 5887 | HYDRAULIC CONDUCTIVITY TESTING | Figure





Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-34	98G241	40.2	16.6	5	1.4E-9

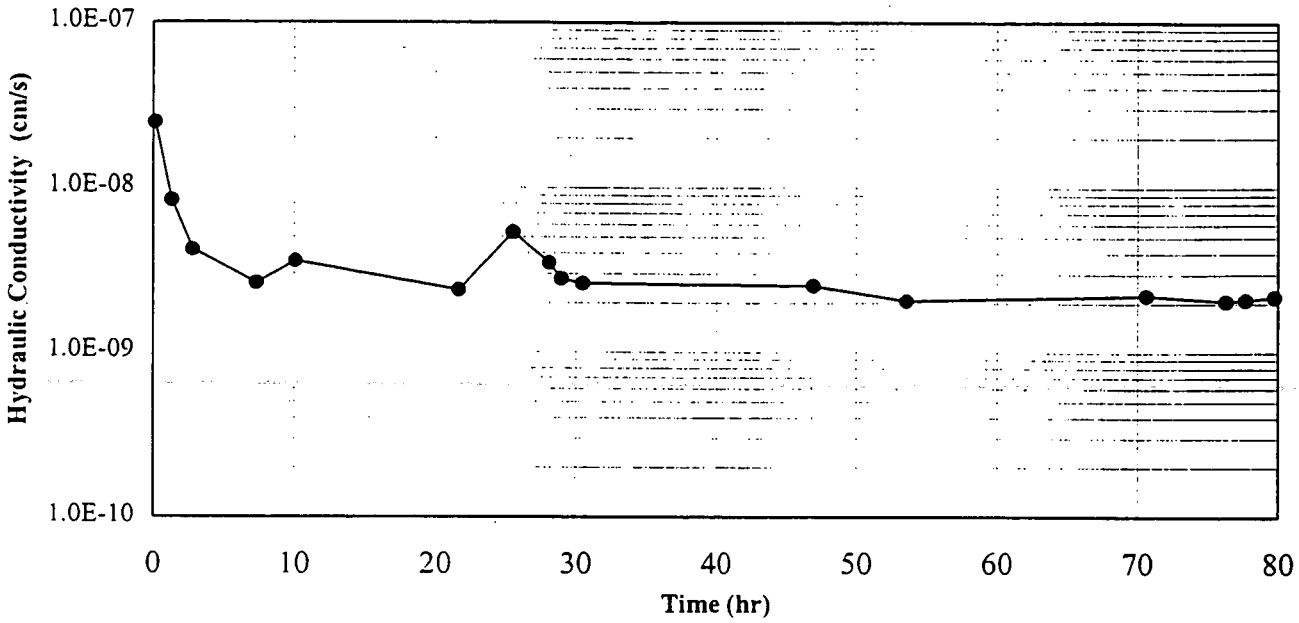
Note(s): Lot No.: 199830030 / Roll No.: 7746
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

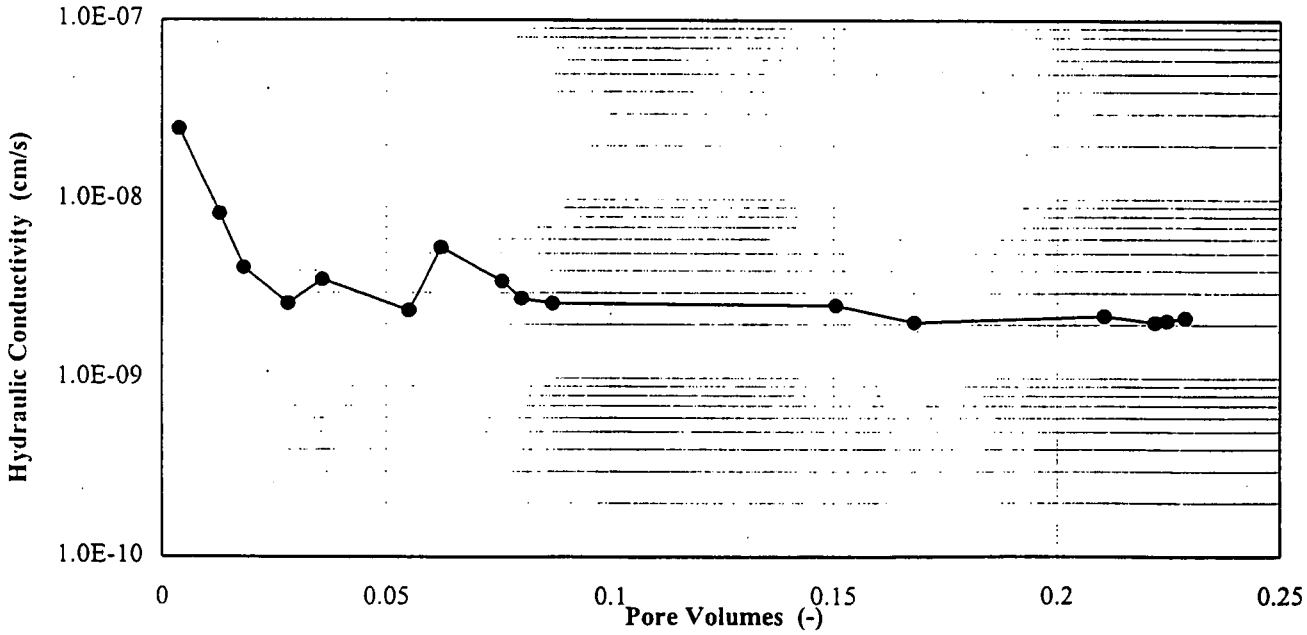
GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-35
Project Name: OSDF-Phase II
Project No.: GQ0409

2062

ASTM D 5887 | **HYDRAULIC CONDUCTIVITY TESTING** | Figure





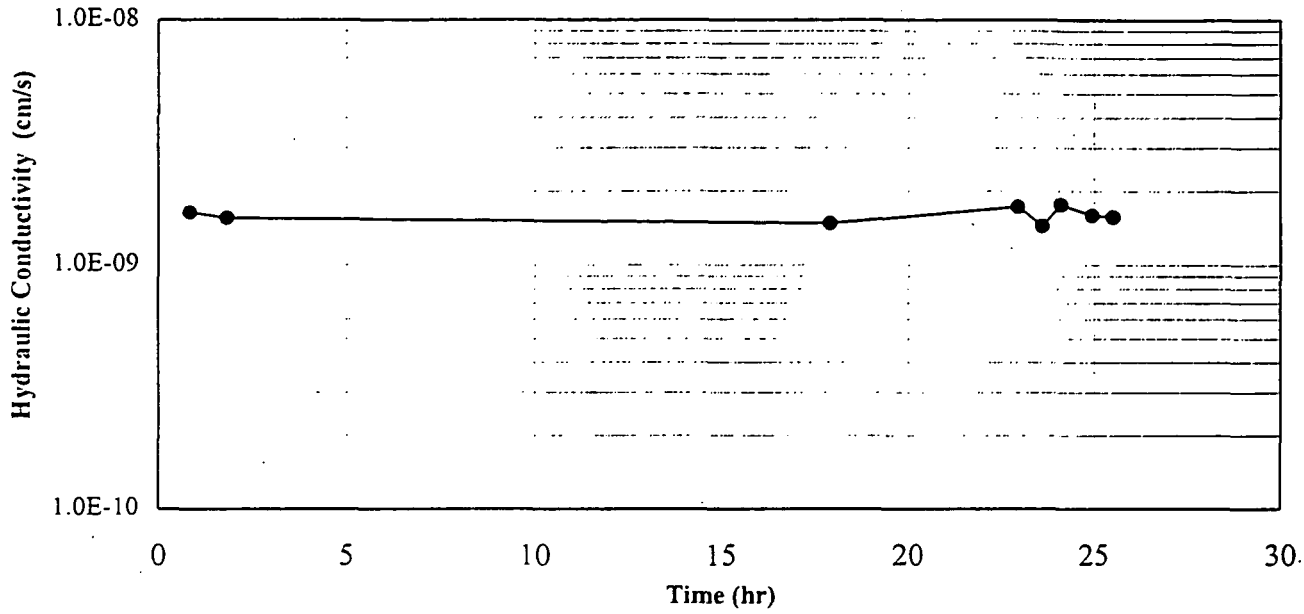
Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-35	98G242	46.6	16.1	5	2.2E-9

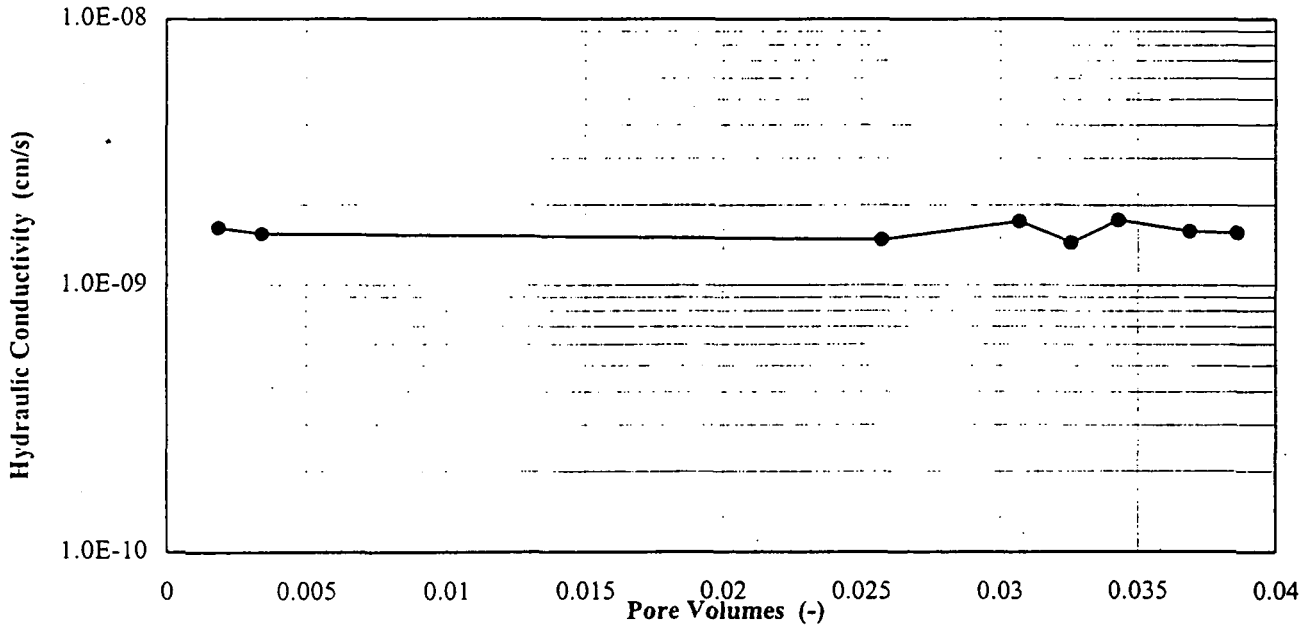
Note(s): Lot No.: 199830030 / Roll No.: 7860
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-36
Project Name: OSDF-Phase II
Project No.: GQ0409

ASTM D 5887 | **HYDRAULIC CONDUCTIVITY TESTING** | **Figure**





Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-36	98G243	51.4	13.6	5	1.6E-9

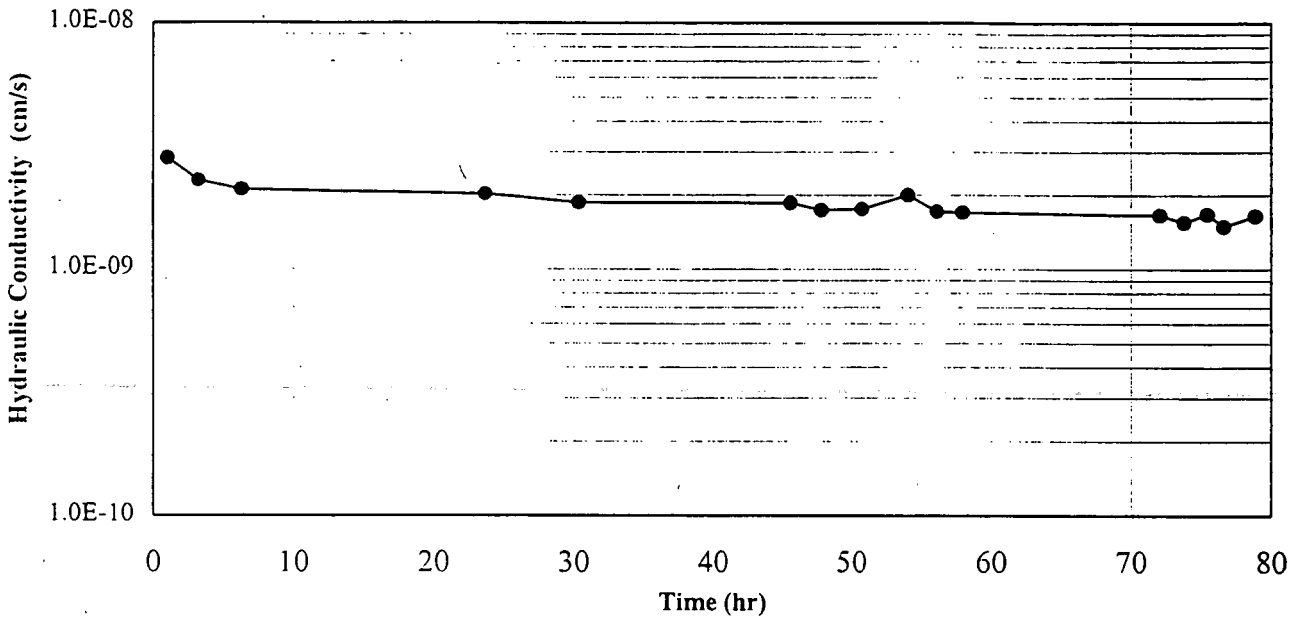
Note(s): Lot No.: 199830030 / Roll No.: 7893
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

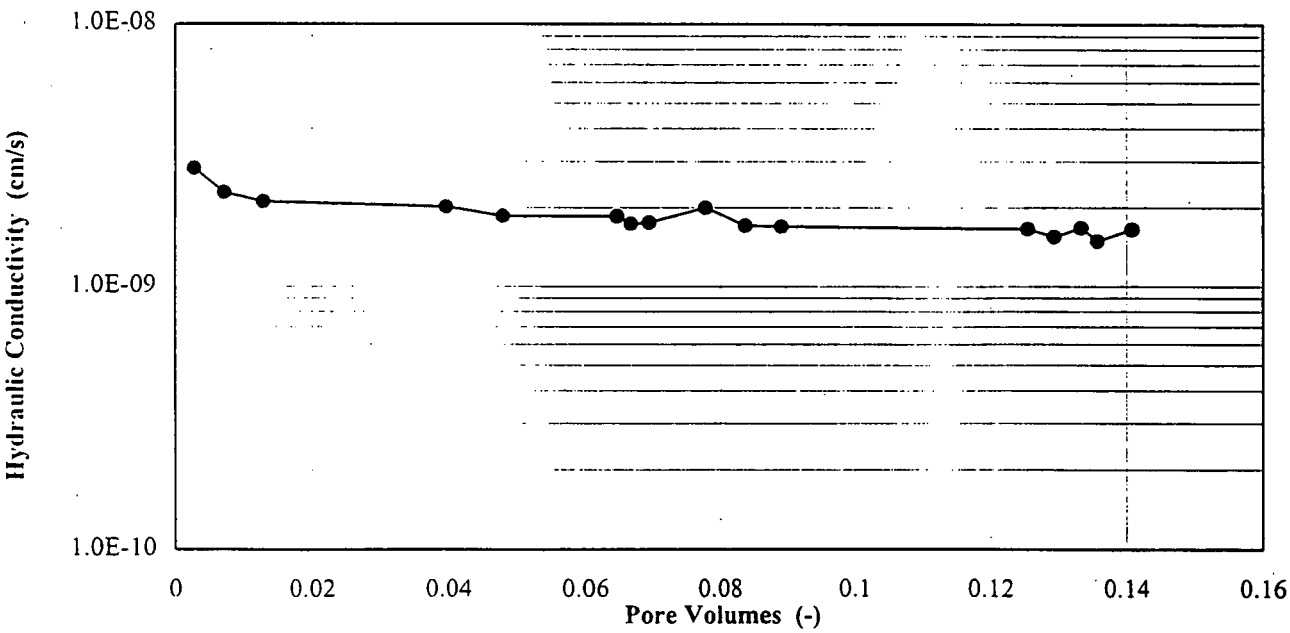
GEOSYNTEC CONSULTANTS
Geomechanics and Environmental Laboratory

Sample ID: GCL-37
Project Name: OSDF - Phase II
Project No.: GQ0409

2062

ASTM D 5084 | **HYDRAULIC CONDUCTIVITY TESTING** | Figure





Sample ID	Lab Sample No.	Specimen Initial Condition		Consolidation Pressure, σ_c (psi)	Hydraulic Conductivity, k (cm/s)
		Dry Unit Weight (pcf)	Moisture Content (%)		
GCL-37	98J49	44.6	20.0	5	1.6E-9

Note(s): Lot No.: 199839030 / Roll No.: 13539
As requested by Fluor Daniel Fernald on RCI/DCN Form No.: 20102-008 dated 22 April 1998, the Geomechanics and Environmental Laboratory has taken thickness measurements within 30 minutes of dismounting the test specimen in order to determine the hydraulic conductivity.

- **Direct Shear Test Results**

GCL 30

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 30G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-30) with woven geotextile against geomembrane. GCL's initial moisture content was 22.5%. GCL's final moisture content ranged from 64 to 84% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-20); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 5 Aug 98 GRS

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 30I

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-30). GCL's initial moisture content was 22.6%. GCL's final moisture content ranged from 56% to 100% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

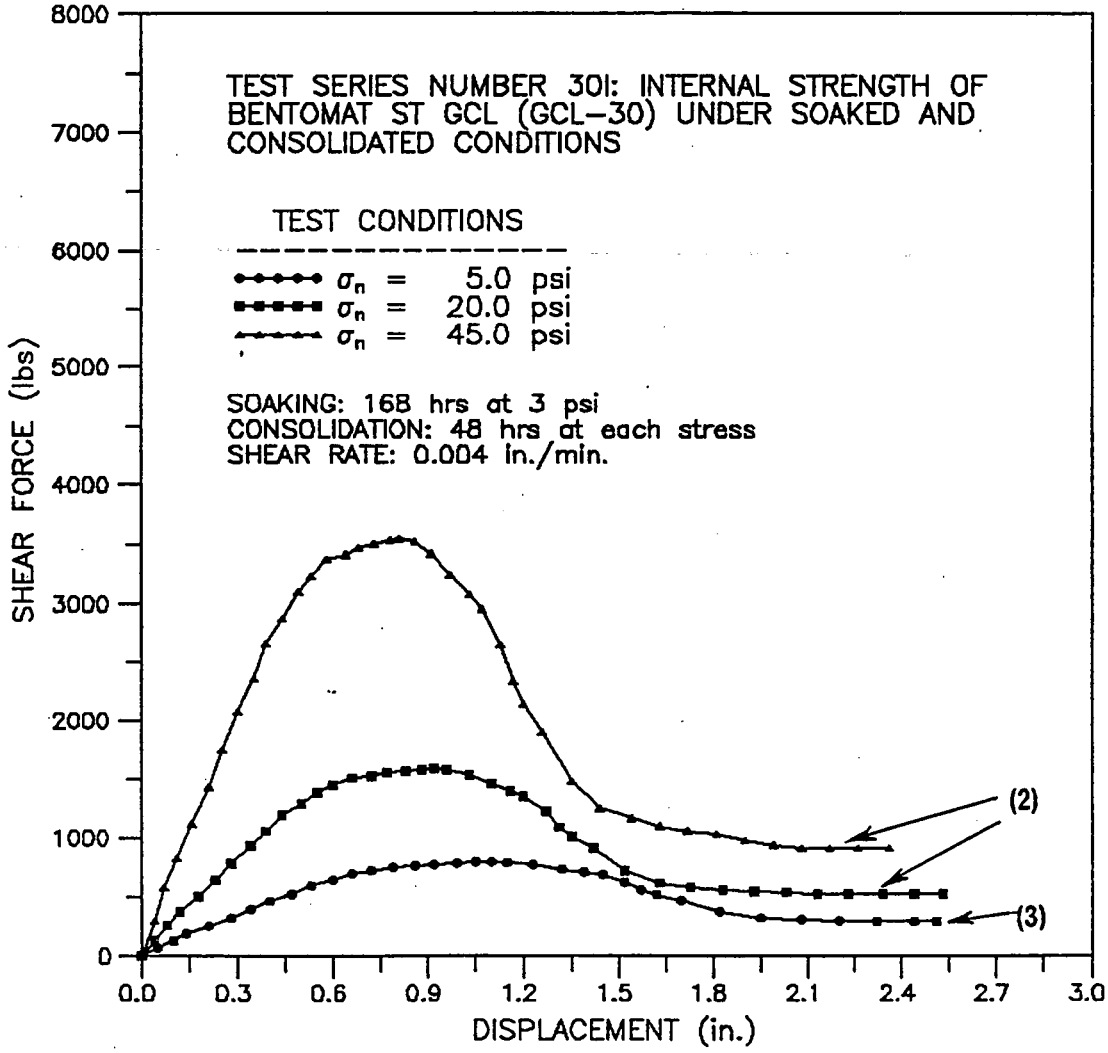
Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 5 Aug 98 GRS

2062

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

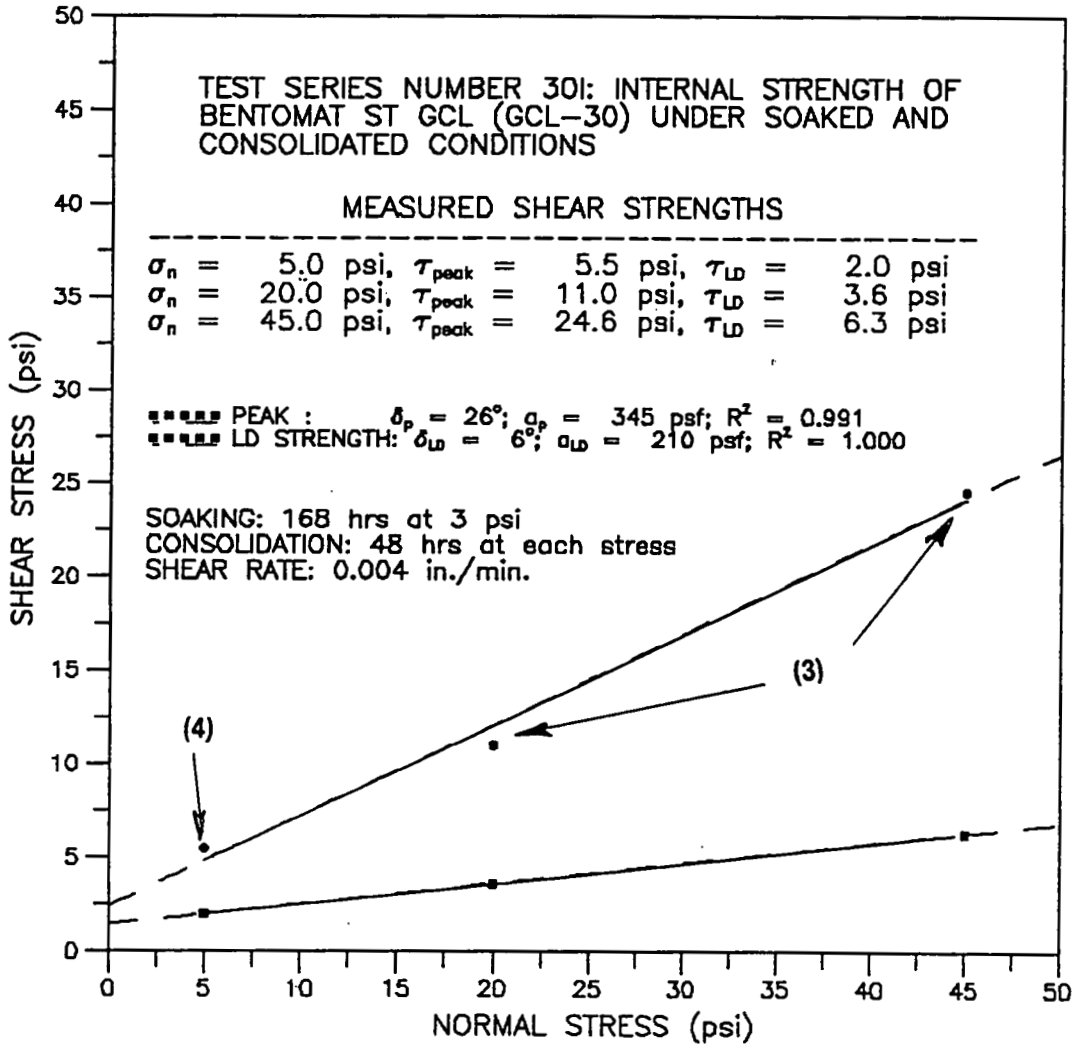
Reviewed 5 Aug 98 GRS

DATE TESTED: 22 TO 31 JULY 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	G00409-04
DOCUMENT NO.	F9850001
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

Reviewed 5 Aug 98 GRS

DATE TESTED: 22 TO 31 JULY 1998

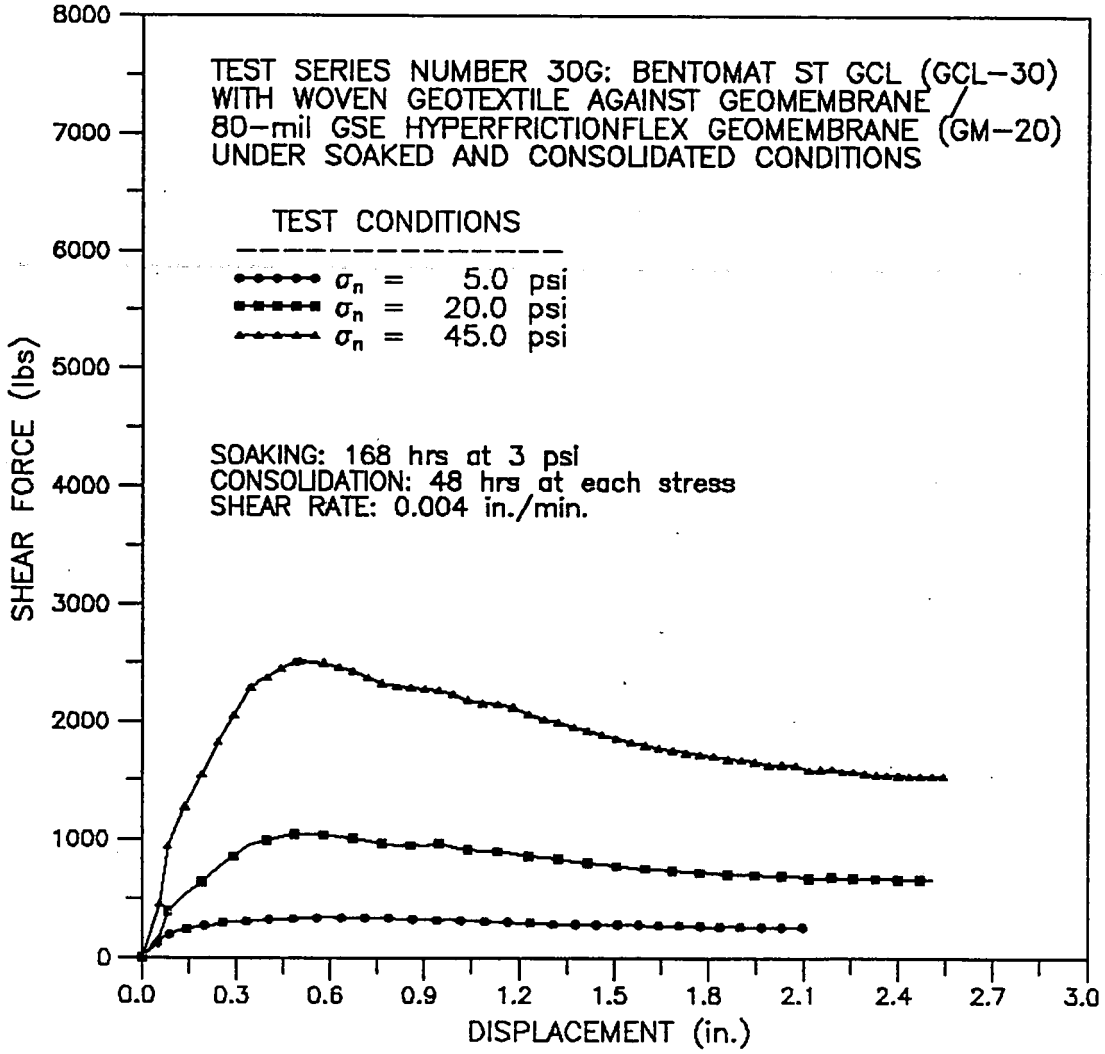
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850001
FILE NO.	

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 5 Aug 98 GRS

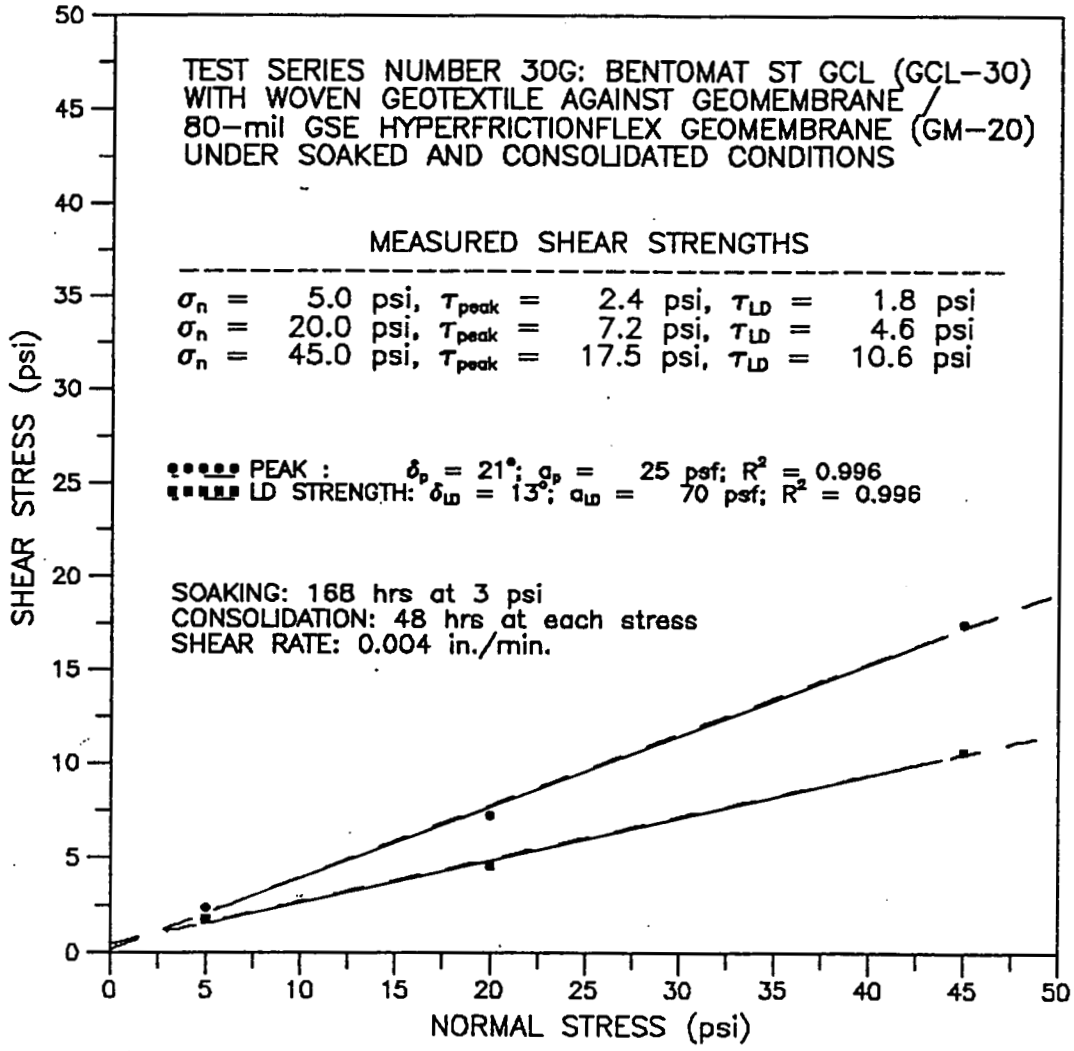
DATE TESTED: 25 JULY TO 3 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850001
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 5 Aug 98
GRS

DATE TESTED: 25 JULY TO 3 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850001
FILE NO.	

2062

GCL 31

000089

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 311

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-31). GCL's initial moisture content was 22.4%. GCL's final moisture content ranged from 62% to 95% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

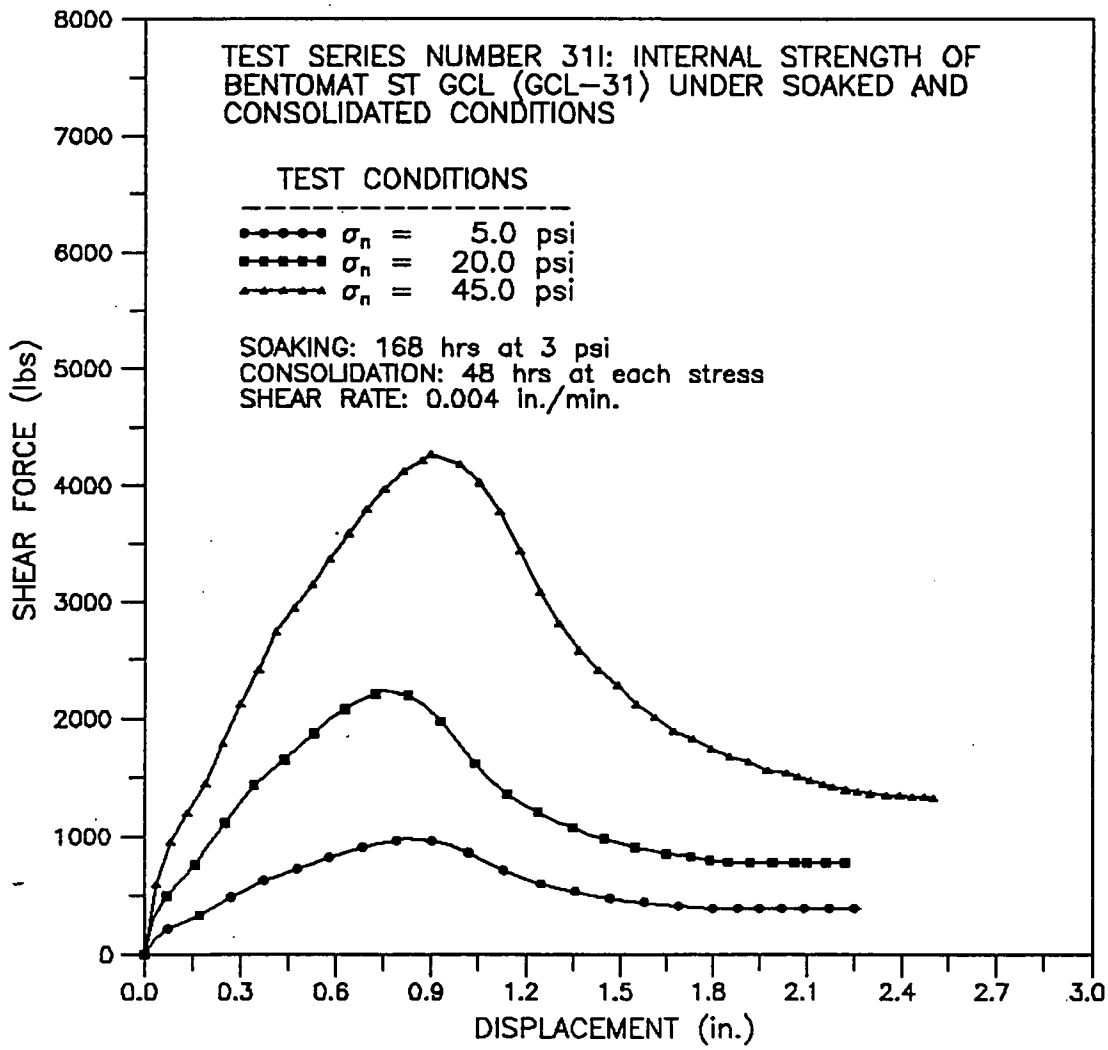
Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 10 Aug 98
DKP

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

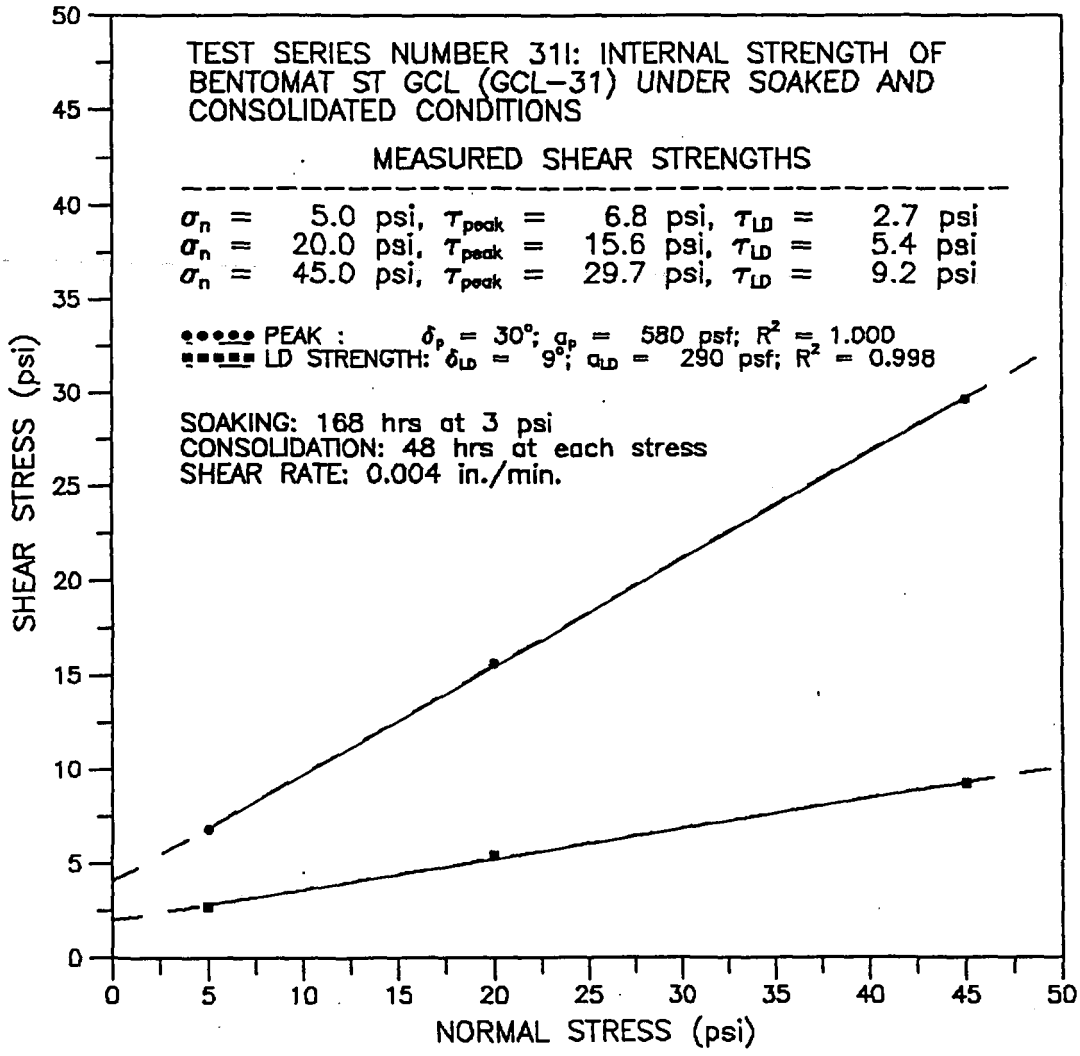
Reviewed 10 Aug 98 DKP

DATE TESTED: 27 JULY TO 5 AUGUST 19

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850002
FILE NO.	

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

Reviewed 10 Aug 98 DKP

DATE TESTED: 27 JULY TO 5 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850002
FILE NO.	

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 31G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-31) with woven geotextile against geomembrane. GCL's initial moisture content was 22.9%. GCL's final moisture content ranged from 67 to 77% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-20); and
- lower shear box: bedding layer of compacted concrete sand.

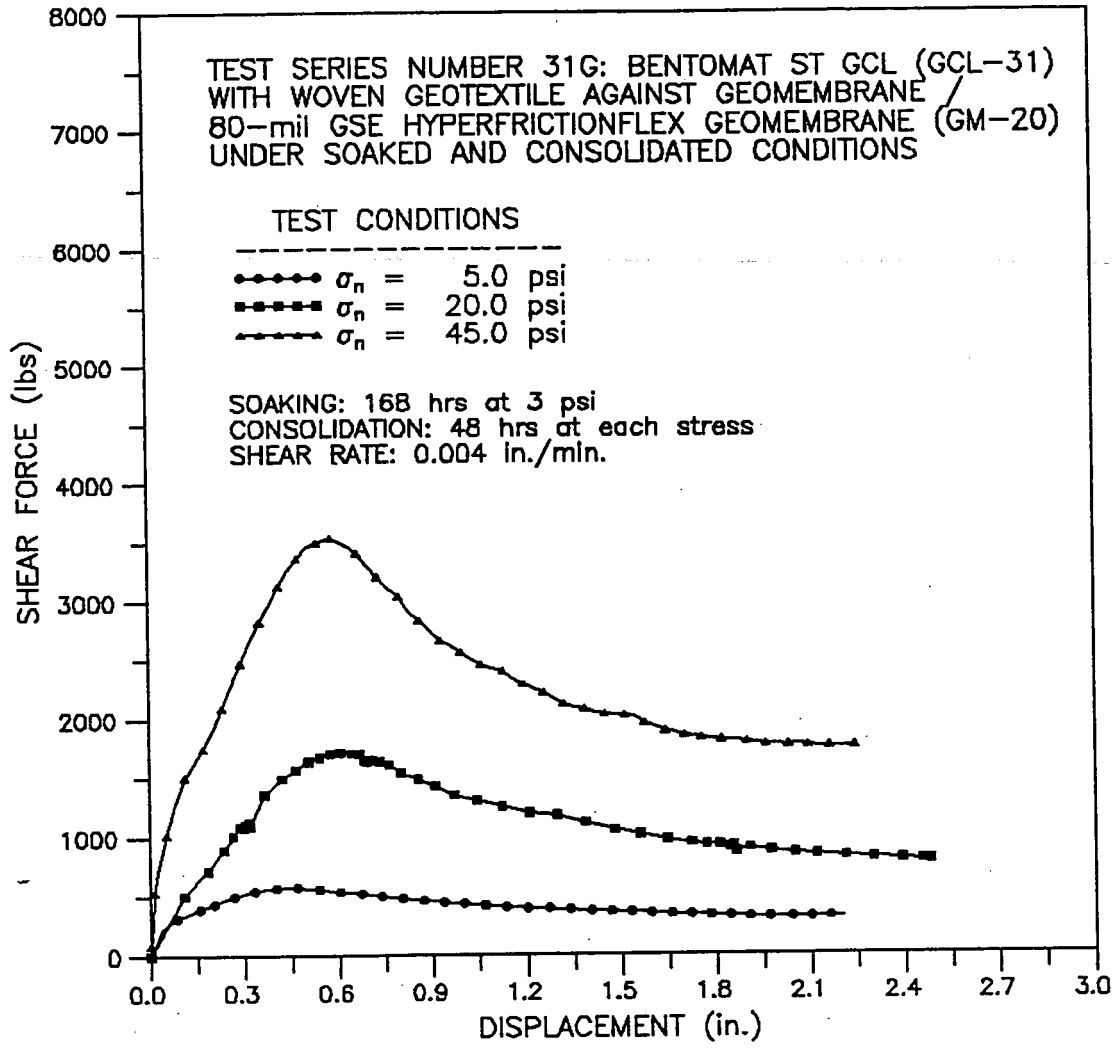
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 10 Aug 98
DVP

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 10 Aug 98 DLG

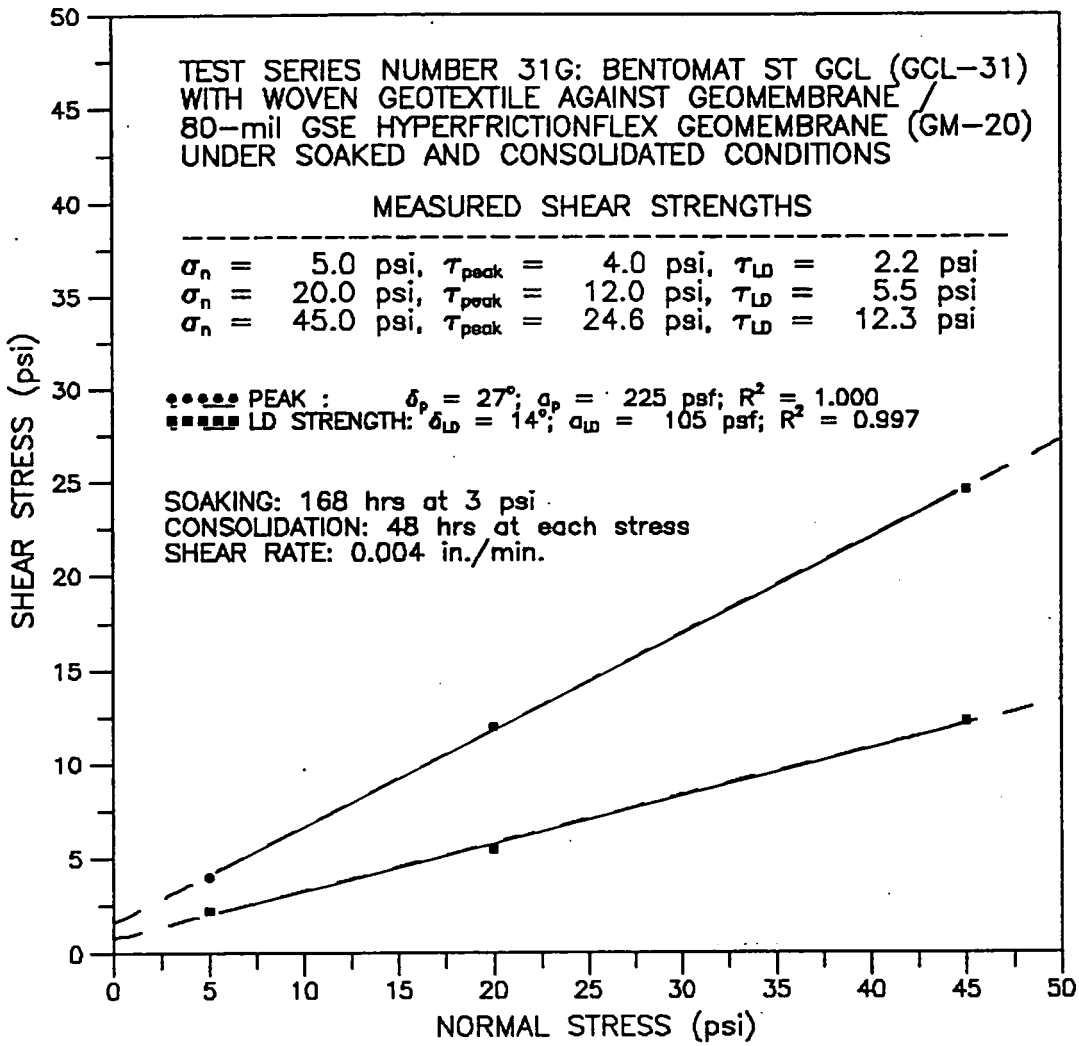
DATE TESTED: 27 JULY TO 7 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	G00409-04
DOCUMENT NO.	F9850002
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 10 Aug 98 DKF

DATE TESTED: 27 JULY TO 7 AUGUST 199

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850002
FILE NO.	

GCL 32

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TEST PROCEDURES AND CONDITIONS 2062
TEST SERIES NUMBER: 321

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-32). GCL's initial moisture content was 22.8%. GCL's final moisture content ranged from 59% to 86% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 12 AUG 98
DKP

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 32G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-32) with woven geotextile against geomembrane. GCL's initial moisture content was 22.7%. GCL's final moisture content ranged from 53 to 86% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-23); and
- lower shear box: bedding layer of compacted concrete sand.

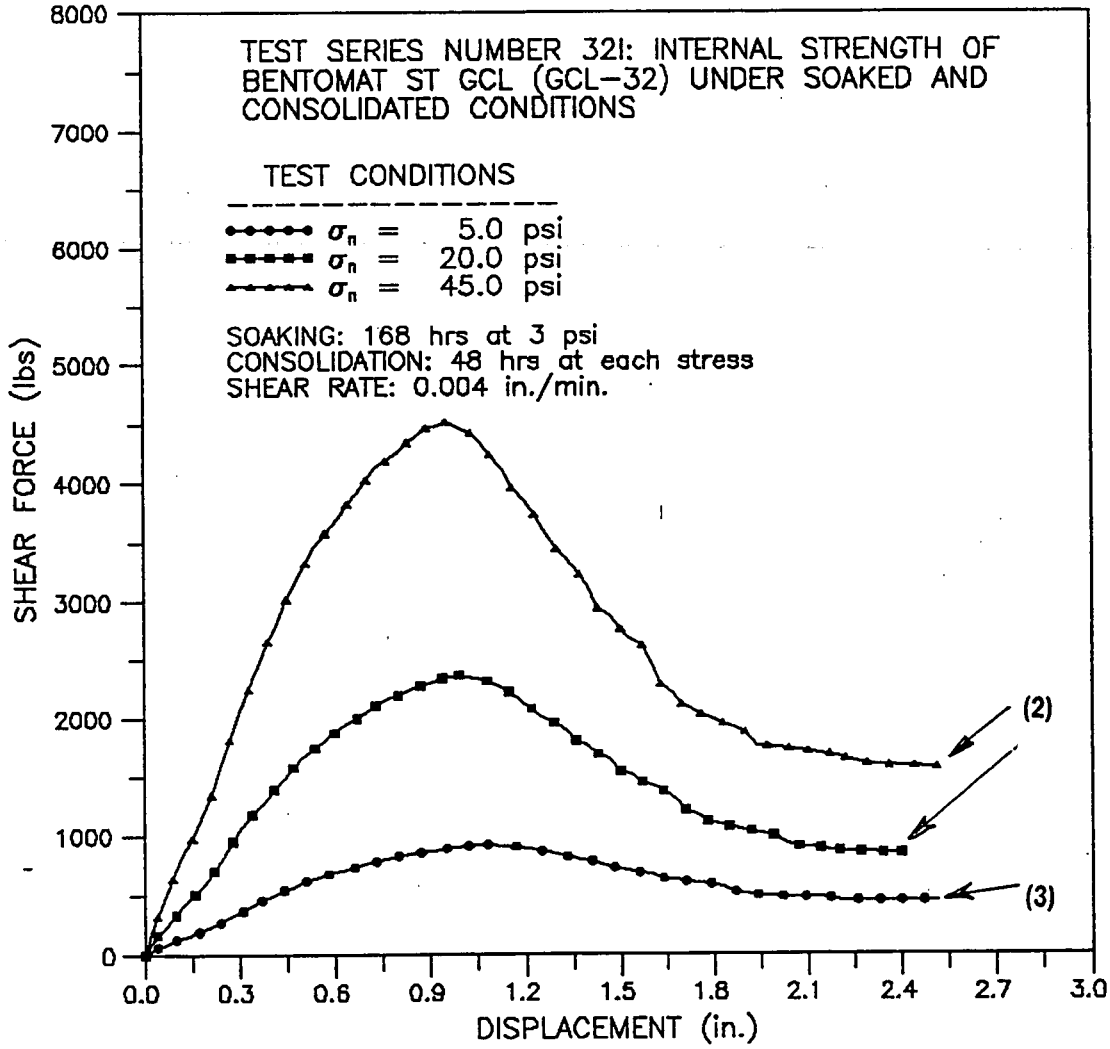
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 12 AUG 98 DKG

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

Reviewed 12 Aug 98 DKP

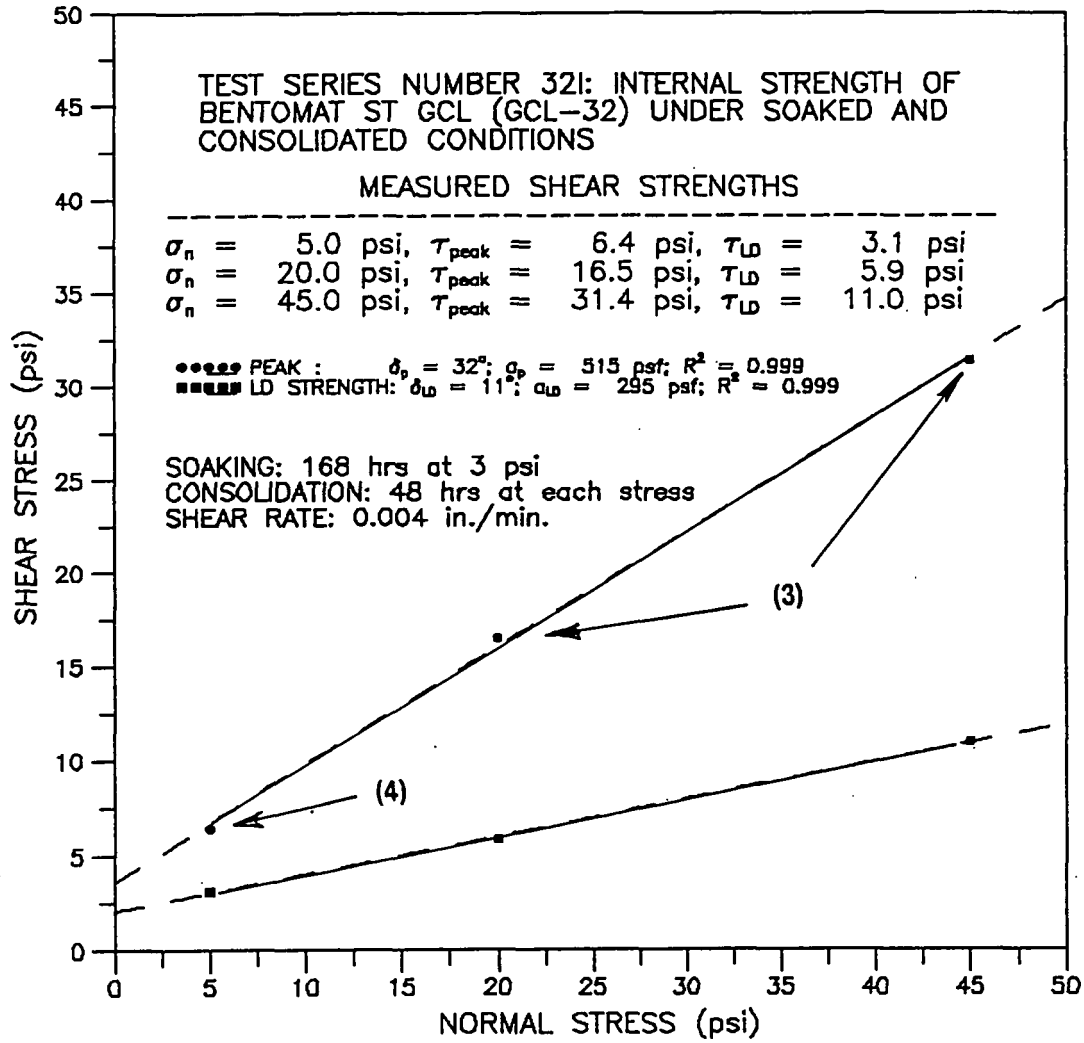
DATE TESTED: 29 JULY TO 7 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9850003
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

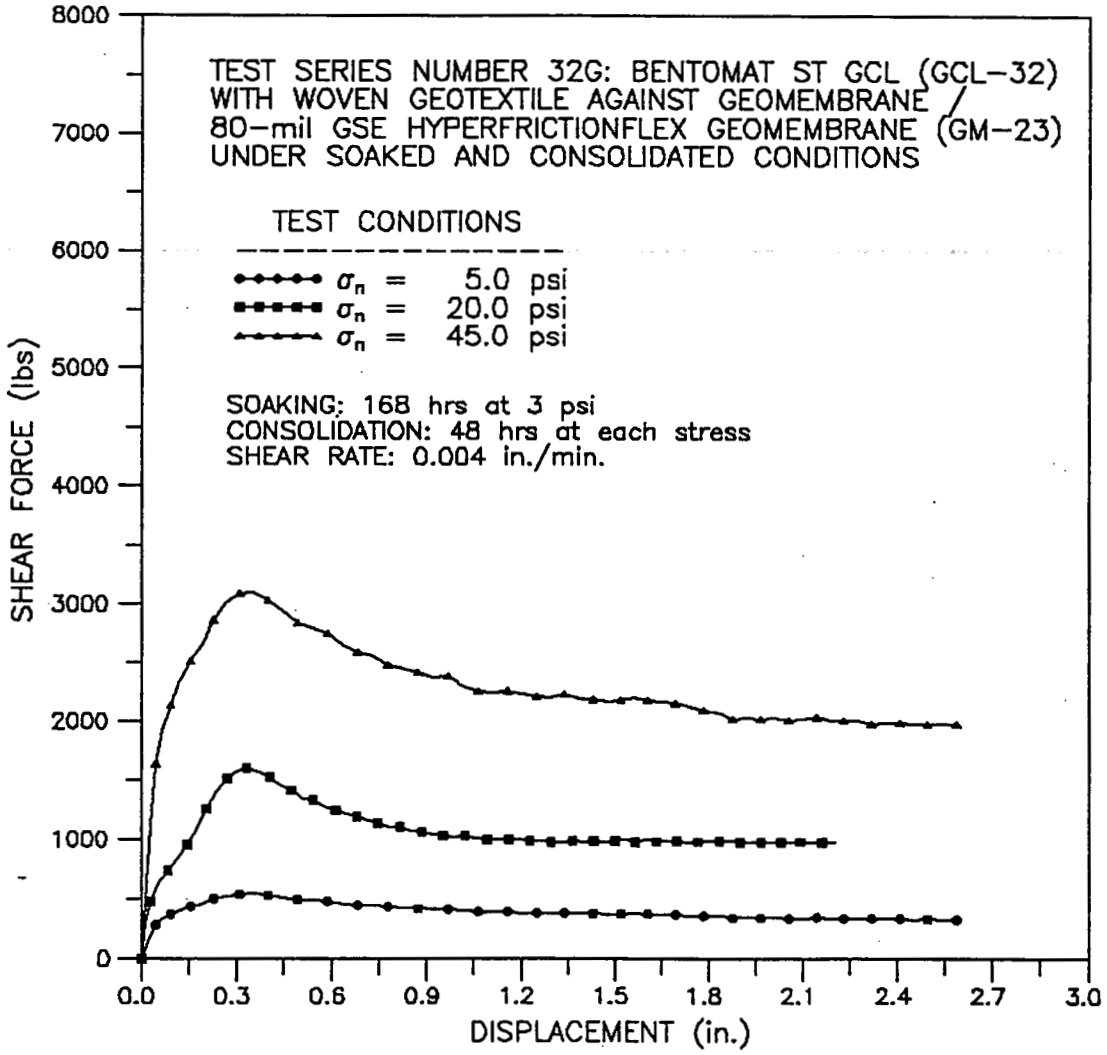
Reviewed 12 Aug 98 DKP

DATE TESTED: 29 JULY TO 7 AUGUST 19

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850003
FILE NO.	

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 12 Aug 98 DKP

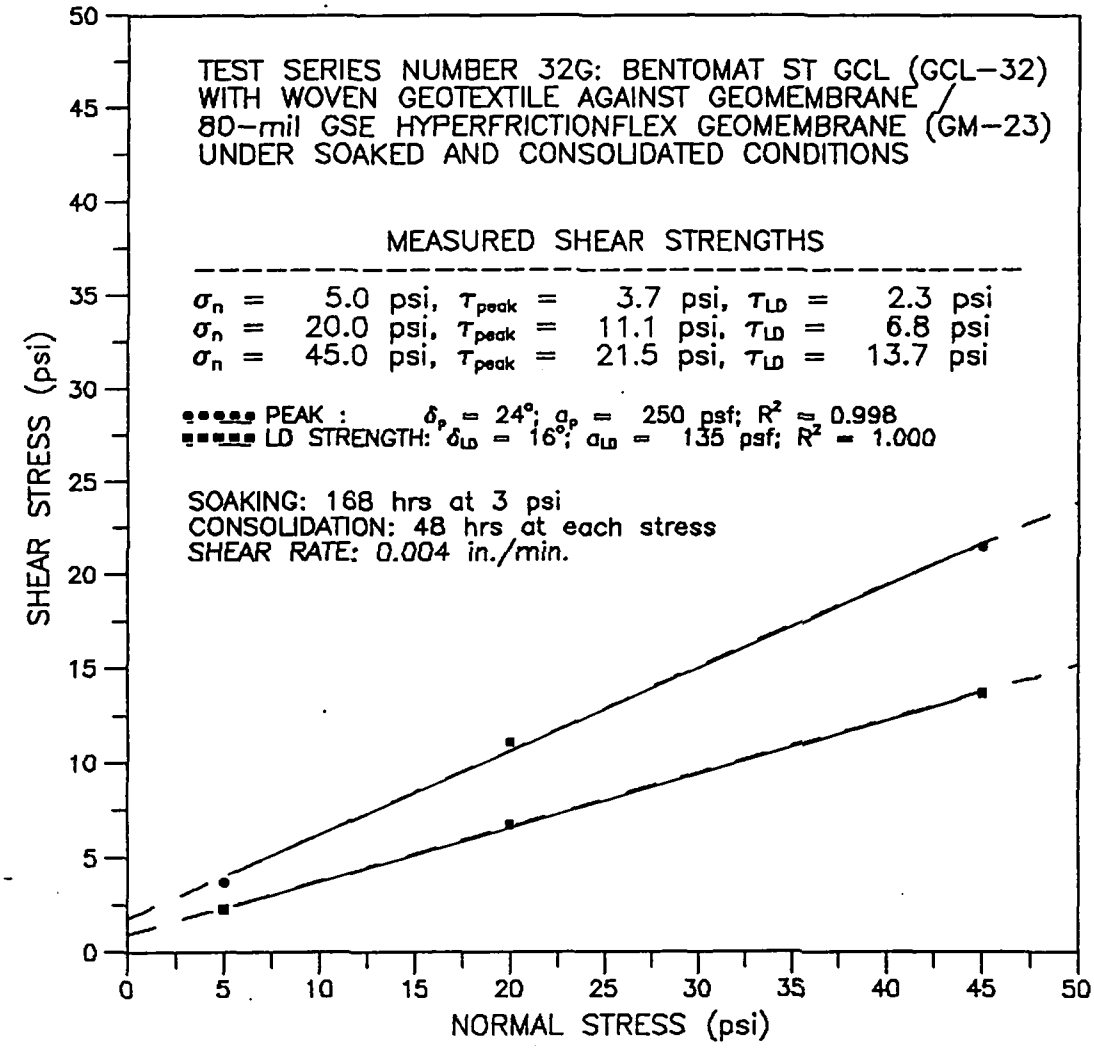
DATE TESTED: 29 JULY TO 10 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850003
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 12 Aug 98 DKP

DATE TESTED: 29 JULY TO 10 AUGUST 1

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9850003
FILE NO.	

2062

GCL 33

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 331

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-33). GCL's initial moisture content was 23.1%. GCL's final moisture content ranged from 59% to 89% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 17 Aug 98
DKP

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 33G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-33) with woven geotextile against geomembrane. GCL's initial moisture content was 23.2%. GCL's final moisture content ranged from 65 to 82% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-23); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

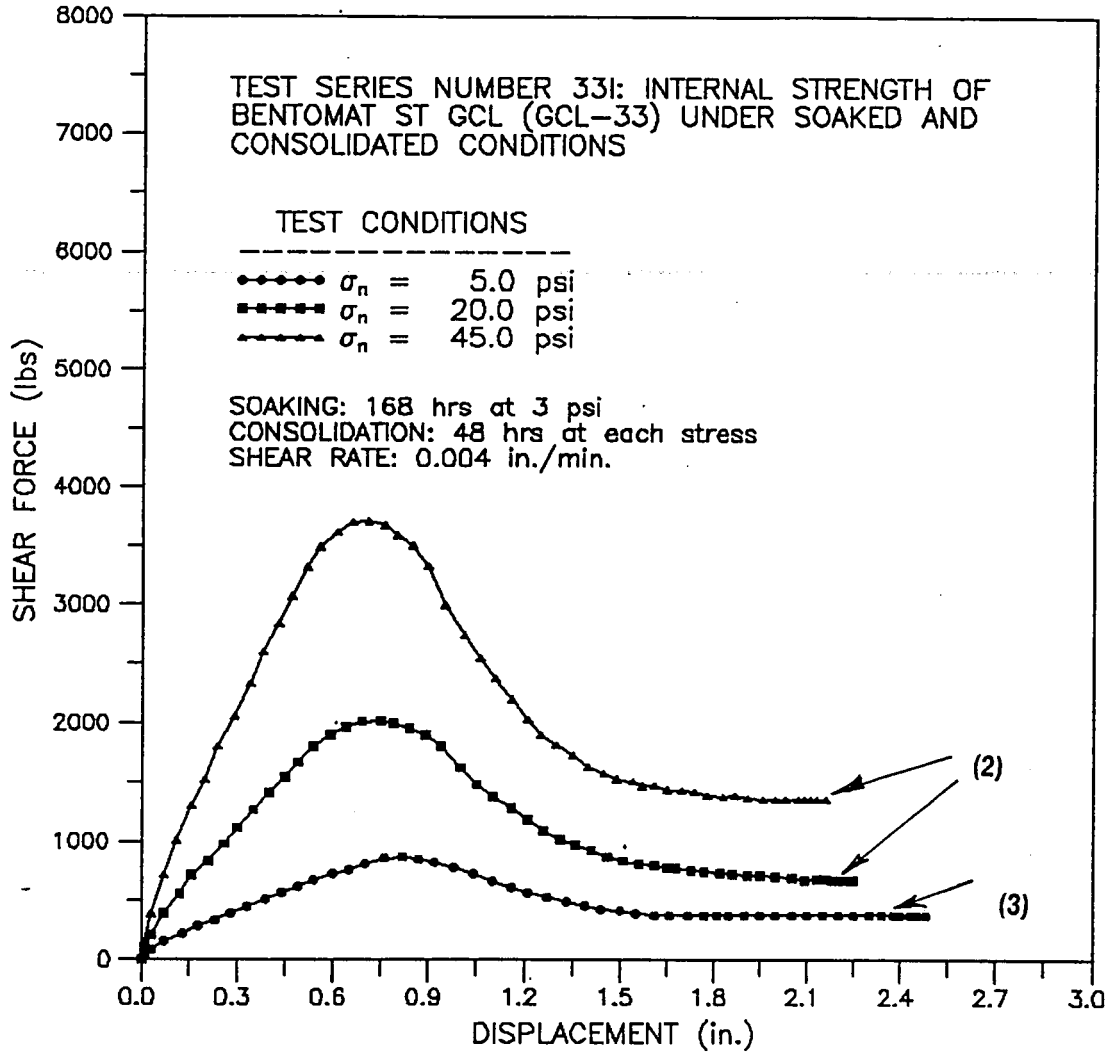
Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 17 Aug 98
DKP

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

Reviewed 17 Aug 98 DKP

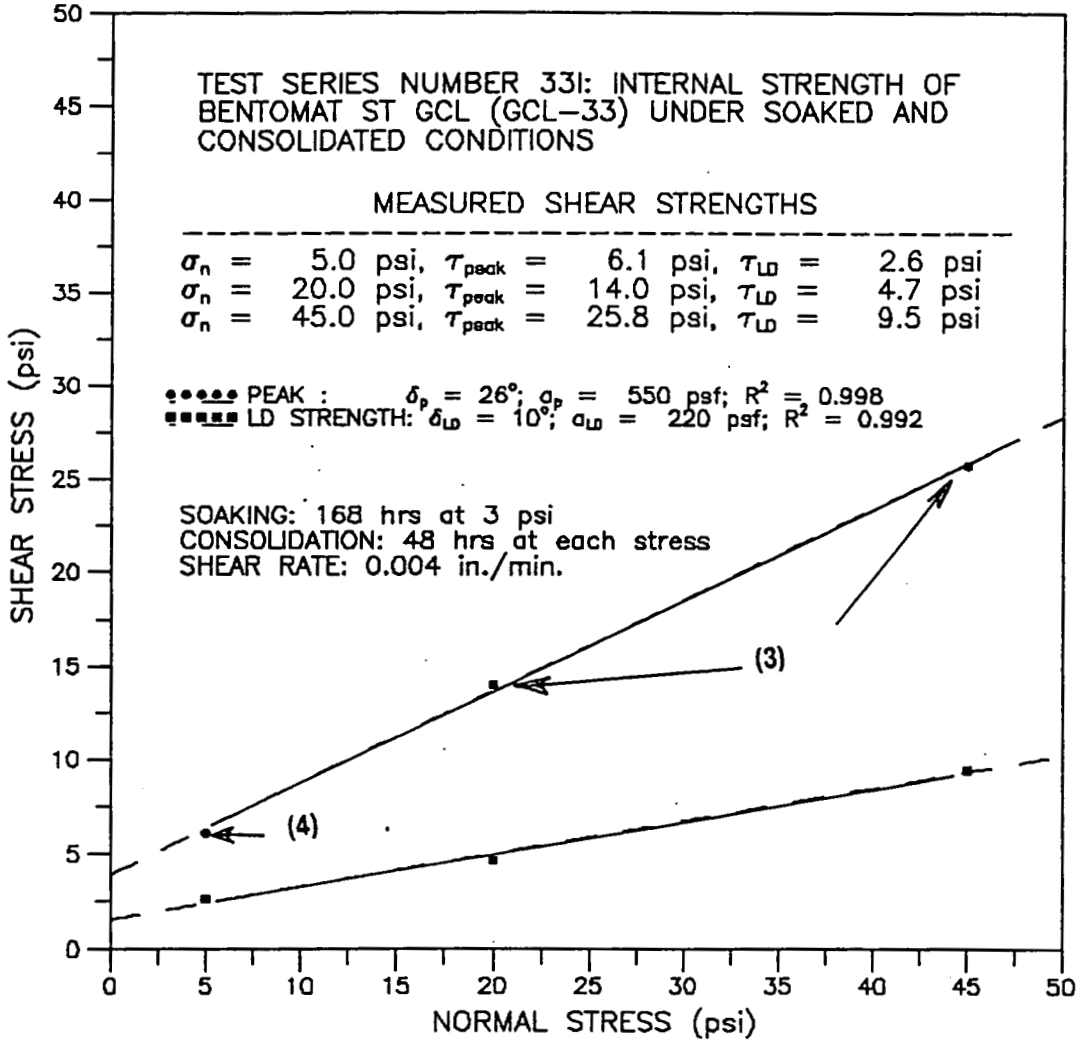
DATE TESTED: 1 TO 10 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850004
FILE NO.	

000106

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

Reviewed 17 Aug 98 DKP

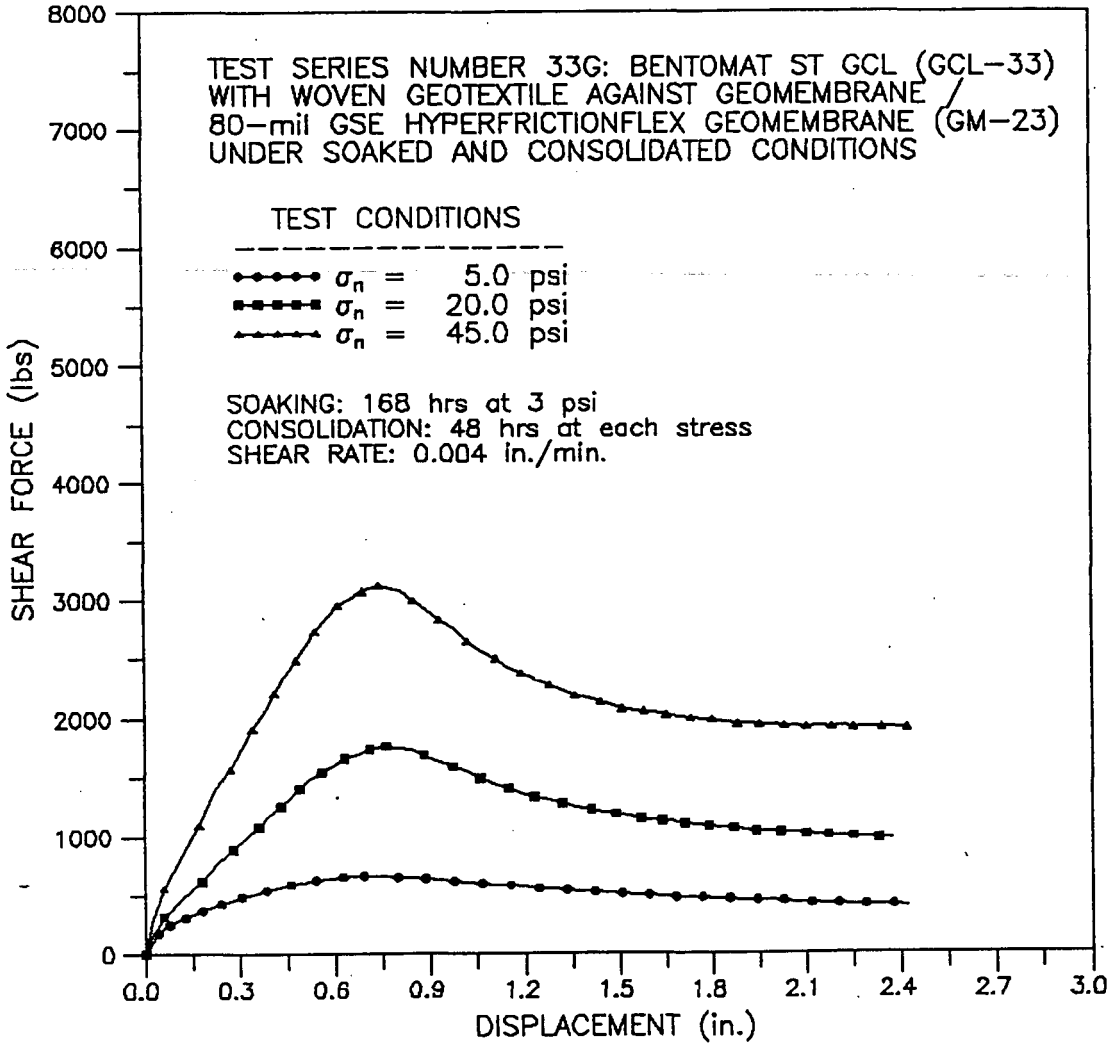
DATE TESTED: 1 TO 10 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850004
FILE NO.	

000107

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 17 Aug 98 DIG

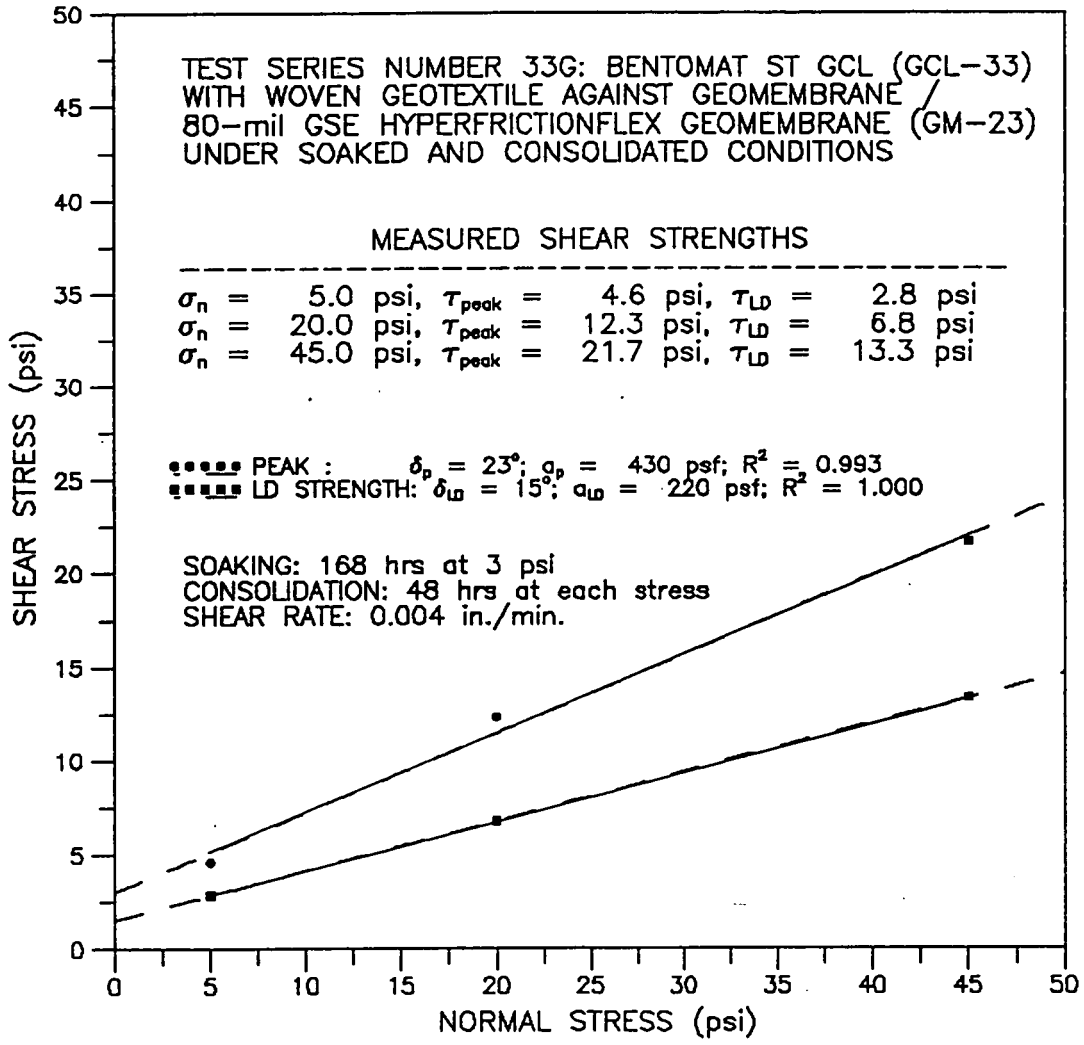
DATE TESTED: 3 TO 12 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850004
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 17 AUG 98
DKP

DATE TESTED: 3 TO 12 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850004
FILE NO.	

2062

GCL 34

000110

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 34I

2062

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-34). GCL's initial moisture content was 21.1%. GCL's final moisture content ranged from 56% to 96% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 18 Aug 98
DKG

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 34G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-34) with woven geotextile against geomembrane. GCL's initial moisture content was 21.5%. GCL's final moisture content ranged from 59 to 83% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-23); and
- lower shear box: bedding layer of compacted concrete sand.

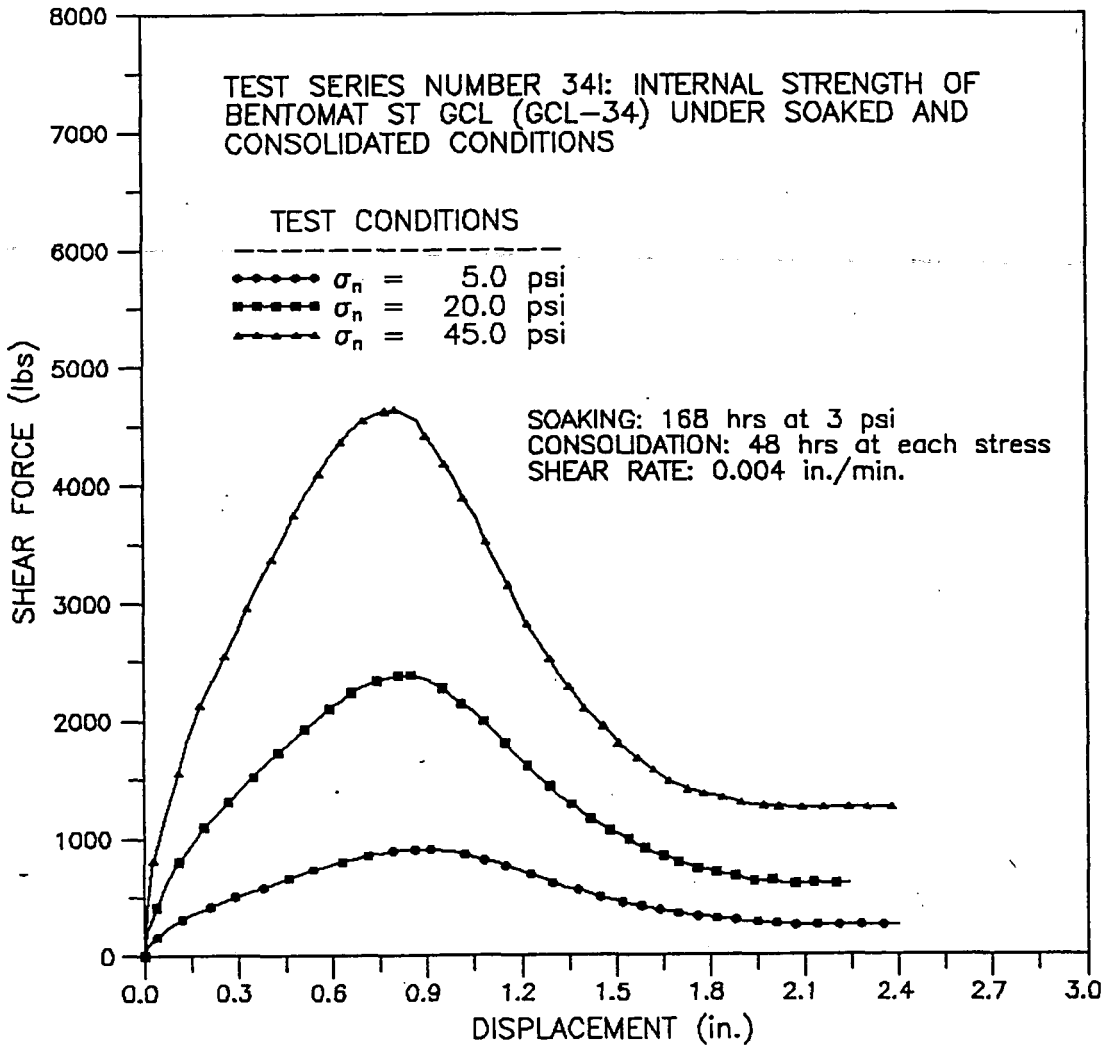
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 18 Aug 98 DKP

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

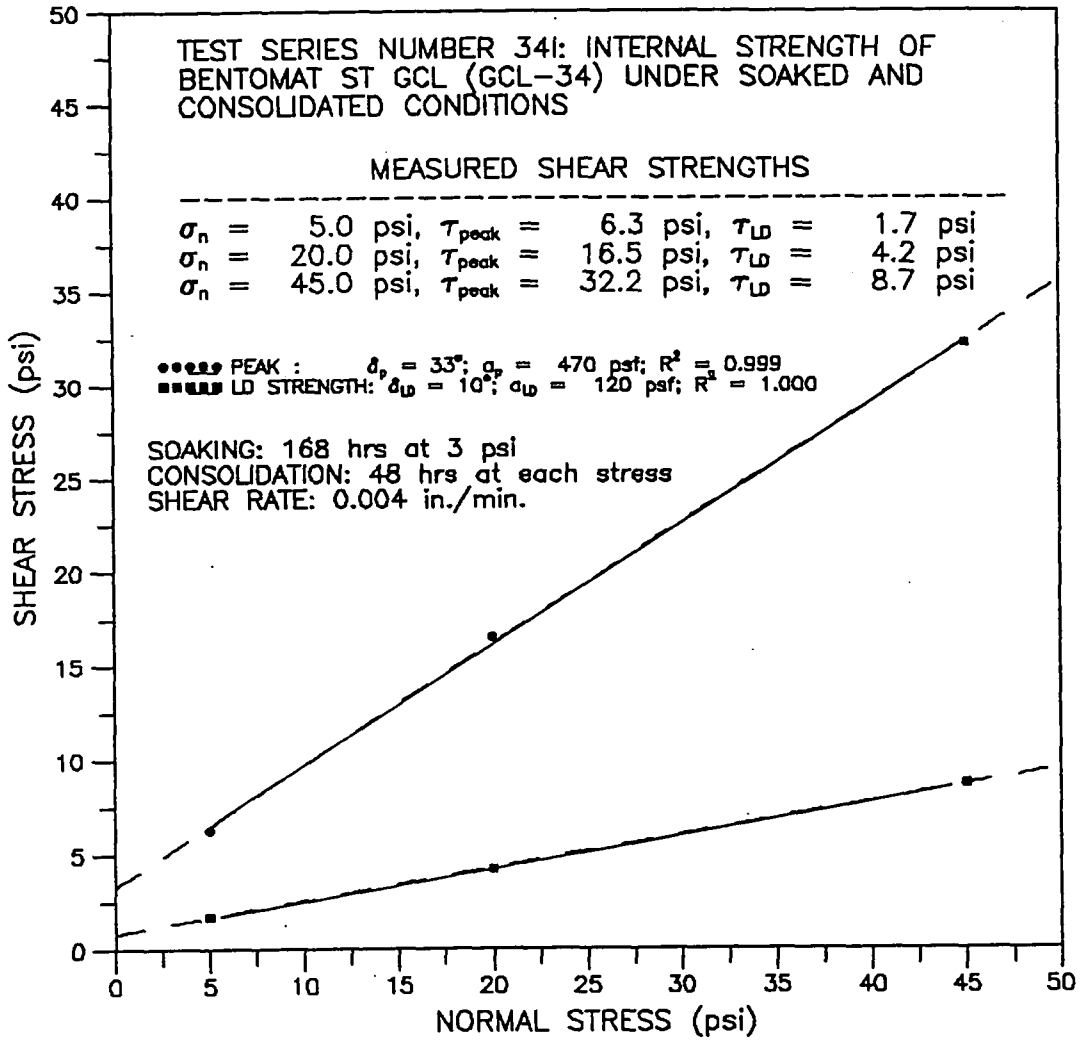
Reviewed 13 Aug 98 DKF

DATE TESTED: 3 TO 14 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850005
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

Reviewed 18 Aug 98 DK

DATE TESTED: 3 TO 14 AUGUST 1998

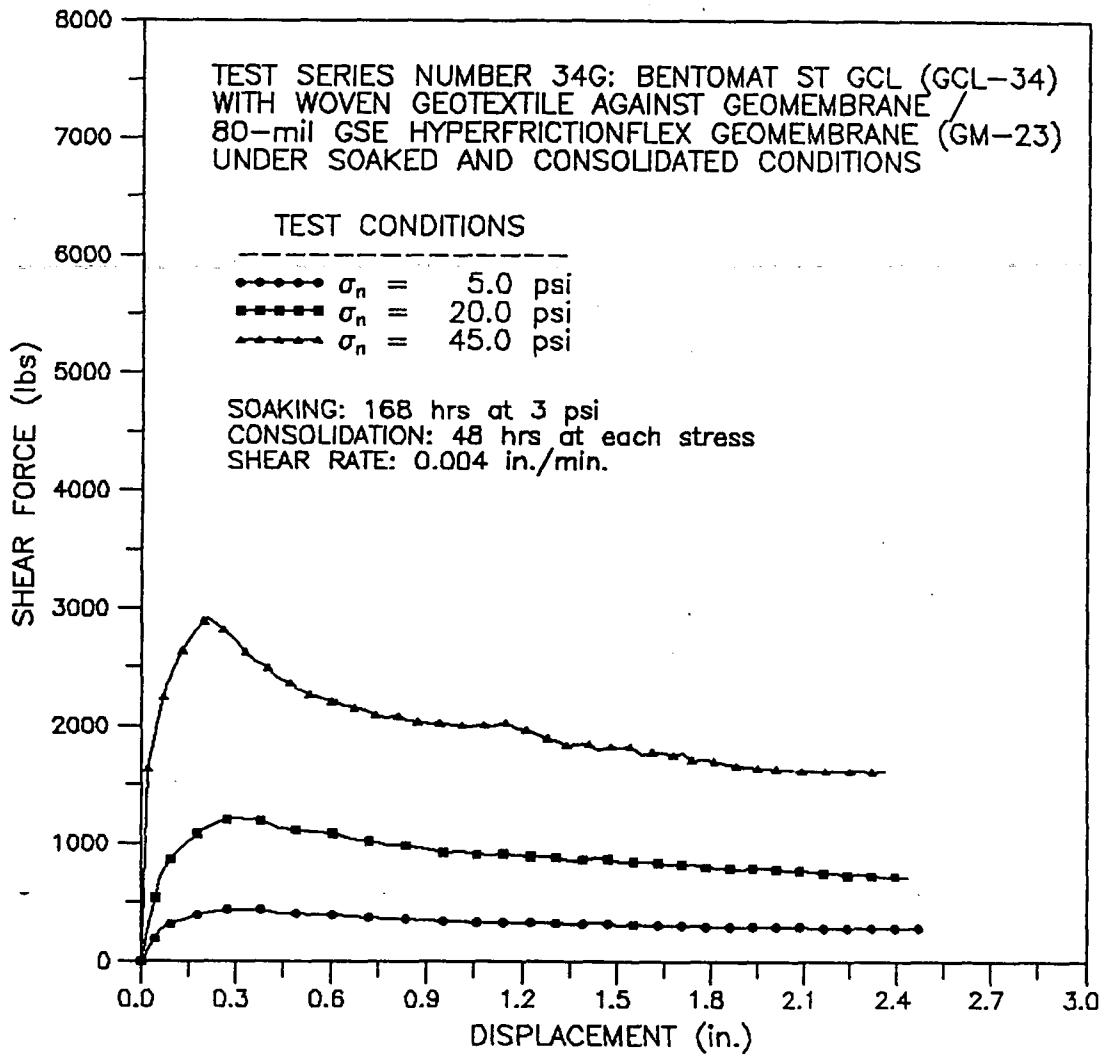
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850005
FILE NO.	

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 18 Aug 98 DKS

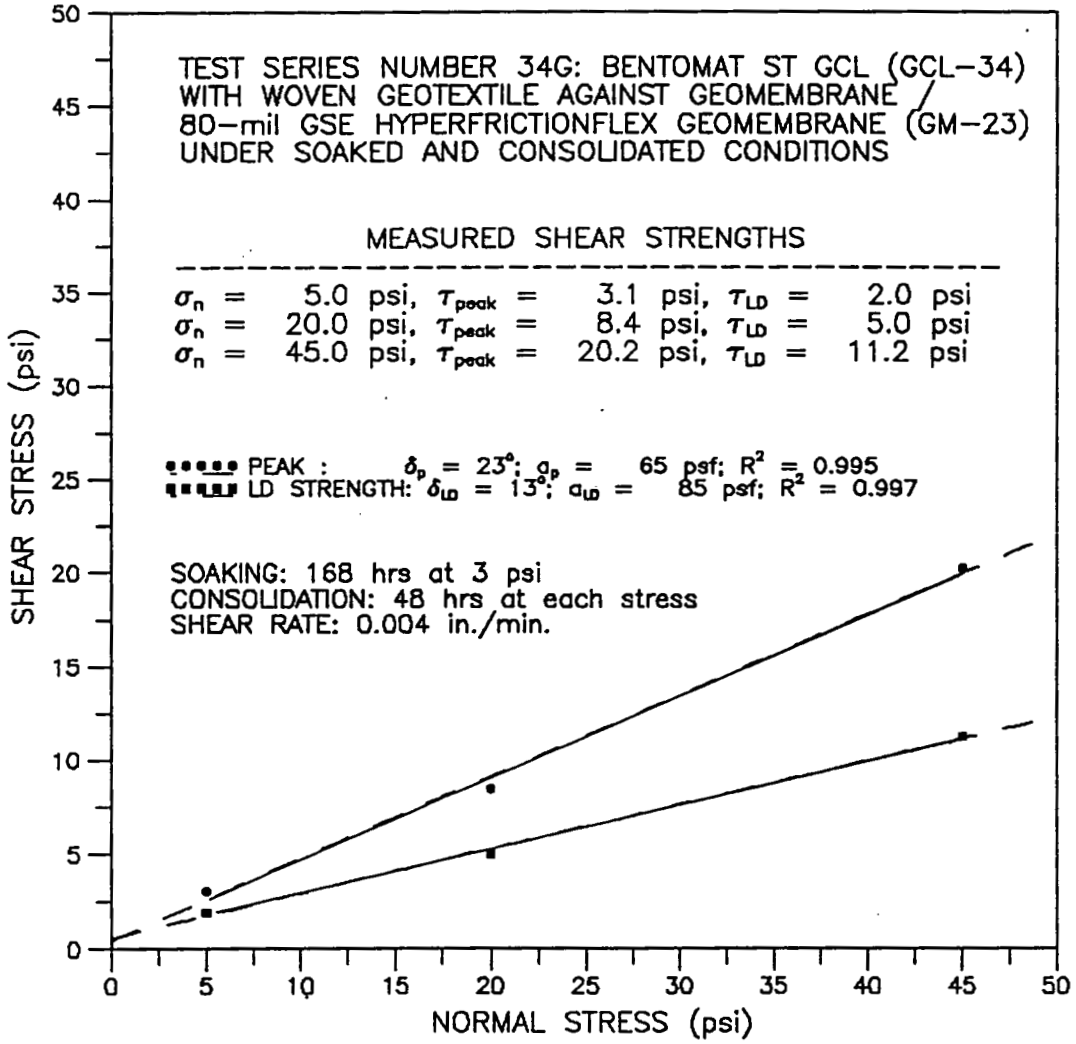
DATE TESTED: 5 TO 14 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850005
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 18 Aug 98 DKP

DATE TESTED: 5 TO 14 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850005
FILE NO.	

GCL 35

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 35I

2062

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-35). GCL's initial moisture content was 24.6%. GCL's final moisture content ranged from 54% to 91% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 19AUG98 DKP

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 35G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-35) with woven geotextile against geomembrane. GCL's initial moisture content was 23.7%. GCL's final moisture content ranged from 54 to 81% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-26); and
- lower shear box: bedding layer of compacted concrete sand.

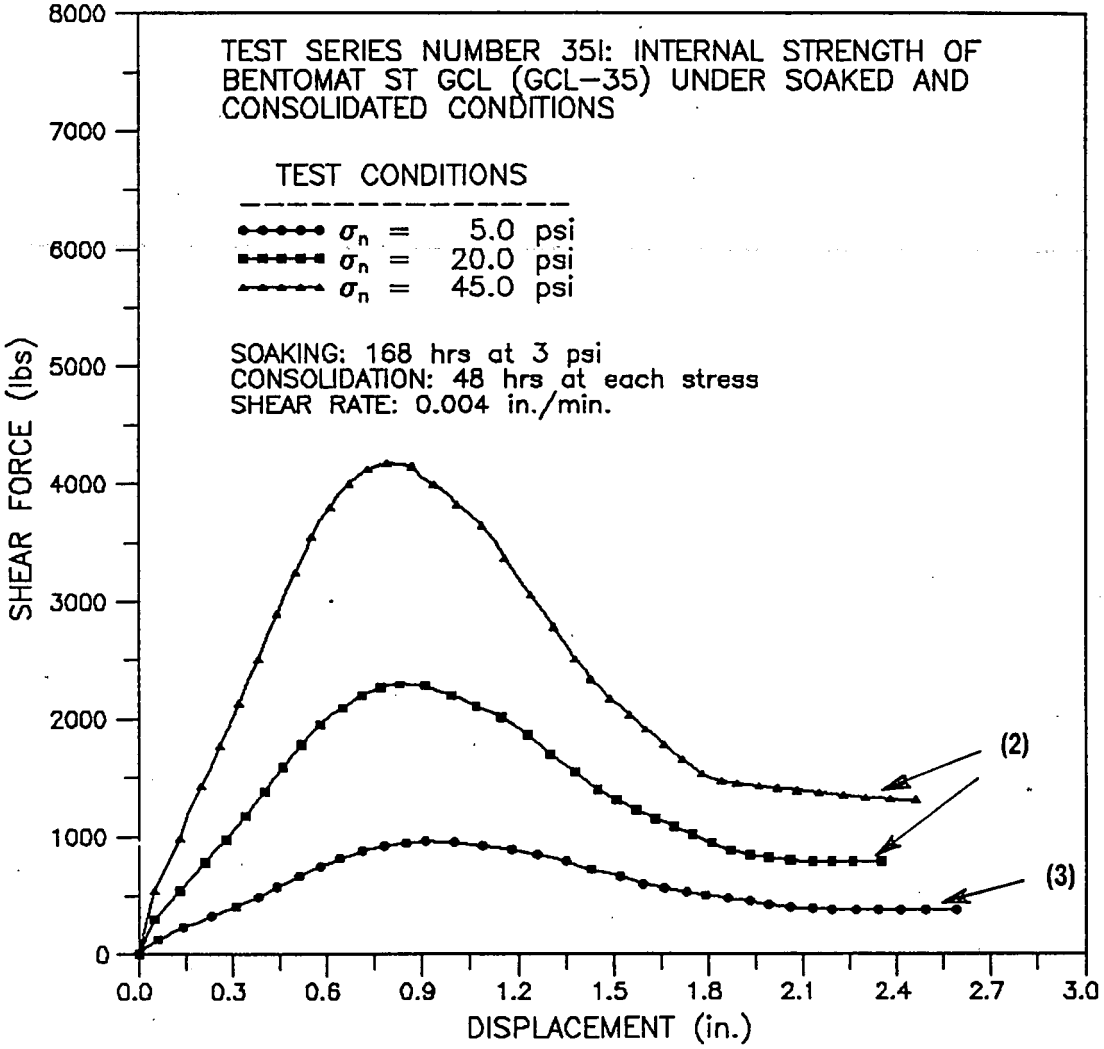
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

Reviewed 19 AUG 98 DKG

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

Reviewed 19 AUG 98 DKP

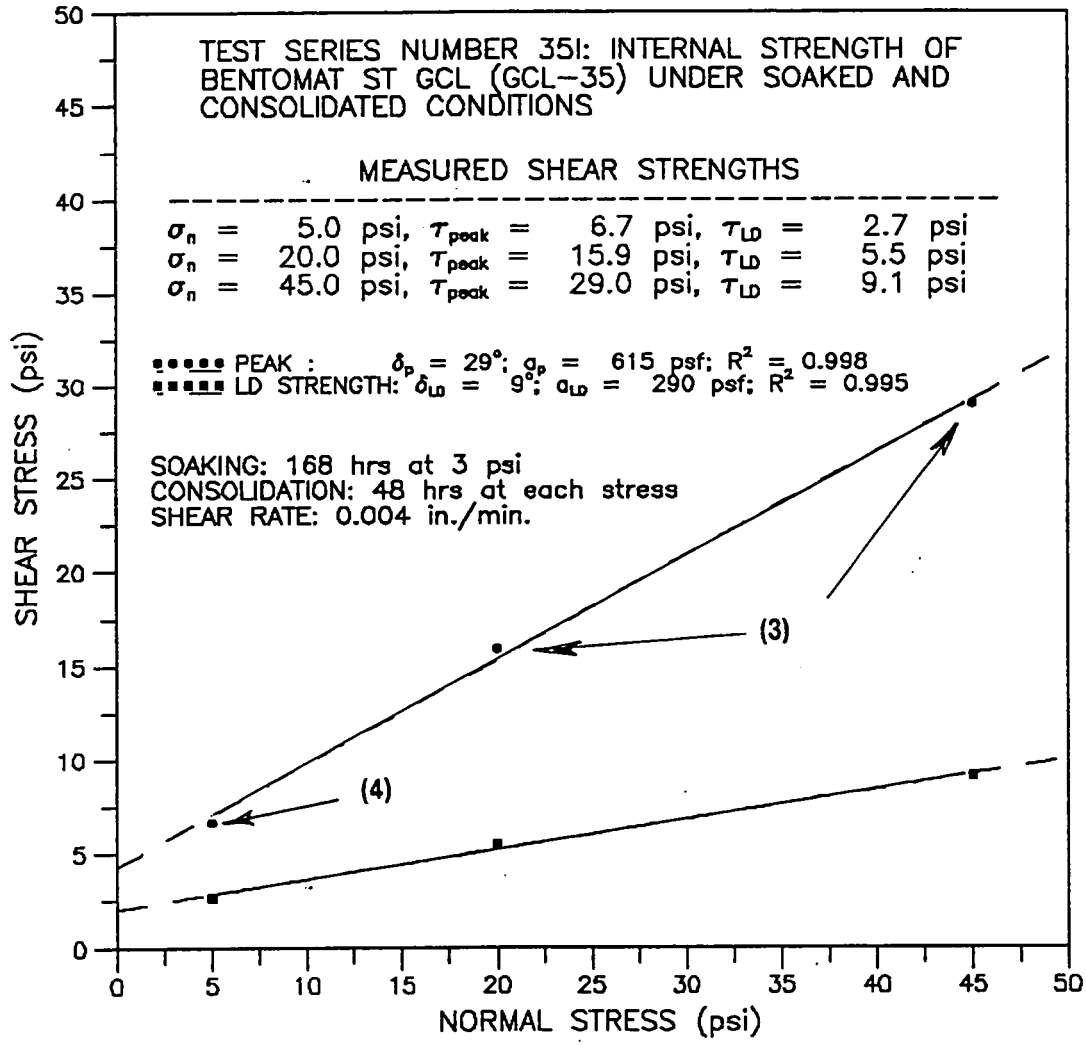
DATE TESTED: 5 TO 17 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

000120

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850006
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

Reviewed 19 Aug 98 DKF

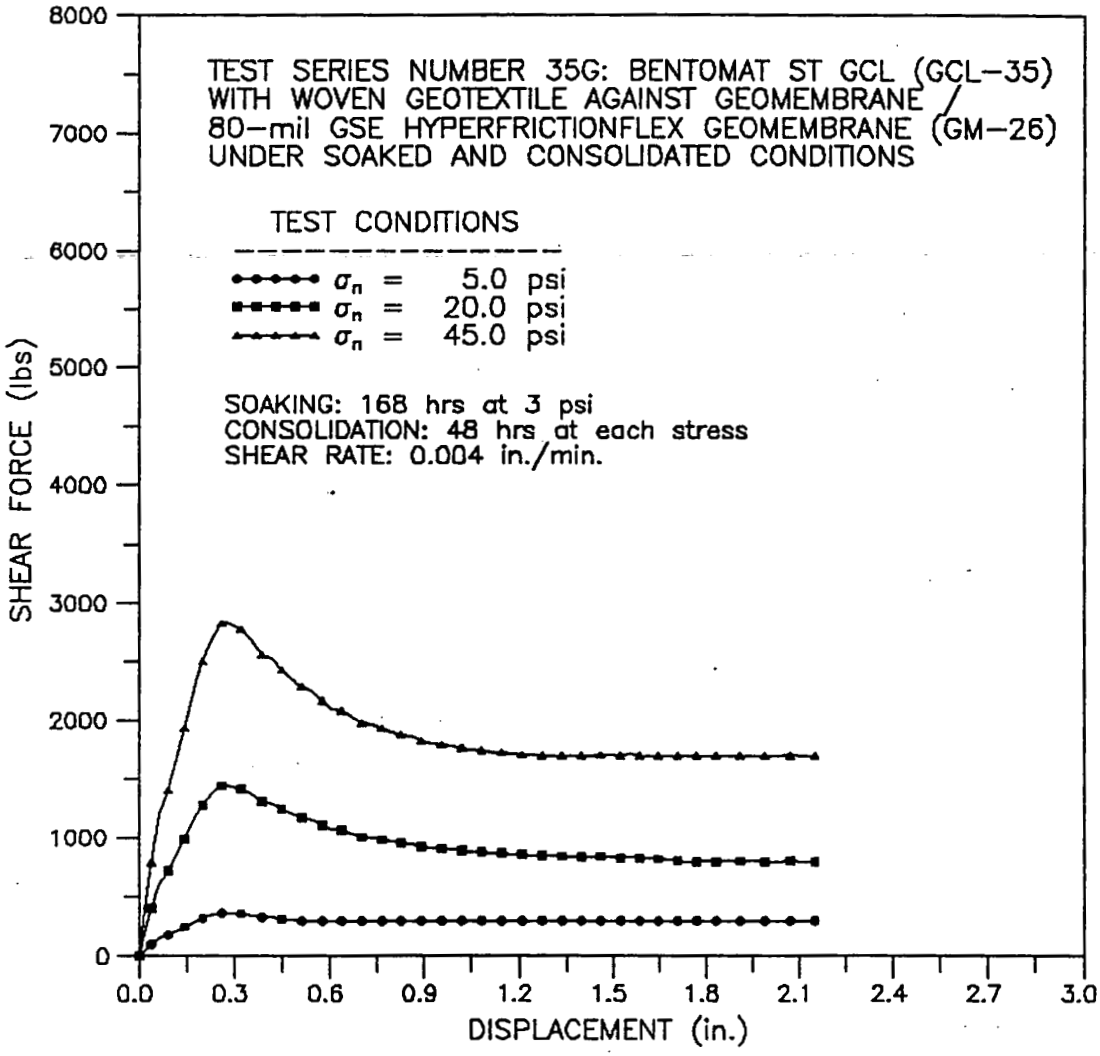
DATE TESTED: 5 TO 17 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850006
FILE NO.	

2062

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

Reviewed 19 Aug 98 DKG

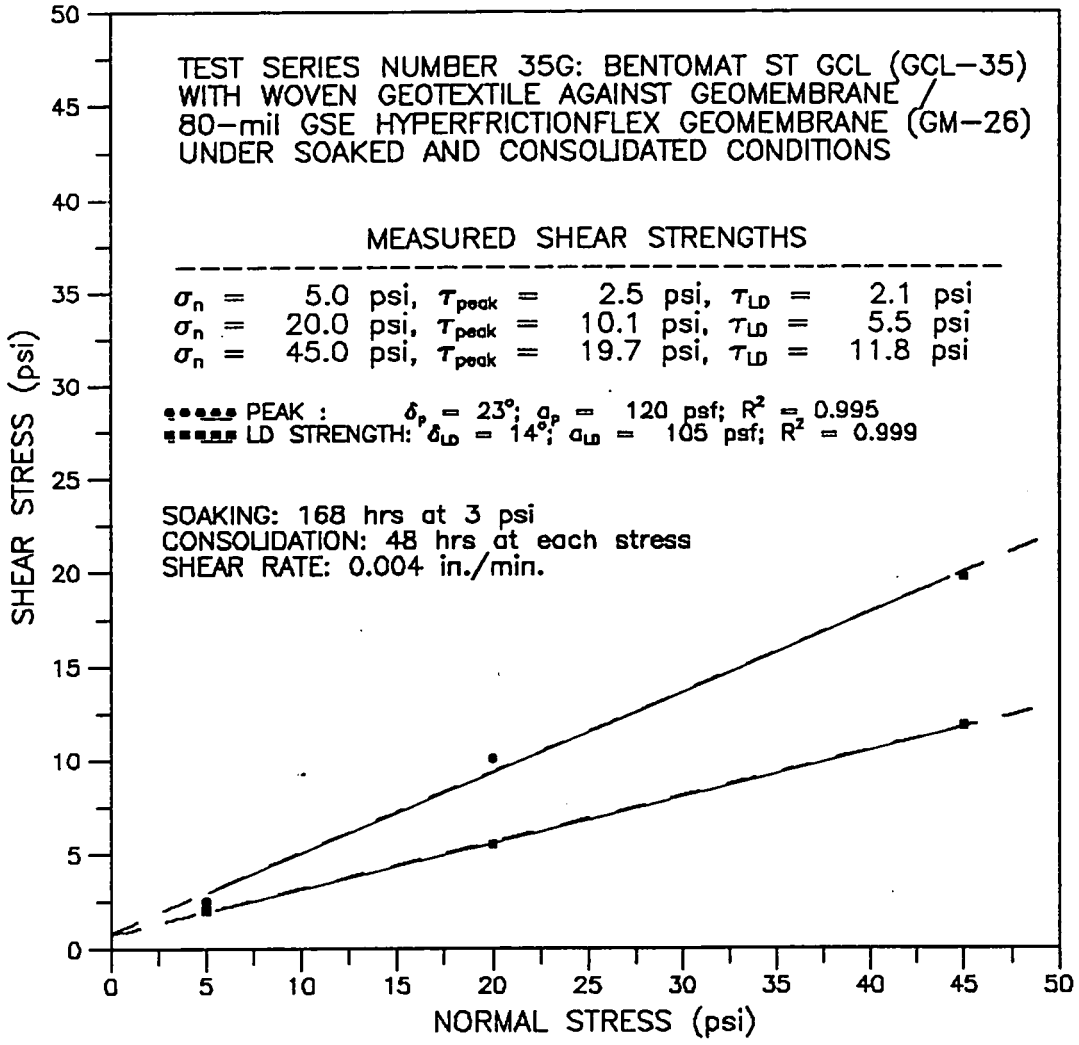
DATE TESTED: 8 TO 17 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9850006
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

Reviewed 19 Aug 98 DKP

DATE TESTED: 8 TO 17 AUGUST 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850006
FILE NO.	

2062

GCL 36

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 36I

2062

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-36). GCL's initial moisture content was 22.8%. GCL's final moisture content ranged from 58% to 86% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

GRS
8/24/98

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 36G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-36) with woven geotextile against geomembrane. GCL's initial moisture content was 23.0%. GCL's final moisture content ranged from 55 to 97% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-26); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

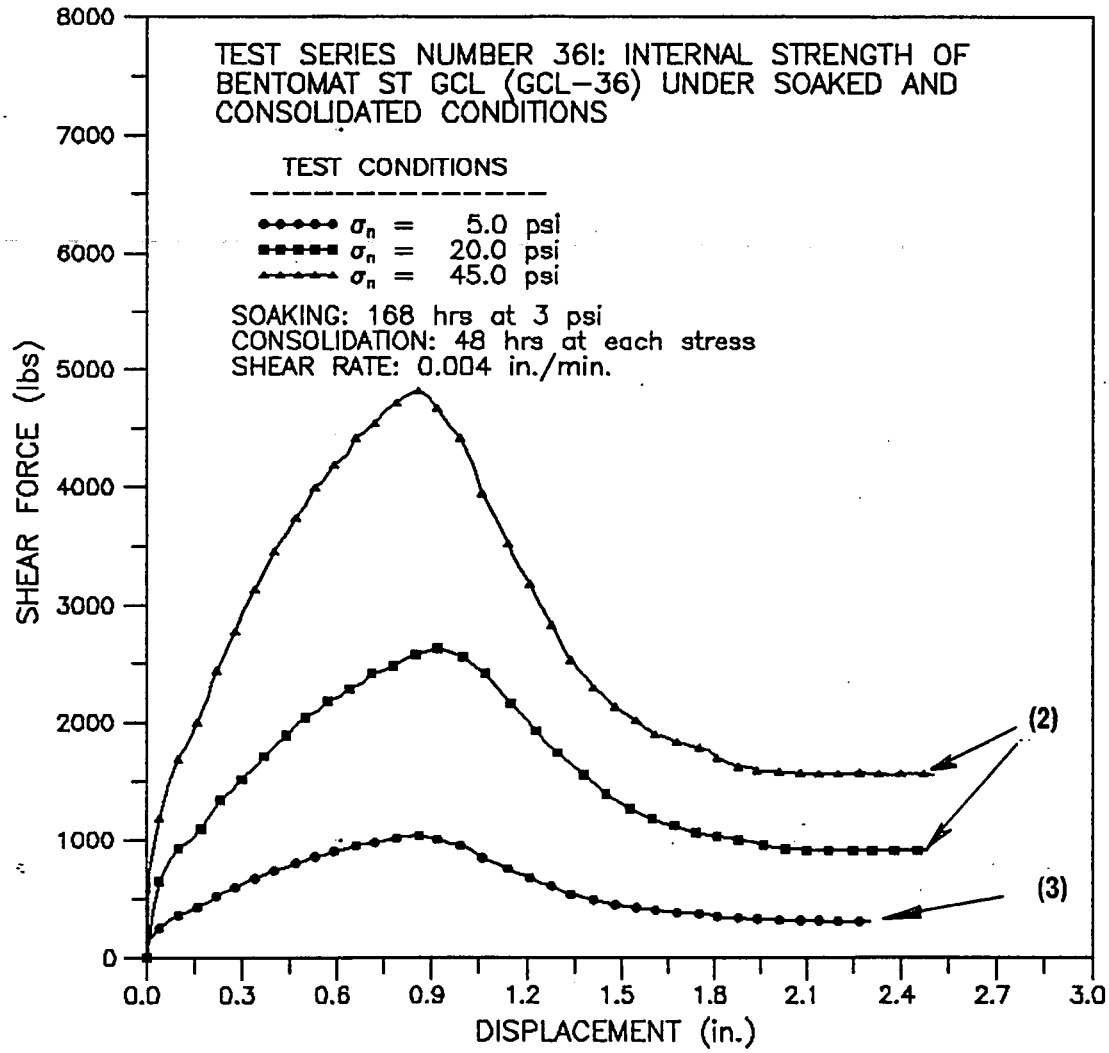
Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

GRS 8/24/98

000126

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

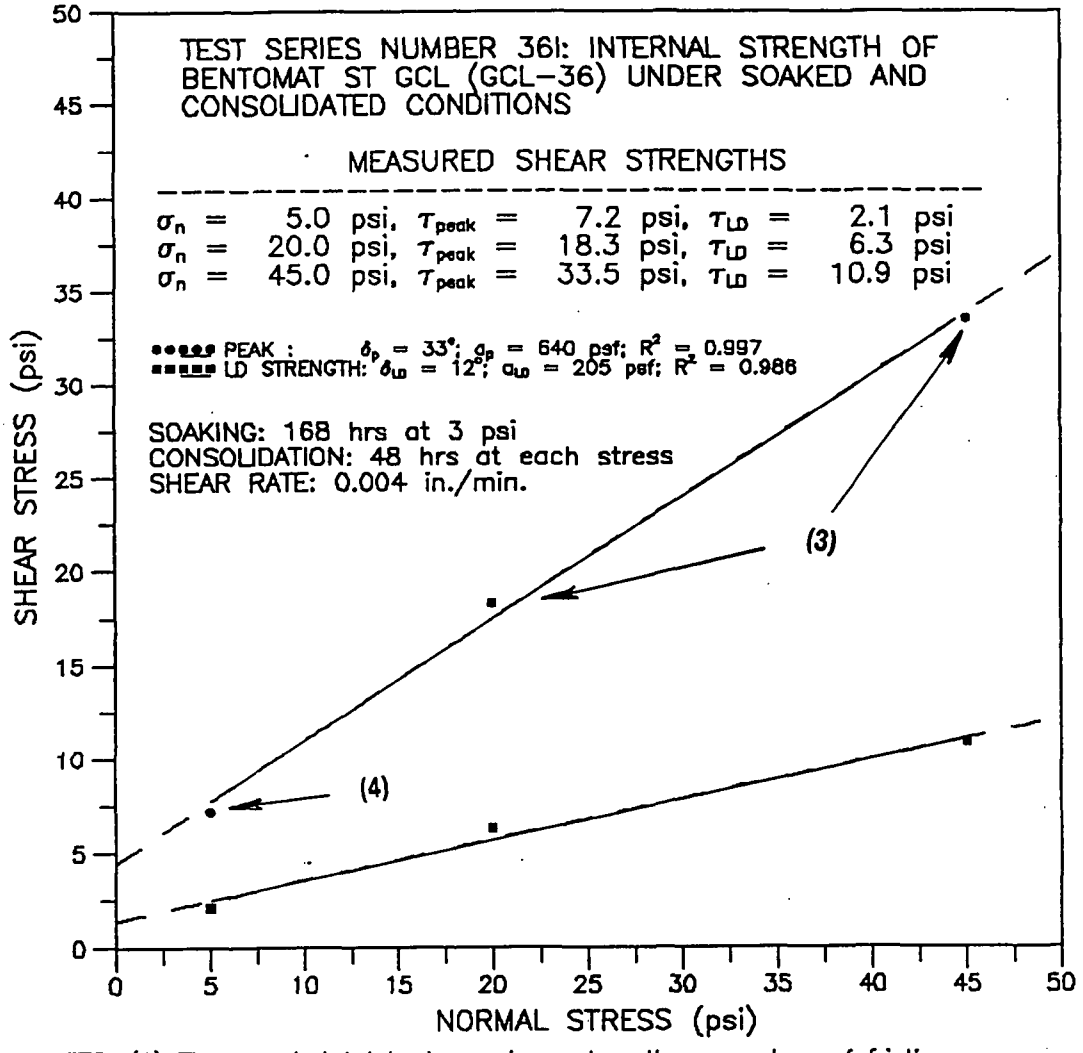
GLS
8/24/98

DATE TESTED: 10 TO 19 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9850007
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

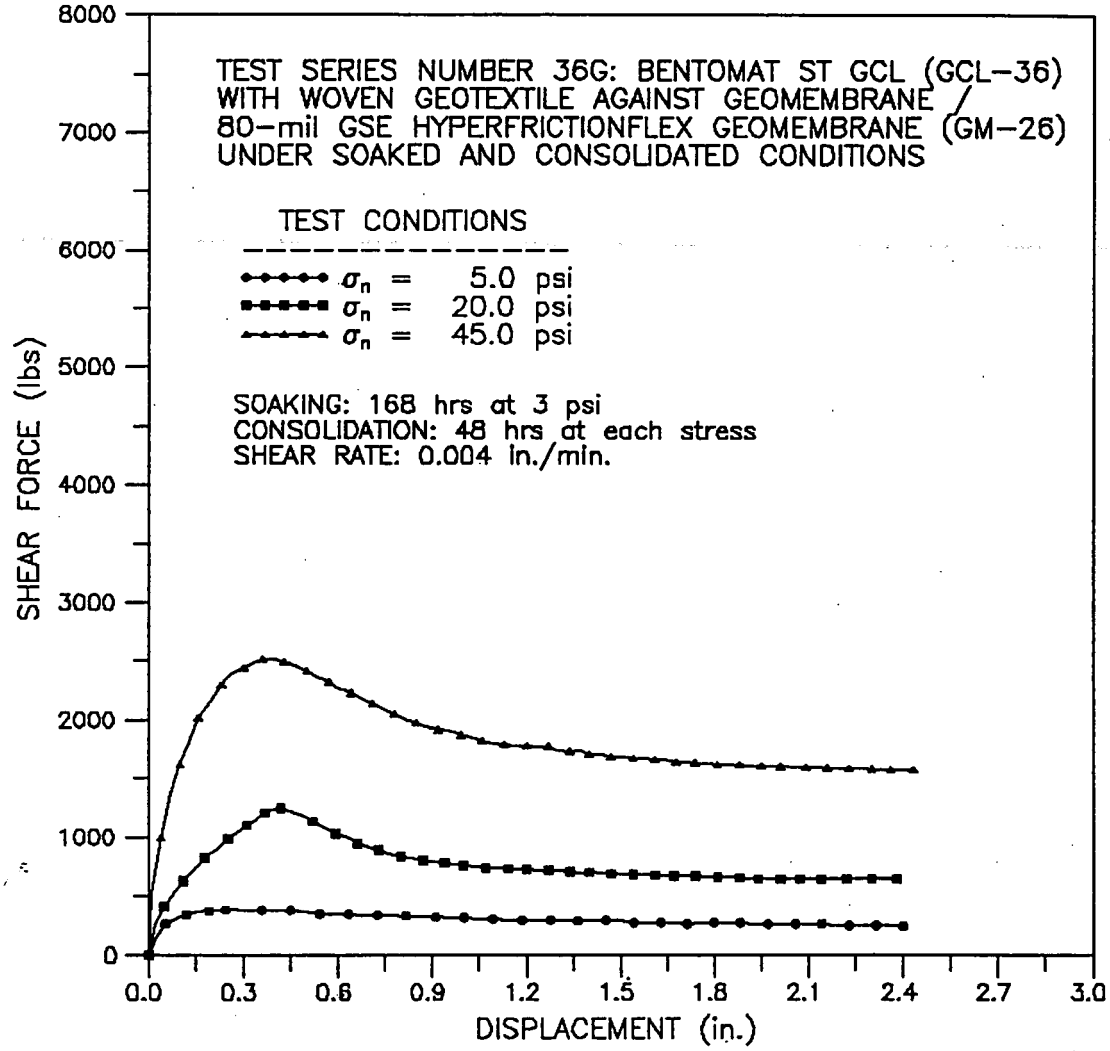
GRS
8/24/98

DATE TESTED: 10 TO 19 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9850007
FILE NO.	

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

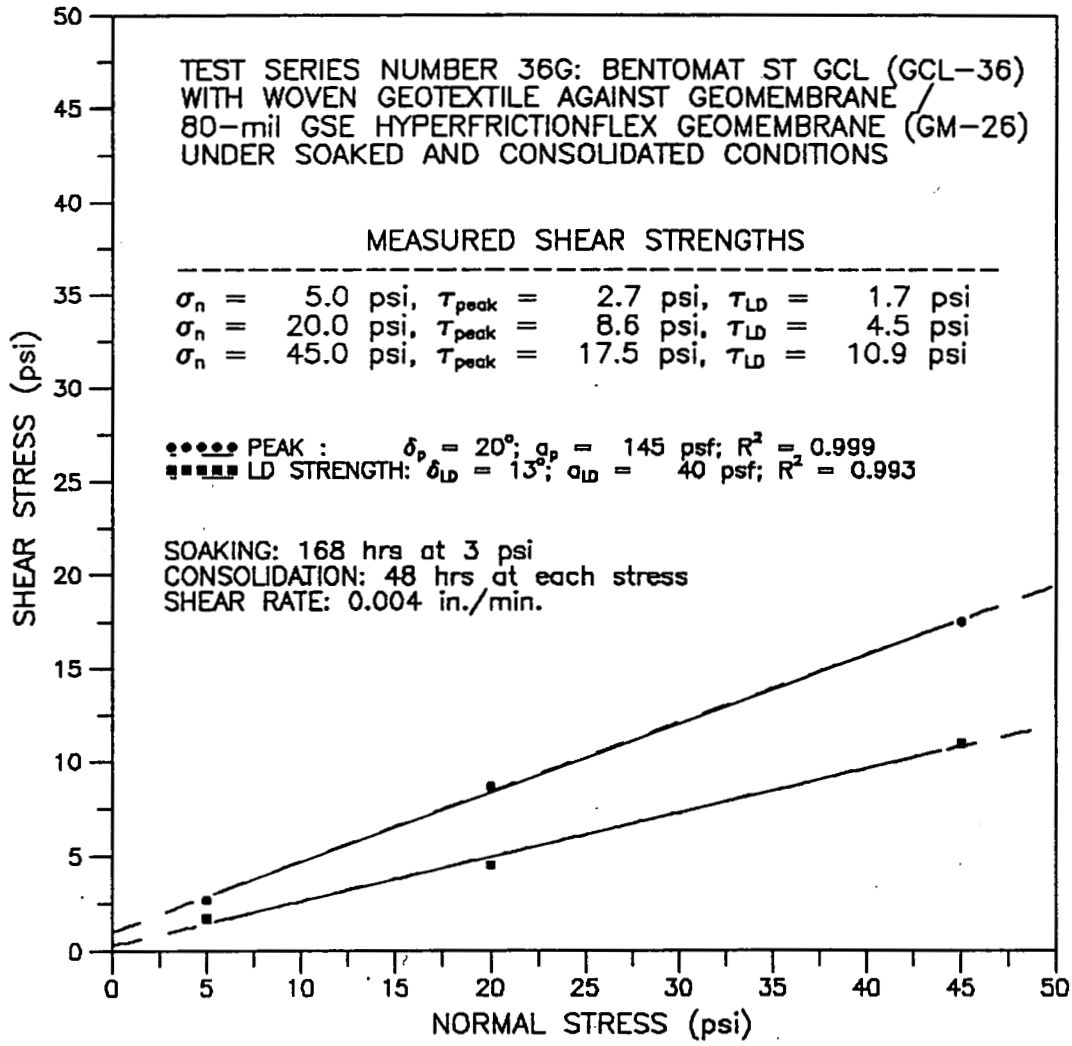
GRS
8/24/98

DATE TESTED: 12 TO 21 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850007
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

GRS
8/24/98

DATE TESTED: 12 TO 21 AUGUST 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850007
FILE NO.	

GCL 37

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 37I

2062

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-37). GCL's initial moisture content was 21.3%. GCL's final moisture content ranged from 55% to 87% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each internal direct shear test was in the direction of manufacture (machine direction) of the Bentomat ST GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

GRS
22 oct 98

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 37G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-37) with woven geotextile against geomembrane: GCL's initial moisture content was 21.6%. GCL's final moisture content ranged from 56 to 93% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-26); and
- lower shear box: bedding layer of compacted concrete sand.

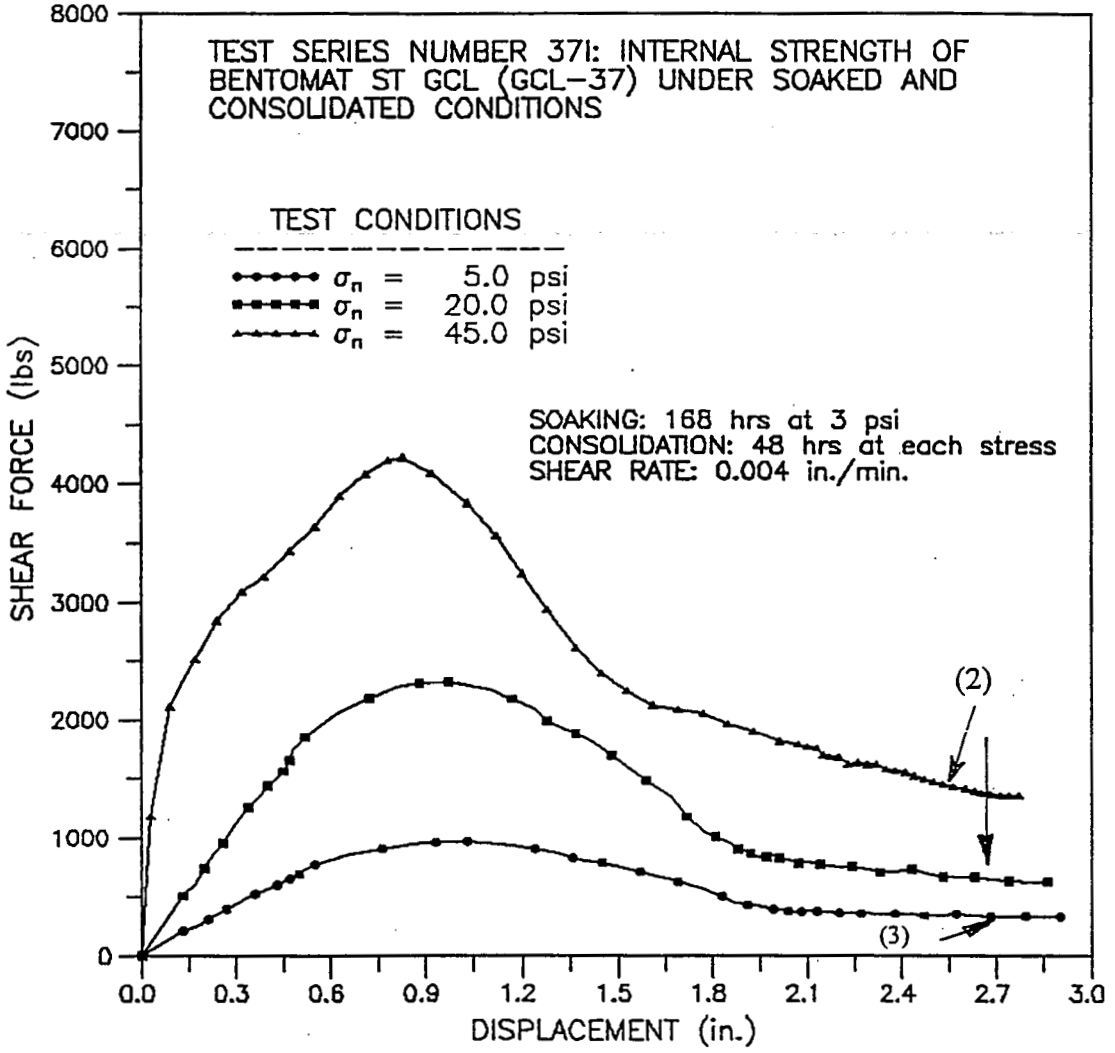
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

GES
22 Oct 98

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

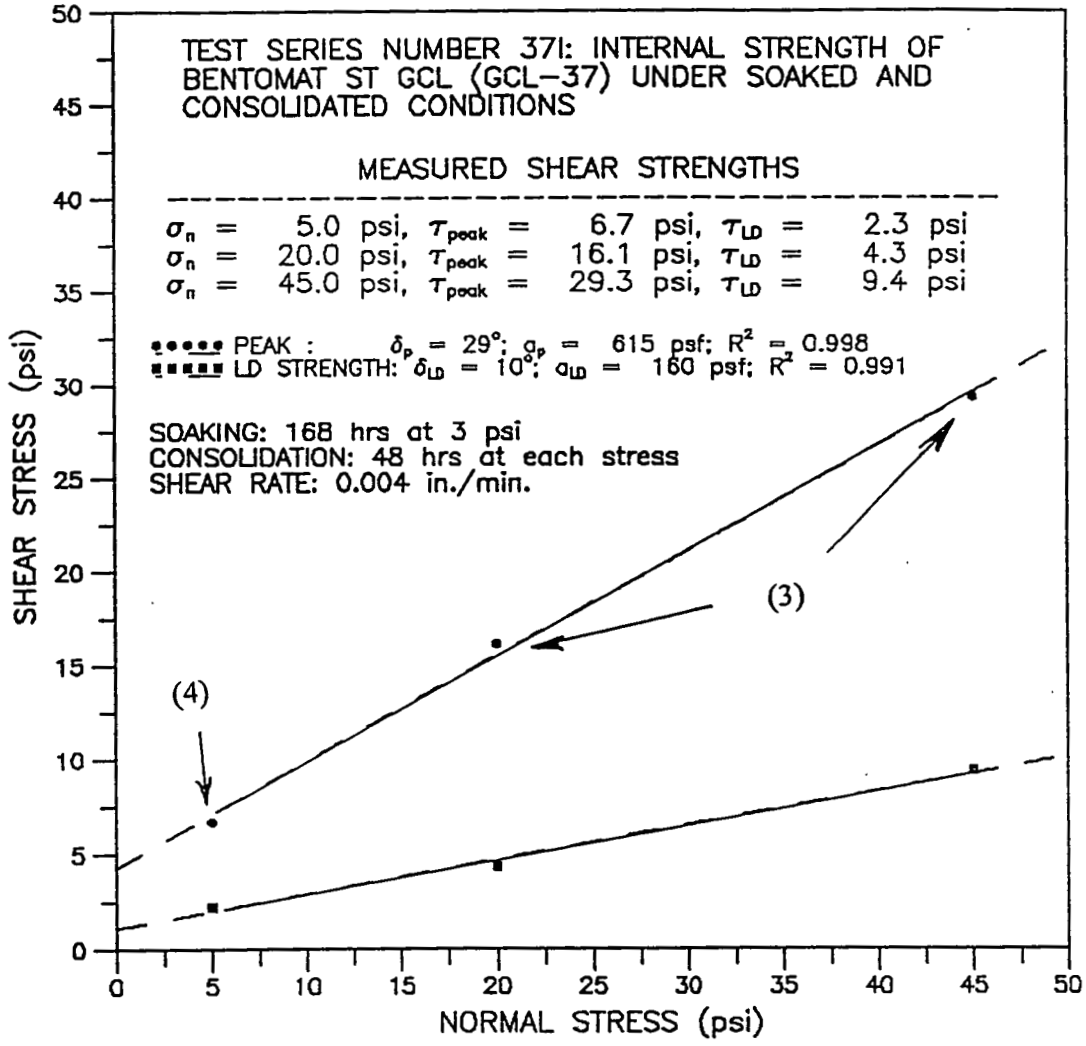
Ges 22oct98

DATE TESTED: 3 TO 12 OCTOBER 1998

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	G00409-04
DOCUMENT NO.	F9850008
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

GRS 22 oct 98

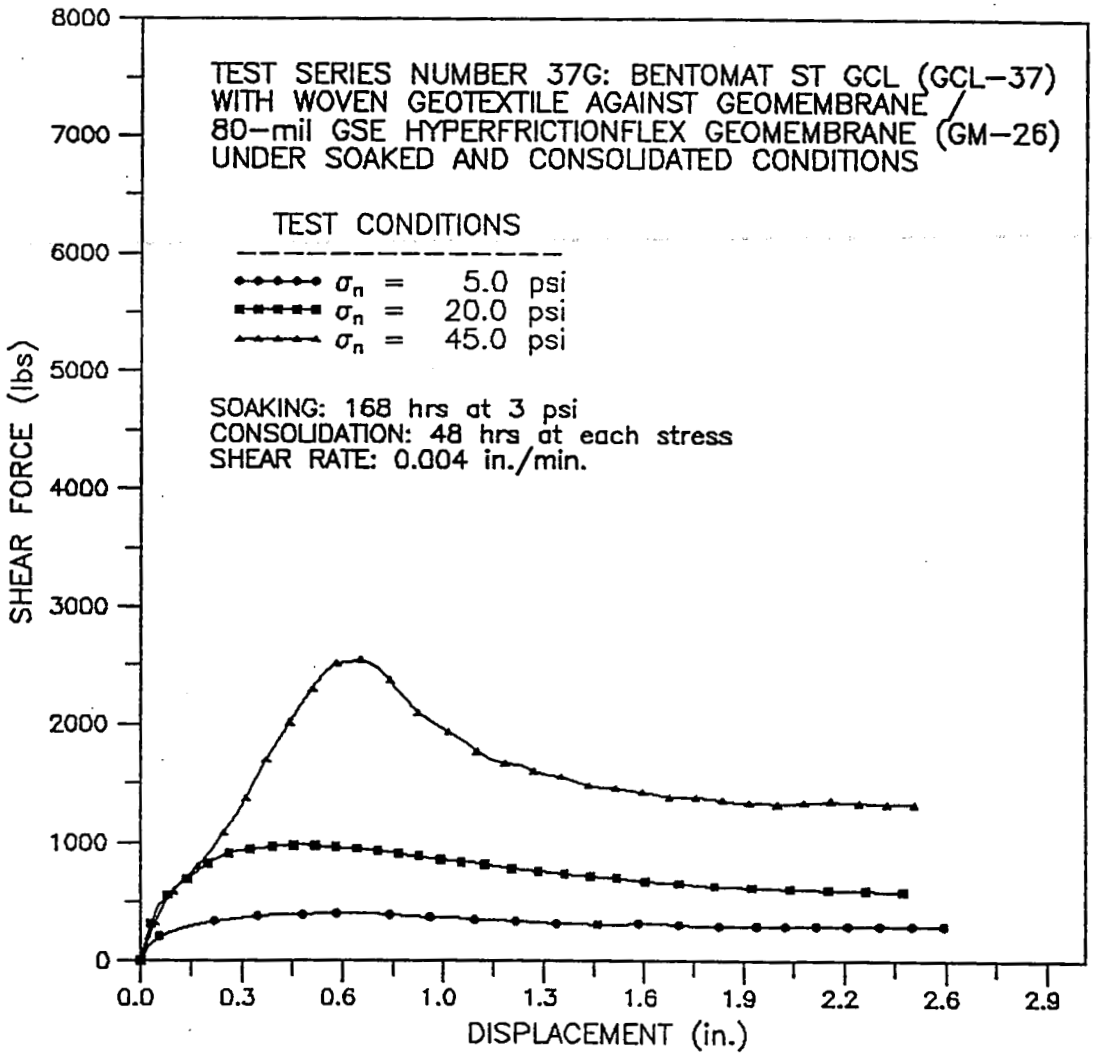
DATE TESTED: 3 TO 12 OCTOBER 199

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

000135

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850008
FILE NO.	

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, shear failure was observed to occur at the intended interface.

GES 22 oct 98

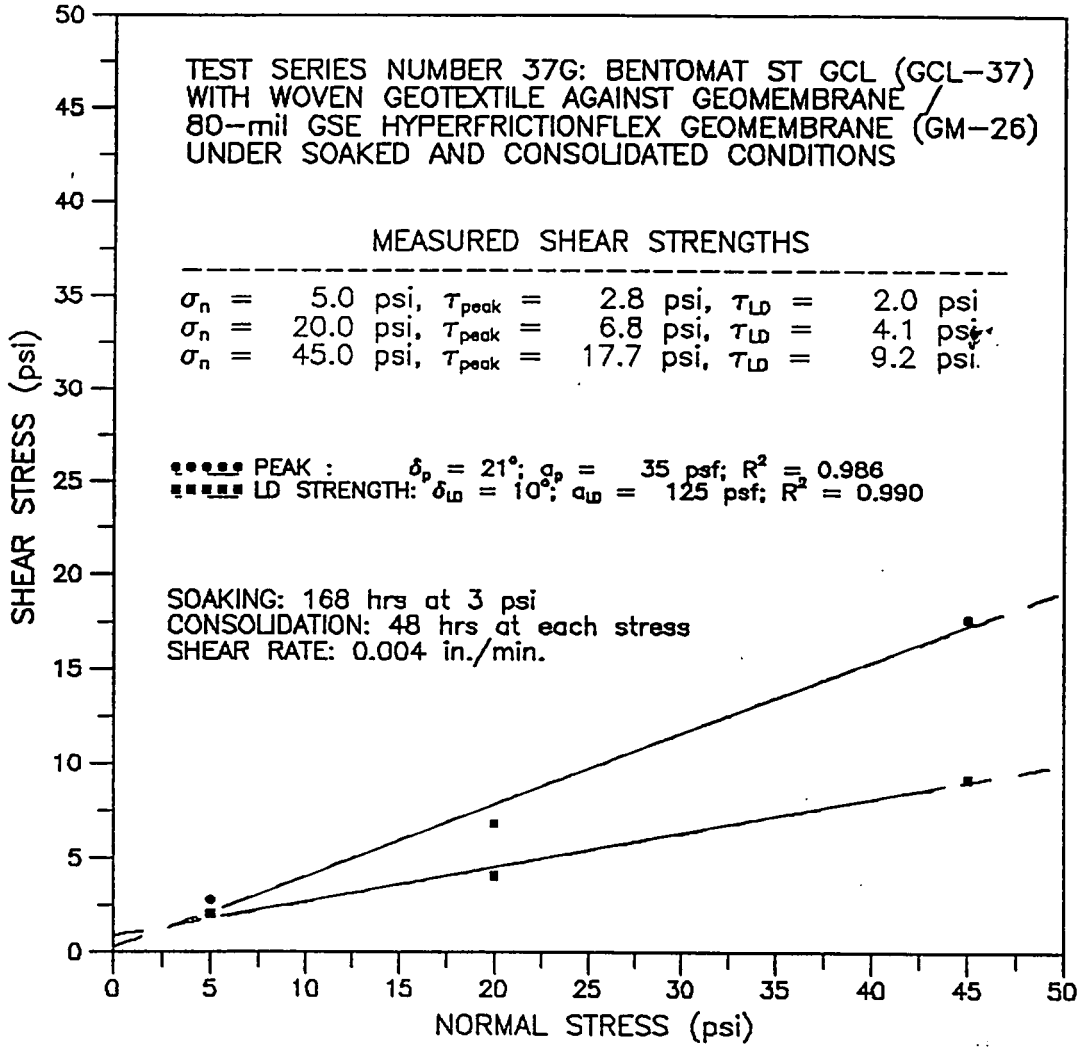
DATE TESTED: 5 TO 14 OCTOBER 1998

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	G00409-04
DOCUMENT NO.	F9850008
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at the end of each test.
(3) For each test, shear failure was observed to occur at the intended interface.

GRS 22oct98

DATE TESTED: 5 TO 14 OCTOBER 199

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

000137

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9850008
FILE NO.	

- **Direct Shear Bentofix Compliance Packages**

2062

Baseline

000139

COMPUTATION COVER SHEET

2062

SUBJECT OF COMPUTATIONS Baseline Factors of Safety for RCI on GCL Shear Strength

Computations By: (Cognizant Engineer)
Signature Robert A. Morgan III — Date 14 OCT 1997
Printed Name and Title ROBERT A. MORGAN III, SR. STAFF ENGINEER

Assumptions and Procedures Checked By: (Checker)
Signature [illegible] — Date 14 Oct 97
Printed Name and Title Gary R. Schmertmann, Sr. Project Engineer

Computations Checked by:
Signature [illegible] — Date 14 Oct 97
Printed Name and Title Gary R. Schmertmann, Sr. Project Engr.

Computations Backchecked by: (Cognizant Engineer)
Signature Robert A. Morgan III — Date 14 OCT 1997
Printed Name and Title ROBERT A. MORGAN III, SR. STAFF ENGINEER

Approved by: (PDP)
Signature [illegible] — Date 14 Oct 97
Printed Name and Title Gary R. Schmertmann, Sr. Project Engr.

Approved by: (DTL and TETL)
Signature [illegible] — Date 15 Oct 97
Printed Name and Title Kenneth W Cargill, Associate

Record of Revision (Number and initial all revisions)

Rev. No.	Reason	Date	By	Checked	Approval

000140

Written By: RAM Date: 10/14/97 Reviewed by: GRS Date: 10/14/97

Client: FDF Project: OSDF Project/Proposal No.: GR0166 Task No.: 04

Calculation of Baseline Factors of Safety for RCI on GCL Shear Strength (RCI no. 1702-006R dated 7 October 1997)

Introduction

A request for clarification of information (RCI) regarding the shear strength requirements in the GCL specification was issued on 7 October 1997 (RCI no. 1702-006R). The RCI presents two *baseline* slope stability factors of safety (FS), one for peak GCL shear strength and the other for large-displacement GCL shear strength. The RCI indicates that the baseline FS values were obtained by reanalyzing two slope stability analysis cases from the OSDF design and changing the GCL shear strength envelopes to those defined in the GCL specification.

Purpose

The purpose of this calculation is to present the slope stability analyses performed to obtain the baseline FS values.

Slope Stability Analysis Cases

The two slope stability analysis cases to be reanalyzed were identified in the RCI as indicated below.

- The first case, referred to as the *interim* case, consists of the most critical interim slope (3H:1V) of impacted material that can potentially exist in the OSDF. The detailed analysis for this case is presented on pages 23 to 26 of section 3.3 of the design calculations, and is there identified by the title "OSDF Interim Conditions – Peak Short Term" and the file name "CASE5B". This case is relevant to the peak GCL shear strength envelope.

- The second case, referred to as the *final* case, consists of the most critical final slope of impacted material that will exist in the OSDF. The detailed analysis for this case is presented on pages 31 to 34 of section 3.3 of the design calculations, and is there identified by the title "OSDF Final Long Term – Large Disp." and the file name "CASE7B". This case is relevant to the large-displacement GCL shear strength envelope.

Method

The baseline FS values were calculated using the steps described below.

1. Obtain the computer analysis program (XSTABL) and input files used to perform the two analyses identified above for the OSDF design calculations. Confirm that the correct analysis program and input files have been obtained by repeating the two analyses and checking that the calculated FS values match those presented in the design calculations.

000141

2. Modify the input files for the two analysis cases as follows:

   - Define the GCL as one material with a single non-linear shear strength envelope. Use the peak shear strength envelope defined in the GCL specification for the interim case (Figure 1) and the large-displacement shear strength envelope defined in the GCL spec. for the final case (Figure 2). This modification will allow shear strengths used in the analysis to represent the shear strength envelopes defined in the GCL specification.

   - Subdivide the geometry line defining the impacted material slope face into several segments, without changing the slope inclination or height. This modification will cause the analysis solution to use more columns in the area where the potential slip surface passes along the GCL. As each analysis column will have a different level of normal stress on the GCL, this modification will allow the shear strengths used in the analysis to more closely simulate the intended shear strength envelope.

   - For the interim case, truncate the input geometry at a point approximately 50 ft outside the toe of the impacted material slope. The geometry outside this point has no influence on the analysis results and is truncated to simplify the search process for locating the critical potential slip surface.

3. Analyze the interim and final slope stability cases using the XSTABL computer program and the input files created in Step 2 that include the shear strength envelopes defined in the GCL specification. For each case, locate the critical potential slip surface that passes along the GCL and calculate the corresponding slope stability factor of safety (FS) using Spencer's analysis method. The calculated FS values are the *baseline* values.

Results

The repeat analyses from the OSDF design calculations produced the following FS values: FS=1.919 for the interim case and FS=1.543 for the final case. These are the same FS values presented in the design calculations, indicating that the correct computer analysis program (XSTABL) and input files were obtained. The computer output files for the repeat analyses are attached as Appendix A.

The reanalyses using the shear strength envelopes given in the GCL specification resulted in the following FS values: FS=1.944 for the interim case and FS=1.574 for the final case. Therefore, after rounding to the nearest 0.1 value, the baseline FS values are as follows:

Interim Case:	baseline FS=	1.9	for peak GCL strength.
Final Case:	baseline FS=	1.6	for large-displacement GCL strength.

The computer output files for the baseline analyses are attached as Appendix B.

Written By: RAM Date: 10/14/97 Reviewed by: GRS Date: 10/14/97

Client: FDF Project: OSDF Project/Proposal No.: GA 0166 Task No.: 04

Figure 1 - Peak Shear Strength Envelope Defined in Specification

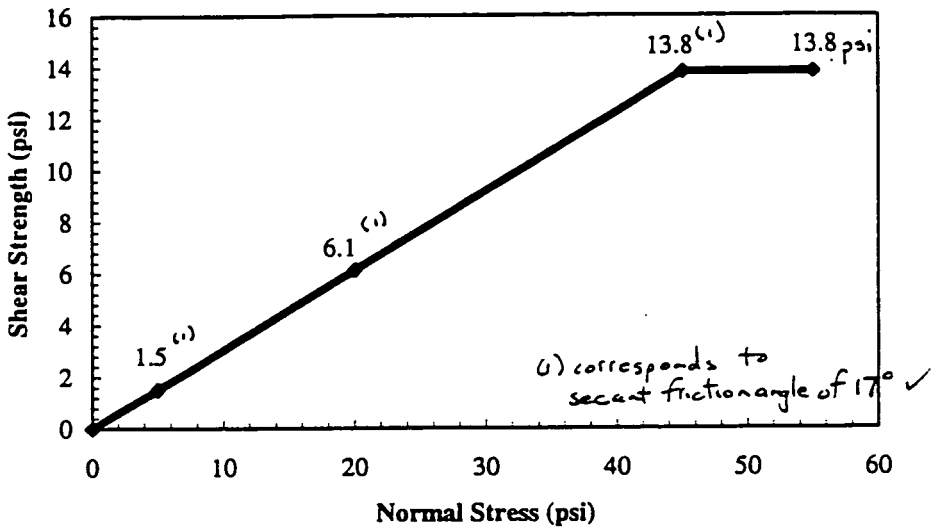
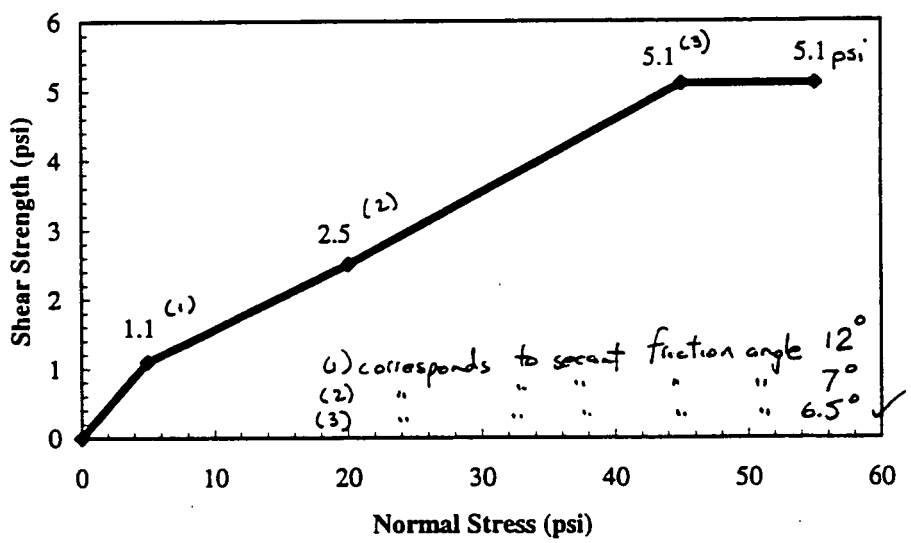


Figure 2- Large-Displacement Shear Strength Envelope Defined in Specification



Note: It is conservative to model envelopes as flat above 45psi

2062

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GRS 10/14/97

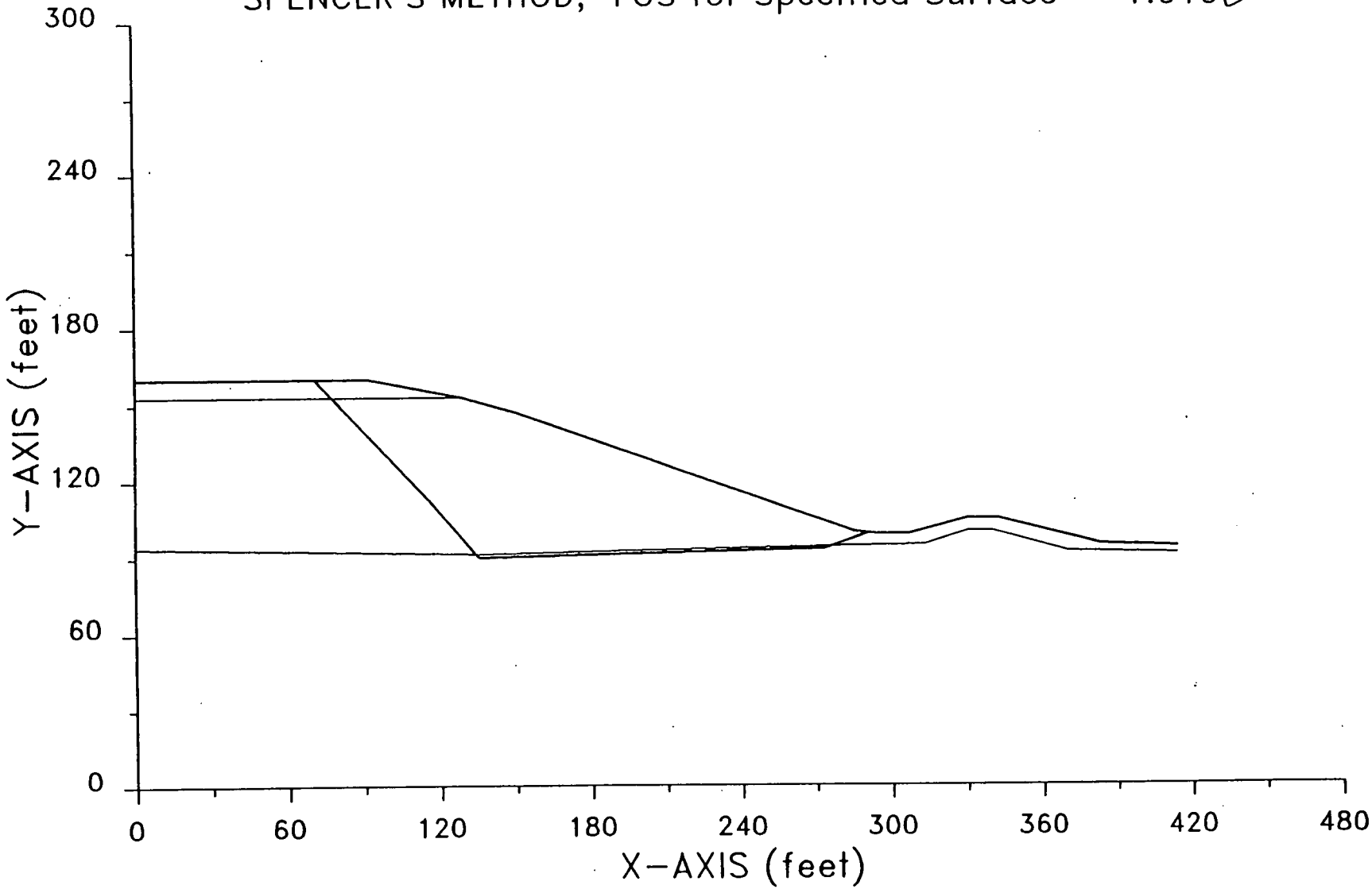
RAM 10/14/97

APPENDIX A

CASE5B 10-13-97 14:59

OSDF Interim Conditions–Peak Short T

SPENCER'S METHOD, FOS for Specified Surface = 1.919



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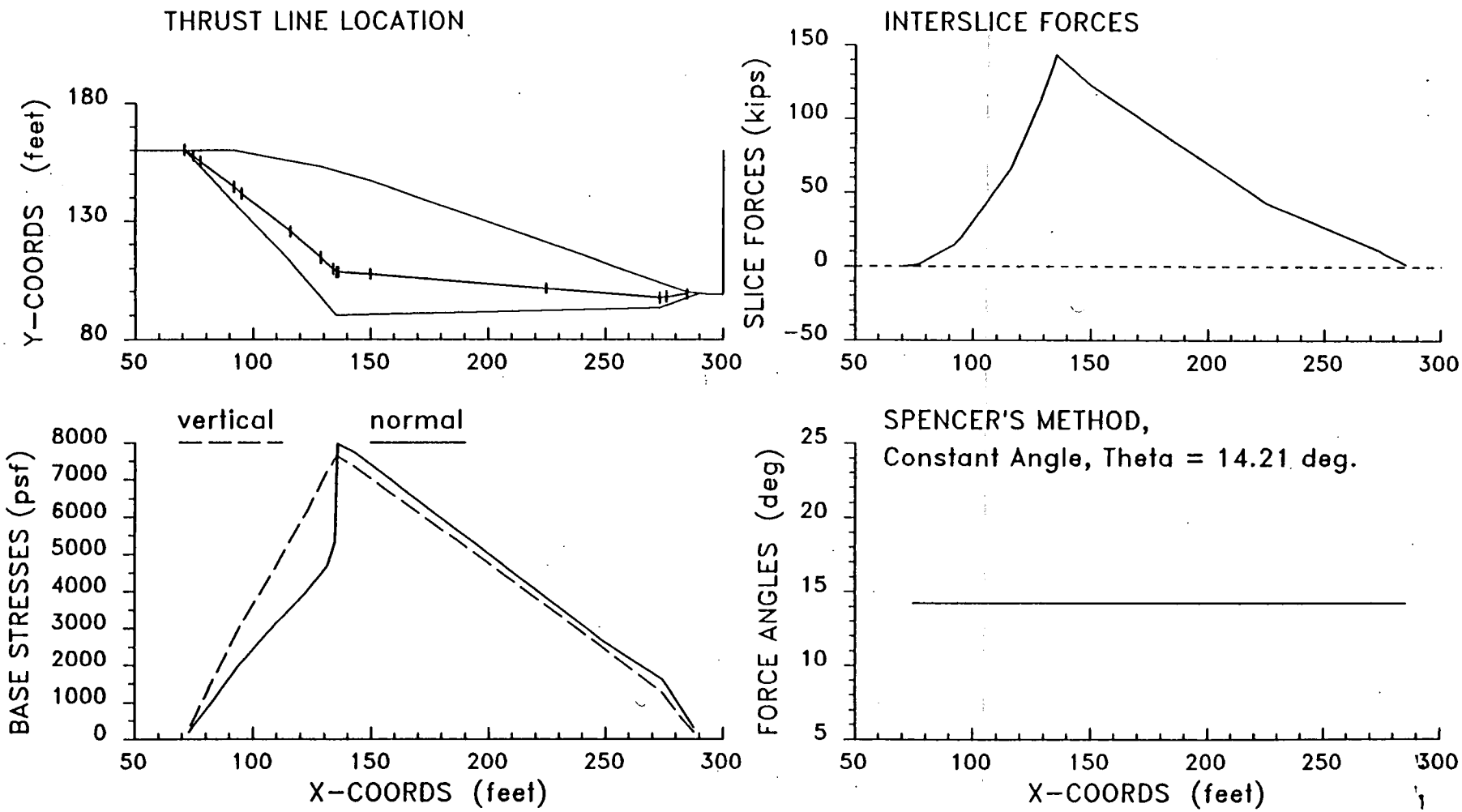
5/31



OSDF Interim Conditions–Peak Short T
SPENCER'S METHOD, FOS for Specified Surface = 1.919 ✓

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2062

6/31

XSTABL File: CASE5B 10-13-97 14:59

```
*****************************************
*              X S T A B L              *
*                                       *
*       Slope Stability Analysis        *
*              using the                *
*           Method of Slices            *
*                                       *
*        Copyright (C) 1992 á 96        *
*   Interactive Software Designs, Inc.  *
*       Moscow, ID 83843, U.S.A.        *
*                                       *
*         All Rights Reserved           *
*                                       *
*  Ver. 5.201                 96 á 1202 *
*****************************************
```

Problem Description : OSDF Interim Conditions-Peak Short T

SEGMENT BOUNDARY COORDINATES

10 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	160.0	92.0	160.0	2
2	92.0	160.0	129.0	153.0	2
3	129.0	153.0	150.0	147.0	1
4	150.0	147.0	285.0	100.0	1
5	285.0	100.0	294.0	99.0	1
6	294.0	99.0	307.0	99.0	2
7	307.0	99.0	330.0	105.0	2
8	330.0	105.0	342.0	105.0	2
9	342.0	105.0	383.0	95.0	2
10	383.0	95.0	414.0	94.0	2

9 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	153.0	129.0	153.0	1
2	.0	94.1	136.5	91.4	3
3	136.5	91.4	224.8	93.2	4
4	224.8	93.2	285.0	94.4	5
5	285.0	94.4	313.0	95.0	6
6	313.0	95.0	330.0	100.0	6
7	330.0	100.0	340.0	100.0	6
8	340.0	100.0	370.0	92.0	6
9	370.0	92.0	414.0	91.0	6

ISOTROPIC Soil Parameters

2062

6 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	200.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	15.00	.000	.0	0
4	125.0	125.0	.0	17.00	.000	.0	0
5	125.0	125.0	.0	23.00	.000	.0	0
6	125.0	125.0	.0	30.00	.000	.0	0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 7 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	290.52	99.39
2	273.30	93.21
3	135.57	90.01
4	116.06	112.79
5	95.26	134.42
6	74.61	156.18
7	70.89	160.00

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	287.76	98.40	1.30	5.52	-19.73	6.34	895.
2	280.56	95.81	5.73	8.88	-19.73	19.20	6357.
3	274.71	93.72	9.87	2.82	-19.73	19.20	3483.
4	249.05	92.65	19.87	48.50	-1.33	19.20	120458.
5	187.40	91.21	42.77	74.80	-1.33	19.20	399853.
6	143.25	90.19	58.74	13.50	-1.33	15.95	99124.

7	136.04	90.02	60.97	.93	-1.33	15.95	7088.
8	134.96	90.73	60.57	1.23	49.42	15.95	9290.
9	131.67	94.56	57.67	5.34	49.42	15.95	38519.
10	122.53	105.24	48.99	12.94	49.42	10.71	79239.
11	105.66	123.60	33.81	20.80	46.12	10.71	87908.
12	93.63	136.14	23.55	3.26	46.50	10.71	9598.
13	84.81	145.43	14.57	14.37	46.50	.00	26180.
14	76.12	154.59	5.41	3.02	46.50	.00	2041.
15	72.75	158.09	1.91	3.72	45.76	.00	888.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	14.2040	1.9192	1.9455
3	14.2106	1.9193	1.9192

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	297.0	200.0	25.00	0.	0.	0.	.00
2	1025.7	200.0	25.00	0.	0.	0.	.00
3	1593.5	.0	23.00	0.	0.	0.	.00
4	2662.1	.0	23.00	0.	0.	0.	.00
5	5626.5	.0	17.00	0.	0.	0.	.00
6	7728.3	.0	17.00	0.	0.	0.	.00
7	7975.9	.0	15.00	0.	0.	0.	.00
8	5319.5	.0	15.00	0.	0.	0.	.00
9	4687.0	200.0	25.00	0.	0.	0.	.00
10	3971.6	200.0	25.00	0.	0.	0.	.00
11	2849.4	200.0	25.00	0.	0.	0.	.00
12	1957.7	200.0	25.00	0.	0.	0.	.00
13	1189.4	200.0	25.00	0.	0.	0.	.00
14	448.5	.0	30.00	0.	0.	0.	.00
15	160.0	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	287.76	297.0	162.1	.0	176.4
2	280.56	1025.7	716.3	.0	353.4
3	274.71	1593.5	1233.1	.0	352.4
4	249.05	2662.1	2483.7	.0	588.7
5	187.40	5626.5	5345.6	.0	896.2
6	143.25	7728.3	7342.5	.0	1231.0
7	136.04	7975.9	7621.1	.0	1113.5
8	134.96	5319.5	7571.5	.0	742.6
9	131.67	4687.0	7209.3	.0	1242.9
10	122.53	3971.6	6123.6	.0	1069.1
11	105.66	2849.4	4226.3	.0	796.5

12	93.63	1957.7	2944.3	.0	579.8
13	84.81	1189.4	1821.6	.0	393.2
14	76.12	448.5	676.3	.0	134.9
15	72.75	160.0	238.8	.0	48.1

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	285.00	14.21	1611.	1.69	2.59	.651
2	276.12	14.21	8215.	3.58	8.87	.404
3	273.30	14.21	10907.	4.21	10.86	.388
4	224.80	14.21	43457.	9.44	28.88	.327
5	150.00	14.21	122699.	17.35	56.65	.306
6	136.50	14.21	142343.	18.43	60.83	.303
7	135.57	14.21	143589.	18.52	61.11	.303
8	134.34	14.21	136668.	18.31	60.03	.305
9	129.00	14.21	113355.	16.69	55.32	.302
10	116.06	14.21	65725.	12.66	42.66	.297
11	95.26	14.21	19237.	7.14	24.96	.286
12	92.00	14.21	14249.	6.57	22.14	.297
13	77.63	14.21	1496.	2.00	7.00	.286
14	74.61	14.21	445.	1.45	3.82	.378
15	70.89	.00	-1.	.14	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3691.70 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 744.98 (psf)

Total Length of failure surface = 251.39 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.919

Total shear strength available along specified failure surface = 359.46E+03 lb

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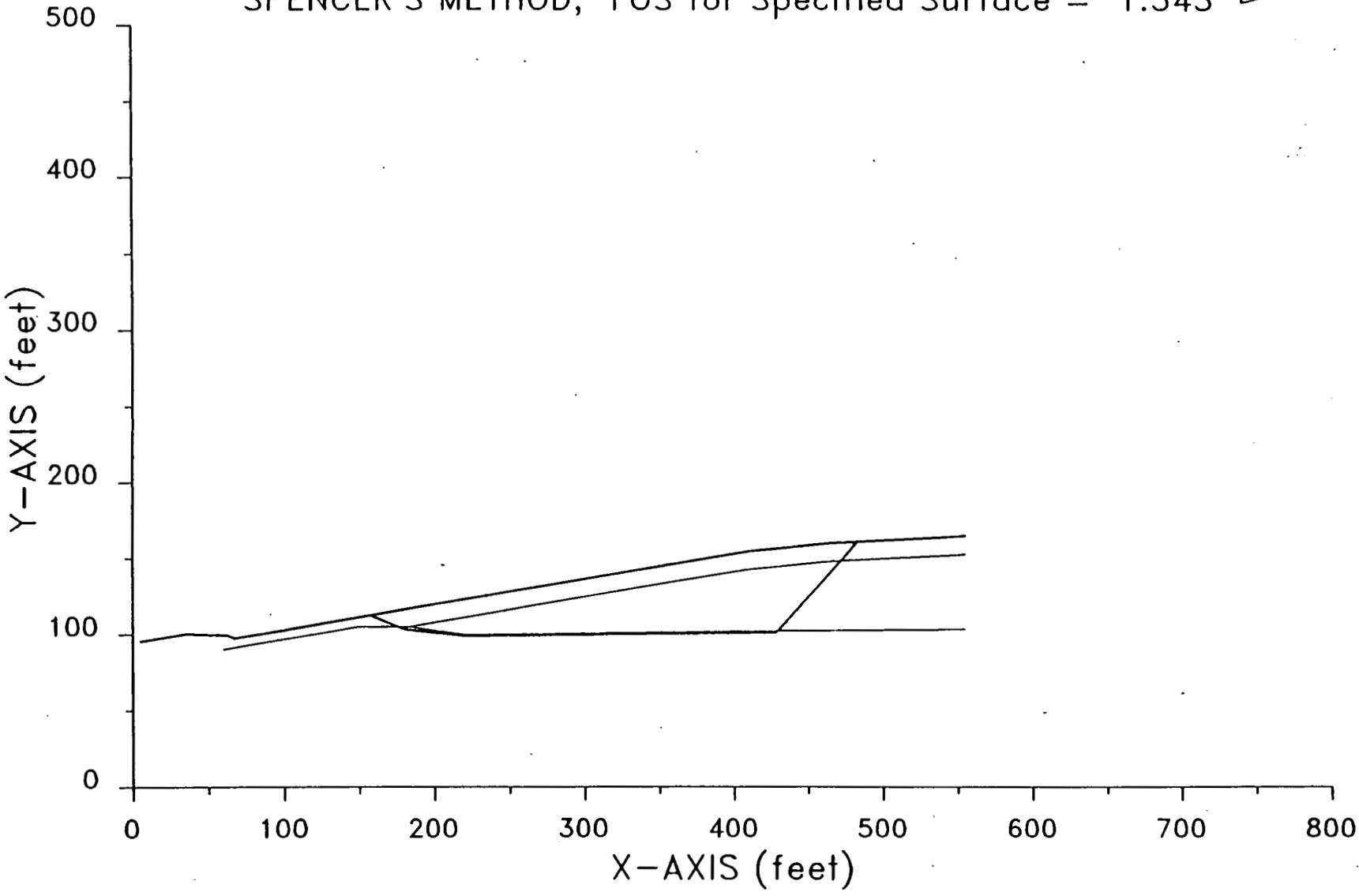
OSDF Final Long Term – Large Disp.

SPENCER'S METHOD, FOS for Specified Surface = 1.543



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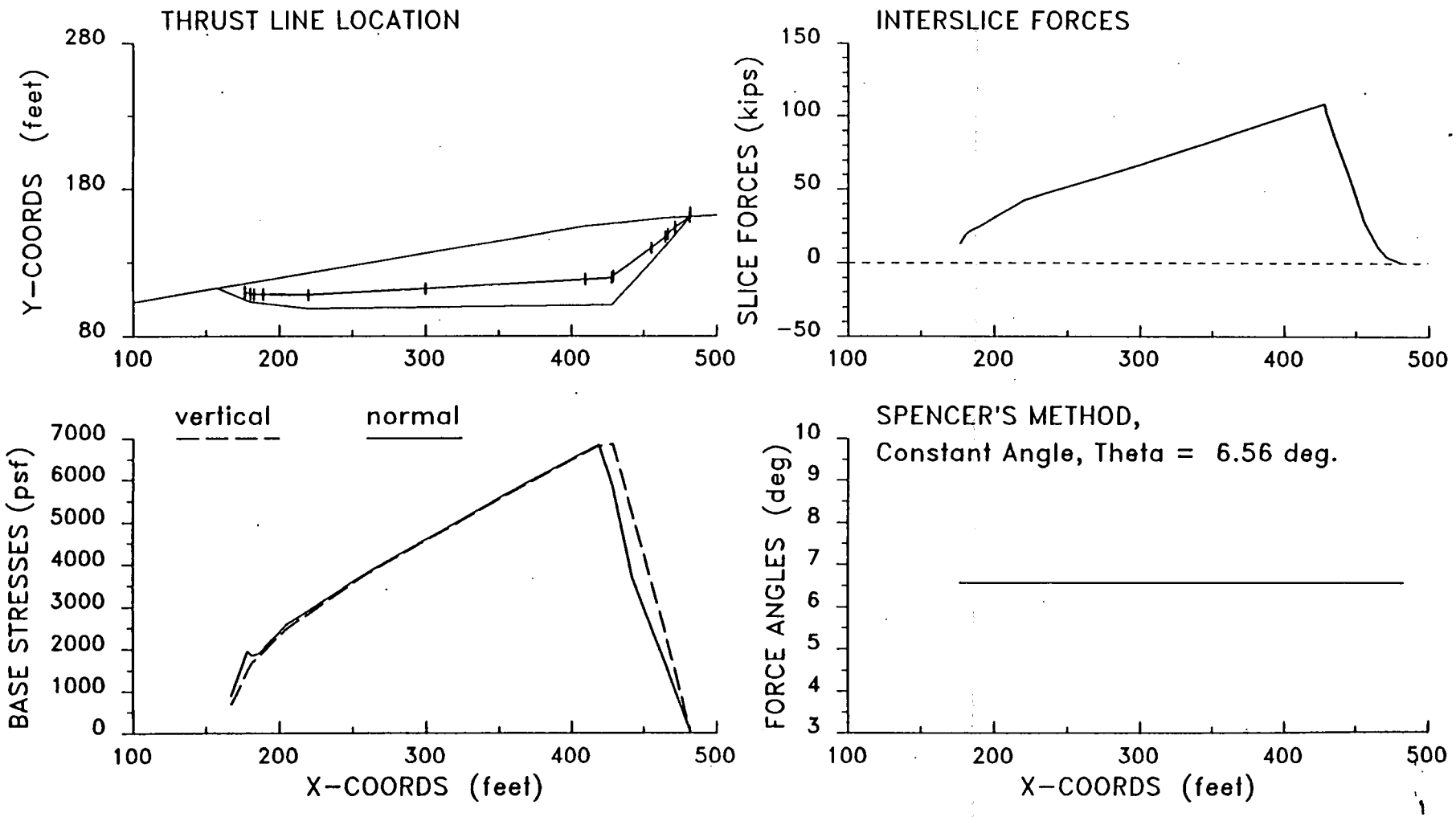

OSDF Final Long Term – Large Disp.
SPENCER'S METHOD, FOS for Specified Surface = 1.543

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2062

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*****************************************
*              X S T A B L              *
*                                       *
*       Slope Stability Analysis        *
*              using the                *
*           Method of Slices            *
*                                       *
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Problem Description : OSDF Final Long Term - Large Disp.

SEGMENT BOUNDARY COORDINATES
---

6 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	5.5	95.6	35.5	100.6	2
2	35.5	100.6	62.5	99.3	2
3	62.5	99.3	67.0	97.5	2
4	67.0	97.5	410.0	154.7	2
5	410.0	154.7	465.0	160.2	2
6	465.0	160.2	555.0	164.7	2

11 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	60.0	90.0	120.0	100.0	2
2	120.0	100.0	150.0	105.0	2
3	150.0	105.0	183.0	105.0	2
4	183.0	105.0	189.0	106.0	1
5	189.0	106.0	410.0	142.8	1
6	410.0	142.8	467.0	148.5	1
7	467.0	148.5	555.0	152.9	1
8	183.0	105.0	220.0	100.0	6
9	220.0	100.0	300.0	100.8	5
10	300.0	100.8	410.0	102.0	4
11	410.0	102.0	555.0	103.5	3

ISOTROPIC Soil Parameters
---

6 Soil unit(s) specified

2062

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	5.00	.000	.0	0
4	125.0	125.0	.0	6.00	.000	.0	0
5	125.0	125.0	.0	8.00	.000	.0	0
6	125.0	125.0	.0	10.00	.000	.0	0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 7 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	157.53	112.60
2	180.25	103.47
3	220.00	99.00
4	428.25	101.18
5	455.60	130.37
6	481.96	160.45
7	482.22	161.06

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	166.99	108.80	5.38	18.91	-21.89	9.47	12707.
2	178.35	104.24	11.83	3.81	-21.89	9.47	5634.
3	181.63	103.32	13.30	2.75	-6.42	9.47	4572.
4	186.00	102.82	14.52	6.00	-6.42	9.47	10891.
5	204.50	100.74	19.69	31.00	-6.42	9.47	76287.
6	260.00	99.42	30.27	80.00	.60	9.47	302667.
7	355.00	100.41	45.11	110.00	.60	9.47	620328.
8	419.13	101.08	54.53	18.25	.60	5.71	124392.

9	428.73	101.69	54.88	.95	46.86	5.71	6548.
10	442.40	116.28	41.66	26.40	46.86	5.71	137441.
11	460.30	135.73	24.00	9.40	48.77	5.71	28196.
12	466.00	142.24	18.01	2.00	48.77	2.86	4503.
13	469.35	146.06	14.36	4.69	48.77	2.86	8425.
14	476.83	154.59	6.20	10.27	48.77	2.86	7955.
15	482.09	160.76	.30	.26	66.95	2.86	10.

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	6.5387	1.5423	1.5719
3	6.5620	1.5427	1.5423

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	883.7	.0	30.00	0.	0.	0.	.00
2	1945.3	.0	30.00	0.	0.	0.	.00
3	1843.3	.0	30.00	0.	0.	0.	.00
4	1888.7	.0	10.00	0.	0.	0.	.00
5	2560.6	.0	10.00	0.	0.	0.	.00
6	3815.1	.0	8.00	0.	0.	0.	.00
7	5672.9	.0	6.00	0.	0.	0.	.00
8	6848.4	.0	5.00	0.	0.	0.	.00
9	5829.9	.0	5.00	0.	0.	0.	.00
10	3691.3	.0	25.00	0.	0.	0.	.00
11	2081.0	.0	25.00	0.	0.	0.	.00
12	1562.0	.0	25.00	0.	0.	0.	.00
13	1245.3	.0	25.00	0.	0.	0.	.00
14	511.4	.0	30.00	0.	0.	0.	.00
15	18.2	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	166.99	883.7	671.9	.0	330.7
2	178.35	1945.3	1479.2	.0	728.0
3	181.63	1843.3	1662.5	.0	689.9
4	186.00	1888.7	1815.2	.0	215.9
5	204.50	2560.6	2460.9	.0	292.7
6	260.00	3815.1	3783.3	.0	347.6
7	355.00	5672.9	5639.3	.0	386.5
8	419.13	6848.4	6816.0	.0	388.4
9	428.73	5829.9	6860.4	.0	330.6
10	442.40	3691.3	5207.0	.0	1115.8
11	460.30	2081.0	2999.6	.0	629.0
12	466.00	1562.0	2251.5	.0	472.2
13	469.35	1245.3	1795.1	.0	376.4

14	476.83	511.4	774.9	.0	191.4
15	482.09	18.2	37.4	.0	6.8

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	176.44	6.56	13053.	4.89	10.75	.455
2	180.25	6.56	18840.	5.06	12.92	.391
3	183.00	6.56	21324.	5.06	13.68	.370
4	189.00	6.56	23910.	5.80	15.36	.378
5	220.00	6.56	42028.	8.84	24.01	.368
6	300.00	6.56	66801.	12.40	36.52	.340
7	410.00	6.56	103021.	17.56	53.71	.327
8	428.25	6.56	108839.	18.49	55.35	.334
9	429.20	6.56	103179.	18.57	54.42	.341
10	455.60	6.56	28150.	9.44	28.89	.327
11	465.00	6.56	11633.	6.36	19.10	.333
12	467.00	6.56	8995.	5.88	16.92	.347
13	471.69	6.56	4060.	5.28	11.80	.447
14	481.96	6.56	7.	.29	.60	.481
15	482.22	.00	-2.	2.84	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3900.75 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 450.16 (psf)

Total Length of failure surface = 353.41 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.543

Total shear strength available along specified failure surface = 245.42E+03 lb

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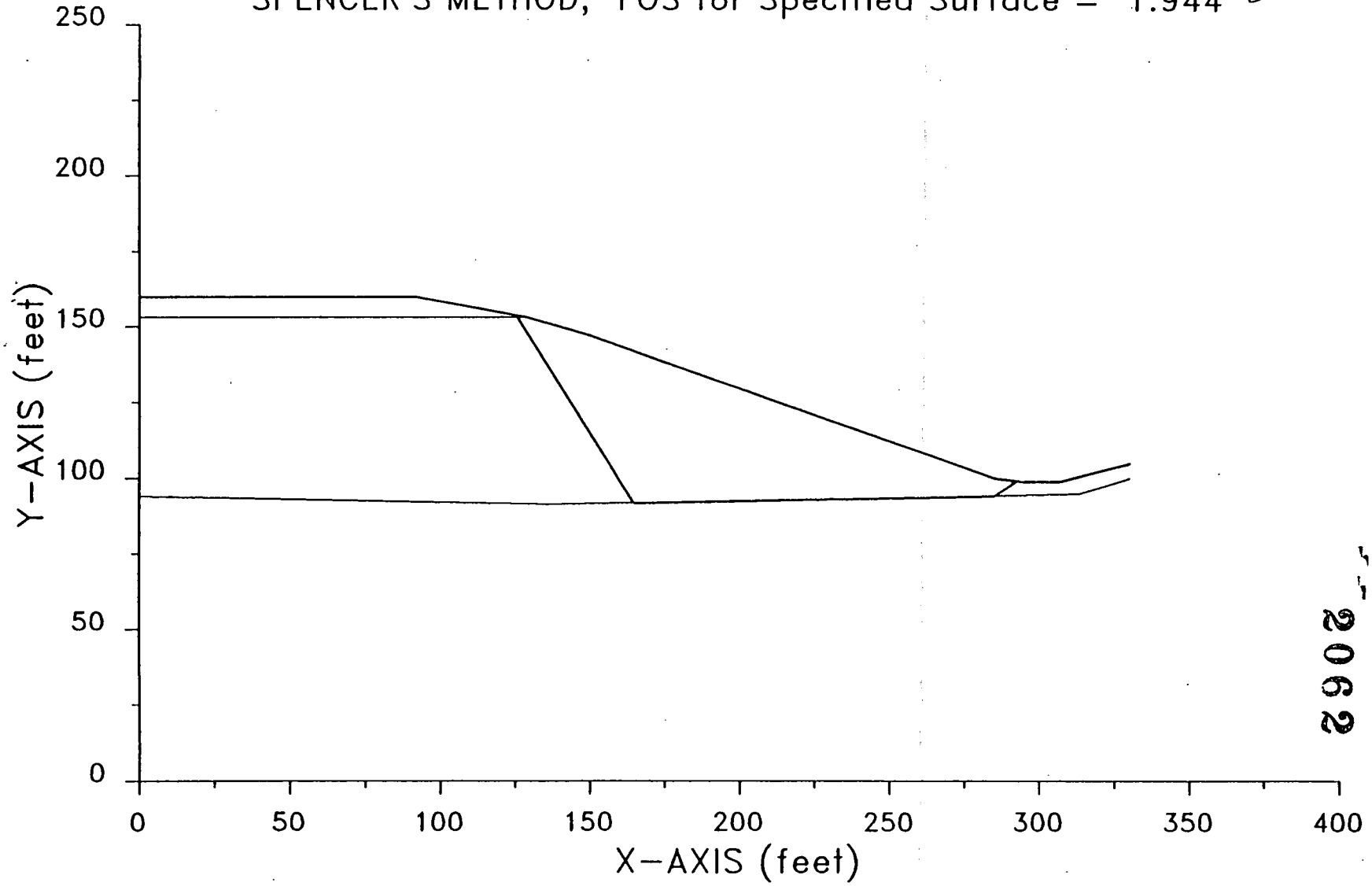
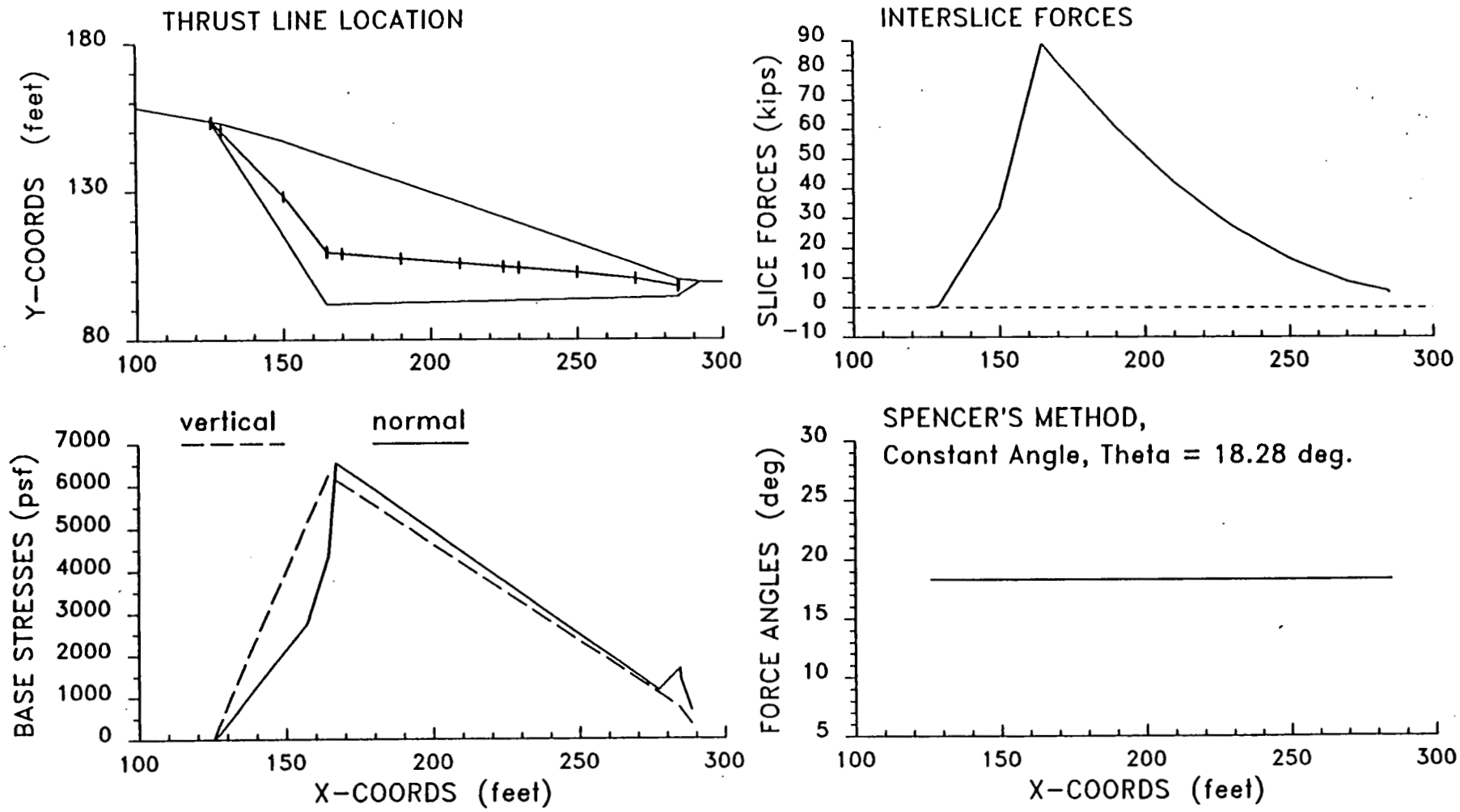
APPENDIX B

OSDF Interim Closure Short Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 1.944





OSDF Interim Closure Short Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 1.944

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
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Problem Description : OSDF Interim Closure Short Term,Peak

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	160.0	92.0	160.0	2
2	92.0	160.0	129.0	153.0	2
3	129.0	153.0	150.0	147.0	1
4	150.0	147.0	170.0	140.0	1
5	170.0	140.0	190.0	133.1	1
6	190.0	133.1	210.0	126.1	1
7	210.0	126.1	230.0	119.1	1
8	230.0	119.1	250.0	112.2	1
9	250.0	112.2	270.0	105.2	1
10	270.0	105.2	285.0	100.0	1
11	285.0	100.0	294.0	99.0	2
12	294.0	99.0	307.0	99.0	2
13	307.0	99.0	330.0	105.0	2

6 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	153.0	129.0	153.0	1
2	.0	94.1	136.5	91.4	3
3	136.5	91.4	224.8	93.2	3
4	224.8	93.2	285.0	94.4	3
5	285.0	94.4	313.0	95.0	3
6	313.0	95.0	330.0	100.0	3

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	200.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	220.1
4	2880.0	880.5
5	6480.0	1981.1
6	10080.0	1981.1

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 8 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	292.31	99.19
2	284.78	94.40
3	284.58	94.19
4	224.80	93.00
5	164.88	91.78
6	164.69	91.97
7	125.81	153.00
8	125.42	153.68

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

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Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	288.65	96.86	2.73	7.31	-32.45	6.34	2495.
2	284.89	94.47	5.57	.22	-32.45	19.12	156.
3	284.68	94.29	5.82	.20	-46.40	19.12	142.
4	277.29	94.04	8.63	14.58	-1.14	19.12	15724.
5	260.00	93.70	15.00	20.00	-1.14	19.29	37498.
6	240.00	93.30	22.35	20.00	-1.14	19.03	55869.
7	227.40	93.05	26.96	5.20	-1.14	19.29	17523.
8	217.40	92.85	30.66	14.80	-1.17	19.29	56722.
9	200.00	92.50	37.10	20.00	-1.17	19.29	92762.
10	180.00	92.09	44.46	20.00	-1.17	19.03	111155.
11	167.44	91.83	49.06	5.12	-1.17	19.29	31401.
12	164.78	91.88	49.95	.19	45.00	19.29	1205.
13	157.34	103.50	40.93	14.69	57.50	19.29	75139.
14	139.50	131.51	18.49	21.00	57.50	15.95	48534.
15	127.40	150.50	2.81	3.19	57.50	10.71	1119.
16	125.61	153.34	.30	.39	60.07	10.71	15.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	18.2890	1.9450	1.9392
3	18.2848	1.9449	1.9450

Nonlinear M-C Iteration Number - 2

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	18.2848	1.9441	1.9450

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	18.2848	1.9441	1.9450

SLICE INFORMATION ... continued :

Slice	Sigma	c-value	phi	U-base	U-top	P-top	Delta

	(psf)	(psf)		(lb)	(lb)	(lb)	
1	678.5	.0	30.00	0.	0.	0.	.00
2	1425.6	200.0	25.00	0.	0.	0.	.00
3	1668.2	.0	17.00	0.	0.	0.	.00
4	1149.4	.0	17.00	0.	0.	0.	.00
5	1998.1	.0	17.00	0.	0.	0.	.00
6	2977.0	.0	17.00	0.	0.	0.	.00
7	3591.2	.0	17.00	0.	0.	0.	.00
8	4085.4	.0	17.00	0.	0.	0.	.00
9	4944.1	.0	17.00	0.	0.	0.	.00
10	5924.4	.0	17.00	0.	0.	0.	.00
11	6534.4	1981.1	.00	0.	0.	0.	.00
12	4348.8	.0	17.00	0.	0.	0.	.00
13	2747.1	200.0	25.00	0.	0.	0.	.00
14	1202.5	200.0	25.00	0.	0.	0.	.00
15	122.9	200.0	25.00	0.	0.	0.	.00
16	20.3	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	288.65	678.5	341.3	.0	201.5
2	284.89	1425.6	696.3	.0	444.8
3	284.68	1668.2	727.4	.0	262.3
4	277.29	1149.4	1078.5	.0	180.7
5	260.00	1998.1	1874.9	.0	314.2
6	240.00	2977.0	2793.4	.0	468.2
7	227.40	3591.2	3369.8	.0	564.7
8	217.40	4085.4	3832.6	.0	642.5
9	200.00	4944.1	4638.1	.0	777.5
10	180.00	5924.4	5557.8	.0	931.6
11	167.44	6534.4	6133.0	.0	1019.0
12	164.78	4348.8	6243.7	.0	683.9
13	157.34	2747.1	5116.0	.0	761.8
14	139.50	1202.5	2311.2	.0	391.3
15	127.40	122.9	350.7	.0	132.4
16	125.61	20.3	37.7	.0	6.0

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	285.00	18.28	4872.	3.53	5.46	.647
2	284.78	18.28	5192.	3.52	5.68	.620
3	284.58	18.28	5607.	3.52	5.96	.592
4	270.00	18.28	8733.	6.45	11.30	.571
5	250.00	18.28	16190.	8.87	18.70	.475
6	230.00	18.28	27299.	10.84	26.00	.417

7	224.80	18.28	30783.	11.33	27.92	.406
8	210.00	18.28	42094.	12.78	33.40	.383
9	190.00	18.28	60591.	14.82	40.81	.363
10	170.00	18.28	82755.	16.93	48.12	.352
11	164.88	18.28	88967.	17.47	50.01	.349
12	164.69	18.28	88223.	17.49	49.89	.351
13	150.00	18.28	33305.	13.11	31.97	.410
14	129.00	18.28	212.	2.09	5.01	.418
15	125.81	18.28	9.	.28	.60	.460
16	125.42	.00	-3.	-.82	.00	.000

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AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 2851.89 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 539.54 (psf)

Total Length of failure surface = 202.35 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.944

Total shear strength available along specified failure surface = 212.25E+03 lb

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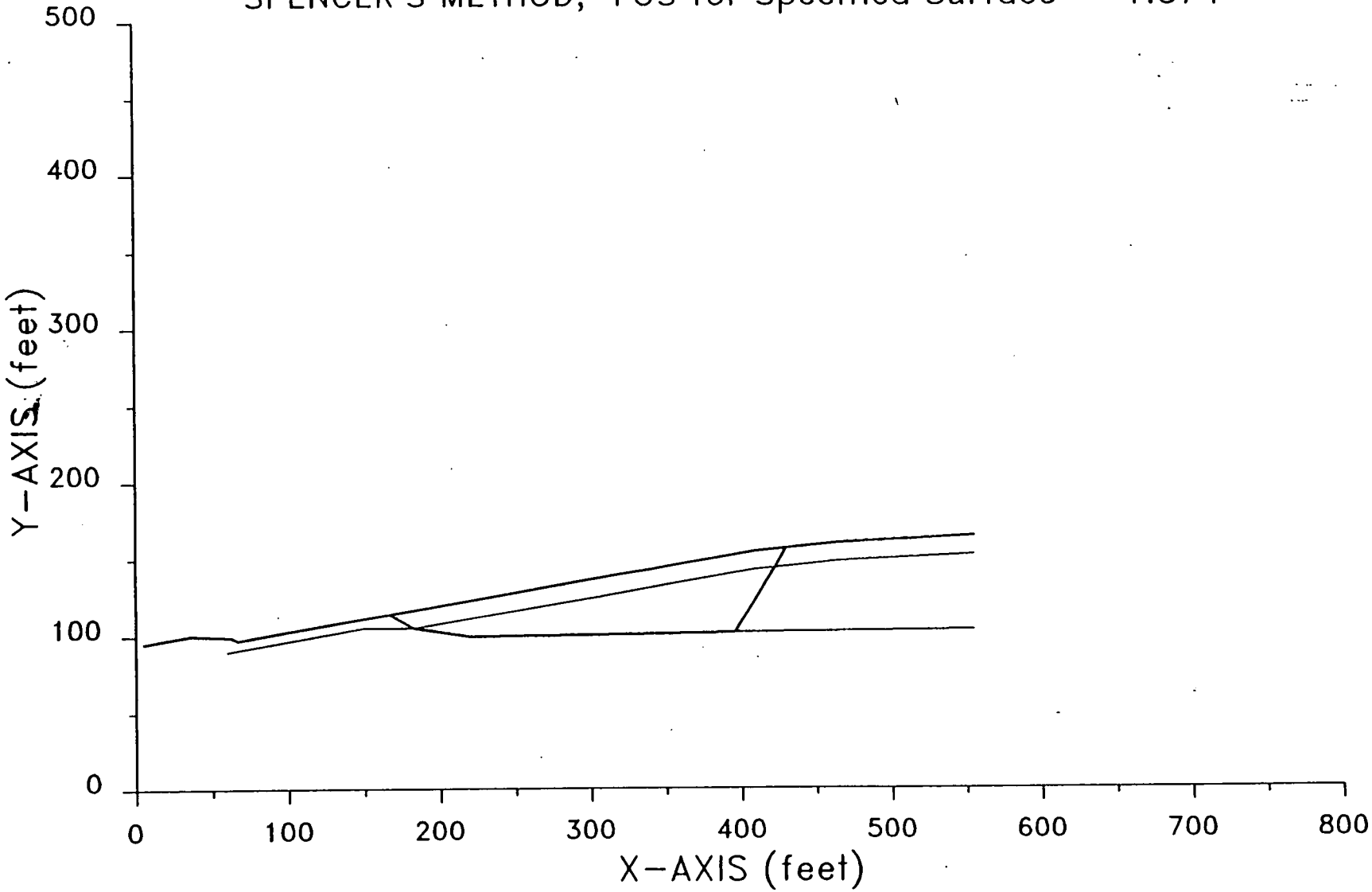
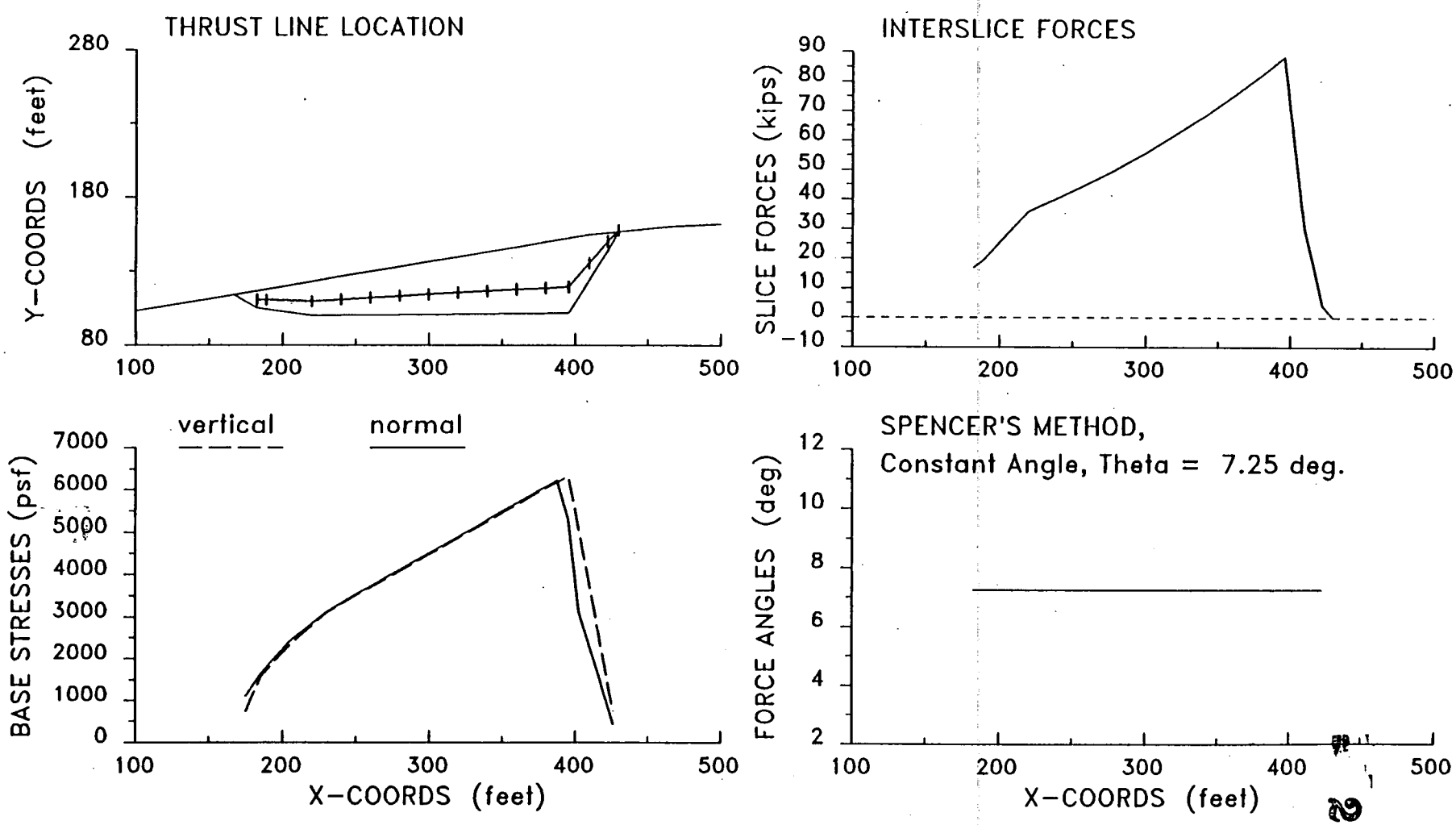
OSDF Final Long Term – Large Displ.

SPENCER'S METHOD, FOS for Specified Surface = 1.574



000165

25/31



OSDF Final Long Term – Large Displ.
SPENCER'S METHOD, FOS for Specified Surface = 1.574

000166

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7/26/91

XSTABL File: CASE7FS 9-23-97 15:11

```
*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 á 96       *
*   Interactive Software Designs, Inc.  *
*        Moscow, ID 83843, U.S.A.       *
*                                       *
*          All Rights Reserved          *
*                                       *
*  Ver. 5.201                 96 á 1202 *
*****************************************
```

Problem Description : OSDF Final Long Term - Large Displ.

SEGMENT BOUNDARY COORDINATES
---

15 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	5.5	95.6	35.5	100.6	2
2	35.5	100.6	62.5	99.4	2
3	62.5	99.4	67.0	97.5	2
4	67.0	97.5	220.0	123.0	2
5	220.0	123.0	240.0	126.4	2
6	240.0	126.4	260.0	129.7	2
7	260.0	129.7	280.0	133.0	2
8	280.0	133.0	300.0	136.4	2
9	300.0	136.4	320.0	139.7	2
10	320.0	139.7	340.0	143.0	2
11	340.0	143.0	360.0	146.4	2
12	360.0	146.4	380.0	149.7	2
13	380.0	149.7	410.0	154.7	2
14	410.0	154.7	465.0	160.2	2
15	465.0	160.2	555.0	164.7	2

11 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	60.0	90.0	120.0	100.0	2
2	120.0	100.0	150.0	105.0	2
3	150.0	105.0	183.0	105.0	2
4	183.0	105.0	189.0	106.0	1

5	189.0	106.0	410.0	142.8	1
6	410.0	142.8	467.0	148.5	1
7	467.0	148.5	555.0	152.9	1
8	183.0	105.0	220.0	100.0	3
9	220.0	100.0	300.0	100.8	3
10	300.0	100.8	410.0	102.0	3
11	410.0	102.0	555.0	103.5	3

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ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	158.4
4	2880.0	360.0
5	6480.0	734.4
6	10080.0	734.4

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 8 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	167.10	114.18
2	183.00	105.00
3	220.00	99.80
4	300.00	100.60
5	395.59	101.66
6	395.77	101.84
7	422.67	144.07
8	429.96	156.70

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	175.05	109.59	5.92	15.90	-30.01	9.46	11759.
2	186.00	104.58	12.75	6.00	-8.00	9.46	9566.
3	204.50	101.98	18.44	31.00	-8.00	9.46	71448.
4	230.00	99.90	24.80	20.00	.57	9.65	62000.
5	250.00	100.10	27.95	20.00	.57	9.37	69875.
6	270.00	100.30	31.05	20.00	.57	9.37	77625.
7	290.00	100.50	34.20	20.00	.57	9.65	85500.
8	310.00	100.71	37.34	20.00	.64	9.37	93348.
9	330.00	100.93	40.42	20.00	.64	9.37	101043.
10	350.00	101.15	43.55	20.00	.64	9.65	108864.
11	370.00	101.38	46.67	20.00	.64	9.37	116684.
12	387.79	101.57	49.43	15.59	.64	9.46	96318.
13	395.68	101.75	50.56	.18	45.00	9.46	1157.
14	402.89	113.01	40.50	14.23	57.50	9.46	72028.
15	416.34	134.12	21.21	12.67	57.50	5.71	33589.
16	426.32	150.38	5.95	7.29	60.00	5.71	5421.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	7.1536	1.5717	1.6178
3	7.2533	1.5739	1.5717
4	7.2509	1.5738	1.5739

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	7.2509	1.5738	1.5739

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	1107.2	.0	30.00	0.	0.	0.	.00

2	1666.1	91.2	5.33	0.	0.	0.	.00
3	2401.4	91.2	5.33	0.	0.	0.	.00
4	3124.7	60.5	5.94	0.	0.	0.	.00
5	3521.1	60.5	5.94	0.	0.	0.	.00
6	3911.1	60.5	5.94	0.	0.	0.	.00
7	4307.4	60.5	5.94	0.	0.	0.	.00
8	4701.3	60.5	5.94	0.	0.	0.	.00
9	5088.5	60.5	5.94	0.	0.	0.	.00
10	5482.0	60.5	5.94	0.	0.	0.	.00
11	5875.5	60.5	5.94	0.	0.	0.	.00
12	6221.6	60.5	5.94	0.	0.	0.	.00
13	5305.7	60.5	5.94	0.	0.	0.	.00
14	3111.4	.0	25.00	0.	0.	0.	.00
15	1629.3	.0	25.00	0.	0.	0.	.00
16	411.0	.0	30.00	0.	0.	0.	.00

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SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	175.05	1107.2	739.6	.0	406.2
2	186.00	1666.1	1594.4	.0	156.8
3	204.50	2401.4	2304.8	.0	200.4
4	230.00	3124.7	3100.0	.0	244.9
5	250.00	3521.1	3493.8	.0	271.1
6	270.00	3911.1	3881.3	.0	296.9
7	290.00	4307.4	4275.0	.0	323.1
8	310.00	4701.3	4667.4	.0	349.1
9	330.00	5088.5	5052.2	.0	374.7
10	350.00	5482.0	5443.2	.0	400.7
11	370.00	5875.5	5834.2	.0	426.7
12	387.79	6221.6	6178.2	.0	449.6
13	395.68	5305.7	6320.3	.0	389.0
14	402.89	3111.4	5062.8	.0	921.9
15	416.34	1629.3	2651.1	.0	482.7
16	426.32	411.0	743.6	.0	150.8

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	183.00	7.25	16760.	5.60	11.83	.473
2	189.00	7.25	19125.	6.42	13.68	.469
3	220.00	7.25	35932.	9.77	23.20	.421
4	240.00	7.25	40240.	10.95	26.40	.415
5	260.00	7.25	44996.	12.01	29.50	.407
6	280.00	7.25	50193.	12.99	32.60	.398
7	300.00	7.25	55838.	13.90	35.80	.388
8	320.00	7.25	61825.	14.76	38.88	.380
9	340.00	7.25	68241.	15.59	41.96	.372

10	360.00	7.25	75094.	16.38	45.13	.363
11	380.00	7.25	82383.	17.15	48.21	.356
12	395.59	7.25	88364.	17.74	50.64	.350
13	395.77	7.25	87456.	17.76	50.49	.352
14	410.00	7.25	30626.	11.16	30.52	.366
15	422.67	7.25	4123.	5.85	11.90	.492
16	429.96	.00	0.	.66	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3548.13 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 383.25 (psf)

Total Length of failure surface = 296.23 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.574

Total shear strength available along specified failure surface = 178.68E+03 lb

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GCL 22

COMPUTATION COVER SHEET

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SUBJECT OF COMPUTATIONS Geosynthetic Clay Liner (GCL) QA22 and QC08- Compliance Package

Computations By:
(Cognizant Engineer)

Signature [signature] Date 5 NOV 97

Printed Name and Title M. CATALINA OROZCO
STAFF ENGINEER

Assumptions and Procedures Checked By:
(Checker)

Signature [signature] Date 5 NOV 1997

Printed Name and Title ROBERT A. MORGAN III
SR. STAFF ENGINEER

Computations Checked by:

Signature [signature] Date 5 NOV 1997

Printed Name and Title ROBERT A. MORGAN III
SR. STAFF ENGINEER

Computations Backchecked by:
(Cognizant Engineer)

Signature [signature] Date 5 NOV 97

Printed Name and Title M. CATALINA OROZCO
STAFF ENGINEER

Approved by:
(PDP)

Signature [signature] Date 6 Nov 97

Printed Name and Title Gary R. Schmertmann
Sr. Project Engineer

Approved by:
(DTL and TETL)

Signature [signature] Date 10 Nov 97

Printed Name and Title Kenneth W Cargill
Associate

Record of Revision (Number and initial all revisions)

Rev. No.	Reason	Date	By	Checked	Approval

Written By: MCO Date: 11 / 5 / 97 Reviewed by: RAM Date: 11 / 5 / 97

Client: FDF Project: OSDF Project/Proposal No.: GQ0166 Task No.: 04

PURPOSE

Evaluate whether GCL lot number 97101002 complies with the shear strength requirements given in the GCL specification (Section 02772, Paragraph 2.01.E.3). The evaluation is based on the shear test results from GCL QA sample no. 22 and GCL QC sample no. 08

METHOD

The method for evaluating the GCL samples is outlined in RCI number 1702-006R. The method involves the following basic steps.

1. Use shear test results from the GCL samples to establish the envelopes of measured peak and large-displacement internal and interface shear strength.
2. Reanalyze two slope stability cases that were included in the OSDF design calculations using the measured peak and large-displacement strength envelopes established in Step 1. Obtain the slope stability factors of safety for the critical potential slip surface for each analysis case.
3. Compare the slope stability factors of safety computed in Step 2 to the baseline factors of safety.

SHEAR TEST RESULTS

The results of the GCL internal shear and GCL/geomembrane interface shear tests performed on QA sample no. 22 and the results of the GCL internal shear tests performed on QC sample no. 08 are shown in the following table. The results of the GCL internal shear tests for QA sample no. 22 were averaged with the results of the GCL internal shear tests for QC sample no. 08. The averaged values for the GCL internal shear tests were used in the stability analyses. The laboratory test results for GCL QA sample no. 22 are presented in Appendix A. The laboratory test results for GCL QC sample no. 08 are presented in Appendix B.

Test Type	Case	Sample No.	Measured Shear Strengths (psi)		
			5 psi	20 psi	45 psi
GCL Internal	Peak	QA 22	4.6	13.5	20.8
		QC 08	3.55	13.153	17.73
		Average QA22-QC08	**4.075**	**13.327**	**19.265**
	Large-displacement	QA 22	4.0	2.9	5.9
		QC 08	2.29	5.861	3.86
		Average QA22-QC08	**3.145**	**4.381**	**4.880**
GCL/GMB Interface	Peak	QA 22	**2.6**	**9.8**	**16.4**
	Large-displacement	QA 22	**2.2**	**6.1**	**11.0**

Written By: MCO Date: 11/5/97 Reviewed by: RAM Date: 11/5/97

Client: FDF Project: OSDF Project/Proposal No.: GQ0166 Task No.: 04

STABILITY ANALYSES RESULTS

The results of the slope stability analyses performed using the computer program XSTABL are shown in the table below. The analyses output files and figures showing critical slip surfaces are presented in Appendix C.

Sample No.	Test Type	Filename	Factor of Safety	Comply ?
Baseline	Peak	NA	1.9	NA
Average QA22-QC08	GCL Internal	NPP22AS ✓	2.8 ✓	YES ✓
QA 22	GCL/GMB Interface	NPK22BS ✓	2.4 ✓	YES ✓
Baseline	Large-displacement	NA	1.6	NA
Average QA22-QC08	GCL Internal	NPL22ADS ✓	1.8 ✓	YES ✓
QA 22	GCL/GMB Interface	NLD22BS ✓	2.7 ✓	YES ✓

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MCD 5 NOV 1997
RAM 5 NOV 1997

APPENDIX A

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 22I

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-22). GCL's initial moisture content was 10.0%. GCL's final moisture content ranged from 55% to 75% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the Bentofix NS GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 22G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-22) with woven geotextile against geomembrane. GCL's initial moisture content was 9.1%. GCL's final moisture content ranged from 54 to 82% for the test series;
- 80-mil NSC textured HDPE geomembrane (GM-16); and
- lower shear box: bedding layer of compacted concrete sand.

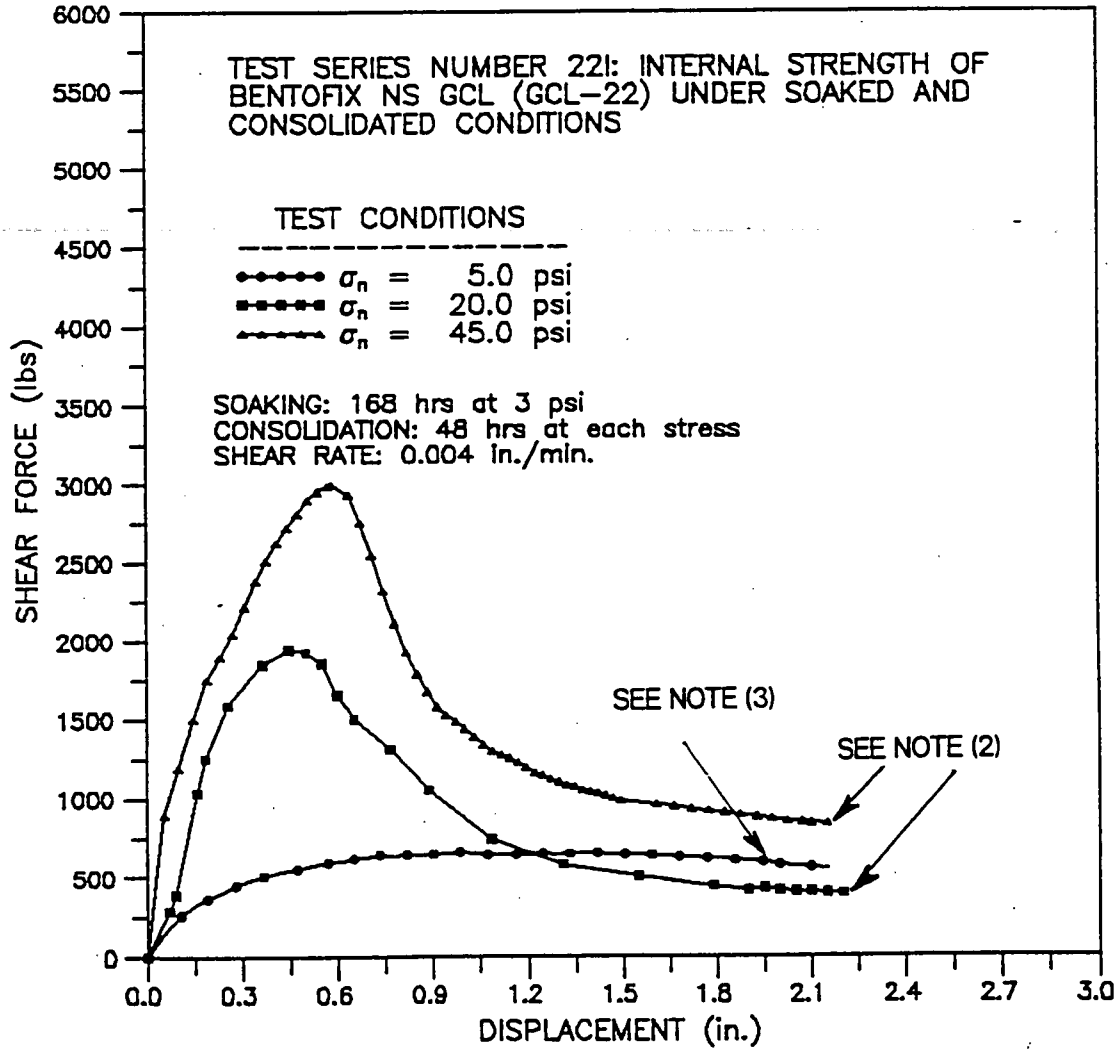
Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 1 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) Internal shear failure within GCL was observed.
(3) Partial internal shear failure within GCL was observed.

DATE TESTED: 23 OCTOBER TO 1 NOVEMBER 1997

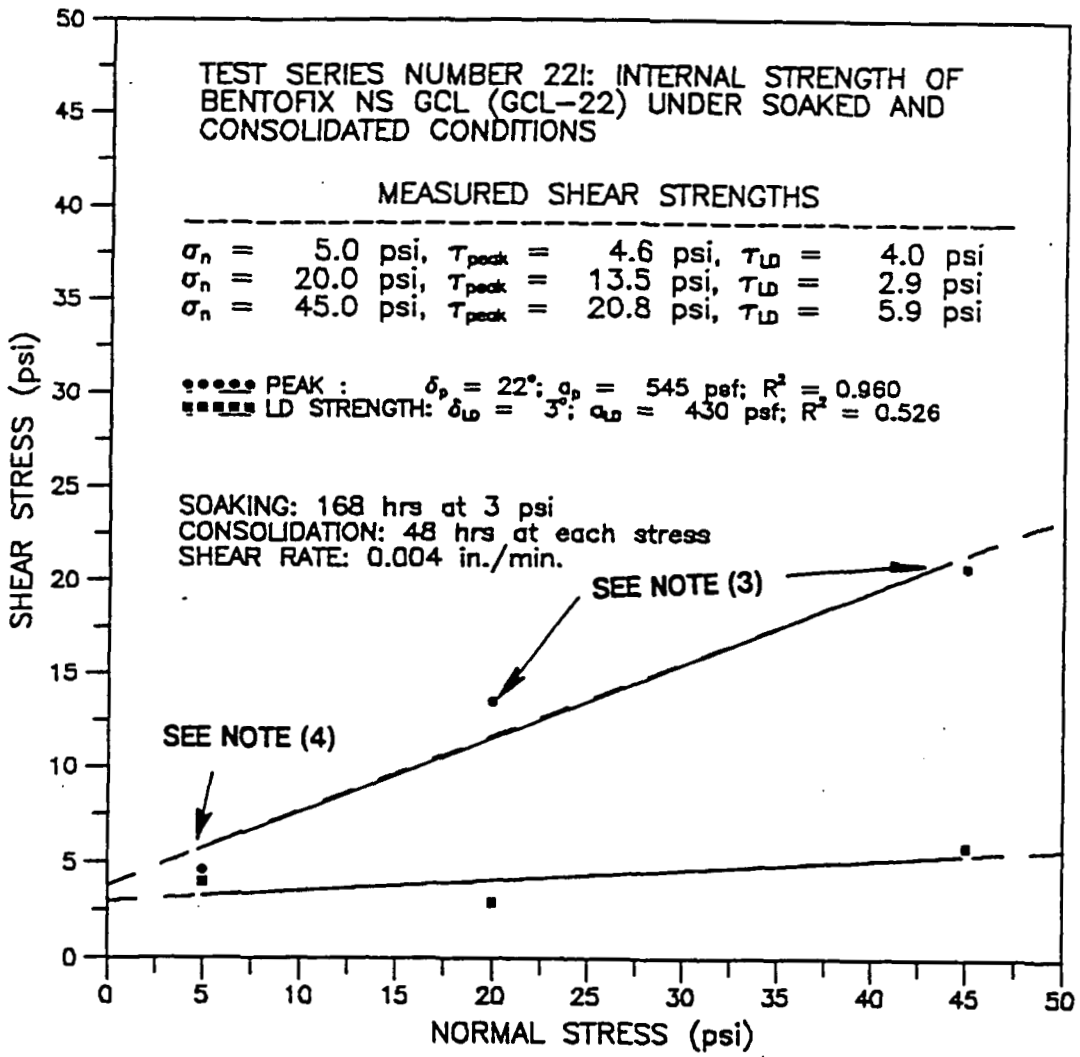
000179

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-1
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730117
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) Partial internal failure within GCL was observed.

DATE TESTED: 23 OCTOBER TO 1 NOVEMBER 199

000180

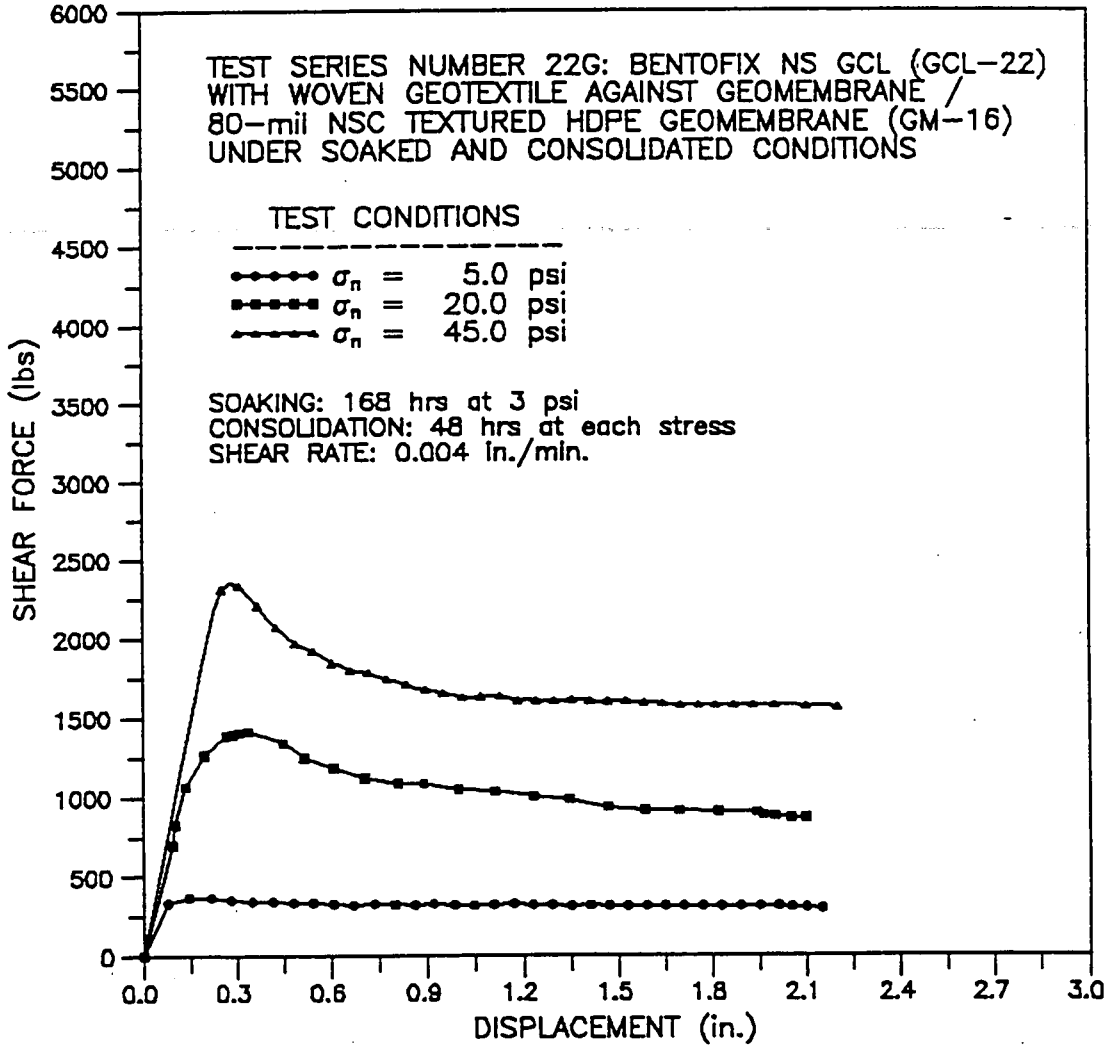
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-2
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730117
FILE NO.	

2062

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) For each test, sliding (i.e., shear failure) was observed to occur at the intended interface.

DATE TESTED: 11 TO 21 OCTOBER 1997

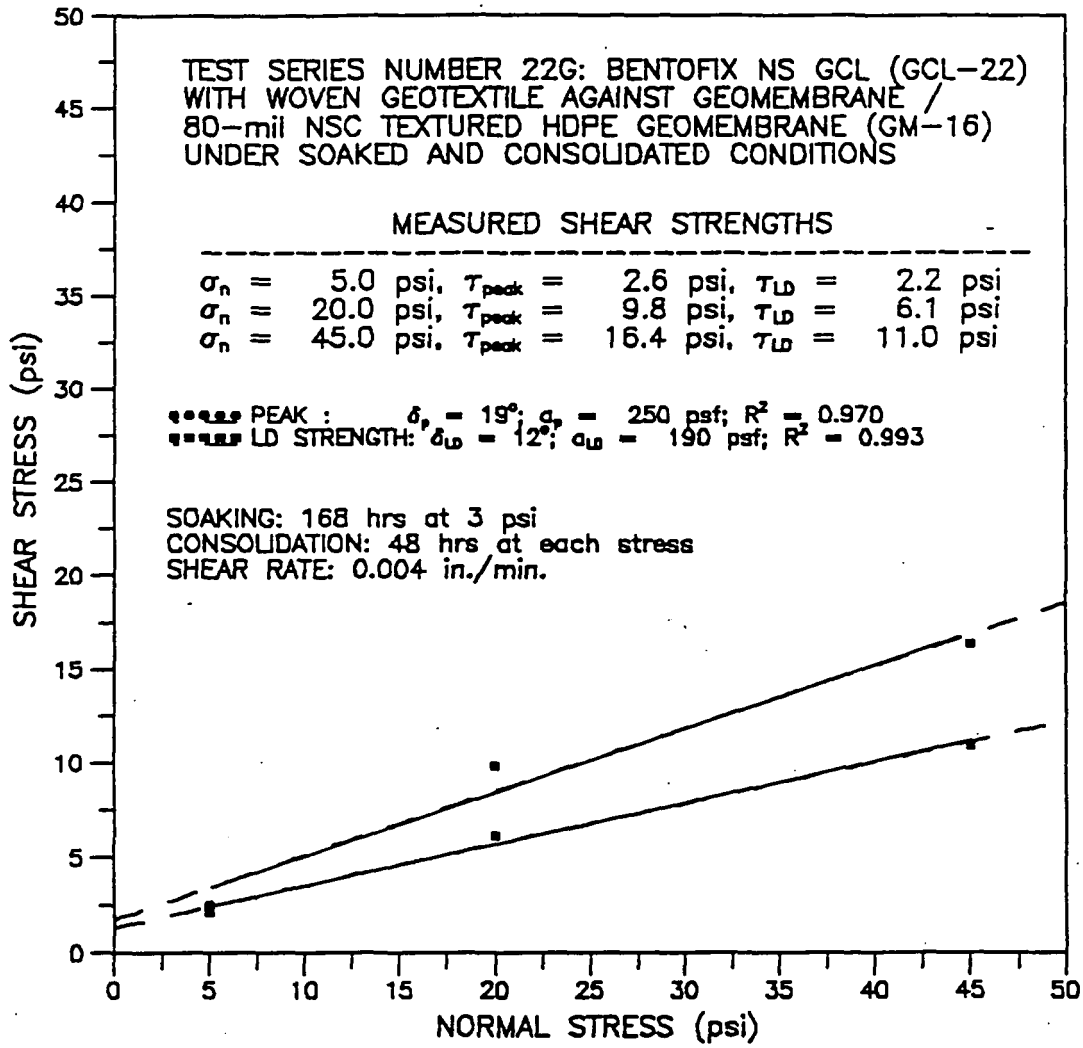
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

000181

FIGURE NO.	A-3
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730117
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) For each test, sliding (i.e., shear failure) was observed to occur at the intended interface.

DATE TESTED: 11 TO 21 OCTOBER 19

000182

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-4
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730117
FILE NO.	

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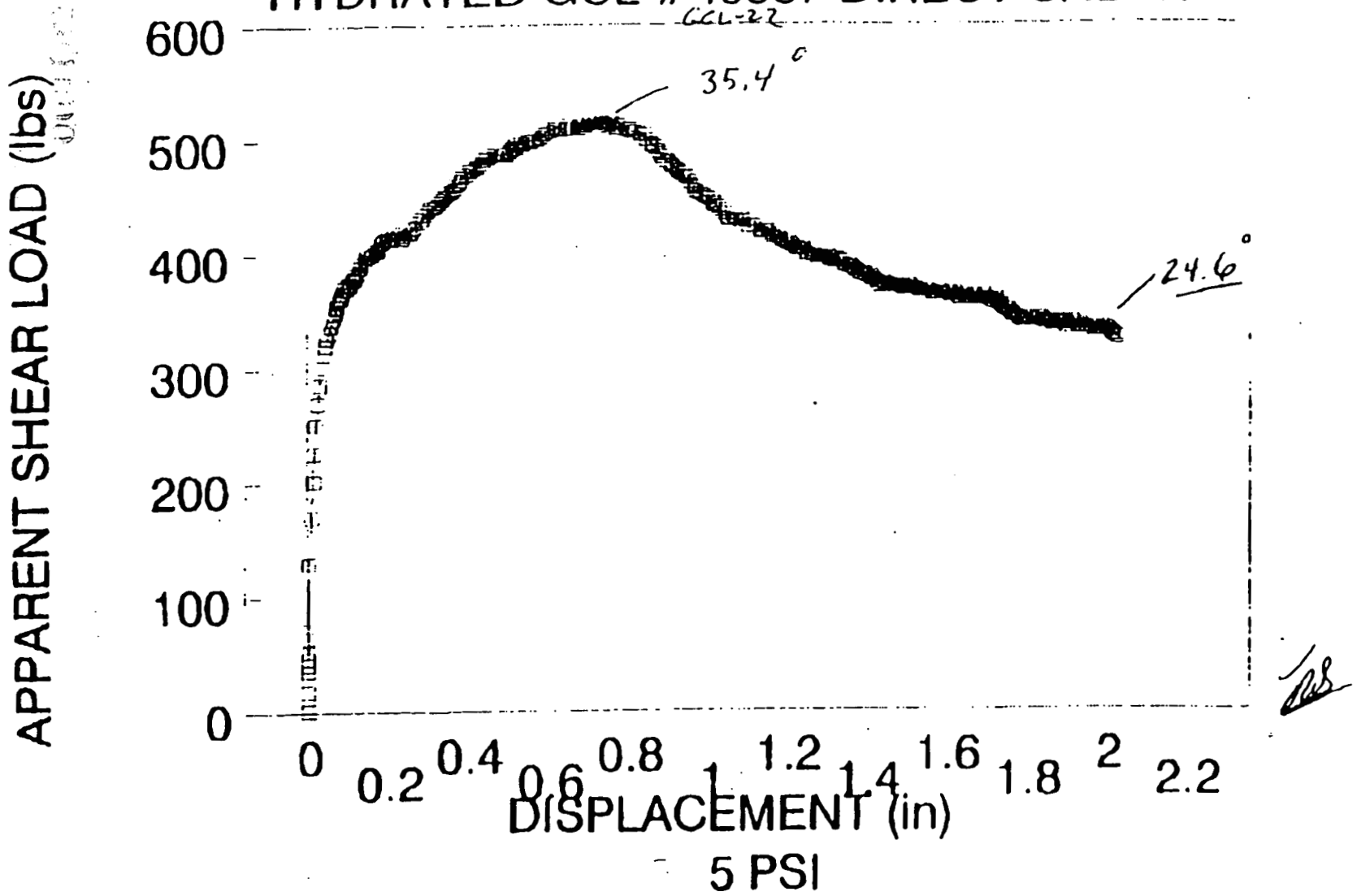
MCD 5 NOV 1997
RAM 5 NOV 1997

APPENDIX B

PETRO ENVIRONMENTAL 54-7239-00
HYDRATED GCL #40667 DIRECT SHEAR



000184

Consulting Engineers
Laboratory Services Group 1969 Techny Road Northbrook, Illinois 60062 Phone: (847) 267-8030 Fax:(847) 272-8320

Determining the Internal Shear Strength of Geosynthetics By the Direct Shear Method ASTM D 5321

Project Name: Petro Enviromental Technologies
Date Tested: 10-20-97

STS Project # 29550

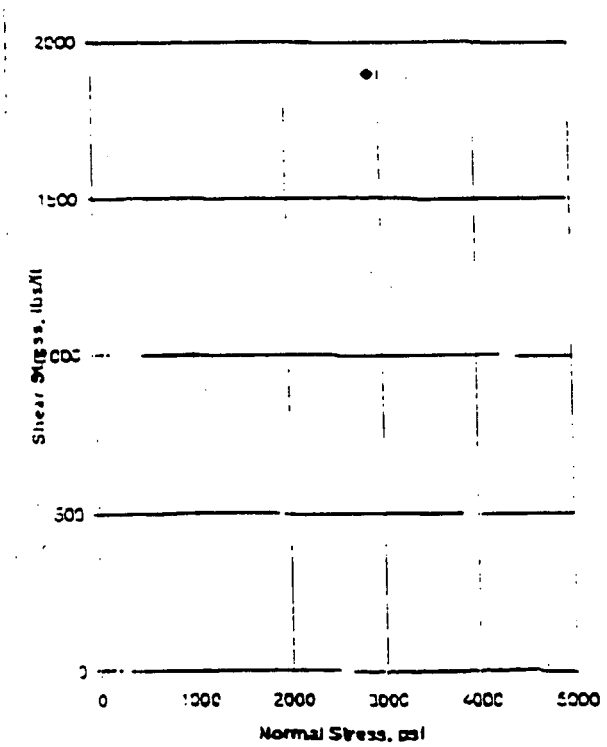
Test Parameters
Material Tested: Geosynthetic Clay Liner
Shear Rate: 0.004 in/min
7 Day Hydration 48 hour Consolidation

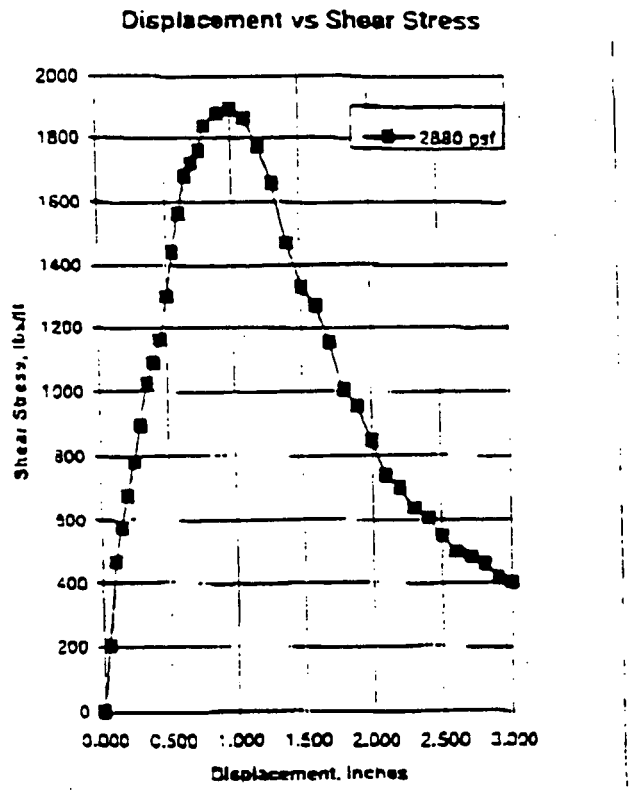
Sample ID Roll No.40667 6022

Test Results

Normal Stress psf	Shear Stress lbs/ft
2880	1894
[illegible]	

Summary of Results
Peak Friction Angle: –
Adhesion: –





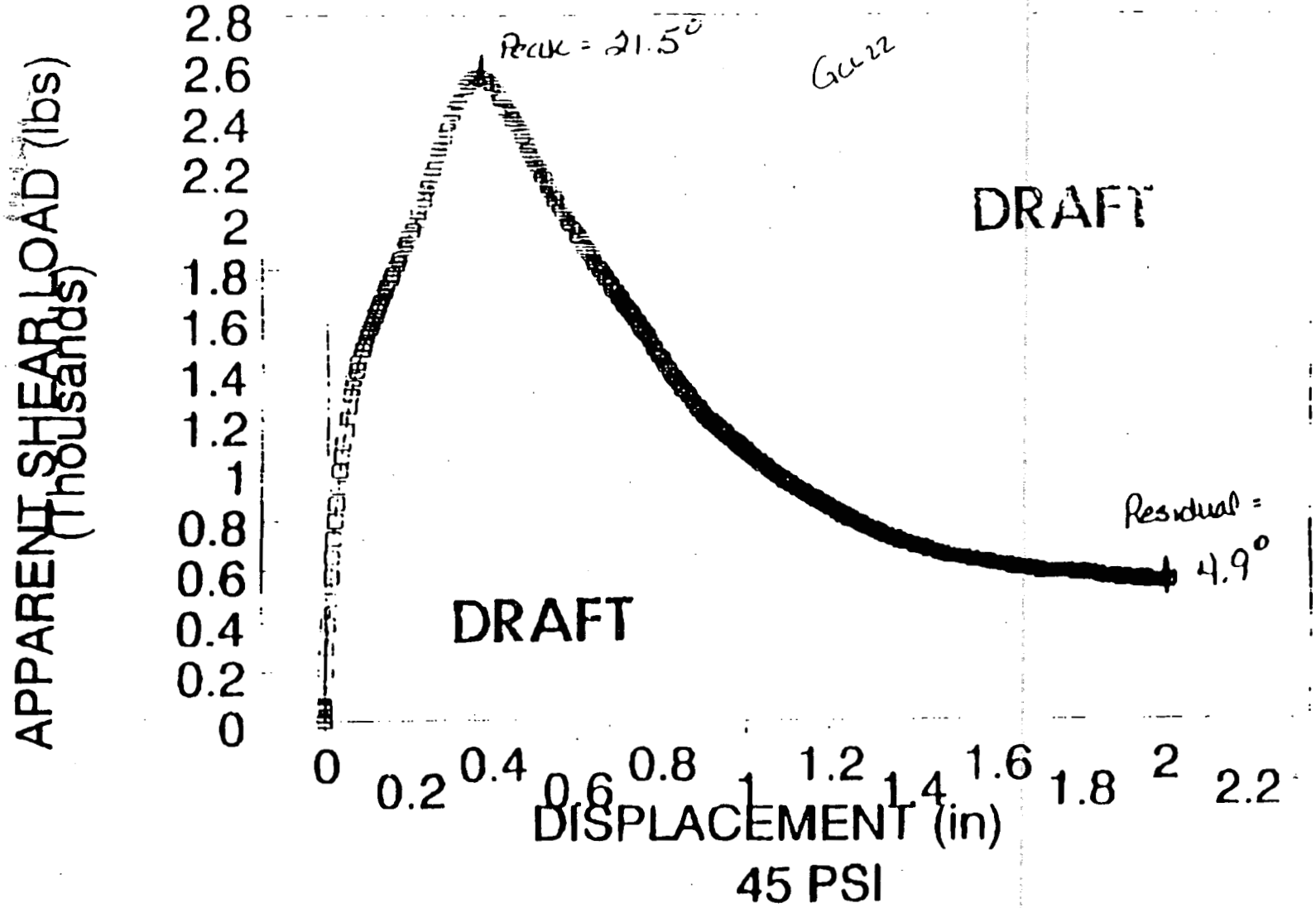
Determining the Internal Shear Strength of Geosynthetics
By the Direct Shear Method
ASTM D 5321

Sample ID Roll No.40667

STS Project # 29550
Date Tested: 10-20-97

Displacement inches	Shear Stress 2880psf lbs/ft
0.000	0
0.050	203
0.100	467
0.150	574
0.200	677
0.250	782
0.300	897
0.350	1025
0.400	1092
0.450	1160
0.500	1299
0.550	1442
0.600	1564
0.650	1679
0.700	1720
0.755	1762
0.800	1835
0.900	1879
1.000	1894
1.100	1864
1.200	1775
1.300	1659
1.400	1471
1.500	1331
1.600	1269
1.700	1157
1.800	1003
1.900	954
2.000	844
2.100	741
2.200	702
2.300	636
2.400	607
2.500	548
2.600	499
2.700	481
2.800	459
2.900	416
3.000	400

PETRO ENVIRONMENTAL 54-7239-00
HYDRATED GCL #40667 DIRECT SHEAR



2062

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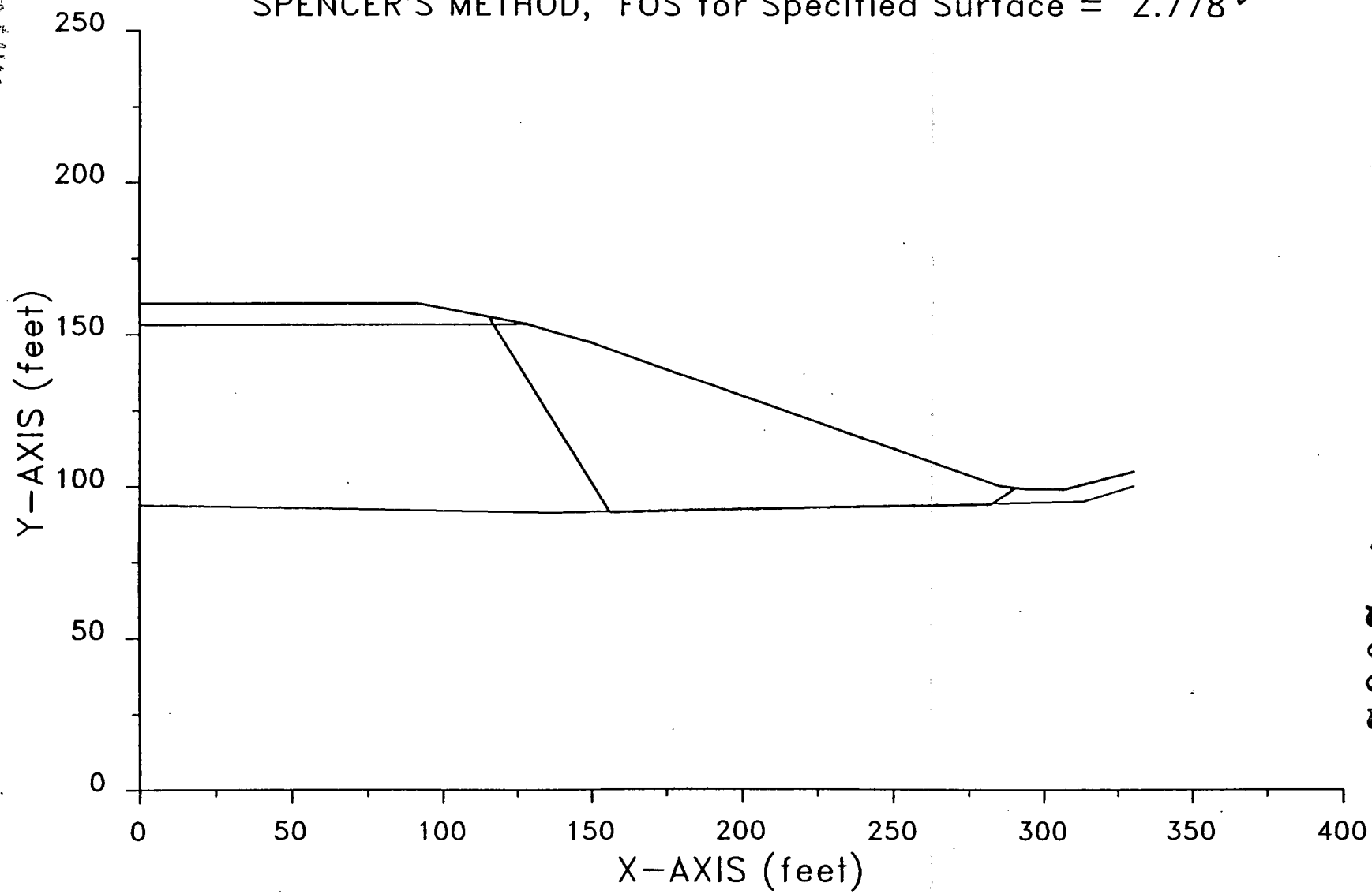
14/43

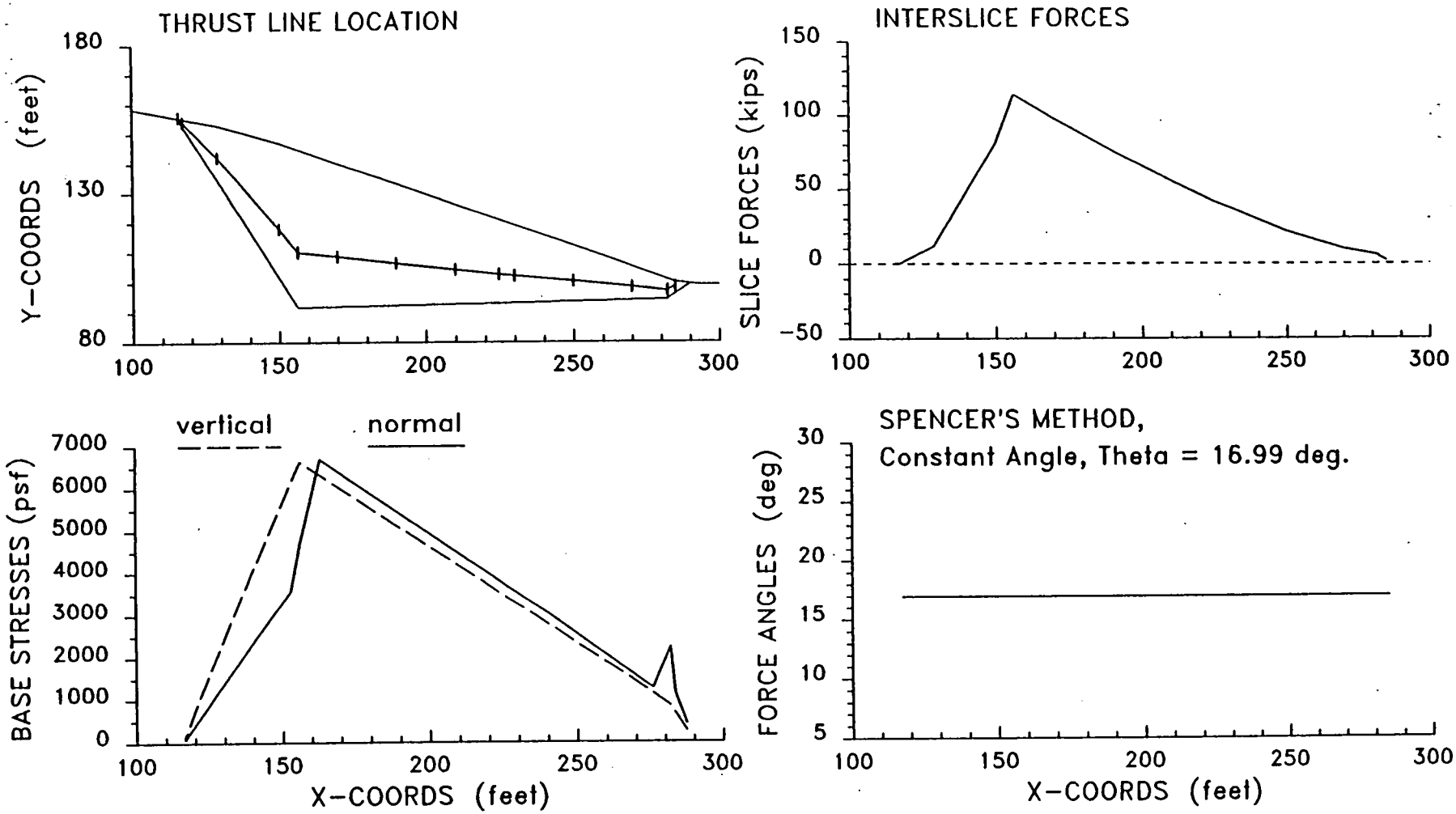
15/15

MCO 5 NOV 1997
RAM 5 NOV 1997

APPENDIX C

OSDF Interim Closure/Short-Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 2.778





OSDF Interim Closure/Short-Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 2.778 ✓

000190

XSTABL File: NPP22AS 11-04-97 8:19 **2062**

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*              X S T A B L              *
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*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
*                                       *
*         Copyright (C) 1992 á 96       *
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*  Ver. 5.201                 96 á 1202 *
*****************************************
```

Problem Description : OSDF Interim Closure/Short-Term,Peak

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	160.0	92.0	160.0	2
2	92.0	160.0	129.0	153.0	2
3	129.0	153.0	150.0	147.0	1
4	150.0	147.0	170.0	140.0	1
5	170.0	140.0	190.0	133.1	1
6	190.0	133.1	210.0	126.1	1
7	210.0	126.1	230.0	119.1	1
8	230.0	119.1	250.0	112.2	1
9	250.0	112.2	270.0	105.2	1
10	270.0	105.2	285.0	100.0	1
11	285.0	100.0	294.0	99.0	2
12	294.0	99.0	307.0	99.0	2
13	307.0	99.0	330.0	105.0	2

6 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	153.0	129.0	153.0	1
2	.0	94.1	136.5	91.4	3
3	136.5	91.4	224.8	93.2	3
4	224.8	93.2	285.0	94.4	3
5	285.0	94.4	313.0	95.0	3
6	313.0	95.0	330.0	100.0	

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	200.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	586.8
4	2880.0	1919.0
5	6480.0	2774.2
6	10080.0	2774.2

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 8 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	290.33	99.41
2	282.39	94.35
3	282.18	94.14
4	224.80	93.00
5	156.43	91.65
6	156.27	91.80
7	117.28	153.00
8	115.85	155.49

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	287.66	97.71	1.99	5.33	-32.50	6.34	1328.
2	283.69	95.18	5.27	2.61	-32.50	19.12	1721.
3	282.28	94.24	6.70	.21	-45.00	19.12	174.
4	276.09	94.02	9.07	12.18	-1.14	19.12	13809.
5	260.00	93.70	15.00	20.00	-1.14	19.29	37502.
6	240.00	93.30	22.35	20.00	-1.14	19.03	55870.
7	227.40	93.05	26.96	5.20	-1.14	19.29	17523.
8	217.40	92.85	30.66	14.80	-1.13	19.29	56714.
9	200.00	92.51	37.09	20.00	-1.13	19.29	92724.
10	180.00	92.12	44.43	20.00	-1.13	19.03	111087.
11	163.21	91.78	50.59	13.57	-1.13	19.29	85815.
12	156.35	91.73	53.05	.16	43.15	19.29	1074.
13	153.13	96.72	49.18	6.27	57.50	19.29	38534.
14	139.50	118.12	31.88	21.00	57.50	15.95	83678.
15	123.14	143.80	10.31	11.72	57.50	10.71	15099.
16	116.57	154.24	1.11	1.43	60.11	10.71	198.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	16.9486	2.7942	2.8341
3	16.9746	2.7954	2.7942
4	16.9741	2.7954	2.7954

Nonlinear M-C Iteration Number - 2

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	16.9949	2.7784	2.7775

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	16.9949	2.7784	2.7775

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	408.9	.0	30.00	0.	0.	0.	.00
2	1123.3	200.0	25.00	0.	0.	0.	.00
3	2235.0	142.7	31.66	0.	0.	0.	.00
4	1248.2	142.7	31.66	0.	0.	0.	.00
5	2052.6	142.7	31.66	0.	0.	0.	.00
6	3041.3	1234.8	13.36	0.	0.	0.	.00
7	3637.8	1234.8	13.36	0.	0.	0.	.00
8	4116.0	1234.8	13.36	0.	0.	0.	.00
9	4948.3	1234.8	13.36	0.	0.	0.	.00
10	5898.6	1234.8	13.36	0.	0.	0.	.00
11	6689.1	2774.2	.00	0.	0.	0.	.00
12	4737.2	1234.8	13.36	0.	0.	0.	.00
13	3579.8	200.0	25.00	0.	0.	0.	.00
14	2301.4	200.0	25.00	0.	0.	0.	.00
15	707.7	200.0	25.00	0.	0.	0.	.00
16	76.0	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	287.66	408.9	249.2	.0	85.0
2	283.69	1123.3	659.0	.0	260.5
3	282.28	2235.0	837.2	.0	547.5
4	276.09	1248.2	1133.7	.0	328.5
5	260.00	2052.6	1875.1	.0	507.0
6	240.00	3041.3	2793.5	.0	704.5
7	227.40	3637.8	3369.8	.0	755.5
8	217.40	4116.0	3832.0	.0	796.4
9	200.00	4948.3	4636.2	.0	867.5
10	180.00	5898.6	5554.3	.0	948.8
11	163.21	6689.1	6323.8	.0	998.5
12	156.35	4737.2	6631.5	.0	849.5
13	153.13	3579.8	6147.6	.0	672.8
14	139.50	2301.4	3984.7	.0	458.2
15	123.14	707.7	1288.3	.0	190.8
16	116.57	76.0	138.6	.0	15.8

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	285.00	16.99	1925.	2.51	3.99	.630
2	282.39	16.99	4591.	2.80	6.56	.427
3	282.18	16.99	5196.	2.73	6.84	.399
4	270.00	16.99	9695.	4.51	11.30	.399
5	250.00	16.99	21151.	6.81	18.70	.364

6	230.00	16.99	37148.	8.99	26.00	.346
7	224.80	16.99	41648.	9.62	27.92	.344
8	210.00	16.99	55230.	11.48	33.39	.344
9	190.00	16.99	75416.	14.04	40.79	.344
10	170.00	16.99	97694.	16.60	48.08	.345
11	156.43	16.99	113736.	18.37	53.10	.346
12	156.27	16.99	113128.	18.36	53.00	.346
13	150.00	16.99	80709.	16.22	45.36	.358
14	129.00	16.99	11448.	7.53	18.40	.410
15	117.28	16.99	172.	1.03	2.22	.463
16	115.85	.00	-2.	.06	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3125.24 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 594.37 (psf)

Total Length of failure surface = 211.14 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 2.778

Total shear strength available along specified failure surface = 348.68E+03 lb

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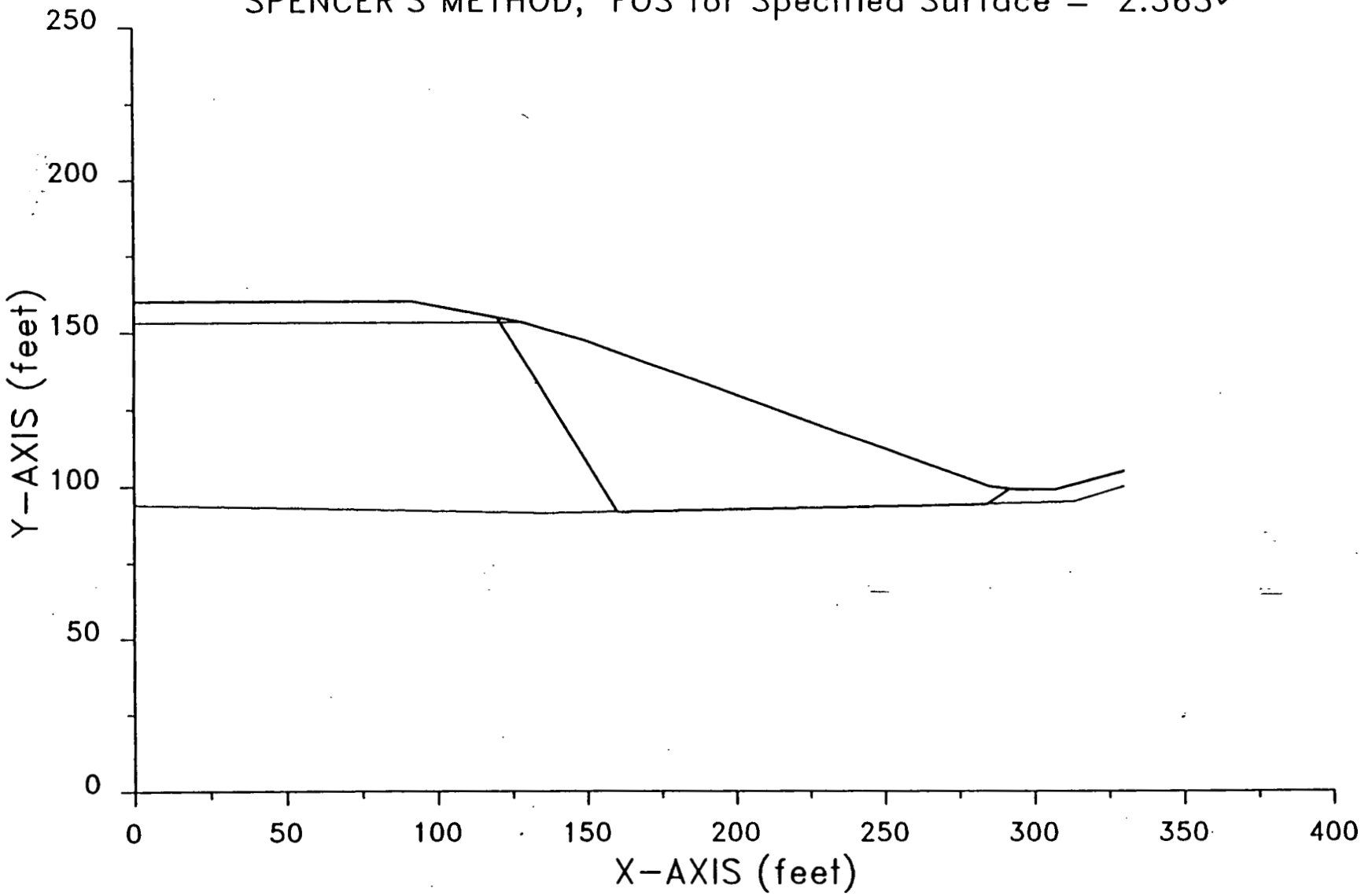
OSDF Interim Closure/Short-Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 2.363✓



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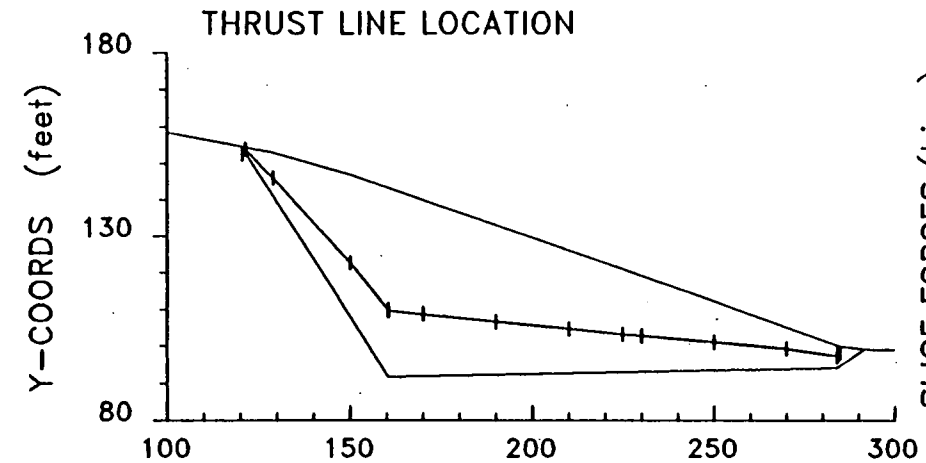

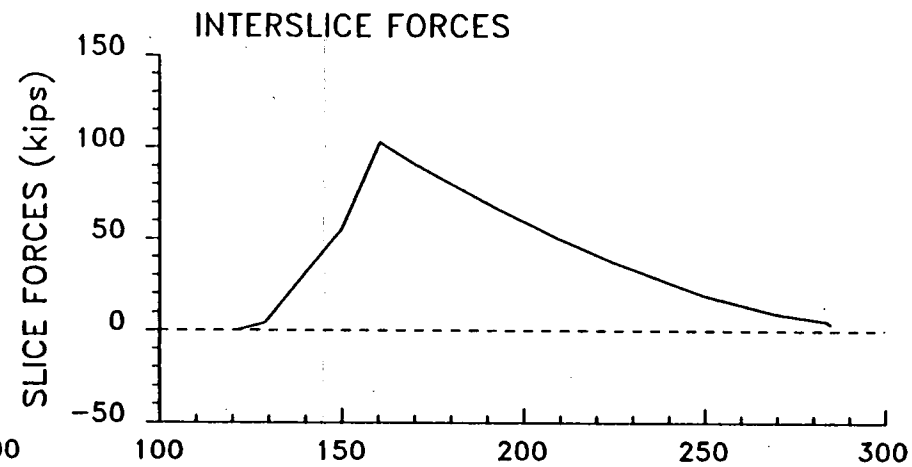

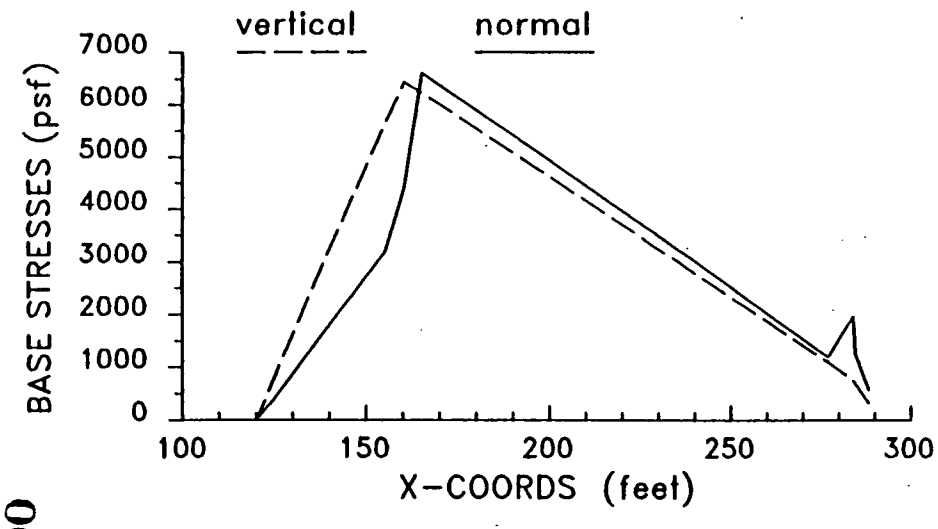

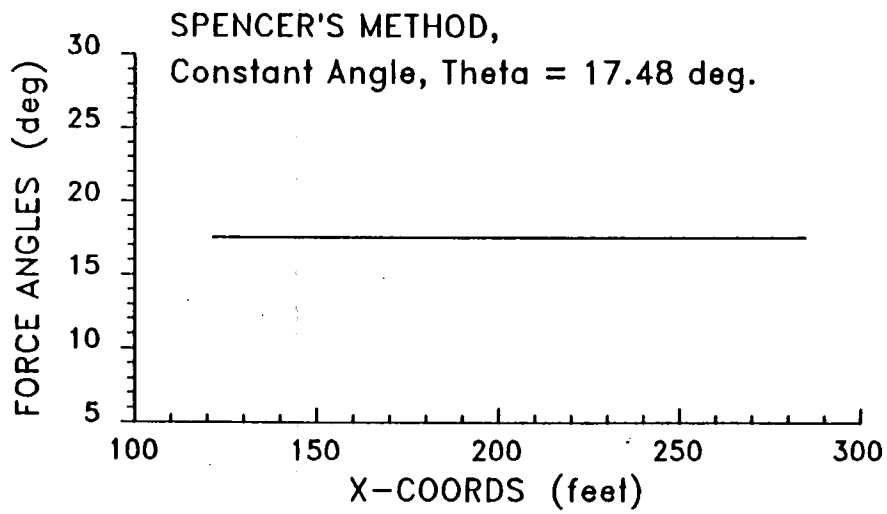

OSDF Interim Closure/Short-Term,Peak
SPENCER'S METHOD, FOS for Specified Surface = 2.363

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24/43

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*              X S T A B L              *
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*              using the                *
*           Method of Slices            *
*                                       *
*        Copyright (C) 1992 - 96        *
*   Interactive Software Designs, Inc.  *
*       Moscow, ID 83843, U.S.A.        *
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```

Problem Description : OSDF Interim Closure/Short-Term,Peak

SEGMENT BOUNDARY COORDINATES
---

13 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	160.0	92.0	160.0	2
2	92.0	160.0	129.0	153.0	2
3	129.0	153.0	150.0	147.0	1
4	150.0	147.0	170.0	140.0	1
5	170.0	140.0	190.0	133.1	1
6	190.0	133.1	210.0	126.1	1
7	210.0	126.1	230.0	119.1	1
8	230.0	119.1	250.0	112.2	1
9	250.0	112.2	270.0	105.2	1
10	270.0	105.2	285.0	100.0	1
11	285.0	100.0	294.0	99.0	2
12	294.0	99.0	307.0	99.0	2
13	307.0	99.0	330.0	105.0	2

6 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	.0	153.0	129.0	153.0	1
2	.0	94.1	136.5	91.4	3
3	136.5	91.4	224.8	93.2	3
4	224.8	93.2	285.0	94.4	3
5	285.0	94.4	313.0	95.0	3
6	313.0	95.0	330.0	100.0	3

2062

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	200.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	374.4
4	2880.0	1411.2
5	6480.0	2361.6
6	10080.0	2361.6

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 8 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	291.87	99.24
2	284.25	94.39
3	284.05	94.18
4	224.80	93.00
5	160.54	91.72
6	160.38	91.89
7	121.44	153.00
8	120.52	154.60

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	288.43	97.05	2.57	6.87	-32.46	6.34	2204.
2	284.62	94.63	5.50	.75	-32.46	19.12	519.
3	284.15	94.28	6.01	.20	-46.40	19.12	147.
4	277.02	94.04	8.72	14.05	-1.14	19.12	15323.
5	260.00	93.70	15.00	20.00	-1.14	19.29	37497.
6	240.00	93.30	22.35	20.00	-1.14	19.03	55868.
7	227.40	93.05	26.96	5.20	-1.14	19.29	17523.
8	217.40	92.85	30.66	14.80	-1.14	19.29	56716.
9	200.00	92.51	37.09	20.00	-1.14	19.29	92735.
10	180.00	92.11	44.44	20.00	-1.14	19.03	111106.
11	165.27	91.81	49.84	9.46	-1.14	19.29	58937.
12	160.46	91.81	51.53	.16	46.74	19.29	1031.
13	155.19	100.03	45.15	10.38	57.49	19.29	58580.
14	139.50	124.66	25.34	21.00	57.49	15.95	66523.
15	125.22	147.07	6.65	7.56	57.49	10.71	6282.
16	120.98	153.80	.72	.92	60.17	10.71	82.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	17.4584	2.3707	2.3869
3	17.4722	2.3712	2.3707

Nonlinear M-C Iteration Number - 2

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	17.4757	2.3632	2.3631

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	17.4757	2.3632	2.3631

000200

SLICE INFORMATION ... continued :

Slice	Sigma	c-value	phi	U-base	U-top	P-top	Delta

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	(psf)	(psf)		(lb)	(lb)	(lb)	
1	565.4	.0	30.00	0.	0.	0.	.00
2	1255.4	200.0	25.00	0.	0.	0.	.00
3	1958.6	28.8	25.64	0.	0.	0.	.00
4	1182.5	28.8	25.64	0.	0.	0.	.00
5	2029.7	28.8	25.64	0.	0.	0.	.00
6	3017.4	650.9	14.79	0.	0.	0.	.00
7	3620.0	650.9	14.79	0.	0.	0.	.00
8	4103.6	650.9	14.79	0.	0.	0.	.00
9	4944.9	650.9	14.79	0.	0.	0.	.00
10	5905.4	650.9	14.79	0.	0.	0.	.00
11	6606.1	2361.6	.00	0.	0.	0.	.00
12	4397.4	650.9	14.79	0.	0.	0.	.00
13	3179.5	200.0	25.00	0.	0.	0.	.00
14	1757.9	200.0	25.00	0.	0.	0.	.00
15	416.1	200.0	25.00	0.	0.	0.	.00
16	47.2	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	288.43	565.4	320.8	.0	138.1
2	284.62	1255.4	688.0	.0	332.3
3	284.15	1958.6	751.6	.0	410.0
4	277.02	1182.5	1090.6	.0	252.4
5	260.00	2029.7	1874.9	.0	424.4
6	240.00	3017.4	2793.4	.0	612.5
7	227.40	3620.0	3369.8	.0	679.8
8	217.40	4103.6	3832.2	.0	733.8
9	200.00	4944.9	4636.8	.0	827.8
10	180.00	5905.4	5555.3	.0	935.1
11	165.27	6606.1	6230.2	.0	999.3
12	160.46	4397.4	6441.8	.0	766.7
13	155.19	3179.5	5643.6	.0	712.0
14	139.50	1757.9	3167.8	.0	431.5
15	125.22	416.1	830.9	.0	166.7
16	120.98	47.2	89.4	.0	11.5

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	285.00	17.48	3585.	3.27	5.13	.636
2	284.25	17.48	4480.	3.26	5.87	.555
3	284.05	17.48	4984.	3.18	6.15	.518
4	270.00	17.48	9048.	5.40	11.30	.478
5	250.00	17.48	18796.	7.56	18.70	.404
6	230.00	17.48	32898.	9.58	26.00	.368

7	224.80	17.48	36998.	10.16	27.92	.364
8	210.00	17.48	49652.	11.89	33.39	.356
9	190.00	17.48	69075.	14.30	40.79	.351
10	170.00	17.48	91149.	16.72	48.09	.34[illegible]
11	160.54	17.48	102365.	17.88	51.59	.34[illegible]
12	160.38	17.48	101710.	17.88	51.48	.347
13	150.00	17.48	55159.	14.45	38.82	.372
14	129.00	17.48	3922.	4.84	11.86	.408
15	121.44	17.48	68.	.66	1.43	.459
16	120.52	.00	0.	-2.06	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 2989.71 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 569.48 (psf)

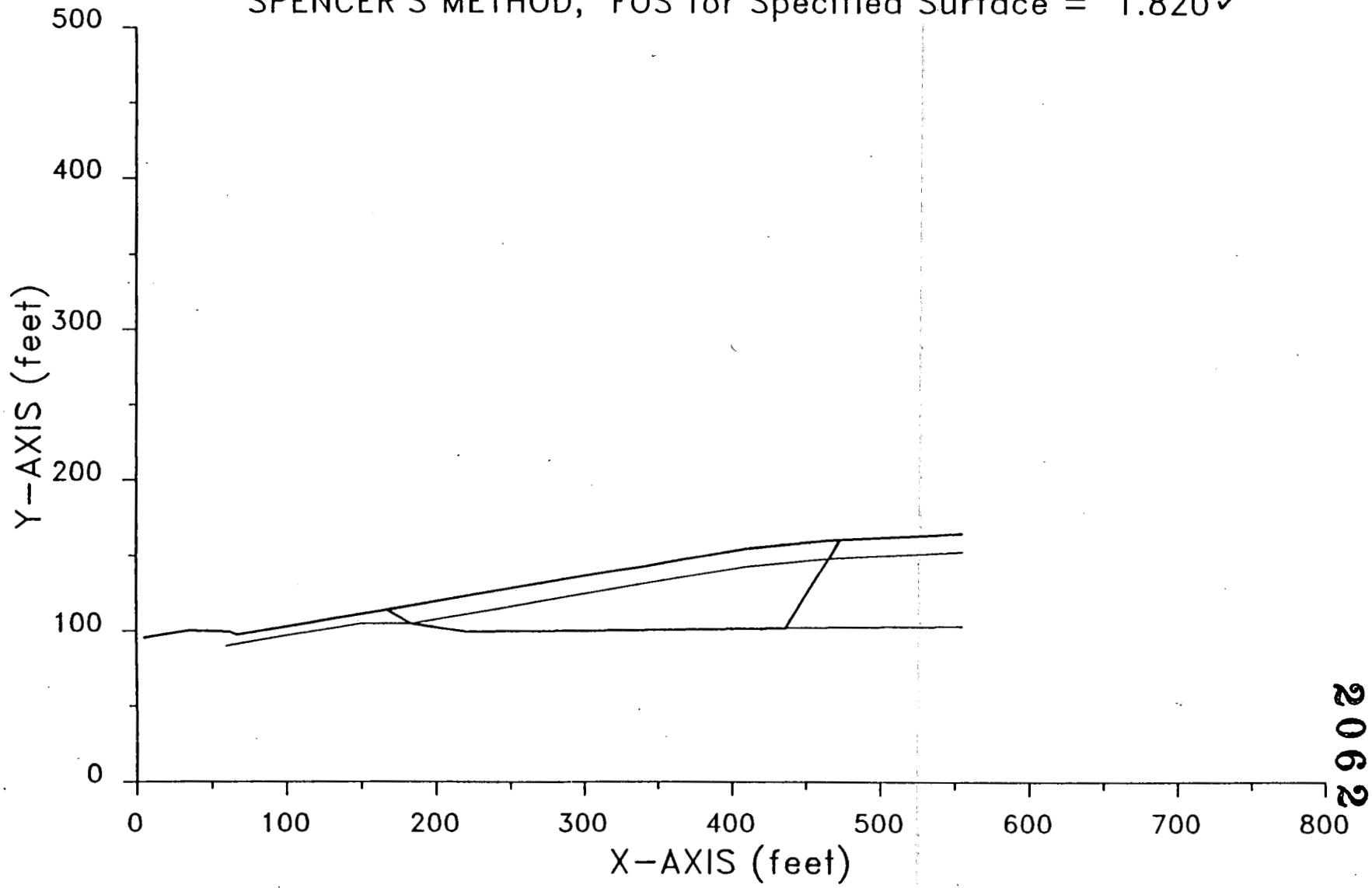
Total Length of failure surface = 207.40 feet

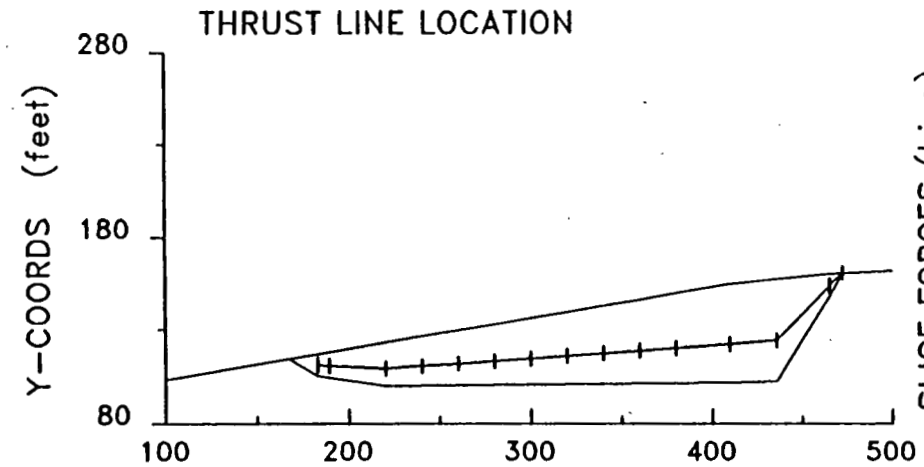
For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

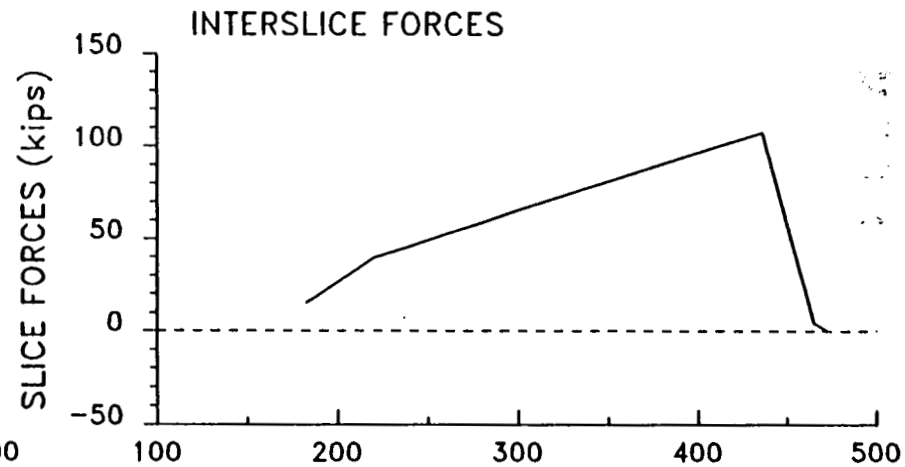
FACTOR OF SAFETY = 2.363

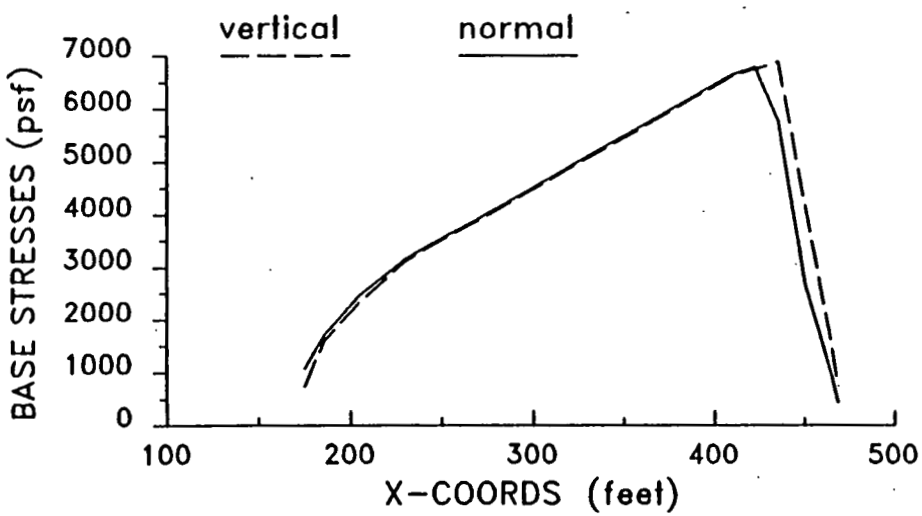
Total shear strength available along specified failure surface = 279.12E+03 lb

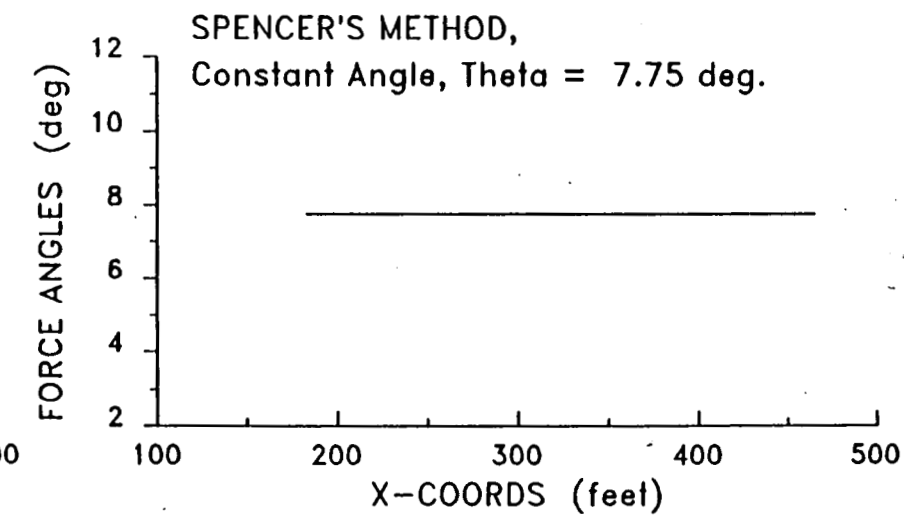
OSDF Final Long Term – Large Displ.
SPENCER'S METHOD, FOS for Specified Surface = 1.820











OSDF Final Long Term – Large Displ.
SPENCER'S METHOD, FOS for Specified Surface = 1.820

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*            Method of Slices           *
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Problem Description : OSDF Final Long Term - Large Displ.

SEGMENT BOUNDARY COORDINATES
---

15 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	5.5	95.6	35.5	100.6	2
2	35.5	100.6	62.5	99.4	2
3	62.5	99.4	67.0	97.5	2
4	67.0	97.5	220.0	123.0	2
5	220.0	123.0	240.0	126.4	2
6	240.0	126.4	260.0	129.7	2
7	260.0	129.7	280.0	133.0	2
8	280.0	133.0	300.0	136.4	2
9	300.0	136.4	320.0	139.7	2
10	320.0	139.7	340.0	143.0	2
11	340.0	143.0	360.0	146.4	2
12	360.0	146.4	380.0	149.7	2
13	380.0	149.7	410.0	154.7	2
14	410.0	154.7	465.0	160.2	2
15	465.0	160.2	555.0	164.7	2

11 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	60.0	90.0	120.0	100.0	2
2	120.0	100.0	150.0	105.0	2
3	150.0	105.0	183.0	105.0	2
4	183.0	105.0	189.0	106.0	1

5	189.0	106.0	410.0	142.8	1
6	410.0	142.8	467.0	148.5	1
7	467.0	148.5	555.0	152.9	1
8	183.0	105.0	220.0	100.0	3
9	220.0	100.0	300.0	100.8	3
10	300.0	100.8	410.0	102.0	3
11	410.0	102.0	555.0	103.5	3

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	452.9
4	2880.0	630.8
5	6480.0	702.7
6	10080.0	702.7

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 9 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	167.10	114.18
2	183.00	105.00
3	220.00	99.80
4	300.00	100.60
5	409.90	101.80
6	435.85	102.13
7	435.99	102.27
8	465.34	148.33
9	472.40	160.57

000206

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	175.05	109.59	5.92	15.90	-30.01	9.46	11759.
2	186.00	104.58	12.75	6.00	-8.00	9.46	9566.
3	204.50	101.98	18.44	31.00	-8.00	9.46	71448.
4	230.00	99.90	24.80	20.00	.57	9.65	62000.
5	250.00	100.10	27.95	20.00	.57	9.37	69875.
6	270.00	100.30	31.05	20.00	.57	9.37	77625.
7	290.00	100.50	34.20	20.00	.57	9.65	85500.
8	310.00	100.71	37.34	20.00	.63	9.37	93352.
9	330.00	100.93	40.42	20.00	.63	9.37	101056.
10	350.00	101.15	43.55	20.00	.63	9.65	108885.
11	370.00	101.36	46.69	20.00	.63	9.37	116714.
12	394.95	101.64	50.55	29.90	.63	9.46	188949.
13	409.95	101.80	52.89	.10	.73	9.46	661.
14	422.92	101.97	54.03	25.85	.73	5.71	174574.
15	435.92	102.20	55.09	.14	45.00	5.71	964.
16	450.49	125.03	33.72	29.01	57.49	5.71	122264.
17	465.17	148.07	12.14	.34	57.49	2.86	520.
18	468.87	154.45	5.94	7.06	60.02	2.86	5241.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	7.7331	1.8198	1.8424
3	7.7506	1.8203	1.8198

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	7.7506	1.8203	1.8198

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta

1	1064.1	.0	30.00	0.	0.	0.	.00
2	1708.2	393.6	4.71	0.	0.	0.	.00
3	2441.9	393.6	4.71	0.	0.	0.	.00
4	3139.8	573.3	1.14	0.	0.	0.	.00
5	3533.5	573.3	1.14	0.	0.	0.	.00
6	3921.1	573.3	1.14	0.	0.	0.	.00
7	4314.8	573.3	1.14	0.	0.	0.	.00
8	4706.5	573.3	1.14	0.	0.	0.	.00
9	5091.7	573.3	1.14	0.	0.	0.	.00
10	5483.1	573.3	1.14	0.	0.	0.	.00
11	5874.5	573.3	1.14	0.	0.	0.	.00
12	6358.1	573.3	1.14	0.	0.	0.	.00
13	6647.5	702.7	.00	0.	0.	0.	.00
14	6789.2	702.7	.00	0.	0.	0.	.00
15	5773.8	573.3	1.14	0.	0.	0.	.00
16	2666.2	.0	25.00	0.	0.	0.	.00
17	960.2	.0	25.00	0.	0.	0.	.00
18	426.2	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	175.05	1064.1	739.6	.0	337.5
2	186.00	1708.2	1594.4	.0	293.5
3	204.50	2441.9	2304.8	.0	326.7
4	230.00	3139.8	3100.0	.0	349.4
5	250.00	3533.5	3493.8	.0	353.7
6	270.00	3921.1	3881.3	.0	358.0
7	290.00	4314.8	4275.0	.0	362.3
8	310.00	4706.5	4667.6	.0	366.6
9	330.00	5091.7	5052.8	.0	370.8
10	350.00	5483.1	5444.3	.0	375.1
11	370.00	5874.5	5835.7	.0	379.4
12	394.95	6358.1	6319.4	.0	384.7
13	409.95	6647.5	6611.4	.0	386.0
14	422.92	6789.2	6753.4	.0	386.0
15	435.92	5773.8	6886.5	.0	378.3
16	450.49	2666.2	4214.5	.0	683.0
17	465.17	960.2	1517.9	.0	246.0
18	468.87	426.2	742.7	.0	135.2

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Rati
1	183.00	7.75	15278.	5.68	11.83	.480
2	189.00	7.75	18509.	6.20	13.68	.453
3	220.00	7.75	39467.	9.21	23.20	.397

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4	240.00	7.75	45886.	10.28	26.40	.389
5	260.00	7.75	52312.	11.39	29.50	.386
6	280.00	7.75	58746.	12.53	32.60	.384
7	300.00	7.75	65187.	13.69	35.80	.383
8	320.00	7.75	71549.	14.87	38.88	.383
9	340.00	7.75	77911.	16.07	41.96	.383
10	360.00	7.75	84274.	17.27	45.14	.383
11	380.00	7.75	90637.	18.48	48.23	.383
12	409.90	7.75	100151.	20.30	52.88	.384
13	410.00	7.75	100181.	20.30	52.90	.384
14	435.85	7.75	108000.	21.91	55.15	.397
15	435.99	7.75	107238.	21.95	55.03	.399
16	465.00	7.75	4734.	5.59	12.40	.450
17	465.34	7.75	4298.	5.64	11.88	.474
18	472.40	.00	-2.	-.06	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3951.68 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 402.44 (psf)

Total Length of failure surface = 340.53 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 1.820

Total shear strength available along specified failure surface = 249.46E+03 lb

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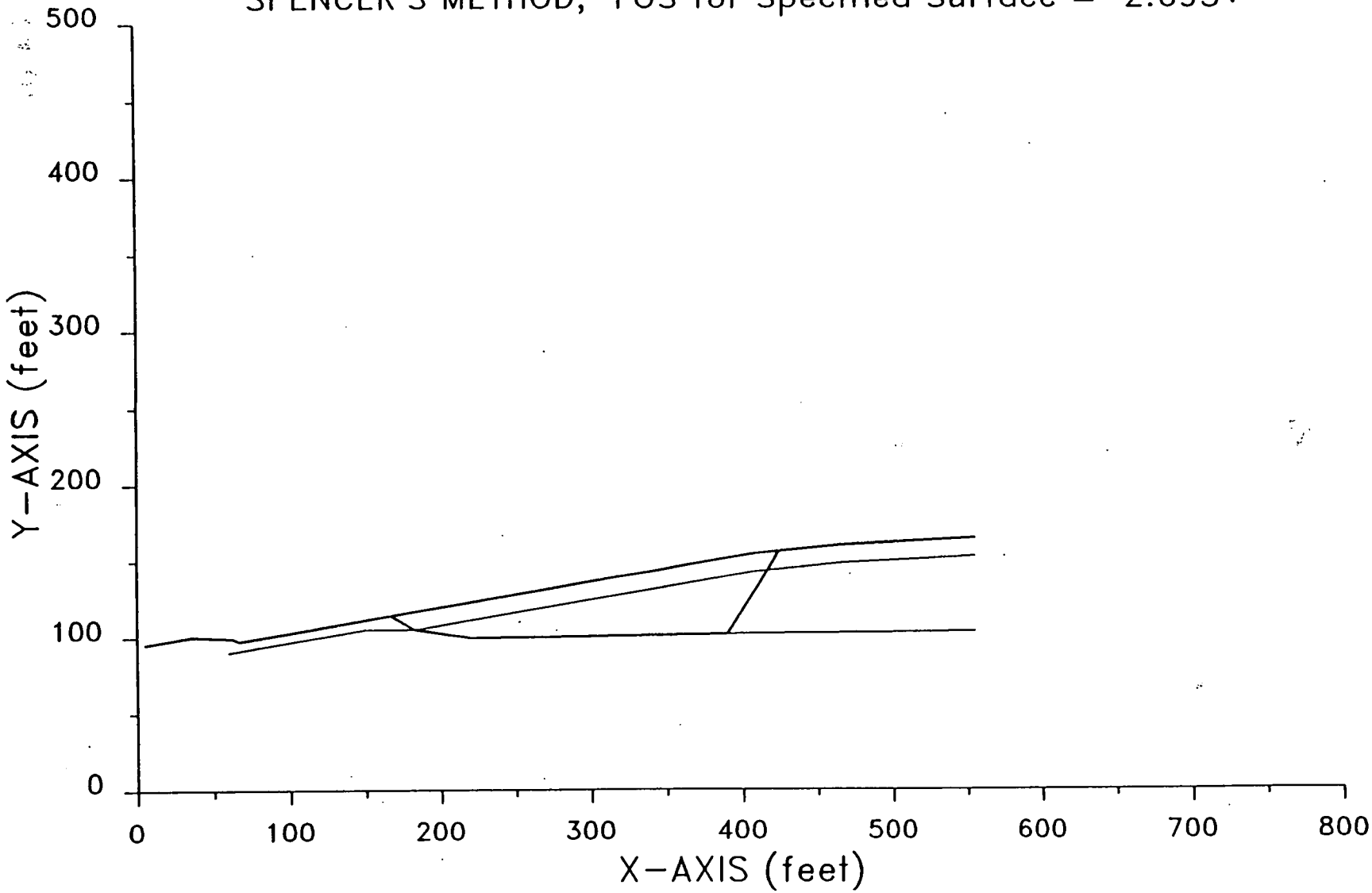
OSDF Final Long Term – Large Displ.

SPENCER'S METHOD, FOS for Specified Surface = 2.693 ✓



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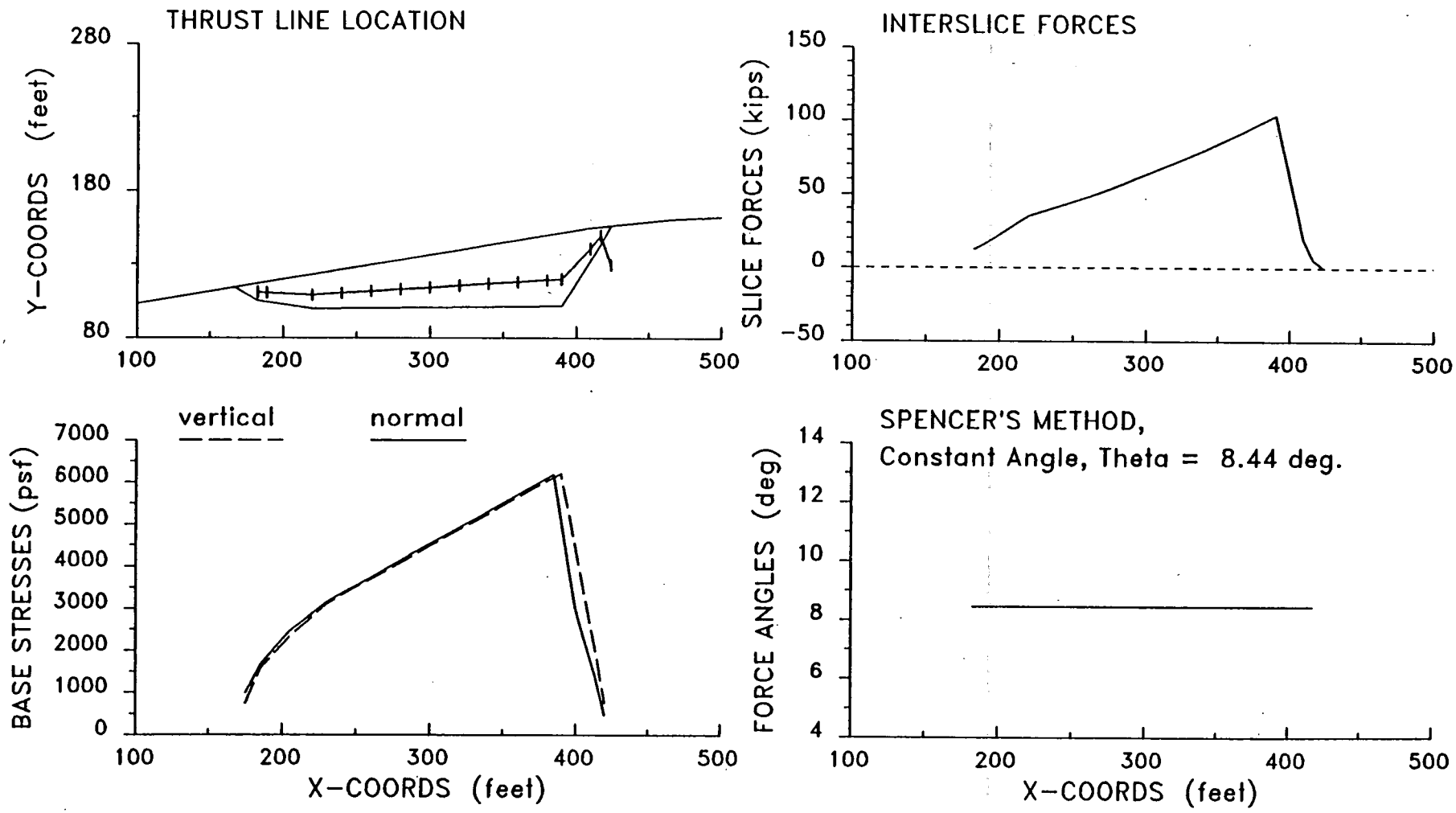

OSDF Final Long Term – Large Displ.
SPENCER'S METHOD, FOS for Specified Surface = 2.693

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*****************************************
*              X S T A B L              *
*                                       *
*        Slope Stability Analysis       *
*               using the               *
*            Method of Slices           *
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Problem Description : OSDF Final Long Term - Large Displ.

SEGMENT BOUNDARY COORDINATES
---

15 SURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	5.5	95.6	35.5	100.6	2
2	35.5	100.6	62.5	99.4	2
3	62.5	99.4	67.0	97.5	2
4	67.0	97.5	220.0	123.0	2
5	220.0	123.0	240.0	126.4	2
6	240.0	126.4	260.0	129.7	2
7	260.0	129.7	280.0	133.0	2
8	280.0	133.0	300.0	136.4	2
9	300.0	136.4	320.0	139.7	2
10	320.0	139.7	340.0	143.0	2
11	340.0	143.0	360.0	146.4	2
12	360.0	146.4	380.0	149.7	2
13	380.0	149.7	410.0	154.7	2
14	410.0	154.7	465.0	160.2	2
15	465.0	160.2	555.0	164.7	2

11 SUBSURFACE boundary segments

Segment No.	x-left (ft)	y-left (ft)	x-right (ft)	y-right (ft)	Soil Unit Below Segment
1	60.0	90.0	120.0	100.0	2
2	120.0	100.0	150.0	105.0	2
3	150.0	105.0	183.0	105.0	2
4	183.0	105.0	189.0	106.0	1

5	189.0	106.0	410.0	142.8	1
6	410.0	142.8	467.0	148.5	1
7	467.0	148.5	555.0	152.9	1
8	183.0	105.0	220.0	100.0	3
9	220.0	100.0	300.0	100.8	3
10	300.0	100.8	410.0	102.0	3
11	410.0	102.0	555.0	103.5	3

ISOTROPIC Soil Parameters
---

3 Soil unit(s) specified

Soil Unit No.	Unit Weight Moist (pcf)	Unit Weight Sat. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Parameter Ru	Pore Pressure Constant (psf)	Water Surface No.
1	125.0	125.0	.0	25.00	.000	.0	0
2	125.0	125.0	.0	30.00	.000	.0	0
3	125.0	125.0	.0	.00	.000	.0	0

NON-LINEAR MOHR-COULOMB envelope has been specified for 1 soil(s)

Soil Unit # 3

Point No.	Normal Stress (psf)	Shear Stress (psf)
1	-1000.0	.0
2	.0	.0
3	720.0	316.8
4	2880.0	878.4
5	6480.0	1584.0
6	10080.0	1584.0

A SINGLE FAILURE SURFACE HAS BEEN SPECIFIED FOR ANALYSIS

Trial failure surface specified by
the following 8 coordinate points :

Point No.	x-surf (ft)	y-surf (ft)
1	167.10	114.18
2	183.00	105.00
3	220.00	99.80
4	300.00	100.60
5	390.11	101.63
6	390.27	101.78
7	416.83	143.48
8	424.12	156.11

****
SELECTED METHOD OF ANALYSIS: Spencer (1973)
****

****
SUMMARY OF INDIVIDUAL SLICE INFORMATION
****

Slice	x-base (ft)	y-base (ft)	height (ft)	width (ft)	alpha	beta	weight (lb)
1	175.05	109.59	5.92	15.90	-30.01	9.46	11759.
2	186.00	104.58	12.75	6.00	-8.00	9.46	9566.
3	204.50	101.98	18.44	31.00	-8.00	9.46	71448.
4	230.00	99.90	24.80	20.00	.57	9.65	62000.
5	250.00	100.10	27.95	20.00	.57	9.37	69875.
6	270.00	100.30	31.05	20.00	.57	9.37	77625.
7	290.00	100.50	34.20	20.00	.57	9.65	85500.
8	310.00	100.71	37.34	20.00	.65	9.37	93339.
9	330.00	100.94	40.41	20.00	.65	9.37	101018.
10	350.00	101.17	43.53	20.00	.65	9.65	108821.
11	370.00	101.40	46.65	20.00	.65	9.37	116625.
12	385.05	101.57	48.97	10.11	.65	9.46	61886.
13	390.19	101.71	49.69	.16	43.15	9.46	1013.
14	400.14	117.27	35.79	19.73	57.51	9.46	88242.
15	413.42	138.12	16.92	6.83	57.51	5.71	14451.
16	420.48	149.80	5.95	7.29	60.01	5.71	5420.

Nonlinear M-C Iteration Number - 1

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
2	8.4028	2.6916	2.7319
3	8.4430	2.6935	2.6916
4	8.4420	2.6935	2.6935

ITERATIONS FOR SPENCER'S METHOD

Iter #	Theta	FOS_force	FOS_moment
1	8.4420	2.6935	2.6935

SLICE INFORMATION ... continued :

Slice	Sigma (psf)	c-value (psf)	phi	U-base (lb)	U-top (lb)	P-top (lb)	Delta
1	974.9	.0	30.00	0.	0.	0.	.00

2	1690.7	129.6	14.57	0.	0.	0.	.00
3	2437.5	129.6	14.57	0.	0.	0.	.00
4	3143.1	313.9	11.09	0.	0.	0.	.00
5	3540.3	313.9	11.09	0.	0.	0.	.00
6	3931.1	313.9	11.09	0.	0.	0.	.00
7	4328.3	313.9	11.09	0.	0.	0.	.00
8	4722.0	313.9	11.09	0.	0.	0.	.00
9	5109.1	313.9	11.09	0.	0.	0.	.00
10	5502.5	313.9	11.09	0.	0.	0.	.00
11	5896.0	313.9	11.09	0.	0.	0.	.00
12	6188.4	313.9	11.09	0.	0.	0.	.00
13	5114.3	313.9	11.09	0.	0.	0.	.00
14	3024.2	.0	25.00	0.	0.	0.	.00
15	1430.0	.0	25.00	0.	0.	0.	.00
16	465.8	.0	30.00	0.	0.	0.	.00

SPENCER'S (1973) - TOTAL Stresses at center of slice base

Slice #	Base x-coord (ft)	Normal Stress (psf)	Vertical Stress (psf)	Pore Water Pressure (psf)	Shear Stress (psf)
1	175.05	974.9	739.6	.0	209.0
2	186.00	1690.7	1594.4	.0	211.3
3	204.50	2437.5	2304.8	.0	283.4
4	230.00	3143.1	3100.0	.0	345.3
5	250.00	3540.3	3493.8	.0	374.2
6	270.00	3931.1	3881.3	.0	402.6
7	290.00	4328.3	4275.0	.0	431.5
8	310.00	4722.0	4667.0	.0	460.2
9	330.00	5109.1	5050.9	.0	488.3
10	350.00	5502.5	5441.1	.0	517.0
11	370.00	5896.0	5831.2	.0	545.6
12	385.05	6188.4	6121.3	.0	566.9
13	390.19	5114.3	6211.5	.0	488.7
14	400.14	3024.2	4473.2	.0	523.6
15	413.42	1430.0	2115.2	.0	247.6
16	420.48	465.8	743.7	.0	99.8

SPENCER'S (1973) - Magnitude & Location of Interslice Forces

Slice #	Right x-coord (ft)	Force Angle (degrees)	Interslice Force (lb)	Force Height (ft)	Boundary Height (ft)	Height Ratio
1	183.00	8.44	12409.	5.77	11.83	.488
2	189.00	8.44	15132.	6.31	13.68	.461
3	220.00	8.44	34750.	9.18	23.20	.396
4	240.00	8.44	41096.	10.31	26.40	.391
5	260.00	8.44	47945.	11.41	29.50	.387
6	280.00	8.44	55291.	12.48	32.60	.383
7	300.00	8.44	63141.	13.52	35.80	.378
8	320.00	8.44	71354.	14.55	38.87	.374
9	340.00	8.44	80046.	15.56	41.94	.371

10	360.00	8.44	89227.	16.56	45.11	.367
11	380.00	8.44	98896.	17.54	48.19	.364
12	390.11	8.44	103967.	18.04	49.75	.363
13	390.27	8.44	103257.	18.03	49.63	.363
14	410.00	8.44	19008.	7.77	21.94	.354
15	416.83	8.44	5211.	5.77	11.90	.485
16	424.12	.00	0.	-26.48	.00	.000

AVERAGE VALUES ALONG FAILURE SURFACE

Total Normal Stress = 3542.66 (psf)
Pore Water Pressure = .00 (psf)
Shear Stress = 396.28 (psf)

Total Length of failure surface = 290.09 feet

For the single specified surface and the assumed angle of the interslice forces, the SPENCER'S (1973) procedure gives a

FACTOR OF SAFETY = 2.693

Total shear strength available along specified failure surface = 309.63E+03 lb

GCL 26

COMPUTATION COVER SHEET

2062

SUBJECT OF COMPUTATIONS Geosynthetic Clay Liner (GCL) 26 - Compliance Package

Computations By: (Cognizant Engineer)

Signature [illegible] Date Nov 21 1997

Printed Name and Title M. CATALINA OROZCO STAFF ENGINEER

Assumptions and Procedures Checked By: (Checker)

Signature [illegible] Date 19 Dec 97

Printed Name and Title Gary R. Schmertmann Sr. Project Engr.

Computations Checked by:

Signature NO COMPUTATION Date

Printed Name and Title

Computations Backchecked by: (Cognizant Engineer)

Signature NO COMPUTATIONS Date

Printed Name and Title

Approved by: (PDP)

Signature [illegible] Date 19 Dec 97

Printed Name and Title Gary R. Schmertmann Sr. Project Engr.

Approved by: (DTL and TETL)

Signature [illegible] Date 20 Dec 97

Printed Name and Title Kenneth W. Cargill

Record of Revision (Number and initial all revisions)

Rev. No.	Reason	Date	By	Checked	Approval

Written By: MCO Date: 11/21/97 Reviewed by: GRS Date: 12/19/97

Client: FDF Project: OSDF Project/Proposal No.: GQ0166 Task No.: 04

PURPOSE

Evaluate whether GCL QA sample no. 26 complies with the shear strength requirements given in the GCL specification (Section 02772, Paragraph 2.01.E.3).

METHOD

The method for evaluating the GCL sample is outlined in RCI number 1702-006R. The method involves the following basic steps.

1. Use shear test results from the GCL sample to establish the envelopes of measured peak and large-displacement internal and interface shear strength.
2. Reanalyze two slope stability cases that were included in the OSDF design calculations using the measured peak and large-displacement strength envelopes established in Step 1. Obtain the slope stability factors of safety for the critical potential slip surface for each analysis case.
3. Compare the slope stability factors of safety computed in Step 2 to the baseline factors of safety.

Note: Whenever the shear test results for the GCL sample are higher than the shear strengths defined to obtain the baseline factor of safety, the slope stability analysis is not performed since it would necessarily result in a factor of safety higher than the baseline factor of safety.

SHEAR TEST RESULTS

The results of the GCL internal shear and GCL/geomembrane interface shear tests performed on QA sample no. 26 are shown in the following table. The laboratory test results are presented in Appendix A.

QA Sample	Case	Test Type	Measured Shear Strengths			Comply? (see note above)
			5 psi	20 psi	45 psi	
Baseline	Peak		1.5	6.1	13.8	NA
26		GCL Internal	4.7psi	9.5psi	17.9psi	YES
		GCL/GMB Interface	2.5	8.6	17.7	YES
Baseline	Large-displacement		1.1	2.5	5.1	NA
26		GCL Internal	4.3	4.0	5.6	YES
		GCL/GMB Interface	2.0	5.5	6.2	YES

2062

MCO NOV 21 1997
GRS 19 Dec 97

APPENDIX A

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 26I

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-26). GCL's initial moisture content was 10.0%. GCL's final moisture content ranged from 49% to 70% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the Bentofix NS GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 26G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

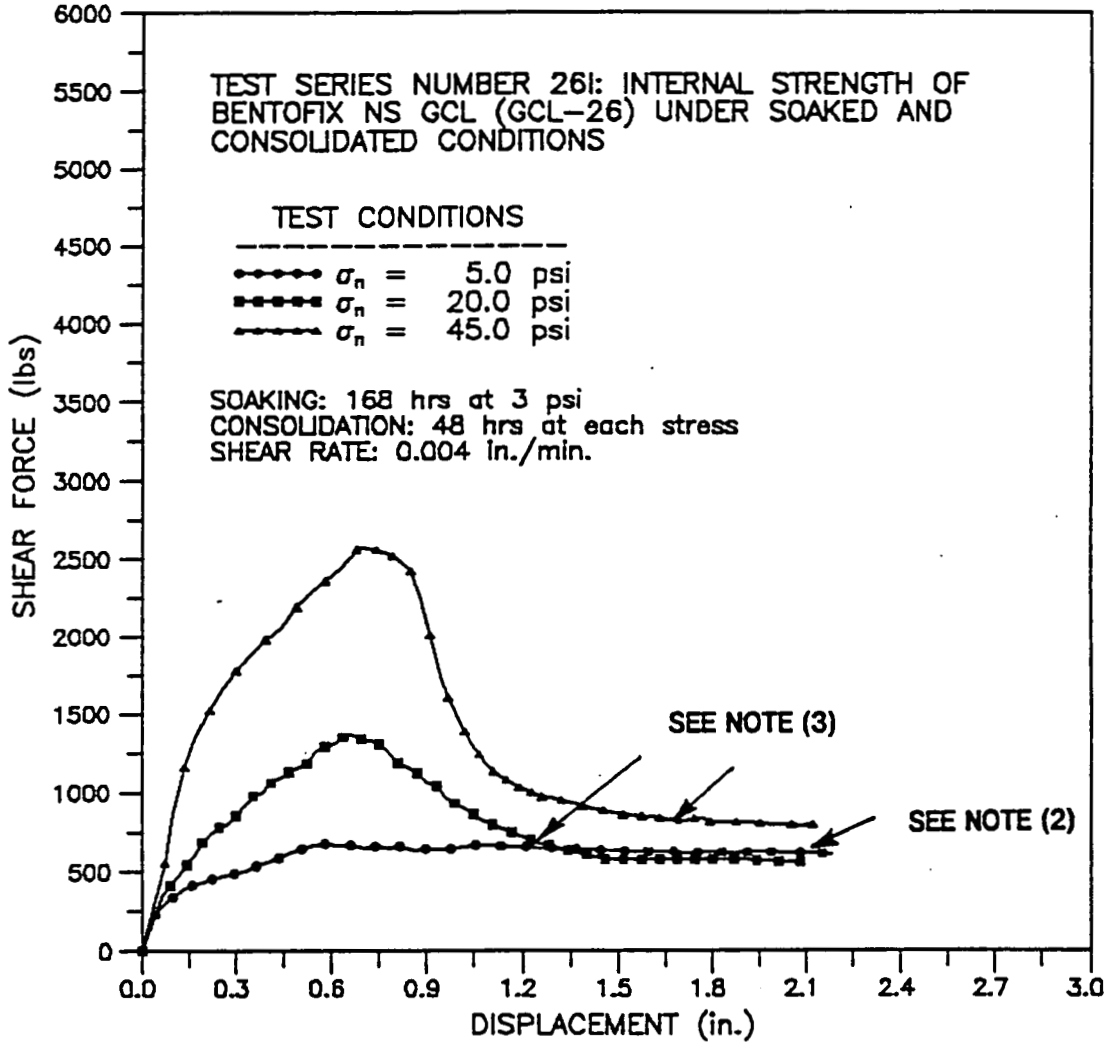
- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-26) with woven geotextile against geomembrane. GCL's initial moisture content was 9.1%. GCL's final moisture content ranged from 49 to 91% for the test series;
- 80-mil NSC textured HDPE geomembrane (GM-11); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) No internal shear failure within GCL was observed.
(3) Internal shear failure within GCL was observed.

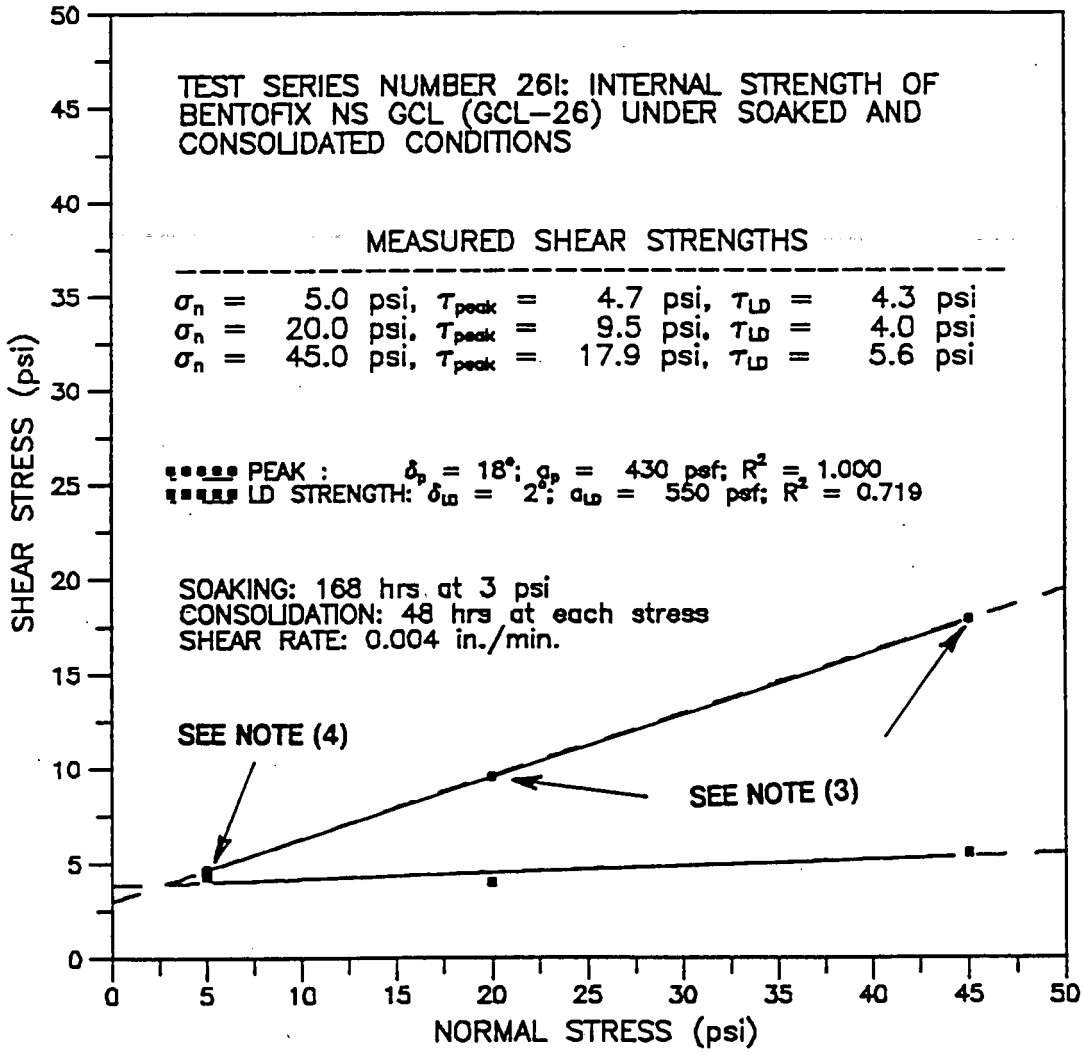
000223 DATE TESTED: 29 OCTOBER TO 7 NOVEMBER 1997

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-1
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730128
FILE NO.	

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 1 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Internal shear failure within GCL was observed.
(4) No internal failure within GCL was observed.

DATE TESTED: 29 OCTOBER TO 7 NOVEMBER 1997

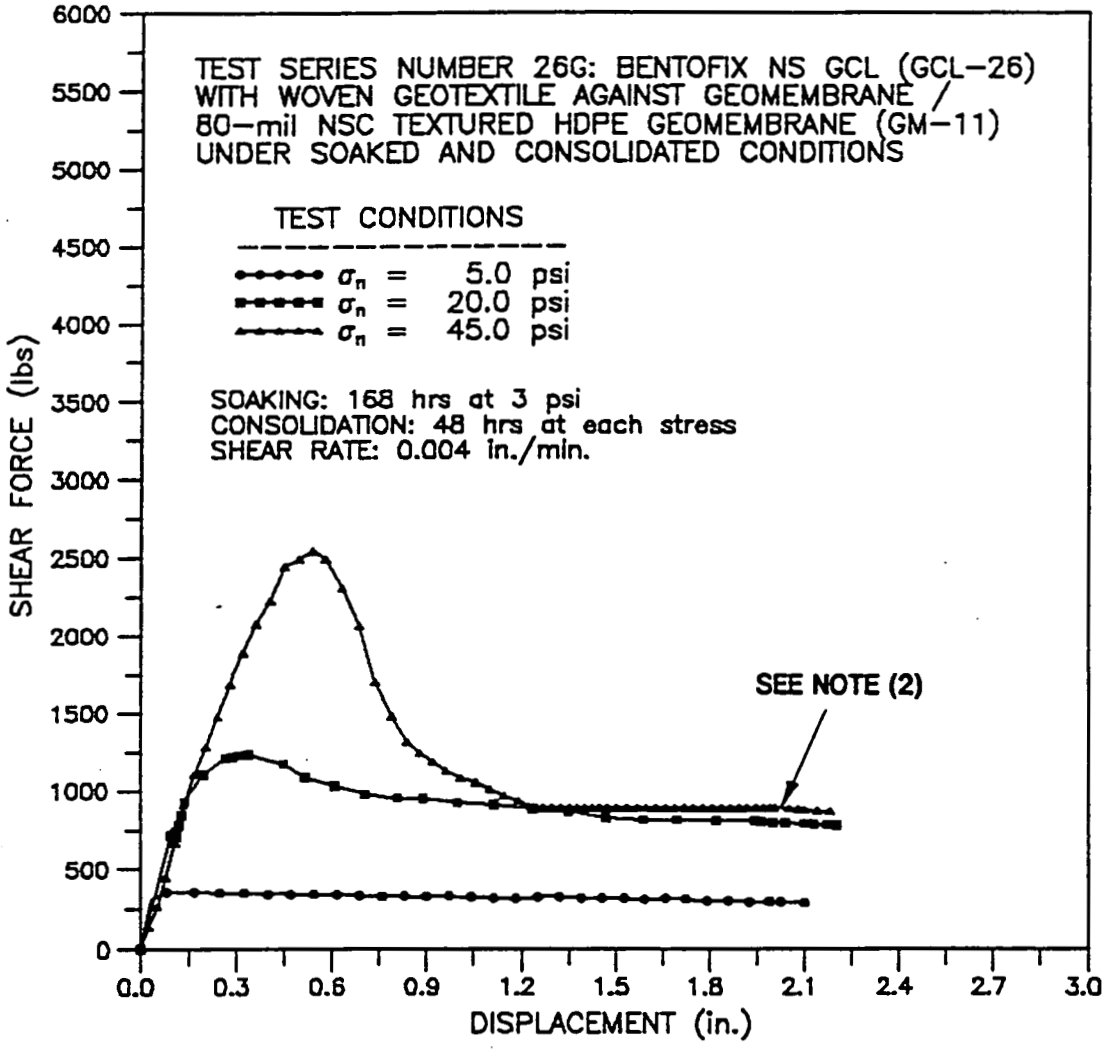
000224

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-2
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730128
FILE NO.	

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 1 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) Sliding (i.e., shear failure) was observed to occur within the GCL rather than the intended interface.

DATE TESTED: 29 OCTOBER TO 7 NOVEMBER 1997

GEOSYNTEC CONSULTANTS

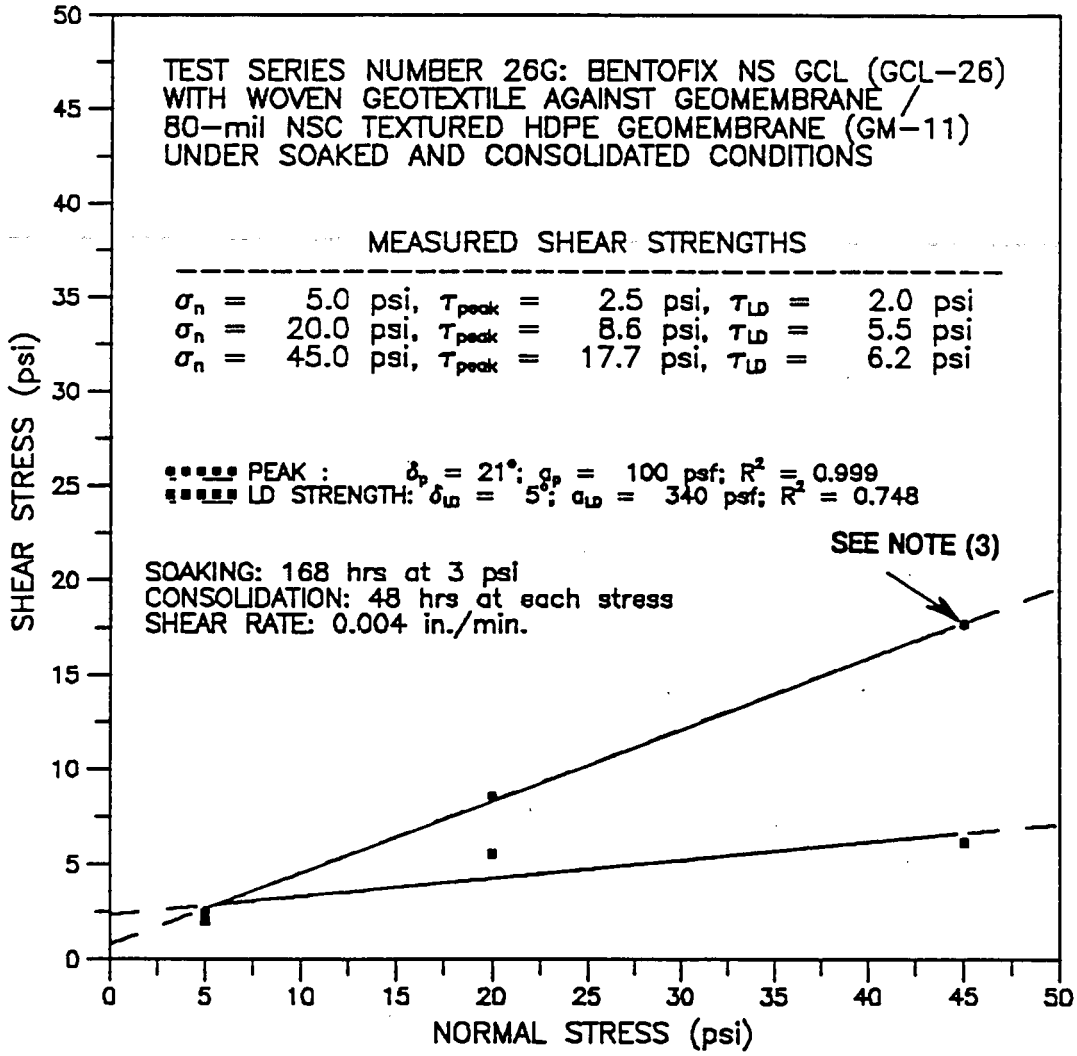
000225

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-3
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730128
FILE NO.	

2062

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Sliding (i.e., shear failure) was observed to occur within the GCL rather than the intended interface.

DATE TESTED: 29 OCTOBER TO 7 NOVEMBER 1997

GEOSYNTEC CONSULTANTS

000226

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-4
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730128
FILE NO.	

2062

GCL 27

000227

COMPUTATION COVER SHEET

SUBJECT OF COMPUTATIONS Geosynthetic Clay Liner (GCL) 27 - Compliance Package

Computations By:
(Cognizant Engineer)

Signature [illegible] Date NOV 21 1997

Printed Name and Title M. CATALINA OROZCO 2062
STAFF ENGINEER

Assumptions and Procedures Checked By:
(Checker)

Signature [illegible] Date 19 Dec 97

Printed Name and Title Gary R. Schmertmann
Sr. Project Engineer

Computations Checked by:

Signature NO COMPUTATIONS Date

Printed Name and Title

Computations Backchecked by:
(Cognizant Engineer)

Signature NO COMPUTATIONS Date

Printed Name and Title

Approved by:
(PDP)

Signature [illegible] Date 19 Dec 97

Printed Name and Title Gary R. Schmertmann
Sr. Project Engineer

Approved by:
(DTL and TETL)

Signature [illegible] Date 20 Dec 97

Printed Name and Title Kenneth W Cargill
Associate

Record of Revision (Number and initial all revisions)

Rev. No.	Reason	Date	By	Checked	Approval

000228

Written By: MCD Date: 11/21/97 Reviewed by: GES Date: 12/19/97

Client: FDF Project: OSDF Project/Proposal No.: GQ0166 Task No.: 04

PURPOSE

Evaluate whether GCL QA sample no. 27 complies with the shear strength requirements given in the GCL specification (Section 02772, Paragraph 2.01.E.3).

METHOD

The method for evaluating the GCL sample is outlined in RCI number 1702-006R. The method involves the following basic steps.

1. Use shear test results from the GCL sample to establish the envelopes of measured peak and large-displacement internal and interface shear strength.
2. Reanalyze two slope stability cases that were included in the OSDF design calculations using the measured peak and large-displacement strength envelopes established in Step 1. Obtain the slope stability factors of safety for the critical potential slip surface for each analysis case.
3. Compare the slope stability factors of safety computed in Step 2 to the baseline factors of safety.

Note: Whenever the shear test results for the GCL sample are higher than the shear strengths defined to obtain the baseline factor of safety, the slope stability analysis is not performed since it would necessarily result in a factor of safety higher than the baseline factor of safety.

SHEAR TEST RESULTS

The results of the GCL internal shear and GCL/geomembrane interface shear tests performed on QA sample no. 27 are shown in the following table. The laboratory test results are presented in Appendix A.

QA Sample	Case	Test Type	Measured Shear Strengths			Comply? (see note above)
			5 psi	20 psi	45 psi	
Baseline	Peak		15	61	13.8	NA
27		GCL Internal	4.8 psi	8.3 psi	17.4 psi	YES
		GCL/GMB Interface	2.7	8.4	17.4	YES
Baseline	Large-displacement		1.1	2.5	5.1	NA
27		GCL Internal	4.7	4.2	7.6	YES
		GCL/GMB Interface	1.6	5.0	6.1	YES

2062

MCO NOV 21 1997
GRS 19 Dec 97

APPENDIX A

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 27I

Test Specimen Configuration (from top to bottom) and Placement Conditions:

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-27). GCL's initial moisture content was 10.0%. GCL's final moisture content ranged from 55% to 71% for the test series; and
- lower shear box: rigid substrate with textured steel gripping surface.

Designated Shear Plane: Within GCL

Test Procedures for Each Normal Stress Condition:

- A fresh GCL specimen was trimmed from the bulk sample of the GCL and placed between two rigid wooden substrates with textured steel gripping surfaces. The ends of each geotextile were then sandwiched between a second rigid wooden substrate prior to testing. The entire test specimen was then placed in the shear box to provide confinement for the exposed bentonite component. The textured steel gripping surfaces were employed to minimize slippage between each geotextile component of the GCL and rigid wood substrate, therefore providing a relatively uniform transfer of shear load onto the GCL specimen.
- Soaking conditions: The GCL specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the GCL specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the Bentofix NS GCL sample.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

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TEST PROCEDURES AND CONDITIONS 2062
TEST SERIES NUMBER: 27G

Test Specimen Configuration (from top to bottom) and Placement Conditions:

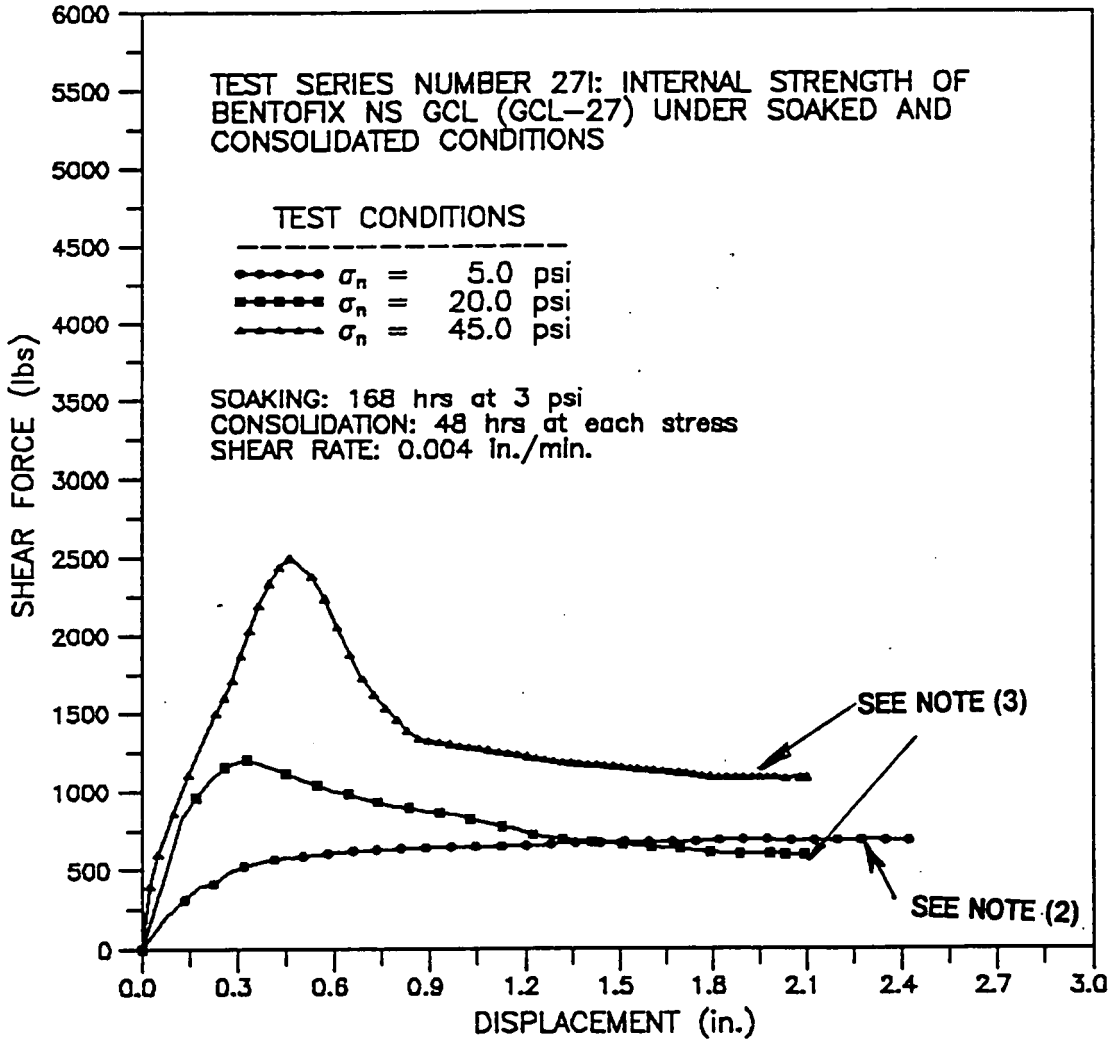
- upper shear box: rigid substrate with textured steel gripping surface;
- Bentofix NS GCL (GCL-27) with woven geotextile against geomembrane. GCL's initial moisture content was 8.1%. GCL's final moisture content ranged from 53 to 80% for the test series;
- 80-mil NSC textured HDPE geomembrane (GM-11); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

Test Procedures for Each Normal Stress Condition:

- A fresh specimen of concrete sand was compacted into the lower shear box by hand tamping to a relatively dense state under dry conditions forming a 3 in. thick bedding layer.
- A fresh specimen of geomembrane was trimmed from the bulk sample and attached to the lower shear box with mechanical compression clamps.
- A fresh specimen of GCL was trimmed from the bulk sample and attached to the upper shear box with mechanical compression clamps. The GCL was oriented so that the woven geotextile component of the GCL was in contact with the geomembrane.
- A rigid substrate with a textured steel gripping surface was placed on top of the GCL. The textured steel gripping surface was used to minimize slippage between the upper geotextile component of the GCL and rigid wooden substrate, therefore providing a relatively uniform transfer of shear load onto the test interface.
- Soaking conditions: The entire test specimen was soaked in tap water for 168 hours under a normal stress of 3 psi.
- Consolidation conditions: After the 168 hour soaking period, the tap water was drained, and the entire test specimen was consolidated for 48 hours under each test normal stress.
- Test normal stresses: 5, 20, and 45 psi.
- Constant shear displacement rate: 0.004 in/min.
- The direction of shear for each interface direct shear test was in the direction of manufacture (machine direction) of the geosynthetic samples.
- Each test was sheared until a minimum total shear displacement of 2 in. was achieved.

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) A constant area of 1 ft^2 was assumed when computing normal and shear stresses.
(2) No internal shear failure within GCL was observed.
(3) Internal shear failure within GCL was observed.

000233

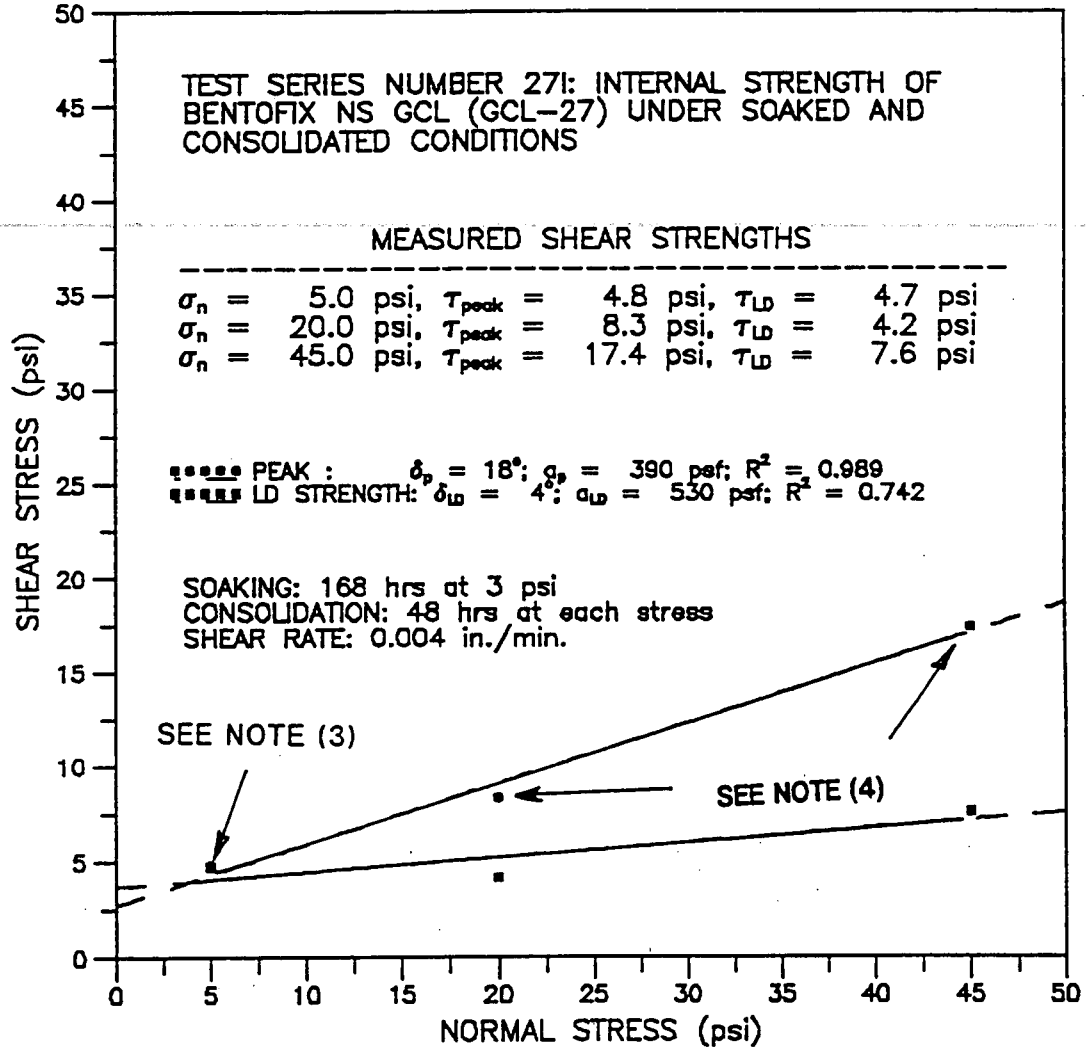
DATE TESTED: 1 TO 10 NOVEMBER 1997

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-1
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730130
FILE NO.	

2062

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) No internal shear failure within GCL was observed.
(4) Internal failure within GCL was observed.

DATE TESTED: 1 TO 10 NOVEMBER 1997

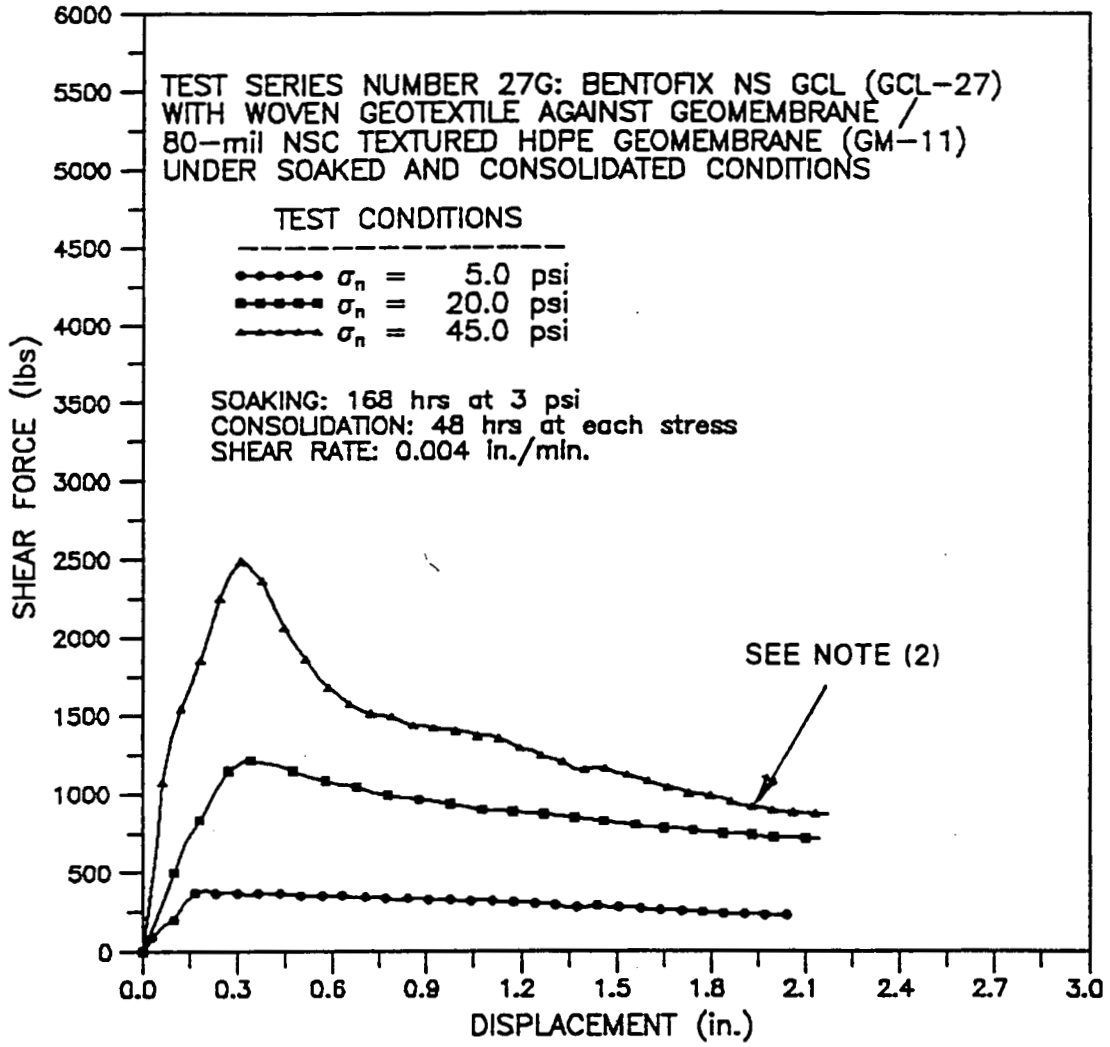
000234

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-2
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730130
FILE NO.	

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 1 CONSTRUCTION
DIRECT SHEAR TESTING



NOTES: (1) The shear box size was 12 in. by 12 in. (300 mm by 300 mm), and the contact area remained constant throughout the entire test.

(2) Sliding (i.e., shear failure) was observed to occur within the GCL rather than the intended interface.

DATE TESTED: 1 TO 10 NOVEMBER 1997

000235

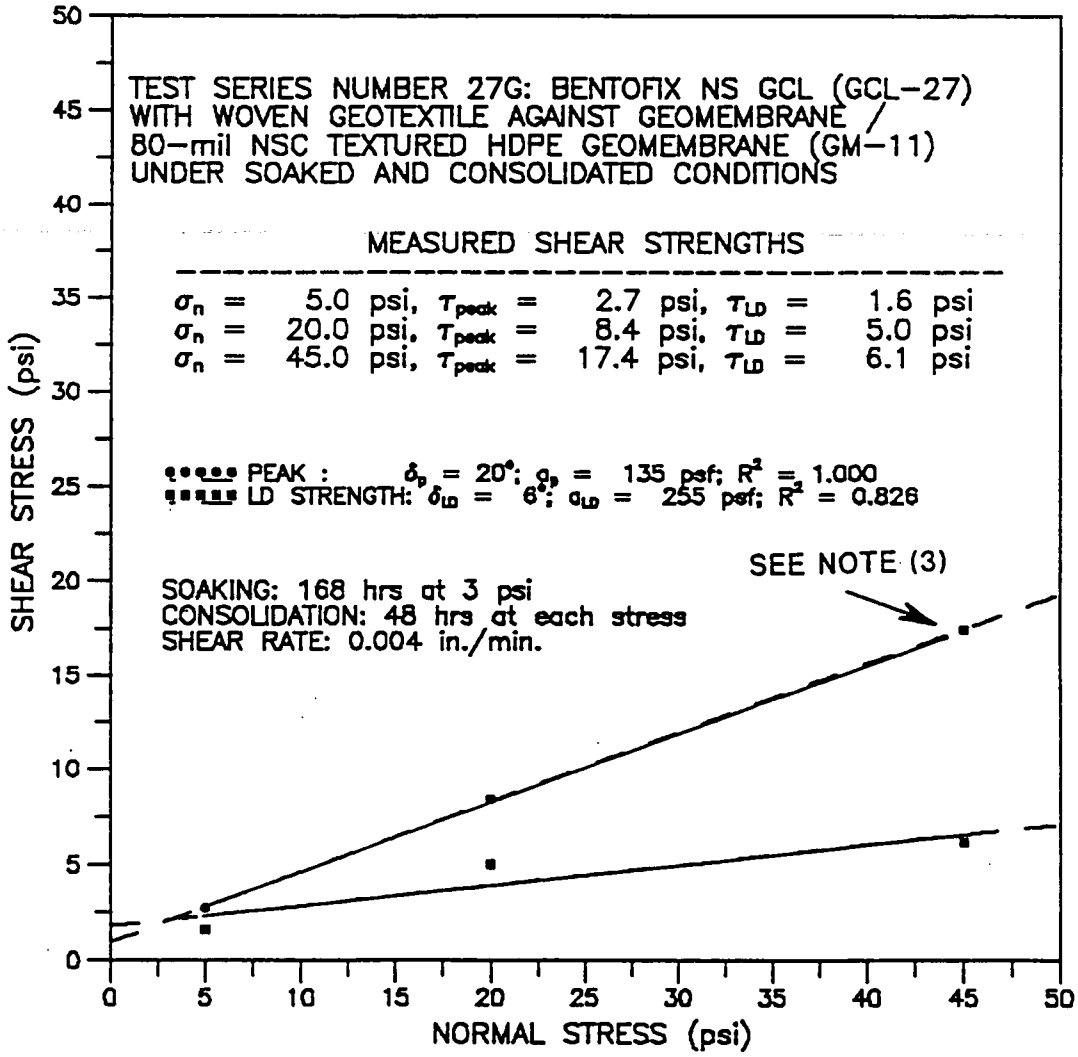
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-3
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730130
FILE NO.	

2062

FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 1 CONSTRUCTION DIRECT SHEAR TESTING



NOTES: (1) The reported total-stress shear strength parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using the strength parameters for applications involving normal stresses outside the range of stresses covered by the test series.
(2) The large displacement shear strength (τ_{LD}) was calculated using the shear force at a shear displacement of 2 in. for each test.
(3) Sliding (i.e., shear failure) was observed to occur within the GCL rather than the intended interface.

DATE TESTED: 1 TO 10 NOVEMBER 1997

000236

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	A-4
PROJECT NO.	GQ0166-04.1
DOCUMENT NO.	F9730130
FILE NO.	

2062

Geomembrane

2062

- **Material Inventory**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF Phase II YEAR: 1998

PRODUCT TYPE: Hyperflex-Textured 80mil HDPE MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	~~BATCH /~~ ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
14 Aug	AK 4198FF	CS					13 AUG	14 AUG	P	KBT
	AK 4200FF	CS	15/7	GM-19	✓	TBY			P	
	AK 4201FF	CS							P	
	AK 4203FF	CS							P	
	AK4204FF	CS							P	
	AK 4205FF	CS							P	
	AK 4206FF	CS							P	
	AK4207FF	CS							P	
	AK4209FF	CS							P	
	AK4210FF	CS	15/7	GM-20	✓	TBY			P	
	AK4213FF	CS							P	
	AK4214FF	CS							P	
	AK 4197FF	CS					13 AUG	14 AUG	P	KBT
	AK4202FF	CS							P	
	AK4208FF	CS							P	
	AK4211FF	CS					29 JUL	1 AUG	P	KBT
	AK4212FF	CS							P	
	AK4217FF	CS							P	
	AK4225FF	CS							P	
	AK4253FF	CS							P	
	AK4261FF	CS							P	
	AK4262FF	CS							P	
	AK4263FF	CS							P	
	AK4273FF	CS							P	

AVG. ROLL WIDTH: 24 AVG. ROLL LENGTH: 356.7

NUMBER OF ROLLS ABOVE: 24 ACCUMULATIVE NUMBER OF ROLLS: 24

CUMULATIVE AREA: ~~205,464~~ 205459.2 NO. OF CONFORMANCE TESTS (page/total): 2 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF - Phase II YEAR: 1998

PRODUCT TYPE: Hyperflex-~~Textured~~ 80 mil HDPE MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	~~BATCH~~ Roll / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
24 Aug	AK4226FF	CS	15/7	GM-21	✓	TBH	29 JUL	14 AUG	P	KBT
	AK4236FF	CS							P	
	AK4239FF	CS							P	
	AK4240FF	CS							P	
	AK4245FF	CS							P	
	AK4246FF	CS							P	
	AK4248FF	CS	15/7	GM-23	✓	TBH			P	
	AK4260FF	CS							P	
	AK4284FF	CS							P	
	AK4290FF	CS							P	
	AK4292FF	CS							P	
	AK4293FF	CS							P	
	AK4218FF	CS							P	
	AK4220FF	CS							P	
	AK4221FF	CS							P	
	AK4234FF	CS							P	
	AK4247FF	CS							P	
	AK4249FF	CS							P	
	AK4255FF	CS							P	
	AK4256FF	CS							P	
	AK4265FF	CS	15/7	GM-24	✓	TBH			P	
	AK4268FF	CS							P	
	AK4271FF	CS							P	
	AK4296FF	CS							P	

AVG. ROLL WIDTH: 24 AVG. ROLL LENGTH: 357.8

NUMBER OF ROLLS ABOVE: 24 ACCUMULATIVE NUMBER OF ROLLS: 48

CUMULATIVE AREA: ~~411,557~~ m² NO. OF CONFORMANCE TESTS (page/total): 3/5

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF-Phase II YEAR: 1998

PRODUCT TYPE: Hyperflex-Textured 80 mil HDPE MANUFACTURER: GSE Lining, Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	~~BATCH~~ SL / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
26 Aug	A15175FF	CS					29 JUL	1 AUG	P	KBT
	AK4223FF	CS							P	
	AK4252FF	CS							P	
	AK4257FF	CS							P	
	AK4258FF	CS							P	
	AK4266FF	CS							P	
	AK4275FF	CS							P	
	AK4282FF	CS							P	
	AK4285FF	CS							P	
	AK4286FF	CS							P	
	AK4288FF	CS							P	
	AK4291FF	CS							P	
27 Aug	AK4216FF	CS					13 AUG	14 AUG	P	KBT
	AK4219FF	CS					29 JUL	1 AUG	P	KBT
	AK4224FF	CS							P	
	AK4230FF	CS							P	
	AK4244FF	CS							P	
	AK4251FF	CS							P	
	AK4259FF	CS							P	
	AK4269FF	CS							P	
	AK4270FF	CS							P	
	AK4277FF	CS							P	
	AK4287FF	CS							P	
	AK4289FF	CS							P	

AVG. ROLL WIDTH: 24 AVG. ROLL LENGTH: ~~358.25~~ ~~357.875~~ 357.25 (MW)

NUMBER OF ROLLS ABOVE: 24 ACCUMULATIVE NUMBER OF ROLLS: 72

CUMULATIVE AREA: ~~617,333~~ MW NO. OF CONFORMANCE TESTS (page/total): 0 / 5

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: OSDF PHASE II YEAR: 1998

PRODUCT TYPE: HYPERFLEX TEXTURED 80MIL HDPE MANUFACTURER: GSE LINING TECH, INC

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	~~BATCH~~ / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
27 Aug 98	AK2527FF	CS					29 JUL	1 AUG	P	KBT
	AK4222FF	CS							P	
	AK4229FF	CS							P	
	AK4231FF	CS							P	
	AK4232FF	CS							P	
	AK4233FF	CS							P	
	AK4254FF	CS							P	
	AK4264FF	CS							P	
	AK4267FF	CS							P	
	AK4279FF	CS							P	
	AK4281FF	CS							P	
	AK4295FF	CS							P	
	AK2528FF	CS							P	
	AK2550FF	CS							P	
	AK2553FF	CS							P	
	AK2554FF	CS							P	
	AK4228FF	CS							P	
	AK4235FF	CS	15/7	GM-22	✓	TBU			P	
	AK4238FF	CS							P	
	AK4242FF	CS							P	
	AK4272FF	CS	15/7	GM-25	✓	TBU			P	
	AK4276FF	CS							P	
	AK4283FF	CS	15/7	GM-26	✓	TBU			P	
	AK4294FF	CS	15/7	GM-27	✓	TBU			P	

AVG. ROLL WIDTH: 24 AVG. ROLL LENGTH: 356.975

NUMBER OF ROLLS ABOVE: 24 ACCUMULATIVE NUMBER OF ROLLS: 96

CUMULATIVE AREA: ~~822,893~~ M4 NO. OF CONFORMANCE TESTS (page/total): 4/9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF PHASE II YEAR: 1998

PRODUCT TYPE: HYPERFLEX TEXTURED 80 MIL HDPE MANUFACTURER: GSE LINING TECH., INC

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	~~BATCH~~ SB / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
31 AUG	AK 4243FF	CS					29 JUL	1 AUG	P	KBT
↓	AK 4250FF	CS					29 JUL	1 AUG	P	KBT

AVG. ROLL WIDTH: 24 AVG. ROLL LENGTH: 358.5

NUMBER OF ROLLS ABOVE: 2 ACCUMULATIVE NUMBER OF ROLLS: 98

CUMULATIVE AREA: 840096 NO. OF CONFORMANCE TESTS (page/total): 0 / 9

- **Geomembrane Conformance Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-19, LOT# Z45473, ROLL# AK4200
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5162-FLQC-1251-1
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9467	0.9466	0.9460	0.9463	0.9459					
0.9443	0.9442	0.9436	0.9439	0.9435					
2.10	2.03	2.08	2.12	2.02	2.07	2.11	2.11	2.13	2.11
82.5	80.0	82.0	83.5	79.5	81.5	83.0	83.0	84.0	83.0
195.2	207.4	195.0	209.0	201.0					
191.6	209.4	197.2	198.0	189.2					
21.9	21.2	21.8	21.5	20.9					
22.3	22.4	21.6	18.5	18.6					
413.2	446.0	411.4	466.7	441.0					
390.6	389.2	460.1	401.2	394.4					
1323	1412	1308	1494	1420					
1295	1243	1475	1300	1288					
2.30	2.60								
Cat.-1	Cat.-1	Cat.-2	Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-2

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9463	0.00035	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9439	0.00035	N/A	
THICKNESS (ASTM D5994)	mm	2.09	0.037	N/A	
	mil	82.2	1.48	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		201.5	6.58	≥ 168	PASS
XD		197.1	7.82	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		21.5	0.41	≥ 12	PASS
XD		20.7	2.00	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		435.7	23.41	≥ 300	PASS
XD		407.1	29.99	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1391	76.5	≥ 200	PASS
XD		1320	89.4	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.45	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. B7 DATE: 8/7/98

000245

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-20, LOT# Z45473, ROLL# AK4210
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5163-FLQC-1251-1
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9455	0.9458	0.9457	0.9459	0.9458					
0.9431	0.9434	0.9433	0.9435	0.9434					
2.08	2.10	2.07	2.08	2.11	2.11	2.11	2.12	2.08	2.06
82.0	82.5	81.5	82.0	83.0	83.0	83.0	83.5	82.0	81.0
215.8	213.0	219.1	207.7	211.5					
219.4	219.6	219.3	218.6	217.4					
17.6	18.1	23.9	22.2	22.2					
17.1	18.0	20.1	25.3	24.6					
431.1	414.8	418.3	414.1	432.1					
393.0	390.1	415.7	388.3	394.1					
1370	1286	1308	1312	1308					
1222	1245	1324	1234	1250					
2.66	2.55								
Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9457	0.00015	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9434	0.00015	N/A	
THICKNESS (ASTM D5994)	mm	2.09	0.020	N/A	
	mil	82.4	0.78	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		213.4	4.32	≥ 168	PASS
XD		218.9	0.90	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		20.8	2.79	≥ 12	PASS
XD		21.0	3.76	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		422.1	8.84	≥ 300	PASS
XD		396.2	11.12	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1317	31.5	≥ 200	PASS
XD		1255	40.0	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.61	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

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QC I.D. AT DATE: 8/7/98

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

342000

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-21,LOT#Z45476, ROLL# AK4226
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5164-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9467	0.9470	0.9462	0.9461	0.9465					
0.9443	0.9446	0.9438	0.9437	0.9441					
2.16	2.08	2.10	2.13	2.08	2.10	2.10	2.13	2.10	2.11
85.0	82.0	82.5	84.0	82.0	82.5	82.5	84.0	82.5	83.0
196.8	205.2	206.0	200.4	203.4					
188.2	202.8	202.4	202.6	204.6					
22.9	18.4	20.4	19.8	20.9					
21.8	18.4	20.5	18.4	18.3					
434.2	442.0	357.4	399.3	404.8					
431.0	394.6	383.2	405.8	420.0					
1372	1429	1123	1281	1325					
1432	1255	1243	1331	1364					
2.23	2.53								
Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-2	Cat.-2	Cat.-2	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9465	0.00037	> 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9441	0.00037	N/A	
THICKNESS (ASTM D5994)	mm	2.11	0.025	N/A	
	mil	83.0	1.00	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		202.4	3.78	> 168	PASS
XD		200.1	6.72	> 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		20.5	1.65	> 12	PASS
XD		19.5	1.57	> 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		407.5	33.50	> 300	PASS
XD		406.9	19.15	> 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1306	116.1	> 200	PASS
XD		1325	78.5	> 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.38	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
• THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. 137 DATE: 8/7/98

000247

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

BST CARBON DISP. RET
THIS SHEET

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-22, LOT# Z45476, ROLL# AK4235
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5165-FLQC-1251-I
DATE TESTED: 7/22/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9466	0.9463	0.9462	0.9462	0.9463					
0.9442	0.9439	0.9438	0.9438	0.9439					
2.11	2.11	2.10	2.07	2.12	2.08	2.03	2.11	2.11	2.07
83.0	83.0	82.5	81.5	83.5	82.0	80.0	83.0	83.0	81.5
212.1	212.3	202.4	197.9	207.2					
207.4	207.5	209.4	205.9	207.7					
19.1	19.1	15.5	20.5	20.5					
21.5	19.1	19.6	22.2	23.2					
420.8	414.9	436.8	419.6	401.8					
373.0	443.7	441.3	437.9	448.0					
1361	1289	1395	1371	1273					
1185	1403	1411	1408	1454					
2.21	2.18								
Cat.-1	Cat.-3	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-2
Cat.-1	Cat.-2	Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9463	0.00016	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9440	0.00016	N/A	
THICKNESS (ASTM D5994)	mm	2.09	0.027	N/A	
	mil	82.3	1.06	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		206.4	6.25	≥ 168	PASS
XD		207.6	1.24	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		18.9	2.06	≥ 12	PASS
XD		21.1	1.74	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		418.8	12.58	≥ 300	PASS
XD		428.8	31.40	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1338	53.6	≥ 200	PASS
XD		1372	106.6	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.20	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PENDING
CARBON BLACK DISPERSION (RETEST) (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

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QC I.D. 87 DATE: 8/7/98

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

000248

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-23, LOT# Z45476, ROLL# AK4248
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5166-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9460	0.9466	0.9462	0.9462	0.9461					
0.9436	0.9442	0.9438	0.9438	0.9437					
2.06	2.21	2.11	2.13	2.12	2.06	2.08	2.11	2.10	2.12
81.0	87.0	83.0	84.0	83.5	81.0	82.0	83.0	82.5	83.5
198.4	205.8	205.2	197.0	203.8					
200.8	201.4	205.8	200.8	202.6					
21.7	19.8	18.4	21.2	20.2					
18.6	21.1	17.9	19.1	19.1					
451.8	434.8	367.4	420.6	413.1					
397.5	415.6	400.2	421.8	427.6					
1440	1388	1191	1375	1326					
1315	1336	1300	1368	1388					
2.60	2.51								
Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9462	0.00023	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9439	0.00023	N/A	
THICKNESS (ASTM D5994)	mm	2.11	0.044	N/A	
	mil	83.1	1.72	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		202.0	4.06	≥ 168	PASS
XD		202.3	2.10	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		20.3	1.27	≥ 12	PASS
XD		19.1	1.19	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		417.5	31.68	≥ 300	PASS
XD		412.5	13.23	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1344	94.7	≥ 200	PASS
XD		1341	36.5	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.56	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

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QC I.D. 87 DATE: 8/7/98

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
• THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

000249

20062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-24, LOT# Z45476, ROLL# AK4265
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5167-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9462	0.9463	0.9459	0.9461	0.9459					
0.9438	0.9439	0.9435	0.9437	0.9435					
2.21	2.07	2.07	2.02	2.13	2.08	2.07	2.08	2.11	2.11
87.0	81.5	81.5	79.5	84.0	82.0	81.5	82.0	83.0	83.0
202.5	209.5	210.3	209.2	206.0					
216.8	216.6	208.0	223.4	216.4					
20.6	22.2	19.1	21.6	19.5					
19.1	19.6	18.1	20.6	19.4					
370.9	384.4	424.6	417.1	443.0					
408.3	417.9	362.8	426.1	429.3					
1188	1192	1314	1296	1433					
1295	1292	1186	1315	1326					
2.22	2.90								
Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9461	0.00018	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9437	0.00018	N/A	
THICKNESS (ASTM D5994)	mm	2.10	0.050	N/A	
	mil	82.5	1.99	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		207.5	3.24	≥ 168	PASS
XD		216.2	5.47	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		20.6	1.33	≥ 12	PASS
XD		19.3	0.89	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		408.0	29.65	≥ 300	PASS
XD		408.9	27.01	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1285	101.1	≥ 200	PASS
XD		1283	55.9	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.56	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

000250

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
• THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. 07 DATE: 8/7/98

GEOSYNTEC CONSULTANTS

Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-25, LOT# Z45476, ROLL# AK4272
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5168-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9468	0.9469	0.9466	0.9471	0.9471					
0.9444	0.9445	0.9442	0.9447	0.9447					
2.10	2.03	2.10	2.08	2.10	2.08	2.07	2.06	2.07	2.10
82.5	80.0	82.5	82.0	82.5	82.0	81.5	81.0	81.5	82.5
198.4	199.6	202.8	202.2	195.2					
209.8	200.6	212.0	206.6	210.0					
17.8	19.9	18.5	21.8	19.9					
18.6	19.9	18.0	18.6	19.1					
404.0	421.2	445.6	437.2	416.0					
445.4	419.2	429.5	389.2	424.7					
1295	1332	1459	1425	1354					
1455	1404	1399	1246	1343					
2.52	2.59								
Cat.-1	Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9469	0.00021	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9445	0.00021	N/A	
THICKNESS (ASTM D5994)	mm	2.08	0.021	N/A	
	mil	81.8	0.82	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		199.6	3.07	≥ 168	PASS
XD		207.8	4.47	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		19.5	1.53	≥ 12	PASS
XD		18.8	0.71	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		424.8	16.65	≥ 300	PASS
XD		421.6	20.58	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1373	67.5	≥ 200	PASS
XD		1369	79.6	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.56	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
• THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. BT DATE: 8/7/98

000251

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-26, LOT# Z45477, ROLL# AK4283
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5169-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9460	0.9459	0.9461	0.9467	0.9464					
0.9436	0.9435	0.9437	0.9443	0.9440					
2.10	2.03	2.08	2.10	2.10	2.11	2.10	2.12	2.10	2.08
82.5	80.0	82.0	82.5	82.5	83.0	82.5	83.5	82.5	82.0
205.6	205.4	209.2	207.2	204.4					
202.8	198.0	204.4	208.4	194.8					
20.4	20.4	19.1	21.7	20.4					
19.1	20.4	19.1	19.2	20.3					
447.2	434.4	417.2	457.2	407.2					
410.8	404.4	417.2	414.4	416.0					
1409	1410	1295	1487	1316					
1303	1293	1312	1302	1322					
2.57	2.54								
Cat.-1	Cat.-1	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9462	0.00033	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9439	0.00033	N/A	
THICKNESS (ASTM D5994)	mm	2.09	0.023	N/A	
	mil	82.3	0.92	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		206.4	1.88	≥ 168	PASS
XD		201.7	5.35	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		20.4	0.91	≥ 12	PASS
XD		19.6	0.65	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		432.6	20.64	≥ 300	PASS
XD		412.6	5.16	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1383	78.2	≥ 200	PASS
XD		1306	11.0	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.56	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

000252

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. BT DATE: 8/7/98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-27, LOT# Z45477, ROLL# AK4294
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5170-FLQC-1251-I
DATE TESTED: 7/20/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9465	0.9462	0.9462	0.9464	0.9460					
0.9441	0.9438	0.9438	0.9440	0.9436					
2.10	2.10	2.12	2.04	2.07	2.11	2.15	2.11	2.12	2.06
82.5	82.5	83.5	80.5	81.5	83.0	84.5	83.0	83.5	81.0
208.4	205.0	210.0	206.4	205.8					
199.8	212.0	207.8	208.2	195.8					
19.6	17.9	19.9	19.1	17.9					
19.7	18.6	19.2	20.5	18.5					
432.4	403.4	406.2	430.8	421.4					
406.8	423.0	394.4	404.4	426.4					
1344	1263	1279	1356	1351					
1299	1335	1255	1330	1400					
2.52	2.48								
Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-1

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9463	0.00019	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9439	0.00019	N/A	
THICKNESS (ASTM D5994)	mm	2.10	0.031	N/A	
	mil	82.6	1.23	76 / 80	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		207.1	2.04	≥ 168	PASS
XD		204.7	6.68	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		18.9	0.95	≥ 12	PASS
XD		19.3	0.84	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		418.8	13.52	≥ 300	PASS
XD		411.0	13.40	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1319	44.0	≥ 200	PASS
XD		1324	53.2	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.50	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. BT DATE: 8/7/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

BST DATE: 9/28/98

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-28, LOT# Z-45448, ROLL# AK2528
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5807-FLQC-1251-I
DATE TESTED: 9/28/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9481	0.9471	0.9472	0.9467	0.9475					
0.9457	0.9447	0.9448	0.9443	0.9451					
2.18	2.18	2.11	2.10	2.10	2.15	2.10	2.13	2.11	2.11
86.0	86.0	83.0	82.5	82.5	84.5	82.5	84.0	83.0	83.0
202.0	201.2	202.6	205.4	199.2					
209.2	206.4	212.8	199.6	205.0					
20.3	22.5	20.5	22.4	19.3					
22.4	22.5	21.7	19.1	22.3					
431.6	411.2	426.8	395.0	450.8					
421.2	442.4	431.2	425.2	434.0					
1397	1318	1382	1262	1466					
1361	1457	1385	1395	1415					
2.32	2.33								
Cat.-1	Cat.-2	Cat.-2	Cat.-1	Cat.-2	Cat.-1	Cat.-1	Cat.-1	Cat.-1	Cat.-2

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL	BST CODE
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9473	0.00052	≥ 0.940	PASS	QM14
						$40
DENSITY (ASTM D792)	g/cc	0.9450	0.00052	N/A		
THICKNESS (ASTM D5994)	mm	2.13	0.035	N/A		QM39
	mil	83.7	1.38	≥ 76 / 80 *	PASS	$30
YIELD TENSION (ASTM D638)	lb/in.					
RD		202.1	2.26	≥ 168	PASS	QM32
XD		206.6	4.92	≥ 168	PASS	$95
YIELD ELONGATION (ASTM D638)	%					
RD		21.0	1.42	≥ 12	PASS	
XD		21.6	1.42	≥ 12	PASS	
BREAK TENSION (ASTM D638)	lb/in.					
RD		423.1	21.12	≥ 300	PASS	
XD		430.8	8.19	≥ 300	PASS	
BREAK ELONGATION (ASTM D638)	%					
RD		1365	78.0	≥ 200	PASS	
XD		1403	36.1	≥ 200	PASS	
CARBON BLACK CONTENT (ASTM D1603)	%	2.33	N/A	2-3	PASS	QM04
						$81
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS	QM05
						$50

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
• THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. AT DATE: 9/28/98

SUB-TOTAL
$296

000254

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOMEMBRANE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: HDPE (Textured)
CLIENT ID: GM-29, LOT# Y-45934, ROLL# AJ5175
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 6200-FLQC-1251-I
DATE TESTED: 10/14/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
0.9490	0.9465	0.9477	0.9470	0.9477					
0.9466	0.9441	0.9453	0.9446	0.9453					
2.24	2.11	2.20	2.15	2.04	2.21	2.10	2.12	2.13	2.06
88.00	83.00	86.50	84.50	80.50	87.00	82.50	83.50	84.00	81.00
213.4	207.2	201.4	212.6	195.2					
216.6	206.2	210.8	205.2	208.0					
21.8	19.8	22.2	20.4	22.4					
20.6	19.7	23.1	23.1	22.8					
392.8	459.0	438.0	458.3	460.8					
381.5	426.3	436.4	418.9	359.9					
1262	1496	1416	1496	1505					
1243	1390	1402	1346	1167					
2.43	2.47								
Cat.-1	Cat.-2	Cat.-2	Cat.-1	Cat.-2	Cat.-2	Cat.-2	Cat.-1	Cat.-2	Cat.-2

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
SPECIFIC GRAVITY (ASTM D792)	n/a	0.9476	0.00094	≥ 0.940	PASS
DENSITY (ASTM D792)	g/cc	0.9452	0.00094	N/A	
THICKNESS (ASTM D5994)	mm	2.13	0.063	N/A	
	mil	84.1	2.50	≥ 76 / 80 *	PASS
YIELD TENSION (ASTM D638)	lb/in.				
RD		206.0	7.71	≥ 168	PASS
XD		209.4	4.57	≥ 168	PASS
YIELD ELONGATION (ASTM D638)	%				
RD		21.3	1.16	≥ 12	PASS
XD		21.9	1.61	≥ 12	PASS
BREAK TENSION (ASTM D638)	lb/in.				
RD		441.8	28.92	≥ 300	PASS
XD		404.6	32.47	≥ 300	PASS
BREAK ELONGATION (ASTM D638)	%				
RD		1435	103.2	≥ 200	PASS
XD		1310	101.4	≥ 200	PASS
CARBON BLACK CONTENT (ASTM D1603)	%	2.45	N/A	2-3	PASS
CARBON BLACK DISPERSION (ASTM D5596)	N/A	N/A	N/A	CAT-1 or 2	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
N/A = NOT APPLICABLE
* THICKNESS SPECIFICATION MINIMUM 76 mils, AVERAGE MUST BE 80 mils OR GREATER.

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QC I.D. RT DATE: 10/14/98

000255

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- **Bill of Lading**

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE® GSE Lining Technology, Inc. at HOUSTON, TEXAS

2062

SHIPPERS NO. H 06480

From GSE LINING TECHNOLOGY, INC.

ceived at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said rier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is GSE ing Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parties, Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper and the Carrier ct to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability for loss of ge to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

bject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are reby agreed and accepted for himself and his assigns.

xternal Ref. FLUOR DANIEL FERNALD
KATHY FISHER
onsigned to 7400 WILLEY ROAD
estination FERNALD

Date Shipped AUGUST 11, 1998
Customer P.O. # 98SC002317
State OH 45030

omments from M.R.

FC:01910008 CONTACT:- KATHY FISHER-@513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & CQA CONSULTANT REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR-ERIC REED.

RIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK4197FF	355	080 HYPERFLEX FF,080MIL,AVG,B
2	AK4202FF	361	080 HYPERFLEX FF,080MIL,AVG,B
3	AK4208FF	355	080 HYPERFLEX FF,080MIL,AVG,B
4	AK4211FF	355	080 HYPERFLEX FF,080MIL,AVG,B
5	AK4212FF	363	080 HYPERFLEX FF,080MIL,AVG,B
6	AK4217FF	355	080 HYPERFLEX FF,080MIL,AVG,B
7	AK4225FF	355	080 HYPERFLEX FF,080MIL,AVG,B
8	AK4253FF	355	080 HYPERFLEX FF,080MIL,AVG,B
9	AK4261FF	355	080 HYPERFLEX FF,080MIL,AVG,B
10	AK4262FF	361	080 HYPERFLEX FF,080MIL,AVG,B
11	AK4263FF	360	080 HYPERFLEX FF,080MIL,AVG,B
12	AK4273FF	355	080 HYPERFLEX FF,080MIL,AVG,B

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006480

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container #

Seal #

FLU240001

otal Square Ft. 102,282

Total Weight 41,949

arrier Ref.

CARRIER NAME:
CARRIER SIGNATURE: Robert Bradley
DATE: 8/11/98

Truckers P.O. # 86113630

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

ere For Shipper
er: Leonard Stoverski
ddress: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper

Agent for Shipper:
(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

TRUCK # 000257

Agent must sign, detach and retain a copy of this Shipping Order.

A COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

GSE®
GSE Lining Technology, Inc.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

at HOUSTON, TEXAS

SHIPPERS NO.
H 06481

From GSE LINING TECHNOLOGY, INC

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which s Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is G Lining Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parti or (b) if the Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper an shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in mor ...ier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liabili ca ...ge to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

Sub ...the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions a hereby agreed and accepted for himself and his assigns.

External Ref. FLUOR DANIEL FERNALD

Date Shipped AUGUST 11, 1998

Consigned to KATHY FISHER

Customer P.O.# 98SC002317

Destination 7400 WILLEY ROAD FERNALD

State OH 45030

Comments from M.R.

FC 01910008 CONTACT= KATHY FISHER @513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & POA CONSULTANT
REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR ERIC REED

DRIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
~~1~~	~~AK4197FF~~	~~355~~	~~080 HYPERFLEX FF,080MIL,AVG,B~~
2	AK4198FF	359	080 HYPERFLEX FF,080MIL,AVG,B
3	AK4200FF	360	080 HYPERFLEX FF,080MIL,AVG,B
4	AK4201FF	355	080 HYPERFLEX FF,080MIL,AVG,B
5	AK4203FF	355	080 HYPERFLEX FF,080MIL,AVG,B
6	AK4204FF	355	080 HYPERFLEX FF,080MIL,AVG,B
7	AK4205FF	355	080 HYPERFLEX FF,080MIL,AVG,B
8	AK4206FF	362	080 HYPERFLEX FF,080MIL,AVG,B
9	AK4207FF	355	080 HYPERFLEX FF,080MIL,AVG,B
10	AK4209FF	355	080 HYPERFLEX FF,080MIL,AVG,B
11	AK4210FF	355	080 HYPERFLEX FF,080MIL,AVG,B
12	AK4213FF	355	080 HYPERFLEX FF,080MIL,AVG,B
	AK4214 FF	355	080

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006481

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container #

Seal #

FLU240001

Michelle Ante

This bill of lading was mis labled and included the roll crossed out and the truck had the roll # added
CS
14 Aug 1998

Total Square Ft. 102,068

Total Weight 42,174

Carrier Ref.

CARRIER NAME: Rigby
CARRIER SIGNATURE:
DATE: 8-11-98

Truckers P.O. # 86113630

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Sign Here For Shipper Leonard Stromski

Address 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper

Agent for Shipper:
(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)
CONSIGNEE 000268

Agent must sign, detach and retain a copy of this Shipping Order.

A COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE Lining Technology, Inc. at HOUSTON, TEXAS

2062

SHIPPERS NO. H 06575

From GSE LINING TECHNOLOGY, INC.

Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is GSE Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parties, the Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper and the Carrier subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability for loss of damage to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are hereby agreed and accepted for himself and his assigns.

External Ref.: FLUOR DANIEL FERNALD
KATHY FISHER
Consigned to: 7400 WILLEY ROAD
Destination: FERNALD

Date Shipped: AUGUST 21, 1998
Customer P.O. #: 98SC002317
State: OH 45030

Comments from M.R.:

FC 01910008 CONTACT: KATHY FISHER (513/648-4661)
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**ED REP & CQA CONSULTANT
REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR ERIC REED
DRIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK4218FF	361	080 HYPERFLEX FF,080MIL,AVG,E
2	AK4220FF	360	080 HYPERFLEX FF,080MIL,AVG,E
3	AK4221FF	355	080 HYPERFLEX FF,080MIL,AVG,E
4	AK4234FF	360	080 HYPERFLEX FF,080MIL,AVG,E
5	AK4247FF	355	080 HYPERFLEX FF,080MIL,AVG,E
6	AK4249FF	355	080 HYPERFLEX FF,080MIL,AVG,E
7	AK4255FF 325	355	080 HYPERFLEX FF,080MIL,AVG,E
8	AK4256FF	361	080 HYPERFLEX FF,080MIL,AVG,E
9	AK4265FF	355	080 HYPERFLEX FF,080MIL,AVG,E
10	AK4268FF	360	080 HYPERFLEX FF,080MIL,AVG,E
11	AK4271FF OK	355	080 HYPERFLEX FF,080MIL,AVG,E
12	AK4296FF	355	080 HYPERFLEX FF,080MIL,AVG,E

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006575

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container # 116

Seal #

Roll # AK4249FF has slight out of alignment of textured surface. One side only 2" instead of 6". Other side 10". D. Bodine 0900 hr. 24 Aug 98

Total Square Ft. 102,330

Total Weight 42,182

FLU240001

Carrier Ref.

CARRIER NAME: RUEL SMITH
CARRIER SIGNATURE:
DATE: 8-21-98

Truckers P.O. # 86127059

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Sign Here For Shipper

8/21/98

Address: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper

Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)
TRUCK

000259

COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Agent must sign, detach and retain a copy of this Shipping Order.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

SHIPPERS NO.
H 06572

Lining Technology, Inc. at HOUSTON, TEXAS

From GSE LINING TECHNOLOGY, IN

Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is Lining Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in rier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability damage to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions hereby agreed and accepted for himself and his assigns.

External Ref. FLUOR DANIEL FERNALD
KATHY FISHER
Consigned to 7400 WILLEY ROAD
Destination FERNALD

Date Shipped AUGUST 21, 1998
Customer P.O.# 98SC002317
State OH 45030

Comments from M.R.
FC 01910008 CONTACT: KATHY FISHER @513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & CQA CONSULTANT
REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR-ERIC REED.

DRIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK4226FF	361	080 HYPERFLEX FF,080MIL,AVG,B
2	AK4236FF	355	080 HYPERFLEX FF,080MIL,AVG,B
3	AK4239FF	355	080 HYPERFLEX FF,080MIL,AVG,B
4	AK4240FF	363	080 HYPERFLEX FF,080MIL,AVG,B
5	AK4245FF	355	080 HYPERFLEX FF,080MIL,AVG,B
6	AK4246FF	361	080 HYPERFLEX FF,080MIL,AVG,B
7	AK4248FF	360	080 HYPERFLEX FF,080MIL,AVG,B
8	AK4260FF	362	080 HYPERFLEX FF,080MIL,AVG,B
9	AK4284FF	355	080 HYPERFLEX FF,080MIL,AVG,B
10	AK4290FF	362	080 HYPERFLEX FF,080MIL,AVG,B
11	AK4292FF	355	080 HYPERFLEX FF,080MIL,AVG,B
12	AK4293FF	355	080 HYPERFLEX FF,080MIL,AVG,B

Internal Ref.
Material Req. # 7920-01
Job # C1269
Shippers # 006572
Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container # W6174

Seal #

FL11240001

Peggy Cam 8-24-98

Total Square Ft. 102,617

Total Weight 42,355

Carrier Ref.

CARRIER NAME: RUEL SMITH
CARRIER SIGNATURE:
DATE: 8/21/98

W 12:25 (GSE)
out 18:35

Truckers P.O.# 86127059

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Sign Here For Shipper
Shipper:
Address: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)
CONSIGNEE

000260

A COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Agent must sign, detach and retain a copy of this Shipping Order.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE® GSE Lining Technology, Inc. at HOUSTON, TEXAS

2062

SHIPPERS NO. H 06615

From GSE LINING TECHNOLOGY, INC.

eived at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said rier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all ny of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is GSE ng Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parties, Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper and the Carrier ct to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability for loss of e to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

bject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are eby agreed and accepted for himself and his assigns.

ternal Ref. FLUOR DANIEL FERNALD
KATHY FISHER
nsigned to 7400 WILLEY ROAD
stination FERNALD

Date Shipped AUGUST 25, 1998

Customer P.O. # 98SC002317

State OH 45030

mments from M.R.

FC 01910008 CONTACT: KATHY FISHER @513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & CQA CONSULTANT
REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR-ERIC REED.

RIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. ckages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK4216FF	360	080 HYPERFLEX FF,080MIL,AVG,B
2	AK4219FF	355	080 HYPERFLEX FF,080MIL,AVG,B
3	AK4224FF	358	080 HYPERFLEX FF,080MIL,AVG,B
4	AK4230FF	360	080 HYPERFLEX FF,080MIL,AVG,B
5	AK4244FF	360	080 HYPERFLEX FF,080MIL,AVG,B
6	AK4251FF	355	080 HYPERFLEX FF,080MIL,AVG,B
7	AK4259FF	355	080 HYPERFLEX FF,080MIL,AVG,B
8	AK4269FF	355	080 HYPERFLEX FF,080MIL,AVG,B
9	AK4270FF	355	080 HYPERFLEX FF,080MIL,AVG,B
10	AK4277FF	355	080 HYPERFLEX FF,080MIL,AVG,B
11	AK4287FF	355	080 HYPERFLEX FF,080MIL,AVG,B
12	AK4289FF	355	080 HYPERFLEX FF,080MIL,AVG,B

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006615

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container # 1211

Seal #

FLU240001

Pro No 404921270 8/26/98

al Square Ft. 102,115 K. Beamon Total Weight 41,901

rrier Ref.

CARRIER NAME: MAGNUM LOGISTICS
CARRIER SIGNATURE:
DATE: 8/25/98

Truckers P.O. # 86113630

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

e For Shipper 8/25/98

dress: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper

Agent for Shipper:

(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

TRUCK

Agent must sign, detach and retain a copy of this Shipping Order.

000261

OPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE® GSE Lining Technology, Inc. at HOUSTON, TEXAS

SHIPPERS NO. H 06600

From GSE LINING TECHNOLOGY, INC

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which s Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is G Lining Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parti or (b) if the Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper an shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in m ier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liabil c ge to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

Sub, o the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions hereby agreed and accepted for himself and his assigns.

External Ref. FLUOR DANIEL FERNALD

Consigned to KATHY FISHER

Destination 7400 WILLEY ROAD FERNALD

Date Shipped AUGUST 24, 1998

Customer P.O. # 9856002317

State OH 45030

Comments from M.R.

FC 01910008 CONTACT: KATHY FISHER @513/648-4661

DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & QA CONSULTANT

REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR ERIC REED.

DRIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK2528FF	360	080 HYPERFLEX FF,080MIL,AVG,E
2	AK2550FF	355	080 HYPERFLEX FF,080MIL,AVG,E
3	AK2553FF	355	080 HYPERFLEX FF,080MIL,AVG,E
4	AK2554FF	362	080 HYPERFLEX FF,080MIL,AVG,E
5	AK4228FF	364	080 HYPERFLEX FF,080MIL,AVG,E
6	AK4235FF	355	080 HYPERFLEX FF,080MIL,AVG,E
7	AK4238FF	361	080 HYPERFLEX FF,080MIL,AVG,E
8	AK4242FF	362	080 HYPERFLEX FF,080MIL,AVG,E
9	AK4272FF	355	080 HYPERFLEX FF,080MIL,AVG,E
10	AK4276FF	355	080 HYPERFLEX FF,080MIL,AVG,E
11	AK4283FF	355	080 HYPERFLEX FF,080MIL,AVG,E
12	AK4294FF	355	080 HYPERFLEX FF,080MIL,AVG,E

Internal Ref.

Material Req. # 7920-01

Job # L1269

Shippers # 006600

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container #

Seal #

FLU240001

F. Beamon 8/27/98

Total Square Ft. 102,497

Total Weight 42,217

Carrier Ref.

CARRIER NAME: JORDAN CARRIERS

CARRIER SIGNATURE: Dwayne Dodson

DATE: 8-24-98

Truckers P.O. # 86113630

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Sign Here For Shipper Leonard Stoemski

Address: 19103 GUNDLE ROAD
HOUSTON, TX 77073

000262

Sign Here For Agent Of Shipper

Agent for Shipper: _____

(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

TRUCK

Agent must sign, detach and retain a copy of this Shipping Order.

A COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE® GSE Lining Technology, Inc. at HOUSTON, TEXAS

SHIPPERS NO. H 06618

2062 From GSE LINING TECHNOLOGY, INC.

ceived at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said rrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted herein is GSE ing Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing between the parties, (b) if the Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipper and the Carrier ject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability for loss of e to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are reby agreed and accepted for himself and his assigns.

xternal Ref. FLUOR DANIEL FERNALD
KATHY FISHER

onsigned to 7400 WILLEY ROAD

estination FERNALD

Date Shipped AUGUST 25, 1998

Customer P.O. # 98SC002317

State OH 45030

omments from M.R.

FC 01910008 CONTACT: KATHY FISHER @513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & CQA CONSULTANT REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR-ERIC REED.

RIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. ackages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK2527FF	355	080 HYPERFLEX FF,080MIL,AVG,E
2	AK4222FF	357	080 HYPERFLEX FF,080MIL,AVG,E
3	AK4229FF	355	080 HYPERFLEX FF,080MIL,AVG,E
4	AK4231FF	355	080 HYPERFLEX FF,080MIL,AVG,E
5	AK4232FF	359	080 HYPERFLEX FF,080MIL,AVG,E
6	AK4233FF	355	080 HYPERFLEX FF,080MIL,AVG,E
7	AK4254FF	355	080 HYPERFLEX FF,080MIL,AVG,E
8	AK4264FF	360	080 HYPERFLEX FF,080MIL,AVG,E
9	AK4267FF	355	080 HYPERFLEX FF,080MIL,AVG,E
10	AK4279FF	355	080 HYPERFLEX FF,080MIL,AVG,E
11	AK4281FF	355	080 HYPERFLEX FF,080MIL,AVG,E
12	AK4295FF	355	080 HYPERFLEX FF,080MIL,AVG,E

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006618

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container # 1210

Seal #

FLU240001

tal Square Ft. 101,948 K. Beamon 8/26/98 Total Weight 42,065

rrier Ref.

CARRIER NAME: Tennis Bridge

CARRIER SIGNATURE: Brett McBride

DATE: 8/25/98

Truckers P.O. # 86113630

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

e For Shipper 8/25/98

dress: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Sign Here For Agent Of Shipper

Agent for Shipper: _____

(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

TRUCK

000263

Agent must sign, detach and retain a copy of this Shipping Order.

COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

Shipping Order - Packing List - Original - Not Negotiable

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Order Form.

GSE® GSE Lining Technology, Inc. at HOUSTON, TEXAS

SHIPPERS NO. H 06629

From GSE LINING TECHNOLOGY, II

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to either: (a) if the Shipper noted Lining Technology, Inc., as indicated by the designation of the "Shipper" to be GSE Lining Technology, Inc., then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for Truck Transportation existing bet or (b) if the Shipper noted herein is not GSE Lining Technology, Inc., then GSE Lining Technology, Inc. is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed hereunder between the Shipp subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) mer classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, GSE Lining Technology, Inc. accepts no liability for lo mage to containers, or any other consequences occurring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and condition hereby agreed and accepted for himself and his assigns.

External Ref. FLUOR DANIEL FERNALD
KATHY FISHER

Date Shipped AUGUST 26, 1998

Consigned to 7400 WILLEY ROAD

Customer P.O. # 98SC002317

Destination FERNALD

State OH 45030

Comments from M.R.

FC 01910008 CONTACT: KATHY FISHER @513/648-4661
DOE JOBSITE**EXT MAT'L SUBMITTALS REQUIRED**FD REP & CQA CONSULTANT
REQUIRED AT PLANT W/14 DAY NOTICE**GSE TECH COORDINATOR-ERIC REED.

DRIVER MUST CALL 24 HOURS PRIOR TO DELIVERY

No. Packages	Roll #	Length	Kind of Package, Description of Articles, Special Marks, and Exceptions
1	AK4243FF	355	080 HYPERFLEX FF,080MIL,AVG,E
2	AK4250FF	362	080 HYPERFLEX FF,080MIL,AVG,E

Internal Ref.

Material Req. # 7920-01

Job # C1269

Shippers # 006629

Bus/Market Seg. Code 0107

Terms: Prepaid/Collect PREPAID

Load Verification SIGNED

X

Truck/Container #

Seal #

EU240001

RECEIVED AUG 3 1 1998

K. Beamon 8/31/98

Total Square Ft. 17,114

Total Weight 7,086

Carrier Ref. TRI. 4809

CARRIER NAME: RUEL SMITH

CARRIER SIGNATURE:

DATE:

Truckers P.O. #

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____

Sign Here For Shipper

Shipper:

Address: 19103 GUNDLE ROAD
HOUSTON, TX 77073

Larry Lapolay 8/26/98

Joe Guerre

000264

Sign Here For Agent Of Shipper

Agent for Shipper:

(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

TRUCK

Agent must sign, detach and retain a copy of this Shipping Order.

A COPY OF THIS SHIPPING ORDER MUST BE ATTACHED TO FREIGHT BILL.

2062

Geotextile

000265

2062

Nonwoven Geotextile (7 oz./yd^2) Filter

- **Material Inventory**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 7oz Geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
2 Sept	6050426A	CS								
	6050430A	CS								
	6050439A	CS								
	6050441A	CS								
	6050443A	CS								
	6050446A	CS	29/7	GT-07-12	✓	TBL				
	6050458A	CS								
	6050465A	CS								
	6050470A	CS								
	6050471A	CS								
	6050473A	CS								
	6050474A	CS								
	6050476A	CS								
	6050478A	CS								
	6050479A	CS								
	6050482A	CS								
	6050487A	CS								
	6050488A	CS								
	6050490A	CS								
	6050492A	CS								
	6050495A	CS								
	6050496A	CS								
	6050497A	CS	29/7	GT-07-13	✓	TBL				
	6050500A	CS								
	6050502A	CS								

000268

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: ~~100.0~~ 300 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 25

CUMULATIVE AREA: ~~37,500~~ 112,500 sf NO. OF CONFORMANCE TESTS (page/total): 2 / 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 7 oz geotextile MANUFACTURER: GSE LINING TECH. INC

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
2 Sept	6050504A	CS								
	6050506A	CS								
	6050507A	CS								
	6050508A	CS								
	6050514A	CS								
	6050516A	CS	29/7	GT-07-14	✓	TBM				
	6050519A	CS								
	6050532A	CS								
	6050533A	CS								
	6050093A	CS	29/7	GT-07-09	✓	TBM				
	6050284A	CS								
	6050285A	CS								
	6050288A	CS								
	6050294A	CS								
	6050298A	CS								
	6050309A	CS								
	6050321A	CS								
	6050352A	CS	29/7	GT-07-10	✓	TBM				
	6050405A	CS								
	6050406A	CS								
	6050415A	CS								
	6050421A	CS								
	6050425A	CS	29/7	GT-07-11	✓	TBM				
3 Sept	6050351A	CS								
	6050353A	CS								

000269

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: @ 100 ~~300~~ FT

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: @ ~~75~~ 50

CUMULATIVE AREA: ~~75,000~~ 225,000 ft² NO. OF CONFORMANCE TESTS (page/total): 4 / 6

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04·1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 7 oz Geotextile MANUFACTURER: GSE LINING TECH, Inc

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
3 Sept	6050354A	CS								
	6050381A	CS								
	6050382A	CS								
	6050384A	CS								
	6050385A	CS								
	6050400A	CS								
	6050407A	CS								
	6050408A	CS								
	6050409A	CS								
	6050410A	CS								
	6050412A	CS								
	6050413A	CS								
	6050416A	CS								
	6050417A	CS								
	6050418A	CS								
	6050419A	CS								
	6050420A	CS								
	6050423A	CS								
	6050424A	CS								
	6050427A	CS								
	6050428A	CS								
	6050429A	CS								
	6050431A	CS								
	6050432A	CS								
	6050433A	CS								

000270

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: ~~100.0~~ 300.00 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 75

CUMULATIVE AREA: ~~42,500~~ 337,500 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 6

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: ~~Ho~~ 7 oz Geotextile MANUFACTURER: GSE LINING TECH, INC

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
3 Sept	6050434A	CS								
	6050435A	CS								
	6050436A	CS								
	6050437A	CS								
	6050438A	CS								
	6050440A	CS								
	6050459A	CS								
	6050460A	CS								
	6050461A	CS								
	6050463A	CS								
	6050464A	CS								
	6050466A	CS								
	6050467A	CS								
	6050468A	CS								
	6050472A	CS								
	6050486A	CS								
	6050493A	CS								
	6050494A	CS								
	6050503A	CS								
	6050513A	CS								
	6050515A	CS								
	6050517A	CS								
	6050518A	CS								

000271

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: ~~100.0~~ 300

NUMBER OF ROLLS ABOVE: 23 ACCUMULATIVE NUMBER OF ROLLS: 98

CUMULATIVE AREA: 441,000 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 6

- **Conformance Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-09, Roll # 6050093, Lot # 60216
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5291-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
79	105	110	128	101	106	96	110	102	110
109	125	108	123	110	114	108	110	121	110
254.5	303.6	272.2	294.0	286.7	253.7	281.1	321.3	276.2	302.8
282.7	285.1	285.9	326.2	242.4	292.3	290.7	284.3	256.9	284.3
113.8	152.2	136.5	157.8	181.8	103.8	152.2	137.6	146.2	154.0
283.4	282.4	297.4	288.7	267.4	280.5	291.1	276.1	290.6	258.2
8.35	8.32	8.76	8.51	7.88	8.26	8.58	8.14	8.56	7.61
0.058	0.058	0.061	0.059	0.055	0.057	0.060	0.056	0.059	0.053
425	430	475	405	450	420	330	410	545	415
0.148	0.149	0.149	0.148	0.149					
100	100	120	100	100					
1.741	1.756	1.627	2.068						
128.2	129.3	119.8	152.3						
0.460	0.479	0.434	0.486						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		105	12.41	≥ 75	PASS
XD		114	6.63	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		284.6	21.68	≥ 180	PASS
XD		283.1	22.00	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	143.6	22.32	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	281.6	11.83		
	oz/yd²	8.30	0.348	≥ 7	PASS
	lb/ft²	0.058	0.0024		
MULLEN BURST STRENGTH (ASTM D3786)	psi	431	54.8	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.149	0.0005	≤ 0.21	PASS
	sieve no.	100.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	1.798	0.1890	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	132.4	13.93		
PERMEABILITY (ASTM D4491) *	cm/s	0.465	0.0233		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
* PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. BT DATE: 8/11/98

000273

20062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-10, Roll # 6050352, Lot # 60217
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5302-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
101	112	107	115	139	108	100	112	103	118
126	125	143	202	269	177	149	162	180	126
249.7	213.5	233.7	271.0	245.0	232.0	236.2	286.7	247.0	282.2
265.0	240.0	253.0	262.0	283.0	315.0	280.0	295.0	284.0	257.0
115.2	173.6	131.6	178.5	150.1	162.0	153.8	158.3	175.2	137.5
255.8	271.7	258.7	248.5	255.3	269.8	284.3	286.3	294.5	292.1
7.54	8.01	7.62	7.32	7.52	7.95	8.38	8.44	8.68	8.61
0.052	0.056	0.053	0.051	0.052	0.055	0.058	0.059	0.060	0.060
410.0	420.0	410.0	350.0	420.0	470.0	505.0	410.0	545.0	510.0
0.125	0.125	0.125	0.125	0.125					
120	120	120	120	120					
2.049	1.752	1.993	2.033						
150.8	129.0	146.8	149.7						
0.504	0.468	0.486	0.514						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		112	11.35	≥ 75	PASS
XD		166	44.64	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		249.7	23.50	≥ 180	PASS
XD		273.4	22.23	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	153.6	20.57	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	271.7	16.81		
	oz/yd²	8.01	0.495	≥ 7	PASS
	lb/ft²	0.056	0.0034		
MULLEN BURST STRENGTH (ASTM D3786)	psi	445.0	60.0	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.125	0.0000	≤ 0.21	PASS
	sieve no.	120.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	1.957	0.1385	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	144.1	10.19		
PERMEABILITY (ASTM D4491) •	cm/s	0.493	0.0203		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
• PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. B7 DATE: 8/11/98

000274

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-11, Roll # 6050425, Lot # 60217
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5294-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
132	107	112	113	128	95	126	102	118	122
125	134	137	151	158	130	149	118	128	134
296.4	269.0	254.5	340.7	245.6	252.9	231.1	285.1	287.5	259.3
298.8	293.1	265.8	277.0	292.3	281.9	289.9	270.6	268.2	281.9
167.5	176.3	141.0	155.1	166.5	131.6	133.6	164.1	124.2	125.0
281.4	286.8	290.1	282.4	300.3	282.9	291.6	284.8	304.2	312.4
8.29	8.45	8.55	8.32	8.85	8.34	8.59	8.39	8.96	9.21
0.058	0.059	0.059	0.058	0.061	0.058	0.060	0.058	0.062	0.064
465	515	460	395	495	410	430	485	500	445
0.132	0.144	0.134	0.144	0.147					
100	100	100	100	100					
1.950	2.032	2.226	2.043						
143.6	149.6	163.9	150.4						
0.489	0.500	0.492	0.513						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		116	11.93	≥ 75	PASS
XD		136	12.61	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		272.2	31.51	≥ 180	PASS
XD		282.0	11.46	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	148.5	19.58	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	291.7	10.56		
	oz/yd²	8.60	0.311	≥ 7	PASS
	lb/ft²	0.060	0.0022		
MULLEN BURST STRENGTH (ASTM D3786)	psi	460	39.9	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.140	0.0067	< 0.21	PASS
	sieve no.	100.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	2.063	0.1165	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	151.9	8.57		
PERMEABILITY (ASTM D4491) *	cm/s	0.499	0.0107		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
*PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. B7 DATE: 8/11/98

002075

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-12, Roll # 6050446, Lot # 60217
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5303-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
108	120	108	110	121	105	116	120	108	141
135	143	141	148	155	147	128	157	134	125
262.0	278.0	304.0	323.0	319.0	271.0	266.0	287.0	210.0	266.0
309.0	277.0	260.0	323.0	240.0	280.0	334.0	289.0	284.0	286.0
126.6	147.1	159.7	128.6	154.8	172.0	161.7	183.5	163.2	130.0
284.3	287.2	304.7	298.4	306.1	299.8	339.1	358.4	292.1	282.4
8.38	8.46	8.98	8.79	9.02	8.84	9.99	10.56	8.61	8.32
0.058	0.059	0.062	0.061	0.063	0.061	0.069	0.073	0.060	0.058
555.0	520.0	485.0	570.0	525.0	405.0	495.0	425.0	475.0	500.0
0.148	0.149	0.125	0.125	0.143					
100	100	120	120	100					
1.654	1.563	1.681	1.713						
121.8	115.1	123.8	126.1						
0.458	0.420	0.457	0.452						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		116	10.70	≥ 75	PASS
XD		141	10.80	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		278.6	32.79	≥ 180	PASS
XD		288.2	28.04	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	152.7	19.36	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	305.3	24.74		
	oz/yd²	9.00	0.729	≥ 7	PASS
	lb/ft²	0.062	0.0051		
MULLEN BURST STRENGTH (ASTM D3786)	psi	495.5	51.9	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.138	0.0121	≤ 0.21	PASS
	sieve no.	100.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	1.653	0.0645	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	121.7	4.74		
PERMEABILITY (ASTM D4491) *	cm/s	0.447	0.0180		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
* PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. 87 DATE: 8/11/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-13, Roll # 6050497, Lot # 60217
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5295-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
125	118	96	104	128	158	120	110	104	125
130	122	114	123	113	105	130	115	109	118
277.0	335.0	306.8	267.4	252.1	227.1	252.1	247.2	297.2	286.7
284.3	274.6	298.8	259.3	264.2	281.9	279.5	250.5	266.6	265.8
151.3	172.2	173.8	208.1	146.5	203.2	152.2	137.1	135.0	157.2
285.8	326.0	244.6	256.2	263.5	276.1	288.7	310.0	327.4	290.6
8.42	9.61	7.21	7.55	7.76	8.14	8.51	9.14	9.65	8.56
0.058	0.067	0.050	0.052	0.054	0.056	0.059	0.063	0.067	0.059
495	520	470	430	540	425	450	475	450	430
0.144	0.150	0.149	0.148	0.148					
100	100	100	100	100					
1.875	2.199	1.847	2.167						
138.0	161.9	136.0	159.5						
0.544	0.547	0.502	0.570						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		119	17.43	≥ 75	PASS
XD		118	8.36	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		274.9	32.35	≥ 180	PASS
XD		272.6	14.06	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	163.7	25.52	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	286.9	28.12		
	oz/yd²	8.45	0.829	≥ 7	PASS
	lb/ft²	0.059	0.0058		
MULLEN BURST STRENGTH (ASTM D3786)	psi	469	39.5	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.148	0.0023	≤ 0.21	PASS
	sieve no.	100.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	2.022	0.1867	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	148.9	13.74		
PERMEABILITY (ASTM D4491) *	cm/s	0.541	0.0283		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
* PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. R7 DATE: 8/11/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-07-14, Roll # 6050516, Lot # 60217
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5296-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
104	117	96	122	124	117	121	146	130	150
141	128	115	117	133	125	121	123	136	135
347.9	270.6	335.8	278.7	304.4	287.5	281.9	296.4	325.4	316.5
252.9	306.0	290.7	327.0	323.8	278.7	293.1	296.4	284.3	256.9
138.1	144.5	179.8	162.6	153.5	148.0	166.7	191.3	145.7	142.8
297.4	297.9	305.6	300.8	286.3	309.0	323.1	313.4	313.9	294.0
8.76	8.78	9.01	8.86	8.44	9.11	9.52	9.24	9.25	8.66
0.061	0.061	0.063	0.062	0.059	0.063	0.066	0.064	0.064	0.060
385	445	400	430	455	510	420	455	420	495
0.125	0.125	0.125	0.125	0.125					
120	120	120	120	120					
2.116	2.179	2.187	2.139						
155.8	160.4	161.0	157.5						
0.544	0.534	0.542	0.516						

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		123	16.58	≥ 75	PASS
XD		127	8.67	≥ 75	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		304.5	26.09	≥ 180	PASS
XD		291.0	24.59	≥ 180	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	157.3	17.50	≥ 75	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	304.1	10.97		
	oz/yd²	8.96	0.323	≥ 7	PASS
	lb/ft²	0.062	0.0022		
MULLEN BURST STRENGTH (ASTM D3786)	psi	442	39.3	≥ 350	PASS
APPARENT OPENING SIZE* (ASTM D4751)	mm	0.125	0.0000	≤ 0.21	PASS
	sieve no.	120.0	N/A	>70	PASS
CONSTANT HEAD PERMITTIVITY* (ASTM D4491)	1/s	2.155	0.0335	≥ 0.5	PASS
FLOW RATE (ASTM D4491)	gal/min ft²	158.7	2.45		
PERMEABILITY (ASTM D4491) *	cm/s	0.534	0.0128		

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION
* PERMEABILITY VALUES ARE CALCULATED BY MULTIPLYING THE INDIVIDUAL SPECIMEN THICKNESS (ASTM D1777, 2kPa LOADING) TIMES THE PERMITTIVITY AND MAY NOT CORRELATE WITH THE PERMEABILITY VALUES UNDER FIELD CONDITIONS.

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QC I.D. 127 DATE: 8/11/98

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2062

Nonwoven Geotextile (10 oz./ yd^2) Cushion

- **Material Inventory**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
3 Sept	5137490A	CS								
	5137494A	CS								
	5137500A	CS								
	5137366A	CS								
	5137378A	CS								
	5137379A	CS								
	5137413A	CS								
	5137436A	CS								
	5137439A	CS								
	5137445A	CS								
	5137447A	CS								
	5137450A	CS								
	5137452A	CS								
	5137453A	CS								
	5137459A	CS								
	5137462A	CS								
	5137466A	CS								
	5137481A	CS								
	5137484A	CS								
	5137489A	CS								
4 Sept	5137244A	CS								
	5137298A	CS								
	5137325A	CS								
	5137331A	CS								
	5137335A	CS	29/7	GT-10-12	✓	TBY				

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: ~~100.0~~ 300

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 25

CUMULATIVE AREA: ~~37,500~~ 112,500 ft² NO. OF CONFORMANCE TESTS (page/total): 1 / 1

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
4 Sept	5137356A	CS								
	5137357A	CS								
	5137358A	CS								
	5137359A	CS								
	5137360A	CS								
	5137361A	CS								
	5137362A	CS								
	5137363A	CS								
	5137364A	CS	29/7	GT-10-13	✓	TBM				
	5137365A	CS								
	5137368A	CS								
	5137369A	CS								
	5137370A	CS								
	5137375A	CS								
	5137377A	CS								
	5137396A	CS	29/7	GT-10-14	✓	TBM				
	5137421A	CS	29/7	GT-10-15	✓	TBM				
	5137446A	CS	29/7	GT-10-16						
	5137455A	CS								
	5137457A	CS								
	5137460A	CS								
	5137461A	CS								
	5137468A	CS								
	5137470A	CS								
	5137478A	CS								

AVG. ROLL WIDTH: 15.0 AVG. ROLL LENGTH: ~~100.0~~ 300.0

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 50

CUMULATIVE AREA: ~~75,000~~ 225,000 ft² NO. OF CONFORMANCE TESTS (page/total): 4 / ~~1~~ 5

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
4 Sept	5137479A	CS	29/7	GT-10-17	✓	TBH				
	5137480	CS								
	5137496	CS								
	5137498	CS								
	5137509	CS								
	5137522	CS								
	5137523	CS	29/7	GT-10-18	✓	TBH				
	5137524	CS								
	5137293	CS								
	5137294	CS								
	5137322	CS								
	5137367	CS								
	5137383	CS								
	5137385	CS								
	5137432	CS								
	5137438	CS								
	5137440	CS								
	5137443	CS								
	5137444	CS								
	5137448	CS								
	5137454	CS								
	5137458	CS								
	5137465	CS								
	5137483	CS								
8 Sept	5137243	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: CS ~~100.0~~ 300.00 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 75

CUMULATIVE AREA: CS ~~112,500~~ 337,500 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 7

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
8 Sept	5137262A	CS								
	5137265A	CS								
	5137286A	CS								
	5137289A	CS								
	5137295A	CS								
	5137296A	CS								
	5137300A	CS								
	5137301A	CS								
	5137302A	CS								
	5137304A	CS								
	5137306A	CS								
	5137307A	CS								
	5137308A	CS								
	5137309A	CS								
	5137310A	CS								
	5137312A	CS								
	5137313A	CS								
	5137314A	CS								
	5137315A	CS								
	5137318A	CS								
	5137319A	CS								
	5137327A	CS								
	5137329A	CS								
	5137330A	CS								
	5137332A	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: ~~100.0~~ 300 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 100

CUMULATIVE AREA: 450,000 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 7

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) - 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
8 Sept	5137334A	CS								
	5137338A	CS								
	5137339A	CS								
	5137342A	CS								
	5137343A	CS								
	5137344A	CS								
	5137345A	CS								
	5137346A	CS								
	5137348A	CS								
	5137349A	CS								
	5137381A	CS								
	5137382A	CS								
	5137389A	CS								
	5137392A	CS								
	5137398A	CS								
	5137399A	CS								
	5137400A	CS								
	5137404A	CS								
	5137405A	CS								
	5137408A	CS								
	5137424A	CS								
	5137433A	CS								
	5137423A	CS								
	5137425A	CS								
	5137426A	CS								

AVG. ROLL WIDTH: ~~25~~ 15.0 ft AVG. ROLL LENGTH: ~~100.0~~ 300 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 125

CUMULATIVE AREA: ~~487,500~~ 562,500 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 7

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
8 Sept	5137427A	CS								
	5131428A	CS								
	5137429A	CS								
	5137430A	CS								
	5137431A	CS								
	5137434A	CS								
	5137435A	CS								
	5137326A	CS								
	5137354A	CS								
	5137376A	CS								
	5137384A	CS								
	5137387A	CS								
	5137393A	CS								
	5137394A	CS								
	5137395A	CS								
	5137397A	CS								
	5137401A	CS								
	5137402A	CS								
	5137403A	CS								
	5137406A	CS								
	5137407A	CS								
	5137409A	CS								
	5137414A	CS								
	5137415A	CS								
	5137416A	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: ~~100.0~~ 300 ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 150

CUMULATIVE AREA: ~~225,000~~ 675,000 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 7

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) = 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 10 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
8 Sept	5137417A	CS								
	5137418A	CS								
	5137419A	CS								
	5137420A	CS								
	5137422A	CS								
	5137245A	CS								
	5137246A	CS								
	5137263A	CS								
	5137264A	CS								
	5137268A	CS								
	5137274A	CS	29/7	GT-10-10	✓	TBM				
	5137290A	CS								
	5137291A	CS								
	5137292A	CS								
	5137297A	CS								
	5137299A	CS								
	5137303A	CS								
	5137311A	CS	29/7	GT-10-11	✓	TBM				
	5137316A	CS								
	5137317A	CS								
	5137320A	CS								
	5137321A	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: ~~1000~~ 300 ft

NUMBER OF ROLLS ABOVE: 22 ACCUMULATIVE NUMBER OF ROLLS: 172

CUMULATIVE AREA: 774,000 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 9

- **Conformance Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-10, Roll # 5137274A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5300-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
140	127	142	132	127	129	162	130	147	140
195	209	199	186	183	163	181	156	161	171
204.7	250.0	269.7	321.2	330.7	393.0	335.7	351.7	321.5	320.0
330.0	369.0	393.7	417.7	425.2	398.2	402.5	440.2	289.5	241.0
166.1	232.3	214.1	202.0	202.7	174.7	204.6	193.5	188.0	226.3
348.3	341.0	343.4	375.9	371.5	375.4	385.1	391.4	373.5	402.0
10.26	10.05	10.12	11.08	10.95	11.06	11.35	11.53	11.01	11.85
0.071	0.070	0.070	0.077	0.076	0.077	0.079	0.080	0.076	0.082
555	580	625	630	565	630	595	520	590	560

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		138	11.1	≥ 90	PASS
XD		180	17.6	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		309.8	54.15	≥ 225	PASS
XD		370.7	64.45	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	200.4	20.92	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	370.7	20.55		
	oz/yd²	10.93	0.606	≥ 10	PASS
	lb/ft²	0.076	0.0042		
MULLEN BURST STRENGTH (ASTM D3786)	psi	585	36.4	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D._____ DATE: _____

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GEOSYNTEC CONSULTANTS
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GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-11, Roll # 5137311A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5297-FLQC 1251-1
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
135	134	134	138	134	147	144	165	141	142
176	159	181	182	169	190	165	181	154	149
324.0	296.0	356.0	291.0	267.0	276.0	297.0	283.0	323.0	325.0
371.0	433.0	420.0	396.0	416.0	381.0	400.0	414.0	425.0	407.0
218.3	217.6	169.2	215.6	207.2	191.5	192.2	171.3	215.5	190.8
320.7	352.1	340.5	360.9	371.0	361.3	371.5	369.6	380.2	403.5
9.45	10.38	10.03	10.63	10.93	10.65	10.95	10.89	11.20	11.89
0.066	0.072	0.070	0.074	0.076	0.074	0.076	0.076	0.078	0.083
595	620	530	540	590	590	650	535	605	580

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		141	9.5	≥ 90	PASS
XD		171	13.6	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		303.8	27.45	≥ 225	PASS
XD		406.3	19.54	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	198.9	18.73	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	363.1	22.46		
	oz/yd²	10.70	0.662	≥ 10	PASS
	lb/ft²	0.074	0.0046		
MULLEN BURST STRENGTH (ASTM D3786)	psi	584	38.8	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. 17 DATE: 8/11/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-12, Roll # 5137335A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5304-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
125	131	111	132	162	126	120	113	134	129
165	215	186	193	197	177	194	191	173	180
326.0	330.0	337.0	316.0	331.0	344.0	340.0	335.0	319.0	310.0
421.0	412.0	411.0	401.0	372.0	417.0	432.0	422.0	439.0	410.0
195.0	215.7	219.8	182.1	233.1	173.8	178.0	211.8	218.1	213.8
370.5	362.3	364.7	349.2	363.8	365.2	369.1	376.8	398.2	398.6
10.92	10.68	10.75	10.29	10.72	10.76	10.88	11.10	11.73	11.75
0.076	0.074	0.075	0.071	0.074	0.075	0.076	0.077	0.081	0.082
570	565	530	600	585	640	645	620	550	615

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		128	14.2	≥ 90	PASS
XD		187	14.2	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		328.8	11.00	≥ 225	PASS
XD		413.7	18.35	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	204.1	20.38	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	371.9	15.66		
	oz/yd²	10.96	0.461	≥ 10	PASS
	lb/ft²	0.076	0.0032		
MULLEN BURST STRENGTH (ASTM D3786)	psi	592	38.5	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. KT DATE: 8/11/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-13, Roll # 5137364A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5293-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
104	116	131	138	134	117	125	143	120	131
176	181	196	176	178	209	192	171	193	205
280.3	264.2	269.8	291.5	280.3	282.7	310.9	292.3	299.6	312.5
349.5	394.6	399.5	382.5	438.1	393.8	405.9	423.6	399.5	418.8
63.8	64.2	65.7	72.6	72.3	69.9	66.9	66.6	70.8	73.3
68.4	75.4	78.5	74.1	88.8	73.7	77.9	74.8	70.6	75.8
169.8	181.3	184.6	204.0	183.1	220.3	193.1	206.3	209.8	185.5
383.1	364.7	351.7	348.8	346.3	359.4	363.8	374.4	353.1	351.2
11.29	10.75	10.36	10.28	10.21	10.59	10.72	11.03	10.41	10.35
0.078	0.075	0.072	0.071	0.071	0.074	0.074	0.077	0.072	0.072
530	590	525	565	520	600	575	470	580	520

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		126	11.8	≥ 90	PASS
XD		188	13.2	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		288.4	16.10	≥ 225	PASS
XD		400.6	24.31	≥ 225	PASS
GRAB ELONGATION (ASTM D4632)	%				
RD		68.6	3.60	N/A	N/A
XD		75.8	5.48	N/A	N/A
PUNCTURE STRENGTH (ASTM D4833	lb	193.8	15.70	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	359.7	11.96		
	oz/yd²	10.60	0.352	≥ 10	PASS
	lb/ft²	0.074	0.0024		
MULLEN BURST STRENGTH (ASTM D3786)	psi	548	40.8	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. WM DATE: 8-10-98

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GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-14, Roll # 5137396A, Lot # 50853
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5289-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
129	122	129	126	122	124	131	118	138	123
167	163	165	176	173	220	178	208	219	178
308.4	325.4	328.6	270.6	323.8	289.9	289.9	308.4	287.5	306.8
419.6	397.0	353.5	418.0	388.2	401.9	391.4	412.3	383.3	423.6
71.3	68.6	73.0	61.5	74.2	72.3	69.3	73.8	63.9	69.5
82.5	77.6	77.2	85.7	77.1	85.0	80.0	80.2	73.2	81.7
194.6	186.2	177.2	194.2	182.1	156.6	175.3	175.0	165.5	175.0
357.5	352.6	350.2	355.5	361.8	358.9	355.5	366.7	362.8	374.4
10.53	10.39	10.32	10.48	10.66	10.58	10.48	10.81	10.69	11.03
0.073	0.072	0.072	0.073	0.074	0.073	0.073	0.075	0.074	0.077
555	475	525	500	520	565	550	555	510	580

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		126	5.7	≥ 90	PASS
XD		185	22.2	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		303.9	19.11	≥ 225	PASS
XD		398.9	21.27	≥ 225	PASS
GRAB ELONGATION (ASTM D4632)	%				
RD		69.7	4.22	N/A	N/A
XD		80.0	3.86	N/A	N/A
PUNCTURE STRENGTH (ASTM D4833	lb	178.2	11.84	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	359.6	7.15		
	oz/yd²	10.60	0.211	≥ 10	PASS
	lb/ft²	0.074	0.0015		
MULLEN BURST STRENGTH (ASTM D3786)	psi	534	32.8	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. WM DATE: 8-10-98

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GEOSYNTEC CONSULTANTS
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GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-15, Roll # 5137421A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5298-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
120	132	120	127	126	126	120	141	142	135
196	199	193	209	187	216	189	208	199	202
320.0	316.0	333.0	296.0	313.0	310.0	297.0	287.0	282.0	289.0
408.0	383.0	405.0	390.0	355.0	442.0	385.0	413.0	415.0	416.0
175.7	219.8	202.5	196.7	167.5	188.3	181.1	219.8	147.1	170.8
371.5	401.6	384.1	405.9	379.8	369.6	342.9	345.4	335.7	340.5
10.95	11.83	11.32	11.96	11.19	10.89	10.11	10.18	9.89	10.03
0.076	0.082	0.079	0.083	0.078	0.076	0.070	0.071	0.069	0.070
545	490	510	530	590	490	670	565	615	605

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		129	8.3	≥ 90	PASS
XD		200	9.2	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		304.3	16.56	≥ 225	PASS
XD		401.2	23.87	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	186.9	23.30	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	367.7	25.64		
	oz/yd²	10.84	0.755	≥ 10	PASS
	lb/ft²	0.075	0.0052		
MULLEN BURST STRENGTH (ASTM D3786)	psi	561	59.2	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. 187 DATE: 8/11/98

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-16, Roll # 5137446A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5292-FLQC 1251-1
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
153	152	132	128	132	122	144	125	120	130
171	166	164	190	160	180	196	180	152	167
305.2	322.9	311.7	352.7	372.9	302.8	283.5	315.7	317.3	342.3
400.3	405.9	443.7	389.0	389.8	437.3	401.1	396.2	386.6	360.0
62.7	68.2	66.8	66.7	67.5	69.1	60.5	67.3	71.0	77.0
82.5	83.2	96.9	76.8	71.4	74.3	68.8	67.6	68.2	64.9
157.0	171.3	181.3	172.7	200.0	195.5	227.0	176.0	184.3	201.2
404.9	390.9	363.3	383.1	382.2	390.9	376.8	389.9	372.5	358.0
11.93	11.52	10.71	11.29	11.26	11.52	11.10	11.49	10.98	10.55
0.083	0.080	0.074	0.078	0.078	0.080	0.077	0.080	0.076	0.073
575	540	550	580	550	590	590	575	540	575

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		134	11.9	≥ 90	PASS
XD		173	13.7	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		322.7	26.34	≥ 225	PASS
XD		401.0	24.37	≥ 225	PASS
GRAB ELONGATION (ASTM D4632)	%				
RD		67.7	4.45	N/A	N/A
XD		75.5	9.76	N/A	N/A
PUNCTURE STRENGTH (ASTM D4833	lb	186.6	19.87	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	381.3	14.10		
	oz/yd²	11.23	0.415	≥ 10	PASS
	lb/ft²	0.078	0.0029		
MULLEN BURST STRENGTH (ASTM D3786)	psi	567	19.6	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. WM DATE: 8-10-98

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GEOSYNTEC CONSULTANTS
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GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-17, Roll # 5137479A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5301-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
116	145	149	151	114	119	144	122	132	133
226	188	192	222	145	161	173	170	183	188
332.0	327.0	338.0	367.2	317.0	309.0	298.2	327.5	301.0	289.0
384.0	352.0	387.5	380.0	399.5	406.2	398.7	403.2	397.7	367.2
189.7	224.8	170.2	198.3	174.8	195.0	202.6	205.1	163.8	204.8
347.3	340.5	351.2	346.8	359.4	360.4	370.1	382.2	377.3	380.2
10.23	10.03	10.35	10.22	10.59	10.62	10.91	11.26	11.12	11.20
0.071	0.070	0.072	0.071	0.074	0.074	0.076	0.078	0.077	0.078
620	570	470	490	500	545	495	490	580	550

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		133	14.2	≥ 90	PASS
XD		185	25.1	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		320.6	22.91	≥ 225	PASS
XD		387.6	17.35	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	192.9	18.67	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	361.5	15.17		
	oz/yd²	10.65	0.447	≥ 10	PASS
	lb/ft²	0.074	0.0031		
MULLEN BURST STRENGTH (ASTM D3786)	psi	531	49.1	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D._____ DATE: _____

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Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-10-18, Roll # 5137523A
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5299-FLQC 1251-I
DATE TESTED: 8/12/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
148	157	153	172	145	124	112	102	123	131
170	162	171	185	189	176	168	155	173	195
263.0	311.0	321.0	308.0	311.0	256.0	276.0	312.0	290.0	291.0
443.0	464.0	417.0	426.0	423.0	407.0	421.0	411.0	428.0	358.0
211.8	217.7	183.7	191.8	181.2	191.6	210.8	204.0	178.6	179.8
332.8	336.2	329.9	337.1	334.7	355.0	350.2	351.7	370.1	358.9
9.81	9.91	9.72	9.93	9.86	10.46	10.32	10.36	10.91	10.58
0.068	0.069	0.068	0.069	0.068	0.073	0.072	0.072	0.076	0.073
630	620	635	655	600	565	665	575	615	605

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		137	21.9	≥ 90	PASS
XD		174	12.3	≥ 90	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		293.9	22.56	≥ 225	PASS
XD		419.8	27.24	≥ 225	PASS
PUNCTURE STRENGTH (ASTM D4833)	lb	195.1	14.79	≥ 120	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	345.7	13.40		
	oz/yd²	10.19	0.395	≥ 10	PASS
	lb/ft²	0.071	0.0027		
MULLEN BURST STRENGTH (ASTM D3786)	psi	617	31.9	≥ 450	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. B7 DATE: 8/11/98

000297

2062

2062

Nonwoven Geotextile (16 oz./ yd^2) Supplemental Cushion

- **Material Inventory**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRODUCT TYPE: 16 oz geotextile MANUFACTURER: GSE Lining Tech., Inc.

INVENTORY			Q.A. CONFORMANCE				Q.C. DOCUMENTS			
DATE (day/mo)	BATCH / ROLL NO.	QA ID	DATE SAMPLED (day/mo)	SAMPLE NO.	PASS/ FAIL	QA ID	DATE RECEIVED (day/mo)	DATE CHECKED (day/mo)	PASS/ FAIL	QA ID
4 Sept	4118610A	CS								
	4118612A	CS								
	4118621A	CS								
	4118629A	CS								
	4118632A	CS								
	4118634A	CS								
	4118642A	CS								
	4118650A	CS								
	4118656A	CS								
	4118657A	CS	29/7	GT-16-02	✓	TBI				
	4118664A	CS								
	4118665A	CS								
	4118666A	CS								
	4118669A	CS								
	4118673A	CS								

AVG. ROLL WIDTH: 15.0 ft AVG. ROLL LENGTH: CS ~~100.0~~ 300 ft

NUMBER OF ROLLS ABOVE: 15 ACCUMULATIVE NUMBER OF ROLLS: 15

CUMULATIVE AREA: CS ~~22,500~~ 67,500 ft² NO. OF CONFORMANCE TESTS (page/total): 1 / 1

- **Conformance Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

GEOTEXTILE TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FLUOR DANIEL FERNALD OSDF
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409-04.1

MATERIAL: TNS Polyesther
CLIENT ID: GT-16-02, Roll # 4118657,Lot # 40880
SAMPLER ID: Mr. Dave Phillips
GEOSYNTEC ID: 5290-FLQC 1251-I
DATE TESTED: 8/10/98

INDIVIDUAL SPECIMENS

1	2	3	4	5	6	7	8	9	10
174	234	210	198	187	170	170	204	168	178
289	299	291	308	332	327	266	310	319	318
468.7	477.6	427.6	429.3	493.7	426.0	427.6	438.1	505.8	459.1
636.2	624.1	579.9	659.6	646.7	716.0	662.0	658.8	696.6	719.2
80.5	85.1	80.5	81.3	80.7	79.3	71.2	73.9	84.6	85.4
86.2	72.4	67.6	69.7	71.2	71.0	77.2	72.7	77.9	78.2
300.0	274.6	270.8	254.1	327.6	298.0	296.0	358.1	346.7	305.2
634.1	540.1	561.4	575.9	598.7	587.6	599.2	525.1	528.5	591.4
18.68	15.92	16.54	16.97	17.64	17.31	17.66	15.47	15.57	17.43
0.130	0.111.	0.115	0.118	0.123	0.120	0.123	0.107	0.108	0.121
935	1000	855	830	885	1020	880	910	970	895

SUMMARY RESULTS

PROPERTY (STANDARD)	UNIT	MEAN	STD	SPEC.	PASS/FAIL
TRAPEZOID TEARING STRENGTH (ASTM D4533)	lb				
RD		189	21.8	≥ 120	PASS
XD		306	20.0	≥ 120	PASS
GRAB TENSILE STRENGTH (ASTM D4632)	lb				
RD		455.4	29.96	≥ 350	PASS
XD		659.9	42.73	≥ 350	PASS
GRAB ELONGATION (ASTM D4632)	%				
RD		80.3	4.63	N/A	N/A
XD		74.4	5.48	N/A	N/A
PUNCTURE STRENGTH (ASTM D4833	lb	303.1	33.12	≥ 180	PASS
MASS PER UNIT AREA (ASTM D5261)	g/m²	574.2	35.15		
	oz/yd²	16.92	1.036	≥ 16	PASS
	lb/ft²	0.117	0.0072		
MULLEN BURST STRENGTH (ASTM D3786)	psi	918	62.3	≥ 700	PASS

COMMENTS:
RD = ROLL DIRECTION
XD = CROSS-ROLL DIRECTION

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QC I.D. WM DATE: 8-10-98

APPENDIX J:

CONTRACTOR'S CERTIFICATE OF ACCEPTANCE - OF CELL 2 SUBGRADE SURFACE

Secondary

2062

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	PROJECT
NAME: Solmax GeoSynthetics	NAME: OSDF Phase II, Cell #2
ADDRESS:	LOCATION: Fernald, OH
INSTALLER AUTHORIZED REPRESENTATIVE: Mark Micochero	OWNER: ~~Floor Daniel~~ Floor Daniel / D.OE

I, The undersigned, duly authorized representive of SOLMAX GEOSYNTHETICS do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐

DATE	PANEL NOS.	SIGNATURE
11 Sept 1998	S-1 & S-2	Marct. Micochero
14 Sept 1998	S-3 through S-11	Marct. Micochero
15 Sept 1998	S-12 ~~S-11~~ through S-20	Marct. Micochero
16 Sept 1998	S-21 through S-27	Marct. Micochero
18 Sept 1998	S-28 through S-30	Marct. Micochero
19 Sept 1998	S-31 through S-42	Marct. Micochero
RR 25 ~~22~~ Sept 1998	S-43 through S-45	Marct. Micochero
26 Sept 1998	S-46 through S-53	Marct. Micochero
28 Sept 1998	S-54 through S-57	Marct. Micochero
29 Sept 1998	S-58 through S-65	Marct. Micochero
30 Sept 1998	S-66 through S-73	Marct. Micochero
1 Oct. 1998	S-74 through S-84	Marct. Micochero
2 Oct. 1998	S-85 through S-100	Marct. Micochero
12 Oct 1998	S-102 through S-108	Marct. Micochero
14 Oct 1998	S-109 through S-113	Marct. Micochero

2062

Primary

000306

2062

CERTIFICATE OF ACCEPTANCE SUBGRADE SURFACE

INSTALLER	PROJECT
NAME: Solmax Geosynthetics	NAME: OSDF Phase II, Cell #2
ADDRESS: 25 Robinson Road Clinton, New York 33233	LOCATION: Fernald, Ohio
INSTALLER AUTHORIZED REPRESENTATIVE: Marc Micochero Curtis Kilburn	OWNER: Fluor Daniel Fernald

I, The undersigned, duly authorized representive of Solmax do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ Curtis T.

DATE	PANEL NOS.	SIGNATURE
14 Oct 1998	P-1 Through P-4	Marc. Micochero
15 Oct 1998	P-5 Through P-14	Marc. Micochero
16 Oct 1998	P-15 Through P-35	Marc. Micochero
17 Oct 1998	P-36 Through P-37	Marc. Micochero
20 Oct 1998	P-38 Through P-44	Marc. Micochero
21 Oct 1998	P-45 Through P-48	Marc. Micochero
22 Oct 1998	P-49 Through P-53	Marc. Micochero
23 Oct 1998	P-54 Through P-62	Marc. Micochero
24 Oct 1998	P-63 Through P-84	Marc. Micochero
27 Oct 1998	P-85* Through P-87*	Curtis T. Kilburn

* PANELS P-85, P86 & P87 changed to skirts PR296 PR297 & PR298

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APPENDIX K:

CELL 2 GEOMEMBRANE PANEL PLACEMENT MONITORING LOGS

Secondary
Primary

2062

Secondary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

= 2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: ~~GQ0166~~ GQ0409 TASK NO.: 04.1

DESCRIPTION: OSDF Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: _____ PRODUCT TYPE: 80 mil Textured HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-1	AK4250FF	11 Sept	1632	East slope, North End	23.0	80'	TBY
S-2	↓	11 ↓	1640	East slope, (1) on N. side	↓	80'	TBY
S-3	↓	14 Sept	1035	" " (2) " " "		80'	TBY
S-4	AK4243FF	14	1058	" " (3) " " "		81'	TBY
S-5	↓	14 ↓	1105	" " (4) " " "	↓	81'	TBY
S-6	AK4276FF	14	1505	" " (5) " " "		82'	TBY
S-7	↓	14	1535	" " (6) " " "		82'	TBY
S-8	↓	14	1555	" " (7) " " "		82'	TBY
S-9	↓	14 ↓	1645	" " (8) " " "	↓	82'	TBY
S-10	AK4283FF	14	1725	" " (9) " " "		83'	TBY
S-11	↓	14 ↓	1735	" " (10) " " "	↓	83'	TBY
S-12	↓	15 Sept	0902	" " (11) " " "		83'	RP
S-13	AK4238FF	15	0925	" " (12) " " "		83'	RP
S-14	↓	15	1105	" " (13) " " "		83'	RP
S-15	↓	15	1400	" " (14) " " "		32'*	RP
S-16	↓	15	1435	" " (15) on E. side	—	250 sq.ft.	RP
S-17	↓	15 ↓	1540	" " (16) on N. side	23.0 ↓	29'* ~~270 sq.ft.~~	RP
S-18	AK4283FF	15	1610	" " (17) on E. side	—	270 sq.ft.	RP
S-19	AK4243FF	15	1650	Across intercell Berm, North side (16) & (18) on E. side	23.0	67* ~~26.5~~	RP
S-20	↓	15 ↓	1710	Across I.B. (19) on East side	16.0 ↓	33.0	RP
S-21	AK4279FF	16 Sept	0918	S. side of I.B. (19) on E. side, (20) on N. side.	23'	93.0 ~~89.5~~	RP
S-22	↓	16	1014	East slope, (17) on N. side		~~51~~ 50	PR
S-23	↓	16 ↓	1031	" " (22) " " "	↓	64'	RP
				TOTALS:(1)	23 →	1413 / 1048	

35,088

NOTE: (1) APPROXIMATE AREA: THIS PAGE: ~~35,250~~ (ft²) ACCUMULATED: ~~35,250~~ 35,088 (ft²)

NOTES: * Ave. panel lengths / I. B. - Intercell Berm / In placement location comments circled #'s denote Panel numbers

000310

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: ~~GQ0166~~ GQ 0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: _____ PRODUCT TYPE: 80 mil Textured HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-24	AK4279FF	16 Sept	1045	Cell #3 East slope, (23) on N. side	23'	64'	RP
S-25	AK4272FF	16	1525	Cell floor, along East slope		277'	
S-26	↓	16	1720	Ice line (interset w/ E-W panels) Across I.B. to cell floor (25) on N. end		72	
S-27	AK4228FF	16	1800	S. side of I.B. (26) on N. end (21) on E. side	87	(24) 84'	
S-28	AK4267FF	18 Sept	1505	Across I.B., across cell floor (25), (26), (27) on E. side	23'	339'	RP
S-29	AK4228FF	18	1605	N. end of cell floor (28) on south side		97'	
S-30	↓	18	1615	N. end of cell floor (29) on S. side		17'	
S-31	AK4281FF	19 Sept	0920	Across cell floor to I.B. (28) & (29) on East side	23'	338'	RP
S-32	AK4222FF	19	1012	Across cell floor (31) on E. side		338'	
S-33	AK4232FF		1112	S. side of I.B., (31) on N. end		85'	
S-34	↓		1125	" " " " , (32) " " "		86'	
S-35	AK4277FF		1320	N " " " , (32) " E. side		316	CS
S-36	AK4229FF		1421	Across cell floor, (35) " " "		313	RP
S-37	AK4295FF		1504	" " " (36) " " "		313	
S-38	AK4264FF		1555	Across I.B. (35) " N. end.		120'	
S-39	↓		1625	" " (38) " E. side		123'	
S-40	AK4219FF		1650	" " (39) " " "		123'	
S-41	AK4232FF		1700	Cell floor, (39) " " "		15'	
S-42	↓		1705	" " (41) " " "		14'	
S-43	AK4277FF	25 SEPT	1605	PHASE I TIE IN ON N. END S-27 ON E. END	23'	(12) 395'	TBy
S-44	AK4216FF	25 SEPT	1655	S-43 ON N. END / S-40 / S-37 ON E. END	23'	158	TBy
S-45	AK4216FF	25 SEPT	1725	S-44 ON N. END / S-40 ON E. END	23'	83'	TBy
S-46	AK4264FF	26 SEPT	0940	S-43, S-44 ON E. SIDE	23'	351	RP
			85,491	TOTALS:(1)	23	3717	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: ~~95,128~~ (2) (ft²) ACCUMULATED: ~~130,378~~ 120,599 (2) (ft²)

NOTES: In Placement location comments circled #'s denote panels

000311

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2062

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II Construction YEAR: 1998

PRIMARY: ☒ SECONDARY: ☒ OTHER: _____ PRODUCT TYPE: 80 mil textured HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-47	AK4254FF	26 Sept	1017	S46 on N. end	23.0	85	RP
S-48	AK 4231 FF		1320	S46 on E side		355	
S-49	AK4228 FF		1340	S49 on N. end		@ ~~82~~ 71'	
S-50	AK4216 FF		1400	S49 on N. end		10'	
S-51	AK 4233 FF		1430	S48 on E. side		313'	
S-52	AK 4259 FF		1505	S51 on S. ~~side~~ end		39	
S-53	↓		1535	S51 on N. end		84'	
S-54	AK 4287 FF	28 Sept	1130	S52, S51 on E. side	23.0	~~248~~ 351.5 @	RP
S-55	AK4259FF @ ~~AK 4233 FF~~		1330	S54 on N. end		@ ~~84.5~~ 84.5	
S-56	AK 4244 FF		1440	S54 on E. side		315	
S-57	AK4230 FF		1512	S55 on N. end.		@ ~~315~~ 121	
S-58	AK 4224 FF	29 Sept	1125	S56 on E. side	23.0	351	RP
S-59	AK 4285 FF		1440	S58 on N. end		85	
S-60	↓		1515	S58 on E. side		248	
S-61	AK 4266 FF		1530	S60 on N. side		103	
S-62	↓		1608	S60 on E. side		155	
S-63	AK 4269 FF		1644	S61 on N, S64 on S side		55	
S-64	AK 4266 FF		1530	S63 on N, S59 on E. side		30	
S-65	AK 4269 FF		1700	S64 S63 S61 on E, S62 on N.		281	
S-66	AK 4289 FF	30 Sept	1030	@ 65 on E. side	23.0	308	RP
S-67	AK 4252 FF		1058	66 on N. end		128	
S-68	↓		1310	66 on E. side		211	
S-69	AK 4251 FF		1340	68 on N. end		225	
			92,207	TOTALS:(1)	23	4009	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: ~~81,949~~ @ (ft²) ACCUMULATED: ~~212,327~~ 212,786 (ft²)

NOTES: In Placement location comments circled #'s denote panel numbers

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: _____ PRODUCT TYPE: 80 mil textured HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S70	/AK4251FF	30 Sept	1518	(68) on E. side	23.0	119	RP
71	AK4282FF		1535	(70) on N. end		321	
72	AK4286FF		1600	(70) on E. side		353	
73	AK4275FF		1645	(72) on N. end		87	
S74	AK4275FF	1 oct	0930	(72) on E. side	23.0	239	CS
75	AK4292FF		0954	(74) on N. end.		197.5	
76			1046	(74) on E. side		148	
77	AK4290FF		1110	(76) on N. end		116	
78			1140	(77) on N. end		169	
79	AK4236FF		1330	(78) (77) on E side		348	
80	AK4246FF		1350	(79) on N. end		84	
81			1455	(79) on E. side		251	
82	AK4241FF		1511	(81) on N. end		181	
83			1535	(81) on E. side		157	
84	AK4223FF		1550	(83) on N. end.		275	
S85	AK4288FF	2 oct	1340	WEST SLOPE OVER PENETRATION BOX	23.0	77	RP
86			1348	(85) on S. SIDE		~~77.5~~ 77	
87			1355	(86)		77.5	
88			1400	(87)		78	
89	AK4257FF		1425	(88)		78	
90			1430	(89)		78	
91			1440	(90)		78	
92			1445	(85) on N. SIDE		76.5	
				TOTALS:(1)	23.0	3665.5	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 84,306.5 (ft²) ACCUMULATED: ~~296,653.5~~ 297,092.5 (ft²)

NOTES: In Placement location comments circled #'s denote panel #'s

000313

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2062

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: _____ PRODUCT TYPE: 80 MIL TEXTURED HDPE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-93	AK4258FF	2 OCT.	1505	92 ON S. SIDE	23.0	76.0	RP
94			1516	93		76.0	
95			1525	94		76.0	
96			1530	95		76.0	
97	AK4226 FF		1545	96		76.0	
98			1555	97		76.0	
99			1604	98		76.0	
100			1609	99		25.5	
101	*	*	*	*	*	*	*
102	AK4293 FF	12 OCT	1530	100 ON N. SIDE 107 & 108 ON E SIDE	23.0	41.5'	TBG
103			1540	102 ON N. SIDE 106 ON E SIDE 104 ON S. SIDE	23.0	61.0'	
104			1545	103 ON N. SIDE 106 ON E SIDE	23.0	61.0'	
105			1550	98 ON N. SIDE 107 ON W. SIDE 84 ON E SIDE	23.0'	33.0'	
106			1605	105 ON N. SIDE 84 ON E. SIDE	23.0'	78.0'	
107	AK4230 FF		1645	98 & 99 ON N. SIDE 102 ON S. SIDE 108 ON W. SIDE	23.0'	49.5'	
108	AK4293 FF		1652	99 ON N. SIDE 100 ON W. SIDE 107 ON E. SIDE	8.0	26.0'	
109	AK4223 FF	14 Oct	1610	106 84 ON N'LY side 104 ON West side	4.5'	34.0'	DLE
110			1510	82 80 ON N'LY side 109 ON W. side	4.0'	34.0'	
111			1445	80 98 ON N'LY side 110 ON West side	3.0'	34.0'	
112			1406	75 73 ON N'LY side 111 ON West side	2.5'	33.0'	
113	AK4223 FF	14 Oct	1345	73 71 ON N'LY side 112 ON West side	1.5'	33.5'	DLE
				TOTALS:(1)	23.0	881.5 → 731.75	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 21,006.25 (ft²) ACCUMULATED: 318,098.75 (ft²)

NOTES: * DO TO CLERICAL ERROR PANEL #101 NEVER EXISTED

In placement location comments circled #'s denote panel #'s

000314

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2062

Primary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: TEXTURED 80-MIL HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-1	AK4247FF	14OCT	1340	EAST ANCHOR TRENCH TO THE CELL FLOOR (CELL #1 ON N. SIDE)	23	346	TBY
P-2	AK4221FF		1355	EAST ANCHOR TRENCH TO CELL FLOOR		346	
P-3	AK4271FF		1420			341	
P-4	AK4265FF		1545			348	
P-5	AK4249FF	15OCT	1035			333	
P-6	AK4256FF		1120			342	
P-7	AK4218FF		1141			348	
P-8	AK4255FF		1250			348	
P-9	AK4245FF		1345			348	
P-10	AK4284FF		1445	CELL FLOOR		174	
P-11	AK4284FF		1600	EAST ANCHOR TRENCH TO CELL FLOOR		175	
P-12	AK4260FF		1625			350	
P-13	AK4220FF		1640			351	
P-14	AK4240FF		1700			351	
P-15	AK4248FF	16OCT	1040	CROSSES THE INTERCELL BERM - EAST END		114	
P-16	AK4248FF		1101	CROSSES THE INTERCELL BERM		114	
P-17	AK4248FF		1120			114	
P-18	AK4296FF		1138			114	
P-19	AK4259FF		1145			10	
P-20	AK4296FF		1245			114	
P-21	AK4296FF		1304			114	
P-22	AK4270FF		1330			114	
P-23	AK4270FF		1343			114	
				TOTALS:(1)	23	5423	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 124,729 (ft^2) ACCUMULATED: 124,729 (ft^2)

NOTES:

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: TEXTURED 80-MIL HDPE

PANEL NO.	~~BATCH~~ / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-24	AK4270FF	16 OCT	1412	CROSSES THE INTERCELL BERM (N-S) - EASTERN HALF	23	115	TBY
P-25	AK4268FF	16 OCT	1433	" "	23	115	TBY
P-26	AK4268FF	16 OCT	1447	" "	23	115	TBY
P-27	AK4268FF	16 OCT	1457	" "	23	116	TBY
P-28	AK4239FF	16 OCT	1739	SOUTHEAST CORNER OF CELL#2 - EAST SLOPE	23	75	TBY
P-29	AK4239FF	16 OCT	1743	" "	23	40	TBY
P-30	AK4239FF	16 OCT	1746	" "	23	32	TBY
P-31	AK4239FF	16 OCT	1748	NORTHEAST CORNER OF CELL#3 - EAST SLOPE	23	47	TBY
P-32	AK4239FF	16 OCT	1750	" "	23	67	[illegible]
P-33	AK4253FF	16 OCT	1801	CROSSES THE INTERCELL BERM (N-S) - SE CORNER CELL#2	23	81	TBY
P-34	AK4253FF	16 OCT	1820	" "	23	46	TBY
P-35	AK4273FF	16 OCT	1838	CELL#3 - EAST ANCHOR TRENCH TO CELL FLOOR -	23	348	TBY
P-36	AK4259FF	17 OCT	1415	CELL#2 FLOOR - PANEL P-6 ON THE EAST SIDE	23	6	TBY
P-37	AK4259FF	17 OCT	1420	CELL#2 FLOOR - PANEL P-5 ON THE EAST SIDE	23	15	TBY
P-38	AK4234FF	20 OCT	1515	TOP OF INTERCELL BERM TO THE PHASE I TIE IN	23	351	TBY
P-39	AK4225FF	20 OCT	1535	TOP OF INTERCELL BERM TO THE CELL FLOOR	23	303	TBY
P-40	AK4225FF	20 OCT	1605	CELL#2 FLOOR - PANEL P-39 ON THE SOUTH SIDE	23	44	TBY
P-41	AK4253FF	20 OCT	1620	TOP OF INTERCELL BERM TO CELL#3 FLOOR	23	74	TBY
P-42	AK4253FF	20 OCT	1625	" "	23	78	TBY
P-43	AK4293FF	20 OCT	1740	CELL#3 FLOOR - PANEL P-35 ON THE EAST SIDE	23	9	TBY
P-44	AK4293FF	20 OCT	1745	CELL#2 FLOOR - PANEL P-3 ON THE EAST SIDE	23	7	TBY
P-45	AK4213FF	21 OCT	1121	WEST ANCHOR TRENCH TO CELL FLOOR - PHASE I ON N. SIDE	23	335	TBY
P-46	AK4207FF	21 OCT	1300	WEST ANCHOR TRENCH TO THE CELL FLOOR	23	335	TBY
				TOTALS:(1)	23	2754	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 63,342 (ft^2) ACCUMULATED: 188,071 (ft^2)

NOTES:

000317

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: TEXTURED 80-MIL HDPE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-47	AK4198FF	21 OCT	1342	WEST ANCHOR TRENCH TO THE CELL FLOOR	23	333	TBY
* P-48	AK4217FF	21 OCT	1508	" "	*	*	TBY
P-49	AK 4203 FF	22 OCT	1615	CELL FLOOR - PHASE I TIE IN ON NORTH SIDE	23	44	TBY
P-50	AK 4203 FF	22 OCT	1620	" "	23	10	TBY
P-51	AK 4203 FF	22 OCT	1625	" "	23	9	TBY
P-52	AK 4203 FF	22 OCT	1642	CELL FLOOR	23	259	TBY
P-53	AK 4212 FF	22 OCT	1711	CROSSES THE INTERCELL BERM	23	133	TBY
P-48	AK4202 FF	23 OCT	1046	WEST ANCHOR TRENCH TO THE CELL FLOOR	23	333	TBY
P-54	AK 4204 FF	23 OCT	1110	" "	23	333	TBY
P-55	AK 4208 FF	23 OCT	1310	" "	23	333	TBY
P-56	AK 4197 FF	23 OCT	1348	" "	23	333	TBY
P-57	AK 4263 FF	23 OCT	1430	CELL FLOOR	23	80	TBY
P-58	AK 4263 FF	23 OCT	1455	WEST ANCHOR TRENCH TO THE CELL FLOOR	23	254	TBY
P-59	AK 4211 FF	23 OCT	1537	" "	23	333	TBY
P-60	AK 4262 FF	23 OCT	1610	" "	23	332	TBY
P-61	AK 4205 FF	23 OCT	1700	" "	23	332	TBY
P-62	AK 4201 FF	23 OCT	1730	" "	23	330	TBY
P-63	AK 4206 FF	24 OCT	1321	" "	23	329	TBY
P-64	AK 4214 FF	24 OCT	1356	CROSSES THE INTERCELL BERM	23	118	TBY
P-65	AK 4214 FF	24 OCT	1408	" "	23	118	TBY
P-66	AK 4214 FF	24 OCT	1421	" "	23	109	TBY
P-67	AK 4209 FF	24 OCT	1433	" "	23	116	TBY
P-68	AK 4209 FF	24 OCT	1445	" "	23	116	TBY
				TOTALS:(1)	23	4687	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 107,801 (ft^2) ACCUMULATED: 295,872 (ft^2)

NOTES: * THIS ~~ROLL~~ PANEL WAS REMOVED DUE TO THE GCL REMOVAL ACTIVITIES AND ~~REPLACED BY ROLL AK4202FF.~~ THE PANEL NUMBER WAS RE-USED ON 23 OCT. WITH THE DEPLOYMENT OF AK4202FF IN THE SAME LOCATION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: TEXTURED 80MIL HDPE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-69	AK4209FF	24 OCT	1454	CROSSES THE INTERCELL BERM	23	109	TBD
P-70	AK4217FF	24 OCT	1455	CELL FLOOR	23	8	
P-71	AK 5253FF	24 OCT	1511	CROSSE THE INTERCELL BERM	23	116	
P-72	AK4217FF	24 OCT	1515	CELL FLOOR	23	7	
P-73	AK 5253FF	24 OCT	1525	CROSSES THE INTERCELL BERM	23	115	
P-74	AK 5253 FF	24 OCT	1535	" "	23	115	
P-75	AK 4242FF	24 OCT	1551	" "	23	115	
P-76	AK4242FF	24 OCT	1607	" "	23	115	
P-77	AK4242FF	24 OCT	1625	WEST ANCHOR TRENCH TO CELL FLOOR - SW CELL #2	23	60	
P-78	AK 4212FF	24 OCT	1639	" "	23	36	
P-79	AK4242FF	24 OCT	1642	" "	23	25	
P-80	AK 4212 FF	24 OCT	1651	WEST ANCHOR TRENCH TO CELL FLOOR - NW CELL #3	23	41	
P-81	AK 4212 FF	24 OCT	1656	" "	23	63	
P-82	AK 2554 FF	24 OCT	1710	CROSSES THE INTERCELL BERM - SW CORNER OF CELL #2	23	75	
P-83	AK 2554 FF	24 OCT	1720	" "	23	42	
P-84	AK 4210 FF	24 OCT	1740	NW CORNER - CELL #3 (PANEL FOR TIE-IN)	23	327	
				TOTALS:(1)	23	1369	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 31,487 (ft^2) ACCUMULATED: 327,359 (ft^2)

NOTES:

000319

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APPENDIX L:

CELL 2 GEOMEMBRANE TRIAL SEAM LOGS

Fusion
Extrusion

2062

Fusion

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2062

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Petro / Solmax TENSIOMETER DESCRIPTION: U.S. Gauge Model 1.04 4½" Test gauge

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (~~SET~~/~~°C~~/°F)	FUSION MEASURED SPEED (~~°C/T~~)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F1	11 Sept.	1515	02	GC	S/S	800	6.0 FT/min	151/141	156	✓		CS
								149/147	159	✓		CS
F2	14 Sept.	0900	02	GC	S/S	800	5.7 FT/min	153/154	175	✓		CS
								161/161	179	✓		CS
F3	14 Sept.	1305	02	GC	S/S	800	6.0 FT/min	140/145	151	✓		CS
								136/138	152	✓		CS
F4	15 Sept.	0820	02	GC	S/S	800	5.8 FT/min	136/165	180	✓		CS
								168/153	181	✓		CS
F5	15 Sept	0905	9727	JM	S/S	800	3.8 FT/min	148/peel	—	—	✓	TBY
F6	15 Sept	1245	02	GC	S/S	800	5.8 FT/min	150/147	165	✓		TBY
								153/152	165	✓		TBY
F7	15 Sept	1445	02	GC	S/T	800	5.8 FT/min	156/154	173	✓		TBY
								159/157	175	✓		TBY
F8	15 Sept	1505	02	GC	S/T	800	7.0 FT/min	159/157	173	✓		TBY
								164/164	173	✓		TBY
F9	15 Sept	1615	02	GC	T/T	800	7.0 FT/min	157/155	183	✓		TBY
								153/152	179	✓		TBY
F10	16 Sept	0800	02	GC	S/S	800	6.0 FT/min	168/161	194	✓		TBY
								169/168	196	✓		TBY
F11	16 Sept	0808	02	GC	S/T	800	6.8 FT/min	191/160	185	✓		TBY
								160/165	196	✓		TBY
F12	16 Sept	0830	02	GC	S/T	800	7.2 FT/min	195/166	196	✓		TBY
								192/174	192	✓		TBY
F13	16 Sept	1310	02	GC	S/S	800	8.0 FT/min	149/138	162	✓		TBY
								172/152	159	✓		TBY

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO/SOLMAX TENSIOMETER DESCRIPTION: U.S. Guage model 1.04 4½" Test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED ~~(°C/°F)~~	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F14	16 SEPT	1330	02	GC	S/T	800	8.0 FT/MIN	146/150	161	✓		TBY
								145/151	164	✓		TBY
F15	16 SEPT	1350	02	GC	T/T	800	8.0 FT/MIN	141/142	168	✓		TBY
								155/151	165	✓		TBY
F16	18 SEPT	0900	02	GC	S/S	800	7.2 FT/MIN	174/161	190	✓		TBY
								175/175	191	✓		TBY
F17	18 SEPT	0915	02	GC	S/T	800	7.2 FT/MIN	161/170	187	✓		[redacted]
								163/170	186	✓		[redacted]
F18	18 SEPT	1245	9727	JM	S/S	750	3.00 FT/MIN	120/132	—	—	✓	TBY
								136/PEEL	—	—	✓	TBY
F19	18 SEPT	1342	9727	JM	S/S	750	3.00 FT/MIN	118/129	165	✓		TBY
								129/122	168	✓		TBY
F20	18 SEPT	1420	9844	JM	S/S	750	5.50 FT/MIN	130/142	153	✓		TBY
								127/127	159	✓		TBY
F21	18 SEPT	1530	9727	JM	S/T	750	3.00 FT/MIN	142/147	—	—	✓	TBY
								150/PEEL	—	—	✓	TBY
F22	18 SEPT	1535	9844	GC	S/T	750	6.50 FT/MIN	PEEL	—	—	✓	TBY
F23	18 SEPT	1740	01	GC	S/T	780	6.00 FT/MIN	150/150	165	✓		TBY
								146/145	168	✓		TBY
F24	18 SEPT	1740	9844	JM	S/T	700	3.00 FT/MIN	143/142	165	✓		TBY
								133/138	165	✓		TBY
F25	18 SEPT	1745	01	GC	S/S	780	6.00 FT/MIN	168/156	169	✓		TBY
								155/144	165	✓		TBY
F26	19 SEPT	0815	9844	JM	S/S	700	3.00 FT/MIN	145/154	—	—	✓	TBY
								PEEL	—	—	✓	[redacted]

000323

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO/SOLMAX TENSIOMETER DESCRIPTION: U.S. Guage model 1.04 4½" Test Guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C (F))	FUSION MEASURED SPEED (~~°C/FT~~)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F27	19 SEPT	0820	01	GC	S/S	800 (F)	6.0 FT/MIN	172/168	193	✓		TBY
								168/173	195	✓		TBY
F28	19 SEPT	0830	01	GC	S/T	800	5.6 FT/MIN	PEEL	—	—	✓	TBY
F29	19 SEPT	0900	9844	JM	S/S	725	3.00 FT/MIN	130/128	171	✓		TBY
								149/136	170	✓		TBY
F30	19 SEPT	0900	01	GC	S/T	800	6.0 FT/MIN	163/153	176	✓		TBY
								143/157	180	✓		TBY
F31	19 SEPT	0920	9844	JM	T/T	725	3.00 FT/MIN	161/171	187	✓		TBY
								160/171	210	✓		TBY
F32	19 SEPT	1250	01	GC	S/S	800	6.0 FT/MIN	141/137	155	✓		TBY
								132/134	158	✓		TBY
F33	19 SEPT	1315	9844	JM	T/T	700	3.00 FT/MIN	146/139	151	✓		TBY
								140/142	152	✓		TBY
F34	19 SEPT	1445	02	JM	S/S	800	7.0 FT/MIN	130/137	151	✓		TBY
								140/140	152	✓		TBY
F35	19 SEPT	1815	02	JM	T/T	800	7.0 FT/MIN	150/154	166	✓		TBY
								147/151	167	✓		TBY
F36	25 SEPT	1615	9860	MM	S/S	780	5.2 FT/MIN	140/141	165	✓		TBY
								149/150	174	—		TBY
F37	25 SEPT	1630	9860	MM	T/T	780	5.2 FT/MIN	PEEL	—	—	✓	TBY
F38	26 SEPT	~~0945~~ 1010 (2)	02	MM	S/S	800	6.5 ft/min	151/141 ~~PEEL~~ (2)	184	✓	(2) ✗	RP
								150/156 ~~PEEL~~ (2)	187	✓ (2)	✗	RP
F39	26 SEPT	~~0930~~ 1030 (2)	02	MM	T/T	800	6.5 ft/min	174/163	184	✓	(2)	RP
								162/162	187	✓		RP

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: U.S. Guage Model 1.04 4½" Test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED ft/min ~~(°C/°F)~~	TEST RESULTS PEEL (pph/psi)	TEST RESULTS SHEAR (pph/psi)	PASS	FAIL	QA ID
F40	26 Sept	1440	02	MM	S/S	800	6.5	140/139	154	✓		CS
								137/139	157	✓		CS
F41	26 Sept	1450	02	MM	T/T	800	6.5	130/146	157	✓		CS
								141/144	159	✓		CS
F42	26 Sept	1625	01	MM	S/S	800	6.5	140/139	160	✓		CS
								145/130	162	✓		CS
F43	26 Sept	1635	01	MM	T/T	800	6.5	140/154	155	✓		CS
								145/152	157	✓		CS
F44	28 Sept	1345	01	JI	S/S	800	6.0	155/158	167	✓		RP
								154/157	169	✓		RP
F45	28 Sept	1345	01	JI	T/T	800	6.0	143/145	167	✓		RP
								141/142	169	✓		RP
F46	29 Sept	1445	01	JI	S/S	800	6.0	132/141	161	✓		DLE
								142/147	159	✓		DLE
F47	29 Sept	1620	01	JI	T/T	800	6.0	141/140	158	✓		DLE
								142/144	157	✓		DLE
F48	29 Sept	1730	9860	MM	S/S	750	5.0	162/142	177	✓		DLE
								156/146	185	✓		DLE
F49	30 Sept	1030	9860	MM	S/S	750	8.0	140/142	157	✓		CS
								149/140	163	✓		CS
F50	30 Sept	1100	9860	MM	T/T	750	~~8.0~~ 3.75 (4)	138/144	151	✓		CS
								127/147	174	✓		CS
F51	30 Sept	1340	01	GC	T/T	800	6.5	138/142	~~140/141~~ 159	✓		CS
								140/141	162			CS

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION - 2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04-1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: U.S. Guage model 1.04 4½" test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C (F))	FUSION MEASURED SPEED (ft ~~(°C/T)~~ min)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F52	30 Sept	1350	01	GC	S/S	800	6.5	130/127	159	✓		CS
								147/139	158	✓		CS
F53	30 Sept	1610	9860	MM	S/S	750	3.8	162/155	~~185~~ 186	✓		CS
								152/154	182	✓		CS
F54	30 Sept	1709	9860	MM	T/T	750	2.5	165/148	187	✓		CS
								156/164	188	✓		CS
F55	1 Oct	0845	01	GC	S/S	800	5.7	173/185	214	✓		DLE
								173/175	212	✓		DLE
F56	1 Oct	0845	01	GC	T/T	800	5.7	207/195	217	✓		DLE
								198/203	229	✓		DLE
F57	1 Oct	0915	9860	JM	S/S	750	4.0	173/185	216	✓		CS
								180/180	210	✓		CS
F58	1 Oct	1300	01	GC	S/S	750	5.7	146/158	177	✓		CS
								154/154	181	✓		CS
F59	1 Oct	1320	01	GC	T/T	750	4.0	168/169	182	✓		CS
								158/162	~~172~~ 196	✓		CS
F60	1 Oct	1530	9860	MM	S/S	750	4.0	165/141	177	✓		CS
								164/157	179	✓		CS
F61	2 Oct	1300	01	GC	S/S	800	6.0	159/151	154	✓		DLE
								138/147	168	✓		DLE
F62	2 Oct	~~1300~~ 1330	01	GC	T/T	800	6.0	120/134	154	✓		DLE
								133/~~144~~	168	✓		DLE
F63	2 Oct	1340	9860	JM	S/S	750	3.0	150/151	169	✓		DLE
								148/147	172	✓		DLE

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: U.S. Guage Model 1.04 4½" Test guage

	TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C (F))	FUSION MEASURED SPEED (~~°C/(F)~~ m/m)	TEST RESULTS PEEL (pp/psi)	TEST RESULTS SHEAR (pp/psi)	PASS	FAIL	QA ID
*	F64	12 Oct	1300	9860	KH	S/S	750	3.25	142/144	167	✓		TBY
									142/145	173	✓		TBY
*	F65	12 Oct	1315	9860	KH	S/T	750	2.75	134/144	173	✓		TBY
									143/152	177	✓		TBY
*	F66	12 Oct	1330	9860	KH	T/T	750	2.50	133/160	—		✓	TBY
									PEEL	—		✓	TBY
*	F67	12 Oct	1400	9860	KH	T/T	750	2.00	132/133	—		✓	TBY
									PEEL	—		✓	TBY
*	F68	12 Oct	~~1400~~ 1500 TBY	9860	KH	T/T	750	1.50	PEEL	—		✓	TBY
*	F69	12 Oct	1525	9727	AG	T/T	750	1.58	123/126	161	✓		TBY
									123/130	152	✓		TBY

* Note
Fusion TRIAL Seams F-64 Through F-69 Prepared on Oct 12 1998 were out of The Binder for Q.A. Purposes at The ~~[illegible]~~ OZC Beginning of Placement of The Primary Geomembrane Yielding A Numbering overlap for The above mentioned TRIAL Seams. All Data is Valid as presented for The Secondary and Primary Geomembrane TRIAL Seams

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: SOLMAX / PETRO TENSIOMETER DESCRIPTION: US Gauge model 1.04 4½" TEST GUAGE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED (~~°C/°F~~)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	TEST RESULTS PASS	TEST RESULTS FAIL	QA ID
F64	14 OCT	1307	9860	KH	S/S	750	250	141 151 145 149	165/175	P		MH
F65	14 OCT	1315	9844	GC	S/S	750	250	153 166 154 142	177/173	P		MH
F66	15 OCT	0830	9860	KH	S/S	750	250	172 WELD DIP	NOT HOLD		F	MH
F67	15 OCT	0850	9844	GC	S/S	750	250	189/99	FCCL		F	MH
F68	15 OCT	0855	9727	LL	S/S	750	200	151 160 161 172	239/222	P		MH
F69	15 OCT	0910	9844	GC	S/S	750	190	173 183 183 181	221/225	P		MH
F70	15 OCT	0914	9860	KH	S/S	750	190	140 154 188 196	231/226	P		MH
F71	15 OCT	1030	9860	KH	S/S	750	190	167 172 157 159	201/198	P		MH
F72	15 OCT	1050	9844	GC	S/T	750	175	145 147 148 158	202/199	P		MH
F73	15 OCT	1138	9860	KH	S/S	750	190	160 174 173 159	210/212	P		MH
F74	15 OCT	1415	9860	KH	S/S	750	225	142 148 138 151	156/170	P		MH
F75	15 OCT	1428	01	GC	S/S	800	6.0 FPM	139 139 144 157	180/182	P		MH
F76	15 OCT	1600	9844	LL	S/S	750	225	155 159 154 157	178/186	P		MH
F77	15 OCT	1620	01	GC	T/T	800	6.5 FPM	145 165 147 164	187/185	P		MH
F78	15 OCT	1720	02	JM	S/S	800	6.0 FPM	160 160 153 163	182/185	P		MH
F79	16 OCT	0900	02	GC	S/S	800	5.5 FPM	159 161 159 176	200/201	P		MH
F80	16 OCT	0915	02	GC	T/T	800	6.0 FPM	179 179 180 185	212/223	P		MH
F81	16 OCT	0930	01	KH	S/S	800	5.5 FPM	167 168 169 173	208/207	P		MH
F82	16 OCT	1040	02	GC	S/S	800	7.6 FPM	146 165 161 154	186/186	P		MH
F83	16 OCT	1048	01	KH	S/S	800	7.6 FPM	158 154 150 159	180/185	P		MH
F84	16 OCT	1330	02	GC	S/S	800	7.6 FPM	147 146 157 168	170/171	P		MH
F85	16 OCT	1335	02	GC	T/T	800	8.0 FPM	155 157 157 159	173/174	P		MH
F86	16 OCT	1345	02	GC	S/T	800	6.7 FPM	149/146 154/155	166/161	P		MH
F87	16 OCT	1600	01	KH	S/S	800	6.0 FPM	150 153 153 156	182/179	P		MH
F88	17 OCT	0900	02	GC	T/T	800	5.5 FPM	175 181 173 182	225/220	P		MH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: SOLMAX / PETRO TENSIOMETER DESCRIPTION: U.S. Gauge Model 1.04 4½" TEST GUAGE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED ~~(°C/°F)~~	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F89	17 OCT	0905	02	GC	S/S	800	6.1 FPM	167 174 180 179	205/207	P		MH
F90	17 OCT	0910	02	GC	S/T	800	6.1 FPM	171 166 176 176	206/210	P		MH
F91	17 OCT	1300	02	GC	S/T	800	5.5 FPM	164 165 170 169	181/184	P		MH
F92	17 OCT	1345	02	GC	S/S	800	5.5 FPM	142 151 149 150	182/184	P		MH
F93	17 OCT	1400	02	GC	T/T	800	6.7 FPM	151 150 147 145	191/193	P		MH
F94	20 OCT	1620	02	KH	T/T	800	6.8 FPM	180 181 187 192	208/210	P		MH
F95	20 OCT	1621	02	KH	S/T	800	6.8 FPM	169 180 182 180	202/203	P		
F96	20 OCT	1625	01	GC	S/S	800	6.0 FPM	176 179 179 180	215/218	P		
F97	21 OCT	1310	02	KH	S/S	800	6.0 FPM	172 174 169 171	231/236	P		MH
F98	21 OCT	1310	01	JM	S/S	812	6.1 FPM	169 170 185 189	207/231	P		MH
F99	21 OCT	1420	02	KH	S/T	800	6.0 FPM	157 181 159 160	191/192	P		MH
F100	22 OCT	1500	02	JM	S/S	800	6.0 FPM	194 187 157 171	216/220	P		MH
F101	22 OCT	1513	02	JM	T/T	800	6.0 FPM	192 184 193 189	226/231	P		MH
F102	22 OCT	1515	02	JM	S/T	800	6.0 FPM	186 192 194 181	225/226	P		MH
F103	22 OCT	1710	01	KH	S/S	800	6.0 FPM	179 169 171 169	213/215	P		MH
F104	23 OCT	1100	02	KH	S/S	800	7.0 FPM	131 WELD FAILED			F	MH
F105	23 OCT	1105	02	KH	S/T	800	7.0 FPM	WELD FAILED			F	MH
F106	23 OCT	1115	01	GC	S/S	860	7.1 FPM	147 155 155 161	196/206	P		MH
F107	23 OCT	1150	02	KH	S/S	800	6.0 FPM	158 163 164 174	209/209	P		MH
F108	23 OCT	1155	02	KH	S/S	800	6.0 FPM	169 167 172 181	209/211	P		MH
F109	23 OCT	1205	02	KH	S/T	800	6.0 FPM	165 165 164 163	192/200	P		MH
F110	23 OCT	1400	01	GC	S/S	800	5.2 FPM	155 159 157 156	197/205	P		MH
F111	23 OCT	1440	9.860	JM	S/S	750	250	180 150 181 168	184/185	P		MH
F112	23 OCT	1530	02	KH	T/T	800	7.0 FPM	152 161 161 165	194/199	P		MH
F113	24 OCT	1000	02	KH	S/S	800	6.5 FPM	180 184 188 188	232/234	P		MH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04-1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: SOLMAX / PETRO TENSIOMETER DESCRIPTION: U.S. Gauge Model 1.04 4½" TEST GUAGE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED (~~°C/°F~~)	TEST RESULTS PEEL (pp/psi)	TEST RESULTS SHEAR (pp/psi)	TEST RESULTS PASS	TEST RESULTS FAIL	QA ID
F114	24 OCT	1005	02	KH	S/T	800	6.0 FPM	149 156 168 152	192/186	P		MH
F115	24 OCT	1130	01	GC	S/S	800	6.5 FPM	154 162 162 150	180/188	P		MH
F116	24 OCT	1315	02	KH	S/S	800	7.0 FPM	164 158 158 161	186/188	P		MH
F117	24 OCT	1455	02	KH	T/T	800	6.0 FPM	149 157 159 163	187/181	P		MH
F118	24 OCT	1620	01	GC	S/S	800	6.1 FPM	156 151 159 157	200/197	P		MH
F119	24 OCT	1715	9860	MM	S/T	750	200	152 157 TEST ABORTED	NOT USING 9860			MH
F120	25 OCT	0845	02	KH	S/T	800	6.0 FPM	171 171 167 188	215/238	P		MH
F121	25 OCT	0850	02	KH	S/S	800	7.0 FPM	156 149 158 160	192/194	P		MH
F122	25 OCT	0855	02	KH	T/T	800	6.5 FPM	156 149 148 161	184/188	P		MH
F123	25 OCT	0910	02	KH	S/T	800	6.0 FPM	154 164 163 150	196/205	P		MH
F124	26 OCT	0900	02	KH	T/T	800	6.5 /FPM	167 173 176 179	209/211	P		RH
F125	26 OCT	0910	02	KH	S/T	800	6.0 FPM	154 160 161 163	205/209	P		RH
F126	26 OCT	1320	02	KH	T/T	800	7.0 FPM	152 160 161 160	173/182	P		RH
F127	27 OCT	0845	02	GC	S/S	800	6.6 FPM	181 184 176 179	225/224	P		RH
F128	27 OCT	0900	02	GC	T/T	800	6.6 FPM	141 179 185 188	233/235	P		RH
F129	27 OCT	0905	02	GC	S/T	800	7.2 FPM	194 174 179 198	227/230	P		RH
F130	27 OCT	1310	02	GC	S/S	800	7.2 FPM	168 172 170 167	192/194	P		RH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

Extrusion

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) E 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: U.S. Gauge model 1.04 4½ Test gauge

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/°C/°F)	EXTRUSION BARREL (°C/°F)	TEST RESULTS PEEL (pp/psi)	TEST RESULTS SHEAR (pp/psi)	PASS	FAIL	RE-TEST NO.	QA ID
E-1	15 Sept	1500	98	JM	T/T	270	257	106/142	180/183	P			TBY
E-2	16 Sept	0825	98	JM	T/T	270	257	PEEL			F	E-3	TBY
E-3	16 Sept	0915	98	JM	T/T	270	257	141/156	183/185	P			TBY
E-4	16 Sept	1330	98	JM	T/T	270	257	122/130	160/163	P			TBY
E-5	19 Sept	0820	98	RS	T/T	270	257	114/110	186/186	P			TBY
E-6	22 Sept	0805	98	JM	T/T	257	250	169/161	200/198	P			TBY
E-7	22 Sept	0800	04	JB	T/T	~~420~~ 300	~~300~~ 420	119/124	186/179	P			CS
E-8	22 Sept	1300	98	JM	T/T	270	257	139/143	162/163	P			RP
E-9	22 Sept	1430	04	JB	T/T	300	420	114/137	157/164	P			RP
E-10	23 Sept	0820	04	JB	T/T	300	420	178/175	218/227	P			RP
E-11	23 Sept	1320	98	JM	T/T	300	420	127/141	164/167	P			RP
E12	23 Sept	1630	04	JB	T/T	257	250	137/142	158/162	P			RP
E-13	24 Sept	0830	04	JB	T/T	300	420	166/160	185/186	P			RP
E-14	24 Sept	0845	98	JM	T/T	257	250	158/162	179/181	P			RP
E-15	24 Sept	1107	98	JM	T/T	257	250	152/163	194/188	P			RP
E-16	24 Sept	1109	04	JB	T/T	300	420	142/144	197/198	P			RP
E-17	24 Sept	1341	04	JB	T/T	300	420	155/156	172/172	P			RP
E-18	24 Sept	1530	98	JM	T/T	257	250	143/140	161/164	P			RP
E-19	25 Sept ~~24~~	0810	98	JM	T/T	257	250	143/148	199/200	P			CS
E-20	25 Sept	0815	04	JB	T/T	350	420	152/147	185/183	P			CS
E-21	25 Sept	1300	98	JM	T/T	257	250	138/135	181/184	P			CS
E-22	25 Sept	1310	04	JB	T/T	450	350	147/161	180/178	P			CS
E-23	26 Sept	0815	98	JM	T/T	~~450~~ 285	275	155/151	190/191	P			RP
E-24	26 Sept	0820	04	JB	T/T	450	350	139/141	188/190	P			CS

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: US. Guage model 1.04 4½ Test guage

TRIAL SEAM NO.	DATE (doy/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/C/F)	EXTRUSION BARREL (°C/F)	TEST RESULTS PEEL (pli/psi)	TEST RESULTS SHEAR (pli/psi)	PASS	FAIL	RE-TEST NO.	QA ID
E25	26Sept	1320	98	JM	T/T	285	275	165/148	151/152	P			CS
E-26	26 Sept	1330	04	JB	T/T	450	350	125/127	151/155	P			CS
E-27	28 Sept	0840	04	JB	T/T	350	450	119/135	190/212	P			RP
E-28	28Sept	1010	03	JM	T/T	350	450	120/113	191/190	P			RP
E-29	28Sept	1020	03	JM	T/T	350	450	133/120	180/184	P			RP
E-30	28 Sept	1340	04	JB	T/T	350	450	117/118	159/154	P			RP
E-31	28Sept	1345	9803	JM	T/T	375	475	127/126	158/160	P			[illegible]
E-32	28 Sept	1630	9803	JM	T/T	375	475	123/131	158/162	P			[illegible]
E-33	29 Sept	0812	04	JB	T/T	375	475	131/119	220/223	P			RP
E-34	29 Sept	0820	03	JM	T/T	375	475	129/127	197/200	P			RP
E-35	29 Sept	1315	04	JB	T/T	375	475	122/119	153/155	P			DLE
E-36	29 Sept	1318	03	JM	T/T	375	475	129/127	152/156	P			DLE
E-37	30 Sept	0840	03	JM	T/T	375	475	127/126	193/182	P			DLE
E-38	30 Sept	0905	04	JB	T/T	375	475	125/148	194/204	P			DLE
E-39	30 Sept	1310	03	JM	T/T	375	475	127/152	188/189	P			DLE
E-40	30 Sept	1330	04	JB	T/T	375	475	127/122	159/160	P			DLE
E-41	1 Oct	0820	04	JB	T/T	385	485	217/229	229/227	P			DLE
E-42	1 Oct	0830	03	JM	T/T	375	475	138/141	185/202	P			DLE
E-43	1 Oct	1315	03	JM	T/T	350	465	160/152	209/182	P			DLE
E-44	1 Oct	1320	04	JB	T/T	350	465	139/142	179/182	P			DLE
E-45	2 Oct	0905	04	JB	T/T	360	475	155/152	192/194	P			DLE
E-46	2Oct	1315	04	JB	T/T	360	475	143/143	174/165	P			DLE
E-47	2Oct	1330	06	CL	T/T	360	475	132/132	166/189	P			DLE
E-48	5 Oct	1310	04	JB	T/T	365	475	133 PEEL			F	E-50	MH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: PETRO/Solmax TENSIOMETER DESCRIPTION: U.S. Guage Model 1.04 4½" test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/°C/°F)	EXTRUSION BARREL (°C/°F)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	TEST RESULTS PASS	TEST RESULTS FAIL	RE-TEST NO.	QA ID
E-49	5 Oct	1316	98	JM	T/T	375	475	114 PEEL			F	E-51	MH
E-50	5 Oct	1340	04	JB	T/T	365	475	125/140	170/175	P			MH
E-51	5 Oct	1346	98	JM	T/T	375	475	139/132	172/181	P			MH
E-52	6 Oct	0830	04	JB	T/T	365	475	163/145	195/203	P			DLE
E-53	6 Oct	0845	98	JM	T/T	375	475	114/131	180/187	P			DLE
E54	6 Oct	1300	04	JB	T/T	365	475	161/160	178/181	P			DLE
E-55	6 Oct	1315	98	JM	T/T	375	475	163/165	183/180	P			DLE
E-56	6 Oct	1615	04	JB	T/T	365	475	151/158	184/191	P			DLE
E-57	7 Oct	0820	04	JB	T/T	365	475	165/171	171/196	P			MH
E-58	7 Oct	0830	98	JM	T/T	400	500	PEEL			F	E-59	MH
E-59	7 Oct	0845	98	JM	T/T	475	525	159/170	195/197	P			MH
E-60	8 Oct	0840	04	JB	T/T	365	475	168/169	217/214	P			MH
E-61	8 Oct	0845	98	JM	T/T	475	525	171/174	212/223	P			MH
E-62	8 Oct	1315	98	JM	T/T	475	525	182/174	197/198	P			MH
E-63	8 Oct	1320	04	JB	T/T	365	475	156/148	215/231	P			MH
E-64	9 Oct	0900	98	JM	T/T	475	525	PEEL		P	F	E65	MH
E-65	9 Oct	0920	98	JM	T/T	500	535	179/179	237/232	P			MH
E-66	9 Oct	1310	98	JM	T/T	500	535	178/193	205/191	P			MH
E-67	10 Oct	1310	98	JB	T/T	425	525	140/144	170/182	P			CL
E-68	10 Oct	1320	98	RS	T/T	425	525	160/155	196/204	P			CL
E-69	10 Oct	1320	04	JM	T/T	350	450	131/150	180/194	P			CL
E-70	12 Oct	0922	98	JM	T/T	525	525	133/131	201/214	P			TBY
E-71	12 Oct	1300	98	JM	T/T	500	525	160/159	175/166	P			TBY
E-72	12 Oct	1315	98	RS	T/T	500	525	164/166	171/174	P			TBY
E-73	12 Oct	1730	98	JM	T/T	515	535	186/176	208/213	P			TBY

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TENSIOMETER DESCRIPTION: U.S. Guage Model 1.04 4½" test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION		TEST RESULTS				RE-TEST NO.	QA ID
						PREHEAT (SET/°C/°F)	BARREL (°C/°F)	PEEL (ppi/psi)	SHEAR (ppi/psi)	PASS	FAIL		
E-74	13 Oct	0830	98	JM	T/T	515	535	124/132	212/230	P			MH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

= 2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: PETRO/SOLMAX TENSIOMETER DESCRIPTION: U.S. Gauge Model 1.04 4½" TEST GUAGE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/°C/°F)	EXTRUSION BARREL (°C/°F)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	RE-TEST NO.	QA ID
E-75	14 Oct	0938	98	JM	T/T	530	550	PEEL	—		F	E-76	MH
E-76	14 Oct	0950	98	JM	T/T	530	550	149/149	183/175	P			MH
E-77	14 Oct	1310	98	JM	T/T	520	555	161/165	186/197	P			MH
E-78	15 Oct	0848	98	JM	T/T	500	550	PEEL	—		F	E-80	MH
E-79	15 Oct	1022	06	JM	T/T	450	500	PEEL	—		F	E-81	MH
E-80	15 Oct	1032	06	JM	NSC T/GSE T	478	510	140/151	230/217	P			MH
E-81	15 Oct	1140	06	JM	NSC T/GSE T	470	510	129/132	171/199	P			MH
E-82	16 Oct	1030	98	JB	T/T	440	540	115/142	181/207	P			MH
E-83	16 Oct	1050	06	CL	T/T	360	475	133/129	179/177	P			MH
E-84	16 Oct	1105	98	JB	T/T	440	540	132/158	173/176	P			MH
E-85	16 Oct	1146	98	JB	T/T	440	540	138/152	169/173	P			MH
E-86	16 Oct	1323	06	CL	T/T	360	475	134/127	224/185	P			MH
E-87	16 Oct	1410	98	JB	T/T	440	540	141/142	207/210	P			MH
E-88	17 Oct	0900	06	RS	NSC T/GSE T	475	425	135/137	232/220	P			MH
E-89	17 Oct	1030	06	RS	T/T	475	520	146/146	206/207	P			MH
E-90	17 Oct	1145	06	LL	NSC T/GSE T	478	525	131/132	190/193	P			MH
E-91	17 Oct	1158	06	LL	T/T	478	525	141/142	186/182	P			MH
E-92	19 Oct	1320	98	RS	T/T	525	540	157/160	Fail Shear	P	F	E-93	MH
E-93	19 Oct	1400	98	RS	T/T	525	540	138/140	182/185	P			TBY
E-94	19 Oct	1415	06	KH	T/T	520	575	137/160	189/203	P			TBY
E-95	20 Oct	0800	06	GC	T/T	525	548	158/160	208/210	P			MH
E-96	20 Oct	0815	06	RS	T/T	525	548	147/114	223/215	P			MH
E-97	20 Oct	1135	98	LL	T/T	477	527	141/144	203/209	P			MH
E-98	20 Oct	1530	98	RS	T/T	448	525	147/151	187/190	P			MH
E-99	20 Oct	1530	98	GC	T/T	448	525	158/132	198/197	P			MH

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04-1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: PETRO/Solmax TENSIOMETER DESCRIPTION: U.S. Gauge Model 1.04 4½" TEST GUAGE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/°C/°F)	EXTRUSION BARREL (°C/°F)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	RE-TEST NO.	QA ID
E-100	21 Oct	0815	98	GC	T/T	535	540	161/163	209/211	P			MH
E-101	21 Oct	0820	98	RS	T/T	535	540	142/147	221/220	P			MH
E-102	21 Oct	0830	06	LL	T/T	475	530	152/148	201/206	P			MH
E-103	21 Oct	0835	06	JB	T/T	475	530	161/168	219/218	P			MH
E-104	21 Oct	1306	98	GC	T/T	535	540	202/198	225/230	P			MH
E-105	21 Oct	1430	06	GC	T/T	475	555	149/151	190/209	P			MH
E-106	22 Oct	1030	06	JB	T/T	480	554	176/158	208/227	P			[illegible]
E-107	22 Oct	1038	06	GC	T/T	480	554	146/147	193/194	P			MH
E-108	22 Oct	1300	06	GC	T/T	475	550	137/166	222/229	P			MH
E-109	23 Oct	0920	06	JB	T/T	475	535	148 140 154	240 201 210	P			MH
E-110	23 Oct	1000	98	RS	T/T	540	540	168/174	182/211	P			MH
E-111	23 Oct	1315	06	JB	T/T	475	450	146/139	204/209	P			MH
E-112	23 Oct	1400	06	RS	T/T	~~435~~ 475	535	132/158	218/213	P			MH
E-113	24 Oct	0915	06	JB	T/T	470	530	124/160	240/230	P			MH
E-114	24 Oct	1315	06	JB	T/T	400	480	125/130	163/153	P			MH
E-115	25 Oct	0820	06	JB	NSC/GSE T/T	400	480	98/124	162 ~~126~~/187	P			MH
E-116	25 Oct	1330	06	JB	T/T	400	490	112/127	158/182	P			MH
E-117	25 Oct	1430	98	RS	T/T	540	550	133/116	187/Pulled weld		F	E-118	MH
E-118	25 Oct	1515	98	RS	T/T	540	550	155/147	188/186	P			MH
E-119	26 Oct	0800	06	JB	T/T	420	500	133/139	202/199	P			MH
E-120	26 Oct	1600	06	RS	T/T	420	500	121/127	191/199	P			MH
E-121	27 Oct	0830	06	RS	T/T	420	495	118/127	195/215	P			RH
E-122	27 Oct	0830	06	RS	T/T	425	495	113/119	186/190	P			RH
E-123	28 Oct	0915	98	RS	T/T	540	550	124/131	179/184	P			RH
E-124	28 Oct	1315	98	GC	T/T	425	495	158/160	171/178	P			[illegible]

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

000337

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - EXTRUSION

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) - 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: ~~1998~~ Phase II YEAR: 1998

CONTRACTOR: PETRO/SOLMAX TENSIOMETER DESCRIPTION: U.S. Guage Model 1.04 4½" Test guage

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	EXTRUSION PREHEAT (SET/°C/°F)	EXTRUSION BARREL (°C/°F)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	TEST RESULTS PASS	TEST RESULTS FAIL	RE-TEST NO.	QA ID
E-125	29 Oct	0830	98	GC	T/T	540	550	117/120	196/224	P			TBY
E-126	29 Oct	0845	98	RS	T/T	540	550	147/134	217/225	P			TBY
E-127	29 Oct	1310	98	GC	T/T	540	550	122/114	181/174	P			TBY
E-128	30 Oct	1500	98	RS	T/T	550	550	125/132	175/182	P			TBY
E-129	1 Nov	1350	98	LL	T/T	520	550	135/141	189/190	P			RP
E-130	2 Nov	1300	98	GC	T/T	520	550	149/152	219/223	P			RP
E-131	3 Nov	0850	98	GC	T/T	550	550	128/122	222/223	P			RP

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

APPENDIX M:

CELL 2 GEOMEMBRANE PRODUCTION SEAM LOGS

Secondary
Primary

2062

Secondary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX/PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (3±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P/F	ACTION	QA ID
11 SEPT	1655	02	GC	51/52	0'	EOS	80'	CS	0'-60' 60'-EOS	30-30 30-28	NA	CK	✓		TBY
14 SEPT	1045	02	GC	52/53	0'	EOS	80'	CS	0'-EOS	30-30	NA	CK	✓		TBY
14 SEPT	1110	02	GC	53/54	0'	EOS	80'	TBY	0'-15' 15-48 48'-EOS	25-25 30-30 30-29	NA	CK	✓		TBY
14 SEPT	1147	02	GC	54/55	0'	EOS	81'	TBY	0'-EOS	30-30	NA	CK	✓		TBY
14 SEPT	1515	02	GC	55/56	0'	EOS	81'	TBY	0'-EOS	30-30	NA	CK	✓		TBY
14 SEPT	1550	02	GC	56/57	0'	EOS	82'	TBY	0'-EOS	30-29	NA	CK	✓		TBY
14 SEPT	1618	02	GC	57/58	EOS	0'	82'	TBY	EOS-0'	30-29	NA	CK	✓		TBY
14 SEPT	1720	02	GC	58/59	EOS	0'	82'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
14 SEPT	1740	02	GC	59/510	EOS	0'	82'	TBY	EOS-0'	30-30	NA	CK	✓	2062	TBY
14 SEPT	1800	02	GC	510/511	EOS	0'	83'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
15 SEPT	0910	02	GC	511/512	EOS	0'	83'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
15 SEPT	0935	02	GC	512/513	EOS	0'	83'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
15 SEPT	1111	02	GC	513/514	EOS	0'	83'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
						TOTAL (1)	1062'.0								

NOTE: (1) SEAM LENGTH: THIS PAGE 1062 ft (ft) ACCUMULATED 1062.0' (ft)

000341

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±2 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
15 SEPT	1410	02	GC	S14/S15	EOS	0'	44'	TBY	EOS-0'	29-29	NA	CK	✓		TBY
	1515	02	GC	S15/S16	EOS	0'	31'	TBY	EOS-0'	30-29	NA	CK	✓		TBY
	1537	02	GC	S15/S17	EOS	0'	20'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
	1545	98	JM	S1/PHASE I S24	0'	64'	64'	TBY	0'-64'	NA	OK	CK	✓		CS
	1630	02	GC	S16/S18	EOS	0'	20'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
	1707	02	GC	S18/S19	0'	EOS	27'	TBY	0'-EOS'	30-30	NA	CK	✓		TBY
	1715	02	GC	S16/S19	25'	EOS	25'	TBY	27'-EOS	NA	NA	NA		SEAM CAPPED	RH
	1732	02	GC	S19/S20	92'	EOS	32'	TBY	92'-EOS	30-30	NA	OK	✓		TBY
16 SEPT	0955	98	JM	S14/S19	0'	EOS	27'	TBY	0'-EOS	NA	OK	CK	✓		RH
	1015	02	GC	S19/S21	43'	92'	49'	TBY	43'-92'	28-28	NA	CK	✓		TBY
	1030	02	GC	S17/S22	0'	EOS	38'	TBY	0'-EOS	29-29	NA	CK	✓		TBY
	1055	02	GC	S22/S23	0'	EOS	62'	TBY	0'-EOS	30-30	NA	CK	✓		TBY
	1115	02	GC	S23/S24	0'	EOS	64'	TBY	0'-EOS	30-28	NA	CK	✓		TBY
					TOTAL (1)		503'								

NOTE: (1) SEAM LENGTH: THIS PAGE 503 FT (116 FT EXT) (ft) ACCUMULATED 1565' (116 FT-EXT) (ft)

000342

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
16 SEPT	1339	98	JM	S17/S18	0'	EOS	30'	TBY	0'-EOS	NA	OK	CK	✓		TBY
16 SEPT	1445	98	JM	S16/CAP	0'	25'	25'	TBY	0'-25'	NA	OK	CK	✓		TBY
16 SEPT	1520	98	JM	S19/CAP	0'	25'	25'	TBY	0'-25'	NA	OK	CK	✓		TBY
16 SEPT	1445	02	GC	S21/S24	0'	EOS	20'	TBY	0'-EOS	30-30	NA	CK	✓		TBY
16 SEPT	1450	02	GC	S21/S23	20'	43'	23'	TBY	20'-43'	30-30	NA	CK	✓		TBY
16 SEPT	1455	02	GC	S19/S23	0'	EOS	4'	TBY	0'-EOS'	NA	NA	NA		SEAM CAPPED	TBY
16 SEPT	1459	02	GC	S19/S22	0'	EOS	29'	TBY	0'-EOS	30-30	NA	CK	✓		TBY
16 SEPT	1505	02	GC	S18/S22	0'	EOS	5'	TBY	0'-EOS	NA	NA	NA		SEAM CAPPED	TBY
18 SEPT	1000	02	GC	N S25 CAP	EOS	0'	23'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
18 SEPT	1005	02	GC	S S25 CAP	EOS	0'	23'	TBY	EOS-0'	30-30	NA	CK	✓		TBY
18 SEPT	1015	02	GC	S9/S25	141'	164'	23'	TBY	141'-164'	NA	NA	NA		SEAM CAPPED	TBY
18 SEPT	1018	02	GC	S8/S25	164'	187'	23'	TBY	164'-187'	NA	NA	NA			TBY
18 SEPT	1022	02	GC	S7/S25	187'	191'	4'	TBY	187'-191'	NA	NA	NA			TBY
						TOTAL (1)	257								

NOTE: (1) SEAM LENGTH: THIS PAGE 257 FT (80 FT - EXT) (11) ACCUMULATED 1822 (196 FT - EXT) (11)

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SHEET NO. 3 OF 42

000343

0062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
18 SEPT	1023	02	GC	57 S25 CAP	191'	196'	5'	TBY	191'-196'	NA	NA	NA	—	SEAM CAPPED	CS
18 SEPT	1025	02	GC	57/S25	196'	210'	15'	TBY	196'-210'	NA	NA	NA	—	↓	CS
18 SEPT	1032	02	GC	56/S25	210'	233'	23'	TBY	210'-233'	NA	NA	NA	—	↓	CC
18 SEPT	1440	9727	JM	521/527	0'	84'	84'	TBY	0'-84'	30-30	NA	CK	✓		TBY
18 SEPT	1800	01	GC	531 541	0'	23'	23'	RH	0'-23'	30-30	NA	CK	✓		RH
18 SEPT	1805	01	GC	525 526	0'	23'	23'	TBY	0'-23'	30-30	NA	CK	✓		TBY
18 SEPT	1810	01	GC	514 526	33'	47'	14'	TBY	33'-47'	30-30	NA	CK	✓		TBY
18 SEPT	1815	01	GC	513 526	47'	70'	23'	TBY	47'-70'	30-30	NA	CK	✓		TBY
18 SEPT	1823	01	GC	512 525	70'	93'	23'	TBY	70'-93'	30-30	NA	CK	✓		TBY
18 SEPT	1825	9844	~~JM~~ GC	530 529	440'	424'	16'	TBY	440'-424'	30-30	NA	CK	✓		TBY
18 SEPT	1828	9844	~~JM~~ GC	525 529	424'	340'	84'	TBY	424'-340'	30-30	NA	CK	✓		TBY
18 SEPT	1828	01	GC	511 525	94'	117'	23'	TBY	93'-116'	29-29	NA	CK	✓		TBY
18 SEPT	1830	01	GC	510 525	117'	141'	24'	TBY	116'-139'	NA	NA	NA	—	SEAM CAPPED	TBY
					TOTAL (1)		380								

NOTE: (1) SEAM LENGTH: THIS PAGE 380 ft (0 ft-ext) (ft) ACCUMULATED 2202 (ft) (196 ft-ext)

0003344

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
18 SEPT	1840	01	GC	532 542	0'	23'	23'	RH	0'-23'	30-30	NA	CK	✓		RH
18 SEPT	1850	9844	JM	525 528	340'	284'	56'	TBY	340'-284'	30-30	NA	CK	✓		TBY
18 SEPT	1850	01	GC	55 525	234'	258'	24'	TBY	234'-258'	25-25	NA	CK	✓		TBY
18 SEPT	1855	01	GC	54 525	258'	281'	23'	TBY	258'-281'	30-30	NA	CK	✓		TBY
18 SEPT	1900	01	GC	53 525	281'	304'	23'	TBY	281'-304'	30-30	NA	CK	✓		TBY
18 SEPT	1901	9844	JM	525/CAP 528	284'	279'	5'	TBY	284'-279'	30-30	NA	CK	✓		TBY
18 SEPT	1902	9844	JM	525 528	279'	159'	120'	TBY	279'-159'	30-30	NA	CK	✓		TBY
18 SEPT	1910	01	GC	52 525	304'	328'	24'	TBY	304'-328'	30-30	NA	CK	✓		TBY
18 SEPT	1915	01	GC	51 525	328'	335'	7'	TBY	328'-335'	30-30	NA	CK	✓	2062	TBY
18 SEPT	1917	01	GC	51 530	335'	351'	16'	TBY	335'-351'	25-25	NA	CK	✓		TBY
															SB
															SB
															SB
					TOTAL (1)		265								

NOTE: (1) SEAM LENGTH: THIS PAGE 265 ft (0 ft. EXT) (ft) ACCUMULATED 2467 (ft) (196 ft. EXT)

000345

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
19SEPT	0920	98	RS	526 521	0'	16.5'	16.5'	TBY	0'-16.5'	NA	OK	CK	✓		TBY
	0930	98	RS	521 526	0'	6'	6'	TBY	0'-6'	NA	OK	CK	✓		TBY
	0945	98	RS	526 527	0'	17'	17'	TBY	0'-17'	NA	OK	CK	✓		TBY
	0945	9844	JM *	525 530	0'	23'	23'	TBY	0'-23'	NA	NA	NA	—	SEAM CAPPED	TBY
	0955	9844	JM	528 529	0'	23'	23'	TBY	0'-23'	30-30	NA	CK	✓		TBY
	1000	01	GC	528 531	85'	123'	38'	TBY	85'-123'	30-30	NA	CK	✓		RH
	1010	98	RS	526 SR-18	0'	17'	17'	TBY	0'-17'	NA	OK	CK	✓		RH
	1015	98	RS	S-20 SR-18	0'	17'	17'	TBY	0'-17'	NA	OK	CK	✓		RH
	1020	01	GC	S-35 S-42	424'	436'	12'	TBY	424'-436'	30-30	NA	CK	✓		RH
	1035	9844	JM	S-26 S-28	108'	160'	52'	TBY	108'-160'	30-30	NA	CK	✓		RH
	1035	01	GC	S-29 S-31	339'	425'	86'	TBY	339'-425'	30-30	NA	CK	✓		RH
	1115	9844	JM	S-27 S-28	0'	84'	84'	TBY	0'-63', 63'-84'	30-30, 30-30	NA	CK	✓		RH
	1140	01	GC	S-28 S-33	0'	85'	85'	TBY	0'-85'	30-30	NA	CK	✓		RH
					TOTAL (1)		476.5								

NOTE: (1) SEAM LENGTH: THIS PAGE → 476.5 FT. (73.5 FT. EXT) * = SHINGLED WRONG DIRECTION (ft) ACCUMULATED 2943.5 (ft) (269.5 FT. EXT)

SR ⇒ SECONDARY REPAIR

000346

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
19 Sept	1332	9844	JM	531 533	0'	23'	23'	TBY	0-23	30-30	NA	CK	✓		RH
	1345	9844	JM	532 534	0'	23'	23'	TBY	0-23	30-29	NA	CK	✓		RH
	1355	01	GC	533 534	0'	85'	85'	TBY	0-85	30-30	NA	CK	✓		RH
	1400	01	GC	531 532	86'	425'	339'	TBY	86-425	30-30	NA	CK	✓		RH
	1515	02	JM	528 531	123'	339'	216'	TBY	123-339	30-29	NA	CK	✓		RH
	1520	01	GC	532 538	86'	120'	34'	TBY	86'-120'	30-30	NA	CK	✓		RH
	1530	01	GC	532 535	120'	423'	303'	TBY	120'-423'	30-30	NA	CK	✓		RH
	1525	02	JM	535 536	123'	442'	319'	TBY	123'-442'	30-30	NA	CK	✓		RH
	1640	01	GC	536 537	123'	440'	317'	TBY	123'-440'	30-30	NA	CK	✓		RH
	1700	02	JM	534 538	0'	86'	86'	TBY	0'-86'	30-30	NA	CK	✓	20062	RH
	1720	02	JM	538 539	0'	120'	120'	TBY	0'-120'	30-30	NA	CK	✓		RH
	1740	02	JM	539 540	0'	123'	123'	TBY	0'-123'	30-30	NA	CK	✓		RH
	1830	02	JM	536 539	0'	23'	23'	TBY	0'-23'	29-29	NA	CK	✓		RH
						TOTAL (1)	2011								

NOTE: (1) SEAM LENGTH: THIS PAGE 2011 FT (0 FT EXT) (ft) ACCUMULATED 4954.5 (ft) (269.5 FT EXT)

GQ0347

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL (P / F)	ACTION	QA ID
19 SEPT	1844	02	JM	535 539	120'	123'	3'	RH	120'-123'	30-30	NA	CK	✓		RH
↓	1846	02	JM	535 538	0'	23'	23'	RH	0'-23'	29-29	NA	CK	✓		RH
															SB
															SB
															SB
22 SEPT	0815	98	JM	520 526	17'	33'	16'	RH	17'-33'	NA	OK	CK	✓		RH
	0820	98	JM	514 520	0'	16'	16'	RH	0'-16'	NA	OK	CK	✓		RH
	0826	98	JM	SR 23 S-28	87'	107'	30'	RH	87'-107'	NA	OK	CK	✓		RH
	0830	98	JM	SR-23 S26	87'	107'	30'	RH	87'-107'	NA	OK	CK	✓		RH
	0835	4	JB	SR 29 S-27	14'	38'	24'	RH	14'-38'	NA	OK	CK	✓		RH
	0837	4	JB	SR-29 S-28	14'	38'	24'	RH	14'-38'	NA	OK	CK	✓		RH
	0852	4	JB	SR-30 S-27	0'	14'	14'	RH	0'-14'	NA	OK	CK	✓		RH
↓	0916	4	JB	SR-30 S-28	0'	14'	14'	RH	0'-14'	NA	OK	CK	✓		RH
					TOTAL (1)		194								

NOTE: (1) SEAM LENGTH: THIS PAGE 194 FT (168 FT-EXT) (ft) ACCUMULATED 5148.5 (ft) (437.5 FT-EXT)

SR7 SECONDARY REPAIR

000348

SHEET NO. 42

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P / F	ACTION	QA ID
22 SEPT	0937	98	JM	SR 38 S-32	86'	120'	33'	RH	86'-120'	NA	OK	CK	✓		RH
	0952	98	JM	SR 38 S 38	85'	118'	33'	RH	85'-118'	NA	OK	CK	✓		RH
	1038	98	JM	SR 46 S-38	15'	21'	6'	RH	15'-21'	NA	OK	CK	✓		RH
	1052	98	JM	SR 46 S 35	15'	21'	6'	RH	15'-21'	NA	OK	CK	✓		RH
	10:58	98	JM	SR 47 S-39	118	123	5	RH	118-123	NA	OK	CK	✓		RH
	11:00	98	JM	SR 47 S-35	120	124	4	RH	120-124	NA	OK	CK	✓		RH
	11:01	98	JM	SR 47 S-38	118	120	2	RH	118-120	NA	OK	CK	✓		RH
	11:06	98	JM	SR ~~48~~ 50 S-40	0	23	23	RH	0-23	NA	OK	CK	✓		RH
	11:10	98	JM	SR ~~48~~ 50 S-37	23	0	23	RH	23-0	NA	OK	CK	✓		RH
SGq		~~98~~	~~JM~~	SR ~~48~~ 50 S-39						NA	OK	CK	✓	2	RH SGq
SGq		~~98~~	~~JM~~	SR ~~48~~ 50 S-36						NA	OK	CK	✓	0	RH SGq
	11:00	98	JM	SR 47 S-36	123	124	1	RH	123-124	NA	OK	CK	✓	6	RH
	1236	4	JB	SR 50 S-37	2'	23'	21'	RH	2'-23'	NA	OK	CK	✓	2	RH
						TOTAL (1)	157								

NOTE: (1) SEAM LENGTH: THIS PAGE 157 FT (157 FT-EXT) (ft) ACCUMULATED 5305.5 (ft) (594.5 FT-EXT)

SR ⇒ SECONDARY REPAIR

000349

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30 ± 3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
22 SEPT	1242	4	JB	SR-50 S-40	2'	23'	21'	RH	2'-23'	NA	OK	CK	✓		RH
23 SEPT	1630	4	JB	SR 63 S-25 (S)	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1635	4	JB	SR-63 S-25 (N)	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1640	4	JB	SR-63 S 28 (S)	23'	46'	23'	RH	28'-76'	NA	OK	CK	✓		RH
	1645	4	JB	SR-63 S 28 (N)	23'	46'	23'	RH	28'-76'	NA	OK	CK	✓		RH
	1650	4	JB	SR 63 S 31 (S)	46'	70'	24'	RH	46'-70'	NA	OK	CK	✓		RH
	1655	4	JB	SR-63 S 31 (N)	46'	70'	24'	RH	46'-70'	NA	OK	CK	✓		RH
	1700	4	JB	SR 63 S 32 (S)	70'	94'	24'	RH	70'-94'	NA	OK	CK	✓		RH
				TOTAL (1)			185								

NOTE: (1) SEAM LENGTH: THIS PAGE 185 ft (0 ft·Ext) (ft) ACCUMULATED 5490.5 (ft) (594.5 ft·Ext)

SR ⇒ SECONDARY REPAIR

SG SG SG SG SG SG SG SG SG

000250

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO. PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
23 SEPT	1705	4	JB	SR 63 S32(N)	70'	94'	24'	RH	70'-94'	NA	OK	OK	✓		RH
	1710	4	JB	SR 63 S35(S)	94'	117'	23'	RH	94'-117'	NA	OK	OK	✓		RH
	1715	4	JB	SR 63 S35(N)	94'	117'	23'	RH	94'-117'	NA	OK	OK	✓		RH
	1720	4	JB	SR63 S36(S)	117'	140'	23'	RH	117'-140'	NA	OK	OK	✓		RH
	1725	4	JB	SR 63 S36(N)	117'	140'	23'	RH	117'-140'	NA	OK	OK	✓		RH
	1730	4	JB	SR 63 S37(S)	140'	148'	8'	RH	140'-148'	NA	OK	OK	✓		RH
	1735	4	JB	SR63 S37(N)	140'	148'	8'	RH	140'-148'	NA	OK	OK	✓		RH
						TOTAL (1)	132								

NOTE: (1) SEAM LENGTH: THIS PAGE 132 ft (132 ft Ext) (ft) ACCUMULATED 5622.5 (ft) (726.5 ft-Ext)

SR ⇒ SECONDARY REPAIR

0003351

2062

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
24 SEPT	1530	98	JM	SR 66 S10 (E)	130'	141'	11'	RH	130'-141'	NA	OK	OK	✓		RH
	1540	4	JB	SR 66 S10 (W)	130'	141'	11'	RH	130'-141'	NA	OK	OK	✓		RH
	1550	98	JM	SR 66 S9 (E)	141'	164'	23'	RH	141'-164'	NA	OK	OK	✓		RH
	1600	4	JB	SR 66 S9 (W)	141'	164'	23'	RH	141'-164'	NA	OK	OK	✓		RH
	1610	98	JM	SR 66 S8 (E)	164'	187'	23'	RH	164'-187'	NA	OK	OK	✓		RH
	1615'	4	JB	SR 66 S8 (W)	164'	187'	23'	RH	164'-187'	NA	OK	OK	✓		RH
	1620	98	JM	SR 66 S7 (E)	187'	211'	24'	RH	187'-211'	NA	OK	OK	✓		RH
	1630	4	JB	SR 66 S7 (W)	187'	211'	24'	RH	187'-211'	NA	OK	OK	✓		RH
	1638	98	JM	SR 68 S-9	141'	164'	23'	RH	141'-164'	NA	OK	OK	✓		RH
	1400	98	JM	SR 68 S-25	141'	164'	23'	RH	141'-164'	NA	OK	OK	✓		RH
	1410	4	JB	SR 68 S-8	164'	187'	23'	RH	164'-187'	NA	OK	OK	✓		RH
	1420	4	JB	SR 68 S-25	164'	187'	23'	RH	164'-187'	NA	OK	OK	✓		RH
	1430	4	JB	SR 68 S-7	187'	211'	24'	RH	187'-211'	NA	OK	OK	✓		RH
				TOTAL (1)			278								

NOTE: (1) SEAM LENGTH: THIS PAGE 278 FT (278 FT-EXT) (ft) ACCUMULATED 5900.5 (ft) (1004.5 FT-EXT)

SR2 SECONDARY REPAIR

000352

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (20±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
24 SEPT	1440	4	JB	SR 68 S-25	187'	211'	24'	RH	187'-211'	NA	OK	CK	✓		RH
	1450	98	JM	SR 68 S-6	211'	234'	23'	RH	211'-234'	NA	OK	CK	✓		RH
	1500	98	JM	SR 68 S-25	211'	234'	23'	RH	211'-234'	NA	OK	CK	✓		RH
	1510	98	JM	SR 68 S-5	234'	237.5'	3.5'	RH	234'-237.5'	NA	OK	CK	✓		RH
	1525	98	JM	SR 68 S 25	234'	237.5'	3.5'	RH	234'-237.5'	NA	OK	CK	✓		RH
	1545	98	JM	SR 84 S-2	304'	328'	24'	RH	304'-328'	NA	OK	CK	✓		RH
	1550	98	JM	SR 84 S-25	304'	328'	24'	RH	304'-328'	NA	OK	CK	✓		RH
	1550	4	JB	SR-85 S-1	328'	351'	23'	RH	328'-351'	NA	OK	CK	✓		RH
	1600	4	JB	SR-85 S-25	328'	351'	23'	RH	328'-351'	NA	OK	CK	✓		RH
	1610	4	JB	SR-87 S-30	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1620	4	JB	SR-87 S-25	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1810	4	JB	SI-57 S-37	242'	232'	10'	RH	242'-232'	NA	OK	CK	✓		RH
	1820	4	JB	SI-56 S-37	232'	218'	14'	RH	232'-218'	NA	OK	CK	✓		RH
					TOTAL (1)		241								

NOTE: (1) SEAM LENGTH: THIS PAGE 241 ft (241 ft-Exr) (ft) ACCUMULATED 6141.5 (ft) (1245.5 ft-Exr)

NOTE: SI INDICATES CELL-1 TIE-IN.

SR ⇒ SECONDARY REPAIR

000353

20062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
24 SEPT	1825	4	JB	SI-54 S-36	218'	203'	15'	RH	218'-203'	NA	OK	CK	✓		MH
↓	1828	4	JB	SI-53 S-36	203'	195'	8'	RH	203'-195'	NA	OK	CK	✓		MH
	1830	4	JB	SI-53 S-35	195'	188'	7'	RH	195'-188'	NA	OK	CK	✓		MH
	1832	4	JB	SI-51 S-35	188'	174'	14'	RH	188'-174'	↓	↓	CK	✓		MH
	1835	4	JB	SI-49 S-35	174'	172'	2'	RH	174'-172'			CK	✓		MH
	1840	4	JB	SI-49 S-42	172'	158'	14'	RH	172'-158'			CK	✓		MH
	1848	4	JB	SI-48 S-42	158'	148'	10'	RH	158'-148'			CK	✓		MH
	1852	4	JB	SI-48 S-41	148'	145'	3'	RH	148'-145'			CK	✓		MH
	1858	4	JB	SI-45 S-41	145'	131'	14'	RH	145'-131'			CK	✓		MH
	1960	4	JB	SI-43 S-41	131'	124'	7'	RH	131'-124'			CK	✓		MH
	1905	4	JB	SI-43 S-29	124'	116'	8'	RH	124'-116'			CK	✓		MH
	1910	4	JB	SI-42 S-29	116'	101'	16'	RH	116'-101'			CK	✓		MH
↓	1900	98	JM	SI-39 S-30	100'	87'	13	RH	100'-87'	↓	↓	CK	✓		MH
					TOTAL (1)		131								

NOTE: (1) SEAM LENGTH: THIS PAGE 131 ft (131 ft-Ext) (ft) ACCUMULATED 6272.5 (ft) (1376.5 ft-Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

SR ⇒ SECONDARY REPAIR

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000354

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P / F	ACTION	QA ID
24 SEPT	1905	98	JM	SI-38 S-30	87'	80'	7'	RH	87'-80'	NA	OK	CK	✓		MH
↓	1910	98	JM	SI-38 S-1	80'	72'	8'	RH	80'-72'	NA	OK	CK	✓		MH
	1915	98	JM	SI-34 S-1	72'	64'	8'	RH	72'-64	NA	OK	CK	✓		MH
						TOTAL (1)	23								

NOTE: (1) SEAM LENGTH: THIS PAGE 23 FT (23 FT·EXT) (ii) ACCUMULATED 6295.5 (ii) (1399.5 FT·EXT)

NOTE: SI INDICATES CELL-1 TIE-IN.

000355

2096

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
25 SEPT	0830	4	JB	536 CAP	132'	149'	17'	RH	132'-149'	NA	OK	CL	✓		RH
	0910	4	JB	535 CAP	132'	149'	17'	RH	132'-149'				✓		RH
	0940	4	JB	536 CAP	149'	173'	24'	RH	149'-173'				✓		RH
	1010	4	JB	535 CAP	149'	173'	24'	RH	149'-173'				✓		RH
	1090	4	JB	536 CAP	173'	194'	21'	RH	173'-194'				✓		RH
	1115	4	JB	535 CAP	173'	194'	21'	RH	173'-194'				✓		RH
	1000	98	JM	SR-124 S-41	425'	436'	11'	RH	425'-436'				✓		RH
	1015	98	JM	SR-124 S-42	425'	436'	11'	RH	425'-436'				✓		RH
	1030	98	JM	SR-123 S-29	425'	436'	11'	RH	425'-436'				✓		RH
	1045	98	JM	SR-123 S-41	425'	436'	11'	RH	425'-436'				✓		RH
	1610	4	JB	S-27 CAP	65'	87'	22'	RH	65'-87'				✓		RH
	1645	4	JB	S-21 CAP	87'	65'	22'	RH	87'-65'				✓		RH
	1700	4	JB	S-27 CAP	32'	65'	33'	RH	32'-65'				✓		RH
					TOTAL (1)		245								

NOTE: (1) SEAM LENGTH: THIS PAGE 245 ft (245 ft Ext) (ft) ACCUMULATED 6540.5 (ft) (1644.5 ft Ext)

SR → SECONDARY REPAIR

000356

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
25 SEPT	1735	04	JB	521 CAP	65'	32'	32'	RH	65-32	NA	OK	CK	✓		RH
	1750	04	JB	527 CAP	0'	35'	32'	RH	0-35	NA	OK	CK	✓		RH
	1800	04	JB	521 CAP	0'	32'	32'	RH	0-32	NA	OK	CK	✓		RH
	1730	9860	MM	543 537	436'	241'	195'	RH	436-241	30-36	NA	CK	✓		RH
	1820	9860	MM	544 537	241'	123'	118'	RH	241-123	30-30	NA	CK	✓		RH
	1845	9860	MM	544 540	123'	83'	40'	RH	123-83	NA	NA	NA		SEAM CAPPED	MH
	1855	9860	MM	545 540	83'	0'	83'	RH	83-0	30-30	NA	CK	✓		RH
	1600	98	JM	SI 56 CAP	222'	217'	5'	RH	222-217	NA	OK	CK	✓		MH
	1610	98	JM	537 CAP	222'	218'	4'	RH	222-218	NA	OK	CK	✓		MH
	1620	98	JM	SI 54 CAP	217'	203'	14'	RH	217-203	NA	OK	CK	✓		MH
	1630	98	JM	536 CAP	218'	195'	23'	RH	218-195	NA	OK	CK	✓		MH
	1700	98	JM	SI 53 CAP	203'	189'	14'	RH	203-189	NA	OK	CK	✓		MH
	1720	98	JM	535 CAP	195'	172'	23'	RH	195-172	NA	OK	CK	✓		MH
					TOTAL (1)		615								

NOTE: (1) SEAM LENGTH: THIS PAGE 615 ft (179 ft Exr) (ft) ACCUMULATED 7155.5 (ft) (1823.5 ft Exr)

NOTE: SI INDICATES CELL-1 TIE-IN.

000357

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
25 SEPT	1740	98	JM	SI 51 CAP	189'	174'	15'	RH	189-174'	NA	OK	JM	✓		MH
↓	1745	↓	↓	SI 49 CAP	174'	158'	16'	RH	174'-158'	↓	↓	↓	✓		MH
	1750			SI 42 CAP	172'	158'	14'	RH	172'-158'				✓		MH
	1755			SI 57 CAP	246'	232'	14'	RH	246'-232'				✓		MH
	1800			S 37 CAP	242'	230'	12'	RH	242'-230'				✓		MH
						TOTAL (1)	71								

NOTE: (1) SEAM LENGTH: THIS PAGE 71 ft (71 ft EXT) (ft) ACCUMULATED 7226.5 (ft) (1894.5 ft EXT)

NOTE: SI INDICATES CELL-1 TIE-IN.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
26 SEPT	1100	02	MM	545 547	0'	83'	83'	RP	0-83	30-30	NA	CK	✓		RH
	1120	02	MM	544 547	83'	86'	3'	RP	83-86				✓		RH
	1140	02	MM	544 546	86'	241'	155'	RP	86-241				✓		RH
	1400	02	MM	547 546	241'	436'	195'	RP	241-436				✓		RH
	1410	02	MM	550 547	0'	11'	11'	RP	0-11				✓		RH
	1415	02	MM	550 549	0'	23'	23'	RP	0-23				✓		RH
	1420	02	MM	549 547	11'	81'	70'	RP	11-81				✓		RH
	1430	02	MM	548 549	0'	23'	23'	RP	0-23				✓		RH
	1435	02	MM	548 547	81'	86'	5'	RP	81-86	30-30 ~~NA~~ RH	RH ~~OK~~ NA		✓		RH
	1115	02	MM	544 545	0'	23'	23'	RP	0'-23'	30-30	NA		✓		RH
	1440	02	MM	547 546	0'	23'	23'	RP	0'-23'	30'-30'	NA		✓		RH
	1450	02	MM	548 546	86'	436'	350'	RP	86'-436'	~~28-28~~ 30-30 (N)	NA		✓		RH
	1715	01	MM	551 552	0'	23'	23'	RP	0'-23'	28-28	NA		✓		RH
						TOTAL (1)	987								

2062

NOTE: (1) SEAM LENGTH: THIS PAGE 987 FT (0 FT EXT) (ft) ACCUMULATED 8213.5 (ft) (1894.5 FT. EXT)

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000359

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
26 SEPT	1730	01	MM	551 552	0'	23'	23'	RP	0'-23'	30 - 30	NA	Ok	✓		RH
	1450	98	JM	544 543	0'	23'	23'	RH	0'-23'	NA	OK		✓		RH
	1500	02	MM	553 550	0'	11'	11'	RH	0-11	30-30	NA		✓		RH
	1510	02	MM	553 549	11'	83'	72'	RH	11-83				✓		RH
	1540	02	MM	553 548	83'	85'	2'	RH	83-85				✓		RH
	1600	02	MM	548 551	85'	396'	311'	RH	85-396				✓		RH
	1715	02	MM	548 552	396'	436'	40'	RH	396-436				✓		RH
	1050	98	JM	541 CAP	131'	145'	14'	RH	131-145	NA	OK		✓		RH
	1115	98	JM	541 CAP	145'	148'	3'	RH	145-148	NA	OK		✓		RH
	1130	98	JM	542 CAP	148'	158'	10'	RH	148'-158	NA	OK		✓		RH
	1015	4	JB	544 CAP	83'	120'	37'	RH	83-120	NA	OK		✓		RH
	1045	4	JB	540 CAP	83'	120'	38'	RH	83-120	NA	OK		✓		RH
	1320	4	JB	525 CAP	141'	168'	27'	RH	141-168	NA	OK		✓		RH
				TOTAL (1)			~~1916~~ 611								

NOTE: (1) SEAM LENGTH: THIS PAGE 611 ft (152 ft-Ext) (ii) ACCUMULATED 8824.5 (ii) (2046.5 ft-Ext)

093000

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
26 SEPT	1355	4	JB	59 CAP	141'	164'	23'	RH	141-164'	NA	OK	Ok	✓		RH
↓	1400	4	JB	58 CAP	164'	168'	4'	RH	164-168	↓	↓	↓	✓		RH
↓	1435	4	JB	56 CAP	213'	218'	5'	RH	213-218	↓	↓	↓	✓		RH
↓	1445	4	JB	525 CAP	213'	218'	5'	RH	213-218	↓	↓	↓	✓		RH
↓	1330	98	JM	SI 43 CAP	124'	116'	8'	RH	124-116	↓	↓	↓	✓		RH
↓	1340	98	JM	SI 40 CAP	116'	102'	14'	RH	116-102	↓	↓	↓	✓		RH
↓	1355	98	JM	SI 42 CAP	102'	100'	2'	RH	102-100	↓	↓	↓	✓		RH
↓	1357	98	JM	SI 39 CAP	100'	87'	13'	RH	100-87	↓	↓	↓	✓		RH
↓	1410	98	JM	SI 38 CAP	87'	80'	7'	RH	87-80	↓	↓	↓	✓		RH
↓	0900	98	JM	SI 56 CAP	232'	222'	10'	RH	232-222	↓	↓	↓	✓	20662	RH
↓	0925	98	JM	537 CAP	230'	222'	8'	RH	230-222	↓	↓	↓	✓		RH
↓	0950	98	JM	SI 48 CAP	158'	148'	10'	RH	158-148	↓	↓	↓	✓		RH
↓	1005	98	JM	SI 49 CAP	148'	145'	3'	RH	148-145	↓	↓	↓	✓		RH
					TOTAL (1)		112								

NOTE: (1) SEAM LENGTH: THIS PAGE 112 FT (112 FT · EXT) (ft) ACCUMULATED 8936.5 (ft) (2158.5 FT - EXT)

NOTE: SI INDICATES CELL-1 TIE-IN.

000361

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30.3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
26 SEPT	1010	98	JM	SI 45 CAP	145'	131'	14'	RH	145-131	NA	Ok	JM	✓		MH
	1025	98	JM	543 CAP	131'	124'	7'	RH	131-124			JM	✓		MH
	1035	98	JM	SI 48 CAP	124'	131'	7'	RH	124-131			JM	✓		MH
	1420	98	JM	SI 38 CAP	80'	75'	5'	RH	80-75			JM	✓		MH
	1425	98	JM	S-1 CAP	75'	80'	5'	RH	75-80			JM	✓		MH
	1430	98	JM	530 CAP	86'	87'	7'	RH	80-87			CK	✓		RH
	1438	98	JM	530 CAP	87'	101'	14'	RH	87-101			CK	✓		RH
	1445	98	JM	529 CAP	101'	116'	15'	RH	101-116			CK	✓		RH
	1535	98	JM	529 CAP	116'	124'	8'	RH	116-124			CK	✓		RH
						TOTAL (1)	82 ~~969~~								

NOTE: (1) SEAM LENGTH: THIS PAGE 82 FT (82 FT · Ext) (11) ACCUMULATED 9018.5 (11) (2240.5 FT · Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

000362

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
28 SEPT	0935	04	JB	535 CAP	197'	259'	62'	RH	197-259	NA	Ok	CK	✓		RH
	1115	04	JB	536 CAP	259'	197'	62'	RH	259-197			CK	✓		RH
	1350	03	JM	SI 61 CAP	275'	288'	13'	RH	275-288			CK	✓		RH
	1640	03	JM	SI 61 CAP	288'	302'	14'	RH	288-302			JM	✓		MH
	1700	03	JM	SI 64 548	302'	309'	7'	RH	302'-309'			JM	✓		MH
	1730	03	JM	SI 64 552	309'	318'	8'	RH	309'-318			JM	✓		MH
	1740	03	JM	SI 67 552	318'	332'	15'	RH	318-332			JM	✓		MH
	1830	03	JM	SI 68 554	332'	346'	14'	RH	332-346			JM	✓		MH
	1350	01	JI	555 554	0'	23'	23'	RH	0-23	30-30	NA	CK	✓		RH
	1410	01	JI	555 553	0'	84'	84'	RH	0-84	30-30	NA	CK	✓		RH
	1430	01	JI	554 551	85'	399'	314'	RH	85-399	30-30	NA	CK	✓		RH
	1530	01	JI	554 552	399'	436'	37'	RH	399-436	30-30	NA	CK	✓		RH
	1610	01	JI	555 557	0'	84'	84'	RH	0'-84'	30-30	NA	CK	✓		RH
					TOTAL (1)		737								

NOTE: (1) SEAM LENGTH: THIS PAGE 737 ft (195 ft-Ext) (ft) ACCUMULATED 9755.5 (ft) (2435.5 ft-Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

000363

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
28 SEPT	1620	01	JI	554 557	84'	121'	37'	RH	84-121	30-30	NA	CK	✓		RH
	1640	01	JI	554 556	121'	436'	315'	RH	121-436	30-30	NA	CK	✓		RH
	1650	01	JI	556 557	0'	23'	23'	RH	0-23	30-30	NA	CK	✓		RH
	1020	03	JM	543 CAP	242'	265'	23'	RH	242-265	NA	OK	CK	✓		RH
	1030	03	JM	546 CAP	265'	268'	3'	RH	265-268			CK	✓		RH
	1032	03	JM	SI 57 CAP	242	246	4'	RH	242-246			CK	✓		RH
	1035	03	JM	SI 58 CAP	246	261	15'	RH	246-261			CK	✓		RH
	1045	03	JM	SI 60 CAP	261'	268'	7'	RH	261-268			CK	✓		RH
	1052	03	JM	SI 57 543	242	246	4'	RH	242-246			CK	✓		RH
	1100	03	JM	SI 58 543	246	261	15'	RH	246-261			CK	✓		RH
	1115	03	JM	SI 60 543	261	265	4'	RH	261-265			CK	✓		RH
	1130	03	JM	SI 60 546	265	275	10'	RH	265-275			CK	✓		RH
	1133	03	JM	SI 61 548	288	290	2'	RH	288-290			CK	✓		RH
				TOTAL (1)			462								

NOTE: (1) SEAM LENGTH: THIS PAGE 462 ft (87 ft · Ext) (II) ACCUMULATED 10,217.5 (II) (2522.5 ft-Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

000364

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
28 SEPT	1140	03	JM	SI 62 548	290'	304'	14'	RH	290-304	NA	OK	OK	✓		RH
29 SEPT	0915	04	JB	SR 204 535 N	0'	23'	23'	RH	0-23	NA	OK	OK	✓		RH
	0925	04	JB	SR 204 528 N	23'	46'	23'	RH	23-46				✓		RH
	0935	04	JB	SR 204 531 N	46'	69'	23'	RH	46-69				✓		RH
	0950	04	JB	SR 204 532 N	69'	92'	23'	RH	69-92				✓		RH
	1020	04	JB	SR 204 535 N	92'	115'	23'	RH	92-115'				✓		RH
	1050	04	JB	SR 204 536 N	115'	138'	23'	RH	115-138'				✓		RH
	1110	04	JB	SR 204 537 N	138'	155'	17'	RH	138-155				✓		RH
	1400	04	JB	SR 204 537 S	155	138'	17'	RH	155-138				✓		RH
	1420	04	JB	SR 204 536 S	138	115'	23'	RH	138-115				✓		RH
					TOTAL (1)		209								

NOTE: (1) SEAM LENGTH: THIS PAGE 209 FT (209 FT-EXT) (II) ACCUMULATED 10,426.5 (II) (2731.5 FT EXT)

NOTE: SI INDICATES CELL-1 TIE-IN.

SR = SECONDARY REPAIR

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P/F	ACTION	QA ID
29 SEPT	1430	4	JB	SR 204 535 S	115'	92'	23'	RH	115-92	NA	OK	CK	✓		RH
	1450	4		SR 204 532 S	92'	69'	23'	RH	92-69				✓		RH
	1505	4		SR 204 531 S	69'	46'	23'	RH	69-46				✓		RH
	1520	4		SR 204 528 S	46'	23'	23'	RH	46-23				✓		RH
	1540	4		SR 204 525 S	23'	0'	23'	RH	23-0				✓		RH
	1550	4		537 540	0'	23'	23'	RH	0-23				✓		RH
	1500	01	JI	558 556	121'	436'	314'	RH	121-436	30-30	NA		✓		RH
	1644	01		558 559	0'	23'	23'	RH	0-23				✓		RH
	1655	01		557 559	0'	85'	85'	RH	0-85				✓		RH
	1710	01		558 557	85'	121'	36'	RH	85-121				✓		RH
	1630	01		561 560	0'	23'	23'	RH	0-23				✓		RH
	1722	01		561 563	0'	23'	23'	RH	0-23				✓		RH
	1730	01		563 564	0'	23'	23'	RH	0-23				✓		RH
					TOTAL (1)		665								

NOTE: (1) SEAM LENGTH: THIS PAGE 665 FT (138 FT EXT) (II) ACCUMULATED 11,091.5 (II) (2869.5 FT EXT)

SR ⇒ SECONDARY REPAIR

000366

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
29 SEPT	1740	01	JI	59/64	0'	30'	30'	RH	0-30	30-30	NA	CK	✓		RH
	1745	01	JI	59/67	30'	85'	55'	RH	30-85				✓		RH
	1800	01	JI	58/61	85'	188'	103'	RH	85-188				✓		RH
	1815	01	JI	58/60	188'	436'	248'	RH	188-436				✓		RH
	1715	9860	MM	62/65	0'	23'	23'	RH	0-23				✓		RH
	1720	9860	MM	60/62	436'	280'	156'	RH	436-280				✓		RH
	1805	9860	MM	60/65	280'	188'	92'	RH	280-188				✓		RH
	1818	9860	MM	61/65	188'	85'	103'	RH	188-85				✓		RH
	1825	9860	MM	63/65	85'	30'	55'	RH	85-30				✓		RH
	1845	9860	MM	64/65	0'	30'	30'	RH	0-30				✓		RH
				TOTAL (1)			895								

NOTE: (1) SEAM LENGTH: THIS PAGE 895 FT (0 FT · Ext) (ft) ACCUMULATED 11,986.5 (ft) (2869.5 Ft · Ext)

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
30 SEPT	0945	03	JM	SI 70 554	346'	356'	10'	RH	346-356'	NA	OK	CK	✓		MH
	0955	03	JM	SI 70 556	356'	358'	2'	RH	356-358'	NA	OK	CK	✓		MH
	1000	03	JM	SI 70 556	358'	360'	2'	RH	358-360	NA	OK	CK	✓		MH
	1020	03	JM	SI 71 556	360'	374'	14'	RH	360-374	NA	OK	CK	✓		MH
	1040	03	JM	SI 72 556	374'	379'	5'	RH	374-379	NA	OK	CK	✓		MH
	1100	9860	MM	566 567	0'	23'	23'	RH	0-23	30-30	NA	CK	✓		MH
	1115	03	JM	SI 72 558	379'	389'	10'	RH	379-389	NA	OK	CK	✓		MH
	1125	9860	MM	562 566	436'	281'	155'	RH	436-281	30-30	NA	CK	✓		MH
	1140	03	JM	SI 74 558	389'	403'	14'	RH	389-403	NA	OK	CK	✓		MH
	1200	9860	MM	565 566	281'	128'	153'	RH	281-128	30-30	NA	CK	✓		MH
	1240	9860	MM	565 567	128'	0'	128'	RH	128'-0'	30-30	NA	CK	✓		MH
	1320	03	JM	SI 75 560	404'	419'	15'	RH	404-419	NA	OK	CK	✓		MH
	1350	03	JM	SI 76 560	419'	426'	7'	RH	419-426	NA	OK	CK	✓		MH
					TOTAL (I)		538								

NOTE: (I) SEAM LENGTH: THIS PAGE 538 ft (79 ft·Ext) (II) ACCUMULATED 12,524.5 (II) (2948.5 ft·Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

000268

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30± 3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
30 SEPT	1405	03	JM	SI 76 S62	426'	433'	7'	RH	426-433	NA	OK	CK	✓		MH
	1420	03	JM	SI 77 S-62	433'	446'	13'	RH	433-446	NA	OK	CK	✓		MH
	1400	01	GC	68/69	0'	23'	23'	RH	0'-23'	30 - 30	NA	CK	✓		CS
	1422	01	GC	69/67	0'	128'	128'	RH	0'-128'			CK	✓		CS
	1445	01	GC	69/66	128'	225'	97'	RH	128'-225'			CK	✓		CS
	1500	01	GC	68/66	225'	436'	211'	RH	225'-436'			CK	✓		RH
	1550	01	GC	71/70	0'	23'	23'	RH	0'-23'			CK	✓		CS
	1620	01	GC	69/71	0'	225'	225'	RH	0'-225'			CK	✓		CS
	1707	01	GC	71/68	225'	321'	96'	RH	225'-321'			CK	✓	2062	CS
	1722	01	GC	68/70	321'	436'	115'	RH	321'-436'			CK	✓		CS
	1700	9860	MM	72/70	436'	321'	115'	CS	436'-321'			CK	✓		CS
	1726	9860	MM	71/72	325'	88'	237'	CS	325'-88'			CK	✓		CS
	1740	01	GC	72/73	0'	23'	23'	CS	0'-23'			CK	✓		CS
					TOTAL (1)		1313								

NOTE: (1) SEAM LENGTH: THIS PAGE 1313 FT (20 FT-Ext) (ft) ACCUMULATED 13,837.5 (ft) (2968.5 ft-Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P	F	ACTION	QA ID
30 SEPT	1819	9860	MM	71/73	88'	0'	88'	RH	88'-0'	30-30	NA	CK	✓			CS
1 OCT	0835	04	JB	SI 79 562	446'	450'	4'	CS	446'-450'	NA	OK	CK	✓			MH
	0837	04	JB	SI 79 566	450'	462'	12'	CS	450'-462'	NA	OK	CK	✓			MH
	0843	04	JB	SI 80 566	462'	473'	11'	CS	462'-473'	NA	OK	CK	✓			MH
	0913	04	JB	SI 80 568	473'	476'	3'	CS	473'-476'	NA	OK	CK	✓			MH
	0938	04	JB	SI 81 568	476'	491'	15'	CS	476'-491'	NA	OK	CK	✓			MH
	1010	01	GC	574 575	0'	23'	23'	CS	0'-23'	30-30	NA	CK	✓			CS
	1007	04	JB	SI 83 568	491'	497'	6'	CS	491'-497'	NA	OK	CK	✓			MH
	1019	01	GC	573 575	0'	86'	86'	CS	0'-86'	30-30	NA	CK	✓			CS
					TOTAL (1)		248									

NOTE: (1) SEAM LENGTH: THIS PAGE 248 FT (51 FT·Ext) (1) ACCUMULATED 14,085.5 (1) (3019.5 FT·Ext)

NOTE: SI INDICATES CELL-1 TIE-IN.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
1 OCT	1036	01	GC	72/75	86'	198'	112'	CS	86'-198'	30-30	NA	CK	✓		CS
	1050	01	GC	72/74	198'	436'	238'	CS	198'-436'	30-30	NA	CK	✓		CS
	1053	04	JB	SI 83 570	497'	506'	7'	CS	497'-506'	NA	OK	CK	✓		MH
	1128	04	JB	SI 84 570	506'	520'	14'	CS	506'-520'	NA	OK	CK	✓		MH
	1142	04	JB	SI 85 5-72	520'	535'	15'	CS	520'-535'	NA	OK	CK	✓		MH
	1145	01	GC	576 577	0'	23'	23'	CS	0'-23'	30-30	NA	CK	✓		CS
	1205	9860	JM	74/76	436'	285'	151'	CS	436'-285'	30-30	NA	CK	✓		CS
	1245	9860	JM	74/77	285'	198'	87'	CS	285'-198'	30-30	NA	CK	✓		CS
	1320	9860	JM	75/77	196'	169'	27'	CS	196'-169'	30-30	NA	CK	✓		CS
	1325	01	GC	77/78	0'	23'	23'	CS	0'-23'	30-30	NA	CK	✓		CS
	1327	04	JB	SI 87 572	535'	543'	8'	CS	535'-543'	NA	OK	CK	✓		RH
	1333	9860	JM	75/78	169'	0'	169'	CS	169'-0'	30-30	NA	CK	✓		CS
	1344	04	JB	SI 87 574	543'	549'	6'	CS	543'-549'	NA	OK	CK	✓		RH
					TOTAL (1)		880								

NOTE: (1) SEAM LENGTH: THIS PAGE 880 FT (50 FT-EXT) (II) ACCUMULATED 14,965.5 (II) (3069.5 FT-EXT)

NOTE: SI INDICATES CELL-2 TIE IN.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
1 OCT	1419	04	JB	SI 88 574	549'	564'	15'	CS	549-564	NA	OK	CK	✓		RH
	1420	01	GC	80/79	0'	23'	23'	CS	0-23	30-30	NA	CK	✓		RH
	1430	01	GC	78/80	0'	83'	83'	CS	0-83	30-30	NA	CK	✓		RH
	1447	01	GC	78/79	83'	169'	86'	CS	83-169	30-30	NA	CK	✓		CS
	1500	01	GC	77/79	169'	285'	116'	CS	169-285	30-30	NA	CK	✓		CS
	1503	04	JB	SI 89 574	564'	566'	2'	CS	564-566	NA	OK	CK	✓		RH
	1523	01	GC	76/79	285'	436'	151'	CS	436-151	30-30	NA	CK	✓		CS
	1525	9860	MM	79/81	181'	436'	255'	CS	181-436	30-30	NA	CK	✓		RH
	1602	01	GC	81/82	0'	23'	23'	CS	0-23	30-30	NA	CK	✓		RH
	1613	01	GC	82/84	0'	181'	181'	CS	0-181	30-30	NA	CK	✓		RH
	1624	9860	MM	79/82	85'	181'	96'	CS	85-181	30-30	NA	CK	✓		RH
	1657	9860	MM	80/82	0'	85'	85'	CS	0-85	30-30	NA	CK	✓		RH
	1705	01	GC	81/84	181'	279'	98'	CS	181-279	30-30	NA	CK	✓		RH
					TOTAL (1)		1214								

NOTE: (1) SEAM LENGTH: THIS PAGE 1214 FT (17 FT. Gxr) (ii) ACCUMULATED 16,179.5 (ii) (3086.5 FT Gxr)

NOTE: SI INDICATES CELL-1 TIE-IN.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (~~30~~ 3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
1 OCT	1717	01	GC	83/84	0'	23'	23'	CS	0-23	30-30	NA	CK	✓		RH
	1725	01	GC	81/83	279'	436'	157'	CS	279-436	30-30	NA	CK	✓		RH
	1542	04	JB	SI 89 576	566'	578'	12'	CS	566-578	NA	OK	CK	✓		RH
	1559	04	JB	SI 91 576	578'	590'	12'	CS	578-590	NA	OK	CK	✓		RH
	1620	04	JB	SI 91 579	590'	593'	3'	CS	590-593	NA	OK	CK	✓		RH
	1630	04	JB	SI 92 579	593'	607'	14'	CS	593-607	NA	OK	CK	✓		RH
	1636	04	JB	SI 93 579	607'	614'	7'	CS	607-614	NA	OK	CK	✓		RH
	1640	04	JB	SI 93 581	614'	622'	8'	CS	614-622	NA	OK	CK	✓		RH
	1649	04	JB	SI 95 581	622'	637'	15'	CS	622-637	NA	OK	CK	✓		RH
	1705	04	JB	SI 96 583	637'	651'	14'	CS	637-651	NA	OK	CK	✓		RH
						TOTAL (1)	265								

NOTE: (1) SEAM LENGTH: THIS PAGE 265 ft (85 ft·Ext) (ft) ACCUMULATED 16,444.5 (ft) (3171.5 ft·Ext)

NOTE: INDICATES CELL-1 TIE-IN.

000373

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30.3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
2 OCT	1400	01	GC	86/87	77'	0'	77'	RH	77-0	34-30	NA	CK	✓		RH
	1403	9860	JM	85/86	0'	77'	77'	RH	0-77				✓		RH
	1418	01	GC	87/88	78'	0'	78'	RH	78-0				✓		RH
	1430	9860	JM	88/89	0'	78'	78'	RH	0-78				✓		RH
	1430	01	GC	89/90	78'	0'	78'	RH	78-0				✓		RH
	1455	9860	JM	90/91	0'	78'	78'	RH	0-78				✓		RH
	1504	01	GC	85/92	77'	0'	77'	RH	77-0				✓		RH
	1523	9860	JM	92/93	76'	0'	76'	RH	76-0				✓		RH
	1526	01	GC	93/94	0'	76'	76'	RH	0-76				✓		RH
	1555	9860	JM	94/95	76'	0'	76'	RH	0-76				✓		RH
	1557	01	GC	95/96	0'	76'	76'	RH	0-76				✓		RH
	1611	01	GC	96/97	0'	76'	76'	RH	0-76				✓		RH
	1622	9860	JM	97/98	76'	0'	76'	RH	76-0				✓		RH
					TOTAL (1)		999								

NOTE: (1) SEAM LENGTH: THIS PAGE 999 FT (0 FT. EXT) (ii) ACCUMULATED 17443.5 (ii) (3171.5 FT EXT)

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL	ACTION	QA ID
2 OCT	1637	9860	JM	98/99	36'	0'	36'	RH	36'-0'	30-30	NA	CK	✓		RH
	1700	9860	JM	99/100	15'	0'	15'	RH	15'-0'	30-30	NA	CK	✓		RH
	1500	04	JB	SI 98 583	651'	660'	9'	MH	651'-660'	NA	OK	CK	✓		RH
	1520	04	JB	SI 98 3-91	660'	665'	5'	MH	660'-665'	NA	OK	CK	✓		RH
	1550	04	JB	SI 132 5-91	665'	680'	15'	MH	665'-680'	NA	OK	CK	✓		RH
	1612	04	JB	SI 12 591	680'	734'	54'	MH	680'-734'	NA	OK	CK	✓		RH
	1703	01	GC	84/98	117'	137'	20'	RH	117'-137'	30-30	NA	CK	✓		RH
	1709	01	GC	84/97	137'	160'	23'	RH	137'-160'	30-30	NA	CK	✓		RH
	1714	01	GC	84/96	160'	183'	23'	RH	160'-183'	30-30	NA	CK	✓		RH
	1719	01	GC	84/95	183'	206'	23'	RH	183-206	30-30	NA	CK	✓	2062	RH
	1724	01	GC	84/94	206'	229'	23'	RH	206-229	30-30	NA	CK	✓		RH
	1728	01	GC	84/93	229'	252'	23'	RH	229-252	30-30	NA	CK	✓		RH
	1732	01	GC	84/92	252'	275'	23'	RH	252-275	30-30	NA	CK	✓		RH
					TOTAL (1)		292								

NOTE: (1) SEAM LENGTH: THIS PAGE 292 ft (83 ft · Ext) (ft) ACCUMULATED 17,735.5 (ft) (3254.5 ft · Ext)

NOTE: INDICATES CBU-2 TIE-IN.

000375

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
2 OCT	1736	01	GC	84/85	275'	279'	4'	RH	275-279	30-30	NA	CK	✓		RH
↓	1742	01	GC	83/85	279'	298'	19'	RH	279-298	↓	↓	↓	✓		RH
	1755	01	GC	83/86	298'	321'	23'	RH	298-321				✓		RH
	1800	01	GC	83/87	321'	344'	23'	RH	321-344				✓		RH
	1805	01	GC	83/88	344'	367'	23'	RH	344-367				✓		RH
	1810	01	GC	83/89	367'	390'	23'	RH	367-390				✓		RH
	1815	01	GC	83/90	390'	413'	23'	RH	390-413				✓		RH
	1820	01	GC	83/91	413'	436'	23'	RH	413-436				✓		RH
						TOTAL (1)	161								

NOTE: (1) SEAM LENGTH: THIS PAGE 161 FT (0 FT · EXT) (ii) ACCUMULATED 17896.5 (ii) (3254.5 FT · EXT)

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
5 OCT	1400	04	JB	S25 CAP	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1430	04	JB	S30 CAP	0'	23'	23'	RH	0'-23'	NA	OK	CK	✓		RH
	1500	04	JB	S2 CAP	325'	328'	3'	RH	325'-328'	NA	OK	CK	✓		RH
	1515	04	JB	S1 CAP	328'	348'	20'	RH	328'-348'	NA	OK	CK	✓		RH
	1530	04	JB	S25 CAP	325'	336'	11'	RH	325'-336'	NA	OK	CK	✓		RH
	1545	04	JB	S30 CAP	336'	348'	12'	RH	336'-348'	NA	OK	CK	✓		RH
						TOTAL (1)	92								

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NOTE: (1) SEAM LENGTH: THIS PAGE 92 FT (92 FT · EXT) (1) ACCUMULATED 17988.5 (1) (3346.5 FT · EXT)

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04,1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30 ± 3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
6 OCT	0930	04	JB	S7 CAP	301'	304'	3'	RH	301'-304'	NA	OK	CK	✓		RH
	1000	04	JB	S2 CAP	304'	325'	21'	RH	304'-325'	NA	OK	CK	✓		RH
	1030	04	JB	S25 CAP	301'	325'	24'	RH	301'-325'	NA	OK	CK	✓		RH
	0945	98	JM	S10 CAP	131'	140'	9'	RH	131'-140'	NA	OK	CK	✓		RH
	1015	98	JM	S9 CAP	140'	163'	23'	RH	140'-163'	NA	OK	CK	✓		RH
	1030	98	JM	S8 CAP	163'	186'	23'	RH	163'-186'	NA	OK	CK	✓		RH
	1100	98	JM	S7 CAP	186'	206'	20'	RH	186'-206'	NA	OK	CK	✓		RH
	1110	98	JM	S25 CAP	131'	206'	75'	RH	131'-206'	NA	OK	CK	✓		RH
	1300	04	JB	SI 54 CAP	208'	203'	5'	RH	208'-203'	NA	OK	CK	✓		RH
	1315	04	JB	SI 53 CAP	203'	189'	14'	RH	203'-189'	NA	OK	CK	✓		RH
	1330	04	JB	SI 51 CAP	189'	174'	15'	RH	189'-174'	NA	OK	CK	✓		RH
	1345	04	JB	SI 49 CAP	174'	164'	10'	RH	174-164	NA	OK	CK	✓		RH
	1410	04	JB	S36 CAP	208'	195'	13'	RH	208'-195'	NA	OK	CK	✓		RH
					TOTAL (1)		255								

NOTE: (1) SEAM LENGTH: THIS PAGE 255 ft (255 ft·Exr) (ft) ACCUMULATED 18,243.5 (ft) (3601.5 ft·Exr)

NOTE: SI INDICATES CELL-1 TIE-IN.

REVIEWED BY: SO.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
6 OCT	1425	04	JB	535 CAP	195'	172'	23'	RH	195'-172'	NA	OK	JM	✓		MH
	1440	04	JB	542 CAP	172'	164'	7'	RH	172'-164'	NA	OK	JM	✓		MH
	1540	98	JM	537 CAP	123'	155'	32'	RH	123'-155'	NA	OK	CK	✓		RH
	1555	98	JM	544 CAP	123'	155'	32'	RH	123'-155'	NA	OK	CK	✓		RH
	1620	98	JM	540 CAP	83'	59'	24'	RH	83'-59'	NA	OK	CK	✓		RH
	1690	98	JM	545 CAP	83'	59'	24'	RH	83'-59'	NA	OK	CK	✓		RH
	1650	98	JM	SR 341 S-7 E	0	23	23	RH	0'-23'	NA	OK	CK	✓		RH
	1700	98	JM	SR 341 S-7 W	0	23	23	RH	0'-23'	NA	OK	CK	✓		RH
	1710	98	JM	SR 341 S-8 E	0	23	23	RH	0'-23'	NA	OK	CK	✓		RH
	1720	98	JM	SR 341 S-8 W	0	23	23	RH	0'-23'	NA	OK	CK	✓	2062	RH
	1730	98	JM	SR 341 S-9 E	0	23	23	RH	0'-23'	NA	OK	CK	✓		RH
	1740	98	JM	SR 341 S-9 W	0	23	23	RH	0'-23'	NA	OK	CK	✓		RH
						TOTAL (1)	280								

NOTE: (1) SEAM LENGTH: THIS PAGE 280 ft (280 ft · Encr) (ft) ACCUMULATED 18,523.5 (ft) (3881.5 ft · Encr)

SR ⇒ SECONDARY REPAIR

000379

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (1)	QA ID	LOCATION (1)	AIR PRESSURE (30.3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
7 OCT	0830	04	JB	545 CAP	37'	0'	37'	RH	37'-0'	NA	OK	CK	✓		RH
↓	0900	04	JB	540 CAP	0'	37'	37'	RH	0'-37'	NA	OK	CK	✓		RH
8 OCT	0845	04	JB	540 CAP	59'	37'	22'	RH	59'-37'	NA	OK	CK	✓		RH
↓	0915	04	JB	545 CAP	37'	59'	22'	RH	37'-59'	NA	OK	CK	✓		RH
12 OCT	1556	9860	KH	100/102	0'	30'	30'	DLE	0'-30'	30-30	NA	CK	✓		TBY
	1610	9860	KH	102/103	0'	54'	54'	DLE	0'-54'	30-30	NA	CK	✓		TBY
	1618	9727	AG	105/106	0'	23'	23'	TBY	0'-23'	30-30	NA	CK	✓		TBY
	1630	9860	KH	103/104	0'	61'	61'	TBY	0'-61'	30-28	NA	CK	✓		TBY
	1650	98	RH	84/106	66'	83'	17'	TBY	66'-83'	NA	OK	CK	✓		TBY
	1657	9860	KH	106/107	46'	83'	37'	DLE	46'-83'	30-30	NA	OK	✓		TBY
	1700	98	RS	84/105	83'	117'	34'	TBY	83'-117'	NA	OK	CK	✓		TBY
	1717	9860	KH	105/107	83'	117'	34'	DLE	83'-117'	30-30	NA	CK	✓		TBY
↓	1725	9860	KH	107/108	0'	35'	35'	DLE	0'-35'	30-30	NA	CK	✓		TBY
					TOTAL (1)		443								

NOTE: (1) SEAM LENGTH: THIS PAGE 443 FT (169 FT · EXT) (1) ACCUMULATED 18,966.5 (1) (4050.5 FT · EXT)

083000

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P F	ACTION	QA ID
12 OCT	1740	9860	KH	84/106	0'	66'	66'	TBY	0'-66'	30-30	NA	CK	✓		TBY
	1755	9727	AG	98/105	0'	23'	23'	TBY	0'-23'	30-30	NA	CK	✓		TBY
	1803	9727	AG	98/107	0'	15'	15'	TBY	0'-15'	30-30	NA	CK	✓		TBY
	1808	9727	AG	99/107	0'	6'	6'	TBY	0'-6'	30-30	NA	CK	✓		TBY
	1813	9727	AG	99/108	0'	16'	16'	TBY	0'-16'	30-30	NA	CK	✓		TBY
	1817	9727	AG	100/108	0'	27'	27'	TBY	0'-27'	30-30	NA	CK	✓		TBY
	1826	9727	AG	102/107	0'	33'	33'	TBY	0'-33'	30-30	NA	CK	✓		TBY
	1840	9727	AG	103/106	46'	23'	23'	TBY	46'-23'	30-30	NA	CK	✓		TBY
	1849	9727	AG	104/106	0'	23'	23'	TBY	0'-23'	30-30	NA	CK	✓		TBY
						TOTAL (1)	232								

NOTE: (1) SEAM LENGTH: THIS PAGE 232 ft (0 ft · Ext) (ft) ACCUMULATED 19,198.5 (ft) (4050.5 ft · Ext)

000381

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/FAIL P	F	ACTION	QA ID
14 Oct	13:01	98	JM	S-71/S-113	0	21	21	DLE	0-21	N/A	OK	PM	P			DLE
14 Oct	13:15	98	JM	S-73/S-113	21	33	12	DLE	21-33	N/A	OK	PM	P			DLE
14 Oct	13:18	98	JM	S-73/S112	33	44	11	DLE	33-44	N/A	OK	PM	P			DLE
14 Oct	13:25	98	JM	S75/S112	44	67	23	DLE	44-67	N/A	OK	PM	P			DLE
14 Oct	1330	98	JM	S-78/S-111	67	90	23	DLE	67-90	N/A	OK	PM	P			DLE
14 Oct	1335	98	JM	S-80/S-111	90	101	11	DLE	90-101	N/A	OK	PM	P			DLE
14 Oct	1337	98	JM	S-80/S-110	101	110	9	DLE	101-110	N/A	OK	PM	P			DLE
14 Oct	1340	98	JM	S-82/S-110	110	135	25	DLE	110-135	N/A	OK	PM	P			DLE
14 Oct	1345	98	JM	S-84/S-109	135	158	23	DLE	135-158	N/A	OK	PM	P			DLE
14 Oct	1400	98	JM	S-109/S-106	158	171	23	DLE	158-171	N/A	OK	PM	P			DLE
14 Oct	1410	98	JM	S-109/S-109	0	5	5	DLE	0-5	N/A	OK	PM	P			DLE
						TOTAL (1)	186									

NOTE: (1) SEAM LENGTH: THIS PAGE 186 FT (186 FT·EXT) (ii) ACCUMULATED 19384.5 (ii) (4236.5 FT EXT)

REVIEWED BY: SG

SHEET NO. 42 OF 42

000382

2062

Primary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
14 Oct	1416	9860	KH	P1/P2	347	0	347	MH	0-347	30-30	N/A	CK	P		MH
14 Oct	1435	9844	GC	P2/P3	343	0	343	MH	0-208 208-343	30-30 30-30	↓	CK	P		MH
14 Oct	1615	9860	KH	P3/P4	343	0	343	MH	0-343	30-30	↓	CK	P		MH
15 Oct	1125	9844	GC	P4/P5	333	0	333	MH	0-333	30-30	↓	CK	P		DLE
15 Oct	1148	9860	KH	P5/P6	333	0	333	MH	0-333	30-30	↓	CK	P		MH
15 Oct	1230	9727	LL	P6/P7	342	0	342	MH	342-191 ⊛	30-30	↓	CK	P ⊛	⊛	MH
15 Oct	1258	06	JM	P1/PI36	0	66	66	MH	0-66	N/A	OK	CK	P		MH
15 Oct	1412	06	JM	P1/PI34	0	9	9	MH	0-9	N/A	OK	CK	P		MH
15 Oct	1421	9860	KH	P7/P8	0	350	350	MH	350-0	30-30	N/A	CK	P	2062	MH
15 Oct	1439	06	JM	PI44/P1	0	14	14	MH	0-14	N/A	OK	CK	P		MH
15 Oct	1510	06	JM	PI45/P1	0	15	15	MH	0-15	N/A	OK	CK	P		MH
15 Oct	1450	01	GC	P8/P9	351	0	351	MH	0-351	30-30	N/A	CK	P		MH
15 Oct	1435	01	GC	P11/P10	0	23	23	MH	0-23	30-30	↓	CK	P		MH
						TOTAL (1)	2869								

NOTE: (1) SEAM LENGTH: THIS PAGE 2869 FT (104 FT-EXT) (ft) ACCUMULATED 2869 (ft)

⊛ → 0-191 FT of SEAM P6/P7 HAD NO AIR CHANNEL — SEAM SECTION FAILED AND CAPPED

PI → CELL 1 PRIMARY PANEL (104 FT EXT)

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0003384

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
15 OCT	1617	9844	LL	P9/P11	0	175	175	MH	175-0	30-30	N/A	CK	P		MH
15 Oct	1703	9844	LL	P9/P10	175	350	175	MH	175-350	30-30	↓	CK	P		MH
15 Oct	1642	9860	KH	P11/P12	0	175	175	MH	175-0	30-30	↓	CK	P		MH
15 Oct	1650	01	GC	P12/P13	351	0	351	MH	0-351	30-30	↓	CK	P		MH
15 Oct	1735	02	JM	P13/PH	351	0	351	MH	0-351	30-30	↓	CK	P		MH
15 Oct	1735	9860	KH	P12/P10	175	351	176	MH	351-175	30-30	↓	CK	P		MH
16 Oct	1112	02	GC	P15/P16	0	114	114	MH	114-0	30-30	N/A	CK	P		MH
16 Oct	1137	06	CL	P1/P547	104	118	14	MH	104-118	N/A	OK	CK	P		MH
16 Oct	1248	01	KH	P16/P19	0	10	10	MH	10-0	30-30	N/A	CK	P		MH
16 Oct	1250	01	KH	P16/P17	10	114	104	MH	10-114	30-30	↓	CK	P		MH
16 Oct	1250	02	GC	P19/P18	0	10	10	MH	0-10	30-30	↓	CK	P		MH
16 Oct	1252	02	GC	P18/P17	10	114	104	MH	10-114	30-30	↓	CK	P		MH
16 Oct	1145	02	GC	P19/P17	0	23	23	MH	0-23	30-30	↓	CK	P		MH
					TOTAL (1)		1780								

NOTE: (1) SEAM LENGTH: THIS PAGE 1780 FT (14 FT-EXT) (ft) ACCUMULATED 4649 (ft) (118 FT-EXT)

PI → CG&L / PRIMARY PANEL

000385

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
16 Oct	1306	01	KH	P18/P20	0	114	114	MH	0-114	30-30	N/A	CK	P		MH
16 Oct	1315	02	GC	P20/P21	0	114	114	MH	114-0	30-30	N/A	CK	P		MH
16 Oct	1332	06	CL	P1/P149	118	132	14	MH	118-132	N/A	OK	CK	P		MH
16 Oct	1335	06	CL	P1/P150	132	147	15	DLE	132-147	N/A	OK	CK	P		MH
16 Oct	1345	01	KH	P21/P22	39	114	75	MH	39-114	30-30	N/A	CK	P		MH
16 Oct	1400	02	GC	P21/P22	0	39	39	MH	0-39	30-30	↓	CK	P		MH
16 Oct	1407	01	KH	P22/P23	0	114	114	MH	114-0	30-30	↓	CK	P		MH
16 Oct	1415	06	CL	P1/P152	147	161	14	DLE	147-161	N/A	OK	CK	P		MH
16 Oct	1430	02	GC	P23/P24	0	115	115	MH	115-0	30-30	N/A	CK	P		MH
16 Oct	1444	01	KH	P24/P25	0	115	115	MH	0-115	30-30	↓	CK	P		MH
16 Oct	1512	01	KH	P26/P27	0	116	116	MH	0-116	30-30	↓	CK	P		MH
16 Oct	1550	02	GC	P25/P26	0	115	115	MH	115-0	30-30	↓	CK	P		MH
16 Oct	1740	02	GC	P15/P28	95	114	19	MH	95-114	30-30	↓	CK	P		MH
				TOTAL (1)			979								

2062

NOTE: (1) SEAM LENGTH: THIS PAGE 979 FT (43 FT-EXT) (ft) ACCUMULATED 5628 (ft) (161 FT-EXT)

P1 → CELL 1 PRIMARY PANEL

000386

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO/SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30.3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
16 Oct	1755	01	KH	P31/P30	0	35	35	MH	0-35	30-30	N/A	CK	P		MH
16 Oct	1800	02	GC	P29/P30	0	30	30	MH	0-30	30-30	↓	CK	P		MH
16 Oct	1805	02	GC	P31/P32	0	58	58	MH	58-0	30-30	↓	CK	P		MH
16 Oct	1819	01	KH	P33/P15	0	95	95	MH	95-0	30-30	↓	CK	P		MH
16 Oct	1840	02	GC	P33/P34	0	66	66	MH	0-66	30-30	↓	CK	P		MH
17 Oct	0930	02	GC	P33/P28	0	24	24	MH	24-0	30-30	N/A	CK	P		MH
17 Oct	1026	02	GC	P32/P35	0	75	75	MH	75-0	30-30	↓	CK	P		MH
17 Oct	1245	02	GC	P35/P15	75	99	24	MH	75-99	30-30	↓	CK	P		MH
17 Oct	0950	02	GC	P33/P32	0	25	25	MH	25-0	30-30	↓	CK	P		MH
17 Oct	1250	02	GC	P35/P16	99	123	24	MH	99-123	30-30	↓	CK	P		MH
17 Oct	1255	02	GC	P35/P19	123	146	23	MH	123-146	30-30	↓	CK	P		MH
17 Oct	1200	06	RS	P1/PI58	205	219	14	MH	205-219	N/A	OK	CK	P		MH
17 Oct	1235	06	RS	P1/PI60	219	233	14	MH	219-233	N/A	OK	CK	P		MH
				TOTAL (1)			507								

NOTE: (1) SEAM LENGTH: THIS PAGE 507 FT (28 FT-EXT) (ft) ACCUMULATED 6135 (ft) (189 FT-EXT)

PI – CELL 1 PRIMARY PANEL

000387

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30 ± 3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
17 Oct	1250	06	LL	P1/PI61	233	248	15	TBY	233-248	N/A	OK	CK	P		TBY
17 Oct	1305	06	LL	P1/PI63	248	262	14	TBY	248-262	↓	OK	CK	P		TBY
17 Oct	1310	06	LL	P1/PI65	262	277	15	DLE	262-277	↓	OK	CK	P		DLE
17 Oct	1320	06	RS	P1/PI66	277	291	14	TBY	277-291	↓	OK	CK	P		TBY
17 Oct	1332	06	LL	P1/PI68	291	306	15	TBY	291-306	↓	OK	CK	P		TBY
17 Oct	1400	06	RS	P1/PI70	306	320	14	TBY	306-320	↓	OK	CK	P		TBY
17 Oct	1425	06	LL	P1/PI71	320	335	15	TBY	320-335	↓	OK	CK	P		TBY
17 Oct	1445	06	LL	P1/PI73	335	347	12	MH	335-347	↓	OK	CK	P	"	TBY
17 Oct	1414	02	GC	P36/P6	0	23	23	MH	0-23	30-30	N/A	CK	P	2062	MH
17 Oct	1430	02	GC	P37/P5	0	23	23	MH	0-23	30-30	↓	CK	P		MH
17 Oct	1440	02	GC	P37/P6	333	342	9	MH	333-342	30-30	↓	CK	P		MH
17 Oct	1300	02	GC	P35/P18	146	170	24	MH	146-170	30-30	↓	CK	P		MH
17 Oct	1305	02	GC	P35/P20	170	194	24	MH	170-194	30-30	↓	CK	P		MH
					TOTAL (1)		217								

NOTE: (1) SEAM LENGTH: THIS PAGE 217 FT (114 FT-EXT) (ft) ACCUMULATED 6352 (ft) (303 FT-EXT)

PI → CELL 1 PRIMARY PANEL

000388

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SHEET NO. 5 OF 20

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
17 Oct	1310	02	GC	P35/P21	194	218	24	MH	194-218	30-30	N/A	CK	P		MH
17 Oct	1315	02	GC	P35/P22	218	241	23	MH	218-241	30-30		CK	P		MH
17 Oct	1325	02	GC	P35/P23	241	265	24	MH	241-265	30-30		CK	P		MH
17 Oct	1330	02	GC	P35/P24	265	288	23	MH	265-288	30-30		CK	P		MH
17 Oct	1335	02	GC	P35/P25	288	312	24	MH	288-312	30-30		CK	P		MH
17 Oct	1340	02	GC	P35/P26	312	335	23	MH	312-335	30-30		CK	P		MH
17 Oct	1345	02	GC	P35/P27	335	348	13	MH	335-348	30-30		CK	P		MH
17 Oct	0915	06	RS	P1/PI54	161	175	14	DLE	161-175	30-30		CK	P		MH
17 Oct	0937	06	RS	P1/PI55	175	190	15	DLE	175-190	30-30		CK	P		MH
17 Oct	1030	06	RS	P1/PI56	190	205	15	DLE	190-205	30-30		CK	P		MH
17 Oct	1515	02	GC	P31/P34	0	26	26	MH	0-26	30-30		CK	P		MH
17 Oct	1522	02	GC	P30/P34	0	24	24	MH	0-24	30-30		CK	P		MH
17 Oct	1528	02	GC	P29/P34	0	30	30	MH	0-30	30-30		CK	P		MH
					TOTAL (1)		278								

NOTE: (1) SEAM LENGTH: THIS PAGE 278 FT (0 FT-EXT) (ft) ACCUMULATED 6630 (ft) (303 FT-EXT)

PI → CELL 1 PRIMARY PANEL

000389

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
17 OCT	~~1600~~ 1535	02	GC	P28/P29	0	48	48	MH	0-48	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1310~~ 1600	~~01~~ 02	~~KH~~ GC	P14/P27	353	334	19	MH	353-334	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1315~~ 1605	~~01~~ 02	~~KH~~ GC	P14/P26	334	310	24	MH	334-310	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1321~~ 1612	~~01~~ 02	~~KH~~ GC	P14/P25	310	287	23	MH	310-287	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1324~~ 1619	~~01~~ 02	~~KH~~ GC	P14/P24	287	263	24	MH	287-263	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1330~~ 1625	~~01~~ 02	~~KH~~ GC	P14/P23	263	240	23	MH	263-240	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1333~~ 1632	~~01~~ 02	~~KH~~ GC	P14/P22	240	~~219~~ 217	23	MH	240-217	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1338~~ 1639	~~01~~ 02	~~KH~~ GC	P14/P21	218	194	23	MH	217-194	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1344~~ 1645	~~01~~ 02	~~KH~~ GC	P14/P20	194	171	23	MH	194-171	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1355~~ 1652	~~01~~ 02	~~KH~~ GC	P14/P18	171	147	24	MH	171-147	30/30	N/A	CK	P	2062	MH
~~17~~ 16 OCT	~~1358~~ 1659	~~01~~ 02	~~KH~~ GC	P14/P17	147	124	23	MH	147-124	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1305~~ 1705	~~01~~ 02	~~KH~~ GC	P14/P16	124	100	24	MH	124-100	30/30	N/A	CK	P		MH
~~17~~ 16 OCT	~~1311~~ 1712	~~01~~ 02	~~KH~~ GC	P14/P15	100	76	24	MH	100-76	30/30	N/A	CK	P		MH
					TOTAL (1)		325								

NOTE: (1) SEAM LENGTH: THIS PAGE 325 FT (0 FT-EXT) (ft) ACCUMULATED ~~6934~~ 6955 (ft) (303 FT-EXT)

000290

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±2 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
~~17~~ 16 Oct	1740 ~~1420~~	02 ~~01~~	GC ~~KH~~	P14/P28	76	0	76	MH	76-0	30-30	N/A	CK	P		MH
17 Oct	1441	02	GC	P37/P36	342	349	7	MH	342-349	30-30	↓	CK	P		MH
17 Oct	1445	02	GC	P37/P4	333	349	16	MH	333-349	30-30	↓	CK	P		MH
20 Oct	1643	02	KH	P38/P41	0	23	23	MH	0-23	30-30	N/A	CK	P		MH
20 Oct	1650	02	KH	P39/P42	0	23	23	MH	0-23	30-30	↓	CK	P		MH
20 Oct	17:00	01	GC	P42/P41	0	74	74	MH	0-74	30-30	↓	CK	P		MH
20 Oct	1713	02	KH	P39/P40	0	23	23	MH	0-23	30-30	↓	CK	P		MH
20 Oct	1710	01	GC	P38/P39	78	381	303	MH	78-381	30-30	↓	CK	P		MH
20 Oct	1740	02	KH	P38/P27	74	135	61	MH	74-135	30-30	↓	CK	P		MH
20 Oct	1749	02	KH	P38/P14	135	158	23	MH	135-158	30-30	↓	CK	P		MH
20 Oct	1753	02	KH	P38/P13	158	181	23	MH	158-181	30-30	↓	CK	P		MH
20 Oct	1757	02	KH	P38/P12	181	204	23	MH	181-204	30-30	↓	CK	P		MH
20 Oct	1635	02	KH	P44/P2	343	348	5	MH	343-348	30-30	↓	CK	P		MH
					TOTAL (1)		680								

NOTE: (1) SEAM LENGTH: THIS PAGE 680 Ft (0 Ft-Ext) (ft) ACCUMULATED ~~6955~~ 7635 (ft) (303 Ft-Ext)

000391

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
20 Oct	1615	02	KH	P44/P3	0	23	23	MH	0-23 ~~343-3~~	30-30	N/A	CK	P		MH
20 Oct	1730	02	KH	P41/P27	0	74	74	MH	0-74	30-30		CK	P		MH
20 Oct	1740	02	KH	P44/P38	365	388	23	MH	365-388	30-30		CK	P		MH
20 Oct	1750	02	KH	P44/P4	343	348	5	MH	343-348	30-30		CK	P		MH
20 Oct	1815	01	GC	P42/P38	74	78	4	MH	74-78	30-30		CK	P		MH
20 Oct	1840	01	GC	P40/P38	381	425	44	MH	381-425	30-30		CK	P		MH
20 Oct	1605	02	KH	P38/P9	227	250	23	MH	227-250	30-30		CK	P		MH
20 Oct	1609	02	KH	P38/P8	250	273	23	MH	250-273	30-30		CK	P		MH
20 Oct	1612	02	KH	P38/P7	273	296	23	MH	273-296	30-30		CK	P		MH
20 Oct	1616	02	KH	P38/P36	296	319	23	MH	296-319	30-30		CK	P	2062	MH
20 Oct	1620	02	KH	P38/P37	319	342	23	MH	319-342	30-30		CK	P		MH
20 Oct	1624	02	KH	P38/P4	342	365	23	MH	342-365	30-30		CK	P		MH
20 Oct	1650	02	KH	P38/P2	388	412	24	MH	388-412	30-30		CK	P		MH
					TOTAL (1)		335								

NOTE: (1) SEAM LENGTH: THIS PAGE 335 FT (0 FT EXT.) (ft) ACCUMULATED 7970 (303 FT EXT.) (ft)

000392

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
20 Oct	1654	02	KH	P38/P1	412	425	13	MH	412-425	30-30	N/A	CK	P		MH
20 Oct	1801	02	KH	P38/P10	204	227	23	MH	204-227	30-30	N/A	CK	P		MH
20 Oct	1750	98	GC	P35/P43	0	15	15	MH	0-15	N/A	OK	CK	P		MH
20 Oct	1800	98	GC	P43/P41	0	17	17	MH	0-17	N/A	OK	CK	P		MH
21 Oct	1315	02	KH	P45/P46	0	335	335	MH	0-335	30-30	N/A	CK	P		MH
21 Oct	1400	01	JM	P46/P47	0	335	335	MH	0-335	30-30	N/A	CK	P		MH
22 Oct	1622	02	JM	P50/P51	435	425	10	MH	435-425	30-29	N/A	CK	P		MH
22 Oct	1641	02	JM	P51/P38	0	23	23	MH	0-23	30-30	↓	CK	P		MH
22 Oct	1645	02	JM	P50/P40	23	0	23	MH	0-23	30-30		CK	P		MH
22 Oct	1700	02	JM	P49/P52	0	23	23	MH	0-23	30-30		CK	P		MH
22 Oct	1734	01	KH	P53/P42	0	78	78	MH	0-78	30-30		CK	P		MH
22 Oct	1750	01	KH	P53/P39	78	133	55	MH	78-133	30-30		CK	P		MH
22 Oct	1730	02	JM	P53/P52	0	23	23	MH	0-23	30-30		CK	P		MH
					TOTAL (1)		973								

NOTE: (1) SEAM LENGTH: THIS PAGE 973 ft (32 ft - Ext) (ft) ACCUMULATED 8943 (ft) (335 ft - Ext)

000393

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
22 Oct	1802	01	KH	P52/P39	133	381	248	MH	133-381	30-30	NA	CK	P		MH
22 Oct	1812	02	JM	P52/P47	367	389	22	MH	367-389	30-30	↓	CK	P		MH
22 Oct	1816	02	JM	P52/P46	389	392	3	MH	389-392	30-30	↓	CK	P		MH
22 Oct	1818	02	JM	P49/P46	392	412	20	MH	392-412	30-30	↓	CK	P		MH
22 Oct	1825	02	JM	P49/P45	412	435	23	MH	412-435	30-30	↓	CK	P		MH
22 Oct	1855	01	KH	P49/P50	425	435	10	MH	425-435	30-30	↓	CK	P		MH
22 Oct	1845	01	KH	P49/P40	392	425	33	MH	425-392	30-30	↓	CK	P	20062	MH
22 Oct	1840	01	KH	P40/P52	381	392	11	MH	381-392	30-30	↓	CK	P		MH
22 Oct	1720	02	JM	P1/P51	425	435	10	MH	425-435	30-30	↓	CK	P		MH
~~23 Oct~~				~~PI 73/P51~~	~~350~~	~~347~~	~~3~~	~~MH~~	~~350-347~~						
23 Oct	1115	01	GC	P47/P48	0	333	333	MH	0-333	30-30	N/A	CK	P		MH
23 Oct	1243	02	KH	P48/P54	0	333	333	MH	0-333	30-30	↓	CK	P		MH
23 Oct	1350	01	GC	P54/P55	0	333	333	RH	0-333	30-30	↓	CK	P		RH
					TOTAL (1)		1379								

NOTE: (1) SEAM LENGTH: THIS PAGE 1379 ft (0 ft-Ext) (ft) ACCUMULATED 10,322 (335 ft-Ext) (ft)

000394

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30.3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
23 Oct	1409	02	KH	PS5/PS6	0	333	333	RH	0-333	30-30	N/A	CK	P		RH
23 Oct	1555	01	GC	PS6/PS8	254	0	254	RH	0-254	30-30		CK	P		RH
23 Oct	1533	01	GC	PS6/PS7	334	254	79	RH	334-254	30-30		CK	P		RH
23 Oct	1543	02	KH	PS7/PS8	0	23	23	RH	0-23	30-30		CK	P		RH
23 Oct	1610	02	KH	PS8/PS9	0	254	254	RH	0-254	30-30		CK	P		RH
23 Oct	1644	02	KH	PS7/PS9	254	334	80	RH	254-334	30-30		CK	P		RH
23 Oct	1615	01	GC	PS9/P60	0	333	333	RH	0-333	30-30		CK	P		RH
23 Oct	1709	02	KH	P60/P61	0	332	332	RH	0-333	30-30		CK	P		RH
23 Oct	1600	06	JB	PI87/P45	467	482	15	MH	467-482	N/A	OK	CK	P		RH
23 Oct	1612	06	JB	PI89/P45	482	496	14	MH	482-496		OK	CK	P		RH
23 Oct	1635	06	JB	PI91/P45	496	510	14	MH	496-510		OK	CK	P		RH
23 Oct	1640	06	JB	PI94/P45	510	525	15	MH	510-525		OK	CK	P		RH
23 Oct	1648	06	JB	PI95/P45	525	540	15	MH	525-540		OK	CK	P		RH
				TOTAL (1)			1761								

NOTE: (1) SEAM LENGTH: THIS PAGE 1761 ft (73 ft-Exr) (ft) ACCUMULATED 12,083 (ft) (408 ft Exr)

PI → CELL 1 PRIMARY PANEL

000395

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
23 Oct	1700	06	JB	PI97/P45	540	554	14	MH	540-554	N/A	OK	CK	P		RH
23 Oct	1715	06	JB	PI99/P45	554	569	15	MH	554-569	↓	OK	CK	P		RH
23 Oct	1730	06	JB	PI100/P45	569	584	15	MH	569-584	↓	OK	CK	P		RH
23 Oct	1750	06	JB	PI102/P45	584	598	14	MH	584-598	↓	OK	CK	P		RH
23 Oct	1802	06	JB	PI103/P45	598	613	15	MH	598-613	↓	OK	CK	P		RH
23 Oct	1814	06	JB	PI105/P45	613	627	14	MH	613-627	↓	OK	CK	P		RH
23 Oct	1820	06	JB	PI106/P45	627	643	16	MH	627-643	↓	OK	CK	P		RH
23 Oct	1835	06	JB	PI107/P45	643	657	14	MH	643-657	↓	OK	CK	P		RH
23 Oct	1737	01	GC	P61/P62	0	332	332	RH	0-332	30-30	N/A	CK	P		RH
24 Oct	1136	02	KH	P52/P62	156	180	24	RH	156-180	30-30	↓	CK	P		RH
24 Oct	1141	02	KH	P52/P61	180	203	23	RH	180-203	30-30	↓	CK	P		RH
24 Oct	1145	02	KH	P52/P10	203	227	24	RH	203-227	30-30	↓	CK	P		RH
24 Oct	1150	02	KH	P52/P59	227	250	24	RH	227-250	30-30	↓	CK	P		RH
						TOTAL (1)	544								

NOTE: (1) SEAM LENGTH: THIS PAGE 544 ft (117 ft-Ext) (ft) ACCUMULATED 12,627 (ft) (525 ft-Ext)

PI → CELL 1 PRIMARY PANEL

2062

000396

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOCMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
24 OCT	1154	02	KH	P52 P57	250	273	23	RH	250-273	30/30	N/A	CK	P		RH
24 OCT	1159	02	KH	P52 P56	273	296	23	RH	273-296	30/30		CK	P		RH
24 OCT	1204	02	KH	P52 P55	296	320	24	RH	296-320	30/30		CK	P		RH
24 OCT	1208	02	KH	P52 P54	320	344	24	RH	320-344	30/30		CK	P		RH
24 OCT	1212	02	KH	P52 P48	344	367	23	RH	344-367	30/30		CK	P		RH
24 OCT	1354	02	KH	P62 P63	0	330	330	RH	0-330	30/30		CK	P		RH
24 OCT	1410	01	GC	P53 P64	15	133	118	RH	15-133	30/30		CK	P		RH
24 OCT	1440	01	GC	P64 P65	0	118	118	RH	0-118	30/30		CK	P		RH
24 OCT	1503	01	GC	P65 P66	0	109	109	RH	0-109	30/30		CK	P		RH
24 OCT	1520	01	GC	P65 P70	109	118	9	RH	109-118	30/30		CK	P		RH
24 OCT	1503	02	KH	P66 P70	0	23	23	RH	0-23	30/30		CK	P		RH
24 OCT	1530	01	GC	P66 P67	0	109	109	RH	0-109	30/30		CK	P		RH
24 OCT	1535	02	KH	P67 P68	0	116	116	RH	0-116	30/30		CK	P		RH
					TOTAL (1)		1049								

NOTE: (1) SEAM LENGTH: THIS PAGE 1049 ft (0 ft-Ext) (ft) ACCUMULATED 13,676 (525 ft-Ext) (ft)

000397

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
24 OCT	1553	01	GC	P68 P69	0	109	109	RH	0-109	30/30	N/A	CK	P		RH
24 OCT	1627	01	GC	P69 P71	0	109	109	RH	0-109	30/30		CK	P		RH
24 OCT	1615	01	GC	P68 P72	109	116	7	RH	109-116	30/30		CK	P		RH
24 OCT	1521	02	KH	P69 P72	0	23	23	RH	0-23	30/30		CK	P		RH
24 OCT	1550	01	GC	P67 P70	109	117	8	RH	109-117	30/30		CK	P		RH
24 OCT	1650	01	GC	P71 P72	109	116	7	RH	109-116	30/30		CK	P		RH
24 OCT	1557	02	KH	P71 P73	0	116	116	RH	0-116	30/30		CK	P		RH
24 OCT	1618	02	KH	P73 P74	0	115	115	RH	0-115	30/30		CK	P		RH
24 OCT	1643	02	KH	P74 P75	0	115	115	RH	0-115	30/30		CK	P		RH
24 OCT	1655	01	GC	P75 P76	0	115	115	RH	0-115	30/30		CK	P		RH
24 OCT	1704	02	KH	P77 P63	0	73	73	RH	0-73	30/30		CK	P		RH
24 OCT	1717	01	GC	P77 P78	0	47	47	RH	0-47	30/30		CK	P		RH
24 OCT	1721	02	KH	P78 P79	0	25	25	RH	0-25	30/30		CK	P		RH
					TOTAL (1)		869								

NOTE: (1) SEAM LENGTH: THIS PAGE 869 FT (0 FT-Ext) (ft) ACCUMULATED 14,545 (525 FT-Ext) (ft)

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SHEET NO. 15 OF 20

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
24 Oct	1730	01	GC	P79/P80	0	26	26	RH	0-26	30-30	N/A	CK	P		RH
24 Oct	1741	02	KH	P80/P81	0	56	56	RH	0-56	30-30		CK	P		RH
24 Oct	1805	02	KH	P82/P83	0	60	60	RH	0-60	30-30		CK	P		KH
24 Oct	1748	01	GC	P76/P82	12	101	89	RH	12-101	30-30		CK	P		RH
24 Oct	1640	01	GC	P64/P53	0	15	15	RH	0-15	30-30		CK	P		RH
25 Oct	0910	02	KH	P63/P76	73	96	23	RH	73-96	30-30		CK	P		RH
25 Oct	0912	02	KH	P63/P75	96	120	24	RH	96-120	30-30		CK	P		RH
25 Oct	0916	02	KH	P63/P74	120	142	22	RH	120-142	30-30		CK	P		RH
25 Oct	0920	02	KH	P63/P73	142	166	24	RH	142-166	30-30		CK	P		RH
25 Oct	0924	02	KH	P63/P71	166	189	23	RH	166-189	30-30		CK	P		RH
25 Oct	0928	02	KH	P63/P72	189	212	23	RH	189-212	30-30		CK	P		RH
25 Oct	0932	02	KH	P63/P68	212	236	24	RH	212-236	30-30		CK	P		RH
25 Oct	0936	02	KH	P63/P67	236	259	23	RH	236-259	30-30		CK	P		RH
				TOTAL (1)			432								

NOTE: (1) SEAM LENGTH: THIS PAGE 432 ft (0 ft-Ext) (ft) ACCUMULATED 14,977 (ft) (525 ft-Ext)

000399

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
25 Oct	0944	02	KH	P63/P65	283	306	23	RH	283-306	30-30	N/A	CK	P		RH
25 Oct	0948	02	KH	P63/P64	306	329	23	RH	306-329	30-30		CK	P		RH
25 Oct	0955	02	KH	P63/P52	133	156	23	RH	133-156	30-30		CK	P		RH
25 Oct	1015	02	KH	P84/P64	327	304	23	RH	327-304	30-30		CK	P		RH
25 Oct	1019	02	KH	P84/P65	304	281	23	RH	304-281	30-30		CK	P		RH
25 Oct	1023	02	KH	P84/P66	281	257	24	RH	281-257	30-30		CK	P		RH
25 Oct	1027	02	KH	P84/P67	257	234	23	RH	257-234	30-30		CK	P		RH
25 Oct	1030	02	KH	P84/P68	234	210	24	RH	234-210	30-30		CK	P		RH
25 Oct	1034	02	KH	P84/P69	210	187	23	RH	210-187	30-30		CK	P	2062	RH
25 Oct	1038	02	KH	P84/P71	187	163	24	RH	187-163	30-30		CK	P		RH
25 Oct	1042	02	KH	P84/P73	163	140	23	RH	163-140	30-30		CK	P		RH
25 Oct	1046	02	KH	P84/P74	140	117	23	RH	140-117	30-30		CK	P		RH
25 Oct	1050	02	KH	P84/P75	117	93	24	RH	117-143	30-30		CK	P		RH
					TOTAL (1)		303								

NOTE: (1) SEAM LENGTH: THIS PAGE 303 FT (0 FT-EXT) (ft) ACCUMULATED 15,280 (ft) (525 FT-EXT)

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SHEET NO. 17 OF 20

000400

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
25 Oct	1054	02	KH	P84/P76	93	70	23	RH	93-70	30-30	N/A	CK	P		RH
25 Oct	1058	02	KH	P84/P81	70	0	70	RH	70-0	30-30	↓	CK	P		RH
25 Oct	1225	02	KH	P81/P76	0	12	12	RH	0-12	30-30	↓	CK	P		RH
25 Oct	1154	02	KH	P81/P82	0	15	15	RH	0-15	30-30	↓	CK	P		RH
25 Oct	1200	02	KH	P80/P82	0	14	14	RH	0-14	30-30	↓	CK	P		RH
25 Oct	1202	02	KH	P80/P83	0	23	23	RH	0-23	30-30	↓	CK	P		RH
25 Oct	1211	02	KH	P79/P83	0	23	23	RH	0-23	30-30	↓	CK	P		RH
25 Oct	1206	02	KH	P78/P83	0	29	29	RH	0-29	30-30	↓	CK	P		RH
25 Oct	1215	02	KH	P77/P82	0	26	26	RH	0-26	30-30	↓	CK	P		RH
25 Oct	1219	02	KH	P77/P76	101	115	14	RH	101-115	30-30	↓	CK	P		RH
25 Oct	0900	06	JB	P86/P45	467	452	15	RH	467-452	N/A	OK	CK	P		RH
25 Oct	0920	06	JB	P84/P45	452	437	15	RH	452-437	↓	OK	CK	P		RH
25 Oct	0945	06	JB	P82/P45	437	422	15	RH	437-422	↓	OK	CK	P		RH
					TOTAL (1)		294								

NOTE: (1) SEAM LENGTH: THIS PAGE 294 ft (45 ft - Ext) (ft) ACCUMULATED 15,574 (ft) (570 ft - Ext)

PI → CELL 1 PRIMARY PANEL

SQ

SHEET NO. 20

000401

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
25 Oct	1020	06	JB	PI 81/P45	422	414	8	RH	422-414	N/A	OK	CK	P		RH
25 Oct	1035	06	JB	PI 81/P49	414	408	6	RH	414-408	↓	OK	CK	P		RH
25 Oct	1050	06	JB	PI 80/P49	408	394	14	RH	408-394	↓	OK	CK	P		RH
25 Oct	1052	06	JB	PI 78/P49	394	391	3	RH	394-391	↓	OK	CK	P		RH
25 Oct	1100	06	JB	PI 78/P50	391	379	12	RH	391-379	↓	OK	CK	P		RH
25 Oct	1110	06	JB	PI 77/P50	379	367	12	RH	379-367	↓	OK	CK	P		RH
25 Oct	1130	06	JB	PI 77/P51	367	365	2	RH	367-365	↓	OK	CK	P		RH
25 Oct	1145	06	JB	PI 75/P51	365	350	15	RH	365-350	↓	OK	CK	P		RH
25 Oct	1343	06	JB	PI 109/P45	657	672	15	RH	657-672	↓	OK	CK	P	2062	RH
25 Oct	1400	06	JB	PI 139/P45	672	687	15	RH	672-687	↓	OK	CK	P		RH
25 Oct	1410	06	JB	PI 140/P45	687	699	12	RH	687-699	↓	OK	CK	P		RH
25 Oct	1418	06	JB	PI 142/P45	699	736	37	RH	699-736	↓	OK	CK	P		RH
25 Oct	0940	02	KH	P63/P70	259	283	24	RH	259-283	30-30	N/A	CK	P		RH
					TOTAL (1)		175								

NOTE: (1) SEAM LENGTH: THIS PAGE 175 ft (151 ft-Exr) (ft) ACCUMULATED 15,749 (ft) (721 ft-Exr)

PI → CELL 1 PRIMARY PANEL

000402

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SHEET NO. 19 OF 20

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPERATOR ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (30±3 psi for 5 min.)	VACUUM BOX (20 sec.)	OPERATOR ID	PASS/ FAIL	ACTION	QA ID
2 NOV	1415	98	GC	PI 145/045	736	750	14	CS	736-750	N/A	ok	RS	P		CS
							END		PRIMARY SEAMING						
						TOTAL (1)	14								

NOTE: (1) SEAM LENGTH: THIS PAGE 14 FT (Ext) (ft) ACCUMULATED 15,763 (ft)
PI → CELL / PRIMARY PANEL (735 FT-EXT)

000403

APPENDIX N:

CELL 2 GEOMEMBRANE DESTRUCTIVE SEAM TEST LOGS AND LABORATORY TEST RESULTS

Secondary
Primary

2062

Secondary

- **Secondary Field Destructive Test Logs**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TEST REQUIREMENTS: Fusion: Peel ≥ 115 ppi, Shear ≥ 151 ppi EXT: Peel ≥ 84 ppi Shear ≥ 151 ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	RE-TEST	QA ID
D/S 1		F	S-2/S-3	42'	02	GC	133.5	135.0	155.5	✓	14 Sept	CS	15 Sept	168.2	181.3	189.0	✓		CS
2		F	S-7/S-8	50'	02	GC	165.5	170.0	181.5	✓	15 Sept	CS	16 Sept	168.2	176.2	187.4	✓		CS
3		F	S-13/S-14	53'	02	GC	152.0	152.0	171.5	✓	16 Sept	CS	17 Sept	165.9	159.6	185.4	✓		CS
4	E		S-19/S-14/S-16	32'	98	JM	151.0	153.0	204.5	✓	18 Sept	CS	21 Sept	153.2	N/A	195.4	✓		CS
5		F	S-21/S-27	32'	9727	JM	158.0	133.5	157.5	✓	19 Sept	CS	21 Sept	142.9(P)	100.2(P)	192.4		✓ CAMED	CS
6		F	S-5/S-25	248'	01	GC	156.5	144.0	163.0	✓	19 Sept	CS	21 Sept	172.5	162.6	188.0	✓		CS
7		F	S-25/S-29	245'	9844	JM	131.5	130.5	161.5	✓	19 Sept	CS	21 Sept	155.7	152.3	187.6	✓		CS
8		F	S-28/S-31	214'	02	JM	156.0	149.0	158.5	✓	23 Sept	CS	23 Sept	162.4	158.1	177.6	✓		CS
9		F	S-31/S-32	307'	01	GC	154.5	162.0	163.5	✓	23 Sept	CS	23 Sept	160.9	145.4	183.0	✓		CS
10		F	S-32/S-34	8' from S-31/32/33/34	9844	JM	142.0	150.5	189.0	✓	23 Sept	CS	23 Sept	139.6	151.3	200.6	✓		CS
11		F	S-33/S-35	158'	01	GC	153.0	158.5	169.0	✓	23 Sept	CS	23 Sept	157.2	159.0	181.6	✓		CS

2002

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

200007

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TEST REQUIREMENTS: Fusion: Peel ≥ 115 ppi, Shear ≥ 151 ppi Extrusion: Peel ≥ 84 ppi; Shear ≥ 151 ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL	DATE SAMPLED/SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL	RE-TEST	QA ID
DIS 12		F	S-35 / S-36	194'	02	JM	Not Tested			✓	—	CS	Failed in Field		Not Sent		–	D/S 12 A&B	CS
13	F		35 / CAP / 51	182'	04	JB	101/PEEL			✓	—	CS	" "	"	" "		–	13 A&B	CS
12A		F	S-35 / S-36	261'	02	JM	Not Tested			✓	27 Sept	CS	28 Sept	~~156.2~~ 152.6	137.4	206.0	✓		CS
12B		F	S-35 / S-36	132'	02	JM	Not Tested			✓	23 Sept	CS	24 Sept	158.9	156.6	184.8	✓		CS
14	E		32 / CAP / 32	4' From (N) 32/31	04	JB	167.5	N/A	192.5	✓	28 Oct	CS	28 Oct ~~102.4~~	102.4(A)	N/A	175.1	✓	14 A&B	CS
15	E		25 / CAP / 9	153'	98	JM	~~148.0~~ 129.5	N/A	160	✓		CS	Not Sent	Failed in Field			–	15 A&B	CS
16	E		S2-34 / 1	30'	98	JM	148.0	N/A	179.5	✓	29 Oct	CS	30 Sept	140.0	N/A	198.8	✓		CS
13A	E		S2-42 / CAP / 42	165'	04	JB	78 Peel			✓	—	CS	Not Sent	Failed in Field			–	13-2A	CS
13B	E		S2-53 / 36	200'	04	JB	85 Peel			✓	—	CS	" "	" "	"		–	13-2B	CS
15A	E		9 / CAP / 25	152	98	JM	116 Peel			✓	—	CS	" "	" "	"		–	15-2A	CS
15B	E		25 / CAP / 9	163	98	JM	138 Peel			✓	—	CS	" "	" "	"		–	15-2B	CS

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

80/000

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TEST REQUIREMENTS: Fusion: Peel ≥ 115ppi, Shear ≥ 151 ppi Extrsion: Peel ≥ 84ppi, Shear ≥ 151 ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	RE-TEST	QA ID
DS 15-2A	E		9/CAP/25	163'	98	JM	126.5 PP	N/A	169.5	✓	—	CS	Not Sent Failed in Field				–	– 15-3A	CS
15-2B	E		25/CAP/9	214'	98	JM	159.5	N/A	186.0	✓	27 Sept	CS	28 Sept	169.3	N/A	189.2	✓		CS
15-3A	E		6/CAP/25	217'	98	JM	147.5	N/A	171.5	✓	27 Sept	CS	28 Sept	150.0	N/A	188.2	✓		CS
17		F	40/45	15'	9860	MM	166	155	177 PASSED in FIELD	✓	28 Sept	CS	29 Sept	122.7(P)	155.2	176.8		✓ 17A&B	CS
18	E		27/CAP/31	15'	04	JB	126	N/A	176.5	✓	29 Sept	CS	30 Sept	133.0	N/A	196.2	✓		CS
19	E		35-31/CAP/35	179'	98	JM	106(P)	N/A	186	✓	—	CS	Not Sent Failed in Field				–	– 19A&B	CS
13-2A	E		35/CAP/32	137'	04	JB	117.5	N/A	206	✓	28 Sept	CS	29 Sept	115.9	N/A	185.2	✓		CS
20		F	44/46	233'	02	MM	180.5	176.0	202.0	✓	29 Sept	CS	30 Sept	164.3	171.8	189.8	✓		CS
14-A	E		31/CAP/31(N)	12' From 28/31	04	JB	94.5 Peel	N/A	211.0	✓	—	CS	Not Sent Failed in Field				–	– 14-2A	CS
14-B	E		32/CAP/32(N)	3' From 32/35	04	JB	84.5 Peel	N/A	210.5	✓	—	CS	"	"	"	"	–	– 14-2B	CS
13-2B	E		40/CAP/37	18'	04	JB	50 Peel	N/A	N/A	✓	—	CS	"	"	"	"	–	– 13-3B	CS

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

000409

206926

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Solmax TEST REQUIREMENTS: Fusion: Peel ≥ 115ppi, Shear ≥ 151 ppi Extrusion: Peel ≥ 84 ppi, Shear ≥ 151 ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL		DATE SAMPLED/SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL		RE-TEST	QA ID
D/S 14-2B	E		27/28	38'	04	JB	141	129	171.5	✓		29 Sept	CS	30 Sept	149.2	N/A	199.4	✓			CS
14-2A	E		25/28	183'	04	JB	78 Peel				✓	—	CS	Not Sent Failed in Field				—	—	14-3A	CS
21		F	46/48	182'	02	MM	142.5	144.0	173.0	✓		29 Sept	CS	30 Sept	170.8	167.4	193.8	✓			CS
22		F	48/51	303'	02	MM	175.0	174.5	191.5	✓		29 Sept	CS	30 Sept	171.9	162.1	184.4	✓			CS
23		F	51/54	99'	01	JI	181.5	166.0	193.5	✓		8 Oct ~~29 Sept~~	CS	9 Oct ~~30 Sept~~	161.8 ~~166.5~~	163.0 ~~167.0~~	182.4 ~~180.4~~	✓			CS
24		F	54/56	344'	01	JI	Not Tested			—	—	29 Sept	CS	30 Sept	165.5	167.0	180.4	✓			CS
25		F	56/58	211'	01	JI	156.5	152.5	174.0	✓		30 Sept	CS	1 Oct	167.3	167.6	182.6	✓			CS
26		F	60/61	12' from 58/60/61	01	JI	143.0	143.0	177.0	✓		30 Sept	CS	1 Oct	170.7	173.0	195.0	✓			CS
27		F	60/65	272'	9860	MM	140.5	142.0	163.0	✓		30 Sept	CS	1 Oct	137.2	155.2	180.4	✓			CS
17A		F	40/45	7'	9860	MM	131.5	100% Peel 134.0	164.0	✗	✓	—	CS	Not Sent Failed in Field				—	—	CAPPED	CS
17B		F	40/45	39'	9860	MM	128.5	129.5 Peel			✓	—	CS	Not Sent Failed in Field				—	—	17-2B	CS

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

000410

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: Petro TEST REQUIREMENTS: Fusion: Peel ≥ 115ppi, Shear ≥ 151ppi Extrusion: Peel ≥ 84ppi, Shear ≥ 151ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	RE-TEST	QA ID
D/S 17 2B		F	37/44	157'	9860	MM	156.0	161.0	194.0	✓	30 Sept	CS	1 Oct	155.6	159.3	181.4	✓		CS
19A	E		SI 49 S-42	164'	98	JM	113.5 Peel	10% N/A	180.0	✓	29 Sept	CS	30 Sept	111.0	N/A	195.0	✓		CS
19B	E		SI 53 & 95	192'	98	JM	122.5	N/A	173.0	✓	29 Sept	CS	30 Sept	*87.6	N/A	193.6		✓	19-2B	CS
14-3A	E		SR 4 / BW	170'	04	JB	28.0 Peel	N/A	—		✓	—	CS	NOT SENT FAILED IN FIELD			—	—	CAPPED	CS
13-3B	E		SR 66 7 (w)	210'	04	JB	47.0 Peel	N/A	—		✓	—	CS	"	"	"	" "	—	—	CAPPED	CS
28	E		36 / CAP 36	8'6" at (N) 36/37	04	JB	147.0	N/A	178.0	✓		30 Sept	CS	1 Oct	156.3	N/A	193.9	✓			CS
29	E		SI 24 / 58	396'	03	JM	111.0	N/A	168.5	✓		30 Sept	CS	1 Oct	131.1	N/A	200.6	✓			CS
19-2B	E		SI 54 / CAP 36	206'	98	JM	109.5	N/A	173.0	✓		30 Sept	CS	1 Oct	120.4	N/A	203.9	✓		2062	CS
30		F	62 / 66	399'	9860	MM	176.0	168.0	210.0	✓		1 Oct	CS	2 Oct	153.9	155.4	172.6	✓			CS
31		F	67 / 69	42'	01	GC	172.0	173.5	217.5	✓		1 Oct	CS	2 Oct	154.6	163.4	179.4	✓			CS
32		F	68 / 70	364'	01	GC	183.0	178.0	212.0	✓		1 Oct	CS	2 Oct	160.8	159.8	179.2	✓			CS

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

* three sample bones below 84.0 ppi

000411

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

CONTRACTOR: PETRO TEST REQUIREMENTS: Fusion: Peel ≥ 115 ppi, Shear ~~84~~ @ 151 ppi Extrusion: Peel 84 ppi, Shear 151 ppi

PRIMARY: ☐ SECONDARY: ☒ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO.	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL	RE-TEST	QA ID
D/S 33		F	71/72	202	9860	MM	165.5	165.0	208.5	✓	1 Oct	CS	2 Oct	163.7	157.0	176.4	✓		CS
34		F	72/74	319	01	GC	171.5	176.0	194.5	✓	1 Oct	CS	2 Oct	168.5 ~~163.7~~	168.7 @ ~~157.0~~	177.4 ~~176.4~~	✓		CS
35		F	75/78	165	9860	JM	154.0	161.0	198.5	✓	1 Oct	CS	2 Oct	158.5	157.3	176.0	✓		CS
36		F	76/79	288	01	GC	179.5	170.5	211.0	✓	1 Oct	CS	2 Oct	164.5	168.6	186.6	✓		CS
37		F	79/82	177'	9860	MM	180.0	191.5	230.5	✓	2 Oct	CS	3 Oct	155.3	156.3	177.4	✓		CS
38		F	82/84	55'	01	GC	184.5	179.5	209.5	✓	2 Oct	CS	3 Oct	170.4	161.4	177.4	✓		CS
39	E		59/62 38/25	160'	98	JM	128.5	—	178.0	✓	7 Oct	CS	8 Oct	139.2	N/A	202.4	✓		CS
40		F	81/97	151'	01	GC	183.0	186.5	220.5	✓	8 Oct	CS	9 Oct	167.4	164.8	192.6	✓		CS
41		F	93/93	25'	9860	JM	176.5	173.0	199.0	✓	8 Oct	CS	9 Oct	159.4	156.4	184.2	✓		CS
42	E		91/5213	702'	04	JB	151.5	2~~18.5~~ @	216.5	✓	8 Oct	CS	9 Oct	130.6	N/A	192.6	✓		CS
43		F	105/106	11' W of S-84	9727	AG	153.0	148.5	189.0	✓	12 Oct	CS	13 Oct ~~159.0~~ @	159.0	158.0	200.5	✓		CS

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

- **Secondary Destructive Laboratory Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5729-FLQC-1251-I
DATE TESTED: 09/15/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-1	1.	80.0	80.0	142.0	131.9	N/R	N/R	0	0	T	B	PASS	PASS	80.0	187.0	N/R	>100	B	PASS
	2.	80.0	80.0	166.9	156.6			0	0	T	B	PASS	PASS	80.0	186.0		>100	B	PASS
	3.	80.0	80.0	204.7	153.5			0	0	T	B	PASS	PASS	80.0	204.0		>100	B	PASS
	4.	80.0	80.0	166.3	159.9			0	0	T	B	PASS	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	80.0	161.2	204.5			0	0	T	T	PASS	PASS	80.0	183.0		>100	B	PASS
	MEAN	80.0	80.0	168.2	161.3							PASS	PASS	80.0	189.0				PASS
	S.D.	0.0	0.0	22.8	26.5									0.0	8.5				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: B7 DATE: 9-15-98

2062

000414

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA .Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5746-FLQC-1251-I
DATE TESTED: 09/16/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-2	1.	80.0	80.0	179.1	187.8	N/R	N/R	0	0	B	B	PASS	PASS	80.0	207.0	N/R	>100	T	PASS
	2.	80.0	80.0	160.9	165.4			0	0	B	B	PASS	PASS	80.0	181.0		>100	T	PASS
	3.	80.0	80.0	159.6	172.7			0	0	B	B	PASS	PASS	80.0	182.0		>100	T	PASS
	4.	80.0	80.0	172.6	181.8			0	0	B	B	PASS	PASS	80.0	184.0		>100	T	PASS
	5.	80.0	80.0	168.7	173.4			0	0	B	B	PASS	PASS	80.0	183.0		>100	T	PASS
	MEAN	80.0	80.0	168.2	176.2							PASS	PASS	80.0	187.4				PASS
	S.D.	0.0	0.0	8.1	8.7									0.0	11.0				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]cations: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

000415

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5765-FLQC-1251-I
DATE TESTED: 09/17/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-3	1.	80.0	80.0	165.8	172.7	N/R	N/R	0	0	B	T	PASS	PASS	80.0	185.8	N/R	>100	T	PASS
	2.	80.0	80.0	168.2	154.4			0	0	B	T	PASS	PASS	80.0	186.0		>100	T	PASS
	3.	80.0	80.0	161.9	155.7			0	0	T	T	PASS	PASS	80.0	186.6		>100	T	PASS
	4.	80.0	80.0	164.1	164.0			0	0	B	B	PASS	PASS	80.0	188.8		>100	T	PASS
	5.	80.0	80.0	169.5	151.0			0	0	B	T	PASS	PASS	80.0	179.9		>100	T	PASS
	MEAN	80.0	80.0	165.9	159.6							PASS	PASS	80.0	185.4				PASS
	S.D.	0.0	0.0	3.1	8.8									0.0	3.3				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: 87 DATE: 9-17-98

000716

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5791-QC1251-I*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*09/21/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-4	1.	80.0	154.0	N/R	0	B	PASS	80.0	192.0	N/R	>100	B	PASS
	2.	80.0	155.0		0	B	PASS	80.0	197.0		>100	B	PASS
	3.	80.0	155.0		0	B	PASS	80.0	194.0		>100	B	PASS
	4.	80.0	139.0		0	B	PASS	80.0	197.0		>100	B	PASS
	5.	80.0	163.0		0	B	PASS	80.0	197.0		>100	B	PASS
	MEAN	80.0	153.2				PASS	80.0	195.4				PASS
	S.D.	0.0	8.7					0.0	2.3				

000417

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifica[illegible]0 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 1[illegible] 4 of 5 specimens per sample must meet the project specifications.

QA ID: [illegible] DATE: 9-21-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: *GeoSyntec Consultants*
PROJECT: *FERNALD, FLUOR DANIEL*
CONTACT: *Mr. Dave Phillips*
GEOSYNTEC JOB NO.: *GQ0409 - 04.1*

MATERIAL: *High Density Polyethylene*
SEAM TYPE: *Double Track Fusion*
GEOSYNTEC ID: *5797-98-99-FLQC-1251-1*
DATE TESTED: *09/21/98*

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-5	1.	80.0	80.0	141.5	145.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	194.0	N/R	>100	T	PASS
	2.	80.0	80.0	123.5	111.0			100	0	P	T	FAIL	PASS	80.0	194.0		>100	T	PASS
	3.	80.0	80.0	152.0	52.1			0	100	B	P	PASS	FAIL	80.0	193.0		>100	T	PASS
	4.	80.0	80.0	151.7	149.2			0	0	B	B	PASS	PASS	80.0	190.0		>100	T	PASS
	5.	80.0	80.0	146.0	43.6			0	100	B	P	PASS	FAIL	80.0	191.0		>100	T	PASS
	MEAN	80.0	80.0	142.9	100.2							FAIL	FAIL	80.0	192.4				PASS
	S.D.	0.0	0.0	11.7	50.1									0.0	1.8				
DS-6	1.	80.0	80.0	173.8	163.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	188.0	N/R	>100	B	PASS
	2.	80.0	80.0	176.3	155.4			0	0	T	B	PASS	PASS	80.0	185.0		>100	B	PASS
	3.	80.0	80.0	158.7	176.0			0	0	B	T	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	176.3	159.6			0	0	T	B	PASS	PASS	80.0	189.0		>100	B	PASS
	5.	80.0	80.0	177.6	159.1			0	0	T	B	PASS	PASS	80.0	189.0		>100	B	PASS
	MEAN	80.0	80.0	172.5	162.6							PASS	PASS	80.0	188.0				PASS
	S.D.	0.0	0.0	7.9	7.9									0.0	1.7				
DS-7	1.	80.0	80.0	154.9	135.9	N/R	N/R	0	30	B	PB	PASS	FAIL	80.0	186.0	N/R	>100	B	PASS
	2.	80.0	80.0	161.5	157.2			0	0	T	T	PASS	PASS	80.0	189.0		>100	B	PASS
	3.	80.0	80.0	154.4	151.1			0	0	T	T	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	156.4	156.0			0	0	B	B	PASS	PASS	80.0	188.0		>100	B	PASS
	5.	80.0	80.0	151.2	161.2			0	0	B	B	PASS	PASS	80.0	186.0		>100	B	PASS
	MEAN	80.0	80.0	155.7	152.3							PASS	PASS	80.0	187.6				PASS
	S.D.	0.0	0.0	3.8	9.8									0.0	1.5				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: A7 DATE: 9-21-98

000418

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5867-68-69-70-71-FLQC-1251-1
DATE TESTED: 09/24/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-8	1.	80.0	80.0	159.8	151.4	N/R	N/R	0	0	B	T	PASS	PASS	80.0	172.0	N/R	>100	T	PASS
	2.	80.0	80.0	155.3	156.9			0	0	B	T	PASS	PASS	80.0	182.0		>100	B	PASS
	3.	80.0	80.0	172.5	163.3			0	0	B	T	PASS	PASS	80.0	182.0		>100	B	PASS
	4.	80.0	80.0	156.9	162.3			0	0	T	T	PASS	PASS	80.0	180.0		>100	B	PASS
	5.	80.0	80.0	167.4	156.4			0	0	T	T	PASS	PASS	80.0	172.0		>100	B	PASS
	MEAN	80.0	80.0	162.4	158.1							PASS	PASS	80.0	177.6				PASS
	S.D.	0.0	0.0	7.3	4.8									0.0	5.2				
DS-9	1.	80.0	80.0	160.3	145.1	N/R	N/R	0	0	B	B	PASS	PASS	80.0	181.0	N/R	>100	B	PASS
	2.	80.0	80.0	159.8	146.6			0	0	B	B	PASS	PASS	80.0	181.0		>100	B	PASS
	3.	80.0	80.0	162.1	147.2			0	0	B	B	PASS	PASS	80.0	185.0		>100	B	PASS
	4.	80.0	80.0	160.5	138.6			0	0	B	B	PASS	PASS	80.0	181.0		>100	B	PASS
	5.	80.0	80.0	161.7	149.3			0	0	T	B	PASS	PASS	80.0	187.0		>100	T	PASS
	MEAN	80.0	80.0	160.9	145.4							PASS	PASS	80.0	183.0				PASS
	S.D.	0.0	0.0	1.0	4.1									0.0	2.8				
DS-10	1.	80.0	80.0	144.0	151.9	N/R	N/R	0	0	B	T	PASS	PASS	80.0	202.0	N/R	>100	B	PASS
	2.	80.0	80.0	151.7	158.3			0	0	B	T	PASS	PASS	80.0	201.0		>100	B	PASS
	3.	80.0	80.0	122.8	154.2			0	0	B	T	PASS	PASS	80.0	200.0		>100	T	PASS
	4.	80.0	80.0	143.5	147.1			0	0	B	T	PASS	PASS	80.0	202.0		>100	T	PASS
	5.	80.0	80.0	136.1	145.0			0	0	B	T	PASS	PASS	80.0	198.0		>100	T	PASS
	MEAN	80.0	80.0	139.6	151.3							PASS	PASS	80.0	200.6				PASS
	S.D.	0.0	0.0	10.9	5.4									0.0	1.7				
DS-11	1.	80.0	80.0	147.9	164.0	N/R	N/R	0	0	T	T	PASS	PASS	80.0	180.0	N/R	>100	B	PASS
	2.	80.0	80.0	157.3	147.0			0	0	T	B	PASS	PASS	80.0	182.0		>100	B	PASS
	3.	80.0	80.0	152.5	156.0			0	0	B	B	PASS	PASS	80.0	181.0		>100	B	PASS
	4.	80.0	80.0	165.2	163.8			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	5.	80.0	80.0	163.1	164.4			0	0	B	B	PASS	PASS	80.0	182.0		>100	B	PASS
	MEAN	80.0	80.0	157.2	159.0							PASS	PASS	80.0	181.6				PASS
	S.D.	0.0	0.0	7.2	7.6									0.0	1.1				
DS-12B	1.	80.0	80.0	158.5	161.3	N/R	N/R	0	0	B	B	PASS	PASS	80.0	188.0	N/R	>100	B	PASS
	2.	80.0	80.0	158.2	157.5			0	0	B	T	PASS	PASS	80.0	183.0		>100	B	PASS
	3.	80.0	80.0	160.0	155.1			0	0	B	B	PASS	PASS	80.0	186.0		>100	B	PASS
	4.	80.0	80.0	159.9	153.5			0	0	B	B	PASS	PASS	80.0	181.0		>100	B	PASS
	5.	80.0	80.0	158.1	155.6			0	0	B	B	PASS	PASS	80.0	186.0		>100	B	PASS
	MEAN	80.0	80.0	158.9	156.6							PASS	PASS	80.0	184.8				PASS
	S.D.	0.0	0.0	0.9	3.0									0.0	2.8				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]ations: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5887-FLQC-1251-I
DATE TESTED: 09/28/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-12A	1.	80.0	80.0	156.8	128.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	204.0	N/R	>100	B	PASS
	2.	80.0	80.0	153.5	95.8			0	0	B	T	PASS	FAIL	80.0	207.0		>100	B	PASS
	3.	80.0	80.0	150.7	154.8			0	0	B	B	PASS	PASS	80.0	207.0		>100	B	PASS
	4.	80.0	80.0	151.0	154.7			0	0	B	B	PASS	PASS	80.0	204.0		>100	B	PASS
	5.	80.0	80.0	150.8	153.6			0	0	B	B	PASS	PASS	80.0	208.0		>100	B	PASS
	MEAN	80.0	80.0	152.6	137.4							PASS	PASS	80.0	206.0				PASS
	S.D.	0.0	0.0	2.6	25.9									0.0	1.9				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: [illegible] DATE: 9-28-98

000420

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5920-QC1251-I*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*09/29/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-13-2A	1.	80.0	121.7	N/R	0	B	PASS	80.0	182.0	N/R	>100	B	PASS
	2.	80.0	114.4		0	B	PASS	80.0	186.0		>100	B	PASS
	3.	80.0	119.5		0	B	PASS	80.0	187.0		>100	B	PASS
	4.	80.0	109.1		0	B	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	115.0		0	B	PASS	80.0	186.0		>100	B	PASS
	MEAN	80.0	115.9				PASS	80.0	185.2				PASS
	S.D.	0.0	4.9					0.0	1.9				

000421

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifica[illegible] mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 1[illegible]4 of 5 specimens per sample must meet the project specifications.

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5880-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*09/28/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-14	1.	80.0	118.7	N/R	75	PT	FAIL	80.0	180.6	N/R	>100	B	PASS
	2.	80.0	145.6		0	B	PASS	80.0	176.4		>100	B	PASS
	3.	80.0	77.3		75	PT	FAIL	80.0	178.2		>100	B	PASS
	4.	80.0	117.1		50	PT	FAIL	80.0	175.7		>100	B	PASS
	5.	80.0	53.2		100	PT	FAIL	80.0	164.5		>100	W	FAIL
	MEAN	80.0	102.4				FAIL	80.0	175.1				FAIL
	S.D.	0.0	36.8					0.0	6.2				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: 87 DATE: 9-28-98

000422

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GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5888-89-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*09/28/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-15-2B	1.	80.0	179.4	N/R	0	B	PASS	80.0	188.0	N/R	>100	B	PASS
	2.	80.0	165.3		0	B	PASS	80.0	189.0		>100	B	PASS
	3.	80.0	167.7		0	B	PASS	80.0	191.0		>100	B	PASS
	4.	80.0	167.7		0	B	PASS	80.0	190.0		>100	B	PASS
	5.	80.0	166.6		0	B	PASS	80.0	188.0		>100	B	PASS
	MEAN	80.0	169.3				PASS	80.0	189.2				PASS
	S.D.	0.0	5.7					0.0	1.3				
DS-15-3A	1.	80.0	150.6	N/R	0	B	PASS	80.0	185.0	N/R	>100	T	PASS
	2.	80.0	133.6		0	B	PASS	80.0	181.0		>100	T	PASS
	3.	80.0	159.6		0	B	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	153.3		0	B	PASS	80.0	193.0		>100	B	PASS
	5.	80.0	152.9		0	B	PASS	80.0	193.0		>100	B	PASS
	MEAN	80.0	150.0				PASS	80.0	188.2				PASS
	S.D.	0.0	9.8					0.0	5.2				

000423

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications [illegible] mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : [illegible] 4 of 5 specimens per sample must meet the project specifications.

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5980-81-82-83-84-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*09/30/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-14-2B	1.	80.0	165.0	N/R	0	B	PASS	80.0	198.0	N/R	>100	B	PASS
	2.	80.0	129.0		0	B	PASS	80.0	199.0		>100	B	PASS
	3.	80.0	140.0		0	B	PASS	80.0	197.0		>100	B	PASS
	4.	80.0	164.0		0	B	PASS	80.0	204.0		>100	B	PASS
	5.	80.0	148.0		0	B	PASS	80.0	199.0		>100	B	PASS
	MEAN	80.0	149.2				PASS	80.0	199.4				PASS
	S.D.	0.0	15.5					0.0	2.7				
DS-16	1.	80.0	176.0	N/R	0	B	PASS	80.0	198.0	N/R	>100	B	PASS
	2.	80.0	128.0		0	B	PASS	80.0	199.0		>100	B	PASS
	3.	80.0	140.0		0	B	PASS	80.0	198.0		>100	B	PASS
	4.	80.0	123.0		0	B	PASS	80.0	199.0		>100	B	PASS
	5.	80.0	133.0		0	B	PASS	80.0	200.0		>100	B	PASS
	MEAN	80.0	140.0				PASS	80.0	198.8				PASS
	S.D.	0.0	21.1					0.0	0.8				
DS-18	1.	80.0	143.0	N/R	0	B	PASS	80.0	194.0	N/R	>100	B	PASS
	2.	80.0	136.0		0	B	PASS	80.0	196.0		>100	B	PASS
	3.	80.0	128.0		0	B	PASS	80.0	196.0		>100	B	PASS
	4.	80.0	114.0		0	B	PASS	80.0	197.0		>100	B	PASS
	5.	80.0	144.0		0	B	PASS	80.0	198.0		>100	B	PASS
	MEAN	80.0	133.0				PASS	80.0	196.2				PASS
	S.D.	0.0	12.4					0.0	1.5				
DS-19A	1.	80.0	107.0	N/R	0	B	PASS	80.0	190.0	N/R	>100	B	PASS
	2.	80.0	110.0		0	B	PASS	80.0	195.0		>100	B	PASS
	3.	80.0	124.0		0	B	PASS	80.0	197.0		>100	B	PASS
	4.	80.0	102.0		0	B	PASS	80.0	196.0		>100	B	PASS
	5.	80.0	112.0		0	B	PASS	80.0	197.0		>100	B	PASS
	MEAN	80.0	111.0				PASS	80.0	195.0				PASS
	S.D.	0.0	8.2					0.0	2.9				
DS-19B	1.	80.0	80.0	N/R	0	B	FAIL	80.0	201.0	N/R	>100	B	PASS
	2.	80.0	81.0		0	B	FAIL	80.0	186.0		>100	B	PASS
	3.	80.0	88.0		0	B	PASS	80.0	204.0		>100	B	PASS
	4.	80.0	83.0		0	B	FAIL	80.0	174.0		>100	B	PASS
	5.	80.0	106.0		0	B	PASS	80.0	203.0		>100	B	PASS
	MEAN	80.0	87.6				FAIL	80.0	193.6				PASS
	S.D.	0.0	10.7					0.0	13.2				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: DJ DATE: 9-30-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QU/ 'Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5921-FLQC-1251-1
DATE TESTED: 09/29/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-17	1.	80.0	80.0	132.4	156.4	N/R	N/R	100	0	P	B	FAIL	PASS	80.0	177.0	N/R	>100	B	PASS
	2.	80.0	80.0	130.8	156.6			0	0	B	B	PASS	PASS	80.0	178.0		>100	B	PASS
	3.	80.0	80.0	90.5	156.2			100	0	P	B	FAIL	PASS	80.0	176.0		>100	B	PASS
	4.	80.0	80.0	113.6	159.6			80	0	PB	B	FAIL	PASS	80.0	178.0		>100	B	PASS
	5.	80.0	80.0	146.4	147.0			10	0	PB	B	FAIL	PASS	80.0	175.0		>100	B	PASS
	MEAN	80.0	80.0	122.7	155.2							FAIL	PASS	80.0	176.8				PASS
	S.D.	0.0	0.0	21.5	4.8									0.0	1.3				

00425

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]tions: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]1 ppi, 4 of 5 specimens per sample must meet the project specifications.

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5985-86-87-88-FLQC-1251-1
DATE TESTED: 09/30/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-20	1.	80.0	80.0	163.4	167.5	N/R	N/R	0	0	B	T	PASS	PASS	80.0	189.0	N/R	>100	B	PASS
	2.	80.0	80.0	165.3	170.5			0	0	B	T	PASS	PASS	80.0	190.0		>100	B	PASS
	3.	80.0	80.0	165.0	174.9			0	0	B	B	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	165.2	171.6			0	0	B	B	PASS	PASS	80.0	191.0		>100	B	PASS
	5.	80.0	80.0	162.7	174.6			0	0	B	T	PASS	PASS	80.0	190.0		>100	B	PASS
	MEAN	80.0	80.0	164.3	171.8							PASS	PASS	80.0	189.8				PASS
	S.D.	0.0	0.0	1.2	3.1									0.0	0.8				
DS-21	1.	80.0	80.0	176.3	162.6	N/R	N/R	0	0	B	T	PASS	PASS	80.0	195.0	N/R	>100	B	PASS
	2.	80.0	80.0	164.8	165.6			0	0	T	T	PASS	PASS	80.0	194.0		>100	B	PASS
	3.	80.0	80.0	162.0	173.2			0	0	B	T	PASS	PASS	80.0	195.0		>100	B	PASS
	4.	80.0	80.0	171.5	168.9			0	0	B	T	PASS	PASS	80.0	192.0		>100	B	PASS
	5.	80.0	80.0	179.6	166.8			0	0	T	T	PASS	PASS	80.0	193.0		>100	B	PASS
	MEAN	80.0	80.0	170.8	167.4							PASS	PASS	80.0	193.8				PASS
	S.D.	0.0	0.0	7.4	4.0									0.0	1.3				
DS-22	1.	80.0	80.0	173.6	157.5	N/R	N/R	0	0	B	B	PASS	PASS	80.0	185.0	N/R	>100	T	PASS
	2.	80.0	80.0	171.1	168.6			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	3.	80.0	80.0	171.1	157.8			0	0	B	B	PASS	PASS	80.0	185.0		>100	B	PASS
	4.	80.0	80.0	170.8	165.3			0	0	B	T	PASS	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	80.0	173.1	161.1			0	0	B	B	PASS	PASS	80.0	184.0		>100	B	PASS
	MEAN	80.0	80.0	171.9	162.1							PASS	PASS	80.0	184.4				PASS
	S.D.	0.0	0.0	1.3	4.8									0.0	0.9				
DS-24	1.	80.0	80.0	169.2	170.8	N/R	N/R	0	0	B	T	PASS	PASS	80.0	179.0	N/R	>100	B	PASS
	2.	80.0	80.0	162.7	164.7			0	0	B	T	PASS	PASS	80.0	180.0		>100	B	PASS
	3.	80.0	80.0	168.5	170.0			0	0	B	T	PASS	PASS	80.0	179.0		>100	B	PASS
	4.	80.0	80.0	163.2	161.5			0	0	B	T	PASS	PASS	80.0	183.0		>100	B	PASS
	5.	80.0	80.0	164.0	168.2			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	MEAN	80.0	80.0	165.5	167.0							PASS	PASS	80.0	180.8				PASS
	S.D.	0.0	0.0	3.1	3.9									0.0	2.0				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: 87 DATE: 10/7/98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 5993-95-96-97-FLQC-1251-I
DATE TESTED: 10/01/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-17-2B	1.	80.0	80.0	152.8	159.2	N/R	N/R	0	0	B	B	PASS	PASS	80.0	182.1	N/R	>100	B	PASS
	2.	80.0	80.0	159.7	159.2			0	0	T	B	PASS	PASS	80.0	183.3		>100	B	PASS
	3.	80.0	80.0	158.7	160.2			0	0	T	T	PASS	PASS	80.0	181.7		>100	B	PASS
	4.	80.0	80.0	149.2	159.8			0	0	T	T	PASS	PASS	80.0	181.3		>100	B	PASS
	5.	80.0	80.0	157.4	158.2			0	0	B	B	PASS	PASS	80.0	178.8		>100	B	PASS
	MEAN	80.0	80.0	155.6	159.3							PASS	PASS	80.0	181.4				PASS
	S.D.	0.0	0.0	4.4	0.8									0.0	1.7				
DS-25	1.	80.0	80.0	174.2	155.2	N/R	N/R	0	0	B	B	PASS	PASS	80.0	181.6	N/R	>100	B	PASS
	2.	80.0	80.0	167.1	164.6			0	0	B	T	PASS	PASS	80.0	185.1		>100	B	PASS
	3.	80.0	80.0	170.8	170.7			0	0	T	T	PASS	PASS	80.0	183.8		>100	B	PASS
	4.	80.0	80.0	162.0	173.5			0	0	T	T	PASS	PASS	80.0	183.2		>100	B	PASS
	5.	80.0	80.0	162.6	174.2			0	0	T	T	PASS	PASS	80.0	179.2		>100	B	PASS
	MEAN	80.0	80.0	167.3	167.6							PASS	PASS	80.0	182.6				PASS
	S.D.	0.0	0.0	5.2	7.9									0.0	2.3				
DS-26	1.	80.0	80.0	175.1	177.5	N/R	N/R	0	0	B	T	PASS	PASS	80.0	194.7	N/R	>100	B	PASS
	2.	80.0	80.0	173.2	173.7			0	0	B	B	PASS	PASS	80.0	195.2		>100	B	PASS
	3.	80.0	80.0	172.1	177.2			0	0	B	T	PASS	PASS	80.0	196.0		>100	B	PASS
	4.	80.0	80.0	166.1	169.3			0	0	B	T	PASS	PASS	80.0	194.6		>100	B	PASS
	5.	80.0	80.0	167.2	167.3			0	0	B	T	PASS	PASS	80.0	194.7		>100	B	PASS
	MEAN	80.0	80.0	170.7	173.0							PASS	PASS	80.0	195.0				PASS
	S.D.	0.0	0.0	3.9	4.6									0.0	0.6				
DS-27	1.	80.0	80.0	112.6	157.3	N/R	N/R	0	0	B	B	PASS	PASS	80.0	182.7	N/R	>100	B	PASS
	2.	80.0	80.0	131.5	154.8			0	0	T	B	PASS	PASS	80.0	179.5		>100	B	PASS
	3.	80.0	80.0	146.5	158.2			0	0	B	B	PASS	PASS	80.0	180.2		>100	B	PASS
	4.	80.0	80.0	147.5	147.8			0	0	B	B	PASS	PASS	80.0	179.7		>100	B	PASS
	5.	80.0	80.0	147.8	158.1			0	0	B	B	PASS	PASS	80.0	180.0		>100	B	PASS
	MEAN	80.0	80.0	137.2	155.2							PASS	PASS	80.0	180.4				PASS
	S.D.	0.0	0.0	15.4	4.4									0.0	1.3				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]ations: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

QA ID: WM DATE: 10-1-98

000227

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*5994-98-99-QC1251-I*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/01/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-19-2B	1.	80.0	130.1	N/R	0	B	PASS	80.0	202.6	N/R	>100	T	PASS
	2.	80.0	127.9		0	B	PASS	80.0	206.4		>100	T	PASS
	3.	80.0	125.2		0	B	PASS	80.0	203.1		>100	T	PASS
	4.	80.0	116.5		0	B	PASS	80.0	203.1		>100	T	PASS
	5.	80.0	102.1		0	B	PASS	80.0	204.3		>100	T	PASS
	MEAN	80.0	120.4				PASS	80.0	203.9				PASS
	S.D.	0.0	11.4					0.0	1.5				
DS-28	1.	80.0	132.2	N/R	100	P	PASS	80.0	194.5	N/R	>100	B	PASS
	2.	80.0	162.0		0	B	PASS	80.0	190.0		>100	T	PASS
	3.	80.0	169.0		0	B	PASS	80.0	195.0		>100	B	PASS
	4.	80.0	159.3		0	B	PASS	80.0	195.3		>100	B	PASS
	5.	80.0	159.2		0	B	PASS	80.0	194.8		>100	B	PASS
	MEAN	80.0	156.3				PASS	80.0	193.9				PASS
	S.D.	0.0	14.1					0.0	2.2				
DS-29	1.	80.0	125.2	N/R	0	B	PASS	80.0	199.3	N/R	>100	B	PASS
	2.	80.0	139.6		0	B	PASS	80.0	202.3		>100	B	PASS
	3.	80.0	129.5		0	B	PASS	80.0	199.2		>100	B	PASS
	4.	80.0	138.6		0	B	PASS	80.0	200.5		>100	B	PASS
	5.	80.0	122.5		0	B	PASS	80.0	201.7		>100	B	PASS
	MEAN	80.0	131.1				PASS	80.0	200.6				PASS
	S.D.	0.0	7.7					0.0	1.4				

000428

2062

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-1-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6017-18-19-20-21-FLQC-1251-1
DATE TESTED: 10/02/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-30	1.	80.0	80.0	153.5	155.2	N/R	N/R	0	0	B	B	PASS	PASS	80.0	169.0	N/R	>100	B	PASS
	2.	80.0	80.0	151.8	157.2			0	0	B	B	PASS	PASS	80.0	177.0		>100	B	PASS
	3.	80.0	80.0	153.4	157.5			0	0	B	T	PASS	PASS	80.0	172.0		>100	B	PASS
	4.	80.0	80.0	154.2	151.6			0	0	B	B	PASS	PASS	80.0	175.0		>100	B	PASS
	5.	80.0	80.0	156.7	155.7			0	0	B	B	PASS	PASS	80.0	170.0		>100	B	PASS
	MEAN	80.0	80.0	153.9	155.4							PASS	PASS	80.0	172.6				PASS
	S.D.	0.0	0.0	1.8	2.4									0.0	3.4				
DS-31	1.	80.0	80.0	165.7	162.6	N/R	N/R	0	0	B	T	PASS	PASS	80.0	177.0	N/R	>100	B	PASS
	2.	80.0	80.0	162.9	165.8			0	0	T	T	PASS	PASS	80.0	178.0		>100	B	PASS
	3.	80.0	80.0	145.9	165.1			0	0	B	T	PASS	PASS	80.0	179.0		>100	B	PASS
	4.	80.0	80.0	150.7	161.5			0	0	B	T	PASS	PASS	80.0	180.0		>100	B	PASS
	5.	80.0	80.0	147.8	161.8			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	MEAN	80.0	80.0	154.6	163.4							PASS	PASS	80.0	179.4				PASS
	S.D.	0.0	0.0	9.1	2.0									0.0	2.3				
DS-32	1.	80.0	80.0	162.0	158.1	N/R	N/R	0	0	T	B	PASS	PASS	80.0	182.0	N/R	>100	B	PASS
	2.	80.0	80.0	162.8	159.4			0	0	T	B	PASS	PASS	80.0	177.0		>100	B	PASS
	3.	80.0	80.0	162.2	156.1			0	0	T	T	PASS	PASS	80.0	177.0		>100	B	PASS
	4.	80.0	80.0	160.4	163.0			0	0	T	B	PASS	PASS	80.0	179.0		>100	B	PASS
	5.	80.0	80.0	156.7	162.4			0	0	B	T	PASS	PASS	80.0	181.0		>100	T	PASS
	MEAN	80.0	80.0	160.8	159.8							PASS	PASS	80.0	179.2				PASS
	S.D.	0.0	0.0	2.5	2.9									0.0	2.3				
DS-33	1.	80.0	80.0	165.6	155.6	N/R	N/R	0	0	B	B	PASS	PASS	80.0	174.0	N/R	>100	B	PASS
	2.	80.0	80.0	166.1	156.9			0	0	B	B	PASS	PASS	80.0	179.0		>100	B	PASS
	3.	80.0	80.0	158.9	153.8			0	0	B	B	PASS	PASS	80.0	175.0		>100	B	PASS
	4.	80.0	80.0	162.3	159.0			0	0	B	B	PASS	PASS	80.0	179.0		>100	B	PASS
	5.	80.0	80.0	165.8	159.5			0	0	B	B	PASS	PASS	80.0	175.0		>100	B	PASS
	MEAN	80.0	80.0	163.7	157.0							PASS	PASS	80.0	176.4				PASS
	S.D.	0.0	0.0	3.1	2.4									0.0	2.4				
DS-34	1.	80.0	80.0	166.8	160.8	N/R	N/R	0	0	T	B	PASS	PASS	80.0	173.0	N/R	>100	B	PASS
	2.	80.0	80.0	168.8	158.1			0	0	B	B	PASS	PASS	80.0	180.0		>100	B	PASS
	3.	80.0	80.0	169.1	171.4			0	0	B	T	PASS	PASS	80.0	177.0		>100	B	PASS
	4.	80.0	80.0	169.2	168.9			0	0	B	B	PASS	PASS	80.0	178.0		>100	B	PASS
	5.	80.0	80.0	168.6	159.3			0	0	T	T	PASS	PASS	80.0	179.0		>100	B	PASS
	MEAN	80.0	80.0	168.5	163.7							PASS	PASS	80.0	177.4				PASS
	S.D.	0.0	0.0	1.0	6.0									0.0	2.7				

NOTE: S[illegible]ical Notes page for explanation of abbreviations.

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Project [illegible]tions: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

00/429

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6022-23-FLQC-1251-I
DATE TESTED: 10/02/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-35	1.	80.0	80.0	160.0	154.7	N/R	N/R	0	0	B	T	PASS	PASS	80.0	172.0	N/R	>100	B	PASS
	2.	80.0	80.0	155.7	157.7			0	0	T	B	PASS	PASS	80.0	177.0		>100	B	PASS
	3.	80.0	80.0	153.4	157.8			0	0	B	T	PASS	PASS	80.0	174.0		>100	B	PASS
	4.	80.0	80.0	162.8	157.4			0	0	B	T	PASS	PASS	80.0	178.0		>100	B	PASS
	5.	80.0	80.0	162.2	159.1			0	0	B	T	PASS	PASS	80.0	179.0		>100	B	PASS
	MEAN	80.0	80.0	158.8	157.3							PASS	PASS	80.0	176.0				PASS
	S.D.	0.0	0.0	4.1	1.6									0.0	2.9				
DS-36	1.	80.0	80.0	163.2	166.5	N/R	N/R	0	0	T	T	PASS	PASS	80.0	186.0	N/R	>100	B	PASS
	2.	80.0	80.0	166.4	165.0			0	0	T	B	PASS	PASS	80.0	189.0		>100	B	PASS
	3.	80.0	80.0	163.6	171.3			0	0	T	T	PASS	PASS	80.0	187.0		>100	B	PASS
	4.	80.0	80.0	163.9	167.8			0	0	T	B	PASS	PASS	80.0	187.0		>100	B	PASS
	5.	80.0	80.0	165.3	172.2			0	0	T	B	PASS	PASS	80.0	184.0		>100	B	PASS
	MEAN	80.0	80.0	164.5	168.6							PASS	PASS	80.0	186.6				PASS
	S.D.	0.0	0.0	1.3	3.1									0.0	1.8				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-2-98

000430

20622

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QU/ 'Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: *GeoSyntec Consultants*
PROJECT: *FERNALD, FLUOR DANIEL*
CONTACT: *Mr. Dave Phillips*
GEOSYNTEC JOB NO.: *GQ0409 - 04.1*

MATERIAL: *High Density Polyethylene*
SEAM TYPE: *Double Track Fusion*
GEOSYNTEC ID: *6038-39-FLQC-1251-1*
DATE TESTED: *10/03/98*

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-37	1.	87.0	87.0	157.4	154.5	N/R	N/R	0	0	B	B	PASS	PASS	86.0	178.0	N/R	>100	B	PASS
	2.	82.5	82.5	156.6	155.6			0	0	B	B	PASS	PASS	88.1	177.0		>100	B	PASS
	3.	81.5	81.5	155.6	157.5			0	0	B	B	PASS	PASS	89.5	177.0		>100	B	PASS
	4.	86.6	86.6	160.7	157.0			0	0	B	T	PASS	PASS	83.4	178.0		>100	B	PASS
	5.	84.9	84.9	146.1	157.1			0	0	B	T	PASS	PASS	81.8	177.0		>100	B	PASS
	MEAN	84.5	84.5	155.3	156.3							PASS	PASS	85.8	177.4				PASS
	S.D.	2.4	2.4	5.5	1.3									3.2	0.5				
DS-38	1.	84.1	84.1	170.8	153.6	N/R	N/R	0	0	T	T	PASS	PASS	80.0	175.0	N/R	>100	B	PASS
	2.	82.8	82.8	168.0	166.1			0	0	T	T	PASS	PASS	82.5	178.0		>100	B	PASS
	3.	83.2	83.2	171.0	162.0			0	0	T	T	PASS	PASS	80.1	178.0		>100	B	PASS
	4.	83.7	83.7	167.8	160.3			0	0	T	T	PASS	PASS	82.7	177.0		>100	B	PASS
	5.	80.7	80.7	174.4	164.8			0	0	T	T	PASS	PASS	83.2	179.0		>100	B	PASS
	MEAN	82.9	82.9	170.4	161.4							PASS	PASS	81.7	177.4				PASS
	S.D.	1.3	1.3	2.7	4.9									1.5	1.5				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]ations: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

000431

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6129-QC1251-I*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/08/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-39	1.	80.0	138.7	N/R	0	B	PASS	80.0	223.0	N/R	>100	B	PASS
	2.	80.0	135.8		0	B	PASS	80.0	197.0		>100	B	PASS
	3.	80.0	152.1		0	B	PASS	80.0	197.0		>100	T	PASS
	4.	80.0	139.3		0	B	PASS	80.0	197.0		>100	B	PASS
	5.	80.0	130.1		0	B	PASS	80.0	198.0		>100	B	PASS
	MEAN	80.0	139.2				PASS	80.0	202.4				PASS
	S.D.	0.0	8.1					0.0	11.5				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-8-98

000432

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QU[illegible]TY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6162-63-64-FLQC-1251-1
DATE TESTED: 10/09/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-23	1.	80.0	80.0	161.0	163.0	N/R	N/R	0	0	T	T	PASS	PASS	80.0	180.0	N/R	>100	B	PASS
	2.	80.0	80.0	166.0	166.0			0	0	T	T	PASS	PASS	80.0	182.0		>100	B	PASS
	3.	80.0	80.0	157.0	163.0			0	0	B	T	PASS	PASS	80.0	180.0		>100	B	PASS
	4.	80.0	80.0	167.0	161.0			0	0	B	T	PASS	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	80.0	158.0	162.0			0	0	B	T	PASS	PASS	80.0	185.0		>100	B	PASS
	MEAN	80.0	80.0	161.8	163.0							PASS	PASS	80.0	182.4				PASS
	S.D.	0.0	0.0	4.5	1.9									0.0	2.5				
DS-40	1.	80.0	80.0	167.0	165.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	193.0	N/R	>100	T	PASS
	2.	80.0	80.0	167.0	160.0			0	0	B	T	PASS	PASS	80.0	192.0		>100	T	PASS
	3.	80.0	80.0	171.0	172.0			0	0	T	B	PASS	PASS	80.0	192.0		>100	T	PASS
	4.	80.0	80.0	170.0	164.0			0	0	T	B	PASS	PASS	80.0	193.0		>100	T	PASS
	5.	80.0	80.0	162.0	163.0			0	0	T	T	PASS	PASS	80.0	193.0		>100	T	PASS
	MEAN	80.0	80.0	167.4	164.8							PASS	PASS	80.0	192.6				PASS
	S.D.	0.0	0.0	3.5	4.4									0.0	0.5				
DS-41	1.	80.0	80.0	154.0	162.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	182.0	N/R	>100	B	PASS
	2.	80.0	80.0	158.0	154.0			0	0	T	B	PASS	PASS	80.0	185.0		>100	B	PASS
	3.	80.0	80.0	160.0	157.0			0	0	T	B	PASS	PASS	80.0	183.0		>100	B	PASS
	4.	80.0	80.0	163.0	149.0			0	0	T	B	PASS	PASS	80.0	184.0		>100	B	PASS
	5.	80.0	80.0	162.0	160.0			0	0	T	B	PASS	PASS	80.0	187.0		>100	B	PASS
	MEAN	80.0	80.0	159.4	156.4							PASS	PASS	80.0	184.2				PASS
	S.D.	0.0	0.0	3.6	5.1									0.0	1.9				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project [illegible]ations: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , She[illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

[illegible] WM DATE 10-9-96

00033

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6165-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/09/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
DS-42	1.	80.0	127.0	N/R	0	B	PASS	80.0	192.0	N/R	>100	B	PASS
	2.	80.0	124.0		0	B	PASS	80.0	194.0		>100	B	PASS
	3.	80.0	146.0		0	B	PASS	80.0	190.0		>100	T	PASS
	4.	80.0	127.0		0	B	PASS	80.0	194.0		>100	B	PASS
	5.	80.0	129.0		0	B	PASS	80.0	193.0		>100	B	PASS
	MEAN	80.0	130.6				PASS	80.0	192.6				PASS
	S.D.	0.0	8.8					0.0	1.7				

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NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-9-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6205-FLQC-1251-I
DATE TESTED: 10/13/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
DS-43	1.	80.0	80.0	157.0	161.3	N/R	N/R	0	0	T	B	PASS	PASS	80.0	203.6	N/R	>100	T	PASS
	2.	80.0	80.0	160.3	153.0			0	0	T	T	PASS	PASS	80.0	201.8		>100	T	PASS
	3.	80.0	80.0	157.8	162.0			0	0	T	B	PASS	PASS	80.0	200.7		>100	T	PASS
	4.	80.0	80.0	160.1	168.4			0	0	T	B	PASS	PASS	80.0	198.7		>100	T	PASS
	5.	80.0	80.0	159.6	145.3			0	0	T	T	PASS	PASS	80.0	197.7		>100	T	PASS
	MEAN	80.0	80.0	159.0	158.0							PASS	PASS	80.0	200.5				PASS
	S.D.	0.0	0.0	1.5	9.0									0.0	2.4				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project s[illegible]tions: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shea[illegible]1 ppi, 4 of 5 specimens per sample must meet the project specifications.

[illegible] 10-13-98

000435

Primary

- **Primary Field Destructive Test Logs**

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO / SOLMAX TEST REQUIREMENTS: EXTRUSION 84 PPI PEEL, 151 PPI SHEAR; FUSION 115 PPI PEEL, 151 PPI SHEAR (MINIMUM)

PRIMARY: ☒ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA						LABORATORY DATA						
D.S. NO. DP-	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI)/PSI) INSIDE	AVG PEEL (PPI)/PSI) OUTSIDE	AVG SHEAR (PPI)/PSI)	PASS/FAIL	DATE SAMPLED/SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI)/PSI) INSIDE	AVG PEEL (PPI)/PSI) OUTSIDE	AVG SHEAR (PPI)/PSI)	PASS/FAIL	RE-TEST	QA ID
1	—	F	P1/P2	313	9860	KH	147	147	174	P	14 Oct	TBY	15 Oct	153.8	144.0	183.4	P		TBY
2	—	F	P2/P3	225	9844	GC	168	162	182	P	14 Oct	TBY	15 Oct	162.4	165.0	190.0	P		TBY
3	—	F	P3/P4	44	9860	KH	189	190	247	P	15 Oct	TBY	16 Oct	156.0	155.0	189.8	P		TBY
4	—	F	P4/P5	137	9844	GC	157	153	185	P	15 Oct	TBY	16 Oct	155.0	156.4	186.2	P		TBY
5	—	F	P5/P6	215	9860	KH	156	160	180	P	15 Oct	TBY	16 Oct	159.0	156.4	189.6	P		TBY
6	—	F	P6/P7	292	9727	LL	140	140	175	P	15 Oct	TBY	16 Oct	151.8	146.2	187.8	P		TBY
7	—	F	P7/P8	93	9860	KH	156	161	190	P	15 Oct	TBY	16 Oct	158.2	162.6	193.4	P		TBY
8	—	F	P8/P9	206	01	GC	160	164	184	P	15 Oct	TBY	*	~~106.0~~	*Not TESTED		P	*	SQ
9	E	—	P10/P1	81	06	JM	114	—	243	P	16 Oct	TBY	17 Oct	106.0	—	221.0	P		TBY
10	—	F	P9/P11	50	9844	LL	177	182	215	P	16 Oct	TBY	17 Oct	160.2	162.6	221.0	P		TBY
11	—	F	P11/P12	130	9860	KH	157	173	213	P	16 Oct	TBY	17 Oct	154.2	160.2	207.0	P		TBY

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

* Sample lost in the field/lab results not available

GEOSYNTEC CONSULTANTS FILE NO. 3-10-DTL REVIEWED BY: SQ SHEET NO. 1 OF 5

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO / SOLNAX TEST REQUIREMENTS: EXTRUSION 84 PPI PEEL, 151 PPI SHEAR; FUSION 115 PPI PEEL, 151 PPI SHEAR (MINIMUM)

PRIMARY: ☒ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA							LABORATORY DATA						
U.S. NO. DP-	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL		DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL		RE-TEST	QA ID
12	—	F	P-12/P15	196	01	GC	177	164	201	P		16 OCT	TBY	17 OCT	158.4	148.4	201.8	P			TBY
13	—	F	P13/P14	305	02	JM	185	185	217	P		16 OCT	TBY	17 OCT	166.4	171.8	204.0	P			TBY
14	—	F	P22/P23	107	01	KH	152	157	179	P		16 OCT	TBY	17 OCT	153.6	157.6	210.0	P			TBY
15	—	F	P16/P35	115	02	GC	180	178	196	P		18 OCT	TBY	19 OCT	170.2	175.6	193.4	P			TBY
16	—	F	P13/P38	172	02	KH	152	161	206	P		21 OCT	TBY	23 OCT	162.8	160.2	197.4	P			SQ
17	—	F	P38/P39	300	01	GC	161	164	192	P		21 OCT	TBY	23 OCT	179.8	159.2	196.4	P			SQ
18	E	—	P6/P8/P46	137	98	GC	159	—	190	P		21 OCT	TBY	23 OCT	163.2	—	195.6	P			SQ
19	—	F	P45/P46	92	02	KH	192	197	233	P		22 OCT	TBY	25 OCT	171.6	164.0	200.0	P			SQ
20	—	F	P46/P47	279	01	JM	172	165	202	P		23 OCT	TBY	27 OCT	161.3	153.0	192.0	P			SQ
21	—	F	P39/P52	308	01	KH	PEEL	—	—		F	23 OCT	TBY	—	—	—	—	—		21B/21A	—
21A	—	F	P39/P52	324	01	KH	PEEL	—	—		F	23 OCT	TBY	—	—	—	—	—		21-2A	—

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO / SOLMAX TEST REQUIREMENTS: EXTRUSION 84 PPI PEEL, 151 PPI SHEAR; FUSION 115 PPI PEEL, 151 PPI SHEAR (MINIMUM)

PRIMARY: ☒ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA							LABORATORY DATA						
D.S. NO. DP-	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL		DATE SAMPLED/SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL	RE-TEST	QA ID
21-2A	—	F	P39/P52	350	01	KH	PEEL	—	—		F	23 Oct	TBY	—	—	—	—	—	21-3A	—
21-3A	—	F	P40/P52	386	01	KH	PEEL	—	—		F	24 Oct	TBY	—	—	—	—	—	21-4A	—
21-B	—	F	P39/P52	290	01	KH	169	179	197	P		23 Oct	TBY	27 Oct	153.3	160.7	190.2	P		SQ
22	—	F	P47/P48	186	01	GC	198	190	250	P		24 Oct	TBY	27 Oct	152.4	152.2	186.6	P		SQ
23	—	F	P48/P54	81	02	KH	206	224	246	P		24 Oct	TBY	27 Oct	162.4	161.2	187.2	P		SQ
24	—	F	P55/P56	295	02	KH	207	216	246	P		24 Oct	TBY	27 Oct	159.7	155.5	186.6	P		SQ
25	—	F	P56/P58	161	01	GC	193	192	239	P		24 Oct	TBY	27 Oct	166.8	156.6	194.0	P		SQ
26	—	F	P58/P59	34	02	KH	196	196	240	P		24 Oct	TBY	27 Oct	158.8	164.1	189.3	P		SQ
27	—	F	P60/P61	159	02	KH	183	165	202	P		24 Oct	TBY	27 Oct	160.0	162.2	187.2	P		SQ
28	—	F	P61/P62	288	01	GC	162	169	191	P		24 Oct	TBY	27 Oct	157.7	163.5	189.3	P		SQ
29	—	F	P53/P64	74	01	GC	178	177	204	P		25 Oct	TBY	28 Oct	157.1	164.1	171.0	P		SQ

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO / SOLMAX TEST REQUIREMENTS: EXTRUSION 84 PPI PEEL, 151 PPI SHEAR FUSION 115 PPI PEEL, 151 PPI SHEAR (MINIMUM)

PRIMARY: ☒ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA							LABORATORY DATA						
D.S. NO. DP-	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL		DATE SAMPLED/ SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/ FAIL		RE-TEST	QA ID
30	—	F	P67/P68	103	02	KH	185	173	209	P		25 Oct	TBY	28 Oct	159.7	159.4	182.6	P			SQ
31	—	F	P74/P74	35	02	KH	170	174	203	P		25 Oct	TBY	28 Oct	162.8	160.3	177.4	P			SQ
32	—	F	P63/P75	107	02	KH	147	158	172	P		25 Oct	TBY	28 Oct	156.6	162.7	177.4	P			SQ
33	—	F	P66/P84	268	02	KH	162	166	186	P		25 Oct	TBY	28 Oct	168.0	172.3	185.4	P			SQ
34	E	—	PI81/P45	418	06	JB	137	156	230	P		26 Oct	TBY	28 Oct	131.5	—	187.8	P		34B/34A	SQ
35	E	—	PI139/P-45	677	06	JB	159	147	200	P		26 Oct	TBY	28 Oct	126.5	—	179.4	P			SQ
21-4A	—	F	P47/P48	326	01	GC	⊛					26 Oct	TBY	28 Oct	162.9	129.5	180.6	SQ P	F	21-5A	SQ
21-5A	—	F	P47/P48	312	01	GC	PEEL	—	—		F			—	—	—	—	—		21-6A	—
21-6A	—	F	P47/P48	290	01	GC	160	161	178	P		27 Oct	TBY	28 Oct	160.7	146.0	187.2	P			SQ
34-B	E	—	PI82/P45	431	06	JB	115	—	182	P		27 Oct	TBY	28 Oct	131.2	—	193.8	P		34-2B	SQ
34-A	E	—	PI81/P49	411	06	JB	PEEL	—	—		F	27 Oct	TBY	—	—	—	—	—		34-2A	—

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

⊛ SAMPLE NOT TESTED IN FIELD, LABORATORY SAMPLES - 4 OF 5 SAMPLES YIELDED ≥10% SEPARATION

000141

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

CONTRACTOR: PETRO / SOLMAX TEST REQUIREMENTS: EXTRUSION 84 PPI PEEL, 151 PPI SHEAR; FUSION 115 PPI PEEL, 151 PPI SHEAR (MINIMUM)

PRIMARY: ☒ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ☒ ARCHIVE: ☒ INSTALLER: ☒ OTHER:

SAMPLE DATA							FIELD DATA							LABORATORY DATA						
U.S. NO. DP-	TRACK (1) SINGLE	TRACK (1) DOUBLE	LOCATION SEAM	LOCATION DISTANCE (ft)	MACH NO.	OPER ID	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL		DATE SAMPLED/SHIPPED (day/mo)	QA ID	DATE OF RESULTS (day/mo)	AVG PEEL (PPI/PSI) INSIDE	AVG PEEL (PPI/PSI) OUTSIDE	AVG SHEAR (PPI/PSI)	PASS/FAIL		RE-TEST	QA ID
34-2A	E	—	PI80/P49	399	06	JB	PEEL	—	—		F	27 Oct	TBY	—	—	—	—	—		34-3A	—
34-3A	E	—	PI77/P50	375	06	JB	PEEL	—	—		F	27 Oct	TBY	—	—	—	—	—		34-4A	—
34-4A	E	—	PI109/P45	661	06	JB	120	—	193	P		27 Oct	TBY	28 Oct	131.2	—	193.8	P			SQ
34-2B	E	—	PE84/P45	441	06	JB	126	—	186	P		28 Oct	TBY	29 Oct	78.8	—	193.0		F	34-3B	SQ
36	E	—	PR304/P45	428	98	GC	168	—	197	P		28 Oct	TBY	29 Oct	137.4	—	196.7	P			SQ
34-3B	E	—	PE107/P45	646	06	JB	143	—	209	P		29 Oct	TBY	2 Nov	145.9	—	180.6	P			SQ

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

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- **Primary Destructive Laboratory Test Results**

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6467-QC1251-I*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/30/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
D/P-34-3B	1.	80.0	143.2	N/R	0	B	PASS	80.0	168.0	N/R	>100	B	PASS
	2.	80.0	147.6		0	B	PASS	80.0	183.0		>100	B	PASS
	3.	80.0	141.8		0	B	PASS	80.0	183.0		>100	B	PASS
	4.	80.0	150.3		0	B	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	146.4		0	B	PASS	80.0	184.0		>100	B	PASS
	MEAN	80.0	145.9				PASS	80.0	180.6				PASS
	S.D.	0.0	3.4					0.0	7.1				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 11-2-98

000044

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6265-66-FLQC-1251-1
DATE TESTED: 10/15/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-1	1.	80.0	80.0	154.2	146.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	182.0	N/R	>100	B	PASS
	2.	80.0	80.0	151.0	138.0			0	0	T	B	PASS	PASS	80.0	187.0		>100	B	PASS
	3.	80.0	80.0	156.5	151.0			0	0	T	T	PASS	PASS	80.0	188.0		>100	B	PASS
	4.	80.0	80.0	154.2	143.5			0	0	T	B	PASS	PASS	80.0	179.0		>100	B	PASS
	5.	80.0	80.0	153.0	141.6			0	0	T	B	PASS	PASS	80.0	181.0		>100	B	PASS
	MEAN	80.0	80.0	153.8	144.0							PASS	PASS	80.0	183.4				PASS
	S.D.	0.0	0.0	2.0	4.9									0.0	3.9				
D/P-2	1.	80.0	80.0	161.0	165.6	N/R	N/R	0	0	B	T	PASS	PASS	80.0	189.0	N/R	>100	B	PASS
	2.	80.0	80.0	157.0	155.7			0	0	T	B	PASS	PASS	80.0	191.0		>100	B	PASS
	3.	80.0	80.0	166.1	169.3			0	0	T	B	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	163.7	163.1			0	0	T	T	PASS	PASS	80.0	190.0		>100	T	PASS
	5.	80.0	80.0	164.0	171.1			0	0	T	B	PASS	PASS	80.0	191.0		>100	B	PASS
	MEAN	80.0	80.0	162.4	165.0							PASS	PASS	80.0	190.0				PASS
	S.D.	0.0	0.0	3.5	6.0									0.0	1.0				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project spe[illegible]tions: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : [illegible]51 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-15-98

000445

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6277-81-FLQC-1251-I
DATE TESTED: 10/16/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-3	1.	80.0	80.0	153.0	152.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	191.0	N/R	>100	B	PASS
	2.	80.0	80.0	158.0	153.0			0	0	T	B	PASS	PASS	80.0	189.0		>100	B	PASS
	3.	80.0	80.0	150.0	154.0			0	0	B	B	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	157.0	156.0			0	0	B	B	PASS	PASS	80.0	187.0		>100	B	PASS
	5.	80.0	80.0	162.0	160.0			0	0	B	B	PASS	PASS	80.0	193.0		>100	B	PASS
	MEAN	80.0	80.0	156.0	155.0							PASS	PASS	80.0	189.8				PASS
	S.D.	0.0	0.0	4.6	3.2									0.0	2.3				
D/P-4	1.	80.0	80.0	156.0	160.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	186.0	N/R	>100	B	PASS
	2.	80.0	80.0	160.0	150.0			0	0	B	B	PASS	PASS	80.0	187.0		>100	B	PASS
	3.	80.0	80.0	157.0	156.0			0	0	B	B	PASS	PASS	80.0	185.0		>100	B	PASS
	4.	80.0	80.0	159.0	161.0			0	0	B	B	PASS	PASS	80.0	185.0		>100	B	PASS
	5.	80.0	80.0	143.0	155.0			0	0	B	T	PASS	PASS	80.0	188.0		>100	B	PASS
	MEAN	80.0	80.0	155.0	156.4							PASS	PASS	80.0	186.2				PASS
	S.D.	0.0	0.0	6.9	4.4									0.0	1.3				
D/P-5	1.	80.0	80.0	159.0	154.0	N/R	N/R	0	0	T	T	PASS	PASS	80.0	188.0	N/R	>100	B	PASS
	2.	80.0	80.0	150.0	157.0			0	0	B	T	PASS	PASS	80.0	192.0		>100	B	PASS
	3.	80.0	80.0	160.0	157.0			0	0	T	B	PASS	PASS	80.0	188.0		>100	B	PASS
	4.	80.0	80.0	163.0	153.0			0	0	B	T	PASS	PASS	80.0	188.0		>100	B	PASS
	5.	80.0	80.0	163.0	161.0			0	0	B	T	PASS	PASS	80.0	192.0		>100	B	PASS
	MEAN	80.0	80.0	159.0	156.4							PASS	PASS	80.0	189.6				PASS
	S.D.	0.0	0.0	5.3	3.1									0.0	2.2				
D/P-6	1.	80.0	80.0	153.0	143.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	187.0	N/R	>100	B	PASS
	2.	80.0	80.0	151.0	152.0			0	0	B	B	PASS	PASS	80.0	188.0		>100	B	PASS
	3.	80.0	80.0	145.0	143.0			0	0	B	B	PASS	PASS	80.0	187.0		>100	B	PASS
	4.	80.0	80.0	153.0	141.0			0	0	B	B	PASS	PASS	80.0	190.0		>100	B	PASS
	5.	80.0	80.0	157.0	152.0			0	0	B	B	PASS	PASS	80.0	187.0		>100	B	PASS
	MEAN	80.0	80.0	151.8	146.2							PASS	PASS	80.0	187.8				PASS
	S.D.	0.0	0.0	4.4	5.4									0.0	1.3				
D/P-7	1.	80.0	80.0	159.0	162.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	195.0	N/R	>100	T	PASS
	2.	80.0	80.0	165.0	167.0			0	0	B	T	PASS	PASS	80.0	193.0		>100	T	PASS
	3.	80.0	80.0	160.0	160.0			0	0	B	T	PASS	PASS	80.0	192.0		>100	T	PASS
	4.	80.0	80.0	151.0	160.0			0	0	B	T	PASS	PASS	80.0	193.0		>100	T	PASS
	5.	80.0	80.0	156.0	164.0			0	0	B	T	PASS	PASS	80.0	194.0		>100	T	PASS
	MEAN	80.0	80.0	158.2	162.6							PASS	PASS	80.0	193.4				PASS
	S.D.	0.0	0.0	5.2	3.0									0.0	1.1				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID:_____ DATE:_____

000446

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY URANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6298-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/17/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
D/P-9	1.	80.0	99.0	N/R	0	B	PASS	80.0	215.0	N/R	>100	W	PASS
	2.	80.0	102.0		0	B	PASS	80.0	220.0		>100	B	PASS
	3.	80.0	108.0		0	B	PASS	80.0	223.0		>100	B	PASS
	4.	80.0	110.0		0	B	PASS	80.0	224.0		>100	B	PASS
	5.	80.0	111.0		0	B	PASS	80.0	223.0		>100	B	PASS
	MEAN	80.0	106.0				PASS	80.0	221.0				PASS
	S.D.	0.0	5.2					0.0	3.7				

000427

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: [illegible] mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 p[illegible] of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-26-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6299-6303-FLQC-1251-I
DATE TESTED: 10/17/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-10	1.	80.0	80.0	153.0	147.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	215.0	N/R	>100	W	PASS
	2.	80.0	80.0	156.0	164.0			0	0	B	T	PASS	PASS	80.0	220.0		>100	B	PASS
	3.	80.0	80.0	174.0	177.0			0	0	B	T	PASS	PASS	80.0	223.0		>100	B	PASS
	4.	80.0	80.0	154.0	161.0			0	0	B	B	PASS	PASS	80.0	224.0		>100	B	PASS
	5.	80.0	80.0	164.0	164.0			0	0	B	B	PASS	PASS	80.0	223.0		>100	B	PASS
	MEAN	80.0	80.0	160.2	162.6							PASS	PASS	80.0	221.0				PASS
	S.D.	0.0	0.0	8.8	10.7									0.0	3.7				
D/P-11	1.	80.0	80.0	159.0	154.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	206.0	N/R	>100	T	PASS
	2.	80.0	80.0	160.0	152.0			0	0	B	B	PASS	PASS	80.0	208.0		>100	T	PASS
	3.	80.0	80.0	158.0	162.0			0	0	B	B	PASS	PASS	80.0	208.0		>100	T	PASS
	4.	80.0	80.0	155.0	165.0			0	0	B	B	PASS	PASS	80.0	206.0		>100	B	PASS
	5.	80.0	80.0	139.0	168.0			0	0	B	B	PASS	PASS	80.0	207.0		>100	T	PASS
	MEAN	80.0	80.0	154.2	160.2							PASS	PASS	80.0	207.0				PASS
	S.D.	0.0	0.0	8.7	6.9									0.0	1.0				
D/P-12	1.	80.0	80.0	159.0	159.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	207.0	N/R	>100	B	PASS
	2.	80.0	80.0	155.0	145.0			0	0	B	B	PASS	PASS	80.0	200.0		>100	B	PASS
	3.	80.0	80.0	162.0	147.0			0	0	T	B	PASS	PASS	80.0	201.0		>100	B	PASS
	4.	80.0	80.0	159.0	145.0			0	0	B	B	PASS	PASS	80.0	201.0		>100	B	PASS
	5.	80.0	80.0	157.0	146.0			0	0	T	B	PASS	PASS	80.0	200.0		>100	B	PASS
	MEAN	80.0	80.0	158.4	148.4							PASS	PASS	80.0	201.8				PASS
	S.D.	0.0	0.0	2.6	6.0									0.0	2.9				
D/P-13	1.	80.0	80.0	166.0	163.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	203.0	N/R	>100	B	PASS
	2.	80.0	80.0	169.0	171.0			0	0	B	T	PASS	PASS	80.0	203.0		>100	T	PASS
	3.	80.0	80.0	170.0	180.0			0	0	B	B	PASS	PASS	80.0	203.0		>100	T	PASS
	4.	80.0	80.0	170.0	176.0			0	0	B	T	PASS	PASS	80.0	205.0		>100	T	PASS
	5.	80.0	80.0	157.0	169.0			0	0	B	T	PASS	PASS	80.0	206.0		>100	T	PASS
	MEAN	80.0	80.0	166.4	171.8							PASS	PASS	80.0	204.0				PASS
	S.D.	0.0	0.0	5.5	6.5									0.0	1.4				
D/P-14	1.	80.0	80.0	154.0	159.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	214.0	N/R	>100	B	PASS
	2.	80.0	80.0	152.0	159.0			0	0	B	B	PASS	PASS	80.0	214.0		>100	B	PASS
	3.	80.0	80.0	150.0	150.0			0	0	B	B	PASS	PASS	80.0	207.0		>100	B	PASS
	4.	80.0	80.0	156.0	156.0			0	0	B	B	PASS	PASS	80.0	206.0		>100	B	PASS
	5.	80.0	80.0	156.0	164.0			0	0	B	B	PASS	PASS	80.0	209.0		>100	B	PASS
	MEAN	80.0	80.0	153.6	157.6							PASS	PASS	80.0	210.0				PASS
	S.D.	0.0	0.0	2.6	5.1									0.0	3.8				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: A 7 DATE: 10/17/98

000448

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6318-FLQC-1251-I
DATE TESTED: 10/20/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-15	1.	80.0	80.0	167.0	172.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	195.0	N/R	>100	B	PASS
	2.	80.0	80.0	171.0	179.0			0	0	B	T	PASS	PASS	80.0	193.0		>100	B	PASS
	3.	80.0	80.0	169.0	174.0			0	0	B	T	PASS	PASS	80.0	191.0		>100	B	PASS
	4.	80.0	80.0	171.0	176.0			0	0	B	T	PASS	PASS	80.0	191.0		>100	B	PASS
	5.	80.0	80.0	173.0	177.0			0	0	B	B	PASS	PASS	80.0	197.0		>100	B	PASS
	MEAN	80.0	80.0	170.2	175.6							PASS	PASS	80.0	193.4				PASS
	S.D.	0.0	0.0	2.3	2.7									0.0	2.6				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : [illegible] ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-20-98

000449

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6373-6374-FLQC-1251-I
DATE TESTED: 10/22/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-17	1.	80.0	80.0	177.0	153.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	193.0	N/R	>100	B	PASS
	2.	80.0	80.0	179.0	161.0			0	0	B	T	PASS	PASS	80.0	196.0		>100	B	PASS
	3.	80.0	80.0	181.0	162.0			0	0	T	B	PASS	PASS	80.0	200.0		>100	B	PASS
	4.	80.0	80.0	181.0	160.0			0	0	T	B	PASS	PASS	80.0	195.0		>100	B	PASS
	5.	80.0	80.0	181.0	160.0			0	0	T	B	PASS	PASS	80.0	198.0		>100	B	PASS
	MEAN	80.0	80.0	179.8	159.2							PASS	PASS	80.0	196.4				PASS
	S.D.	0.0	0.0	1.8	3.6									0.0	2.7				
D/P-16	1.	80.0	80.0	168.0	162.0	N/R	N/R	0	0	T	B	PASS	PASS	80.0	199.0	N/R	>100	B	PASS
	2.	80.0	80.0	162.0	161.0			0	0	T	B	PASS	PASS	80.0	195.0		>100	B	PASS
	3.	80.0	80.0	163.0	161.0			0	0	B	T	PASS	PASS	80.0	197.0		>100	B	PASS
	4.	80.0	80.0	157.0	161.0			0	0	T	B	PASS	PASS	80.0	197.0		>100	B	PASS
	5.	80.0	80.0	164.0	156.0			0	0	B	T	PASS	PASS	80.0	199.0		>100	B	PASS
	MEAN	80.0	80.0	162.8	160.2							PASS	PASS	80.0	197.4				PASS
	S.D.	0.0	0.0	4.0	2.4									0.0	1.7				

000450

2062

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: 07 DATE: 11-10-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY URANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

BST DATE: 10/9/98

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6372-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED: -*	*10/22/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR						BST CODE
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	
D/P-18	1.	80.0	173.0	N/R	0	B	PASS	80.0	195.0	N/R	>100	T	PASS	QM27
	2.	80.0	155.0		0	B	PASS	80.0	198.0		>100	T	PASS	
	3.	80.0	167.0		0	B	PASS	80.0	197.0		>100	B	PASS	
	4.	80.0	166.0		0	B	PASS	80.0	194.0		>100	T	PASS	
	5.	80.0	155.0		0	B	PASS	80.0	194.0		>100	T	PASS	
	MEAN	80.0	163.2				PASS	80.0	195.6				PASS	
	S.D.	0.0	7.9					0.0	1.8					

000451

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: 57 DATE: 11-16-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6385-FLQC-1251-1
DATE TESTED: 10/25/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-19	1.	80.0	80.0	174.0	165.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	205.0	N/R	>100	T	PASS
	2.	80.0	80.0	172.0	164.0			0	0	B	T	PASS	PASS	80.0	200.0		>100	T	PASS
	3.	80.0	80.0	177.0	165.0			0	0	B	T	PASS	PASS	80.0	196.0		>100	T	PASS
	4.	80.0	80.0	168.0	161.0			0	0	B	T	PASS	PASS	80.0	199.0		>100	T	PASS
	5.	80.0	80.0	167.0	165.0			0	0	B	T	PASS	PASS	80.0	200.0		>100	T	PASS
	MEAN	80.0	80.0	171.6	164.0							PASS	PASS	80.0	200.0				PASS
	S.D.	0.0	0.0	4.2	1.7									0.0	3.2				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-25-98

2062

25/000

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6450-FLQC-1251-1
DATE TESTED: 10/28/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-21-6A	1.	80.0	80.0	166.1	177.3	N/R	N/R	0	0	B	B	PASS	PASS	80.0	188.0	N/R	>100	T	PASS
	2.	80.0	80.0	158.0	120.7			0	100	B	P	PASS	FAIL	80.0	187.0		>100	T	PASS
	3.	80.0	80.0	161.0	155.2			0	0	B	T	PASS	PASS	80.0	188.0		>100	T	PASS
	4.	80.0	80.0	158.8	139.0			0	15	B	PT	PASS	FAIL	80.0	185.0		>100	T	PASS
	5.	80.0	80.0	159.7	137.6			0	60	B	PT	PASS	FAIL	80.0	188.0		>100	T	PASS
	MEAN	80.0	80.0	160.7	146.0							PASS	FAIL	80.0	187.2				PASS
	S.D.	0.0	0.0	3.2	21.4									0.0	1.3				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-28-98

000453

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6403-02-04-05-06-FLQC-1251-I
DATE TESTED: 10/27/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-21B	1.	80.0	80.0	155.3	158.6	N/R	N/R	0	0	B	T	PASS	PASS	80.0	190.0	N/R	>100	B	PASS
	2.	80.0	80.0	157.1	162.7			0	0	B	T	PASS	PASS	80.0	187.0		>100	T	PASS
	3.	80.0	80.0	153.2	161.8			0	0	B	T	PASS	PASS	80.0	198.0		>100	T	PASS
	4.	80.0	80.0	151.6	161.7			0	0	B	T	PASS	PASS	80.0	188.0		>100	T	PASS
	5.	80.0	80.0	149.5	158.8			0	0	B	T	PASS	PASS	80.0	188.0		>100	T	PASS
	MEAN	80.0	80.0	153.3	160.7							PASS	PASS	80.0	190.2				PASS
	S.D.	0.0	0.0	3.0	1.9									0.0	4.5				
D/P-20	1.	80.0	80.0	158.5	149.7	N/R	N/R	0	0	B	B	PASS	PASS	80.0	186.0	N/R	>100	T	PASS
	2.	80.0	80.0	163.6	153.5			0	0	B	T	PASS	PASS	80.0	196.0		>100	T	PASS
	3.	80.0	80.0	160.5	155.0			0	0	B	T	PASS	PASS	80.0	196.0		>100	T	PASS
	4.	80.0	80.0	161.6	154.5			0	0	B	T	PASS	PASS	80.0	193.0		>100	T	PASS
	5.	80.0	80.0	162.5	152.3			0	0	B	T	PASS	PASS	80.0	189.0		>100	T	PASS
	MEAN	80.0	80.0	161.3	153.0							PASS	PASS	80.0	192.0				PASS
	S.D.	0.0	0.0	2.0	2.1									0.0	4.4				
D/P-22	1.	80.0	80.0	155.0	155.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	186.7	N/R	>100	T	PASS
	2.	80.0	80.0	144.0	152.0			0	0	B	T	PASS	PASS	80.0	189.3		>100	T	PASS
	3.	80.0	80.0	166.0	155.0			0	0	B	T	PASS	PASS	80.0	187.1		>100	T	PASS
	4.	80.0	80.0	153.0	148.0			0	0	B	T	PASS	PASS	80.0	184.3		>100	T	PASS
	5.	80.0	80.0	144.0	151.0			0	0	B	T	PASS	PASS	80.0	185.5		>100	T	PASS
	MEAN	80.0	80.0	152.4	152.2							PASS	PASS	80.0	186.6				PASS
	S.D.	0.0	0.0	9.1	2.9									0.0	1.9				
D/P-23	1.	80.0	80.0	156.0	169.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	185.0	N/R	>100	T	PASS
	2.	80.0	80.0	169.0	166.0			0	0	B	T	PASS	PASS	80.0	185.0		>100	T	PASS
	3.	80.0	80.0	168.0	154.0			0	0	B	B	PASS	PASS	80.0	180.0		>100	T	PASS
	4.	80.0	80.0	155.0	156.0			0	0	T	T	PASS	PASS	80.0	194.0		>100	T	PASS
	5.	80.0	80.0	164.0	161.0			0	0	T	T	PASS	PASS	80.0	192.0		>100	T	PASS
	MEAN	80.0	80.0	162.4	161.2							PASS	PASS	80.0	187.2				PASS
	S.D.	0.0	0.0	6.6	6.4									0.0	5.7				
D/P-24	1.	80.0	80.0	158.0	156.2	N/R	N/R	0	0	B	T	PASS	PASS	80.0	189.5	N/R	>100	B	PASS
	2.	80.0	80.0	166.0	165.8			0	0	T	T	PASS	PASS	80.0	184.6		>100	T	PASS
	3.	80.0	80.0	162.2	150.1			0	0	B	T	PASS	PASS	80.0	186.0		>100	T	PASS
	4.	80.0	80.0	153.2	151.5			0	0	B	T	PASS	PASS	80.0	186.1		>100	B	PASS
	5.	80.0	80.0	159.3	154.0			0	0	B	T	PASS	PASS	80.0	186.6		>100	B	PASS
	MEAN	80.0	80.0	159.7	155.5							PASS	PASS	80.0	186.6				PASS
	S.D.	0.0	0.0	4.8	6.2									0.0	1.8				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-27-98

000454

2062

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6407-08-09-10-FLQC-1251-1
DATE TESTED: 10/27/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-25	1.	80.0	80.0	166.0	152.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	194.0	N/R	>100	B	PASS
	2.	80.0	80.0	164.0	152.0			0	0	B	T	PASS	PASS	80.0	194.0		>100	T	PASS
	3.	80.0	80.0	165.0	160.0			0	0	B	B	PASS	PASS	80.0	191.0		>100	T	PASS
	4.	80.0	80.0	172.0	156.0			0	0	B	B	PASS	PASS	80.0	190.0		>100	B	PASS
	5.	80.0	80.0	167.0	163.0			0	0	T	B	PASS	PASS	80.0	201.0		>100	T	PASS
	MEAN	80.0	80.0	166.8	156.6							PASS	PASS	80.0	194.0				PASS
	S.D.	0.0	0.0	3.1	4.9									0.0	4.3				
D/P-26	1.	80.0	80.0	164.5	163.2	N/R	N/R	0	0	T	T	PASS	PASS	80.0	191.6	N/R	>100	B	PASS
	2.	80.0	80.0	158.8	163.0			0	0	B	T	PASS	PASS	80.0	189.5		>100	B	PASS
	3.	80.0	80.0	158.5	159.3			0	0	B	B	PASS	PASS	80.0	189.0		>100	B	PASS
	4.	80.0	80.0	156.5	164.0			0	0	B	T	PASS	PASS	80.0	189.0		>100	B	PASS
	5.	80.0	80.0	155.6	171.1			0	0	B	B	PASS	PASS	80.0	187.2		>100	B	PASS
	MEAN	80.0	80.0	158.8	164.1							PASS	PASS	80.0	189.3				PASS
	S.D.	0.0	0.0	3.5	4.3									0.0	1.6				
D/P-27	1.	80.0	80.0	160.0	164.0	N/R	N/R	0	0	B	T	PASS	PASS	80.0	193.0	N/R	>100	T	PASS
	2.	80.0	80.0	163.0	162.0			0	0	B	T	PASS	PASS	80.0	189.0		>100	T	PASS
	3.	80.0	80.0	159.0	162.0			0	0	B	T	PASS	PASS	80.0	175.0		>100	B	PASS
	4.	80.0	80.0	164.0	163.0			0	0	B	T	PASS	PASS	80.0	189.0		>100	T	PASS
	5.	80.0	80.0	154.0	160.0			0	0	B	T	PASS	PASS	80.0	190.0		>100	B	PASS
	MEAN	80.0	80.0	160.0	162.2							PASS	PASS	80.0	187.2				PASS
	S.D.	0.0	0.0	3.9	1.5									0.0	7.0				
D/P-28	1.	80.0	80.0	156.1	162.2	N/R	N/R	0	0	B	T	PASS	PASS	80.0	189.8	N/R	>100	B	PASS
	2.	80.0	80.0	158.0	160.8			0	0	B	B	PASS	PASS	80.0	184.5		>100	T	PASS
	3.	80.0	80.0	162.2	163.1			0	0	B	T	PASS	PASS	80.0	188.3		>100	B	PASS
	4.	80.0	80.0	155.6	166.2			0	0	B	T	PASS	PASS	80.0	192.0		>100	B	PASS
	5.	80.0	80.0	156.5	165.0			0	0	B	T	PASS	PASS	80.0	192.0		>100	B	PASS
	MEAN	80.0	80.0	157.7	163.5							PASS	PASS	80.0	189.3				PASS
	S.D.	0.0	0.0	2.7	2.2									0.0	3.1				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project spec[illegible]ns: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : [illegible]ppi, 4 of 5 specimens per sample must meet the project specifications.

WM DATE: 10-27-98

000455

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6422-23-24-25-26-FLQC-1251-1
DATE TESTED: 10/27/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-21-4A	1.	80.0	80.0	164.7	140.3	N/R	N/R	0	90	B	PT	PASS	FAIL	80.0	181.0	N/R	>100	B	PASS
	2.	80.0	80.0	159.8	113.8			0	50	B	PT	PASS	FAIL	80.0	179.0		>100	B	PASS
	3.	80.0	80.0	164.3	105.6			0	100	B	P	PASS	FAIL	80.0	182.0		>100	B	PASS
	4.	80.0	80.0	164.2	161.0			0	0	B	T	PASS	PASS	80.0	179.0		>100	T	PASS
	5.	80.0	80.0	161.5	127.0			0	100	B	P	PASS	FAIL	80.0	182.0		>100	B	PASS
	MEAN	80.0	80.0	162.9	129.5							PASS	FAIL	80.0	180.6				PASS
	S.D.	0.0	0.0	2.1	22.0									0.0	1.5				
D/P-29	1.	80.0	80.0	152.7	164.0	N/R	N/R	0	0	B	B	PASS	PASS	80.0	173.0	N/R	>100	T	PASS
	2.	80.0	80.0	160.3	164.2			0	0	T	B	PASS	PASS	80.0	179.0		>100	B	PASS
	3.	80.0	80.0	161.1	156.6			0	0	T	B	PASS	PASS	80.0	165.0		>100	B	PASS
	4.	80.0	80.0	152.1	168.5			0	0	B	T	PASS	PASS	80.0	164.0		>100	B	PASS
	5.	80.0	80.0	159.3	167.1			0	0	T	T	PASS	PASS	80.0	174.0		>100	B	PASS
	MEAN	80.0	80.0	157.1	164.1							PASS	PASS	80.0	171.0				PASS
	S.D.	0.0	0.0	4.3	4.6									0.0	6.4				
D/P-30	1.	80.0	80.0	156.5	155.7	N/R	N/R	0	0	B	B	PASS	PASS	80.0	181.0	N/R	>100	B	PASS
	2.	80.0	80.0	158.7	153.0			0	0	B	B	PASS	PASS	80.0	184.0		>100	B	PASS
	3.	80.0	80.0	162.3	170.6			0	0	B	T	PASS	PASS	80.0	183.0		>100	B	PASS
	4.	80.0	80.0	159.3	156.2			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	5.	80.0	80.0	161.6	161.7			0	0	B	B	PASS	PASS	80.0	182.0		>100	B	PASS
	MEAN	80.0	80.0	159.7	159.4							PASS	PASS	80.0	182.6				PASS
	S.D.	0.0	0.0	2.3	7.0									0.0	1.1				
D/P-31	1.	80.0	80.0	159.1	160.3	N/R	N/R	0	0	B	B	PASS	PASS	80.0	175.0	N/R	>100	T	PASS
	2.	80.0	80.0	156.1	162.5			0	0	B	B	PASS	PASS	80.0	176.0		>100	T	PASS
	3.	80.0	80.0	165.8	159.7			0	0	B	B	PASS	PASS	80.0	177.0		>100	B	PASS
	4.	80.0	80.0	166.8	159.6			0	0	B	B	PASS	PASS	80.0	183.0		>100	B	PASS
	5.	80.0	80.0	166.2	159.6			0	0	B	B	PASS	PASS	80.0	176.0		>100	B	PASS
	MEAN	80.0	80.0	162.8	160.3							PASS	PASS	80.0	177.4				PASS
	S.D.	0.0	0.0	4.9	1.2									0.0	3.2				
D/P-32	1.	80.0	80.0	150.5	171.6	N/R	N/R	0	0	B	B	PASS	PASS	80.0	179.0	N/R	>100	B	PASS
	2.	80.0	80.0	158.8	160.6			0	0	B	B	PASS	PASS	80.0	171.0		>100	B	PASS
	3.	80.0	80.0	152.5	168.0			0	0	B	B	PASS	PASS	80.0	180.0		>100	B	PASS
	4.	80.0	80.0	159.1	162.2			0	0	B	B	PASS	PASS	80.0	179.0		>100	B	PASS
	5.	80.0	80.0	162.2	151.3			0	0	B	B	PASS	PASS	80.0	178.0		>100	B	PASS
	MEAN	80.0	80.0	156.6	162.7							PASS	PASS	80.0	177.4				PASS
	S.D.	0.0	0.0	4.9	7.8									0.0	3.6				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-28-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUA Y ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GeoSyntec Consultants
PROJECT: FERNALD, FLUOR DANIEL
CONTACT: Mr. Dave Phillips
GEOSYNTEC JOB NO.: GQ0409 - 04.1

MATERIAL: High Density Polyethylene
SEAM TYPE: Double Track Fusion
GEOSYNTEC ID: 6427-FLQC-1251-1
DATE TESTED: 10/27/98

SAMPLE NUMBER	SPEC. #	PEEL												SHEAR					
		THICKNESS (mil)		MAXIMUM TENSION (ppi)		MAXIMUM STRESS (psi)		SEAM SEPARATION (%)		LOCUS OF FAILURE		PASS OR FAIL		THICKNESS (mil)	MAXIMUM TENSION (ppi)	ELONGATION AT YIELD (%)	ELONGATION AT BREAK (%)	LOCUS OF FAILURE	PASS OR FAIL
		I	O	I	O	I	O	I	O	I	O	I	O						
D/P-33	1.	80.0	80.0	169.1	170.1	N/R	N/R	0	0	B	T	PASS	PASS	80.0	185.0	N/R	>100	B	PASS
	2.	80.0	80.0	173.5	173.2			0	0	B	T	PASS	PASS	80.0	186.0		>100	B	PASS
	3.	80.0	80.0	165.7	173.1			0	0	B	B	PASS	PASS	80.0	188.0		>100	B	PASS
	4.	80.0	80.0	162.8	174.2			0	0	B	B	PASS	PASS	80.0	188.0		>100	B	PASS
	5.	80.0	80.0	169.0	170.8			0	0	T	B	PASS	PASS	80.0	180.0		>100	B	PASS
	MEAN	80.0	80.0	168.0	172.3							PASS	PASS	80.0	185.4				PASS
	S.D.	0.0	0.0	4.0	1.7									0.0	3.3				

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil fusion welded seams : Peel >115 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-28-98

000457

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6428-6429-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/27/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
D/P-34	1.	80.0	150.3	N/R	50	PB	FAIL	80.0	185.0	N/R	>100	B	PASS
	2.	80.0	106.3		70	PB	FAIL	80.0	192.0		>100	B	PASS
	3.	80.0	120.3		0	B	PASS	80.0	191.0		>100	B	PASS
	4.	80.0	139.1		0	B	PASS	80.0	182.0		>100	B	PASS
	5.	80.0	141.6		0	B	PASS	80.0	189.0		>100	B	PASS
	MEAN	80.0	131.5				FAIL	80.0	187.8				PASS
	S.D.	0.0	17.8					0.0	4.2				
D/P-35	1.	80.0	123.0	N/R	0	B	PASS	80.0	177.0	N/R	>100	B	PASS
	2.	80.0	138.7		0	B	PASS	80.0	174.0		>100	B	PASS
	3.	80.0	124.3		0	B	PASS	80.0	181.0		>100	B	PASS
	4.	80.0	118.2		0	B	PASS	80.0	180.0		>100	B	PASS
	5.	80.0	128.5		0	B	PASS	80.0	185.0		>100	B	PASS
	MEAN	80.0	126.5				PASS	80.0	179.4				PASS
	S.D.	0.0	7.7					0.0	4.2				

000458

2062

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID: WM DATE: 10-28-98

G. SYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY URANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6451-6452-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/28/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
D/P-34-4A	1.	80.0	119.0	N/R	0	B	PASS	80.0	191.0	N/R	>100	T	PASS
	2.	80.0	127.0		0	B	PASS	80.0	192.0		>100	T	PASS
	3.	80.0	130.0		0	B	PASS	80.0	193.0		>100	T	PASS
	4.	80.0	147.0		0	B	PASS	80.0	198.0		>100	T	PASS
	5.	80.0	133.0		0	B	PASS	80.0	195.0		>100	T	PASS
	MEAN	80.0	131.2				PASS	80.0	193.8				PASS
	S.D.	0.0	10.3					0.0	2.8				
D/P-34B	1.	80.0	94.0	N/R	100	P	FAIL	80.0	195.0	N/R	>100	T	PASS
	2.	80.0	135.0		0	B	PASS	80.0	195.0		>100	B	PASS
	3.	80.0	126.0		0	B	PASS	80.0	189.0		>100	T	PASS
	4.	80.0	120.0		0	B	PASS	80.0	192.0		>100	T	PASS
	5.	80.0	116.0		40	PB	FAIL	80.0	197.0		>100	T	PASS
	MEAN	80.0	118.2				FAIL	80.0	193.6				PASS
	S.D.	0.0	15.3					0.0	3.1				

000459

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specificatio[illegible]nil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 [illegible] of 5 specimens per sample must meet the project specifications.

[illegible] WM DATE 10-28-98

GEOSYNTEC CONSULTANTS
Materials Testing Laboratory

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT:	*GeoSyntec Consultants*	*MATERIAL:*	*Polyethylene*
PROJECT:	*FERNALD, FLUOR DANIEL*	*SEAM TYPE:*	*Single Track Extrusion*
CONTACT:	*Mr. Dave Phillips*	*GEOSYNTEC ID:*	*6457-6458-QC1251-1*
GEOSYNTEC JOB NO.:	*GQ0409 - 04.1*	*DATE TESTED:*	*10/29/98*

SAMPLE NUMBER	SPEC. #	PEEL						SHEAR					
		THICKNESS (mil)	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*SEAM SEPARATION (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*	*THICKNESS (mil)*	*MAXIMUM TENSION (ppi)*	*MAXIMUM STRESS (psi)*	*ELONGATION AT BREAK (%)*	*LOCUS OF FAILURE*	*PASS OR FAIL*
D/P-34-2B	1.	80.0	81.5	N/R	100	P	FAIL	80.0	186.0	N/R	>100	B	PASS
	2.	80.0	77.6		100	P	FAIL	80.0	215.0		>100	B	PASS
	3.	80.0	87.9		100	P	FAIL	80.0	183.0		>100	B	PASS
	4.	80.0	91.9		100	P	FAIL	80.0	190.0		>100	B	PASS
	5.	80.0	55.2		100	P	FAIL	80.0	191.0		>100	B	PASS
	MEAN	80.0	78.8				FAIL	80.0	193.0				PASS
	S.D.	0.0	14.3					0.0	12.7				
D/P-36	1.	80.0	151.0	N/R	0	B	PASS	80.0	192.5	N/R	>100	B	PASS
	2.	80.0	139.7		0	B	PASS	80.0	194.8		>100	B	PASS
	3.	80.0	128.7		0	B	PASS	80.0	196.0		>100	B	PASS
	4.	80.0	137.7		0	B	PASS	80.0	199.7		>100	B	PASS
	5.	80.0	130.0		0	B	PASS	80.0	200.6		>100	B	PASS
	MEAN	80.0	137.4				PASS	80.0	196.7				PASS
	S.D.	0.0	9.0					0.0	3.4				

000460

2062

NOTE: See Technical Notes page for explanation of abbreviations.

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Project specifications: 80 mil extrusion welded seams : Peel >84 ppi, maximumof 10 % seam separation , Shear : 151 ppi, 4 of 5 specimens per sample must meet the project specifications.

Q.A. ID:_____ DATE:_____

APPENDIX O:

CELL 2 GEOMEMBRANE REPAIR SUMMARY LOGS

Secondary
Primary

Secondary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: ~~GQ0166~~ GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: PETRO/SOLMAX

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO. (1)	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
15 Sept	S1/PANEL #4	SR-1	5'	—	P	E	1	1	—	#98	JM	CS	21 Sept	JM	P	vacuum box	RP
15 Sept	S1/S2	SR-2	60'	—	P	E	5	3	—	"	"	CS	21	JM	P	↓	RP
15 Sept	S2/S3	SR-3	42'	—	D/S-1	E	5	3	—	"	"	CS	21	JM	P	↓	RP
15 Sept	S3/S4	SR-4	14'	—	P	E	6	2	—	"	"	CS	22 Sept	CK	P	↓	RP
15 Sept	S3/S4	SR-5	47'	—	P	E	2	2	—	"	"	CS	21 Sept	JM	P	↓	RP
15 Sept	S7/S8	SR-6	50'	—	D/S-2	E	5	3	—	"	"	CS	21	JM	P	↓	RP
15 Sept	S9	SR-7	0'	5'	S	E	10	2	—	"	"	CS	21	JM	P	↓	RP
16 Sept	S13/S14	SR-8	53'	—	D/S-3	E	5	3	—	#98	JM	CS	21	JM	P	↓	RP
18 Sept	S14/S15	SR-9	2'	—	P	E	2	2	—	98	JM	TBY	22 Sept	CK	P	↓	RP
18 Sept	S14/S17 S14/S19	SR-10	—	—	P	E	3.5	2.5	—	98	JM	TBY	21	JM	P	↓	RP
18 Sept	S14/S19	SR-11	16'	—	P	E	1.5	2.0	—	98	JM	TBY	21	JM	P	↓	RP
18 Sept	S15/S17/ S16/S18	SR-12	—	—	P	E	3	3.5	—	98	JM	TBY	23 Sept	CK	P	↓	DLE
18 Sept	S16/S18/ S19	SR-13	—	—	P	E	2	3	—	98	JM	TBY	23 Sept	CK	P	↓	DLE
18 Sept	S16/S19	SR-14	—	—	C	E	24	3	—	98	JM	TBY	21 Sept	JM	P	vacuum box	RP
18 Sept	S19	SR-15	93'	4'E	P	E	1	1.5	—	98	JM	TBY	23 Sept	CK	P	↓	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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2062

000163

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
(8) 16/18 Sept	S-19 S-20 S-21	SA-16	TEE		P	E	2.0'	2.0'	–	98	JM	TBY	23 Sept	CK	P	Vacuum Box	DLE
(9) 16/18 "	S-19 S-19 S-18 S-22	17	TEE		P	E	8.5'	3.0'	–	↓	JM	TBY	↓ "	CK	P	" "	DLE
19 Sept	S-20 S-26 S-24 SA-18	18	0' To	19'	C	E	19.0'	3.0'	–	↓	RS	TBY	↓ "	CK	P	" "	DLE
22 Sept	S-20 F-21 S-26	19	Tee		P	E	2.0'	2.0'	–	98	RS	DLE	23 Sept	CK	P	Vacuum Box	DLE
"	S-22 S-23	20	@53'		P	E	2.0'	2.0'	–	98	RS	DLE	23 Sept	CK	P	" "	DLE
"	S-22 S-23	21	TEE		P	E	8.0'	3.0'	–	98	J.M.	DLE	23 Sept	CK	P	Vacuum Box	DLE
"	S-23 F-21 S-24	22	TEE		P	E	2.5'	3.0'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	S-28 S-26	23	99' To	117'	C	E	30.0'	2.0'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	S-28 S-27	24	@ 61'		P	E	2.5'	1.5'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	SA-14 S-16 S-18 S-19	25	TEE		DS-4 P	E	1.5'	4.5'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	S-21 S-29	26	@27'		DS-5 P	E	14.0'	11.0'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	S-29	27	@27'	W-9'	P	E	2.0'	4.0'	–	↓		DLE	↓ "	CK	P	↓	DLE
"	S-21	28	W 17'	@ 28'	P	E	3.0'	3.0'	–	98	JM	DLE	↓ "	CK	P	↓	DLE
"	S-29 S-28	29	12' To	24'	C	E	24.0'	4.0'	–	4	JB	DLE	↓ "	CK	P	↓	DLE
22 (13) Sept	S-29 S-28	SA-30	0' To	12'	C	E	14.0'	4.0'	–	4	JB	DLE	23 Sept	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

000384

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2062

000365

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
22 Sept	S-28 S-27	SR. 31	@20'		P	E	7.5'	4.5'	—	98	JM	DLE	23 Sept	CK	P	Vacuum Box	DLE
	S-27 S-28	32			P		7.0'	4.5'	—	98	JM	DLE			P		DLE
	S-28 S-31 S-33	33	TEE		P		12.0'	6.0'	—	4	JB	DLE			P		DLE
	S-31 S-32 S-33 S-34	34	TEE		P		5.0'	3.0'	—	4	JB	DLE			P		DLE
	S-34	35	88'	3.5' W 34/33	P		2.0'	2.0'	—	4	JB	DLE			P		DLE
	S-32 S-34 S-38	36	TEE		P		9.0'	2.0'	—	4	JB	DLE			P		DLE
	S-34	37	83'	35' E 34/34	P		2.0'	2.0'	—	4	JB	DLE			P		DLE
	S-38 S-32	38	84' To	118'	C		3.5'	2.0'	—	98	JM	DLE			P		DLE
	S-38	39	95.5'	3' W 38/39	P		2.5'	2.0'	—	4	JB	DLE			P		DLE
	S-38	40	95.5'	3' E 38/39	P		2.0'	2.0'	—	4	JB	DLE			P		DLE
	S-39	41	97'	25' W 38/39	P		2.0'	2.0'	—	4	JB	DLE			P		DLE
	S-39	42	98'	3' E 39/40	P		2.0'	2.0'	—	4	JB	DLE			P		DLE
	S-40	43	95'	3' W 39/40	P		1.5'	1.5'	—	4	JB	DLE			P		DLE
	S-40	44	96'	3' E 39/40	P		—	—	2.0'	4	JB	DLE			P		DLE
22 (13) Sept	S-32 S-35 S-38	SR 45	TEE		P	E	4.0'	4.0'	—	4	JB	DLE	23 Sept	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000466

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: PETRO / SOLMAX

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
22 Sept	S-38 S-35	SR 46	4' E of S-39		P	E	6.0'	1.5'	–	4	JB	DLE	8 Oct	JM	P	Vacuum Box	DLE
	S-38 S-39 S-35 S-36	47	118' To 124'		C		6.0'	4.0'	–	4	JB	DLE	8 Oct	JM	P	" "	DLE
	S-36 S-39 S-39 S-40	48	TEE		P		6.5'	4.0'	–	98	JM	RP	8 Oct	JM	P	Vacuum Box	M.H.
	S-40 S-36 S-39 S-39	49	117' To 120.5'		P		3.5'	1.5'	–	4	JB	RP	8 Oct	JM	P	" "	M.H
	S-40 S-37	50	@ 120'		C		23.0'	2.0'	–	4	JB	RP	—	—	–	Capped	CS
	S-28 S-31	51	@ 123'		P		3.0'	2.5'	–	98	JM	RP	8 Oct	JM	P	Vacuum Box	M.H
	S-26 S-28	52	@ 129'		P		6.0'	2.0'	–	98	JM	RP	8 Oct	JM	P	" "	M.H
	S-25 S-26 S-28	53	TEE		P		4.0'	2.0'	–	4	JB	RP	8 Oct	JM	P	Vacuum Box	M.H.
	S-13 S-14 S-26	54			P		2.0'	2.0'	–	98	JM	RP		JM	P		M.H
	S-12 S-13 S-26 S-25	55			P		5.5'	2.5'	–	4	JB	RP		JM	P		M.H
	S-11 S-12 S-25	56			P		2.0'	2.0'	–	4	JB	RP		JM	P		M.H
	S-16 S-11 S-25	57	TEE		P		2.0'	2.0'	–	4	JB	RP		JM	P		M.H
	S-23 S-28	58	@ 198'		P		5.0'	2.0'	–	98	JM	DLE		JM	P		M.H
	S-32 S-35	59	@ 190'		P		2.0'	2.0'	–	4	JB	DLE		JM	P		M.H
22 Sept (13)	S-35 S-36	SR 60	@ 215'		P	E	7.0'	2.0'	–	98	JM	DLE	8 Oct	JM	P	Vacuum Box	M.H

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
22 Sept	S-35 S-36	SR 61	@ 300'		P	E	3.0'	2.0'	–	48	JM	DLE	23 Sept	CK	P	Vacuum Box	DLE
23 Sept	S-35 S-32	SR 62	@ 203'		P	E	4.0'	2.0'	–	4	JB	DLE	23 Sept	CK	P	Vacuum Box	DLE
*	S-6 S-25 (S) S-7 S-25 (W)	SR 63A	0-23 0-23	@ 297'	C		0	4.0'	–			DLE	24 Sept	CK	P		DLE
*	S-28 (S) S-28 (N)	63B	23' to 46'	@ 297'	C				–			DLE		CK	P		DLE
*	S-31 (S) S-31 (W)	63C	46' to 70'	@ 297'	C				–			DLE		CK	P		DLE
*	S-32 (S) S-32 (W)	63D	70' to 94'	@ 297'	C				–			DLE		CK	P		DLE
*	S-35 (S) S-35 (W)	63E	94' to 119'	@ 297'	C				–			DLE		CK	P		DLE
*	S-36 (S) S-36 (W)	63F	119' to 140'	@ 297'	C		140'		–			DLE		CK	P		DLE
* 23 Sept.	S-39 (S) S-39 (W)	SR 63G	140' to 148'	@ 297'	C		8.0'	4'	–			DLE		CK	P		DLE
24 Sept.	S-31 S-28	64	@ 214'		DS-B P		5.0'	2.0'	–			DLE		CK	P		DLE
	S-25	65	@ 232'	between 0-15	P		18.0'	4.0'	–			DLE		CK	P		DLE
	S-10 S-9 S-8 S-9 S-6	66	130' to 212'	7.0'	C		82'	4.0'	–	4	JB	DLE		CK	P		DLE
	S-10 S-9 S-25	67	@ 70'		P		6.0'	2.0'	–	98	JM	DLE		CK	P		DLE
	S-9 S-8 S-9 S-6 S-5	68	156' to 238'		C		97.5'	4.0'	–	4	JB	DLE		CK	P		DLE
24 Sept (13)	S-6 S-7	SR 69	@ 78'		P	E	3.0'	2.0'	–	98	JM	DLE	24 Sept	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION * = SR 204 Capping C[illegible] 24, Sept, 1998

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000468

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
24 Sept.	S-6 S-9	SR 70	72.5'	—	P	E	6.0'	2.0'	—	98	JM	DLE	24 Sept	CK	P	Vacuum Box	DLE
	S-5 S-25	91	248'	—	DS-6 P		5.0'	2.0'	—	4	JB	DLE		CK	P		DLE
	S-4 S-5 S-25	92	TEE	—	P		2.0'	1.5'	—			DLE		CK	P		DLE
	S-4 S-3 S-25	93	TEE	—	P		2.0'	1.5'	—			DLE		CK	P		DLE
	S-31 S-32	94	309'	—	DS-9 P		5.0'	2.0'	—			DLE		CK	P		DLE
	S-35 S-36	95	194'	—	DS-12 P		5.0'	2.0'	—			DLE		CK	P		DLE
	S-28 S-25	96	279'	-	P		2.0'	2.0'	—			DLE		CK	P		DLE
	S-28 S-25	99	284'	—	P		2.0'	2.0'	—			DLE		CK	P		DLE
	S-28 S-29 S-25	98	340'	—	P		3.5'	3.0'	—			DLE		CK	P		DLE
	S-28 S-29 S-31	99	337'	—	P		2.5'	2.0'	—			DLE		CK	P		DLE
	S-32 S-35	80	158'	—	DS-11 P		5.0'	2.0'	—	4	JB	DLE		CK	P		DLE
	S-25	81	189'	S-6 S-9 S-28	G		0.5'	—	—	98	JM	DLE	24 Sept.	CK	P		DLE
	S-35 S-36	82	350'	—	P		4.0'	2.0'	—	4	JB	DLE	Capped		~~P~~ DLE	Capped	DLE
	S-2 S-25 S-3	83	78'	TEE	P		4.0'	3.0'	—	4	JB	DLE	24 Sept.	CK	P		DLE
24 (b) Sept.	S-2 S-25	SR 84	78'	—	C	E	22.0'	3.0'	—	98	JM	DLE	24 Sept.	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

69700

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro/Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
24 Sept.	S-1 S-30	SR 85	78'	—	C	E	24.0'	3.0'	—	98	JM	DLE	24 Sept	PJM	P	Vacuum Box	DLE
	S-29 S-30	86	429'	—	P		3.0'	2.0'	—	4	JB	DLE		PJM	P	" "	DLE
	S-30 S-23	87	412'	—	C		23.0'	3.0'	—	4		DLE		PJM	P	Vacuum Box	DLE
	S-1 SI 34	88	53'	—	P		—	—	1.5'	4		DLE		PJM	F	Replaced By SR 354	DLE
	S-1 SI 34	89	50'	—	P		—	—	1.5'	4		DLE		PJM	P	Vacuum Box	DLE
	S-29 S-31 S-41	90	TEE		P		4.0'	2.0'	—	4	JB	DLE		PJM	P		DLE
	S-31	91	423'	4'w S-29/S-31	P		2.5'	2.0'	—	98	JM	DLE		PJM	P		DLE
	S-31	92	423'	3'E S-32/S-31	P		2.0'	1.5'	—	4	JB	DLE		PJM	P		DLE
	S-31 S-32 S-41 S-42	93	TEE	—	P		—	—	3.5'	4	JB	DLE		PJM	P		DLE
	S-32	94	423'	4'w S-32/S-31	P		—	—	2.0'	98	JM	DLE		PJM	P		DLE
	S-32	95	422'	5'E S-35/S-32	P		—	—	1.5'	98	JM	DLE		PJM	P		DLE
	S-35	96	422'	3'w S-32/S-35	P		—	—	1.5'	98	JM	DLE		PJM	P		DLE
	S-35 S-42 S-32	97	TEE	—	P		5.0'	2.0'	—	4	JB	DLE		PJM	P		DLE
	S-35	98	422'	4'E S-36/S-35	P		—	—	1.0'	98	JM	DLE		PJM	P		DLE
24 (15) Sept.	S-36	99	422'	4w S-35/S-36	P	E	—	—	1.0'	98	JM JB	DLE	24 Sept	PJM	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

000470

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
24 Sept	S-36	SR 100	3.5 E 428	422	P	E	—	—	1.0'	98	JM	DLE	24 Sept	PJM	P	Vacuum Box	DLE
	S-37	101	3'W 428	422	P		—	—	1.0'	98	JM	DLE		PJM	P		DLE
	S-36 SE-53	102	1'W @	192'	P		—	—	1.0'	4	JB	DLE		PJM	P		DLE
	S-36 S-35 SE-53	103	TEE	—	P		—	—	1.0'			DLE		PJM	P		DLE
	S-35 SE 53 SE 51 SE 51	104	TEE	—	P		—	—	1.0'			DLE	24 Sept	PJM	P		DLE
	SE 49 S-35 SE 49	105	TEE	—	P		—	—	1.0'			DLE	25 Sept	PJM	P		DLE
	S-35 S-42 SE-49	106	TEE	—	P		—	—	1.0'			DLE	25 Sept	PJM	P		DLE
	SE-48 S-42 SE-49	107	TEE	—	P	E	3.5'	1.5'	—	4	JB	DLE	25 Sept	PJM	P	Vacuum Box	DLE
	SE-48 S42 SE-48	108	TEE	—	P	E	1.0'	1.0'	—	98	JM	DLE	—	—	—	CAPPED	CL
24 Sept	SE-45 S-41 S-25	109	TEE	—	P	E			1.0'	4	JB	DLE	25 Sept	PJM	P	Vacuum Box	DLE
25 Sept	S-25	110	15'E @	258'	P		2.0'	1.5'	—			DLE		PJM	P		DLE
	S-25 S-28	111	245'		DS-9 P		4.0'	2.0	—			DLE		PJM	P		DLE
	S-28	112	262'	3'E	G		0.5'	—	—			DLE		PJM	P		DLE
	SE-45 S-41 SE-45	113	TEE	—	P		—	—	1.5'			DLE		PJM	P		DLE
25 Sept (15)	S-41 SE-43 S-29	SR 114	TEE	—	P	E	—	—	1.5'	4	JB	DLE	25 Sept	PJM	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2062

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petrau / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
25 Sept	SI 43 S-29 SI 42	SR 115	TEE	—	P	E	—	—	1.5'	4	JB	DLE	25 Sept.	PJM	P	Vacuum Box	DLE
	SI 42 S-29 SI 39	116	TEE	—	P		3.5'	2.0'	—			DLE		PJM	P		DLE
	SI 42 S-30 SI 39	117	TEE	—	P		3.0'	2.0'	—			DLE		PJM	P		DLE
	SI 39 S-30 SI 38	118	TEE	—	P		—	—	1.5'			DLE		PJM	P		DLE
	SI 38 S-1 S-30	119	TEE	—	P		1.0'	1.0'	—			DLE		PJM	P		DLE
	SI-34 S-1	120	70'	—	P		1.0'	1.0'	—			DLE		PJM	P		DLE
	SI-34 S-1	121	64'	—	P		1.0'	1.0'	—			DLE		PJM	P		DLE
	SI-34 S-1	122	30'	—	P		3.0'	1.5'	—			DLE		PJM	P		DLE
	S-41 29 S-30 DLE	123	429' To 436' W 425' To 436'		C		7.0'	2.5'	—			DLE		PJM	P		DLE
	SI-48 S-41 S-42	124			P C DLE		11.0'	3.0'	—	4	JB	DLE		PJM	P		DLE
	S-29	125	412'	4' W @ S-30	P		—	—	1.0'	98	JM	DLE		PJM	P		DLE
	SI-51 S-35	126	182'	—	DS-13 P		5.0'	2.0'	—			DLE		PJM	P		DLE
	S-37	127	3' W @ 425'		P		3.5'	2.5'	—			DLE		PJM	P		DLE
	S-37 S-36	128	400'	—	G		9"	—	—			DLE		PJM	P		DLE
26(13) Sept	S-37	SR 129	W 3'	@ 400'	P	E	3.0'	1.0'	—	98	JM	DLE	25 Sept.	PJM	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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224000

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petroe / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
25 Sept	S-37	SR 130	W 12'	@ 400'	G	E	3"	—	—	98	JM	DLE	8 Oct	R.S	P	Vacuum Box	DLE
	S-39	131	W 19'	@ 412'	G		6"	—	—			DLE		R.S	P		DLE
	S-39	132	W 6'	@ 392'	P		11.0'	2.0'	—			DLE		R.S.	P		DLE
	S-39 S-43	133	392'	—	P		12.0'	2.0'	—			DLE		R.S.	P		DLE
	S-36	134	1' E	@ 286'	G		1.0'	—	—			DLE		R.S	P		DLE
	S-36	135	5' E	@ 286'	G		1.0'	—	—			DLE		R.S	P		DLE
	S-36 S-39	136	309'	—	P		—	—	2.0'			DLE		CK	P		DLE
	S-32	137	W 10'	@ 295'	P		—	—	2.0'			DLE		CK	P		DLE
	S-32	138	W 4'	@ 295'	DS-14 P		4.5'	1.5'	—			DLE		CK	P		DLE
25 Sept.	S-31	139	E 4'	@ 295'	P		—	—	2.5'	98	JM	DLE		CK	P		DLE
28 Sept.	S-25	140	143'	To 168'	DS-15 C		25.0'	6.5'	—	4	JB	DLE		CK	P		DLE
28 Sept.	S-25	141	213'	To 218'	C		5.0'	5.0'	—	4	JB	DLE		CK	P		DLE
26 Sept	SZ-29 S-30 SZ-29 SZ-42	142	75'	To 127.5'	C		52.5'	3.0'	—	98	JM	DLE		JM	P		DLE
26 Sept	SZ-48 S-41 SZ-48 S-42 SZ-48	143	127.5	To 158'	C		30.5'	3.0'	—	98	JM	DLE		JM	P		DLE
25 (15) Sept	SZ-51 S-35 SZ-49 S-32	144	was SR 105/106/107 158	To 175'	C	E	30.5	3.0'	—	98	JM	DLE	8 Oct.	JM	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

2062

000473

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Selmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
25 Sept.	SE53 S-36 SE51 S-35	SR 145	WAS SR 102/103/104 175' To 198'		DS-13 @	E	23.0'	3.0'	—	98	JM	DLE	6 Oct	CK	P	Vacuum Box	DLE
25 Sept.	SE55 S-37 SE53 S-36	146	198' To 222'		DS-13 B C		24.0'	3.5'	—		JM	DLE	8	JM	P		DLE
25 Sept.	SE54 SE53 S-36	147	TEE	—	P		2.5'	1.5'	—		JM	DLE	8	JM	P		DLE
25 Sept.	S-39	148	W2' @	433'	P		—	—	1.0'		JM	DLE	8	CK	P		DLE
26 Sept.	SE-56 S-39	149	222' To	231'	C		9.0'	2.0'	—		JM	DLE	8	JM	P		DLE
26 Sept.	SE 57 S-39	150	231' To	242'	C		11.0'	3.5'	—		JM	DLE	8	JM	P		DLE
26 Sept.	SE-58 SE-57 S-42	151	242' To	253'	C		11.0'	1.5'	—		JM	DLE	8	JM	P		DLE
26 Sept.	SE-58 S-41 SE-60 S-43	152	253' To	266'	C		13.0'	2.5'	—		JM	DLE	8	JM	P		DLE
26 Sept.	S-28	153	6' W @	150'	P		—	—	1.0'	98	JM	DLE	6	CK	P		DLE
25 Sept.	S-29 S-21	154	36' To	48'	C		7.0'	3.0'	—	4	JB	DLE	6	CK	P		DLE
25 Sept.	S-29 S-21	155	48' To	64'	C		21.0'	3.0'	—	4	JB	DLE	6	CK	P		DLE
25 Sept.	S-29 S-21	156	64' To	85'	C	E	21.0'	3.0'	—	4	JB	DLE	6 Oct	CK	P	Vacuum Box	DLE
25 Sept.	S-34 S-38	157	@ 16'		P	E	2.0'	1.0'	—	4	JB	DLE	6 Oct	CK	P	Vacuum Box	DLE
28 Sept	S-36 S-35	158	173' To	194'	C	E	21.0'	3.0'	—	4	JB	DLE	6 Oct	CK	P	Vacuum Box	DLE
28 (PM) Sept	S-36 S-35	SR 159	149' To	173'	C	E	24.0'	3.0'	—	4	JB	DLE	6 Oct	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

000374

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO.	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
28 Sept	S-36 S-35	SR 160	139' To	149'	C	E	17.0'	3.0'	—	4	JB	DLE	6 Oct	CK	P	Vacuum Box	DLE
	S-36 S-35	161	199' To	201'	C		4.0'	3.0'	—		JB	DLE		CK	P		DLE
	S-36 S-35	162	201' To	226'	C		23.0'	3.5'	—		JB	DLE		CK	P		DLE
	S-36 S-35	163	226' To	240'	C		14.0'	3.5'	—		JB	DLE		CK	P		DLE
	S-36 S-35	164	240' To	257'	C		17.0'	3.0'	—		JB	DLE		CK	P		DLE
	S-36 S-35	165	257' To	261'	DS-13-D C		4.0'	2.5'	—		JB	DLE	6 Oct	CK	P		DLE
	S-37	166	W 10' @	353'	G		1.5'	—	—		JB	DLE	8 Oct	CK	P		DLE
	S-31	167	W 11' @	295'	P		3.5'	2.0'	—		JB	DLE		CK	P		DLE
	S-32 S-35	168	@	295'	DS-14-A P		4.5'	2.0'	—		JB	DLE		CK	P		DLE
	S-35	169	W 11'	@ 295'	P		4.5'	2.0'	—		JB	DLE		CK	P		DLE
	S-43 S-37	170	E 7'	@ 300'	P		10.0'	2.5'	—		JB	DLE		CK	P		DLE
	S-37	171	W 17'	@ 305'	G		1.0	—	—		JB	DLE		CK	P		DLE
	S-39 S-36 S-40 S-39	172	TEE	—	DS-15-B		4.0'	2.0'	—		JB	DLE		CK	P		DLE
	S-39 S-44 S-43	173	TEE	—	P		—	—	3.5'		JB	DLE		CK	P		DLE
28 Sept.	S-43 S-46	SR 174	TEE	—	P	E	—	—	3.0'	4	JB	DLE	8 Oct	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2062

000375

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
28 Sept.	S-44	SR175	2'w @	225'	P	E	—	—	1.5'	4	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
25 Sept	S-43	176	3'w @	421'	P		—	—	3.0'	98	JM	DLE		RS	P		R.H
28	S-43 S-47	177	@	300'	P		—	—	1.5'	4	JB	DLE		CK	P		R.H
28	S-43 S-39	178	@	295'	P		—	—	2.0'		JB	DLE		CK	P		R.H.
28	S-44	179	3'E of	S-46 @ 225'	P		—	—	2.0'		JB	DLE		CK	P		R.H.
28	S-35 S-38	SR-160 180	@	137'	DS-13 2A P		4.5'	2.0'	—		JB	DLE		CK	P		DLE
26	S-39 S-44	S-40 181	@ 117'	To 123'	C		6.0'	3.0'	—		JB	DLE		CK	P		R.H.
26	S-45 S-44	S-40 182	@ 81'	To 117'	C		34'	3.5'	—		JB	DLE		CK	P		R.H.
28	S-44 S-45 S-46	S-49 183	TEE	—	P		5.0'	2.0'	—		JB	DLE		CK	P		R.H.
28	S-46 S-49	S-48 184	TEE	—	P		2.5'	2.0	—		JB	DLE		CK	P		R.H.
28	S-49 S-48	S-49 185	TEE	—	P				2.0'		JB	DLE		CK	P		R.H.
28	S-49 S-53	S-50 186	TEE	—	P				2.0'		JB	DLE		CK	P		R.H.
28	S-49 S-50	S-49 187	TEE	—	P				2.5'		JB	DLE		CK	P		R.H.
28	S-40 S-45	188	@ 26'	—	DS-17 P		5.0'	2.5'			JB	DLE		CK	P		R.H.
28 (15) Sept	S-43	189	E 5' @	425'	P	E	2.0'	1.5'		4	JB	DLE	8 Oct	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

920276

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
28 Sept.	SE-60 S-46	SR 190	W 274'		P	E	2.5'	1.5'	—	03	JM	DLE	8 Oct	JM	P	Vacuum Box	M.H
	SE-61 S-46 SE-60	191	TEE	—	P		—	—	1.0	03	JM	DLE		JM	P		M.H
	S-46 S-48	192	@ 429'		P		2.0'	1.5'	—	03		DLE		JM	P		M.H.
	SE-61 S-46 SE-62.5 S-48	193	430' To 437'		P		7.0'	2.0'	—	03		DLE		JM	P		M.H.
	SE-62 SE-64 S-48	194	TEE	—	P		1.5'	1.0'	—	03		DLE		JM	P		M.H.
	S-48 S-52 S-51	195	TEE	—	P		5.0'	2.5'	—	03		DLE		RS	P		R.H
	S-52 S-48	196	@ 430'		P		3.0'	1.0'	—	03		DLE		JM	P		M.H
	SE-64 S-48 S-52	197	TEE	—	P		1.5'	1.0'	—	03		DLE		JM	P		M.H.
	SE-69 SE-69 S-52	198	TEE	—	P		4.0'	2.5'	—	03		DLE		JM	P		M.H.
28 Sept.	SE-69 S-54 SE-68 S-52	199	TEE	—	P		2.5'	2.0'	—	03		DLE		JM	P		M.H.
29 Sept.	S-54 S-52 S-51	200	@ 400'		P		2.0'	1.5'	—	03	JM	DLE		CK	P		M.H.
29 Sept.	S-53 S-49 S-51 S-48	201	TEE	—	P		3.5'	2.5'	—	98	JB	DLE		CK	P		M.H.
28 Sept.	S-53 S-55	202	@ 7'	—	P		—	—	2.0'	98	JB	DLE		CK	P		R.H
28 Sept.	SE 56 S-37	203	@ W	226'	P		1.0'	0.5'	—	98	JB	DLE		JM	P		M.H
28 (5) Sept	S-6 S-7 S-25	204	Way SR 0' T 63 0 23'		C	E	23.0'	6.0'	—	04	JM	DLE	8 Oct	CK	P	Vacuum Box	M.H

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
29 Sept	S-28	WAS SR63 SR 204	23.0'	to 46.0'	C	E	23.0'	6.0'	—	04	JB	DLE	5 Oct.	CK	P	Vacuum Box	M.H.
	S-31	WAS SR63 204	46.0'	to 69.0'	C		23.0'	6.0'	—		JB	DLE		CK	P		M.H.
	S-32	WAS SR63 204	69.0'	to 92.0'	C		23.0'	6.0'	—		JB	DLE		CK	P		M.H.
	S-35	WAS SR63 204	92.0'	to 115'	C		23.0'	6.0'	—		JB	DLE		CK	P		M.H.
	S-36	WAS SR63 204	115'	to 138'	C		23.0'	6.0'	—		JB	DLE		CK	P		M.H.
	S-37	WAS SR63 SR 204	138'	to 155'	C		23.0'	6.0'	—		JB	DLE		CK	P		M.H.
	S-51 S-35 SR-145	205	@ 179'	@ 169'	DS 19 P		4.0'	2.0'	—	04	JB	DLE	5 Oct.	CK	P		M.H.
29 Sept	S-25	206	16' west	S-28	P	E	—	—	2.0'	98	JBm DLE	DLE	8 Oct.	CK	P	Vacuum Box	DLE
25 Sept	S-29	207	w 2' @	412'	P	E	—	—	1.0'	98	JM		8 Oct.	CK	P	Vacuum Box	DLE
29 Sept	S-48 S-51	208	@ 3	23'	DS-22 P	E	5.0'	2.0'	—	03	JM	DLE	8 Oct.	CK	P	Vacuum Box	R.H.
	S-25/Cap S-8	209	@ 1	83'	DS-14-2-0 P		4.5'	2.0'	—	04	JB	DLE		CK	P		R.H.
	S-54 S-51	210	@	99'	DS-23 P		5.0'	2.0'	—	03	JM	DLE		CK	P		R.H.
	S-51 S-54 S-53 S-55	211	TEE	—	P		3.5'	2.0'	—	03	JM	DLE		CK	P		R.H.
	S-44 S-46	212	@	232'	DS-20 P		4.0'	2.5'	—	03	JM	DLE		CK	P		R.H.
29 (15) Sept.	S-27/Cap S-28	SR 213	@	88'	DS-14-2B P	E	4.5'	2.5'	—	04	JB	DLE	8 Oct.	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000478

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro/Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
29 Sept	S-40 S-39 SA-50	SA-214	5' @ 0	S-44	DS-13-2 B P	E	4.5'	2.5'	—	04	JB	DLE	8 Oct	RS	P	Vacuum Box	R. H
	S-48 S-51	215	@ 132.5'		P		4.0'	2.5'	—	04	JB	DLE		RS	P		R. H
	S-51 S-48	216	@ 313'		P		4.5'	2.5'	—	03	JM	DLE		RS	P		R. H
	S-56 S-54	217	@ 344'		DS-24 P		4.5'	2.0'	—	03	JM	DLE		RS	P		R. H
	S-56 S-54	218	@ 308'		P		4.0'	1.5'	—	03	JM	DLE	8 Oct	RS	P		R. H
	S-40 S-39	219	W43 SA-50 @ 120'		C		23.0'	100'	—	04	JB	DLE	6 Oct	CK	P		DLE
	S-64 S-63 S-59	220	@ 30'	—	P		—	—	2.0		JB	DLE	8 Oct	CK	P		R. H
	S-45 S-40	221	@ 7'	—	DS-19-A P		4.5'	2.5'	—		JB	DLE	8 Oct	CK	P		DLE
	S-45 S-40	222	@ 39'	—	DS-19-3 P		4.5'	2.5'	—		JB	DLE	8 Oct	CK	P		DLE
	S-40 S-45	223	@ 52'	—	P		3.5	2.0'	—		JB	DLE	8 Oct	CK	P		DLE
	S-27 S-21	224	@ 15'	—	DS-18 P		4.0'	2.5'	—		JB	DLE	6 Oct	CK	P		DLE
29 Sept	S-27 S-21	225	@ 5'	—	P		5.0'	2.5'	—		JB	DLE	6 Oct	CK	P		DLE
25 Sept	S-27 S-21	226	@ 5' To 31'		C		26.0'	2.5'	—		JB	DLE	6 Oct	CK	P		DLE
29 Sept	S-63 S-64 S-65	227	TEE	—	P		—	—	2.5'		JB	DLE	8 Oct	CK	P		DLE
29 (15) Sept	S-56 S-59 S-58	SA-228	TEE	—	P	E	—	—	2.5'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petree / SoLmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
29 Sept	S-57	SR229	8'E of	S-58 @ 106'	G	E	2.5'	—	—	04	JB	DLE	8 Oct.	J.M.	P	Vacuum Box	M.H.
29	S-57	230	2'E of	S-58 @ 88'	G		0.5'	—	—	04	JB	DLE	8	J.M	P		M.H.
30	S-54 S-55	231	7'E of	S-59 @ 84'	P		3.5'	2.0'	—	04	JB	DLE	8	J.M	P		M.H.
29	SI-49 S-42 SA-144	232	9'E of	S-35	DS-19-A P		4.0'	2.0'	—	03	JM	DLE	8	J.M	P		M.H.
29	SI-53 S-35 SA-145	233	4'W of	S-36	DS-19-B P		4.0'	2.5'	—	03	JM	DLE	8	J.M	P		M.H.
30	SI-68 S-54	234	9'W of	S-52	P		4.0'	2.5'	—	03	JM	DLE	8	J.M	P		M.H.
30	SI-68 SI-90 S-54	235	TEE	—	P		4.0'	2.5'	—	03	JM	DLE	8	J.M	P		M.H.
30	SI-90 S-54 S-56	236	TEE	—	P		11.0'	2.5'	—	04	JB	DLE	8	J.M	P		M.H.
30	S-66 S-65 S-69	237	TEE	—	P		—	—	2.0'	04	JB	DLE	8	CK	P		R.H.
30	S-66 S-69 S-68	238	TEE	—	P		—	—	2.0'	04	JB	DLE	9	CK	P		M.H.
30	S-68 S-69 S-71	239	TEE	—	P		—	—	2.0'	04	JB	DLE	9	CK	P		M.H.
30	S-66 S-65 S-62	240	TEE	—	P		—	—	2.0'	04	JB	DLE	9	CK	P		M.H.
30	S-67 S-66 S-65	241	TEE	—	P		—	—	2.0'	04	JB	DLE	8	CK	P		R.H.
30	S-64 S-65	242	@ 27'	—	P		—	—	1.5'	04	JB	DLE	8	CK	P		R.H.
30 (15) Sept	S-63 S-65	SR-243	@ 32'	—	P	E	—	—	1.5'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H.

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(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000780

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
30 Sept.	S-65 S-63 S-61	SR 244	TEE	—	P	E	—	—	2.0'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
30	S-55 S-54	245	E 11' @ 85'		P		—	—	2.0'		JB	DLE	8	CK	P		R.H
30	S-59 S-55 S-59	246	TEE	—	P		—	—	2.0'		JB	DLE	8	CK	P		R.H
29	S-59 S-58 S-59	247	TEE	—	P		—	—	2.5'		JB	DLE	8	CK	P		R.H
30	S-59 S-58	248	E 11' @ 85'		P		5.5'	4.0'	—		JB	DLE	8	CK	P		R.H
30	S-59 S-61 S-58 S-63	249	TEE	—	P		—	—	2.0'		JB	DLE	8	CK	P		R.H
30	S-61 S-65 S-60	250	TEE	—	P		—	—	2.0'		JB	DLE	8	CK	P		R.H
30	S-60 S-65	251	@ 271'	—	DS-27 P		4.0'	1.5'	—		JB	DLE	9	CK	P		M.H
30	S-65 S-60 S-62	252	TEE	—	P		—	—	2.5'		JB	DLE	9	CK	P		M.H
30	S-60 S-61	253	11' E of	S-58	DS-26 P		4.0'	2.0'	—		JB	DLE	8	CK	P		R.H
30 Sept.	S-58 S-60 S-61	254	TEE	—	P		—	—	2.0	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
30 Sept.	S-58 S-57 S-58 SR 228	255	TEE	—	P		—	—	2.0	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
30 Sept	S-58 S-56	256	@ 211'		DS-25 P		4.0'	2.0'	—	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
29 Sept	S-57 S-56 S-54	257	TEE	—	P		—	—	2.0'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H
30 (15) Sept	S-67	SR 258	E 13'	@ 115'	P	E	—	—	1.0'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	R.H

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000781

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petco / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR No.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
29 Sept	S-46	SA259	@182'	—	DS-21 P	E	4.0'	2.0'	—	04	JB	DLE	5 Oct	CK	P	Vacuum Box	M.A
30 Sept	S-46 S-43	260	@435'	—	P		—	—	2.5'		JB	DLE	8 Oct	JM	P		M.A
	S-39	261	@435'	—	P		2.5'	2.0'	—		JB	DLE	8 Oct	JM	P		M.A
	S-36 SE-20	262	@298'	—	DS-28 P		4.5'	2.0'	—		JB	DLE	5 Oct	CK	P		M.A
	S-25	263	5'W of S-28	@198'	P		—	—	2.0'	04	JB	DLE	5 Oct	CK	P		M.A
	SE-54 S-36	264	206' from E. Mark		DS-14-28 P		4.0'	2.0'	—	03	JM	DLE	5 Oct	CK	P		M.A
	S-52 SE-69	265	321' From E. Mark		P		1.0'	1.0'	—		JM	DLE	8 Oct	JM	P		M.A
	SE-90 SE-91 S-56	266	TEE	—	P		1.5'	1.0'	—		JM	DLE	8 OCT	JM	P		M.A
	SE-91 S-56	267	365' From E. Mark		P		3.0'	2.0'	—		JM	DLE	8 OCT	JM	P		M.A
	SE-91 SE-92 S-56	268	TEE	—	P		5.0'	2.0'	—		JM	DLE	8 Oct	JM	P		M.A
	SE-72 S-58	269	TEE	—	P		2.5'	2.0'	—		JM	DLE	8 OCT	JM	P		M.A
	SE-93 SE-94 S-58	290	TEE	—	P		4.5'	2.0'	—		JM	DLE	8 Oct	JM	P		M.A
	SE-94 S-58	291	396' From E. Mark		DS-29 P		4.0'	2.0'	—		JM	DLE	8 Oct	JM	P		M.A
	SE-95 SE-96 S-60	292	TEE	—	P		1.5'	1.0'	—		JM	DLE	8 Oct	JM	P		M.A
30 Sept (15)	SE-96 S-60 S-62	293	TEE	—	P	E	3.0'	1.5'	—	03	JM	DLE	8 OCT	JM	P	Vacuum Box	M.A

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000282

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
30. Sep-1	SE 96 SE 99 S-62	SR 274	TEE	—	P	E	1.5'	1.0'	—	03	JM	DLE	9. Oct	CK	P	Vacuum Box	DLE
01. Oct	SE 99 S-62 SE 99 S-66	275	TEE	—	P	E	4.0'	1.0'	—	04	JB	DLE	↓	CK	P	Vacuum Box	DLE
29. Sept	SE 34 S-1	276	E Step Down	@ 28' Beam	DS-16 P	E	4.0'	1.5'	—	03	JM	DLE	↓	CK	P	Vacuum Box	DLE
01 Oct.	S-66 S-68	297	@246'		P	E	2.0'	2.0'	—	04	JB	DLE	↓	CK	P	Vaccuum Box	DLE
01	S-62 S-66	298	@430'		P	E	—	—	1.0'	04	JB	DLE	↓	CK	P	Vacuum Box	DLE
01	S-62 S-66	299	@400'		DS-30 P	↓	4.0'	1.5'	—	04	JB	DLE	↓	CK	P	↓	DLE
01	S-62 S-66	280	@424'		G	↓	0.5'	—	—	04	JB	DLE	↓	CK	P	↓	DLE
01	SE 80 SE 79 S-66	281	@462'	From E. Mark	P	↓	1.5'	1.0'	—	04	JB	DLE	↓	CK	P	↓	DLE
01	SE 80 S-66 S-68	282	@472'	From E. Mark	P	↓	1.5'	1.5'	—	04	JB	DLE	↓	CK	P	↓	DLE
01	SE 80 SE 81 S-68	283	@476'	From E. Mark	P	↓	4.0'	2.5'	—	04	JB	DLE	↓	CK	P	↓	DLE
01	SE 81 SE 83 S-68	284	@491'	From E. Mark	P	↓	3.5'	2.0'	—	04	JB	DLE	↓	CK	P	↓	M.H
01	SE 83 S-68 S-70	285	@497'	From E. Mark	P	↓	1.5'	1.0'	—	04	JB	DLE	↓	CK	P	↓	M.H
01	SE 83 S-70	286	@500'	From E. Mark	P	↓	—	—	1.0'	04	JB	DLE	↓	CK	P	↓	M.H
01	SE 83 SE 84 S-70	287	@504'	From E. Mark	P	↓	3.0'	1.5'	—	04	JB	DLE	↓	CK	P	↓	M.H
01(15) Oct	SE 84 S-70	SR 289	@513'	From E. Mark	P	E	—	—	1.5'	04	JB	DLE	9. Oct	CK	P	Vacuum Box	M.H

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

2062

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000083

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petae / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
01 Oct.	SE-84 S-90 SE-85 S-92	SR 289	@520'	From E. Mark	P	E	2.5'	2.5'	—	03	JM	DLE	9. Oct.	ck	P	Vacuum Box	M.H.
30 Sept.	SE-85 S-88 SE-84 S-60	290	TEE	—	P		4.5'	2.5'	—	03	JM	DLE	8 Oct.	ck	P	" "	RH
01 Oct	S-62	291	@330'	6' west of S-60	P		—	—	3.0'	03	JM	DLE	8 Oct	ck	P	" "	RH
01 Oct.	S-67 S-69	292	@42'	—	DS-38 P		4.0'	2.0'	—	03	JM	DLE	8 Oct	ck	P	" "	RH
30 Sept	S-68 S-70 S-71	293	TEE	—	P		4.0'	1.5'	—	04	JB	DLE	9 Oct	ck	P	" "	MH
30 Sept.	S-70	294	@334'	9' west of S-68	G		0.5'	—	—	04	JB	DLE	9 Oct	ck	P	" "	MH
30 Sept	S-70	295	@326'	9' west of S-68	P		—	—	1.5'	04	JB	DLE	9 Oct	ck	P	" "	MH
30 Sept	S-70	296	@325'	9' west of S-68	P		—	—	1.0'	04	JB	DLE	9. Oct.	ck	P	" "	MH
1 Oct	S-68 S-70	297	@364'	—	DS-32 P		4.5'	2.0'	—	03	JM	DLE	9 Oct.	ck	P	" "	MH
	SE-85 SE-89 S-72	298	TEE	—	P		4.0'	1.5'	—	04	JB	DLE	9 Oct	CK	P	" "	MH
	SE-89 S-72 S-98	299	TEE	—	P		2.0'	1.5'	—		JB	DLE	9 oct	CK	P	" "	MH
	SE-88 SE-87 S-94	300	TEE	—	P		3.5'	2.0'	—		JB	DLE	9 oct	CK	P	" "	MH
	SE-88 S-94	301	@552'	From E. Mark	P		4.5'	1.5'	—		JB	DLE	9 oct	CK	P	" "	MH
	SE-88 S-94	302	@560'	From E. Mark	P		1.5'	1.0'	—		JB	DLE	9 Oct	CK	P	" "	MH
1 (15) Oct	SE-88 SE-89 S-94	SR 303	TEE	—	P	E	1.5'	1.0'	—	04	JB	DLE	9 Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000784

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
01 Oct	S-99 S-94 S-96	SR 304	TEE	—	P	E	1.5'	1.5'	—	04	JB	DLE	9. Oct	CK	P	Vacuum Box	MH
	S-96 S-99 S-94	305	TEE	—	P		3.0'	2.0'	—	04	JB	DLE		CK	P		MH
	S-99 S-96 S-97	306	TEE	—	DS-36 P		7.0'	2.5'	—	04	JB	DLE		CK	P		MH
	S-99 S-94 S-95	307	TEE	—	P		4.0'	1.5'	—	03	JM	DLE		CK	P		MH
	S-94 S-95 S-92	308	TEE	—	P		2.5'	2.0'	—	03	JM	DLE		CK	P		MH
01 Oct.	S-94 S-92	309	@200'	North mark	P		2.0'	1.5'	—	03	JM	DLE		CK	P		MH
02 Oct.	S-98 S-99 S-95	310	TEE	—	P		4.0'	2.5'	—	04	JB	DLE		CK	P		MH
01 Oct.	S-98 S-95	311	@165'	North mark	DS-35 P		4.0'	2.5'	—	03	JM	DLE	9 Oct	CK	P		MH
02 Oct.	S-95 S-93 S-92	312	TEE	—	P		3.0'	2.0'	—	03	JM	DLE	8 Oct	CK	P		RH
02 Oct	S-91 S-92 S-93	313	TEE	—	P		—	—	2.0'	03	JM	DLE	8 Oct	CK	P		RH
02 Oct	S-92 S-91	314	@202'	North mark	DS-33 P		4.0'	2.0'		03	JM	DLE	9. Oct	CK	P		MH
30 Sept.	S-91 S-90 S-92	315	TEE	—	P		—	—	2.0'	03	JM	DLE		CK	P		MH
02 Oct	S-99 S-98 S-97	316	TEE	—	P		—	—	3.0'	03	JM	DLE		CK	P		MH
02 Oct	S-99 S-90 S-98	317	TEE	—	P		—	—	2.0'	03	JM	DLE		CK	P		MH
02 (15) Oct	S-90 S-99 S-88	SR 318	TEE	—	P	E	—	—	2.5'	04	JB	DLE	9. Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
5. Oct	S-31 S-28	SR 319	WAS @ 214'	SR-64	DS-08 P	E	6.5'	4.0'	–	98	JM	DLE	6 Oct	CK	P	Vacuum Box	DLE
	S-35 S-36	320	WAS @ 194'	SR-75	DS-12 P		6.0'	4.0'	–	98	JM	DLE	6	CK	P		DLE
	S-32 S-35	321	WAS @ 158'	SR-80	DS-11 P		6.0'	3.5'	–	98	JM	DLE	6	CK	P		DLE
	S-25 S-35	322	WAS @ 233'	SR-65	P (DLE)		2.0'	2.5'	–	04	JB	DLE	8	CK	P		DLE
	S-36	323	@ 215'	SR-61	P		4.0'	3.5'	–	98	JM	DLE	8	CK	P		DLE
	S-32 S-34	324	8' W of	S-31 SR-70	DS-10 P		6.0'	3.5'	–	98	JM	DLE	6	CK	P		DLE
	S-6 S-9	325	WAS @ 225'	@ E. Mark SR-74	DS-13 ·83 P		8.0'	4.0'	–	04	JB	DLE	5	CK	P		MH
	S-31 S-32	326	WAS @ 309'	SR-69	DS-09 P		6.0'	3.5'	–	98	JM	DLE	8	CK	P		RH
	S-10 S-9 S-25	327	WAS @ 92'	Form E SR-110	P		7.0'	4.0'	–	04	JB	DLE	8	CK	P		DLE
	S-25	328	E 14' of	S-28 @ 256'	P		3.5'	3.0'	–	04	JB	DLE	8	CK	P		DLE
	S-25 S-5	329	WAS @ 248'	SR-71	DS-06 P		7.0'	3.0'	–	04	JB	DLE	5	CK	P		MH
	S-5 S-6 S-25	330	@ 258'		P		3.5'	2.0'	–	04	JB	DLE	5	CK	P		MH
	S-35 S-36	331	WAS @ 353'	SR-82	P		6.0'	3.0'	–	98	JM	DLE	8	CK	P		RH
	S-4 S-5 S-25	332	WAS TEE	SR-72	P		—	—	3.0'	04	JB	DLE	8	CK	P		RH
5 (15) Oct	S-29 S-28 S-31	SR 333	WAS TEE	SR-79	P	E	4.5'	3.5'	–	98	JM	DLE	8 Oct	CK	P	Vacuum Box	RH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, [illegible] = RECONSTRUCTION
[illegible]PAIR TYPES: E = EXTRUSION, F = FUSION

2062 000485

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000786

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Salmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
5 Oct	5-30 5-25	SR 334	WAS	SR 89	C	E	24.0'	5.0'	–	04	JB	DLE	8 Oct	CK	P	Vacuum Box	RN
5	5-29 5-28 5-25	335	WAS	SR 78	P	↓	6.0'	4.0'	–	98	JM	DLE	↓	CK	P	↓	RN
5	5-41 5-31 5-29	336	WAS	SR 90	P	↓	5.0'	3.0'	–	98	JM	DLE	↓	CK	P	↓	RN
5	5-31	337	WAS 2' @ of	SR 92 5-32 @	P	↓	4.0'	3.0'	–	98	JM	DLE	↓	CK	P	↓	RN
5 Oct	5-1 5-25 5-30 5-2	338	WAS SR 84-SR 85 324' TO 347'		C	↓	23.0'	4.6'	–	04	JB	DLE	↓	CK	P	↓	RN
5 Oct	5-31	339	WAS 5' W of	SR 91 5-29 @	P	↓	—	—	3	98	JM	DLE	↓	CK	P	↓	RN
5 Oct	5-32	340	WAS 4' W of	SR 94 5-31 @	P	↓	3.5'	3.0'	–	98	JM	DLE	↓	CK	P	↓	RN
6 Oct	5-40 5-32 5-9 SR 140	341	WAS 131' TO	SR 66 152'	C	↓	21.0'	11.0'	–	98	JM	DLE	↓	CK	P	↓	DLE
6	5-8 5-9 5-25	342	152' TO	175'	DS-39 @	↓	23.0'	11.0'	–	98	JM	DLE	↓	CK	P	↓	DLE
6	5-35 5-36	343	@ 132'	—	DS-12 B P	↓	4.5'	4.0'	–	98	JM	DLE	↓	CK	P	↓	DLE
6	5-25 5-3 5-2	344	WAS 301 TO	SR 83 311'	C	↓	10.0'	5.5'	–	04	JB	DLE	↓	CK	P	↓	RN
6	5-2 5-25	345	311' TO	325'	C	↓	14.0'	5.0'	–	04	JB	DLE	↓	CK	P	↓	RN
6	5-42 5-35 5-32	346	WAS TEE	SR 97 —	P	↓	5.5'	3.0'	–	04	JB	DLE	↓	CK	P	↓	RN
6	5-30 5-29	347	WAS @ 429'	SR 86	P	↓	4.0'	3.0'	–	04	JB	DLE	↓	CK	P	↓	RN
6 (15) Oct	5-41 5-32 5-42 5-31	348	WAS TEE	SR 93 —	P	E	—	—	5.0'	04	JB	DLE	8 Oct	CK	P	Vacuum Box	RN

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petco / Solmar

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
6 Oct.	S-8 S-9 S-25	SR 349	WAS 175'	SR-68 TO 200'	C	E	31.0'	11.0'	—	98	JM	DLE	8 Oct	JM	P	Vacuum Box	MH
6	SI 53 S-35 SI 51	350	@ 179'	TO 193' E	C		14.0'	3.5'	—	04	JB	DLE		JM	P		MH
6	S-25 S-28	351	WAS @ 345'	SR 111	DS 07 P		7.0'	4.0'	—	98	JM	DLE		JM	P		MH
6	S-25 S-28	352	WAS @ 279'	SR-76	P		4.0'	4.0'	—	98	JM	DLE		JM	P		MH
6	S-25 S-28	353	WAS @ 285'	SR-77	P		4.0'	4.0'	—	98	JM	DLE		JM	P		MH
6	S-1 SI-34	354	WAS @ 72'	SR 88/89 From C	P		6.0'	2.0'	—	04	JB	DLE		JM	P		MH
6	S-7 S-6 SR 204	355	@ 208' N		P		6.0'	6.0'	—	98	JM	DLE		JM	P		MH
6	SI 54 S-36 SI 53	356	@ 193'	TO 209' E	C		16.0'	3.5'	—	04	JB	DLE		JM	P		MH
6	SI 51 S-42 SI 48 S-35	357	@ 165'	TO 180' E	C		15.0'	2.5'	—	04	JB	DLE		JM	P		MH
6	S-36	358	4' W of S-35	@ 435' N	P		—	—	3.0'	04	JB	DLE	8 Oct	CK	P		RH
6	S-44 S-37	359	@ 122'	TO 155' N	C		33.0'	4.0'	—	98	JM	DLE	5 Oct	CK	P		MH
6	S-40 S-45	360	@ 59'	TO 82' N	C		23.0'	4.5'	—	98	JM	DLE	8 Oct	CK	P		RH
8 Oct.	S-40 S-45	361	@ 59	TO 37' N	C		22.0'	4.5'	—	04	JB	DLE		CK	P		RH
7 Oct.	S-40 S-45	362	@ 0'	TO 37 N	C		37.0	4.5'	—	04	JB	DLE		CK	P		RH
8 (15) Oct.	S-37	SR 363	10' E of	S-45 @ 285'	P	E	6.0'	4.0'	—	98	JM	DLE	8 Oct	CK	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000788

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petae / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
8 Oct	S-54 S-51	SR 364	@ 103'	N	P	E	2.5'	2.0'	—	98	JM	DLE	8 Oct	JM	P	Vacuum Box	DLE
25 Sept	S-39	365	@ 335'	N	G	↓	6.0'	—	—	98	JM	DLE	9 "	CK	P	↓	DLE
29 Sept	S-1 SI-34	366	@ 33'	E	P	↓	4.0'	1.5'	—	98	JM	DLE	8 "	CK	P	↓	DLE
01 Oct	S-81 S-82 S-77	367	TEE	—	P	↓	4.0'	1.5'	—	98	JM	DLE	9 "	CK	P	↓	MH
01 Oct	S-99 S-82	368	@ 164'	N	DS-39 P	↓	8.0'	2.5'	—	04	JB	DLE	9 "	CK	P	↓	MH
02 Oct	S-82	369	12' W of	S-79 e.n.5'	P	↓	—	—	1.5'	04	JB	DLE	9 "	CK	P	↓	MH
02 Oct	S-84 S-82 S-81	370	TEE	—	P	↓	4.0'	2.0'	—	04	JB	DLE	9 "	CK	P	↓	MH
02 Oct	S-98 S-84 S-97	371	TEE	—	P	↓	2.5'	1.5'	—	04	JB	DLE	9 "	CK	P	↓	MH
02 Oct	S-82 S-84	372	@ 55' N	—	DS-38 P	↓	4.0'	1.5'	—	04	JB	DLE	9 "	CK	P	↓	MH
08 Oct	S-89 S-97	373	@ 151'	—	DS-40 P	↓	3.5'	1.5'	—	04	JB	DLE	9 "	CK	P	↓	MH
08 Oct	S-97 S-96 S-89	374	TEE	—	P	↓	—	—	1.5'	04	JB	DLE	9 "	CK	P	↓	MH
08 Oct	S-54	375	@ 285' 10' N of	S-51	P	↓	—	—	2.0'	04	JB	DLE	9 "	CK	P	↓	MH
01 Oct	SI-74 SI-72 S-58	376	TEE	—	P	↓	3.0'	2.0'	—	98	JM	DLE	9 "	CK	P	↓	MH
01 Oct	S-66 S-62	377	@ 430'	N	P	↓	—	—	1.0'	04	JB	DLE	9 "	CK	P	↓	MH
04 (15) Oct	SI-91 SI-89 S-96	SR 378	@ 578'	E	P	E	5.5'	2.0'	—	04	JB	DLE	9 Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR NO	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
01 Oct	SI-91 S-96 S-99	SR 379	@591'	E	P	E	1.5'	1.0'	—	04	JB	DLE	9 Oct	CK	P	Vacuum Box	M H
	SI 92 S-91	380	@603'	E	P		—	—	1.0'			DLE			P		M H
	SI 93 SI-93 S-99	381	TEE	—	P		1.5'	1.0'	—			DLE			P		M H
	SI-93	382	4' NEB of S-99 @608'	EAST	P		—	—	1.5'			DLE			P		M H
	S-99 S-81 SI-93	383	TEE	—	P		1.5'	1.0'	—			DLE			P		M H
	SI 95 SI 93 S-81	384	TEE	—	P		2.0'	1.0'	—			DLE			P		M H
	SI 96 S-81 SI 95 S-83	385	TEE	—	P		—	—	2.0'			DLE			P		M H
	SI 96 SI 98 S-83	386	TEE	—	P		3.5'	1.5'	—			DLE			P		M H
	SI-98 S-91 S-83	389	TEE	—	P		4.0'	2.0'	—			DLE			P		M H
	SI 98 S-91 SI 132	388	TEE	—	P		1.5'	1.0'	—			DLE			P		M H
	SI 132 S-91	389	@673'	East	P		3.0'	1.0'	—			DLE			P		M H
	SI-132 SI-131 S-91	390	@680'	East	P		2.0'	1.0'	—			DLE			P		M H
01 Oct	SI-131 S-91	391	@695'	East	P		—	—	4.0'			DLE			P		M H
8 Oct	SI-131 S-91	392	@702'	East	DS-42 P		5.0'	2.5'	—			DLE			P		M H
8(15) Oct	SI-131 S-91	SR 393	@704'	East	P	E	5.5'	2.5	—	04	JB	DLE	9 Oct	CK	P	Vacuum Box	M H

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000090

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petao / Selmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
8 Oct	S-131 S-91	SR 394	@ 726'	E	P	E	—	—	1.0'	04	JB	DLE	9 Oct	CK	P	Vacuum Box	MH
8	S-91 S-90 S-83	395	TEE	—	P		—	—	1.5'	04	JB	DLE	9 "	CK	P		MH
8	S-83 S-89 S-90	396	TEE	—	P		—	—	1.5'	04	JB	DLE	9 "	CK	P		MH
8	S-63	397	@ 80' 2' E of	North S-65	P		—	—	2.0'	04	JB	DLE	8 "	CK	P		R.H
01	S-63	398	@ 36' 3' E of	S-65	P		—	—	2.0'	98	JM	DLE	8 "	CK	P		R.H
01	S-72 S-74	399	@ 319'	North	DS 34 P		5.0'	2.0'	—	04	JB	DLE	9 "	CK	P		MH
8	S-96 S-95 S-89	400	TEE	—	P		—	—	2.0'	04	JB	DLE	9 "	CK	P		MH
02	S-89 S-81 S-83	401	TEE	—	P		5.0'	3.5'	—	04	JB	DLE	9 "	CK	P		MH
02	S-83 S-85 S-84 S-92	402	TEE	—	P		5.0'	2.0'	—	04	JB	DLE	9 "	CK	P		DLE
02	S-93 S-84 S-92	403	TEE	—	P		—	—	1.5'	04	JB	DLE	9 "	CK	P		DLE
01	SF 131 S-91	404	@ 734'	East	P		2.0'	1.5'	—	03	GC	DLE	9 "	CK	P		MH
9	S-58 S-60	405	@ 395'	North	P		3.0'	2.0'	—	98	JM	DLE	9 "	CK	P		MH
9	SF-92 S-99	406	WTS @ 600'	SR 380 East	P		9.0'	3.0'	—	98	JM	DLE	9 "	CK	P		MH
9	S-58	409	@ 20½'	4' E of S-60	P		1.0'	1.0'	—	98	JM	DLE	9 "	CK	P		MH
9 (15) Oct	S-93 S-92	408	@ 25'	From W	DS 41 P	F	4.0	2.5'	—	98	JM	DLE	9 Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

000791

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
8 Oct	S-78	SR 409	@150'	8.3' From S-79	G	E	7.0	—	—	98	JM	DLE	9 Oct	CK	P	Vacuum Box	DLE
9	S-85 S-86 S-83	410	TEE	—	P		—	—	1.2'		JM	MN	12 Oct	CK	P		MN
9	S-86 S-89 S-93	411	TEE	—	P		—	—	1.2'		JM	MN		CK	P		MN
9	S-93 S-94 S-94	412	@225'	—	P		—	—	1.2'		JM	MN		CK	P		MN
9	S-94 S-95 S-84	413	TEE	—	P		—	—	1.3'		JM	MN		CK	P		MN
9	S-89 S-88 S-83	414	TEE	—	P		—	—	1.0'		JM	MN		CK	P		MN
9	S-88 S-89 S-83	415	TEE	—	P		—	—	1.0'		JM	MN	12 Oct	CK	P		MN
9	SI-88	416	552'	North 3' From B. Panel	P		2.0'	1.5'	—	98	JM	MN	9 Oct	CK	P		MN
10	SI-131 S-91	417	@692'	E	P		3.1'	3.0'	-	04	JM	MN	12 Oct	CK	P		MN
10	S-92 S-85	418	56' ~~Base of Tee~~	DLE	P		—	—	4.5'	04	JM	DLE		CK	P		MN
10	S-85	419	Top Lt. LCS	at Lt. Bot	P		1.5'	1.0'	—	04	JM	DLE		CK	P		MN
10	S-85	420	Top Rt LCS	at Lt. Bot	P		2.0'	1.0'	—	04	JM	DLE		CK	P		MN
10	S-85	421	Bottom Bot	at center LCSR	P		5.5	4.5'	—	98	RS	DLE		CK	P		MN
10	S-85	422	Top Lt.	at LCSR	P		—	—	1.0'	98	JB	DLE		CK	P		MN
10 15 Oct	S-85	SR 423	Top Rt	of LCSR	P	E	—	—	2.5'	98	JB	DLE	12 Oct	CK	P	Vacuum Box	MN

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000792

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Sealmat

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
10 Oct	S-85	SR 424	Top RT	of LDS	P	E	1.5'	1.0'	—	98	RS	DLE	12 Oct	CK	P	Vacuum Box	MN
10	S-85	425	Top RT	of LDS	P		—	—	3.0'	04	JM	DLE	12 Oct	CK	P		MN
10	S-85	426	Bottom	RT of LDS	P		5.0'	3.0'	-	98	JB	DLE	12 Oct	CK	P		MN
12	SR-131 S-91	427	WAS @ 200'	SR 392 EAST	DS-42 P		10.0'	4.0'	—		JB	DLE	12 Oct	CK	P		MN
12	S-75	428	@ 27' 5' E of	North S-98	P		1.0'	1.0'	—		RS	DLE	13 Oct	CK	P		DLE
12	S-75	429	@ 21' 7' E of	North S-98	P		2.0'	2.0'	—		RS	DLE		CK	P		DLE
12	S-75	430	@ 13' 7' E of	North S-98	P		1.5'	1.5'	—		RS	DLE		CK	P		DLE
12	S-84 S-106	431	@ 68'	North	P		2.0'	1.0'	—		RS	DLE		CK	P		MH
12	S-84 S-106 S-105	432	TEE	—	P		2.5'	1.5'	—		RS	DLE		CK	P		MH
12	S-105 S-106	433	49'	from S-84	DS 43 P		12.0'	2.5	—		RS	DLE		CK	P		DLE
12	S-105 S-106 S-107	434	TEE	—	P		3.0'	2.0'	—		JM	DLE		CK	P		DLE
13	S-105 S-98 S-107	435	TEE	—	P		20'	1.5'	—		JM	DLE		CK	P		DLE
13	S-98 S-99 S-109	436	TEE	—	P		—	—	2.0'		JM	DLE		CK	P		DLE
13	S-109 S-99 S-108	437	TEE	—	P		3.0'	2.0'	—		JM	DLE		CK	P		DLE
13 (15) Oct	S-84 S-106	SR 438	@ 66'	North	P	E	3.0'	2.0'	—	98	JM	DLE	13 Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

2062

000493

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmax

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	PANEL	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
13 Oct	S-84 S-105 S-98	SR439	TEE	–	P	E	3.0'	2.0'	–	98	JM	DLE	13 Oct	CK	P	V. Box	M.H.
13 "	S-106	SR440	@ 65'	W 16' of S-84	P	E	–	–	1.0'	98	JM	DLE	13 Oct	CK	P	V. Box	M.H.
13 "	S-106	SR441	@ 65'	W 4' of S-84	P	E	–	–	1.0'	98	JM	DLE	13 Oct	CK	P	V. Box	DLE
13 "	S-102 S103 S106 S107	SR442	~ 52'	–	P	E	–	–	3.0'	98	JM	DLE	13 Oct	CK	P	V. Box	DLE
13 "	S106 S104 S103	SR443	@ 14'	N –	P	E	2.0'	1.0'	–	↓	↓	↓	↓	CK	P	" "	↓
13 "	S 100 S 102 S 103	SR444	TEE	–	P	E	2.0'	4.0'	–	↓	↓	↓	↓	CK	P	" "	↓
13 "	S-99 S-100 S-108	SR445	TEE	–	P	E	–	–	2.0'	↓	↓	↓	↓	CK	P	" "	↓
13 Oct	S-99 S-100	SR446	@ 21'	Ends at Anchor Trench	P	E	1.0'	1.0'	–	98	JM	DLE	13 Oct	CK	P	V. Box	DLE
14 Oct	S-71 S113 S-93	SR447	TEE	–	P	E	4.0'	2.0'	–	98	JM	DLE	17 Oct	PM	P	" "	↓
14 Oct	S-93 S-112 S113	SR448	TEE	–	P	E	1.0'	1.0'	–	98	JM	DLE	↓	↓	P	" "	↓
14 Oct	S-93 S-93 S-112	SR449	TEE	–	P	E	–	–	2.0	98	JM	DLE	↓	↓	P	" "	↓
14 Oct	S-95 S-112 S-98 S-111	SR450	TEE	–	P	E	4.0'	3.0'	–	98	JM	DLE	↓	↓	P	" "	↓
14 Oct	S-98 S-80 S-111	SR451	TEE	–	P	E	2.0'	1.5'	–	98	JM	DLE	↓	↓	P	" "	↓
14 Oct	S-80 S-111	SR452	@ 6' E of S-110 S-111		P	E	6.0'	3.0'	–	98	JM	DLE	↓	↓	P	" "	↓
14 (15) Oct	SR111 SR112 S-80	SR453	TEE	–	P	E	1.5'	1.0'	–	98	JM	DLE	↓	↓	P	" "	↓

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

000794

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1988

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM OR PANEL	[redacted] Repair No.	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
14 Oct	S-80 S-82 S-110	SR454	TEE	–	P	E	1.5'	1.0'	–	98	JM	DLE	17 Oct	PM	P	V. Box	DLE
14 Oct	S-82 S-110 S-84 S-109	SR465	TEE	–	P	E	5.0'	2.5'	–	98	JM	DLE	17 Oct	PM	P	V. Box	DLE
14 Oct	S-84 S-106 S-109	SR456	TEE	–	P	E	7.0'	3.5'	–	98	JM	DLE	17 Oct	PM	P	V. Box	DLE
14 Oct	S-106 S-109 S-109	SR457	TEE	–	P	E	7.0'	3.0'	–	98	JM	DLE	17 Oct	PM	P	V. Box	DLE
(15)																	

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Petro/Salmar

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
14 Oct	P-1 P-2	PR 1	@313'	From E	DP-01 P	E	5.0'	2.0'	–	98	JM	MH	25 Oct	GC	P	Vacuum Box	MH
14	P-2 P-3	2	@225'	From E	DP-02 P		4.0'	2.5'	–	98	JM	MH	17	MM	P		DLE
14	P-2 P-3	3	@208'	From E	P		2.5'	1.5'	–	98	JM	MH	17	MM	P		DLE
15	PI-36 P-1	4	@E	Anchor Trench Ext.			–	–	2.0'	06	JM	DLE	17	MM	P		DLE
15	PI-36 P-1	5	@33'	From E			3.0'	1.0'	–	06	JM	DLE	25	GC	P		MH
15	PI-36	6	1.5' N	@41' W and 1' SE of PI-36			–	–	1.0'	06	JM	DLE	25	GC	P		MH
15	P-1	7	@59' W				–	–	1.5'	06	JM	DLE	17	MM	P		DLE
15	PI-34 PI-36 P-1	8	@665'	From E			–	–	1.0'	06	JM	DLE	25	GC	P		MH
15	PI-34 PI-44 P-1	9	@75'	From E			–	–	1.0'	06	JM	DLE	25	GC	P		MH
15	PI-44 P-1	10	@79'	From E			–	–	1.0'	06	JM	DLE	25	GC	P		MH
15	PI-44 P1	11	@85'	From E			2.5'	1.5'	–	06	JM	DLE	25	GC	P		MH
15	PI 44 PI45 P-1	12	@89'	From E					1.0'	06	JM	DLE	25	GC	P		MH
16	PI 45 P-1 PI47	13	@106'	From E					1.0'	06	CL	DLE	25	GC	P		MH
16	PI-47 PI-49 P-1	14	@118'	From E			3.5'	2.5'	–	06	CL	DLE	25	GC	P		MH
16 (15) Oct	PI-49 PI-50 P-1	PR 15	@132'	From E	P	E	3.0'	2.5'	–	06	CL	DLE	25 Oct	GC	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Petre / Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR No	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
17 Oct	PI 52 PI 50 P-1	PR 16	@ 147'	E	P	E	—	—	1.6'	06	LL	DLE	25 Oct	G C	P	Vacuum Box	M H
17	PI 52 P-1	17	@ 158'	E	P		2.5'	1.5'	—		LL	DLE	25	G C	P		M H
17	PI 54 PI 52 P-1	18	@ 160'	E	P		1.5'	1.5'	—		LL	DLE	25	G C	P		M H
16	PI 44 P-1	19	@ 80'	E	DP-9 P		4.0'	2.0'	—		CL	DLE	25	G C	P		M H
16	P-4 P-5	20	@ 137'	E	DP-4 P		5.0'	2.5'	—		CL	DLE	17	M M	P		DLE
16	P-3 P-4	21	@ 44'	E	DP-3 P		4.5'	2.0'	—		CL	M H	17	M M	P		DLE
16	P-5 P-6	22	@ 215'	E	DP-5 P		4.0'	2.0'	—		CL	M H	17	M M	P		DLE
16	P-6 P-7	23	@ 192'	E	P		—	—	1.5'		CL	M H	17 Oct	M M	P	Vacuum Box	DLE
16	P-6 P-7	24	@ 238'	E	P		—	—	1.5'		CL	M H				Capped By S.R. 103	CS
16	P-6 P-9	25	@ 292'	E	DP-6 P		5.0'	3.0'	—		CL	M H	22 Oct	CK	P	Vacuum Box	M H
16	P17 P-8	26	@ 93'	E	DP-9 P		4.0'	1.5'	—		CL	M H	17	M M	P		DLE
16	P-9 P-11	27	@ 50'	E	DP-10 P		4.0'	2.0'	—		CL	M H	17	M M	P		DLE
16	P-8 P-9	28	@ 206'	E	DP-8 P		5.0'	2.5'	—		CL	M H	17	M M	P		DLE
16	P-9 P-11 P-10	29	@ 174'	E	P		2.0'	1.5'	—		CL	M H	17	M M	P		DLE
16 (15) Oct	P-10 P-11 P-12	PR 30	@ 174'	E	P	E	2.5'	1.5'	—	06	CL	M H	17 Oct	M M	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax / Petro

DATE (day/mo)	LOCATION: SEAM OR Panel	LOCATION: [redacted] Repair No	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
16 Oct	P-11 P-12	PR 31	@ 130 ~~12~~	Ⓓ E	DP-11 P	E	4.0	2.0	—	06	CL	MH	17 Oct	MM	P	V. Box	DLE
16	P-12 P-13	PR 32	@ 190'	E	DP-12 P		4.5'	2.5'	—			MH					DLE
16	P-12 P-13	PR 33	@ 211'	E	P		2.0'	1.5'	—			MH					DLE
16	P-13 P-14	PR 34	@ 305'	E	DP-13 P		4.2'	2.0'	—			MH					DLE
16	P-23 P-22	PR 35	@ 102'	E	DP-14 P		3.2'	2.0	—			MH	20 Oct	RS	P	V. Box	[illegible]
16	P-22 P-21	PR 36	@ 39'	E			—	—	2.5			MH			P	V. Box	[illegible]
16 Oct	P-6 P-7	PR 37	@ 118.5'	E			1.5'	1.0'	—		CL	MH	17 Oct	MM	P	V. Box	DLE
17 Oct	PI-54 P-1	PR 38	@ 172.5'	E			2.5'	1.5'	—		RS	DLE	25 Oct	GC	P	V. Box	MH
17	PI-54 P-1 PI-55	PR 39	@ 175.5'	E			1.0	1.0'	—			DLE	25 Oct	GC	P	V. Box	MH
17	PI-55 P-1 PI-56	PR 40	@ 190'	E			—	—	1.0'			DLE	25 Oct	GC	P	V. Box	MH
17	PI-56 P-1	PR 41	@ 194'	E			2.5'	1.0'	—			DLE	25 Oct	GC	P	V. Box	MH
17	PI-56 P-1	PR 42	@ 205'	E			1.0'	1.0'	—		RS	DLE	25 Oct	GC	P	V. Box	MH
17	PI-58 P-1	PR 43	@ 210'	E			2.5'	1.0'	—	06	LL	DLE	25 Oct	GC	P	V. Box	MH
17	PI-60 P-1 PI-58	PR 44	@ 218'	E	P	E	—	—	1.0	06	RS	DLE	25 Oct	GC	P	V. Box	MH
17 Oct	PI-66 P-1	PR 45	@ 226'	E	P	E	3.5'	1.5'	—	06	RS	DLE	25 Oct	GC	P	V. Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: [redacted] Repair No	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
17 Oct	PI 60 PI 61 P-1	PR 46	@ 233'		P	E	3.5'	1.5'	–	06	RS	DLE	25 Oct	GC	P	V. Box	MH
	PI 68 PI 61 P-1	PR 47	@ 240'		P	E	1.0'	1.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 63 PI 65 P-1	PR 48	@ 262'		P	E	1.5'	1.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 67 PI 66 P-1	PR 49	@ 277'		P	E	2.0'	2.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 66 PI 68 P-1	PR 50	@ 291'		P	E	2.5'	2.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 68 P-1	PR 51	@ 300'		P	E	4.0'	3.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 68 PI 90 P-1	PR 52	@ 306'		P	E	3.0'	2.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 90 PI 71 P-1	PR 53	@ 320'		P	E	3.0'	2.0'	–			DLE	25 Oct	GC	P	V. Box	MH
	PI 71 PI 73 P-1	PR 54	@ 335'		P	E	3.0'	2.0'	–			DLE	25 Oct	~~GK~~ GG	P	V Box	MH
	P-3	PR 55	@ 336'	12' S of P-2	P	E	–	–	1.0'			DLE	25 Oct	@ GK GG	P	V. Box	MH
	P-28 P-14 P-15	PR 56	TEE	–	P	E	4.0'	2.5'	–			DLE	20 Oct	RS	P	V. Box	DLE
17 Oct	P-28 P-33 P-15	PR 57	TEE	–	P	E	4.0'	4.0'	–	06	RS	DLE	20 Oct	RS	P	V. Box	DLE
	P-28 P-33 P-34	PR 58	TEE	–	P	E	1.5'	1.0'	–			DLE			P	V. Box	DLE
	P-28 P-29 P-34	PR 59	TEE	–	P	E	2.0'	2.0'	–			DLE			P	V. Box	DLE
17 (15) Oct	P-29 P-30 P-34	PR 60	TEE	–	P	E	1.5'	1.5'	–	06	RS	DLE	20 Oct	RS	P	V. Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) [redacted]IR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmat / Petco

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
17 Oct	P-30 P-31 P-34	PR 61	TEE	—	P	E	1.5'	1.0'	—	06	RS	DLE	20 Oct	RS	P	Vacuum Box	DLE
17	P-15 P-33	PR 62	TEE	—	P		8.0'	5.0'	—	06	RS	DLE		RS	P		DLE
17	P-32 P-35	PR 63	TEE	—	P		1.5'	1.0'	—	06	RS	DLE		RS	P		DLE
17	P-17 P-19 P-16	PR 64	TEE	—	P		2.5'	1.5'	—	06	RS	DLE		RS	P		DLE
17	P-17 P-19 P-18	PR 65	@231'	From Emark	P		7.0'	4.0'	—	06	RS	DLE		RS	P		DLE
19	P-22 P-35	PR 66	TEE	—	P		4.0'	3.0'	—	98	RS	DLE		RS	P		CS
19	P-14 P-26 P-27	PR 67	TEE	—	P		1.5'	1.0	—	98	RS	DLE		RS	P		CS
19	P-26 P-14 P-25	PR 68	@105'	N	G		1 lea. 1'	Grinds	—	98	RS	DLE		RS	P		CS
19	P-26	PR 69	@105'	N	G		9 lea. 1'	Grinds	—	98	RS	DLE		RS	P		CS
19	P-25	PR 70	TEE	—	P		1.5'	1.5'	—	98	RS	DLE		RS	P		CS
19	P-14 P-25 P-24	PR 71	TEE	—	P		2.0'	1.5'	—	98	RS	DLE		RS	P		CS
19	P-14 P-23 P-24	PR 72	TEE	—	P		—	—	2.0'	98	RS	DLE		RS	P		CS
19	P-14 P-23 P-22	PR 73	TEE	—	P		—	—	2.0'	98	RS	DLE		RS	P		DLE
19	P-14 P-21 P-22	PR 74	TEE	—	P		1.5'	1.5'	—	98	RS	DLE		RS	P		DLE
19 (15) Oct	P-14 P-21 P-20 P-18	PR 75	TEE	—	P	E	2.0'	1.5'	—	98	RS	DLE	20 Oct	RS	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax / Petro

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
19 Oct	P-14 P-18 P-17	PR 76	TEE	—	P	E	1.5'	1.0'	—	98	RS	DLE	20 Oct	RS	P	Vacuum Box	DLE
19	P-14 P-16 P-17	PR 77	TEE	—	P		2.0'	1.0'	—	98	RS	DLE		RS	P		DLE
19	P-14 P-16 P-15	PR 78	TEE	—	P		1.5'	1.0'	—	98	RS	DLE		RS	P		DLE
19	P-15 P-14	PR 79	@ 10' E of P-16		P		—	—	1.0'	98	RS	DLE		RS	P		DLE
19	P-31 P-33 P-32 P-34	PR 80	TEE	—	P		12.0'	2.0'	—	98	RS	DLE		RS	P		DLE
19	P-16 P-35 P-15	PR 81	TEE	—	P		2.5'	1.5'	—	98	RS	DLE		RS	P		DLE
19	P-16 P-35	PR 82	@ 10' E of P-19		DP-15 P		3.5'	2.0'	—	06	KH	DLE		RS	P		DLE
19	P-19 P-35 P-16	PR 83	TEE	—	P		2.5'	1.5'	—	06	KH	DLE		RS	P		DLE
19	P-35 P-18 P-19	PR 84	TEE	—	P		2.5'	1.5'	—	06	KH	DLE		RS	P		DLE
19	P-35 P-20 P-18	PR 85	TEE	—	P		1.5'	1.0'	—	06	KH	DLE		RS	P		DLE
19	P-35 P-21 P-20	PR 86	TEE	—	P		1.5'	1.0'	—	06	KH	DLE		RS	P		DLE
19	P-35 P-21 P-22	PR 87	TEE	—	P		1.5'	1.0'	—	06	KH	DLE		RS	P		DLE
19	P-35 P-23 P-22	PR 88	TEE	—	P		2.5	1.5'	—	06	KH	DLE		RS	P		DLE
19	P-23 P-35 P-24	PR 89	TEE	—	P		2.5	1.5'	—	06	KH	DLE		RS	P		DLE
19 (15) Oct	P-35 P-35 P-24	PR 90	TEE	—	P	E	1.5	1.0'	—	06	KH	DLE	20 Oct	RS	P	Vacuum Box	DLE

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, [illegible] RECONSTRUCTION
([illegible]) [illegible]UR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
19 Oct	P-35 P-26 P-25	PR91	TEE	—	P	E	1.5'	1.0'	—	06	KH	DLE	20 Oct	RS	P	Vacuum Box	DLE
19	P-35 P-26 P-27	PR92	TEE	—	P		1.5'	1.5'	—	06	KH	DLE	20	RS	P		DLE
19	P-6 P-7	PR93	From TO	4' East 192' North	P		188.0'	4.0'	—	02	GC	DLE	22	CK	P		MH
20	P-23	PR94	@105' 4' East	of P-24	G		4ea @	1.5' long	—	06	LL	DLE	22	CK	P		MH
20	P-21	PR95	@103 ~~From~~	Across P-21	G		6ea @	3' Long	—	06	LL	MH	22	CK	P		MH
20	P6 P7	PR96	4' TO	192'	C		188.0'	4.0'	—	98	GC	TBY	22	CK	P		MH
20	PR96 P-7 PR93	PR97	@75'	—	P		2.0'	1.0'	—	98	RS	TBY	22	CK	P		MH
20	P-7	PR98	@98'	—	P		3.0'	1.0'	—	98	RS	TBY	22	CK	P		MH
20	P-7	PR99	@121'	—	P		3.0'	1.0'	—	98	GC	TBY	22	CK	P		MH
20	P-7	PR100	@144'	—	P		2.0'	2.0'	—	98	GC	TBY	22	CK	P		MH
20	P-7	PR101	@167'	—	P		3.0'	2.0'	—	98	GC	TBY	22	CK	P		MH
20	P-7	PR102	@190'	—	P		4.0'	3.0'	—	98	GC	TBY	22	CK	P		MH
20	P6 P-7	PR103	@240'	—	P		14.0'	12.0'	—	98	RS	TBY	22	CK	P		MH
21	P-7 PR93	PR104	@29'	—	P		2.0'	2.0'	—	98	GC	CS	22	CK	P		CS
21 (1/5) Oct	P-7 PR93	PR105	@52'	—	P	E	1.0'	2.0'	—	98	GC	CS	22 Oct	CK	P	Vacuum Box	CS

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO ENVIRONMEL

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM	~~PANEL~~ Repair No.	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
21 Oct	P6/PR96	PR106	137	–	~~DIS~~ P/P 18	E	5	3	–	98	GC	CS	22 OCT	CK	P	V BOX	MH
21 Oct	P7/PR93	PR107	153	5	P	E	7	5	–	98	GC	CS	22 Oct	CK	P	V. Box	CS
21 Oct	P1/P2 P/38	PR108	TEE	–	P	E	2	2	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P2/P38 P44	PR109	TEE	–	P	E	2	2	–	06	LL	CS	25 Oct	GL	P	V.Box	MH
21 Oct	P2/P3 P44	PR110	TEE	–	P	E	4	3	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P3/P4 P44	PR111	TEE	–	P	E	2	2	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P4/P38 P44	PR112	TEE	–	P	E	3	5	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P4/P37 P38	PR113	TEE	–	P	E	2	2	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P4/P5 P37	PR114	TEE	–	P	E	3	2	–	98	GC	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P5/P6 P37	PR115	TEE	–	P	E	3	2	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P6/P7 P36	PR116	TEE	–	P	E	2	1	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 Oct	P36/P37 P38	PR117	TEE	–	P	E	1	1	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
22 Oct	P7	PR118	142	10ft S of P6	P	E	–	–	1	98	GC	CS	22 OCT	CK	P	V BOX	MH
21 OCT	P40, P38 P39	PR120	381 N	–	P	E	2.5	1.5	–	06	LL	CS	25 Oct	GL	P	V. Box	MH
21 (15) OCT	P38 P39	PR121	315 N	–	P	E	3	2	–	06	LL	CS	25 Oct	GL	P	V. Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

000503

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: ~~1998~~ 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Sokmax / Petro

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
21 Oct	P-27 P-41	PR119	47' To 74'		C	E	27.0'	3.0'	—	06	GC	MH	25 Oct	GC	P	Vacuum Box	MH
21	P-6 P-9	PR 122	@330'	W	P		2.5'	2.0'	—	06	LL	MH	25	GC	P		MH
21	P-37 P-36 P6	PR 123	@340'	W	P		3.0'	1.5'	—	06	LL	MH	25	GC	P		MH
21	P-36 P-38 P9	PR 124	@346'	W	P		2.0'	2.0'	—	06	LL	MH	25	GC	P		MH
21	P-12 P-13	PR 125	@339'	1' N ID	G		1.0'	—	—	06	LL	MH	25	GC	P		MH
21	P-6	PR 126	@325'	8' SE	G		11.0'	—	—	06	LL	MH	25	GC	P		MH
21	P-38 P-39	PR 127	@300'	N TH	D P-17 P		3.5'	2.0'	—	06	JB	MH	25	GC	P		MH
21	P-17 P-8 P-38	PR 128	@295'	N TH	P		2.0'	1.5'	—	06	LL	MH	25	GC	P		MH
21	P-8	PR 129	@334'	12' SE	P		—	—	1.5'	06	LL	MH	25	GC	P		MH
21	P-8	PR 130	@340'	12' SE	P		—	—	2.0'	06	LL	MH	25	GC	P		MH
21	P-8 P-38	PR 131	@262'		P		—	—	2.0'	06	LL	MH	25	GC	P		MH
22	P-8 P-9 P-38	PR 132	@348'	W	P		—	—	1.5'	06	GC	MH	25	GC	P		MH
22	P-10 P-38 P9	PR 133	@348'	W	P		—	—	1.5'	06	GC	MH	25	GC	P		MH
22	P10	PR 134	@333'	W	G		23.0'	—	—	06	GC	MH	25	GC	P		MH
22 (13) Oct	P-10 P-38 P-12	PR 135	@348'	W	P	E	2.0'	1.5'	—	06	GC	MH	25 Oct	GC	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax / Petro

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
22 Oct	P-12	PR 136	335' W	2' S	G	E	1.0'	—	—	06	GC	MH	25 Oct	GC	P	Vacuum Box	MH
22	P-12	PR 137	346' W	6' S	P		—	—	1.0'	06	GC	MH	25	GC	P		MH
22	P-12	PR 138	335' W	6' S	G		1.5'	—	—	06	GC	MH	27	CK	P		TBY
22	P-12 P-13 P-38	PR 139	TEE	—	P		—	—	1.0'	06	GC	MH	25	GC	P		MH
22	P-13 P-38	PR 140	351'	10' North	DP-16 P		4.0'	2.5'	—	06	GC	MH	25	GC	P		MH
22	P-13	PR 141	339' W	5' North	G		5.5'	—	—	06	GC	MH	25	GC	P		MH
22	P-13 P-14 P-38	PR 142	348'	West	P		—	—	2.5'	06	GC	MH	25	GC	P		MH
22	P-13	PR 143	351' W	8' S of P-12	P		—	—	1.0'	06	GC	MH	25	GC	P		MH
22	P-13	PR 144	351' W	11" S of P-12	P		—	—	2.0'	06	GC	MH	25	GC	P		MH
22	P-14	PR 145	339 W	7' North	G		1.5'	—	—	06	GC	MH	27	CK	P		TBY
22	P-14 P-27 P-38	PR 146	TEE	—	P		—	—	1.5'	06	GC	MH	25	GC	P		MH
22	P-27	PR 147	108' N	1' West of P-28	G		1.5'	—	—	06	GC	MH	27	CK	P		TBY
22	P-43 P-41 P-27	PR 148	23'	North	P		3.0'	2.5'	—	06	GC	MH	27	CK	P		TBY
22	P-35	PR 149	334 W	14' North	P		2.0'	1.0'	—	06	GC	MH	27	CK	P		TBY
22 (15) Oct	P-35 P-27 P-43	PR 150	346'	West	P	E	7.0'	3.0'	—	06	GC	MH	27 Oct	CK	P	Vacuum Box	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, [illegible] = RECONSTRUCTION
([illegible]) [illegible]IR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax / Petro

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
23 Oct	P-39,38 41,42	PR 151	TEE	–	P	E	14.0	11.0'	–	06	JB	MH	27 Oct	CK	P	Vacuum Box	TAJ
23	P-53,39 P-42	PR 152	TEE	–	P		3.0'	2.0'	–	06	JB	MH	27	CK	P		TAJ
23	P-39,53 P-52	PR 153	@ 137' N		P		2.5'	2.0'	–	06	JB	MH	25	GC	P		TAJ
23	P-51-A1 P-53	PR 154	@ 422' N		C		18.0'	6.0'	–	06	JB	MH	25	GC	P		MH
23	P-52 P-49 P-40	PR 155	@ 392' N		P		3.0'	2.0'	–	98	RS	MH	27	CK	P		TAJ
23	P-53,51 P-38,40	PR 156	@ 422' N		P		3.5'	5.0'	–	98	RS	MH	26	CK	P		TAJ
23	P-53,47 P-48	PR 157	@ 388' N		P		2.0'	2.0'	–	06	JB	MH	25	CK	P		MH
23	P-52,49 P-46	PR 158	@ 392' N		P		3.5'	2.5'	–	06	JB	MH	25	CK	P		MH
23	P-52,40 P-39	PR 159	@ 345' N		P		2.5'	1.5'	–	06	JB	MH	27	CK	P		TAJ
23	P-50,49 P-40	PR 160	@ 425' N		P		3.0'	2.5'	–	98	RS	MH	27	CK	P		TAJ
23	P-45 P-49	PR 161	@ 431' N		P		2.5'	1.5'	–	06	JB	MH	27	CK	P		TAJ
23	P-45 P-49	PR 162	@ 421' N		P		2.0'	1.5'	–	06	JB	MH	25	CK	P		MH
23	P-45 P-49	PR 163	@ 419' N		P		2.5'	1.5'	–	98	RS	MH	25	CK	P		MH
23	P-45,49 P-46	PR 164	@ 414' N		P		1.5'	1.0'	–	98	RS	MH	25	CK	P		MH
23 (13) Oct	P-3	PR 165	@ 337' 11" W		G	E	1.0	–	–	06	JB	MH	25 Oct	GC	P	Vacuum Box	MH

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NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Schmatz / PetRo

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR NO	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
23 Oct	P-39 P-52	PR 166	@ 350' N		DP-21-2A P	E	3.5'	2.0'	–	06	JB	MH	—	—	—	Capped	CS
23	P-39 P-52	PR 167	@ 325' N		DP-21-A P		4.5'	2.5'	–	Capped		MH	—	—	—	Capped	CS
23	P-39 P-52	PR 168	@ 308' N		DP-21 P		4.5'	2.5'	–	06	JB	MH	—	—	—	Capped	CS
23	P-39 P-52	PR 169	@ 299' N		P		3.5'	2.0'	–	06	JB	MH	—	—	—	Capped	CS
24	P-39 P-52	PR 190	@ 290' N		DP-21B P		6.0'	4.0'	–	06	JB	MH	—	—	—	Capped	CS
24	P-62	PR 191	328' E	10' SE of P-61	G		1.0'	—	—	06	JB	MH	26 Oct	CK	P	Vacuum Box	TBY
24	P-62	PR 192	329' E	10' SE of P-61	G		1.0'	—	—	06	JB	MH	27	CK	P		TBY
24	P-62 P-52 P-61	PR 193	TEE	—	P		—	—	2.5'	06	JB	MH	25	CK	P		MH
24	P-61	PR 194	326' E	12' N of P-62	G		2 passes	—	—	06	JB	MH	27	CK	P		TBY
24	P-61 P52 P-60	PR 195	TEE	—	P		—	—	2.0'	06	JB	MH	25	CK	P		MH
24	P-60 P52 P-59	PR 196	TEE	—	P		—	—	2.5'	06	JB	MH	25	CK	P		MH
24	P-59 P-59 P52	PR 197	TEE	—	P		—	—	2.0'	06	JB	MH	25	CK	P		MH
24	P-59 P56 P-52	PR 198	TEE	—	P		—	—	1.5'	06	JB	MH	25	CK	P		MH
24	P-55 P-56	PR 199	@ 296' E		DP-24 P		4.0'	2.5'	–	06	JB	MH	25	CK	P		MH
24 (25) Oct	P-55 P56 P-52	PR 180	@ 338' E	TEE	P	E	—	—	1.5'	06	JB	MH	25 Oct	CK	P	Vacuum Box	MH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ REPAIR	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
24 OCT	P55	PR181	331 E	9' N	G	E	1.0	—	—	06	JB	MH	25 Oct	CK	P	V. Box	MH
24 OCT	P55, 52	PR182	333 E	11' N	P	E	2.0	1.5	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
24 OCT	P55, 54 52	PR183	333 E	—	P	E	—	—	2.0	06	JB	MH	25 Oct	CK	P	V. Box	MH
24 OCT	P54	PR184	330 E	14' N	G	E	(2) @ 1' EA	—	—	06	JB	MH	25 Oct	CK	P	V. Box	MH
24 OCT	P54, 48 52	PR185	333 E	—	P	E	—	—	2.0	06	JB	MH	25 Oct	CK	P	V. Box	MH
24 OCT	P47, 48 52	PR186	333 E	—	P	E	8.0	7.0	—	06	JB	MH	25 Oct	CK	P	V. Box	MH
23 OCT	PI 87, 89 P45	PR187	482 W	—	P	E	—	—	1.0	06	JB	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 89, 91 P45	PR188	496 W	—	P	E	—	—	1.5	06	JB	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 94, 91 P45	PR189	510 W	—	P	E	—	—	2.0	06	RS	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 94, 95 P45	PR190	525 W	—	P	E	4.0	2.0	—	06	RS	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 95 P45	PR191	537 W	—	P	E	—	—	2.0	06	RS	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 95, 97 P45	PR192	540 W	2' E	P	E	—	—	2.5	06	JB	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 97, 99 P45	PR193	554 W	—	P	E	—	—	2.0	06	RS	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 99, 100 P45	PR194	569 W	—	P	E	—	—	2.0	06	JB	MH	27 OCT	CK	P	V. Box	TBH
23 OCT	PI 100, 102 P45	PR195	583 W	—	P	E	3.5	2.0	—	06	RS	MH	27 OCT	CK	P	V. Box	TBH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX / PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ REPAIR	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
23 OCT	PC102,103 P45	PR196	598 W	–	P	E	2.0	1.5	–	06	JB	MH	27 OCT	CK	P	V. BOX	TBY
23 OCT	PC103,105 P45	PR197	613 W	–	P	E	1.5	1.0	–	06	RS	MH	27 OCT	CK	P	V. BOX	TBY
23 OCT	PC105 P45	PR198	619 W	–	P	E	1.5	1.0	–	06	RS	MH	27 OCT	CK	P	V. BOX	TBY
23 OCT	PC105,106 P45	PR199	627 W	–	P	E	–	–	1.0	06	JB	MH	27 OCT	CK	P	V. BOX	TBY
23 OCT	PC 106 P45	PR200	635 W	–	P	E	–	–	2.0	06	RS	MH	27 OCT	CK	P	V. BOX	TBY
23 OCT	PC 106,107 P45	PR201	643 W	–	P	E	2.0	1.0	–	06	RS	MH	27 OCT	CK	P	V. BOX	TBY
24 OCT	P46 P47	PR202	278 E	–	P DP 20	E	4.0	2.0	–	06	JB	MH	27 OCT	CK	P	V. BOX	TBY
24 OCT	P47 P48	PR203	186 E	–	P DP 22	E	3.5	2.5	–	06	JB	MH	25 Oct	CK	P	V. BOX	MH
24 OCT	P48 P54	PR204	81 E	–	P DP 23	E	4.0	2.0	–	06	JB	MH	27 OCT	CK	P	V. BOX	TBY
24 OCT	P45 P46	PR205	92 E	–	P DP 19	E	3.0	2.0	–	06	JB	MH	27 OCT	CK	P	V. BOX	TBY
24 OCT	P45	PR206	107 E	3' [illegible]	46 P	E	–	–	2.0	06	JB	MH	25 Oct	CK	P	V. BOX	MH
24 OCT	P56 P57 P58	PR207	254 E	–	P	E	2.5	1.5	–	06	JB	MH	25 Oct	CK	P	V. BOX	MH
24 OCT	P56 P58	PR208	246 E	–	P	E	–	–	1.0	06	JB	MH	25 Oct	CK	P	V. BOX	MH
24 OCT	P56 P59	PR209	161 (CL) ~~258~~ E	–	P DP 25	E	4.0	2.5	–	06	JB	MH	25 Oct	CK	P	V. BOX	MH
24 OCT (15)	P57 P58 P59	PR210	254 E	–	P	E	3.0	2.0	–	06	JB	MH	26 OCT	CK	P	V. BOX	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmat / Petro

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
	SEAM OR PANEL	REPAIR Nº	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
24 Oct	P-58 P-59	PR 211	34' E	—	DP-26 P	E	4.0'	2.0'	—	06	JB	MH	27 Oct	CK	P	Vacuum Box	TBY
24	P-61 P-62	PR 212	288' E	—	DP-28 P		4.0'	2.0'	-	06	JB	MH	29	CK	P		TBY
24	P-69 P92 P-71	PR 213	109' N	—	P		—	—	1.0'	06	JB	MH	26	CK	P		TBY
24	P-68,69 P-72	PR 214	109' N	—	P		—	—	1.5'	06	JB	MH	26	CK	P		TBY
24	P90,66 P-69	PR 215	109' N	—	P		—	—	1.5'	06	JB	MH	26	CK	P		TBY
24	P90,66 P-65	PR 216	109' N	—	P		—	—	1.5'	06	JB	MH	26	CK	P		TBY
24	P-60 P-61	PR 217	159' E	—	DP-27 P		3.0'	2.0'	—	06	JB	MH	26	CK	P		TBY
25	PI 87,86 P-45	PR 218	467' W	—	P		3.5'	2.5'	—	06	JB	MH	27	CK	P		TBY
25	PI 86 P-43	PR 219	461' W	—	P		—	—	2.5'	06	JB	MH	29	CK	P		TBY
25	PI 86,84 P-45	PR 220	452' W	—	P		5.0'	2.5'	—	06	JB	MH	29	CK	P		TBY
25	PI-83,84 P-45	PR 221	437' W	—	P		2.0'	1.5'	—	06	JB	MH	29	CK	P		TBY
25	PI-81,82 P-45	PR 222	423' W	—	P		2.0'	1.0'	—	06	JB	MH	29	CK	P		TBY
25	PI-81 P-49 P45	PR 223	409' W	—	P		2.0'	1.0'	—	06	JB	MH	29	CK	P		TBY
25	PI 80,81 P-49	PR 224	405' W	—	P		2.0'	1.0'	—	06	JB	MH	27	CK	P		TBY
25 (15) Oct	PI 80,78 P-49	PR 225	394' W	—	P	E	—	—	2.5'	06	JB	MH	29 Oct	CK	P	Vacuum Box	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

000510

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: SOLMAX/PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ REPAIR	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
25 OCT	PE78 P49 50	PR226	391w	—	P	E	2.0	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE78,77 P50	PR227	379w	—	P (MH)	E	1.5	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE77 P50	PR228	374w	—	P	E	3.0	2.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE77 P50,51	PR229	367w	—	P	E	—	—	1.0	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE77,75 P51	PR230	364w	—	P	E	3.0	2.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	P40	PR231	415N	8'w	G	E	(5) @ 1' EA	—	—	06	JB	MH	26 OCT	CK	P	V. Box	TBH
25 OCT	PE109,139 P45	PR232	657w	—	P	E	—	—	1.0	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE75 P51	PR233	355w	—	P	E	4.0	2.5	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE73,75 P51	PR234	350w	—	P	E	2.0	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE109,139 P45	PR235	672w	—	P	E	1.5	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE140,139 P45	PR236	687w	—	P	E	—	—	1.0	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE142 P45	PR237	700w	—	P	E	2.0	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE142 P45	PR238	706w	—	P	E	1.5	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT	PE142 P45	PR239	711w	—	P	E	2.0	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH
25 OCT (15)	PE142 P45	PR240	717w	—	P	E	1.5	1.0	—	06	JB	MH	27 OCT	CK	P	V. Box	TBH

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax / Petro

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
25 Oct	PI-142 P.45 P.51	PR 241	722'	West	P	E	—	—	10'	06	JB	MH	27 Oct	CK	P	Vacuum Box	TBY
23	P-1	PR 242	422' to 432'		C		10.0'	2.0'	—	06	JB	MH	25	CK	P		CS
25	A-62 P52 P-63	PR 243	159'	—	P		3.0'	2.0'	—	98	RS	MH	26	CK	P		TBY
25	P-63 P65 P-90	PR 244	TEE	—	P		—	—	1.5'	06	JB	TBY	26	CK	P		TBY
25	P-96 P92 P-77	PR 245	100' W	—	P		6.0'	5.0'	—	06	JB	MH	26	CK	P		TBY
25	P.77, 82 P-83, 78	PR 246	50' E	—	P		6.0'	2.5'	—	06	JB	MH	26	CK	P		TBY
25	P-96, 77 P.63	PR 247	73' E	—	P		5.0'	3.5'	—	06	JB	MH	26	CK	P		TBY
25	P-52, 53 P-64, 63	PR 248	132' N	—	P		4.0'	2.0'	—	98	RS	MH	26	CK	P		TBY
25	P-64, 65 P-63	PR 249	117' N	—	P		—	—	1.0'	98	RS	MH	26	CK	P		TBY
25	P-39 P-53	PR 250	129' W	—	P		—	—	1.0'	06	JB	MH	25	CK	P		TBY
26	P-63, 75 P-96	PR 251	TEE	—	P		—	—	1.0'	06	JB	TBY	26	CK	P		TBY
26	P-63 P-75	PR 252	107'		DP-32 P		3.5'	2.5'	—	06	JB	TBY	26	CK	P		TBY
26	P-75	PR 253	109'	4'32 of P-63	G		2ea @	1.0'	—	06	JB	TBY	26	CK	P		TBY
26	P-75, 94 P-63	PR 254	TEE	—	P		—	—	1.0'	06	JB	TBY	26	CK	P		TBY
26 (25) Oct	P-93, 94 P-63	PR 255	TEE	—	P	E	—	—	1.0'	06	JB	TBY	26 Oct	CK	P	Vacuum Box	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: PETRO/SOLMAX

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ REPAIR	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
26 Oct	P63/P71/ P73	PR-256	T	—	P	E	—	—	1.0	06	JB	TBY	26 Oct	CK	P	V. Box	TBY
26 Oct	P63/P71/ P72	PR-257	T	—	P	E	—	—	1.0	06	JB	TBY	26 Oct	CK	P	V. Box	TBY
26 Oct	P63/P68/ P72	PR-258	T	—	P	E	—	—	1.0	06	JB	TBY	26 Oct	CK	P	V. Box	TBY
26 Oct	P63/P61/ P68	PR-259	T	—	P	E	—	—	1.0	06	JB	TBY	26 Oct	CK	P	V. Box	TBY
26 Oct	P63/P67/ P70	PR-260	T	—	P	E	—	—	1.0	06	JB	TBY	26 Oct	CK	P	V. Box	TBY
26 Oct	P53/P64	PR-261	75	—	DP-29	E	3	2	—	98	RS	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P53/P64/ P84	PR-262	T	—	P	E	4	2	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P64/P65/ P84	PR-263	T	—	P	E	1.5	1.5	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P65/P66/ P84	PR-264	T	—	P	E	—	—	1.0	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P66/ P84	PR-265	~~TBD~~ 1268	—	DP-33	E	4.5	2.5	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P66/P67 P84	PR-266	T	—	P	E	1.5	1.5	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P67/P68/ P84	PR-267	T	—	P	E	1.0	1.0	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P68/P69/ P84	PR-268	T	—	P	E	1.0	1.0	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P69/P71/ P84	PR-269	T	—	P	E	1.0	1.0	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY
26 Oct	P71/P73/ P84	PR-270	T	—	P	E	1.5	1.0	—	06	JB	TBY	27 oct	CK	P	V. Box	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G00409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Petro / Solmar

DATE (day/mo)	LOCATION: SEAM OR PANEL	LOCATION: REPAIR Nº	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE: LENGTH (ft)	SIZE: WIDTH (ft)	SIZE: DIA (ft)	WELDER ID: MACH NO.	WELDER ID: OPER ID	QA ID	NON-DESTRUCTIVE TESTING: DATE (day/mo)	NON-DESTRUCTIVE TESTING: OPER ID	NON-DESTRUCTIVE TESTING: PASS/FAIL	NON-DESTRUCTIVE TESTING: ACTION	NON-DESTRUCTIVE TESTING: QA ID
26 Oct	P73 P74 P84	PR271	TEE	—	P	E	1.5'	1.5'	0.5	06	JB	TBY	27 Oct	CK	P	Vacuum Box	TBY
	P-73 P-74	272	Q35'	—	DP-31 P		4.0'	2.0'	0.5	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P74 P75 P84	273	TEE	—	P		—	—	1.0	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P75 P76 P84	274	TEE	—	P		1.0'	1.0'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P76 P81 P84	275	TEE	—	P		3.0'	2.0'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P76 P82 P81	276	TEE	—	P		8.5'	3.5'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P80 P81 P82	277	TEE	—	P		1.5'	1.5'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P80 P-81	278	47'	—	P		1.5'	1.0'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P80 P82 P83	279	TEE	—	P		1.0'	1.0'	—	06	JB	TBY	27 Oct	CK	P	" "	TBY
	P39 P52 P40 P52 P40 P49	280	290'	To 435	C		145.0	5.0'	—	02	KH	TBY	26 Oct	CK	P	Air Test	TBY
	P-47 P-48	281	326'	—	DP21-4A P		4.5'	2.0'	—	06	RS	TBY	26 Oct	CK	P	Vacuum Box	TBY
	PI81 P-45	282	417'	—	DP-34 P		3.0'	2.0'	—	06	RS	TBY	27 Oct	CK	P	" "	TBY
	PI78 P49 P50 PR280 LCS-3	283	391'	—	P		6.0'	3.5'	—	06	RS	TBY	27 Oct	CK	P	" "	TBY
	P56 P58 LCS-103	284	TEE	—	P		8.0'	1.5'	—	06	RS	TBY	27 Oct	CK	P	" "	TBY
26 Oct (B)	P-56	285	—	—	P	E	1.5'	1.5'	—	06	RS	TBY	27 Oct	CK	P	" "	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S= ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax/PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ Repair No	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
26 Oct	SW Corner LCSR P-56	PR 286	–	–	P	E	2.0	2.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
26 Oct	NW Corner LCSR P-56	PR 287	–	–	P	E	2.0	2.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
26 Oct	LCS/LCSR P56/P58	PR 288	–	–	P	E	9.0	7.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
26 Oct	P67/P68	PR 289	103'	–	DP30	E	4.0	2.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P57/P61	PR 290	189'	–	P	E	1.0	1.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P1B9 P45	PR 291	682'	–	DP-35	E	4.0	1.5	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P78 P79 P83	PR 292	TEE	–	P	E	1.0	1.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P79-P80 P83	PR 293	TEE	–	P	E	3.0	2.5	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P-38	PR 294	89'	8½ east of P-39	G	E	4.0	–	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P-38	PR 295	75'	10 ft west of P-27	P	E	4.0	2.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	P84/53 42/41/43	PR 296	0	–	S	F	69.0	5.0	–	02	GC	RH	27 Oct	CK	P	Airtest	RH
27 Oct	41/43/35	PR 297	0	–	S	E	6.0	4.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	RH
27 Oct	P43/35	PR 298	0	–	S	F	115.0	2.0	–	02	GC	RH	27 Oct	CK	P	Airtest	RH
27 Oct	PR 298 P43 P35	PR 299	TEE	–	P	E	2.5	2.5	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY
27 Oct	PR 299 P43 41/43	PR 300	TEE	–	P	E	6.0	2.0	–	06	RS	RH	27 Oct	CK	P	Vacuum Box	TBY

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

PREPARED BY: [illegible] DATE: [illegible] SHEET NO. [illegible] OF 22

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax/PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	~~PANEL~~ Repair No.	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
27 Oct	P41/P42 PR296	PR 301	TEE	–	P	E	1.0	1.0	–	06	RS	RH	27 Oct	CK	P	V. Box	TBY
27 Oct	P42/P53 PR296	PR 302	TEE	–	P	E	1.0	1.0	–	06	RS	RH	27 Oct	CK	P	V. Box	TBY
27 Oct	P53/P84 PR296	PR 303	TEE	–	P	E	5.0	4.5	–	06	RS	RH	27 Oct	CK	P	V. Box	TBY
28 Oct	Phase I tie in P48/49/50 P51	PR 304	345'-443'	–	C	E	98.0	4.0	–	98	GC	TBY	29 Oct	CK	P	V. Box	TBY
28 Oct	PI-109 P-45	PR 305	661	–	P	E	4.0	2.0	–	98	RS	TBY	28 Oct	CK	P	V. Box	TBY
28 Oct	P47/P48	PR 306	287-325	–	C	E	38.0	3.0	–	98	RS	TBY	28 Oct	CK	P	V. Box	TBY
28 Oct	P47/P48	PR 307	328-333	–	C	E	5.0	3.0	–	98	RS	TBY	28 Oct	CK	P	V. Box	TBY
28 Oct	P45 PR304	PR 308	430'	–	DP-36	E	3.0	2.0	–	98	GC	TBY	29 Oct	CK	P	V. Box	TBY
28 Oct	PI 86 P45	PR 309	450	–	P	E	3.5	2.0	–	98	GC	TBY	29 Oct	CK	P	V. Box	TBY
29 Oct	P47 P48	PR 310	186-287	–	C	E	101.0	3.5	–	98	GC	TBY	29 Oct	CK	P	V. Box	TBY
29 Oct	PI 109/109 P45	PR 311	649-660	–	C	E	11.0	4.0	–	98	GC	TBY	29 Oct	CK	P	V. Box	TBY
29 Oct	PI 107 P45	PR 312	643-649	–	DP 34-38	E	6.0	4.0	–	98	GC	TBY	30 Oct	CK	P	V. Box	TBY
30 Oct	PI 87 PI 84 P45 P86	PR 313	443-469	–	C	E	26.0	5.0	–	98	RS	TBY	30 Oct	CK	P	V. Box	TBY
1 Nov	P47/P48	PR 314	5'	–	P	E	9.0	2.0	–	98	LL	CS	2 Nov	RS	P	V. Box	CS
(15) 1 Nov	P46/P47	PR 315	3'	–	P	E	6.0	2.0	–	98	LL	CS	2 Nov	RS	P	V. Box	CS

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1998

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: Solmax/PETRO

DATE (day/mo)	LOCATION				REPAIR NO. AND CODE (1)	REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
	SEAM	PANEL	DIST. (ft)	OFFSET (ft)			LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	QA ID
1 Nov	P-47	PR 316	5	-	S	E	23.0	5.0	-	98	LL	CS	2 Nov	RS	P	V. Box	CS
2 Nov	P-45	PR 317	3'	6' S. of PI 142	P	E	1.0	1.0	-	98	GC	CS	2 Nov	RS	P	V. Box	CS
2 Nov	PI 142 P-45	PR 318	12'	-	P	E	1.0	1.0	-	98	GC	CS	2 Nov	RS	P	V. Box	CS
3 Nov	P-55 P-56	PR 319	4'	-	P	E	7.0	2.0	-	98	GC	CS	3 Nov	RS	P	V. Box	CS
3 Nov	P-63 P-77	PR 320	4'	-	P	E	8.0	2.0	-	98	GC	CS	3 Nov	RS	P	V. Box	CS
(15)																	

NOTES: (1) REPAIR NO.: REPAIRS CAN BE NUMBERED SEQUENTIALLY, IF NECESSARY.
(1) REPAIR CODES: P = PATCH, C = CAP, S = ANCHOR TRENCH EXTENSION (SKIRT), DS = DESTRUCTIVE SAMPLE, G = GRIND & WELD, T = TOPPING ALONG FUSION SEAM, R = RECONSTRUCTION
(2) REPAIR TYPES: E = EXTRUSION, F = FUSION

APPENDIX P:

CELL 2 GEOMEMBRANE SEAM AND PANEL REPAIR LOCATION LOGS

Secondary
Primary

2062

Secondary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04-1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

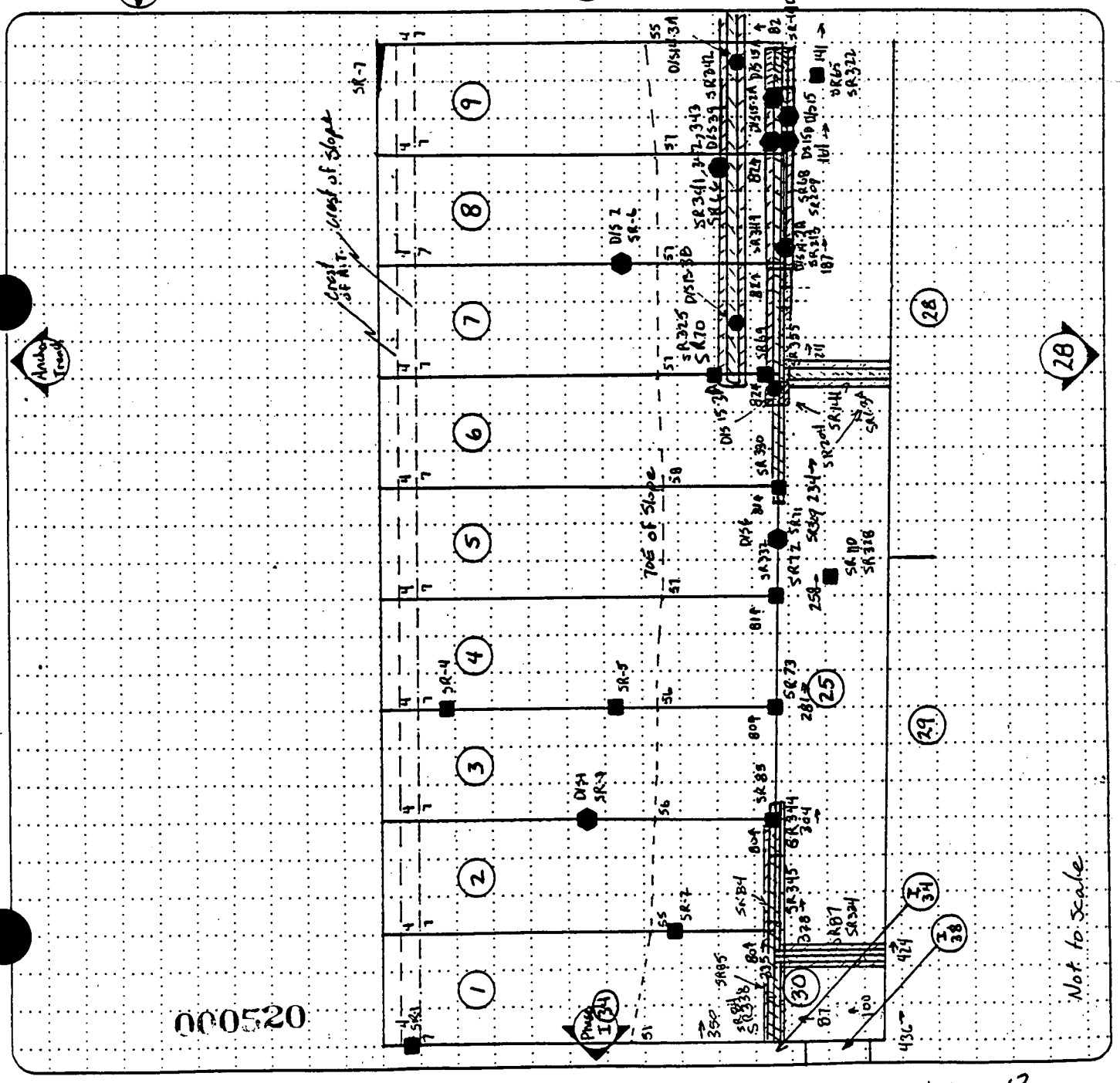
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CS



000520

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

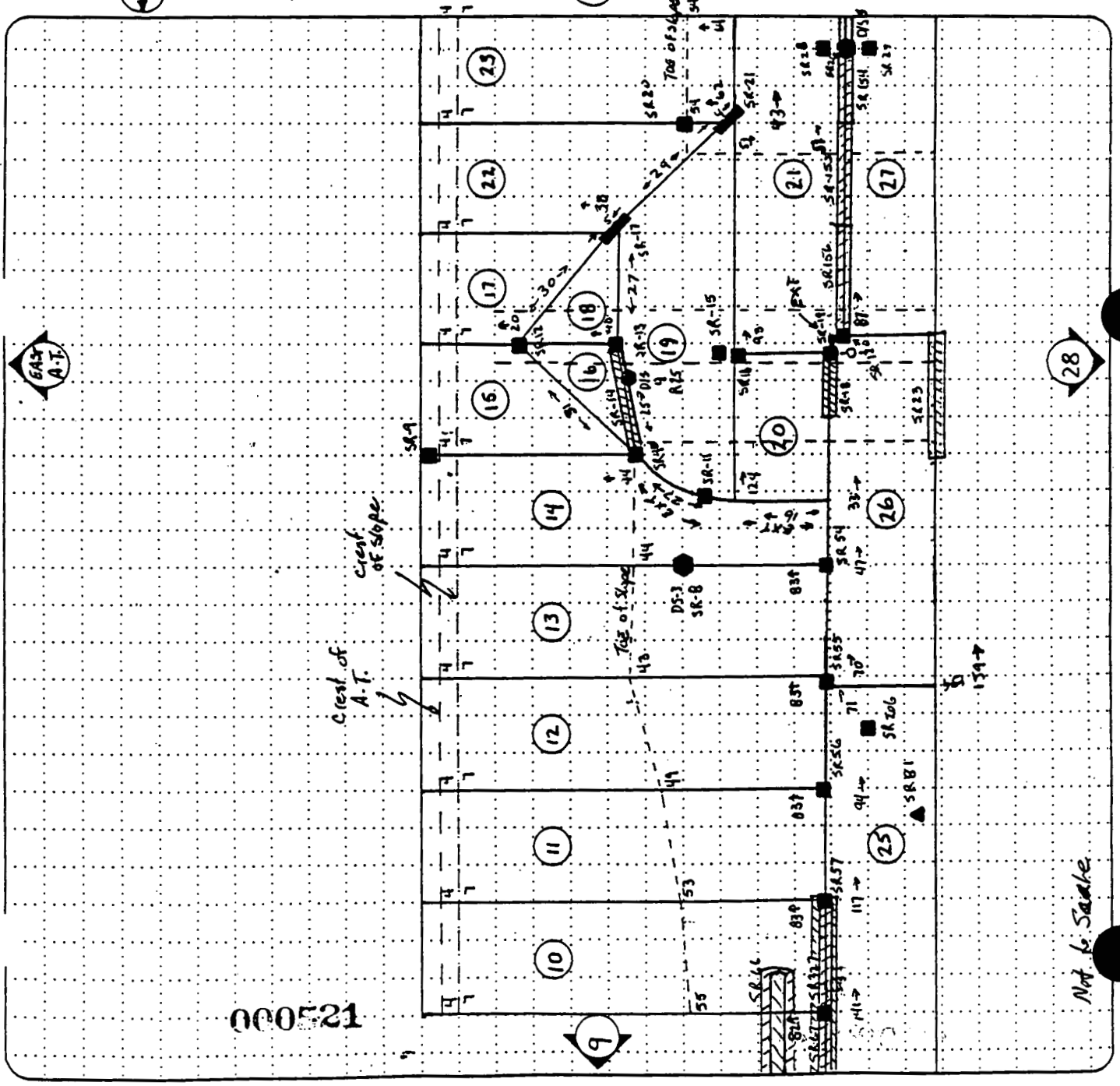
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CS



000521

GEO SYNTEC CONSULTANTS FILE NO. 3-08-SPR

SHEET NO. 2 OF 13

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04-1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

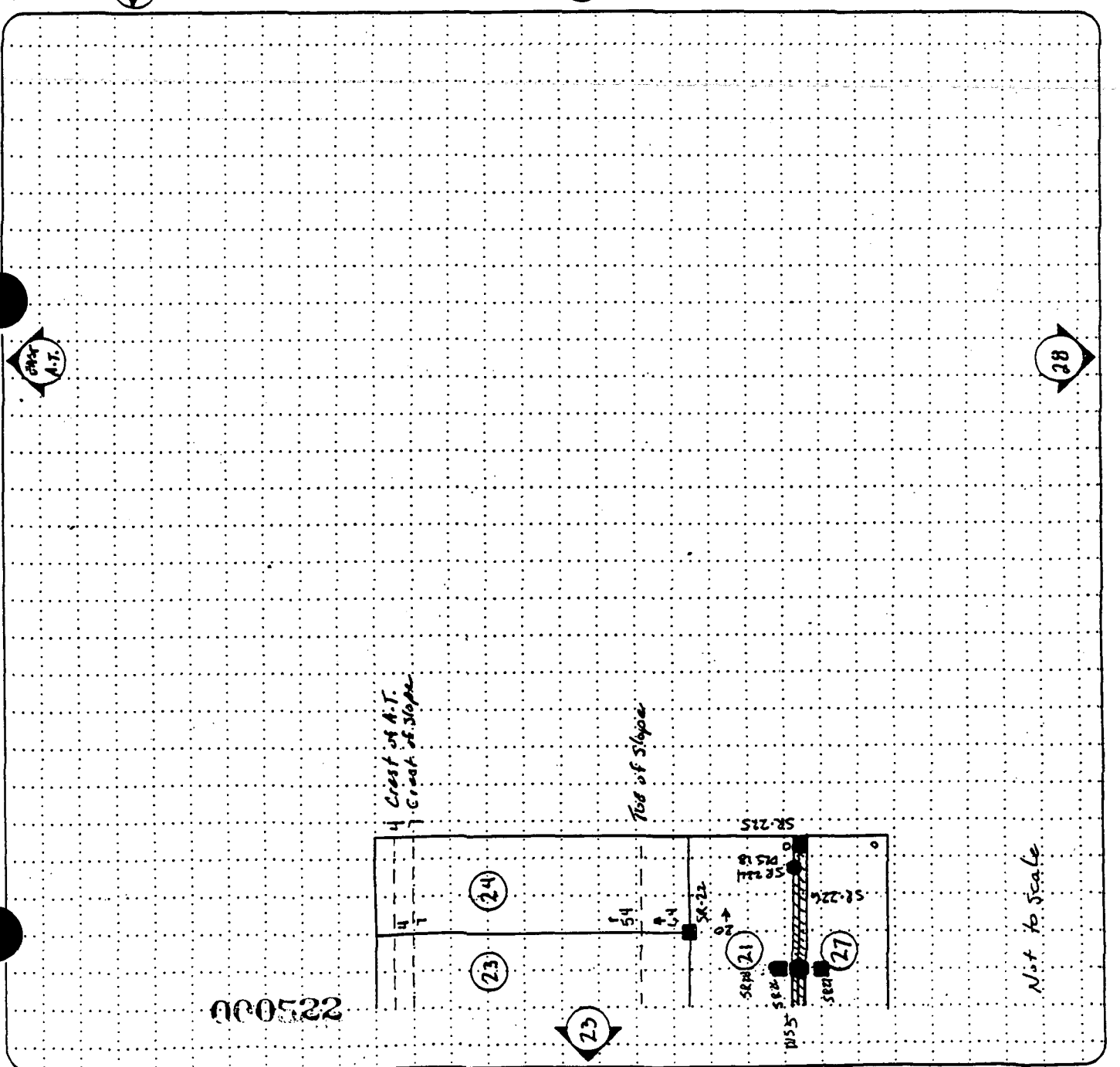
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CS



000522

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

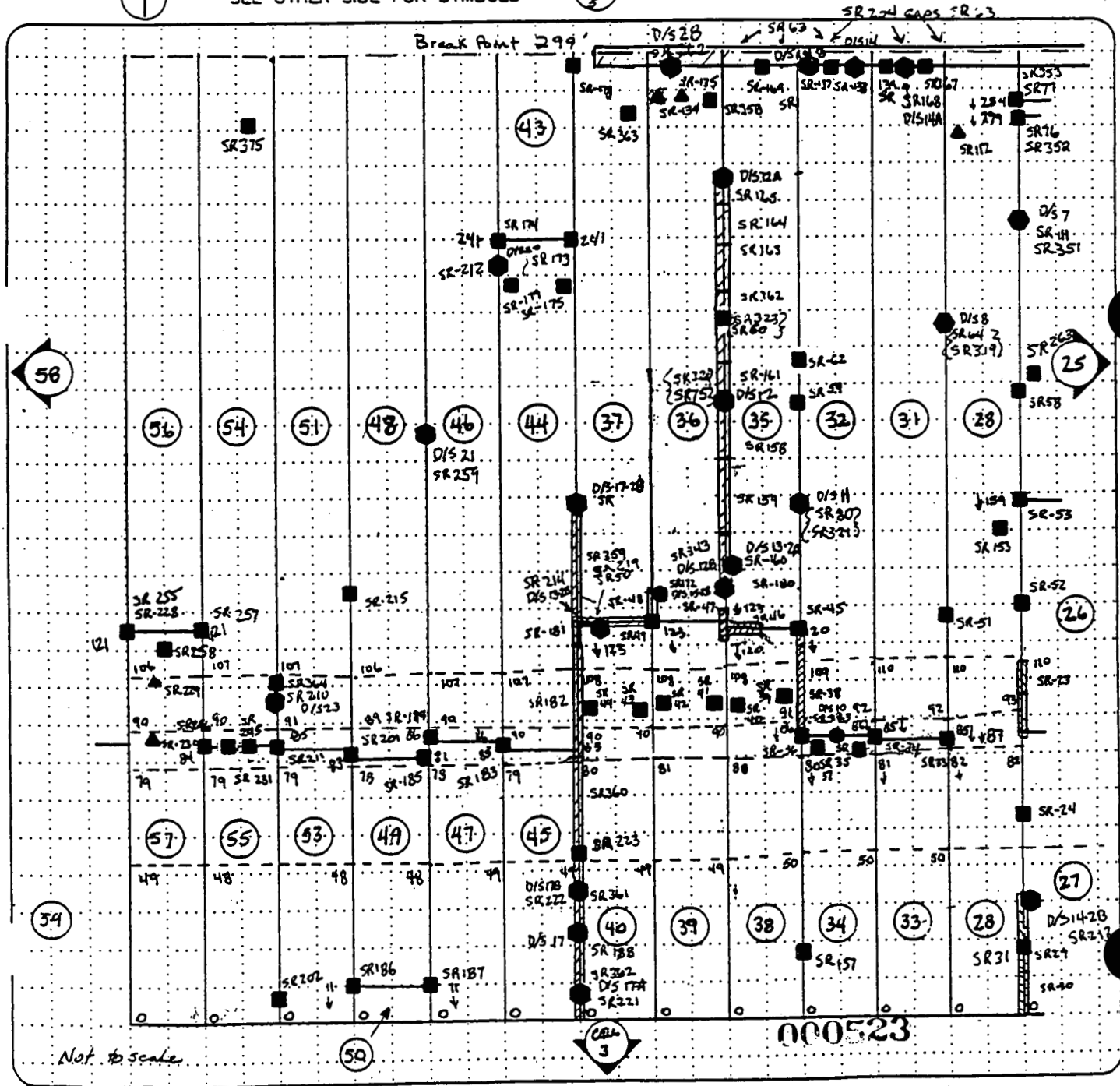
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CA



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG - 2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

CONTRACTOR: Solmax

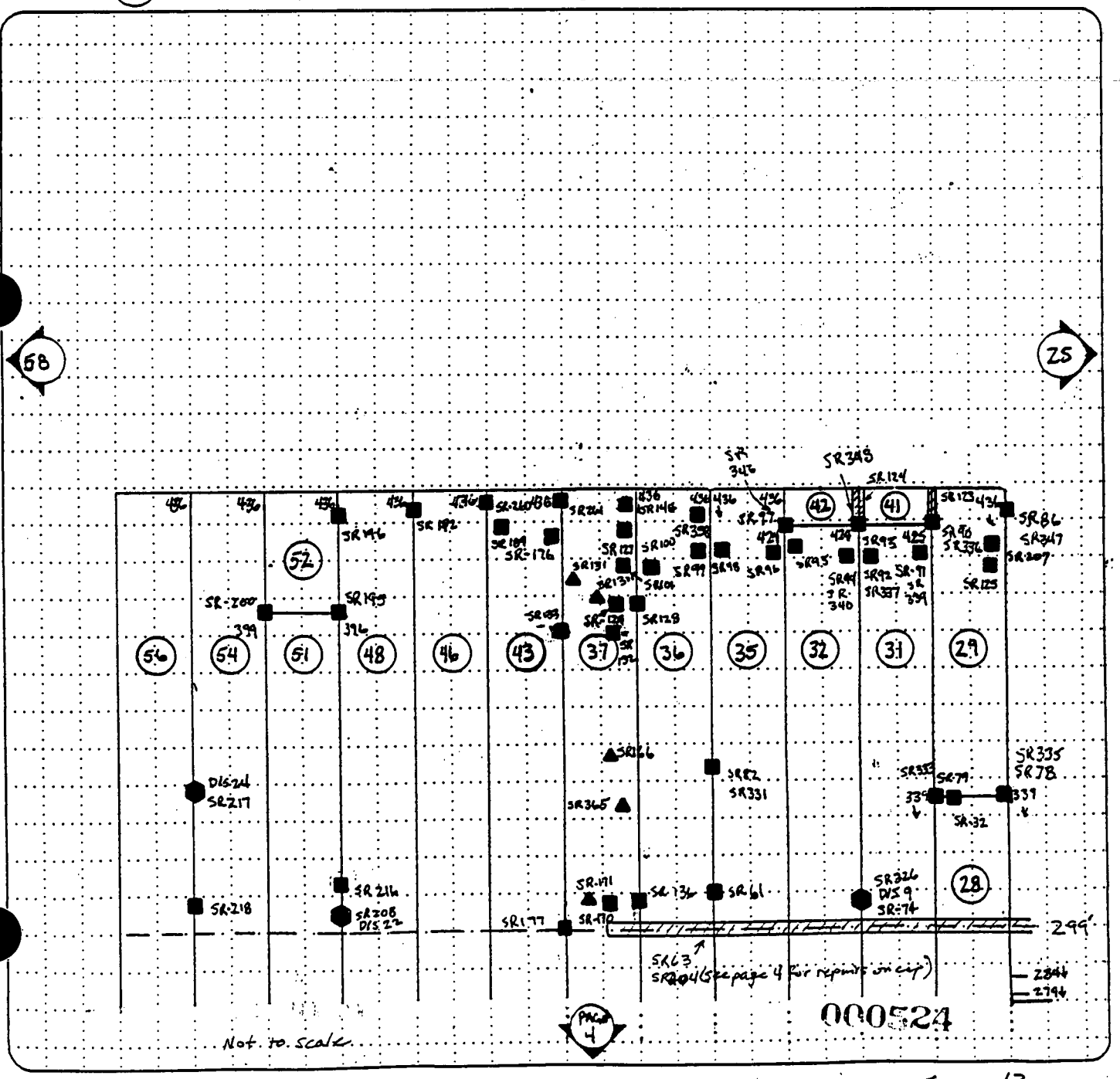
PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH ↑

NOTE: SEE OTHER SIDE FOR SYMBOLS

Phase I

QA ID: CS



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

CONTRACTOR: Solmax

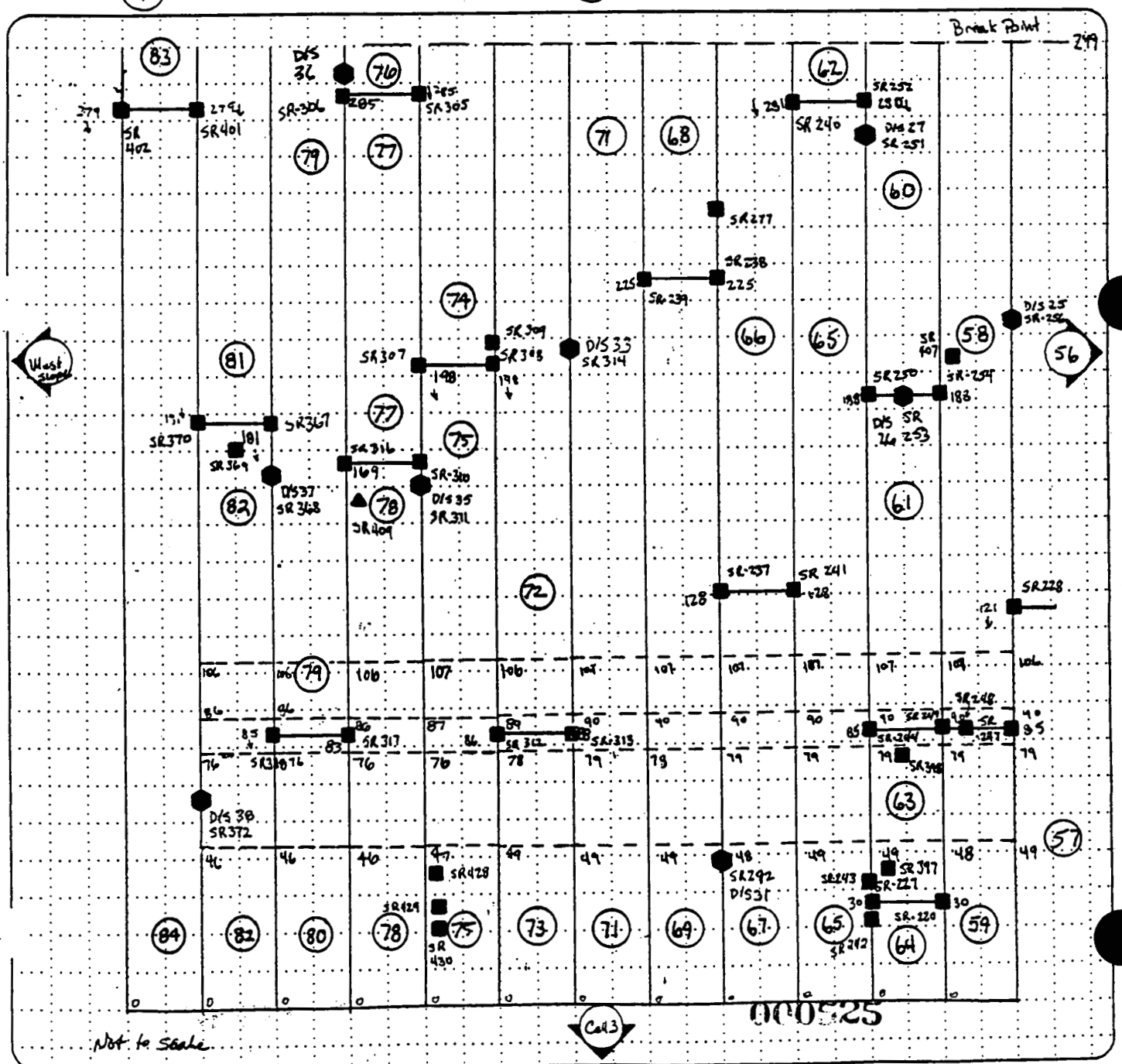
PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

PAGE 7

QA ID: CS



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG - 2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

CONTRACTOR: Solmax

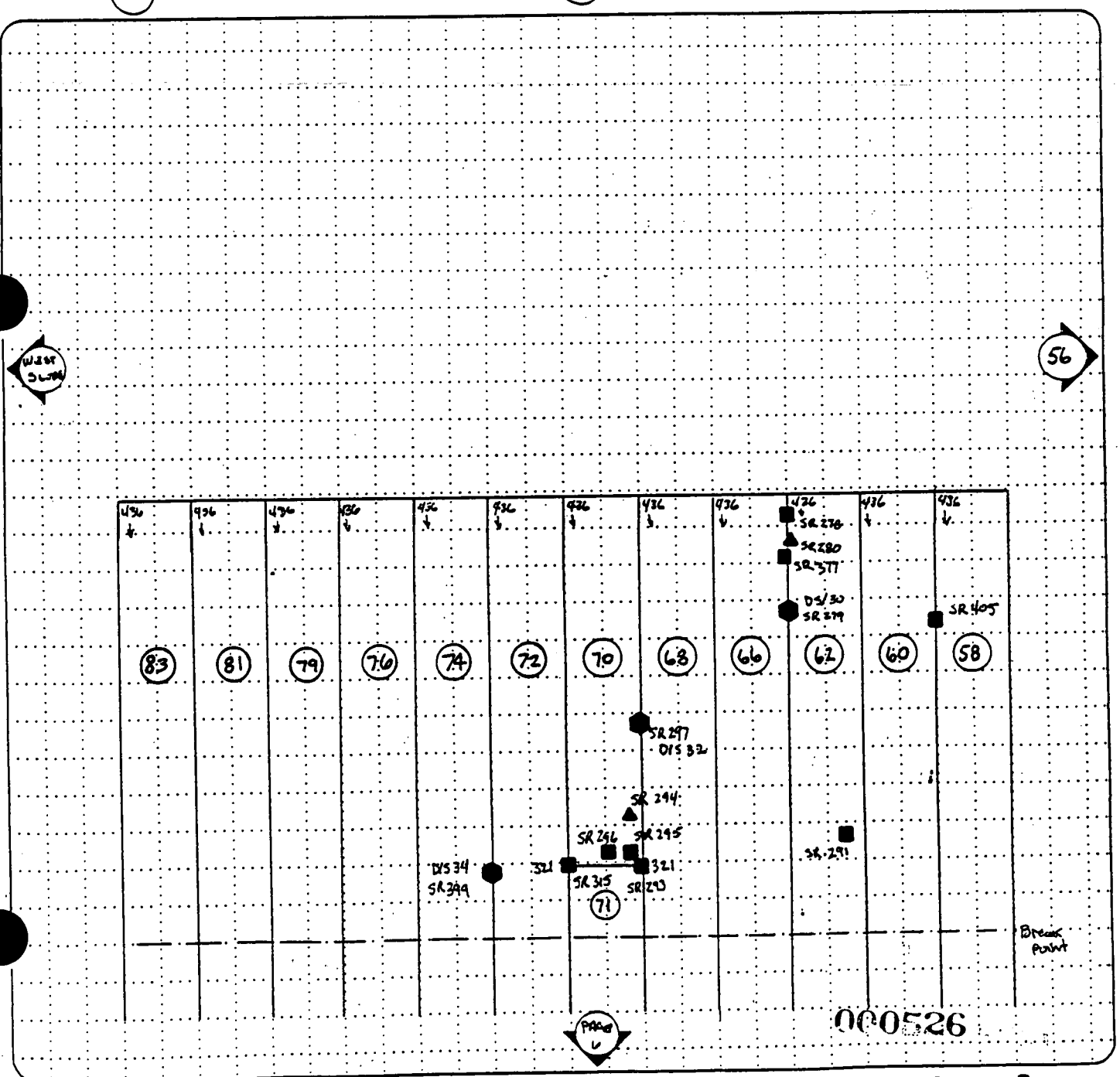
PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

Panel I

QA ID: CS



000526

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

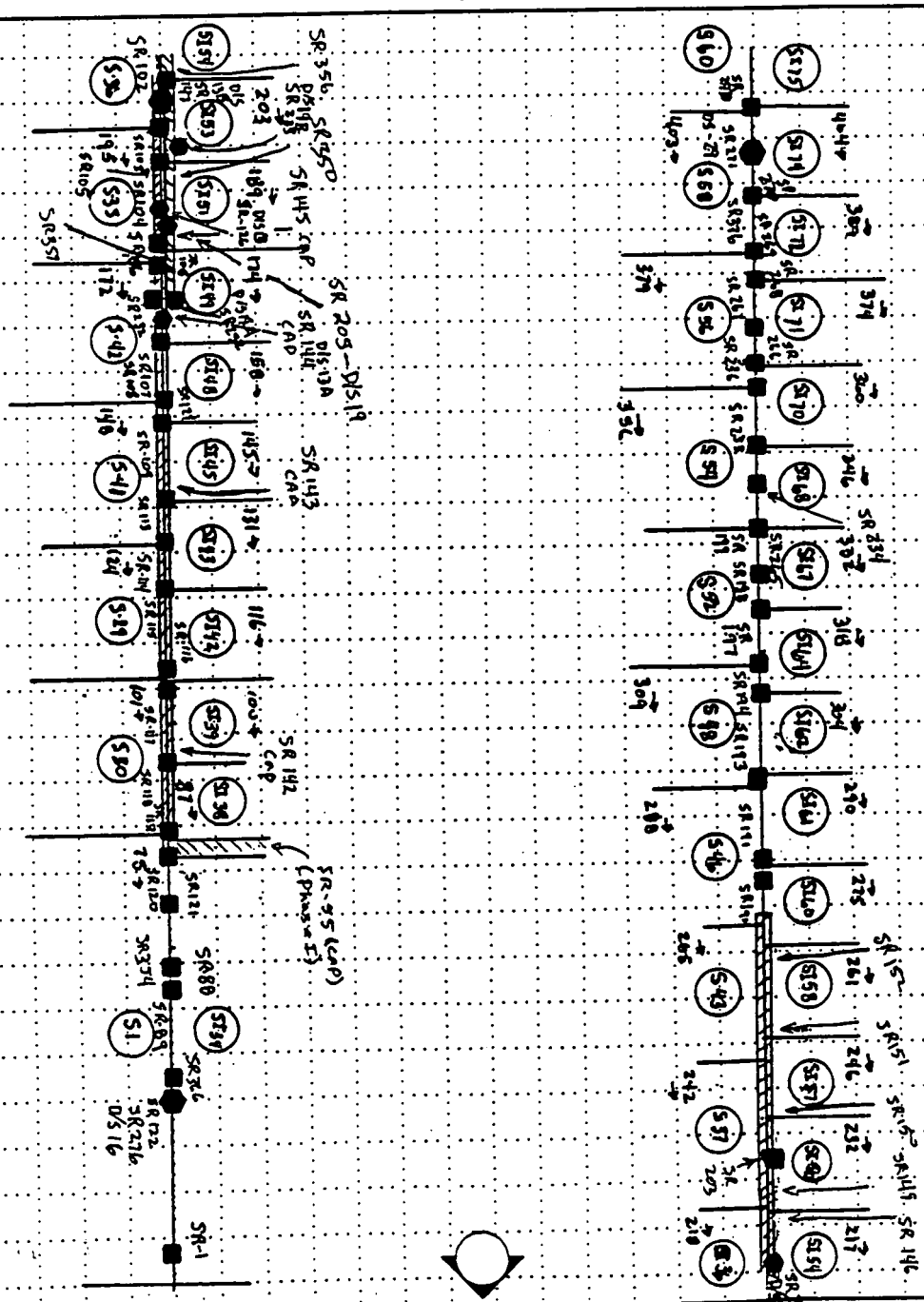
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CA



000527

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

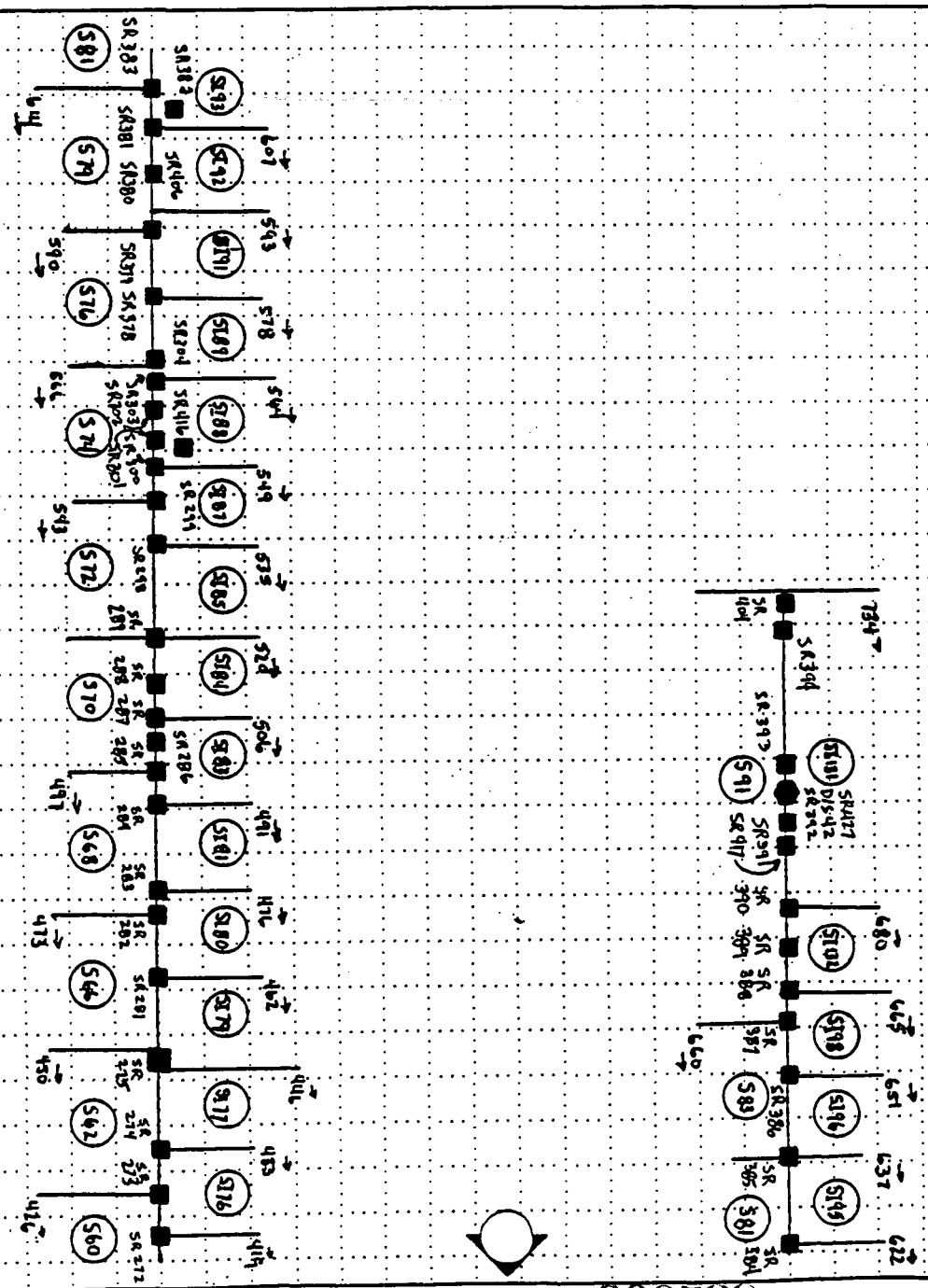
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: cl



GeoSyntec Consultants

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

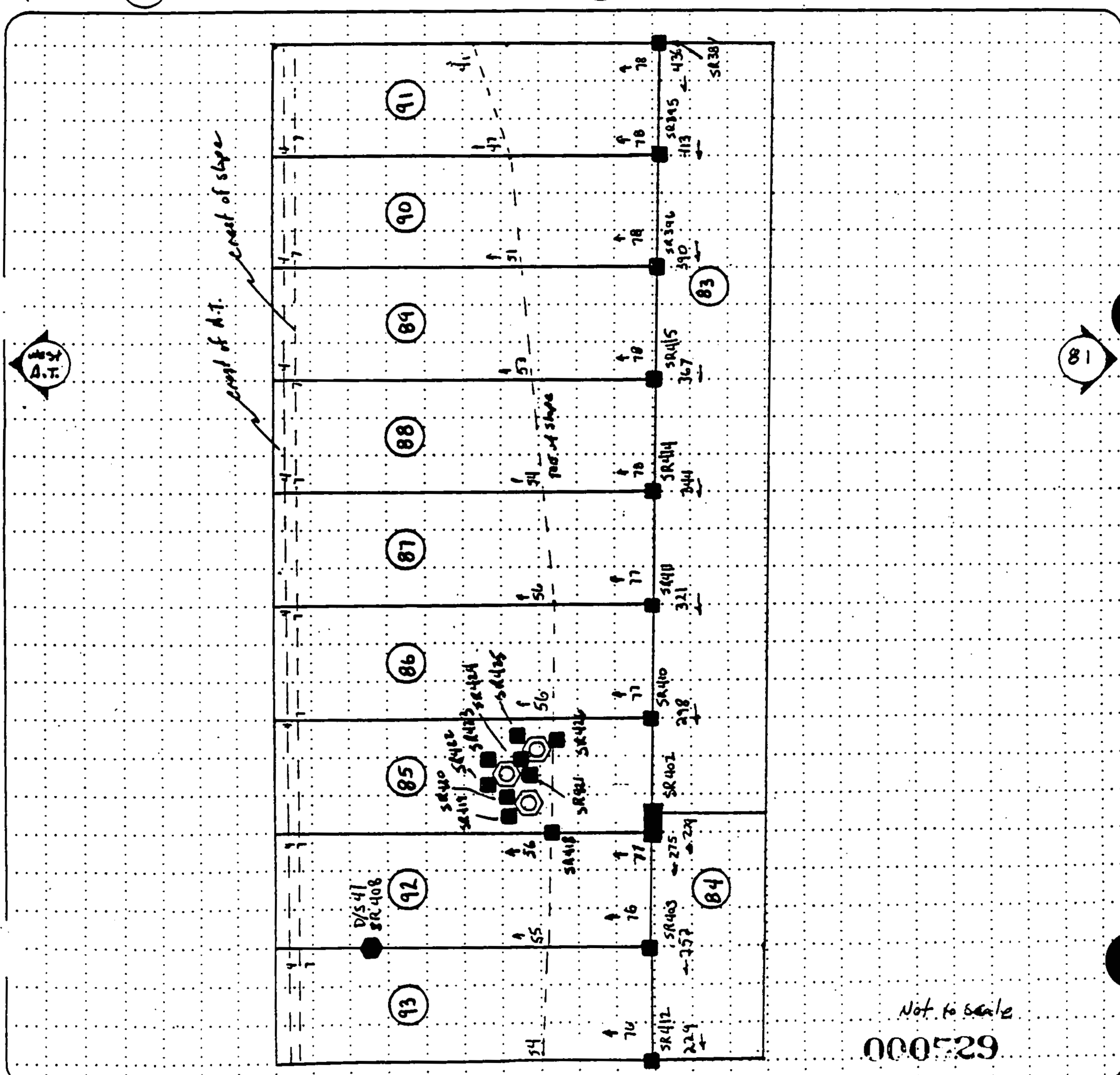
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CJ



000529

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

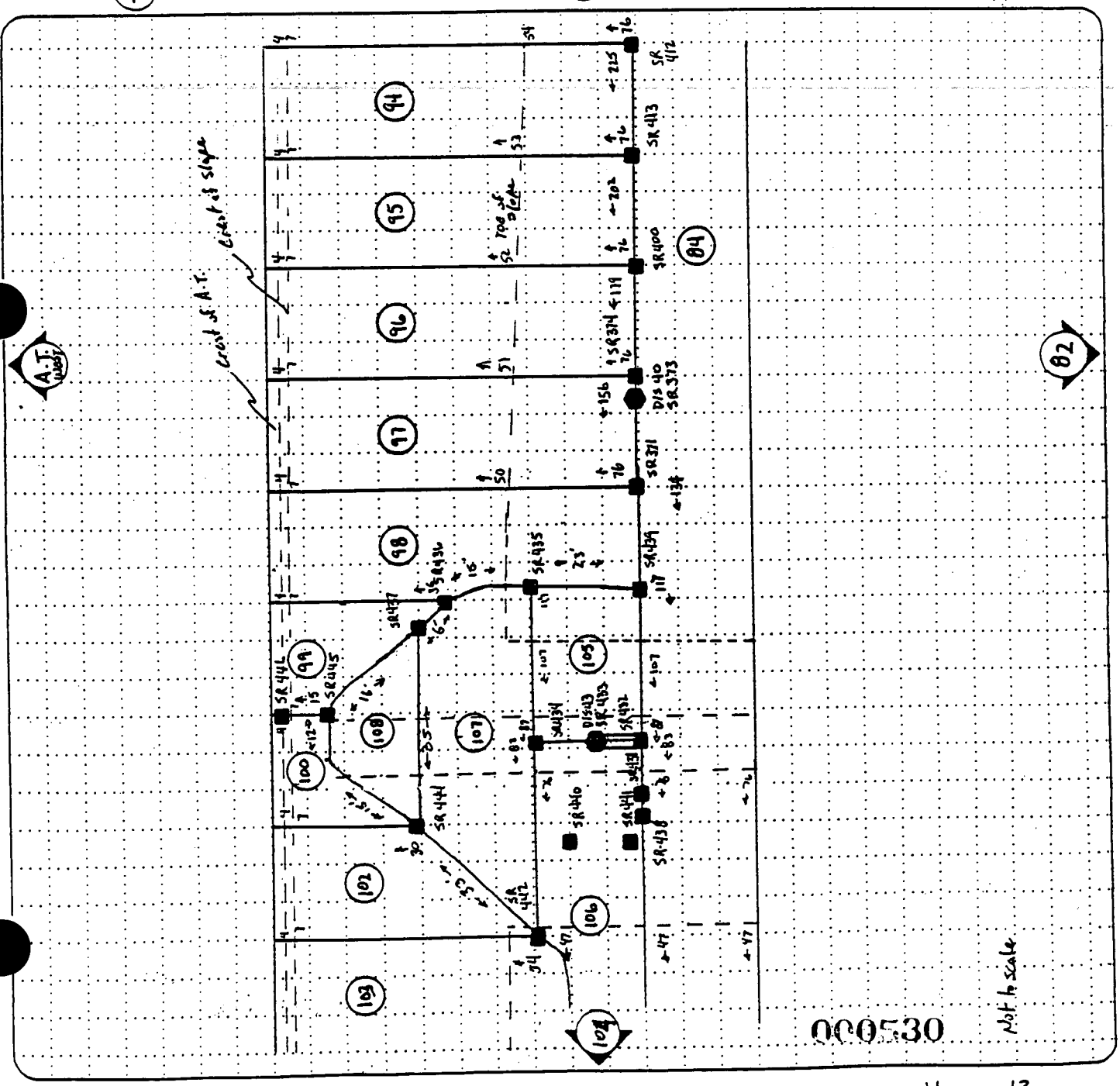
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: cl



000530

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: 1 day Oct month 1998 year

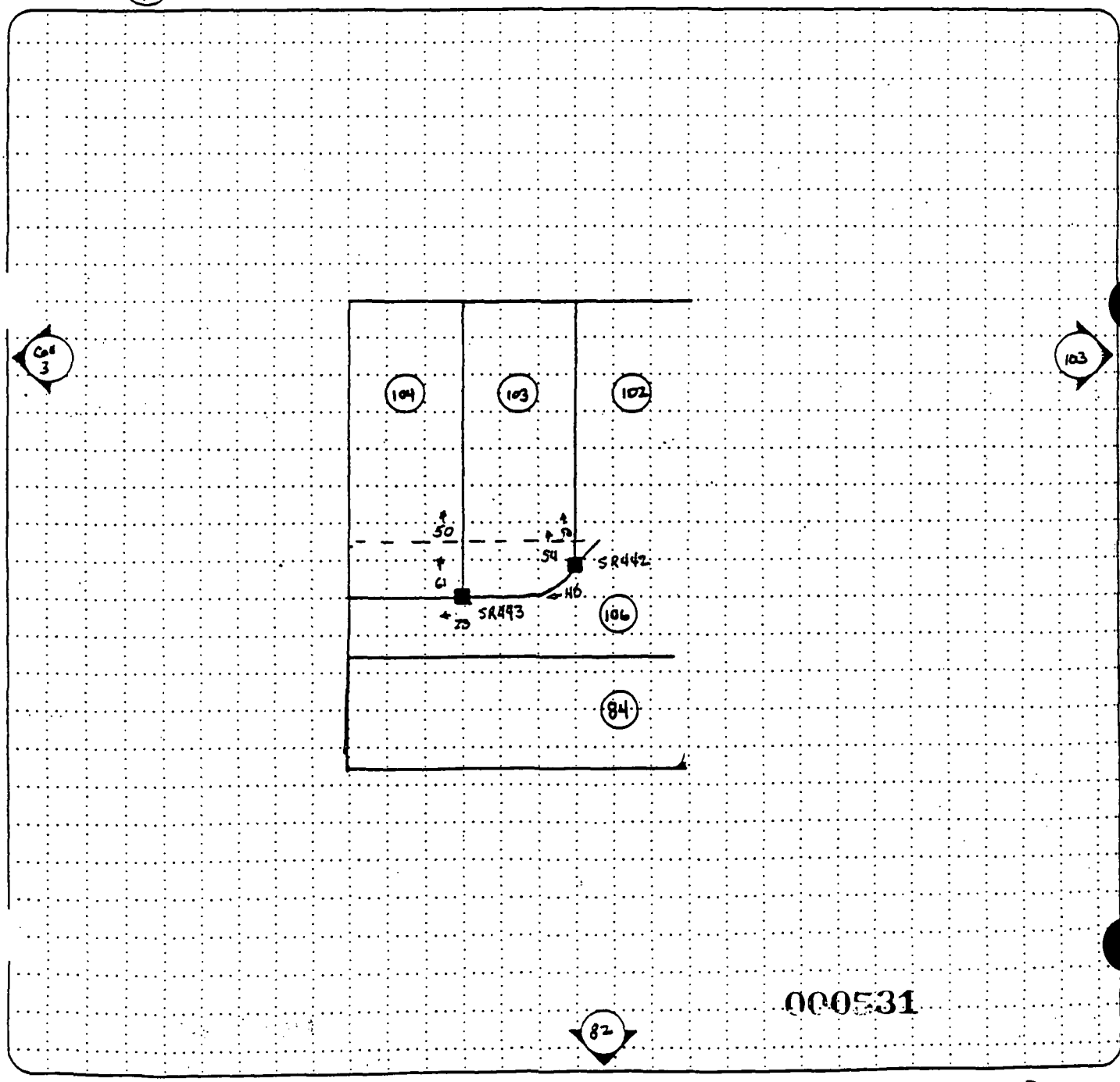
CONTRACTOR: Solmax

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: CJ



000531

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II DATE: 14 day oct month 1998 year

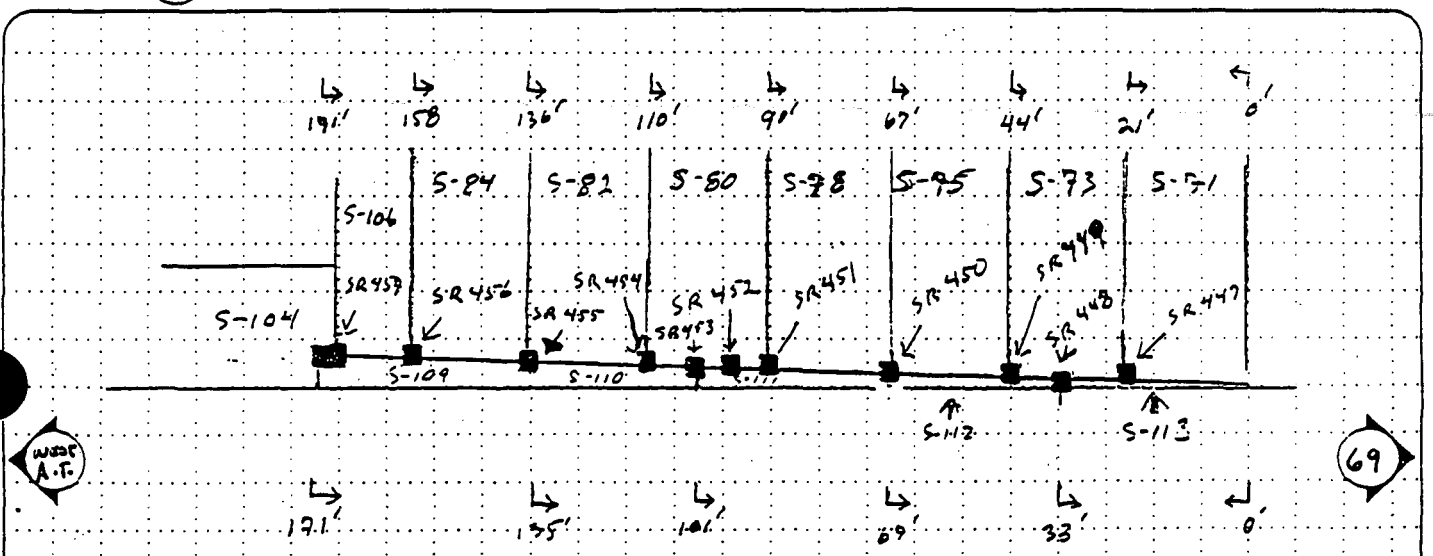
CONTRACTOR: Petro / Solmar

PRIMARY: ☐ SECONDARY: ☒ OTHER: ☐ PRODUCT TYPE: 80 MIL Textured HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

OA ID: DLE



000532

2062

Primary

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: – day Nov month 1998 year

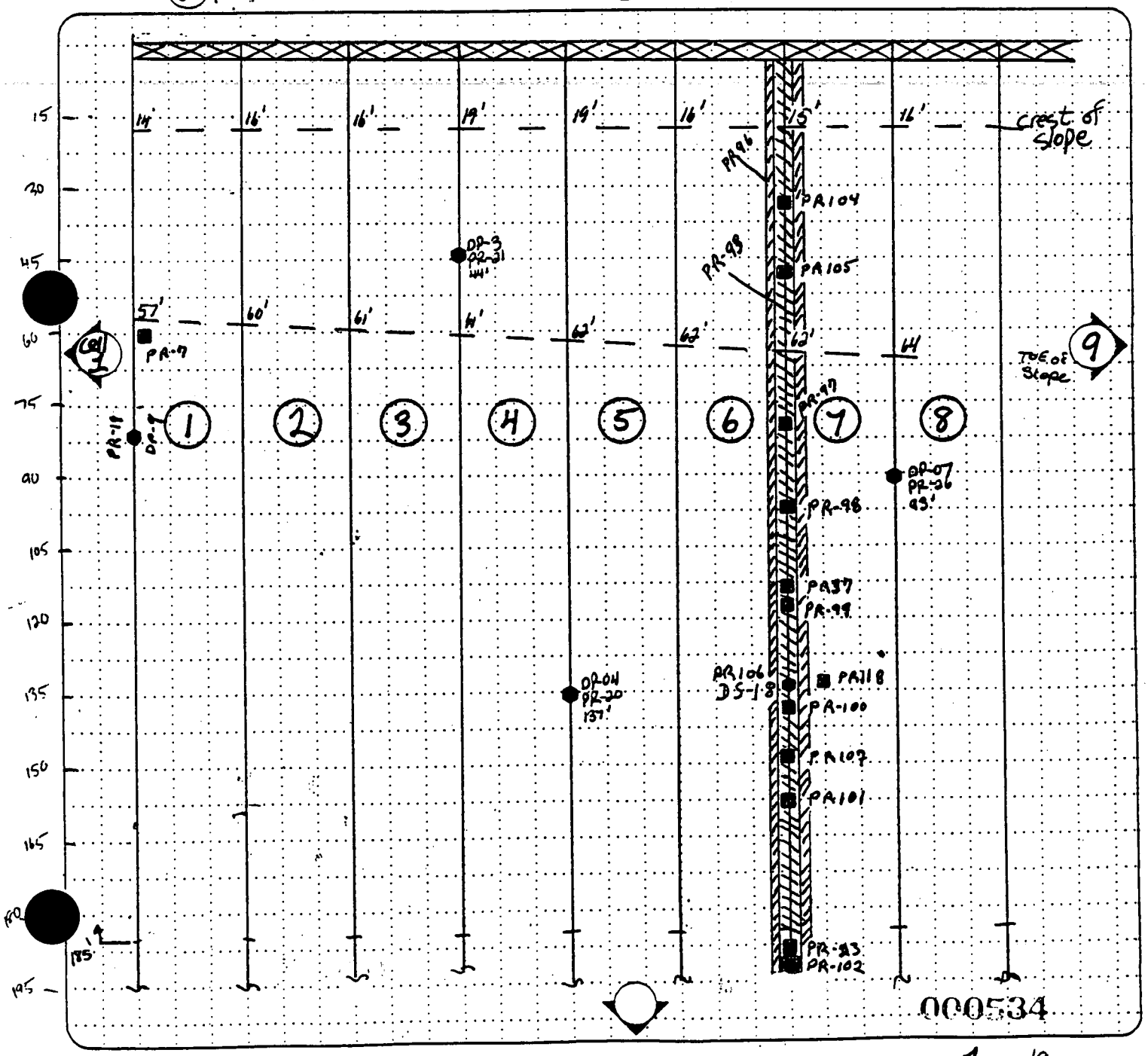
CONTRACTOR: Petro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DJE/CS



000534

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

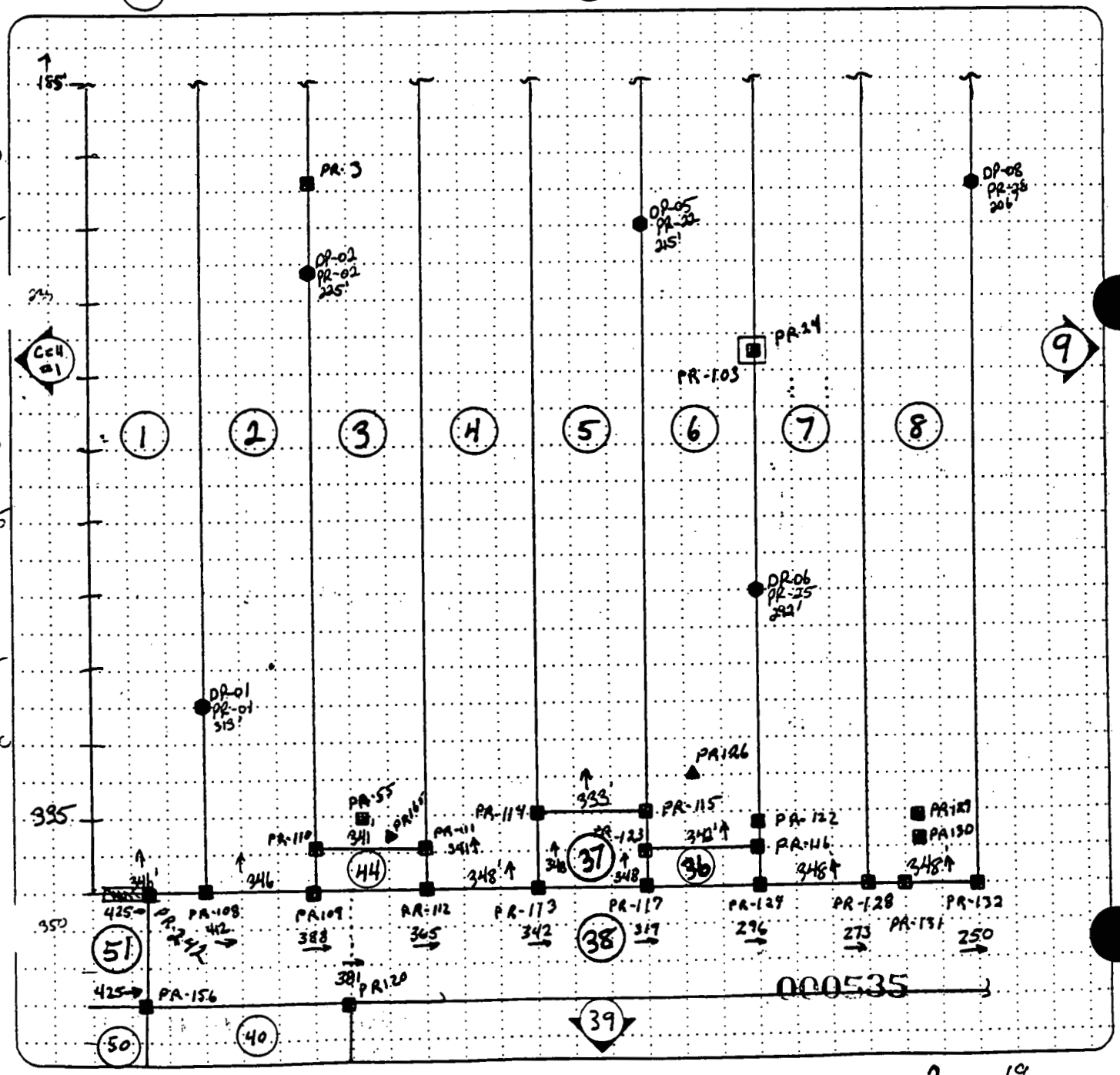
CONTRACTOR: Petro/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE: SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



GEO SYNTEC CONSULTANTS FILE NO. 3-08-SPR

SHEET NO. 2 OF 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

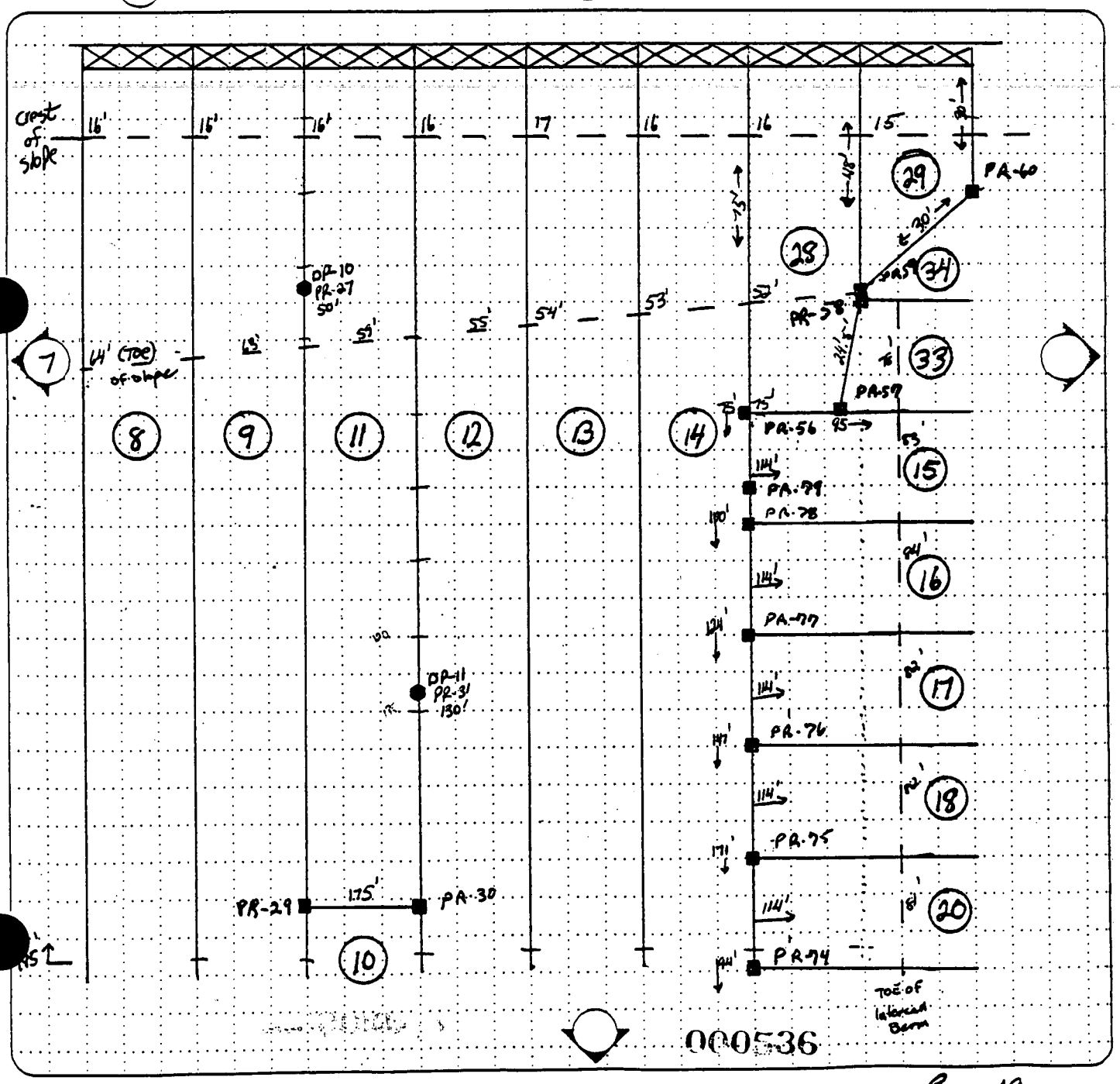
CONTRACTOR: Petro/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE Geomembrane

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

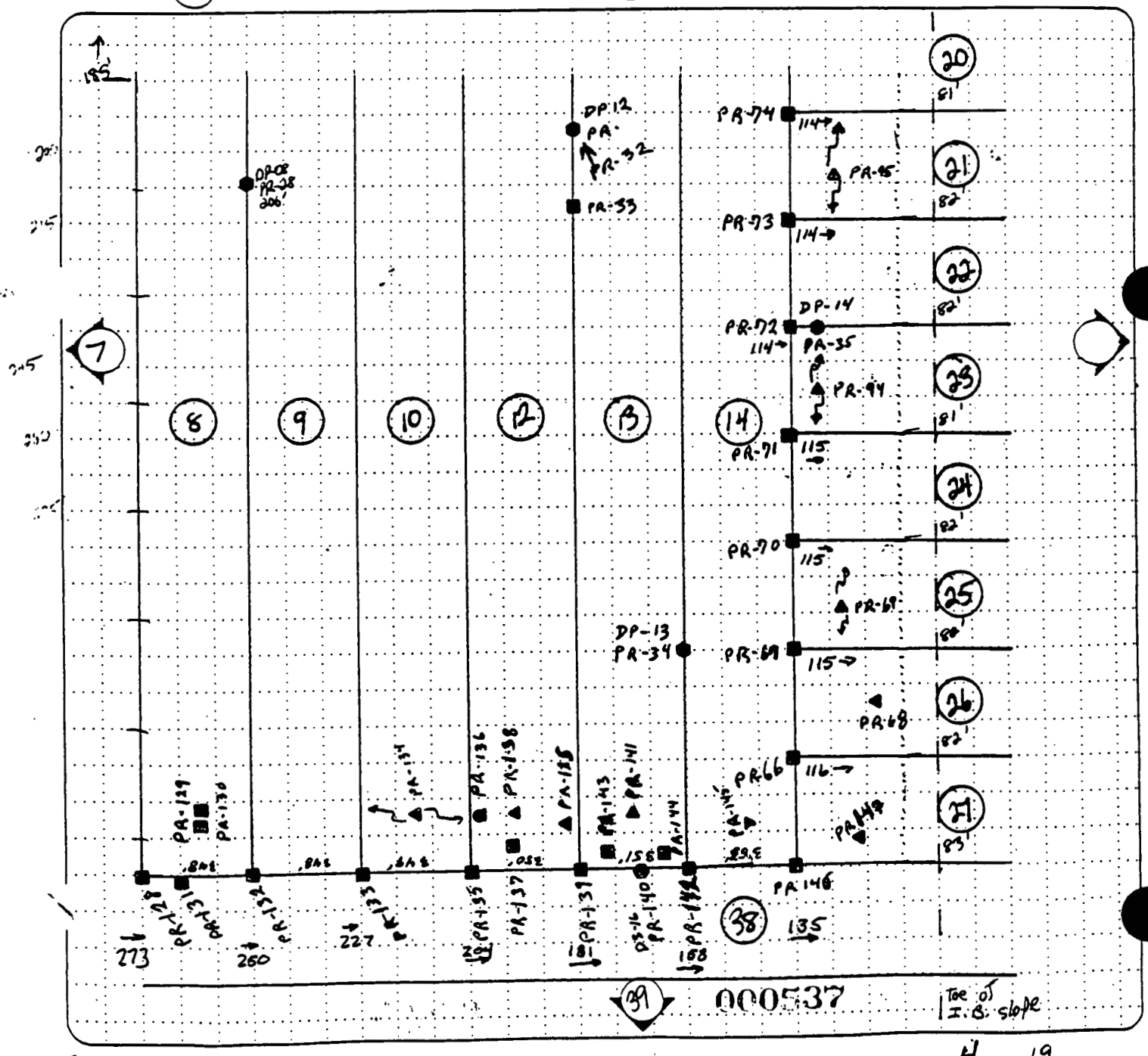
CONTRACTOR: Petro/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 M.I HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: – day Nov month 1998 year

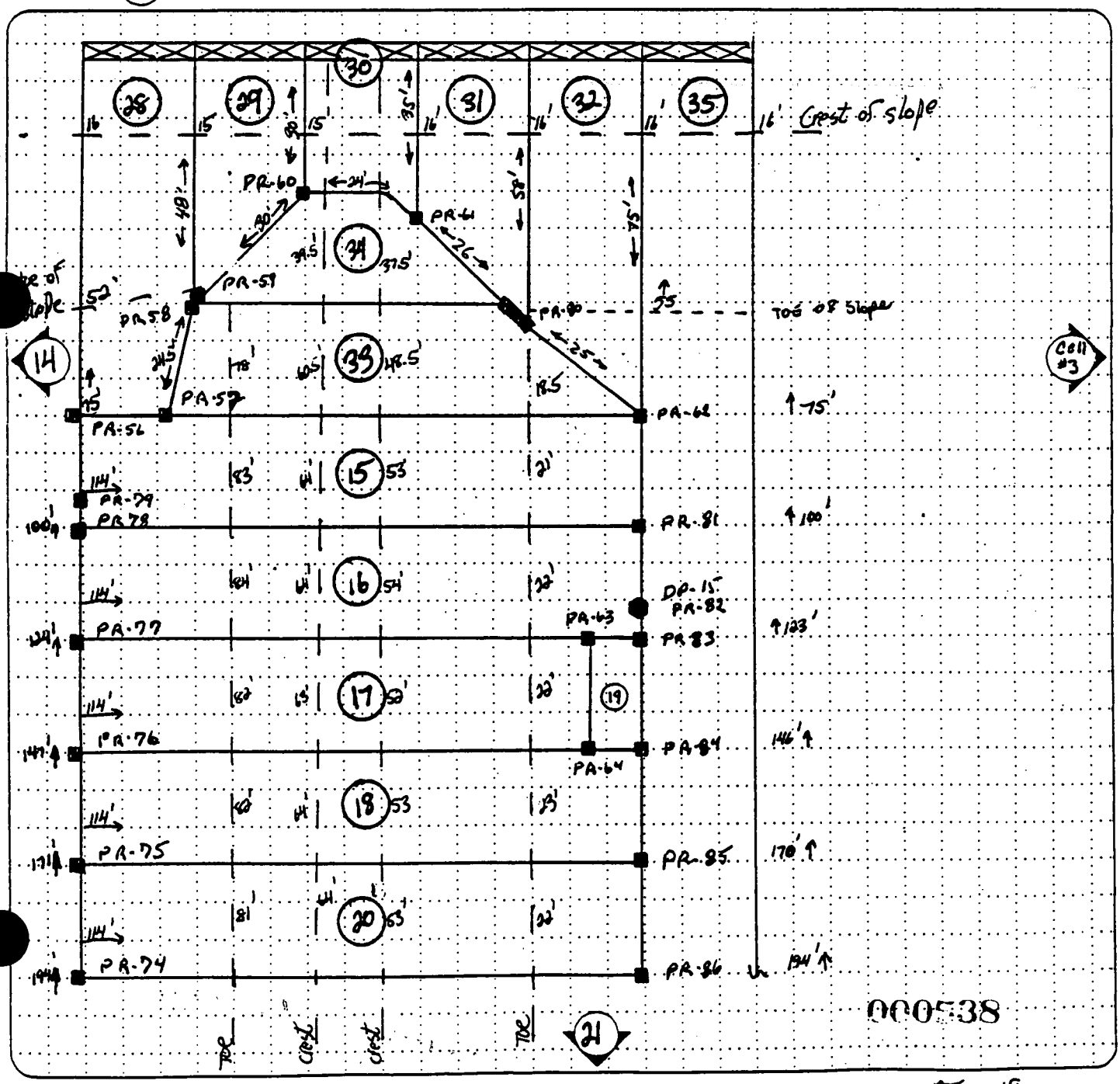
CONTRACTOR: Petro/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



000538

GEO SYNTEC CONSULTANTS FILE NO. 3-08-SPR

SHEET NO. 5 OF 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

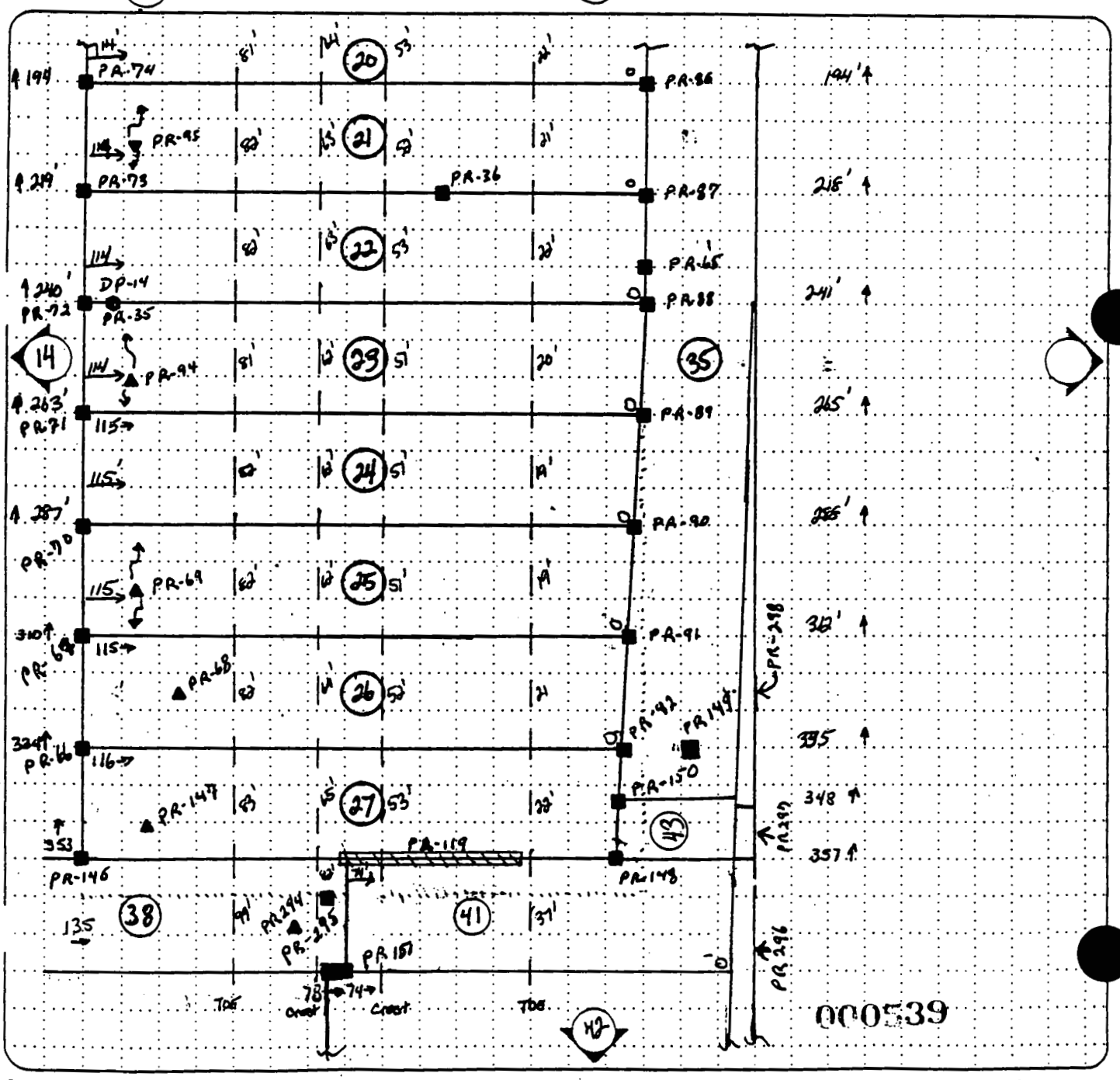
CONTRACTOR: Petro Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐. PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



GEO SYNTEC CONSULTANTS FILE NO. 3-08-SPR

SHEET NO. 6 OF 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

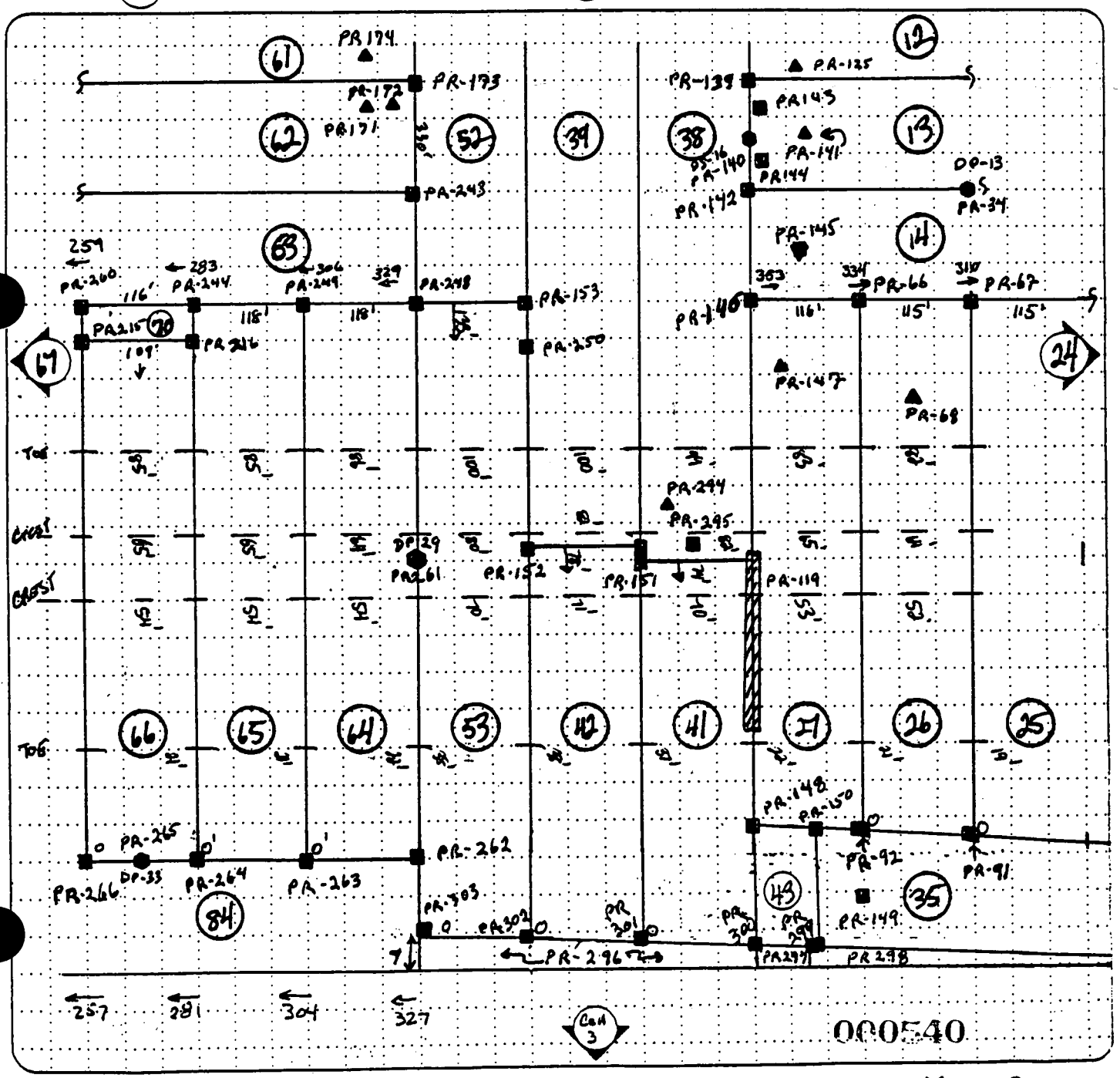
CONTRACTOR: Petro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



000540

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: – day Nov month 1998 year

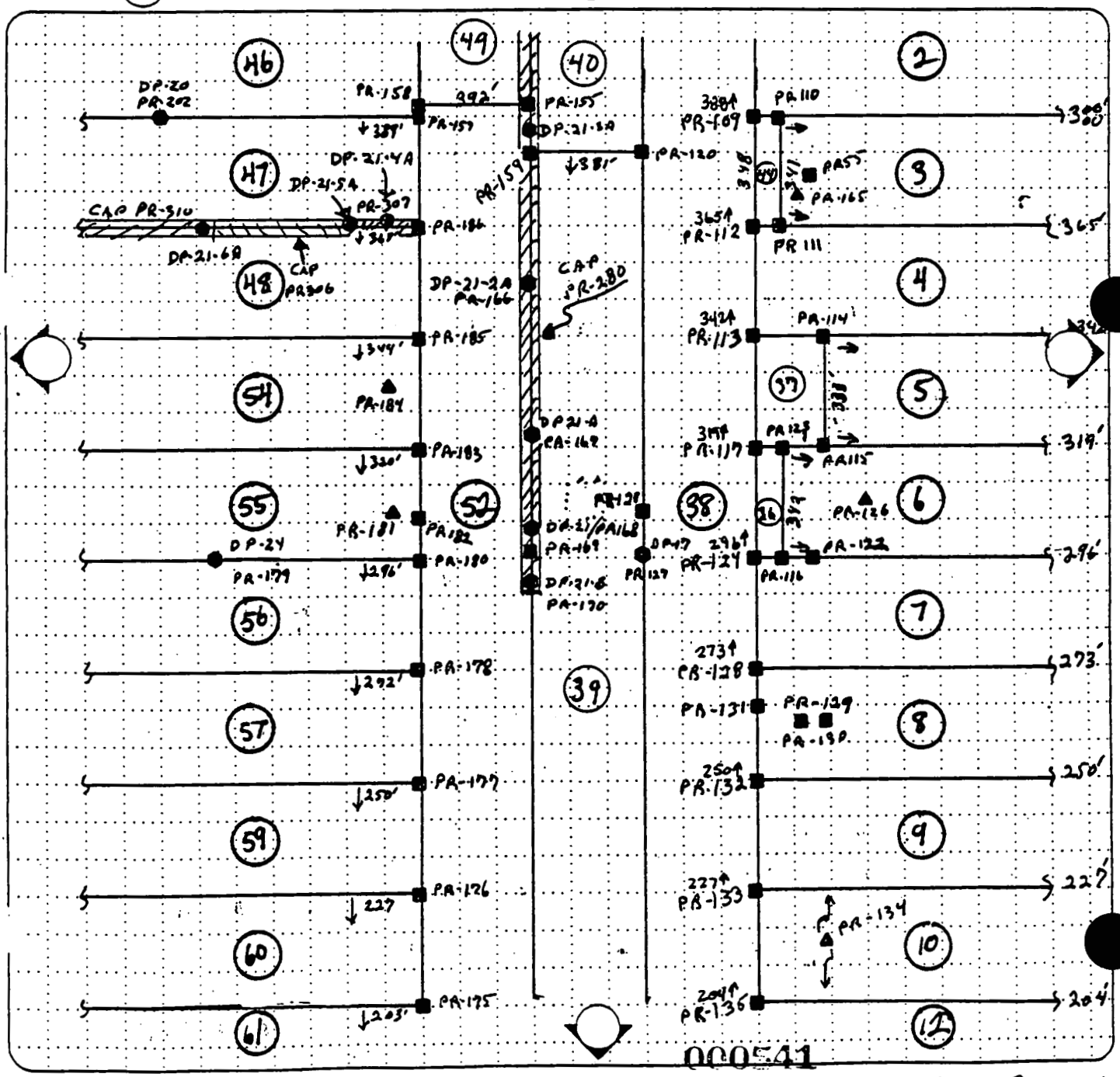
CONTRACTOR: Pelro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



000541

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: — day NOV month 1998 year

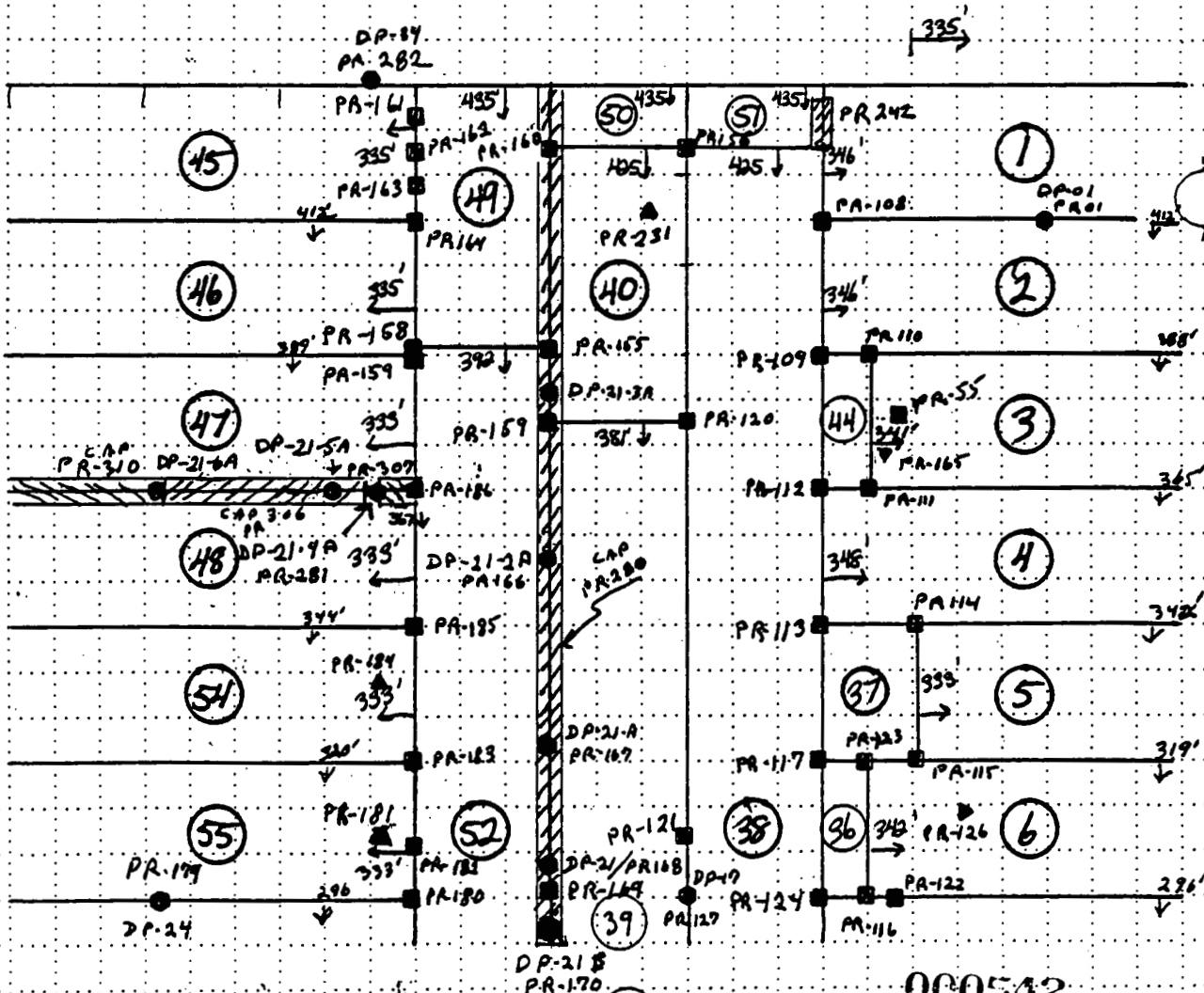
CONTRACTOR: Petro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



000542

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: – day Nov month 1998 year

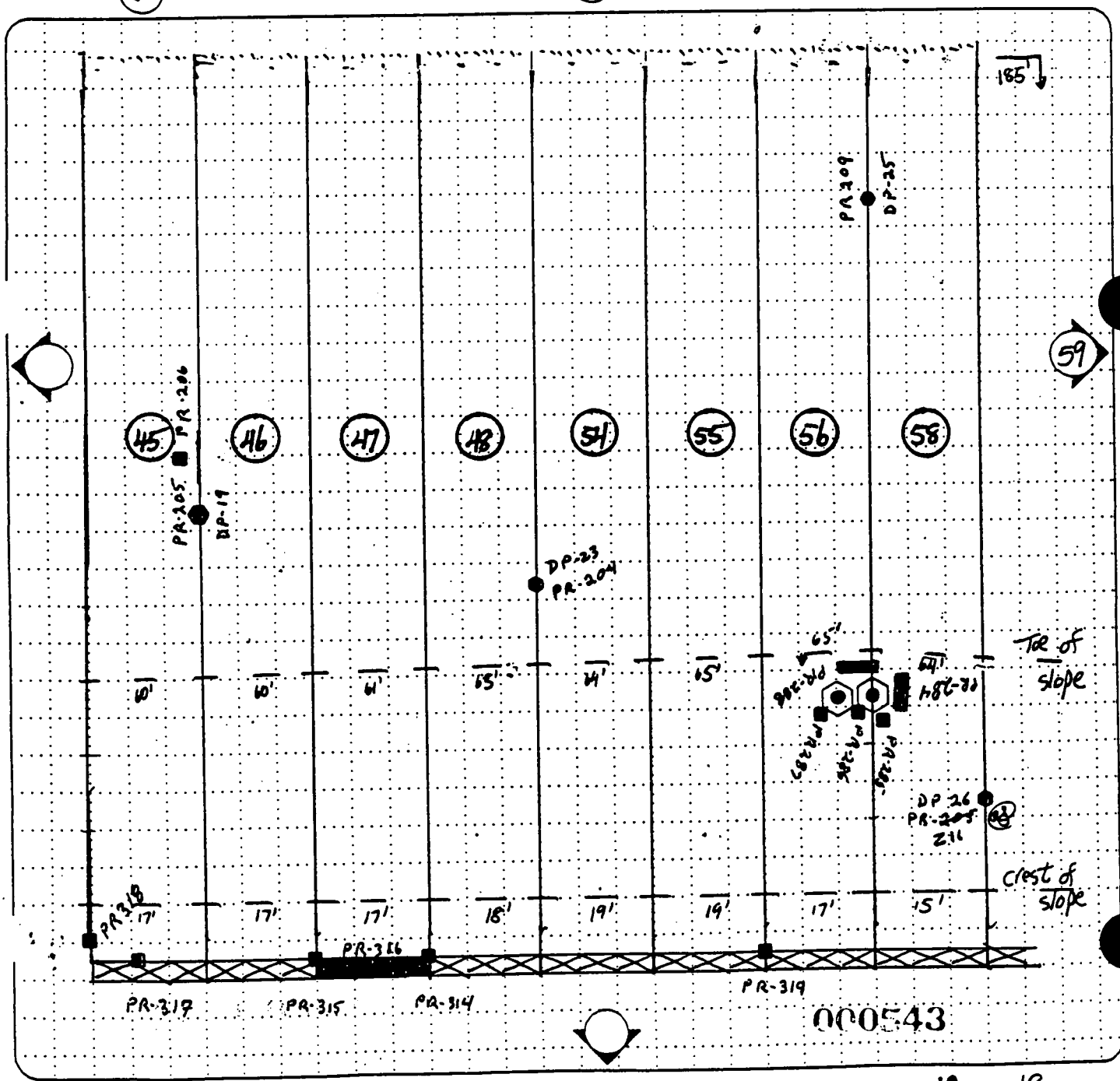
CONTRACTOR: Petric/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DLE/CS



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

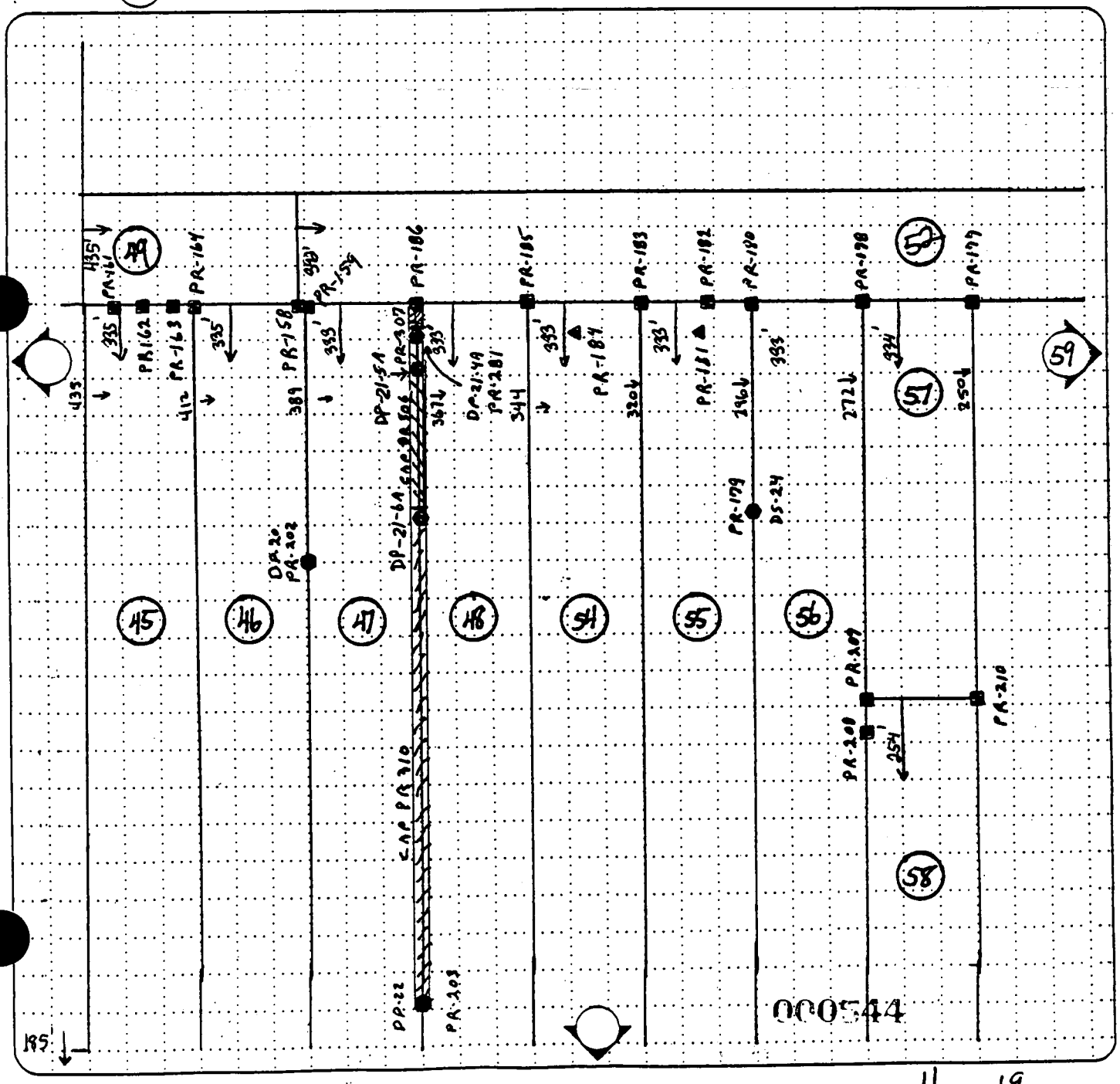
CONTRACTOR: Petro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DVE/C.S



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

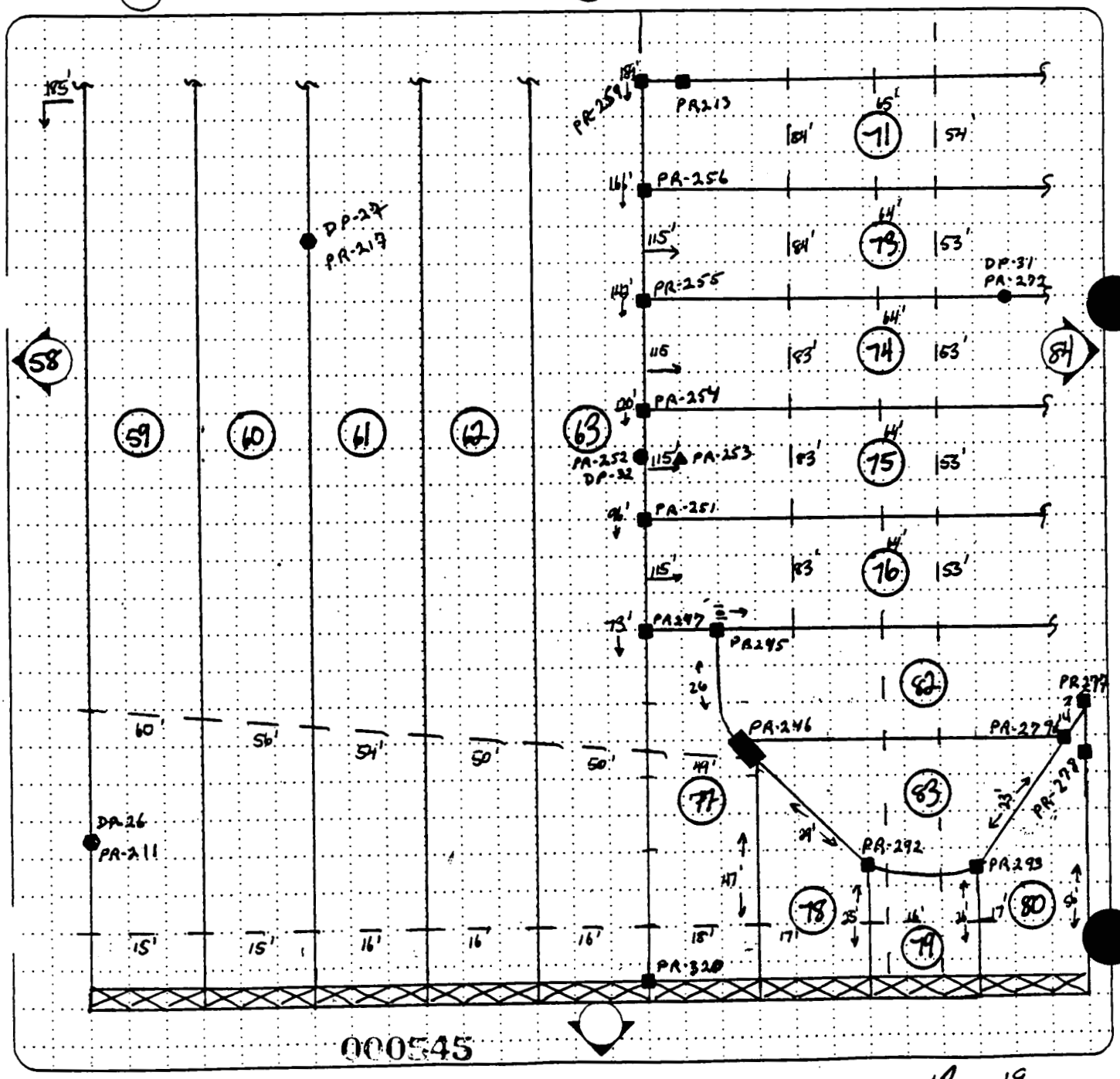
CONTRACTOR: Petro / Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 MIL HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DJE/CS



000545

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2062

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

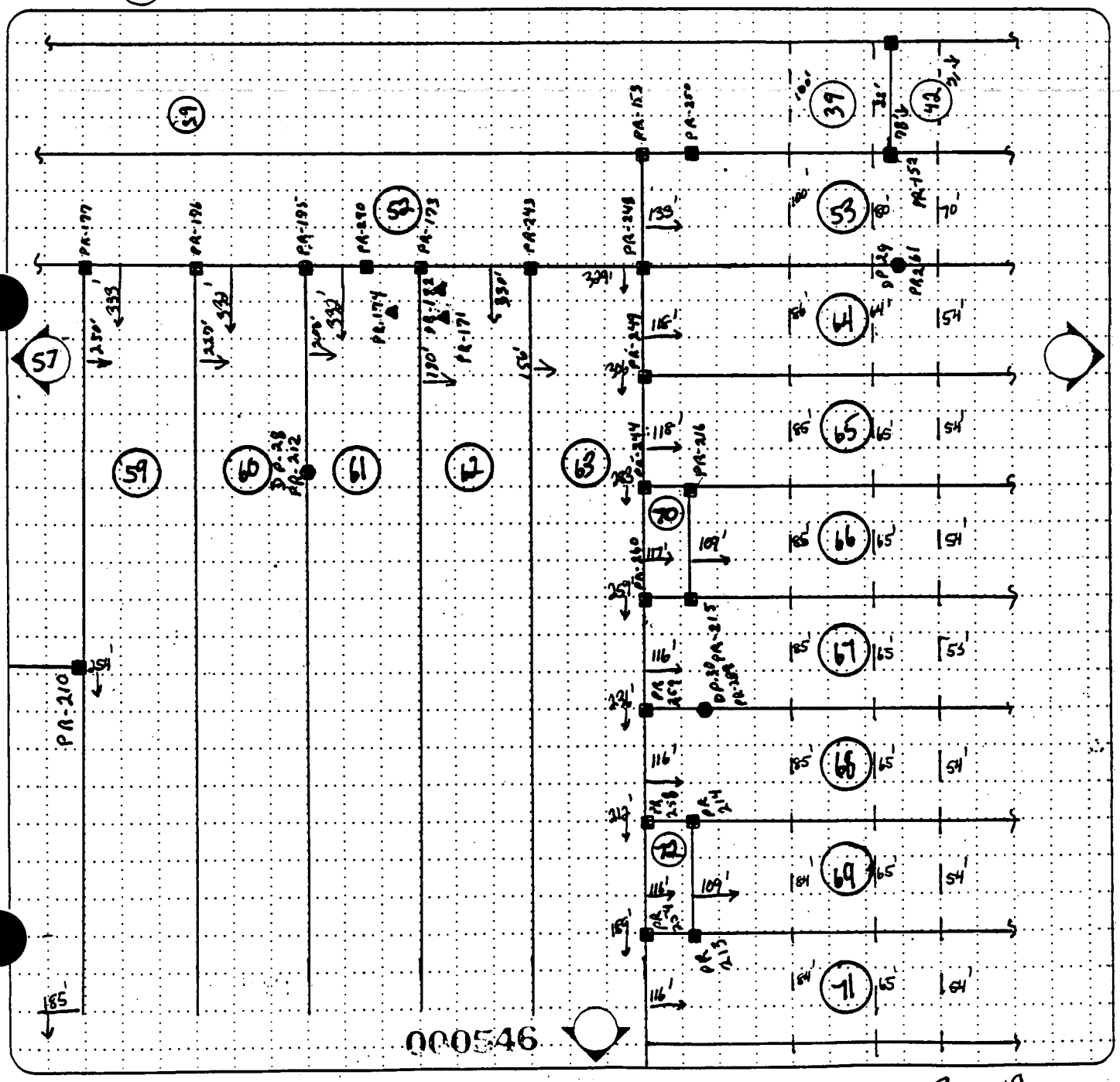
CONTRACTOR: Petro/Solmax

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: DKE/CS



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LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

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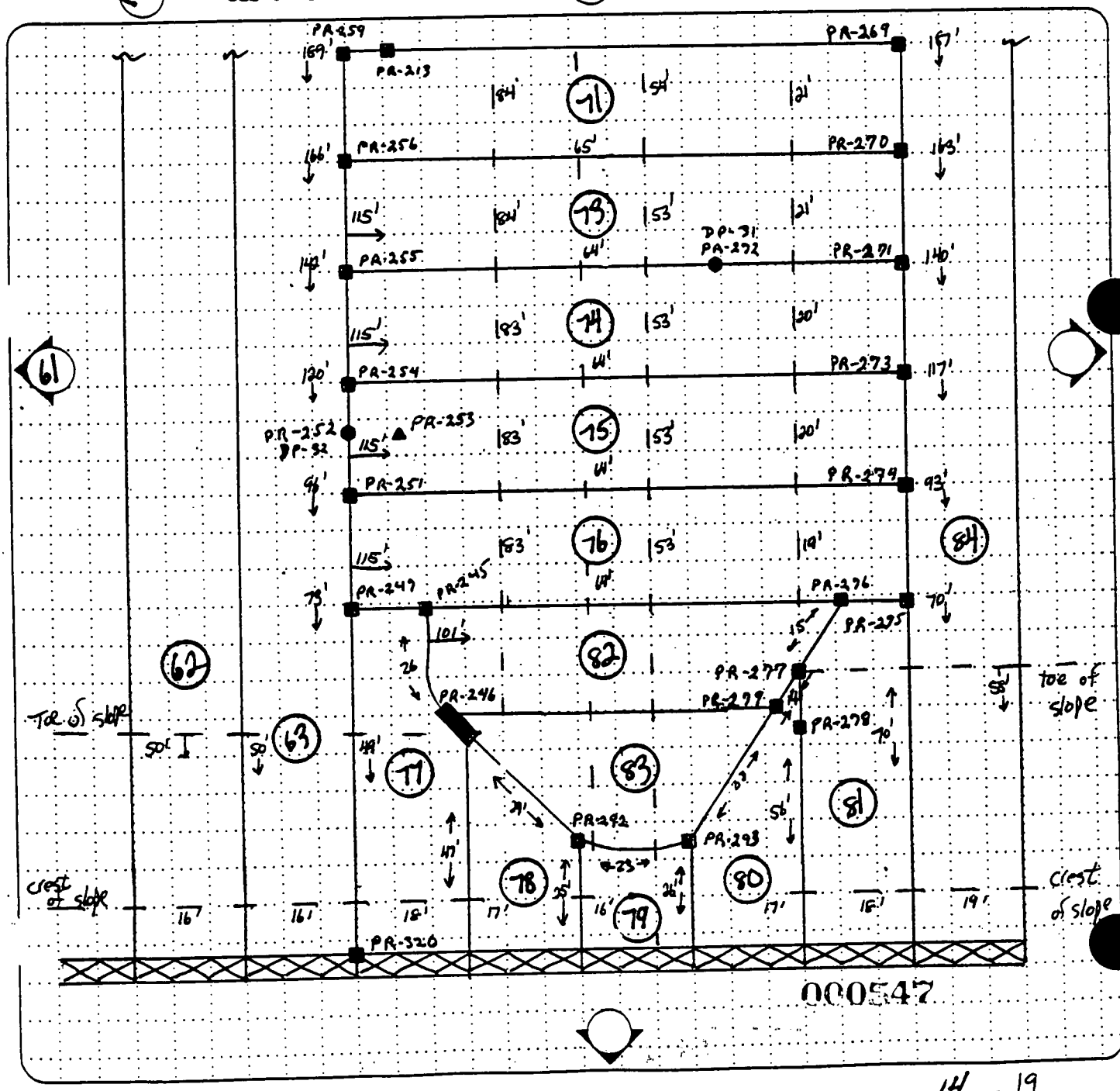

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SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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NORTH

NOTE:
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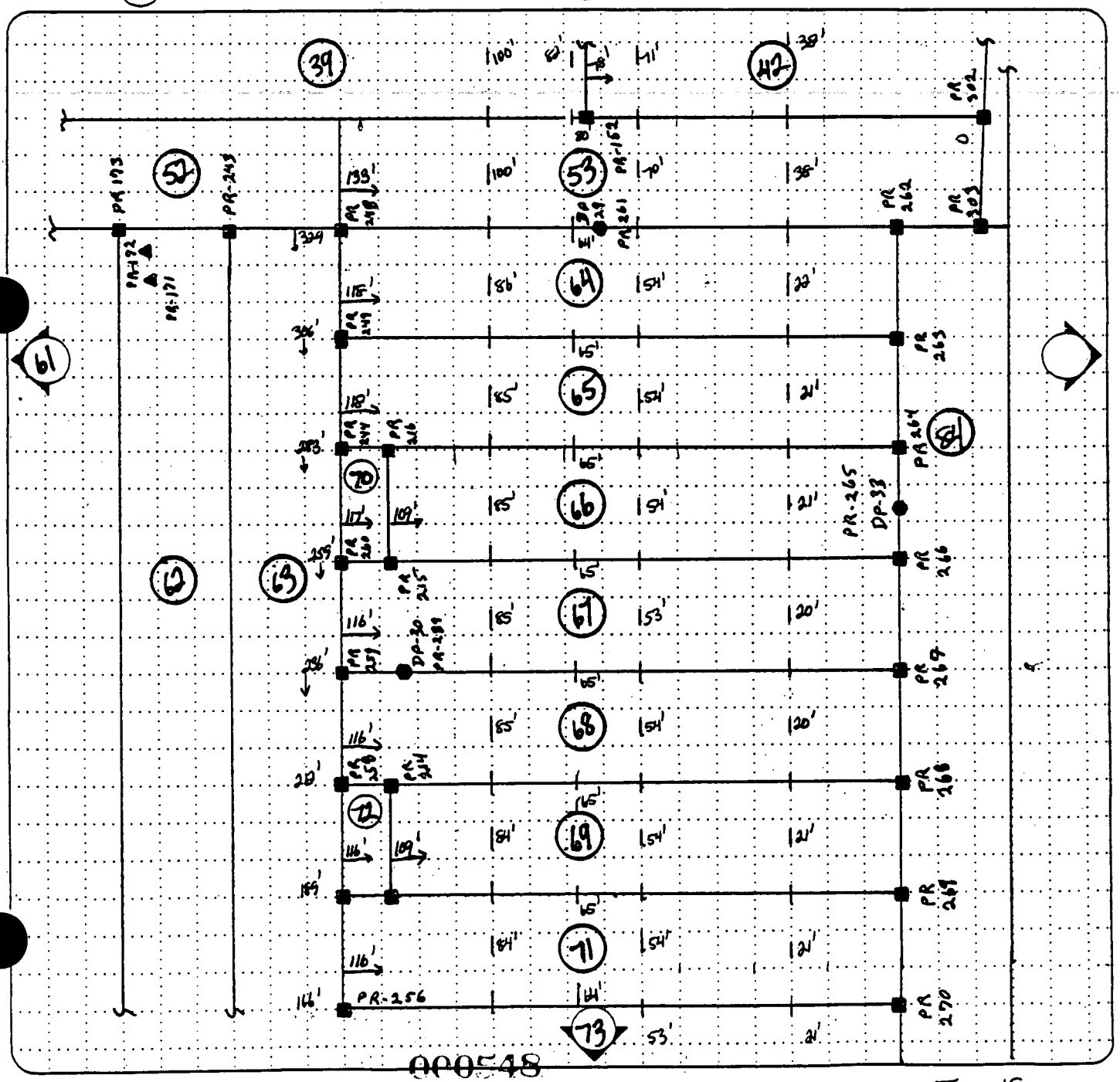
QA ID: DJE/CS



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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: PHASE II DATE: — day NOV month 1998 year

CONTRACTOR: PETRO/SOLMAX

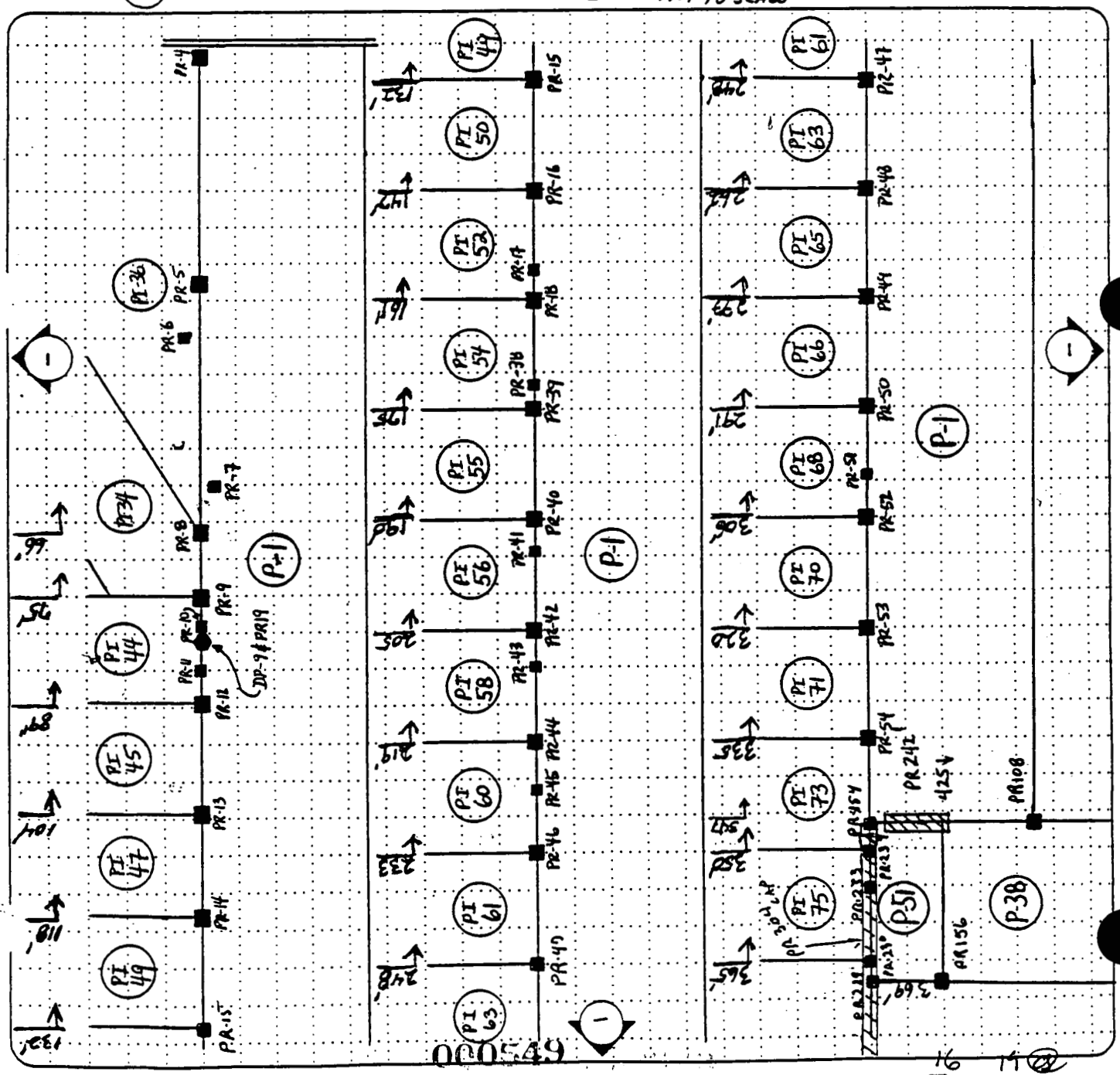
PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 MIL HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

NOT TO SCALE

QA ID: DLE/CA



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FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

CONTRACTOR: PETRO/SOLMAX

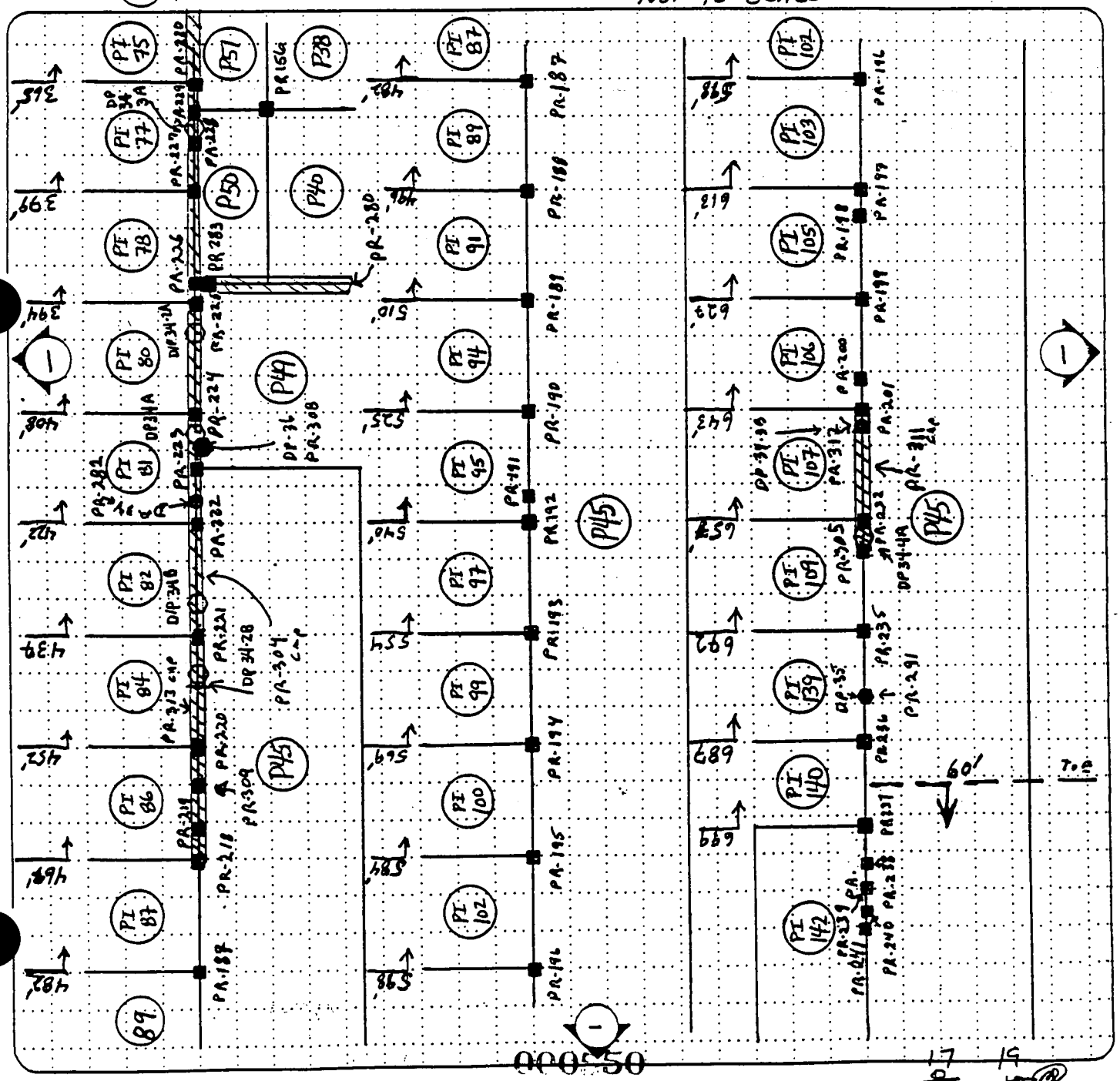
PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 MIL HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

NOT TO SCALE

QA ID: _____



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SHEET NO. 17 OF 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 04.1

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

CONTRACTOR: PETRO/SOLMAX

PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 MIL HDPE GEOMEMBRANE

NORTH

NOTE:
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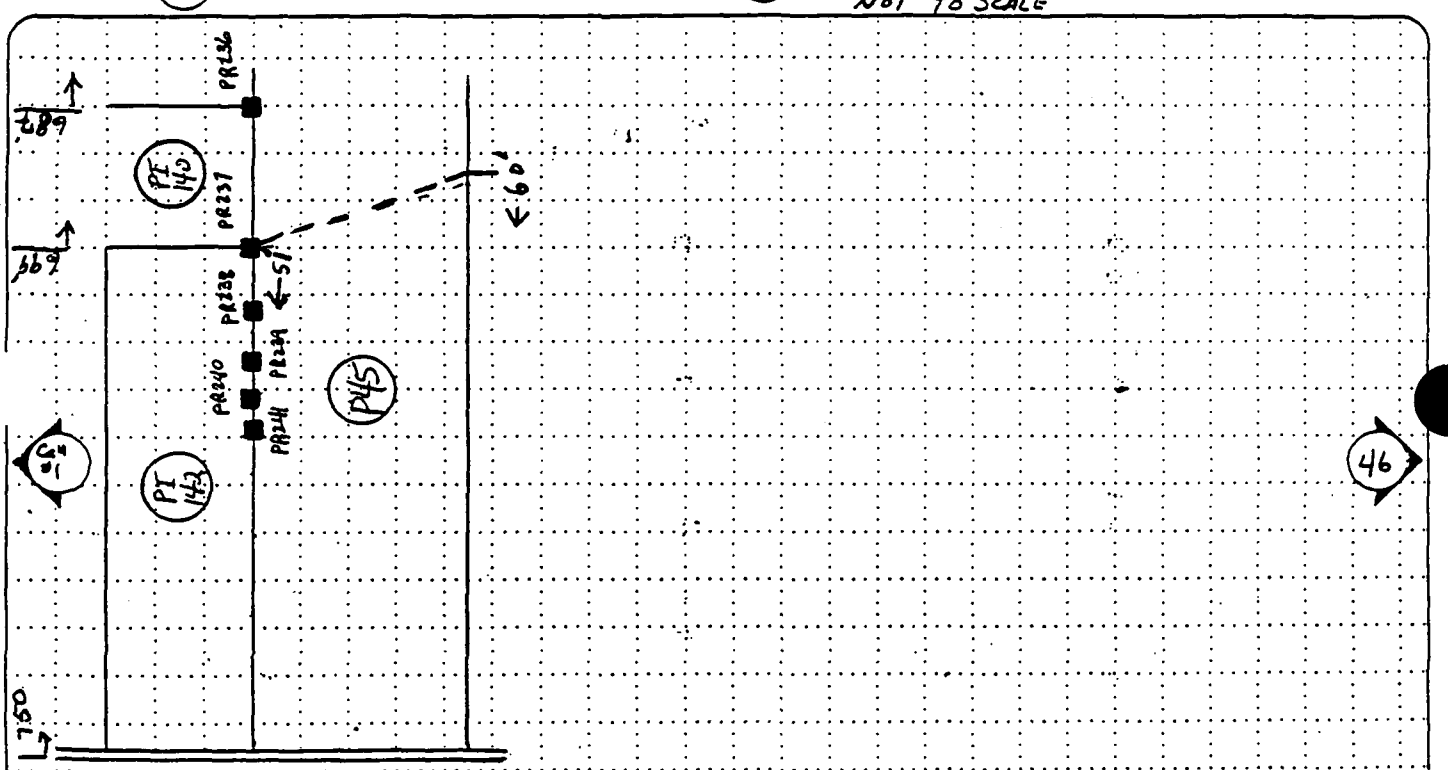
Sheet 8

NOT TO SCALE

QA ID: DLE/cd



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SHEET NO. 9 OF 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2062

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GC0409 TASK NO.: 04.)

DESCRIPTION: Phase II DATE: — day Nov month 1998 year

CONTRACTOR: Petro / Solmax

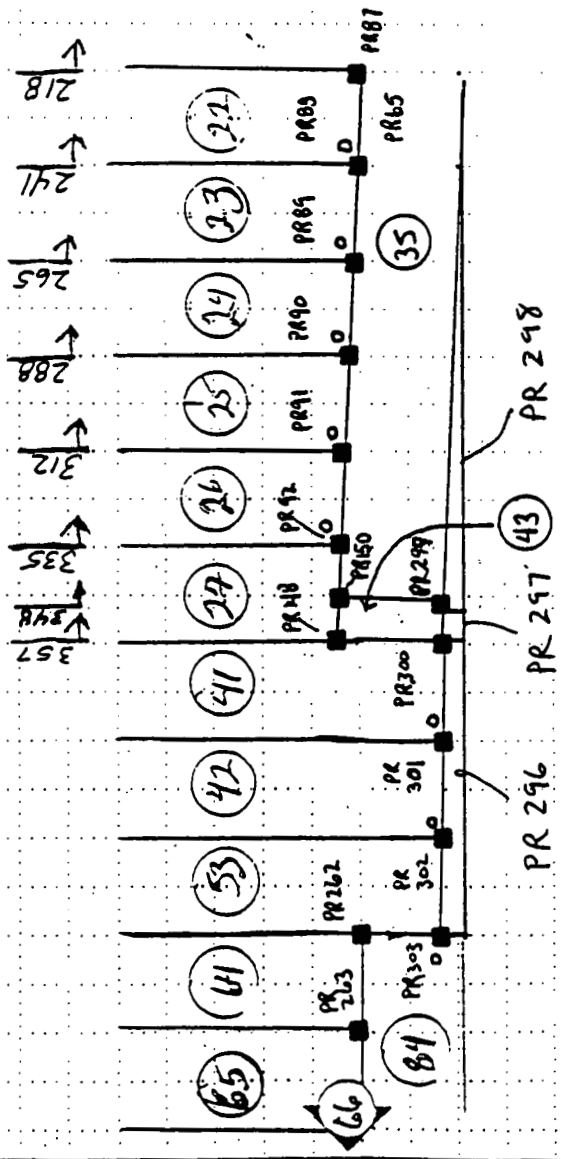
PRIMARY: ☒ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80 Mil HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

NOT TO SCALE

CA ID: DLE/CS



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SHEET NO. ~~18~~ 19 OF ~~18~~ 19