CONSTRUCTION QUALITY ASSURANCE FINAL REPORT

ON-SITE DISPOSAL FACILITY PHASE II CELL 3

REVISION 0
NOVEMBER 1999
VOLUME V

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

prepared by

GEOSYNTEC CONSULTANTS
Fernald Field Office
7400 Willey Road, Mail Stop 38
Hamilton, Ohio 45013

under

Fluor Daniel Fernald
Subcontract 95PS005028

APPENDIX I

GEOSYNTHETIC CONFORMANCE TEST RESULTS

GEOSYNTHETIC CLAY LINER

GEOSYNTHETIC CLAY LINER

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

= 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
26 JULY	ØØØØ5192	TBV								
26 JULY	52Ø3									
26 JULY	52Ø8									
26 JULY	52Ø9									
26 JULY	5211									
26 JULY	5212									
26 JULY	5213									
26 JULY	5214									
26 JULY	522Ø									
26 JULY	5221									
26 JULY	5223									
26 JULY	5224									
26 JULY	5227									
26 JULY	5228									
26 JULY	5231									
26 JULY	5232									
26 JULY	5233									
26 JULY	52Ø2									
26 JULY	52Ø4									
26 JULY	52Ø5									
26 JULY	52Ø6									
26 JULY	521Ø									
26 JULY	5222									
26 JULY	5225									
26 JULY	5226									

000005

AVG. ROLL WIDTH: 15 ft. AVG. ROLL LENGTH: 15Ø ft.

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

CUMULATIVE AREA: 56,25Ø ft² NO. OF CONFORMANCE TESTS (page/total): Ø 19

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
26 JULY	ØØØØ5229	TBV								
26 JULY	5230									
26 JULY	5310									
26 JULY	5311									
26 JULY	5312									
26 JULY	5313									
26 JULY	5314									
26 JULY	5319									
26 JULY	5320									
26 JULY	5215									
26 JULY	5216									
26 JULY	5234									
26 JULY	5235		26 May	99-6	P	CS				
26 JULY	5307									
26 JULY	5308									
26 JULY	5309									
26 JULY	5315									
26 JULY	5316									
26 JULY	5317									
26 JULY	5318									
26 JULY	5321									
26 JULY	5322		26 May	99-8	P	CS				
26 JULY	5323									
26 JULY	5324									
26 JULY	5325									

000006

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 112,500 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
26 JULY	ØØØØ5326	TBY								
26 JULY	5154									
26 JULY	5155									
26 JULY	5171									
26 JULY	5172									
26 JULY	5173									
26 JULY	5174									
26 JULY	5175									
26 JULY	5176									
26 JULY	5196									
26 JULY	5197									
26 JULY	5198									
26 JULY	5199									
26 JULY	52ØØ									
26 JULY	52Ø1									
26 JULY	5217									
26 JULY	5218									
26 JULY	5219									
29 JULY	5Ø65									
29 JULY	5128									
29 JULY	5129									
29 JULY	513Ø									
29 JULY	5131									
29 JULY	5132									
29 JULY	5133									

000007

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 15Ø ft

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

CUMULATIVE AREA: 168,75Ø ft² NO. OF CONFORMANCE TESTS (page/total): Ø / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
29 JULY	ØØØØ5134	TBY								
29 JULY	5136									
29 JULY	5137									
29 JULY	5139									
29 JULY	5143									
29 JULY	5144									
29 JULY	5145									
29 JULY	5146									
29 JULY	5164									
29 JULY	514Ø									
Ø2 AUG	51Ø8									
Ø2 AUG	51Ø9									
Ø2 AUG	511Ø									
Ø2 AUG	5111									
Ø2 AUG	5112									
Ø2 AUG	5113									
Ø2 AUG	5114									
Ø2 AUG	5115									
Ø2 AUG	5116									
Ø2 AUG	5117									
Ø2 AUG	5135									
Ø2 AUG	5138									
Ø2 AUG	5141									
Ø2 AUG	5142		25 May	99-4	P	CJ	000008			
Ø2 AUG	515Ø									

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 15Ø ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 1ØØ

CUMULATIVE AREA: 225,000 ft² NO. OF CONFORMANCE TESTS (page/total): 1 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
02 AUG	0000 5151	TBY								
02 AUG	5153									
02 AUG	5085									
02 AUG	5086									
02 AUG	5087									
02 AUG	5094									
02 AUG	5118									
02 AUG	5119									
02 AUG	5120									
02 AUG	5121									
02 AUG	5122									
02 AUG	5123									
02 AUG	5124									
02 AUG	5125									
02 AUG	5126									
02 AUG	5127									
02 AUG	5147									
02 AUG	5148									
02 AUG	5149									
09 AUG	5069									
09 AUG	5070									
09 AUG	5071									
09 AUG	5072									
09 AUG	5073									
09 AUG	5074						000009			

AVG. ROLL WIDTH: 15 ft. AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 281,250 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
09 AUG	0000 5075	TBM								
09 AUG	5095									
09 AUG	5096									
09 AUG	5097									
09 AUG	5098		25 May	99-3	P	CA				
09 AUG	5099									
09 AUG	5100									
09 AUG	5101									
09 AUG	5102									
09 AUG	5103									
09 AUG	5104									
09 AUG	5064									
09 AUG	5066									
09 AUG	5067									
09 AUG	5068									
09 AUG	5076									
09 AUG	5077									
09 AUG	5078									
09 AUG	5083									
09 AUG	5084									
09 AUG	5088									
09 AUG	5089									
09 AUG	5090									
09 AUG	5091						000010			
09 AUG	5092									

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 337,500 ft² NO. OF CONFORMANCE TESTS (page/total): 1 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2740

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

DESCRIPTION: PHASE II YEAR: 1999

PRODUCT TYPE: GCL (BENTOMAT ST) 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
09 AUG	0000 5093	TBD								
09 AUG	5105									
09 AUG	5107									
	5177	TO								
	5178									
	5179									
	5180									
	5181									
	5182									
	5183									
	5184									
	5185									
	5186									
	5187									
	5188									
	5189									
	5190									
	5191									
	5192									
	5193									
	5293									
	5294									
	5295									
	5296									
	5297						000011			

AVG. ROLL WIDTH: 15 AVG. ROLL LENGTH: 150

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

CUMULATIVE AREA: 393,750 NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL (BenTomat ST) 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
09 Aug	0000 5298	TP								
	5299									
	5300									
	5327									
	5328									
	5329									
	5330									
	5046									
	5047									
	5048									
	5049									
	5050									
	5051									
	5052									
	5057									
	5058									
	5059									
	5060									
	5061									
	5062									
	5063									
	5079									
	5081									
	5106									
	5044									

000012

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 450,000 NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL (~~Bentofix~~ 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
30 Aug	0000 5003	DE	25 May	99-1*	P	CS				
	5004									
	5005									
	5006									
	5008									
	5009									
	5010									
	5011									
	5012									
	5013									
	5014									
	5015									
	5016									
	5033									
	5034									
	5035									
	5036									
	5037									
	5038									
	5039									
	5040									
	5041									
	5042									
	5043									
	@ ~~5044~~ 5045									

000013

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 506,250 NO. OF CONFORMANCE TESTS (page/total): 1 / 9

* Note: 99.1 was sampled from 5002; 5002 was not delivered to the site

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL (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
30 Aug	0000 5054	DE								
	5055		25 May	99-2	P	CS				
	5056									
	5080									
	5082									
	5053									
13 July	5236	CS								
	5237									
	5238									
	5239									
	5240									
	5241									
	5242									
	5265									
	5269									
	5270									
	5272									
	5274									
	5275									
	5276									
	5277									
	5278		26 May	99-7	P	CS				
	5280									
12 July	5254									
	5255									

000014

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150 ft

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

CUMULATIVE AREA: 562,500 NO. OF CONFORMANCE TESTS (page/total): 2 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2740

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: Bentomat GCL 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
12 July	199922020 0000.5256	CD								
	5257									
	5258									
	5259									
	5260									
	5271									
	5279									
	5287									
	5288									
	5289									
	5290									
	5291									
	5292									
12 July	5263									
	5264									
	5266									
	5267									
	5268									
	5273									
	5301									
	5302									
	5304									
	5305									
	5306						000015			
	5243									

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 150-ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 275

CUMULATIVE AREA: 618,750 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL - 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
12 July	199922020-00005244	CJ								
	5245	CJ								
	5246									
	5247									
	5248									
	5249									
	5250									
	5251									
	5252									
	5253									
	5281									
	5282									
	5283									
	5284									
	5285									
	5286									
13 July	5331									
	5332									
	5333									
	5334									
	5335									
13 July	5336									
	5337									
	5338									
	5339									

000016

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 150-ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 300

CUMULATIVE AREA: 675,000 ft² NO. OF CONFORMANCE TESTS (page/total): 0 / 89

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL-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
13 July	199922020 0000-5340	CA								
	5341									
	5342									
	5343									
	5344									
	5345									
	5346									
	5347									
22 July	5152									
	5156									
	5157									
	5158									
	5159									
	5160									
	5161									
	5162									
	5163									
	5165									
	5166									
	5167									
	5168									
	5169									
	5170									
	5194									
	5195		26 May	99-5	P	CA	000017			

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 150-ft

NUMBER OF ROLLS ABOVE: 25 ACCUMULATIVE NUMBER OF ROLLS: 325

CUMULATIVE AREA: 731,250 NO. OF CONFORMANCE TESTS (page/total): 1 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: GCL 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
13 July	199922020 0000-5348	CA								
	5349									
	5350									
	5351									
	5352									
	5353									
	5354									
	5355									
	5356									
	5357									
	5358									
	5359									
	5360		26 May	99-9	P	CA				
	5361									
	5362									
	5363									
	5364									

000018

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 150-ft

NUMBER OF ROLLS ABOVE: 17 ACCUMULATIVE NUMBER OF ROLLS: 342

CUMULATIVE AREA: 769,500 NO. OF CONFORMANCE TESTS (page/total): 1 / 9

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 000108312
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

-- 2740

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761S0
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

7/9/99
Mirat
42.

STOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~36000~~.0000 38,250		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

JW Wallace 7-13-99

ROSS: .00 TARE: .00 NET: 46,188.00

Deliv M-Thurs 7A.M.-1P.M.
Deliv Tues 7/13 only

Must Call Ahead 24 hrs
Jim McDonough
513-648-5020

ct to Section 7 of conditions, if this shipment is delivered to the consignee without recourse on onsignor, the consignor shall sign the following ment:
carrier shall not make delivery of this shipment ut payment of freight and all other lawful charges.

LLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

000019

"X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ect to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except nts and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, ts, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion e to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, the applicable motor carrier classification or tariff if this is a motor carrier shipment.
hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation hipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:
Jim Whitefors

s to certify that the above named materials are properly classified, described, ged, marked and labeled and are in proper condition for transportation ac- ng to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

PACKING LIST

2740

COLLOID ENVIRONMENTAL TECH CO
[illegible]0 WEST SHURE DRIVE
[illegible]LINGTON HEIGHTS IL 60004

ORDER NO:.. 000108312
ORDER DATE: 5/18/0019
SHIP DATE:. 7/0999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005331	150.0	15.0	2250.0	2772.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	D00005332	150.0	15.0	2250.0	2763.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005333	150.0	15.0	2250.0	2685.0
[illegible]BENTOMAT ST	SFT SF	199922020	00005334	150.0	15.0	2250.0	2796.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005335	150.0	15.0	2250.0	2785.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005336	150.0	15.0	2250.0	2791.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005337	150.0	15.0	2250.0	2788.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005338	150.0	15.0	2250.0	2842.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005339	150.0	15.0	2250.0	2824.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005340	150.0	15.0	2250.0	2852.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005341	150.0	15.0	2250.0	2844.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	D00005342	150.0	15.0	2250.0	2846.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005343	150.0	15.0	2250.0	2814.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	D00005344	150.0	15.0	2250.0	2831.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	D00005345	150.0	15.0	2250.0	2805.0
[illegible]20-BENTOMAT ST	SFT SF	199922020	00005346	150.0	15.0	2250.0	2808.0
[illegible]-BENTOMAT ST	SFT SF	199922020	00005347	150.0	15.0	2250.0	2823.0

ORDER TOTALS..... 38250.0 47669.0

000020

TOTAL ITEMS 17

PACKING LIST

2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
NGTON HEIGHTS IL 60004

ORDER NO:.. 000108320
ORDER DATE: 5/18/0019
SHIP DATE:. 7/1999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

O: 2292-000-OD ORDER #6761S0

RODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
0-BENTOMAT ST	SFT SF	199922020	00005152	150.0	15.0	2250.0	2753.0
0-BENTOMAT ST	SFT SF	199922020	00005156	150.0	15.0	2250.0	2710.0
0-BENTOMAT ST	SFT SF	199922020	00005157	150.0	15.0	2250.0	2703.0
0-BENTOMAT ST	SFT SF	199922020	00005158	150.0	15.0	2250.0	2699.0
BENTOMAT ST	SFT SF	199922020	00005159	150.0	15.0	2250.0	2755.0
0-BENTOMAT ST	SFT SF	199922020	00005160	150.0	15.0	2250.0	2693.0
0-BENTOMAT ST	SFT SF	199922020	00005161	150.0	15.0	2250.0	2684.0
0-BENTOMAT ST	SFT SF	199922020	00005162	150.0	15.0	2250.0	2697.0
0-BENTOMAT ST	SFT SF	199922020	00005163	150.0	15.0	2250.0	2685.0
0-BENTOMAT ST	SFT SF	199922020	00005165	150.0	15.0	2250.0	2682.0
0-BENTOMAT ST	SFT SF	199922020	00005166	150.0	15.0	2250.0	2681.0
0-BENTOMAT ST	SFT SF	199922020	00005167	150.0	15.0	2250.0	2674.0
0-BENTOMAT ST	SFT SF	199922020	00005168	150.0	15.0	2250.0	2655.0
0-BENTOMAT ST	SFT SF	199922020	00005169	150.0	15.0	2250.0	2769.0
0-BENTOMAT ST	SFT SF	199922020	00005170	150.0	15.0	2250.0	2787.0
0-BENTOMAT ST	SFT SF	199922020	00005194	150.0	15.0	2250.0	2723.0
ENTOMAT ST	SFT SF	199922020	00005195	150.0	15.0	2250.0	2739.0

ORDER TOTALS.....	38250.0	46089.0
TOTAL ITEMS..... 17		

000021

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE -- 2740 PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 000108313
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761S0
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

7/9/99
Side Board
97

TOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~6000~~.0000 38,250 ROLLS		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

Wallace 7-13-99

OSS: .00 TARE: .00 NET: 46,188.00

M- Thurs 7A.M- 1P.M.
Deliv Tues 7/13 Only
Must Call Ahead. 24 hrs
Jim McDonough
513-648-5021

to Section 7 of conditions, if this shipment is livered to the consignee without recourse on signor, the consignor shall sign the following nt:
arrier shall not make delivery of this shipment payment of freight and all other lawful charges.

LOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS
...ct to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ... and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood ...ntract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, ..., otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion ...e to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ...ions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, ...e applicable motor carrier classification or tarrif if this is a motor carrier shipment.
...ereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation ...pment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:
Charles E Frymire

...certify that the above named materials are properly classified, described, ...d, marked and labeled and are in proper condition for transportation ac... to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

000022

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[illegible] WEST SHURE DRIVE
[illegible]INGTON HEIGHTS IL 60004

ORDER NO:.. 000108313 -- 2740
ORDER DATE: 5/18/0019
SHIP DATE:. 7/0999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST		SFT	SF 199922020	00005348	150.0	15.0	2250.0	2800.0
20-BENTOMAT ST		SFT	SF 199922020	00005349	150.0	15.0	2250.0	2796.0
20-BENTOMAT ST		SFT	SF 199922020	00005350	150.0	15.0	2250.0	2788.0
[illegible]ENTOMAT ST		SFT	SF 199922020	00005351	150.0	15.0	2250.0	2795.0
20-BENTOMAT ST		SFT	SF 199922020	00005352	150.0	15.0	2250.0	2779.0
20-BENTOMAT ST		SFT	SF 199922020	00005353	150.0	15.0	2250.0	2778.0
20-BENTOMAT ST		SFT	SF 199922020	00005354	150.0	15.0	2250.0	2782.0
20-BENTOMAT ST		SFT	SF 199922020	00005355	150.0	15.0	2250.0	2786.0
20-BENTOMAT ST		SFT	SF 199922020	00005356	150.0	15.0	2250.0	2789.0
20-BENTOMAT ST		SFT	SF 199922020	00005357	150.0	15.0	2250.0	2792.0
20-BENTOMAT ST		SFT	SF 199922020	00005358	150.0	15.0	2250.0	2785.0
20-BENTOMAT ST		SFT	SF 199922020	00005359	150.0	15.0	2250.0	2794.0
20-BENTOMAT ST		SFT	SF 199922020	00005360	150.0	15.0	2250.0	2791.0
20-BENTOMAT ST		SFT	SF 199922020	00005361	150.0	15.0	2250.0	2781.0
20-BENTOMAT ST		SFT	SF 199922020	00005362	150.0	15.0	2250.0	2784.0
20-BENTOMAT ST		SFT	SF 199922020	00005363	150.0	15.0	2250.0	2781.0
[illegible]BENTOMAT ST		SFT	SF 199922020	00005364	150.0	15.0	2250.0	2786.0

ORDER TOTALS..... 38250.0 47387.0

TOTAL ITEMS..... 17

000023

PACKING LIST

2740

[redacted]OID ENVIRONMENTAL TECH CO
1500 WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. [redacted]
ORDER DATE: 5/18/0019
SHIP DATE:. 7/1299

SOLD TO: 001376
GSF LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

SHIP FROM:. LOVELL
FRT TERMS: PREPAID & ADD
SHIP VIA . NATIONWIDE

HOUS ON TX 77073

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO. 2292 000 00 ORDER #676150

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT	
20-BENTOMAT ST		SFT	SF	199922020	00005263	150.0	15.0	2250.0	2761.0	ok
20-BENTOMAT ST		SFT	SF	199922020	00005264	150.0	15.0	2250.0	2744.0	Damaged
20-BENTOMAT ST		SFT	SF	199922020	266	150.0	15.0	2250.0	2712.0	Damaged
BENTOMAT ST		SFT	SF	199922020	267	150.0	15.0	2250.0	2715.0	ok
20 BENTOMAT ST		SFT	SF	199922020	268	150.0	15.0	2250.0	2706.0	ok
20 BENTOMAT ST		SFT	SF	199922020	273	150.0	15.0	2250.0	2698.0	ok
20 BENTOMAT ST		SFT	SF	199922020	301	150.0	15.0	2250.0	2698.0	ok
20 BENTOMAT ST		SFT	SF	199922020	302	150.0	15.0	2250.0	2694.0	ok
20 BENTOMAT ST		SFT	SF	199922020	303	150.0	15.0	2250.0	2687.0	ok
20-BENTOMAT ST		SFT	SF	199922020	304	150.0	15.0	2250.0	2685.0	ok
20 BENTOMAT ST		SFT	SF	199922020	305	150.0	15.0	2250.0	2667.0	Damaged
20-BENTOMAT ST		SFT	SF	199922020	306	150.0	15.0	2250.0	2712.0	ok

ORDER TOTALS.....	27000.0	32479.0

TOTAL ITEMS..... 12

PACKING LIST

— 2740

COLLOID ENVIRONMENTAL TECH CO
[redacted]00 WEST SHURE DRIVE
[redacted]LINGTON HEIGHTS IL 60004

ORDER NO:.. [redacted]
ORDER DATE: 5/18/0019
SHIP DATE:. 7/1299

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA... NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO. 2292-000-OD ORDER #676150

PRODUCT	SIZE	U/M	LOT #	ROLL #	LNGTH	WIDTH	SHIP QTY	WEIGHT	
20-BENTOMAT ST		SFT	SF	199922020	[redacted] 54	150.0	15.0	2250.0	2818.0	OK
20-BENTOMAT ST		SFT	SF	199922020	[redacted] 56	150.0	15.0	2250.0	2828.0	Damage
20-BENTOMAT ST		SFT	SF	199922020	[redacted] 56	150.0	15.0	2250.0	2798.0	OK
[redacted]BENTOMAT ST		SFT	SF	199922020	[redacted] 59	150.0	15.0	2250.0	2995.0	
20-BENTOMAT ST		SFT	SF	199922020	[redacted] 5258	150.0	15.0	2250.0	3021.0	
20 BENTOMAT ST		SFT	SF	199922020	[redacted] 5259	150.0	15.0	2250.0	2915.0	
20-BENTOMAT ST		SFT	SF	199922020	[redacted] 5260	150.0	15.0	2250.0	2729.0	
20 BENTOMAT ST		SFT	SF	199922020	[redacted] 5271	150.0	15.0	2250.0	2740.0	
0 BENTOMAT ST		SFT	SF	199922020	[redacted] 5219	150.0	15.0	2250.0	2689.0	
0-BENTOMAT ST		SFT	SF	199922020	[redacted] 97	150.0	15.0	2250.0	2710.0	
0-BENTOMAT ST		SFT	SF	199922020	[redacted] 88	150.0	15.0	2250.0	2677.0	
0-BENTOMAT ST		SFT	SF	199922020	[redacted] 89	150.0	15.0	2250.0	2691.0	
0-BENTOMAT ST		SFT	SF	199922020	[redacted] 90	150.0	15.0	2250.0	3102.0	
0 BENTOMAT ST		SFT	SF	199922020	[redacted] 91	150.0	15.0	2250.0	2763.0	
0-BENTOMAT ST		SFT	SF	199922020	[redacted] 92	150.0	15.0	2250.0	2761.0	

[redacted]RDER TOTALS..... 33750.0 42237.0

TOTAL ITEMS..... 15

PACKING LIST

- 2740

COLLOID ENVIRONMENTAL TECH CO
[redacted]SS WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO: [redacted]
ORDER DATE: 5/18/0019
SHIP DATE: 7/1299

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM: LOVELL
FRT TERMS: PREPAID & ADD
SHIP VIA: NATIONWIDE

SHIP TO 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2297-000-OD ORDER #676150

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT	
[redacted]-BENTOMAT ST	SFT SF	199922020	5236 [redacted]5236	150.0	15.0	2250.0	2720.0	— ok
320-BENTOMAT ST	SFT SF	199922020	5237 [redacted]	150.0	15.0	2250.0	2721.0	— ok
120-BENTOMAT ST	SFT SF	199922020	5238 [redacted]5238	150.0	15.0	2250.0	2713.0	— ok
[redacted] BENTOMAT ST	SFT SF	199922020	5239 [redacted]5239	150.0	15.0	2250.0	2735.0	— ok
120-BENTOMAT ST	SFT SF	199922020	5240 [redacted]	150.0	15.0	2250.0	2725.0	— ok
120 BENTOMAT ST	SFT SF	199922020	5241 [redacted]	150.0	15.0	2250.0	2741.0	— ok
120-BENTOMAT ST	SFT SF	199922020	5242 [redacted]	150.0	15.0	2250.0	2738.0	— ok
20-BENTOMAT ST	SFT SF	199922020	5265 [redacted]	150.0	15.0	2250.0	2747.0	— Damaged
20-BENTOMAT ST	SFT SF	199922020	5269 [redacted]5269	150.0	15.0	2250.0	2733.0	— ok
20 BENTOMAT ST	SFT SF	199922020	5290 [redacted]5290	150.0	15.0	2250.0	2745.0	— ok
20 BENTOMAT ST	SFT SF	199922020	5292 [redacted]	150.0	15.0	2250.0	2730.0	— ok
20 BENTOMAT ST	SFT SF	199922020	5294 [redacted]	150.0	15.0	2250.0	2737.0	— ok
20-BENTOMAT ST	SFT SF	199922020	5295 [redacted]5295	150.0	15.0	2250.0	2730.0	— ok
20-BENTOMAT ST	SFT SF	199922020	5296 [redacted]	150.0	15.0	2250.0	2741.0	— ok
20 BENTOMAT ST	SFT SF	199922020	5297 [redacted]	150.0	15.0	2250.0	2694.0	— ok
20 BENTOMAT ST	SFT SF	199922020	5298 [redacted]	150.0	15.0	2250.0	2696.0	— Damaged + Stained Damp
[redacted]NTOMAT ST	SFT SF	199922020	5280 [redacted]	150.0	15.0	2250.0	2705.0	— ok

ORDER TOTALS..... 38250.0 46351.0

TOTAL ITEMS..... 17

000026

PACKING LIST

-- 2740

[illegible]LOID ENVIRONMENTAL TECH CO
[illegible] WEST SHURE DRIVE
[illegible]LINGTON HEIGHTS IL 60004

ORDER NO:.. [redacted]
ORDER DATE: 5/18/0019
SHIP DATE:. 7/1299

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:.. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO. 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

[illegible]O: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT	
0 BENTOMAT ST	SFT	SF	199922020	00005243	150.0	15.0	2250.0	2738.0	
0 BENTOMAT ST	SFT	SF	199922020	00005244	150.0	15.0	2250.0	2740.0	D
0-BENTOMAT ST	SFT	SF	199922020	00005245	150.0	15.0	2250.0	2861.0	D
BENTOMAT ST	SFT	SF	199922020	00005246	150.0	15.0	2250.0	2749.0	D
0 BENTOMAT ST	SFT	SF	199922020	00005247 D	150.0	15.0	2250.0	2840.0	D
0-BENTOMAT ST	SFT	SF	199922020	5248	150.0	15.0	2250.0	2831.0	
0 BENTOMAT ST	SFT	SF	199922020	5249	150.0	15.0	2250.0	2820.0	
0-BENTOMAT ST	SFT	SF	199922020	00005250 D	150.0	15.0	2250.0	2810.0	D
0-BENTOMAT ST	SFT	SF	199922020	00005251	150.0	15.0	2250.0	2795.0	
0-BENTOMAT ST	SFT	SF	199922020	00005252	150.0	15.0	2250.0	2812.0	
0-BENTOMAT ST	SFT	SF	199922020	5253	150.0	15.0	2250.0	2746.0	Dropped
0 BENTOMAT ST	SFT	SF	199922020	00005281	150.0	15.0	2250.0	2699.0	D
0-BENTOMAT ST	SFT	SF	199922020	00005282	150.0	15.0	2250.0	2683.0	
0-BENTOMAT ST	SFT	SF	199922020	00005283	150.0	15.0	2250.0	2724.0	
0-BENTOMAT ST	SFT	SF	199922020	00005284	150.0	15.0	2250.0	2709.0	
0-BENTOMAT ST	SFT	SF	199922020	00005285	150.0	15.0	2250.0	2715.0	
BENTOMAT ST	SFT	SF	199922020	00005286	150.0	15.0	2250.0	2707.0	

000027

ORDER TOTALS. 38250.0 46979.0

TOTAL ITEMS..... 17

PACKING LIST

2740

LOID ENVIRONMENTAL TECH CO
00 WEST SHURL DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000108323
ORDER DATE: 5/18/0019
SHIP DATE.. 7/2299

SOLD TO 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM . LOVELL
FRT TERMS.. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO 2292-000 00 ORDER #676150

RECEIVED JUL 26 1999

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
020-BENTOMAT ST	SFT	SF	199922020	00005192	150.0	15.0	2250.0	2736.0
020 BENTOMAT ST	SFT	SF	199922020	00005203	150.0	15.0	2250.0	2750.0 D
020 BENTOMAT ST	SFT	SF	199922020	00005208	150.0	15.0	2250.0	2814.0 D
BENTOMAT ST	SFT	SF	199922020	00005209	150.0	15.0	2250.0	2840.0 D
020 BENTOMAT ST	SFT	SF	199922020	00005211	150.0	15.0	2250.0	2860.0 D
020-BENTOMAT ST	SFT	SF	199922020	00005212	150.0	15.0	2250.0	2854.0 D
020-BENTOMAT ST	SFT	SF	199922020	00005213	150.0	15.0	2250.0	2840.0
20-BENTOMAT ST	SFT	SF	199922020	00005214	150.0	15.0	2250.0	2835.0 D
20-BENTOMAT ST	SFT	SF	199922020	00005220	150.0	15.0	2250.0	2840.0 D
020-BENTOMAT ST	SFT	SF	199922020	00005221	150.0	15.0	2250.0	2845.0 D
20-BENTOMAT ST	SFT	SF	199922020	00005223	150.0	15.0	2250.0	2795.0 D
20 BENTOMAT ST	SFT	SF	199922020	00005224	150.0	15.0	2250.0	2790.0
20 BENTOMAT ST	SFT	SF	199922020	00005227	150.0	15.0	2250.0	2727.0 D
20-BENTOMAT ST	SFT	SF	199922020	00005228	150.0	15.0	2250.0	2715.0
20-BENTOMAT ST	SFT	SF	199922020	00005231	150.0	15.0	2250.0	2741.0
20-BENTOMAT ST	SFT	SF	199922020	00005232	150.0	15.0	2250.0	2750.0 D
BENTOMAT ST	SFT	SF	199922020	00005233	150.0	15.0	2250.0	2696.0

ORDER TOTALS..... 38250.0 47428.0

TOTAL ITEMS..... 17

000028

PACKING LIST

2740

[redacted]OID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO: 000108324
ORDER DATE: 6/18/0019
SHIP DATE: 7/2299

SOLD TO: 001376
GSC LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM: LOVELL
FRT TERMS: PREPAID & ADD
SHIP VIA: NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO 2292-000-00 ORDER #676150

RECEIVED JUL 2 6 1999

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST	SFT SF	199922020	00005202	150.0	15.0	2250.0	2741.0
20-BENTOMAT ST	SFT SF	199922020	00005204	150.0	15.0	2250.0	2778.0
20 BENTOMAT ST	SFT SF	199922020	00005205	150.0	15.0	2250.0	2784.0
[redacted]ENTOMAT ST	SFT SF	199922020	00005206	150.0	15.0	2250.0	2801.0
20 BENTOMAT ST	SFT SF	199922020	00005210	150.0	15.0	2250.0	2850.0
20 BENTOMAT ST	SFT SF	199922020	00005222	150.0	15.0	2250.0	2830.0
20-BENTOMAT ST	SFT SF	199922020	00005225	150.0	15.0	2250.0	2791.0
20 BENTOMAT ST	SFT SF	199922020	00005226	150.0	15.0	2250.0	2718.0
20 BENTOMAT ST	SFT SF	199922020	00005229	150.0	15.0	2250.0	2724.0
20-BENTOMAT ST	SFT SF	199922020	00005230	150.0	15.0	2250.0	2730.0
20-BENTOMAT ST	SFT SF	199922020	00005310	150.0	15.0	2250.0	2679.0
20-BENTOMAT ST	SFT SF	199922020	00005311	150.0	15.0	2250.0	2686.0
20-BENTOMAT ST	SFT SF	199922020	00005312	150.0	15.0	2250.0	2681.0
0-BENTOMAT ST	SFT SF	199922020	00005313	150.0	15.0	2250.0	2702.0
0-BENTOMAT ST	SFT SF	199922020	00005314	150.0	15.0	2250.0	2710.0
0-BENTOMAT ST	SFT SF	199922020	00005319	150.0	15.0	2250.0	2760.0
[redacted]ENTOMAT ST	SFT SF	199922020	00005320	150.0	15.0	2250.0	2777.0

000029

ORDER TOTALS..... 38250.0 46751.0

TOTAL ITEMS..... 17

PACKING LIST

- 2740

COLLOID ENVIRONMENTAL TECH CO
00 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000108322
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2299

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #676150

RECEIVED JUL 2 5 1999

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
120-BENTOMAT ST	SFT	SF	199922020	00005215	150.0	15.0	2250.0	2833.0
120-BENTOMAT ST	SFT	SF	199922020	00005216	150.0	15.0	2250.0	2822.0
120 BENTOMAT ST	SFT	SF	199922020	00005234	150.0	15.0	2250.0	2699.0
BENTOMAT ST	SFT	SF	199922020	00005235	150.0	15.0	2250.0	2759.0
120 BENTOMAT ST	SFT	SF	199922020	00005307	150.0	15.0	2250.0	2720.0
120-BENTOMAT ST	SFT	SF	199922020	00005308	150.0	15.0	2250.0	2679.0
120-BENTOMAT ST	SFT	SF	199922020	00005309	150.0	15.0	2250.0	2681.0 D
120 BENTOMAT ST	SFT	SF	199922020	00005315	150.0	15.0	2250.0	2724.0
120-BENTOMAT ST	SFT	SF	199922020	00005316	150.0	15.0	2250.0	2795.0 DD
120 BENTOMAT ST	SFT	SF	199922020	00005317	150.0	15.0	2250.0	2765.0
120-BENTOMAT ST	SFT	SF	199922020	00005318	150.0	15.0	2250.0	2758.0
120-BENTOMAT ST	SFT	SF	199922020	00005321	150.0	15.0	2250.0	2751.0 D
120-BENTOMAT ST	SFT	SF	199922020	00005322	150.0	15.0	2250.0	2762.0
120-BENTOMAT ST	SFT	SF	199922020	00005323	150.0	15.0	2250.0	2757.0
120-BENTOMAT ST	SFT	SF	199922020	00005324	150.0	15.0	2250.0	2799.0 D
120 BENTOMAT ST	SFT	SF	199922020	00005325	150.0	15.0	2250.0	2790.0
BENTOMAT ST	SFT	SF	199922020	00005326	150.0	15.0	2250.0	2797.0 D

000030

ORDER TOTALS.....	38250.0	46891.0
TOTAL ITEMS..... 17		

PACKING LIST

- 2740

OTG ENVIRONMENTAL TECH CO
1500 WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000108321
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2299

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

RECEIVED JUL 26 1999

PO: 2292-000-00 ORDER #676150

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
0-BENTOMAT ST		SFT	SF	199922020	00005154	150.0	15.0	2250.0	2753.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005155	150.0	15.0	2250.0	2733.0 ✓
0 BENTOMAT ST		SFT	SF	199922020	00005171	150.0	15.0	2250.0	2745.0 ✓
ENTOMAT ST		SFT	SF	199922020	00005172	150.0	15.0	2250.0	2740.0 ✓
0 BENTOMAT ST		SFT	SF	199922020	00005173	150.0	15.0	2250.0	2739.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005174	150.0	15.0	2250.0	2746.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005175	150.0	15.0	2250.0	2730.0 ✓ D
0-BENTOMAT ST		SFT	SF	199922020	00005176	150.0	15.0	2250.0	2744.0 ✓
0 BENTOMAT ST		SFT	SF	199922020	00005196	150.0	15.0	2250.0	2727.0 ✓
0 BENTOMAT ST		SFT	SF	199922020	00005197	150.0	15.0	2250.0	2745.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005198	150.0	15.0	2250.0	2749.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005199	150.0	15.0	2250.0	2733.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005200	150.0	15.0	2250.0	2740.0 ✓
0-BENTOMAT ST		SFT	SF	199922020	00005201	150.0	15.0	2250.0	2763.0 ✓
0 BENTOMAT ST		SFT	SF	199922020	00005217	150.0	15.0	2250.0	2833.0 ✓ D
0-BENTOMAT ST		SFT	SF	199922020	00005218	150.0	15.0	2250.0	2816.0 ✓ D
ENTOMAT ST		SFT	SF	199922020	00005219	150.0	15.0	2250.0	2819.0 ✓

000031

ORDER TOTALS..... 38250.0 46855.0

TOTAL ITEMS..... 17

FERMCO OW2 LIST

2740

[illegible]OID ENVIRONMENTAL TECH [illegible]
[illegible] WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

JUL 29 6 56 AM '99

ORDER NO:.. 000108326
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2899

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
10103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-00 ORDER #676150

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20 BENTOMAT ST	SFT	SF	199922020	~~00005002~~ SEE PAGE #2	150.0	15.0	2250.0	2715.0 -NO
20-BENTOMAT ST	SFT	SF	199922020	00005065	150.0	15.0	2250.0	2742.0
20 BENTOMAT ST	SFT	SF	199922020	00005128	150.0	15.0	2250.0	2975.0
[illegible]ENTOMAT ST	SFT	SF	199922020	00005129	150.0	15.0	2250.0	2950.0
20-BENTOMAT ST	SFT	SF	199922020	00005130	150.0	15.0	2250.0	2863.0
20-BENTOMAT ST	SFT	SF	199922020	00005131	150.0	15.0	2250.0	2825.0
20 BENTOMAT ST	SFT	SF	199922020	00005132	150.0	15.0	2250.0	2841.0
20-BENTOMAT ST	SFT	SF	199922020	00005133	150.0	15.0	2250.0	2841.0
20-BENTOMAT ST	SFT	SF	199922020	00005134	150.0	15.0	2250.0	2828.0
20 BENTOMAT ST	SFT	SF	199922020	00005136	150.0	15.0	2250.0	2765.0
20-BENTOMAT ST	SFT	SF	199922020	00005137	150.0	15.0	2250.0	2771.0
20-BENTOMAT ST	SFT	SF	199922020	00005139	150.0	15.0	2250.0	2738.0
20-BENTOMAT ST	SFT	SF	199922020	00005143	150.0	15.0	2250.0	2719.0
20-BENTOMAT ST	SFT	SF	199922020	00005144	150.0	15.0	2250.0	2746.0
20-BENTOMAT ST	SFT	SF	199922020	00005145	150.0	15.0	2250.0	2735.0
20-BENTOMAT ST	SFT	SF	199922020	00005146	150.0	15.0	2250.0	2731.0
[illegible]NTOMAT ST	SFT	SF	199922020	00005164	150.0	15.0	2250.0	2683.0

000032

ORDER TOTALS..... 38250.0 47468.0

TOTAL ITEMS..... 17

PACKING LIST

FERMCO OU2

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
LINGTON HEIGHTS IL 60004 JUL 29 6 56 AM '99

ORDER NO:.. 000108326
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2899

2740

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS.. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #676150

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
020-BENTOMAT ST	SFT	SF	199922020	00005140	150.0	15.0	2250 0	2739.0

ORDER TOTALS..... 2250 0 2739.0

TOTAL ITEMS 1

000033

SENT BY: CEICO / LOVELL; 7-28-99 4:04PM; 307 548 5413 => 513 648 5707;

PACKING LIST

2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
[illegible]INGTON HEIGHTS IL 60004

ORDER NO:.. 000108327
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2999

SOLD TO: 001376
GSE LINING TECHNOLOGY. INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

02 AUG 1999

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST	SFT SF	199922020	00005108	150.0	15.0	2250.0	2663.0
20-BENTOMAT ST	SFT SF	199922020	00005109	150.0	15.0	2250.0	2765.0
20-BENTOMAT ST	SFT SF	199922020	00005110	150.0	15.0	2250.0	2739.0
20-BENTOMAT ST	SFT SF	199922020	00005111	150.0	15.0	2250.0	2764.0
[illegible]BENTOMAT ST	SFT SF	199922020	00005112	150.0	15.0	2250.0	2786.0
20-BENTOMAT ST	SFT SF	199922020	00005113	150.0	15.0	2250.0	2814.0
20-BENTOMAT ST	SFT SF	199922020	00005114	150.0	15.0	2250.0	2819.0
20-BENTOMAT ST	SFT SF	199922020	00005115	150.0	15.0	2250.0	2835.0
20-BENTOMAT ST	SFT SF	199922020	00005116	150.0	15.0	2250.0	2831.0
20-BENTOMAT ST	SFT SF	199922020	00005117	150.0	15.0	2250.0	2812.0
0-BENTOMAT ST	SFT SF	199922020	00005135	150.0	15.0	2250.0	2795.0 - ? damage from factory
0-BENTOMAT ST	SFT SF	199922020	00005138	150.0	15.0	2250.0	2751.0
0-BENTOMAT ST	SFT SF	199922020	00005141	150.0	15.0	2250.0	2731.0
0-BENTOMAT ST	SFT SF	199922020	00005142	150.0	15.0	2250.0	2749.0
0-BENTOMAT ST	SFT SF	199922020	00005150	150.0	15.0	2250.0	2744.0 - damage off Load
0-BENTOMAT ST	SFT SF	199922020	00005151	150.0	15.0	2250.0	2749.0
[illegible]ENTOMAT ST	SFT SF	199922020	00005153	150.0	15.0	2250.0	2760.0

ORDER TOTALS..... 38250.0 47107.0

TOTAL ITEMS..... 17

000034

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE -- 2740 PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 000108327
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #676150
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

STOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 676150 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~36000.0000~~ 17 Rolls		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

Peggy Com 8-2-99

ROSS: .00 TARE: .00 NET: 46,188.00

Del M-Thurs 7 A.M- 1 P.M Only
Must Call Ahead
Jim McDonough
513-648-5021

ct to Section 7 of conditions, if this shipment is delivered to the consignee without recourse on nsignor, the consignor shall sign the following ent:
carrier shall not make delivery of this shipment t payment of freight and all other lawful charges.
LOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."
PREPAID
Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

"X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS
ct to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except s and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, ouse, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion oute to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, the applicable motor carrier classification or tariff if this is a motor carrier shipment.
hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation hipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: 000035

to certify that the above named materials are properly classified, described, ged, marked and labeled and are in proper condition for transportation ac- g to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

#2 9:40

PACKING LIST

- 2740

COLLOID ENVIRONMENTAL TECH CO
[illegible] WEST SHURE DRIVE
[illegible]NGTON HEIGHTS IL 60004

ORDER NO:.. 000108325
ORDER DATE: 5/18/0019
SHIP DATE:. 7/2999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

02 AUG 1999

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT	
20-BENTOMAT ST		SFT	SF	199922020	00005085	150.0	15.0	2250.0	2685.0	
20-BENTOMAT ST		SFT	SF	199922020	00005086	150.0	15.0	2250.0	2691.0	
20-BENTOMAT ST		SFT	SF	199922020	00005087	150.0	15.0	2250.0	2686.0	
[illegible]ENTOMAT ST		SFT	SF	199922020	00005094	150.0	15.0	2250.0	2694.0	
20-BENTOMAT ST		SFT	SF	199922020	00005118	150.0	15.0	2250.0	2827.0	
20-BENTOMAT ST		SFT	SF	199922020	00005119	150.0	15.0	2250.0	2822.0	Damage off load
20-BENTOMAT ST		SFT	SF	199922020	00005120	150.0	15.0	2250.0	2824.0	
20-BENTOMAT ST		SFT	SF	199922020	00005121	150.0	15.0	2250.0	2831.0	
20-BENTOMAT ST		SFT	SF	199922020	00005122	150.0	15.0	2250.0	2826.0	
20-BENTOMAT ST		SFT	SF	199922020	00005123	150.0	15.0	2250.0	2796.0	Damaged off load
20-BENTOMAT ST		SFT	SF	199922020	00005124	150.0	15.0	2250.0	2777.0	
20-BENTOMAT ST		SFT	SF	199922020	00005125	150.0	15.0	2250.0	2973.0	
20-BENTOMAT ST		SFT	SF	199922020	00005126	150.0	15.0	2250.0	2971.0	Damaged off load
20-BENTOMAT ST		SFT	SF	199922020	00005127	150.0	15.0	2250.0	2972.0	
20-BENTOMAT ST		SFT	SF	199922020	00005147	150.0	15.0	2250.0	2744.0	
20-BENTOMAT ST		SFT	SF	199922020	00005148	150.0	15.0	2250.0	2752.0	
[illegible]ENTOMAT ST		SFT	SF	199922020	00005149	150.0	15.0	2250.0	2745.0	

000036

ORDER TOTALS..... 38250.0 47616.0

TOTAL ITEMS..... 17

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

SD 2740

PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000
SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761S0
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:
SHIPPER'S NO: 000108325
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

7/29/99
3

TOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
6000.0000		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

Rolls

Rons 8/2/99

OSS: .00 TARE: .00 NET: 46,188.00

Dely Mon A.M.

Dely M-Th Only 7A.M-1 P.M.
Must Call Ahead.

Jim McDonough
513-648-5021

t to Section 7 of conditions, if this shipment is elivered to the consignee without recourse on nsignor, the consignor shall sign the following ent:
carrier shall not make delivery of this shipment payment of freight and all other lawful charges.

LOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ts and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion ute to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms itions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, the applicable motor carrier classification or tarrif if this is a motor carrier shipment.
hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation hipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

to certify that the above named materials are properly classified, described, ged, marked and labeled and are in proper condition for transportation ac- g to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

000037

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
[illegible]NGTON HEIGHTS IL 60004

ORDER NO:.. 000108329 -- 2740
ORDER DATE: 5/18/0019
SHIP DATE:. 8/0599

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

ARRIVED & UNLOADED 09 AUG. 1999 ✓ TBD

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST		SFT	SF 199922020	✓00005069*	150.0	15.0	2250.0	2719.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005070	150.0	15.0	2250.0	2703.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005071	150.0	15.0	2250.0	2716.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005072	150.0	15.0	2250.0	2779.0
[illegible]BENTOMAT ST		SFT	SF 199922020	✓00005073	150.0	15.0	2250.0	2775.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005074	150.0	15.0	2250.0	2775.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005075	150.0	15.0	2250.0	2712.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005095	150.0	15.0	2250.0	2724.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005096	150.0	15.0	2250.0	2699.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005097	150.0	15.0	2250.0	2722.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005098	150.0	15.0	2250.0	2720.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005099	150.0	15.0	2250.0	2716.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005100	150.0	15.0	2250.0	2725.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005101	150.0	15.0	2250.0	2724.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005102	150.0	15.0	2250.0	2724.0
20-BENTOMAT ST		SFT	SF 199922020	✓00005103	150.0	15.0	2250.0	2728.0
[illegible]BENTOMAT ST		SFT	SF 199922020	✓00005104	150.0	15.0	2250.0	2716.0

* DAMAGED

ORDER TOTALS..... 38250.0 46377.0

TOTAL ITEMS..... 17

000038

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

#2740 PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 000108329
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761SO
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

8/5/99
Carrier
1154

STOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761SO ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~36000.0000~~ 38,250 11,Rolls		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

ROSS: .00 TARE: .00 NET: 46,188.00

Now Deliv Deliv M-Th Only 7AM - 1P.M.
Must Call Ahead
Jim McDonough
513-648-5021

ct to Section 7 of conditions, if this shipment is delivered to the consignee without recourse on nsignor, the consignor shall sign the following ent:
carrier shall not make delivery of this shipment t payment of freight and all other lawful charges.

LLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, herwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ns of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, e applicable motor carrier classification or tarrif if this is a motor carrier shipment.
hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation hipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:
Roger Goodman

000039

s to certify that the above named materials are properly classified, described, ged, marked and labeled and are in proper condition for transportation ac- g to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

CUSTOMER

PACKING LIST

-- 2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
[illegible]INGTON HEIGHTS IL 60004

ORDER NO:.. 000108330
ORDER DATE: 5/18/0019
SHIP DATE:. 8/0599

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

ARRIVED & UNLOADED 09 AUG 1999 ✓ TBY

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST	SFT SF	199922020	✓00005064	150.0	15.0	2250.0	2732.0
20-BENTOMAT ST	SFT SF	199922020	✓00005066	150.0	15.0	2250.0	2731.0
20-BENTOMAT ST	SFT SF	199922020	✓00005067	150.0	15.0	2250.0	2770.0
0-BENTOMAT ST	SFT SF	199922020	✓00005068 ✗	150.0	15.0	2250.0	2743.0
[illegible]ENTOMAT ST	SFT SF	199922020	✓00005076	150.0	15.0	2250.0	2731.0
0-BENTOMAT ST	SFT SF	199922020	✓00005077	150.0	15.0	2250.0	2722.0
0-BENTOMAT ST	SFT SF	199922020	✓00005078	150.0	15.0	2250.0	2697.0
0-BENTOMAT ST	SFT SF	199922020	✓00005083	150.0	15.0	2250.0	2677.0
0-BENTOMAT ST	SFT SF	199922020	✓00005084 ✗	150.0	15.0	2250.0	2676.0
0-BENTOMAT ST	SFT SF	199922020	✓00005088 ✗	150.0	15.0	2250.0	2650.0
0-BENTOMAT ST	SFT SF	199922020	✓00005089	150.0	15.0	2250.0	2660.0
0-BENTOMAT ST	SFT SF	199922020	✓00005090	150.0	15.0	2250.0	2690.0
0-BENTOMAT ST	SFT SF	199922020	✓00005091	150.0	15.0	2250.0	2655.0
0-BENTOMAT ST	SFT SF	199922020	✓00005092	150.0	15.0	2250.0	2651.0
0-BENTOMAT ST	SFT SF	199922020	✓00005093	150.0	15.0	2250.0	2718.0
0-BENTOMAT ST	SFT SF	199922020	✓00005105 ✗	150.0	15.0	2250.0	2668.0
0-BENTOMAT ST	SFT SF	199922020	✓00005107	150.0	15.0	2250.0	2634.0

✗ DAMAGED

ORDER TOTALS..... 38250.0 45805.0

TOTAL ITEMS..... 17

000040

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER: 2740
SHIPPER'S NO: 000108330
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761S0
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

8/9/99
Dave J Green

STOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

NTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
8000.0000 38,250 17,20115		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

OSS: .00 TARE: .00 NET: 46,188.00

Dely Dely M-Th Only 7A.M. - 1P.M.
Must Call Ahead.
Jim McDonough
513-648-5021

to Section 7 of conditions, if this shipment is livered to the consignee without recourse on signor, the consignor shall sign the following nt:
arrier shall not make delivery of this shipment ayment of freight and all other lawful charges.

OID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

ITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms e Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, able motor carrier classification or tariff if this is a motor carrier shipment.
certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation nt, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Bally Blanket

certify that the above named materials are properly classified, described, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

000041

CUSTOMER

PACKING LIST

--2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000108319
ORDER DATE: 5/18/0019
SHIP DATE:. 7/1999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST	SFT SF	199922020	00005177	150.0	15.0	2250.0	2715.0
20-BENTOMAT ST	SFT SF	199922020	00005178	150.0	15.0	2250.0	2700.0
20-BENTOMAT ST	SFT SF	199922020	00005179	150.0	15.0	2250.0	2712.0
20-BENTOMAT ST	SFT SF	199922020	00005180	150.0	15.0	2250.0	2708.0
20-BENTOMAT ST	SFT SF	199922020	00005181	150.0	15.0	2250.0	2706.0
20-BENTOMAT ST	SFT SF	199922020	00005182	150.0	15.0	2250.0	2694.0
20-BENTOMAT ST	SFT SF	199922020	00005183	150.0	15.0	2250.0	2691.0
20-BENTOMAT ST	SFT SF	199922020	00005184	150.0	15.0	2250.0	2691.0
20-BENTOMAT ST	SFT SF	199922020	00005185	150.0	15.0	2250.0	2720.0
20-BENTOMAT ST	SFT SF	199922020	00005186	150.0	15.0	2250.0	2732.0
20-BENTOMAT ST	SFT SF	199922020	00005187	150.0	15.0	2250.0	2694.0
20-BENTOMAT ST	SFT SF	199922020	00005188	150.0	15.0	2250.0	2754.0
20-BENTOMAT ST	SFT SF	199922020	00005189	150.0	15.0	2250.0	2715.0
20-BENTOMAT ST	SFT SF	199922020	00005190	150.0	15.0	2250.0	2727.0
20-BENTOMAT ST	SFT SF	199922020	00005191	150.0	15.0	2250.0	2695.0
20-BENTOMAT ST	SFT SF	199922020	00005192	150.0	15.0	2250.0	2736.0
20-BENTOMAT ST	SFT SF	199922020	00005193	150.0	15.0	2250.0	2729.0

000042

ORDER TOTALS..... 38250.0 46119.0

TOTAL ITEMS..... 17

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE — 2740 PAGE 1

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000
SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #6761S0
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:
SHIPPER'S NO: 00010831
DEL DATE: 6/28/99 SHIP DATE: 6/24/9
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

7/9/99
[signature]
S

STOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

#1

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~6000-0000~~ 7000 7,12115 1 pallets		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

[signature] 7-13-99

GSS: .00 TARE: .00 NET: 46,188.00

Dely M-Thurs.
Dely Tuesday 7/13 7A.M-1P.M.
ONLY
Call Ahead @ Jim McDonough
24 hrs. 513-648-5021

Section 7 of conditions, if this shipment is ...ered to the consignee without recourse on ...gnor, the consignor shall sign the following ...:
...rier shall not make delivery of this shipment ...yment of freight and all other lawful charges.

...OID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

...H "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS
...ubject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ...and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood ...ct as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, ...e to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion ...ination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ... the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, ...pplicable motor carrier classification or tariff if this is a motor carrier shipment.
...y certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation ...nt, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:
[signature] Jerry Witt

...tify that the above named materials are properly classified, described, ...arked and labeled and are in proper condition for transportation ac... ...e applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

000043

PACKING LIST

- 2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000108310
ORDER DATE: 5/18/0019
SHIP DATE:. 7/0999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

1

PO: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST		SFT	SF 199922020	00005293	150.0	15.0	2250.0	2687.0
20-BENTOMAT ST		SFT	SF 199922020	00005294	150.0	15.0	2250.0	2710.0
0-BENTOMAT ST		SFT	SF 199922020	00005295	150.0	15.0	2250.0	2694.0
0-BENTOMAT ST		SFT	SF 199922020	00005296	150.0	15.0	2250.0	2687.0
ENTOMAT ST		SFT	SF 199922020	00005297	150.0	15.0	2250.0	2668.0
)-BENTOMAT ST		SFT	SF 199922020	00005298	150.0	15.0	2250.0	2680.0
)-BENTOMAT ST		SFT	SF 199922020	00005299	150.0	15.0	2250.0	2676.0
-BENTOMAT ST		SFT	SF 199922020	00005300	150.0	15.0	2250.0	2709.0
-BENTOMAT ST		SFT	SF 199922020	00005327	150.0	15.0	2250.0	2783.0
-BENTOMAT ST		SFT	SF 199922020	00005328	150.0	15.0	2250.0	2791.0
-BENTOMAT ST		SFT	SF 199922020	00005329	150.0	15.0	2250.0	2788.0
BENTOMAT ST		SFT	SF 199922020	00005330	150.0	15.0	2250.0	2774.0

RDER TOTALS..... 27000.0 32647.0

OTAL ITEMS..... 12

000044

PACKING LIST

- 2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHURE DRIVE
[illegible]INGTON HEIGHTS IL 60004

ORDER NO:.. 000108331
ORDER DATE: 5/18/0019
SHIP DATE:. 8/0999

SOLD TO: 001376
GSE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM:.. LOVELL
FRT TERMS:. PREPAID & ADD
SHIP VIA:.. NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

PO: 2292-000-OD ORDER #6761S0

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
)20-BENTOMAT ST	SFT SF	199922020	00005046	150.0	15.0	2250.0	2753.0
)20-BENTOMAT ST	SFT SF	199922020	00005047	150.0	15.0	2250.0	2761.0
)20-BENTOMAT ST	SFT SF	199922020	00005048	150.0	15.0	2250.0	2746.0
)20-BENTOMAT ST	SFT SF	199922020	00005049	150.0	15.0	2250.0	2725.0
[illegible]-BENTOMAT ST	SFT SF	199922020	00005050	150.0	15.0	2250.0	2715.0
)20-BENTOMAT ST	SFT SF	199922020	00005051	150.0	15.0	2250.0	2716.0
)20-BENTOMAT ST	SFT SF	199922020	00005052	150.0	15.0	2250.0	2727.0
)20-BENTOMAT ST	SFT SF	199922020	00005057	150.0	15.0	2250.0	2765.0
)20-BENTOMAT ST	SFT SF	199922020	00005058	150.0	15.0	2250.0	2756.0
)20-BENTOMAT ST	SFT SF	199922020	00005059	150.0	15.0	2250.0	2750.0
)20-BENTOMAT ST	SFT SF	199922020	00005060	150.0	15.0	2250.0	2717.0
20-BENTOMAT ST	SFT SF	199922020	00005061	150.0	15.0	2250.0	2711.0
20-BENTOMAT ST	SFT SF	199922020	00005062	150.0	15.0	2250.0	2720.0
20-BENTOMAT ST	SFT SF	199922020	00005063	150.0	15.0	2250.0	2799.0
20-BENTOMAT ST	SFT SF	199922020	00005079	150.0	15.0	2250.0	2812.0
20-BENTOMAT ST	SFT SF	199922020	00005081	150.0	15.0	2250.0	2689.0
[illegible]BENTOMAT ST	SFT SF	199922020	00005106	150.0	15.0	2250.0	2671.0

ORDER TOTALS.....	38250.0	46533.0
TOTAL ITEMS..... 17		

000045

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE — 2740 PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 00010833
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #676150
CAR/VEHICLE#:
SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

ROUTING/CONTRACT:

USTOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 676150 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~36000-0000~~ 17 Rolls		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

GROSS: .00 TARE: .00 NET: 46,188.00

8-12-99

Daily M-Thur Only 7-1 P.M.
Must Call Ahead
Jim McDonough
513-648-5021

ject to Section 7 of conditions, if this shipment is e delivered to the consignee without recourse on consignor, the consignor shall sign the following ement:
he carrier shall not make delivery of this shipment out payment of freight and all other lawful charges.

LLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

RK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

NTED subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood s contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion ute to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms onditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
er hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

s is to certify that the above named materials are properly classified, described, kaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

000046

- 2740

Date 8/12/99

Invoice No. 539

Willhaul

2004 Eastbrook Avenue
Casper, WY 82604

Billed to: Nationwide

Pro No.

B/L No. 108331

Weight

Date P/U 8/9/99

Commodity Bentonite

Date Dlvrd 8/12/99

Rate $

Other Charges $

Advances $

Amount Due $

Payment due on receipt. Billing and finance charges may apply for late payments

Shipper Cetco Lovellwy

Consignee Ferdwald Hurricane UT

Delivery Receipt

Commodity Received

17 rolls

Received by

Date Received 8-12-99

Mailed:_____

From:_____

000047

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

2740

PAGE 1 OF

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000

DELIVERING CARRIER:
SHIPPER'S NO: 000108332
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SOLDTO: 001376 SHIPTO: 46
CONSIGNED P.O.#: 2292-000-OD ORDER #676180
CAR/VEHICLE#:
ROUTING/CONTRACT:

SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL WY 82431

8/27/99
Mont Tran
BM32

OMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771,750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 6761S0 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

NTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~00.0000~~ Rolls		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

S: .00 TARE: .00 NET: 46,188.00

Dely M-Thurs Only 7-1 P.M
Must Call Ahead
Jim McDonough
513-648-5021

ection 7 of conditions, if this shipment is ed to the consignee without recourse on or, the consignor shall sign the following

r shall not make delivery of this shipment ient of freight and all other lawful charges.

D ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

"X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ect to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order except s and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood ontrar as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination ents to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion estination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, cable motor carrier classification or tariff if this is a motor carrier shipment.

s that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation e said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

that the Governed materials are properly classified, described, ed and labeled and are in proper condition for transportation or applicable regulations of the Department of Transportation

PLACARDS REQUIRED

PLACARDS SUPPLIED

YES NO
DRIVERS SIGNATURE

000048

ORIGINAL

SENT BY: CETCO / LOVELL; 8-30-99 7:46AM; 307 548 6413 => 513 648 5767;

BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

CARRIER NAME: NATIONWIDE
CONSIGNED TO: FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030
PHONE: 513-648-3000
SOLDTO: 001376
CONSIGNED PO #: 2292-000-0D ORDER #676150
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER: 2740

PAGE 1

SHIPPER'S NO: 00010832
DEL DATE: 6/28/99 SHIP DATE: 6/24/99
SHIPPER: Colloid Environmental
1350 West Shure Drive
Arlington Heights IL 60004

SHIPTO: 46

SHIPPING PLANT: LOVELL
EAST HWY 14
LOVELL

WY 8243 8/31/99
Ewm
334

CUSTOMER COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

TOTAL ORDER IS FOR 771.750 SF BENTOMAT ST WITH 650 CAP AND 343 BAGS
INCLUDE ORDER NUMBER 676150 ON ALL INVOICES, CONFIRM DELIVERY WITH KATHY FISHER AFTER RECEIPT OF MQA APPROVAL
MQA PACKAGES MUST BE SENT TO GSE BY 6/1/99
MANUFACTURE, SAMPLE AND HOLD FOR MQA APPROVAL

ANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
[redacted]		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46,188.0000

.00 TARE: .00 NET: 46,188.00

Dely M-Thurs Only 7-4 P.M
Must Call Ahead
Jim McDonough
513 648-5021

of conditions, if this shipment is to the consignee without recourse on the consignor shall sign the following

If not make delivery of this shipment freight and all other lawful charges.

ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

CARRIER:

PLACARDS REQUIRED

PLACARDS SUPPLIED

000049

SENT BY: CETCO / LOVELL; 8-30-99 7:46AM; 307 548 6413 => 513 648 5767;

PACKING LIST

2740

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO... 000108328
ORDER DATE: 5/18/1999
SHIP DATE: 8/27/1999

SOLD TO: 001376
CSE LINING TECHNOLOGY, INC
19103 GUNDLE ROAD

SHIP FROM: LOVELL
FRT TERMS: PREPAID & ADD
SHIP VIA: NATIONWIDE

HOUSTON TX 77073

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

PO 2210-000 OD ORDER #676150

HARRISON OH 45030

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT
20-BENTOMAT ST	SFT SF	199922020	00005003	150.0	15.0	2250.0	2724.0
20-BENTOMAT ST	SFT SF	199922020	00005004	150.0	15.0	2250.0	2718.0
0-BENTOMAT ST	SFT SF	199922020	00005005	150.0	15.0	2250.0	2697.0
0-BENTOMAT ST	SFT SF	199922020	00005006	150.0	15.0	2250.0	2702.0
0-BENTOMAT ST	SFT SF	199922020	~~00005007~~ 5044	150.0	15.0	2250.0	2688.0
BENTOMAT ST	SFT SF	199922020	00005008	150.0	15.0	2250.0	2680.0
-BENTOMAT ST	SFT SF	199922020	00005009	150.0	15.0	2250.0	2674.0
BENTOMAT ST	SFT SF	199922020	00005014	150.0	15.0	2250.0	2690.0
BENTOMAT ST	SFT SF	199922020	00005015	150.0	15.0	2250.0	2693.0
BENTOMAT ST	SFT SF	199922020	00005016	150.0	15.0	2250.0	2685.0
BENTOMAT ST	SFT SF	199922020	00005033	150.0	15.0	2250.0	2766.0
BENTOMAT ST	SFT SF	199922020	00005034	150.0	15.0	2250.0	2777.0
ENTOMAT ST	SFT SF	199922020	00005035	150.0	15.0	2250.0	2767.0
ENTOMAT ST	SFT SF	199922020	00005042	150.0	15.0	2250.0	2784.0
NTOMAT ST	SFT SF	199922020	00005043	150.0	15.0	2250.0	2790.0
NTOMAT ST	SFT SF	199922020	00005045	150.0	15.0	2250.0	2754.0

R TOTALS

ITEMS	16	36000.0	43589.0

-Changed Core Pipe Damaged ON 5007

000050

8-30-99 7:47AM; 307 548 6413 => 513 648 5767;

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1500 WEST SHORE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO... 000106332
ORDER DATE 5/19/1999
SHIP DATE 8/27/1999

2740

SOLD TO: 001376
GNE LINING TECHNOLOGY, INC.
19103 GUNDLE ROAD

HOUSTON TX 77073

SHIP FROM . LOVELL
FRT TERMS.. PREPAID & ADD
SHIP VIA... NATIONWIDE

SHIP TO: 46
FLUOR DANIEL FERNALD
DEPARTMENT OF ENERGY
7400 WILLEY ROAD

HARRISON OH 45030

O 2299-000-00 ORDER #676190

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGHT	
-BENTOMAT ST	SFT SF	199922020	00005010	150.0	15.0	2250.0	2683.0	
-BENTOMAT ST	SFT SF	199922020	00005011	150.0	15.0	2250.0	2687.0	
-BENTOMAT ST	SFT SF	199922020	00005012	150.0	15.0	2250.0	2682.0	
-BENTOMAT ST	SFT SF	199922020	00005013	150.0	15.0	2250.0	2684.0	
-BENTOMAT ST	SFT SF	199922020	00005036	150.0	15.0	2250.0	2718.0	
BENTOMAT ST	SFT SF	199922020	00005037	150.0	15.0	2250.0	2760.0	Damaged
-BENTOMAT ST	SFT SF	199922020	00005038	150.0	15.0	2250.0	2744.0	
-BENTOMAT ST	SFT SF	199922020	00005039	150.0	15.0	2250.0	2710.0	
BENTOMAT ST	SFT SF	199922020	00005040	150.0	15.0	2250.0	2812.0	
BENTOMAT ST	SFT SF	199922020	00005041	150.0	15.0	2250.0	2838.0	
BENTOMAT ST	SFT SF	199922020	00005053	150.0	15.0	2250.0	2728.0	
BENTOMAT ST	SFT SF	199922020	00005054	150.0	15.0	2250.0	2734.0	
BENTOMAT ST	SFT SF	199922020	00005055	150.0	15.0	2250.0	2773.0	Damaged
BENTOMAT ST	SFT SF	199922020	00005056	150.0	15.0	2250.0	2775.0	
BENTOMAT ST	SFT SF	199922020	00005080	150.0	15.0	2250.0	2721.0	
BENTOMAT ST	SFT SF	199922020	00005082	150.0	15.0	2250.0	2675.0	

ORDER TOTALS.....

36000.0 43724.0

ITEMS 16

000051

SENT BY: CETCO / LOVELL; 8-30-99 7:46AM; 307 548 6413 => 513 648 5767; #4

MATERIALS INVENTORY LOG

SWU EXCAVATION/OSDF (PHASE II) PROJECT
PROJECT NOs. 20102/402; CONTRACT No. FSC-614
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: July 13 - August 31, 1999 — 2740

PREPARED BY: J. Richard Schairbaum

MATERIAL DELIVERED: GCL

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
199922020	5003	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5004	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5005	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5006	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5008	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5009	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5010	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5011	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5012	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5013	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5014	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5015	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5016	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5033	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5034	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5035	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5036	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5037	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5038	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5039	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5040	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5041	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5042	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5043	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5044	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5045	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5046	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5047	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5048	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5049	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5050	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5051	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5052	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5053	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition – 2740
199922020	5054	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5055	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5056	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5057	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5058	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5059	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5060	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5061	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5062	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5063	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5064	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5065	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5066	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5067	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5068	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5069	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5070	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5071	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5072	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5073	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5074	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5075	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5076	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5077	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5078	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5079	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5080	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5081	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5082	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5083	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5084	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5085	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5086	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5087	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5088	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5089	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5090	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5091	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

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Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
199922020	5092	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5093	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5094	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5095	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5096	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5097	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5098	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5099	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5100	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5101	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5102	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5103	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5104	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5105	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5106	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5107	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5108	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5109	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5110	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5111	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5112	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5113	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5114	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5115	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5116	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5117	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5118	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5119	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5120	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5121	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5122	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5123	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5124	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5125	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5126	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5127	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5128	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5129	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
199922020	5130	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5131	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5132	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5133	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5134	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5135	15-ft. x 150-ft.	*See notes below.	Delivered damaged from manufacturer.
199922020	5136	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5137	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5138	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5139	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5140	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5141	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5142	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5143	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5144	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5145	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5146	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5147	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5148	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5149	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5150	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5151	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5152	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5153	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5154	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5155	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5156	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5157	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5158	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5159	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5160	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5161	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5162	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5163	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5164	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5165	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery. 000055
199922020	5166	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5167	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
199922020	5168	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5169	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5170	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5171	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5172	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5173	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5174	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5175	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5176	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5177	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5178	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5179	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5180	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5181	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5182	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5183	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5184	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5185	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5186	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5187	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5188	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5189	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5190	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5191	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5192	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5193	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5194	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5195	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5196	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5197	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5198	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5199	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5200	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5201	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5202	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5203	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5204	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5205	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
199922020	5206	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5207	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5208	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5209	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5210	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5211	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5212	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5213	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5214	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5215	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5216	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5217	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5218	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5219	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5220	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5221	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5222	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5223	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5224	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5225	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5226	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5227	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5228	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5229	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5230	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5231	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5232	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5233	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5234	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5235	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5236	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5237	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5238	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5239	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5240	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5241	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery. 000057
199922020	5242	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5243	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

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Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
199922020	5244	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5245	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5246	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5247	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5248	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5249	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5250	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5251	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5252	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5253	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5254	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5255	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5256	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5257	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5258	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5259	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5260	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5263	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5264	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5265	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5266	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5267	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5268	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5269	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5270	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5271	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5272	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5273	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5274	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5275	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5276	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5277	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5278	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5279	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5280	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5281	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5282	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5283	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

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Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
199922020	5284	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5285	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5286	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5287	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5288	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5289	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5290	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5291	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5292	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5293	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5294	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5295	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5296	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5297	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5298	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5299	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5300	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5301	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5302	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5303	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5304	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5305	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5306	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5307	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5308	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5309	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5310	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5311	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5312	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5313	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5314	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5315	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5316	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5317	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5318	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5319	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5320	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5321	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
199922020	5322	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5323	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5324	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5325	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5326	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5327	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5328	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5329	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5330	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5331	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5332	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5333	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5334	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5335	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5336	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5337	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5338	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5339	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5340	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5341	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5342	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5343	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5344	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5345	15-ft. x 150-ft.	*See notes below.	Possibly damaged during unloading.
199922020	5346	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5347	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5348	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5349	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5350	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5351	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5352	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5353	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5354	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5355	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5356	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5357	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5358	15-ft. x 150-ft.	*See notes below.	Damaged during unloading.
199922020	5359	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
199922020	5360	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5361	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5362	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5363	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.
199922020	5364	15-ft. x 150-ft.	*See notes below.	No damage noted upon delivery.

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HYDRAULIC CONDUCTIVITY TEST RESULTS

GCL INDEX FLUX / PERMEABILITY TEST (1)

-- 2740

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-1
Sample Number:	8125
Material Type:	GCL
Expected/Specified Value:	
Date Received:	7/30/1999

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.58	10.31	80.0	75.0	5.0	77.0	DDI	3.9E-9	1.8E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 22±3 °C.

000063

Tested/Checked by: CR Date: 8-5-99 Approved by: BSS Date: 8-5-99

Geotechnical, Environmental and Material Testing Laboratory

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-- 2740

GCL INDEX FLUX / PERMEABILITY TEST (1)

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-2
Sample Number:	8064
Material Type:	GCL
Expected/Specified Value:	
Date Received:	7/22/1999

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.61	10.42	79.9	74.9	5.0	77.0	DDI	3.9E-9	1.9E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 22±3 °C.

000064

Tested/Checked by: ZR Date: 8-5-99 Approved by: BES Date: 8-5-99

GCL INDEX FLUX / PERMEABILITY TEST (1) -- 2740

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-3
Sample Number:	8057
Material Type:	GCL
Expected/Specified Value:	
Date Received:	7\19\99

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.66	9.93	80.0	75.0	5.0	77.0	DDI	6.1E-9	3.2E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 22±3 °C.

000065

Tested/Checked by: CAM Date: 7/27/99 Approved by: BES Date: 7-27-99

Geotechnical, Environmental and Material Testing Laboratory

A division of GeoSyntec Consultants Laboratories

GCL INDEX FLUX / PERMEABILITY TEST (1) — 2740

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-4
Sample Number:	8013
Material Type:	CETCO GCL-BENTOMAT
Expected/Specified Value:	
Date Received:	7/8/1999

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.6	10.3	80.0	75.0	5.0	77.0	DDI	5.6E-9	2.2E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 21±3 °C, laboratory humidity at 50±15 %.

000066

Tested/Checked by: AB Date: 7/12 Approved by: BSS Date: 7-13-99

2740

GCL INDEX FLUX / PERMEABILITY TEST (1)

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-5
Sample Number:	8014
Material Type:	GCL
Expected/Specified Value:	
Date Received:	7\8\99

Specimen Number	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic Conductivity
	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	(cm/s)
1	0.64	10.33	80.0	75.0	5.0	77.0	DDI	8.5E-9	3.8E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 21±3 °C.

000067

Tested/Checked by: TR Date: 7-15-99 Approved by: BSS Date: 7-15-99

GCL INDEX FLUX / PERMEABILITY TEST (1) -- 2740

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-6 / Lot #199922020 / Roll # 5235
Sample Number:	7968
Material Type:	GCL
Expected/Specified Value:	
Date Received:	6/28/1999

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic (4)
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.7	10.1	80.0	75.0	5.0	77.0	DDI	1.1E-8	5.9E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water
4. At the project engineers request, dye was injected into specimen 7/9/99. Dye was observed passing through specimen 7/12/99 and then the specimen was removed from cell. Dye results were inconclusive as to the direction of flow.

* Deviations:
Laboratory temperature at 21∓3 °C, laboratory humidity at 50∓15 %.

000068

Tested/Checked by: AB Date: 7/12 Approved by: BES Date: 7-13-99

GCL INDEX FLUX / PERMEABILITY TEST [1]

2740

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-6
Sample Number:	7968.2
Material Type:	CETCO GCL-BENTOMAT
Expected/Specified Value:	
Date Received:	6/28/1999

Specimen	Specimen Final Conditions [2]		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid [3] (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.7	10.3	80.0	75.0	5.0	77.0	DDI	5.1E-9	2.3E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 21∓3 °C, laboratory humidity at 50∓15 %.

000009

Tested/Checked by: AB Date: 7/12 Approved by: BES Date: 7-13-99

Geotechnical, Environmental and Material Testing Laboratory

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2740

GCL INDEX FLUX / PERMEABILITY TEST (1)

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR1
Project Number:	GQ0409-04.1
Client Project Number:	N/A
Client/Site ID:	GCL-99-6
Sample Number:	7968.3
Material Type:	GCL
Expected/Specified Value:	
Date Received:	7\13\99

Specimen	Specimen Final Conditions (2)		Test Conditions					Flux	Hydraulic
Number	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid (3) (-)	$(m^3/m^2)/s$	Conductivity (cm/s)
1	0.59	10.19	80.0	75.0	5.0	77.0	DDI	6.4E-9	2.9E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 21±3 °C.

000070

Tested/Checked by: ZR Date: 7-19-99 Approved by: BSS Date: 7-19-99

2740

GCL INDEX FLUX / PERMEABILITY TEST [1]

ASTM D5887 *

Project Name:	FERNALD OSDF-OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-7
Sample Number:	7911
Material Type:	CETCO GCL-BENTOMAT
Expected/Specified Value:	
Date Received:	6/21/1999

Specimen Number	Specimen Final Conditions [2]		Test Conditions					Flux	Hydraulic Conductivity
	Spec. Thickness (cm)	Spec. Diameter (cm)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Influent Press. (psi)	Permeant Liquid [3] (-)	$(m^3/m^2)/s$	(cm/s)
1	0.7	10.4	80.0	75.0	5.0	77.0	DDI	6.7E-9	3.3E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Values presented are the final dimensions of the clay component of GCL.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:
Laboratory temperature at 21±3 °C, laboratory humidity at 50±15 %.

000071

Tested/Checked by: AB Date: 7/2 Approved by: BSS Date: 7-3-99

Geotechnical, Environmental and Material Testing Laboratory

A division of GeoSyntec Consultants Laboratories

FLEXIBLE WALL PERMEABILITY TEST[1]

2740

ASTM D5887

Project Name:	FERNALD OSDF - OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-8 / Lot. # 199922020 / Roll # 5322
Sample Number:	7769
Material Type:	GCL
Expected/Specified Value:	

Specimen	Test Specimen Initial Conditions					Test Conditions					Hydraulic
No.	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content (%)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Permeant Liquid [3] (-)	Average Gradient (-)	Conductivity (cm/s)
1	GCL	0.8	10.0	54.5	20.8	80.3	75.3	5.0	DDI	154.5	3.4E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Specimen preparation: ST = Shelby Tube, R = Remolded, B = Block Sample, GCL = Geosynthetic Clay Liner.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

Deviations:

Test Conditions: Laboratory Temperature at 21±3 °C, Laboratory Humidity at 50±10 %

Test specimen final conditions are not presented.

000072

Tested/Checked by: TR Date: 6-21-99 Approved by: BSS Date: 6-21-99

-- 2740

FLEXIBLE WALL PERMEABILITY TEST[1]

ASTM D5887

Project Name:	FERNALD OSDF - OPTION YEAR 1
Project Number:	GQ0409
Client Project Number:	N/A
Client/Site ID:	GCL-99-9 / Lot. # 199922020 / Roll # 5360
Sample Number:	7767
Material Type:	GCL
Expected/Specified Value:	

Specimen	Test Specimen Initial Conditions					Test Conditions					Hydraulic
No.	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content (%)	Cell Press. (psi)	Back Press. (psi)	Consolid. Press. (psi)	Permeant Liquid [3] (-)	Average Gradient (-)	Conductivity (cm/s)
1	GCL	0.7	10.4	46.2	20.8	76.9	74.9	2.0	DDI	167.3	2.4E-9

Notes:

1. Method C, "Falling-Head, Increasing-Tailwater" test procedures were followed during the testing.
2. Specimen preparation: ST = Shelby Tube, R = Remolded, B = Block Sample, GCL = Geosynthetic Clay Liner.
3. Type of permeant liquid: DTW = Deaired Tap Water, DDI = Deaired Deionized Water

Deviations:

Test Conditions: Laboratory Temperature at 21±3 °C, Laboratory Humidity at 50±10 %

Test specimen final conditions are not presented.

000073

Tested/Checked by: ZR Date: 6-21-99 Approved by: [illegible] Date: 6-21-99

DIRECT SHEAR TEST RESULTS

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-11

-- 2740

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-1). GCL's initial moisture content was 23.3%. GCL's final moisture content ranged from 58 to 98% 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.

DKP
11 August 1999

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-1G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-1) with woven geotextile against geomembrane. GCL's initial moisture content was 23.8%. GCL's final moisture content ranged from 42 to 80% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-1); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

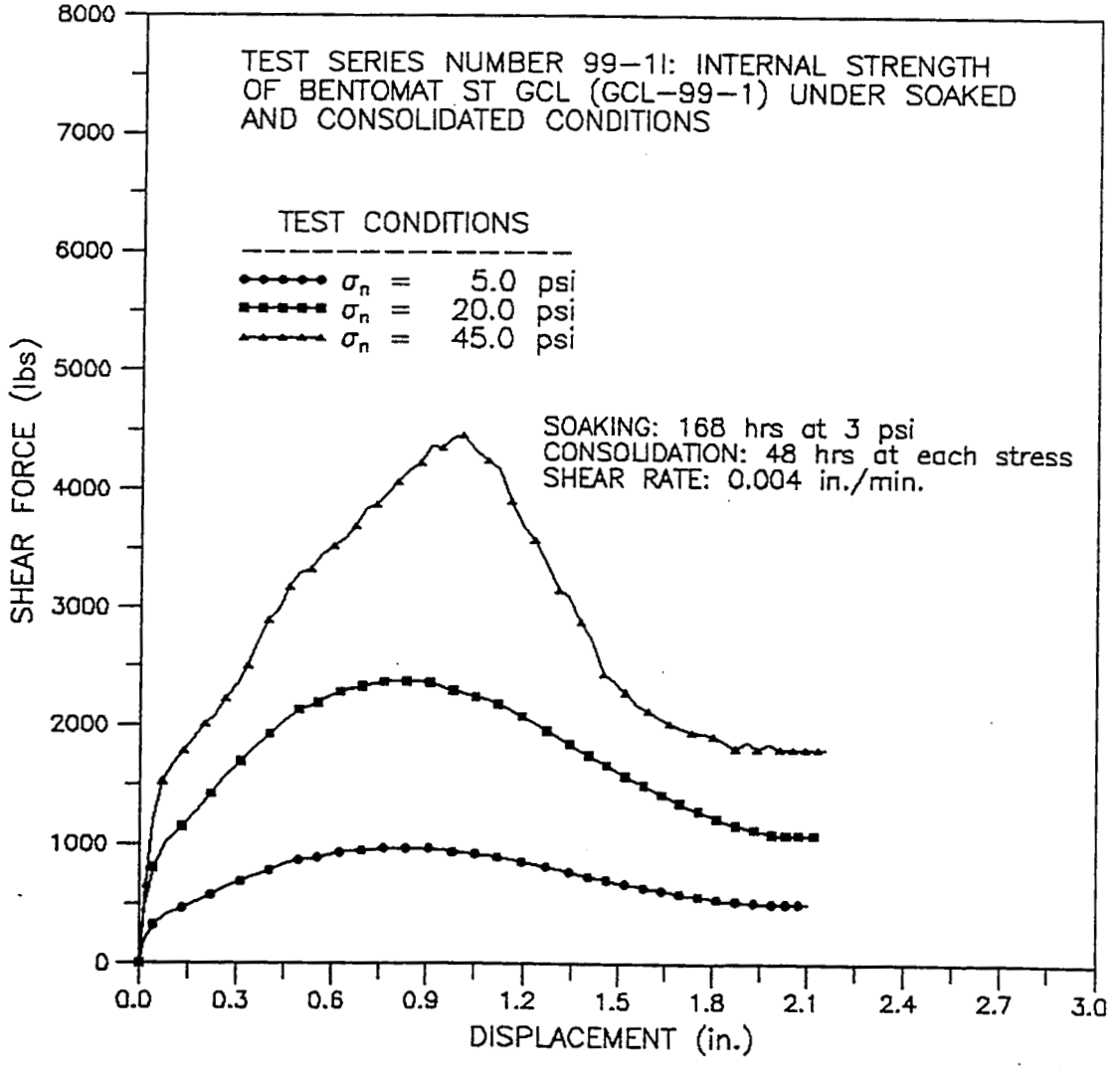
Test Procedures for Each Normal Stress Condition:

- 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.

DKP
11 August 1999

-- 2740

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.

DKP
11 AUGUST 1999

000077

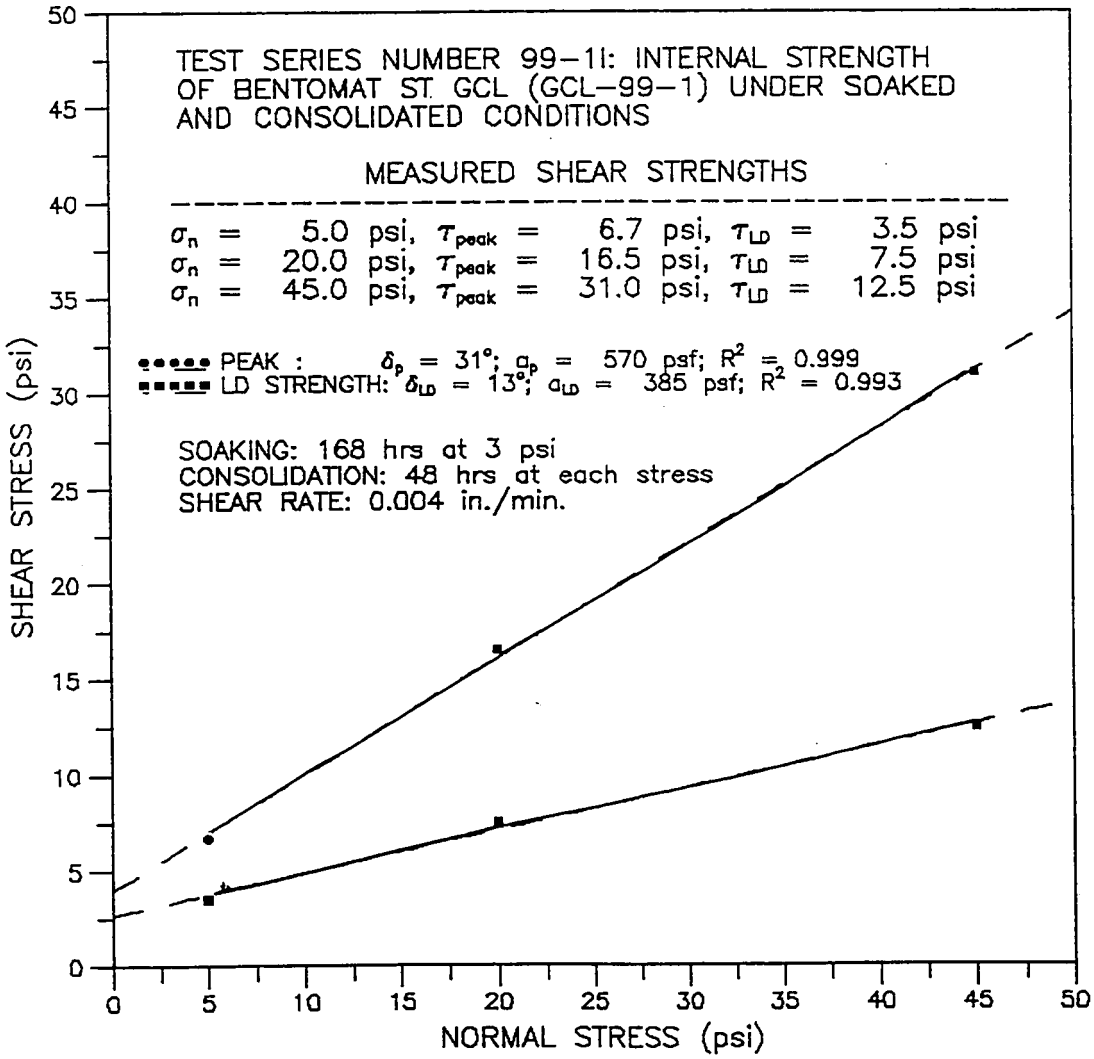
DATE TESTED: 28 JULY TO 6 AUGUST 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940001
FILE NO.	

2740

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.

000078

DKP 11 August 1999

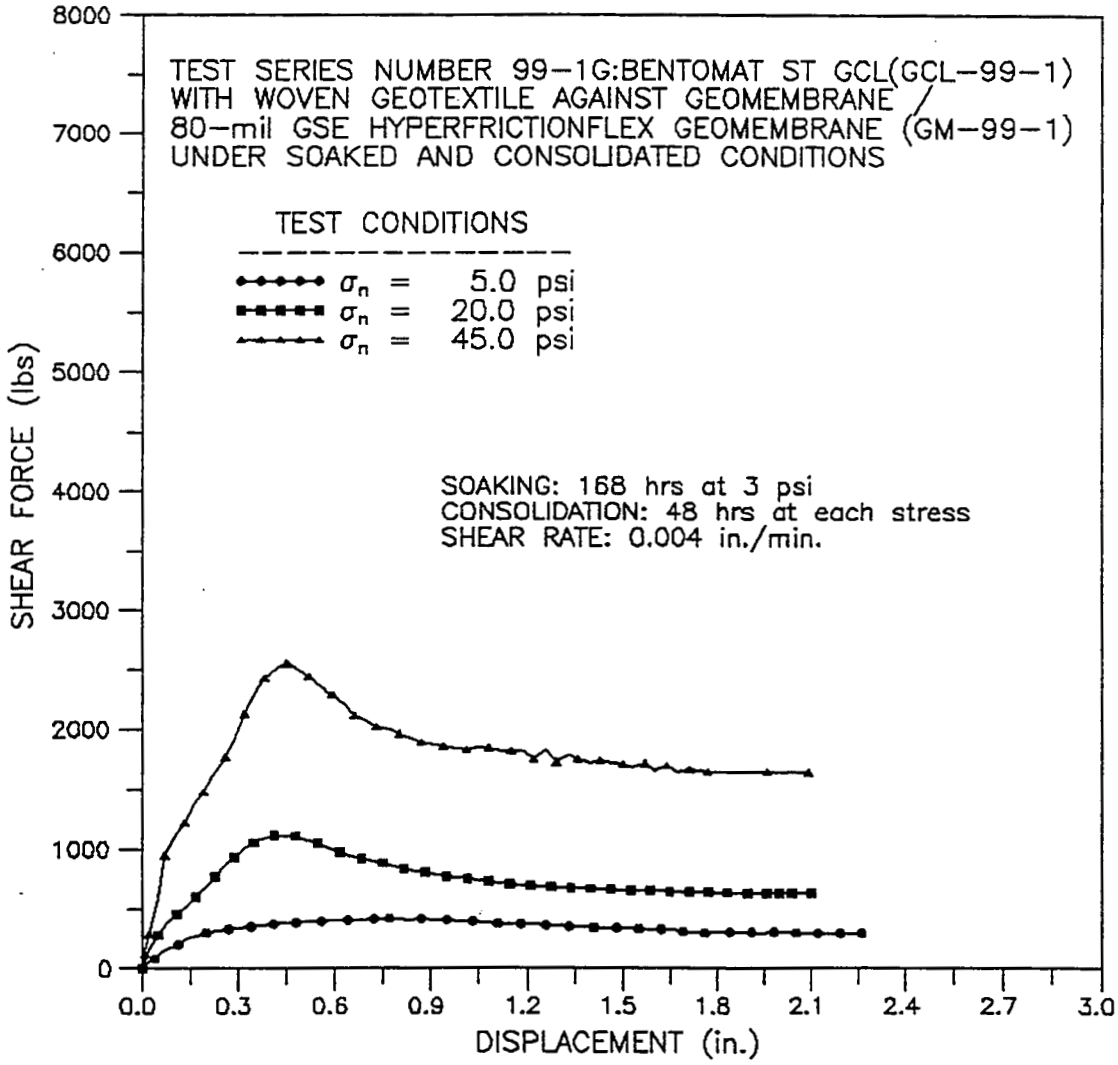
DATE TESTED: 28 JULY TO 6 AUGUST 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940001
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) Shear failure was observed to occur at the intended interface.

000079

DKP
11 August 1999

DATE TESTED: 31 JULY TO 9 AUGUST 1999

GEOSYNTEC CONSULTANTS

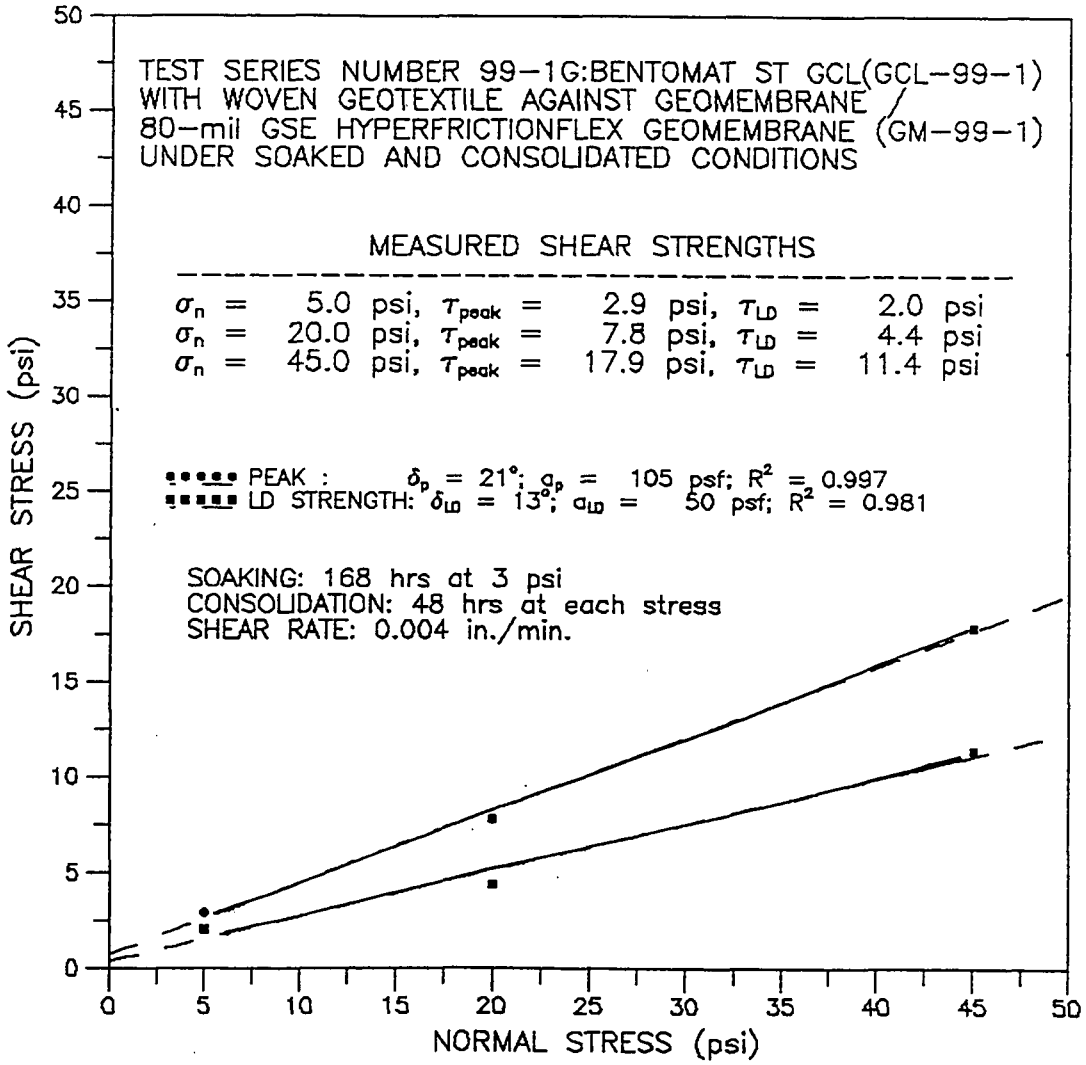
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940001
FILE NO.	

NOTE: Large displacement shear strength should be based on 2-in displacement rather than end-of-test. However, the end-of-test values reported here will be less than or equal to the 2-in values.
DKG

2740

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) Shear failure was observed to occur at the intended interface.

000080

DKP
11 August 1999

DATE TESTED: 31 JULY TO 9 AUGUST 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940001
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-2I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-2). GCL's initial moisture content was 20.2%. GCL's final moisture content ranged from 61 to 90% 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.

DKP
6 AUG 99

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-2G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-2) with woven geotextile against geomembrane. GCL's initial moisture content was 20.2%. GCL's final moisture content ranged from 46 to 79% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-2); 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.

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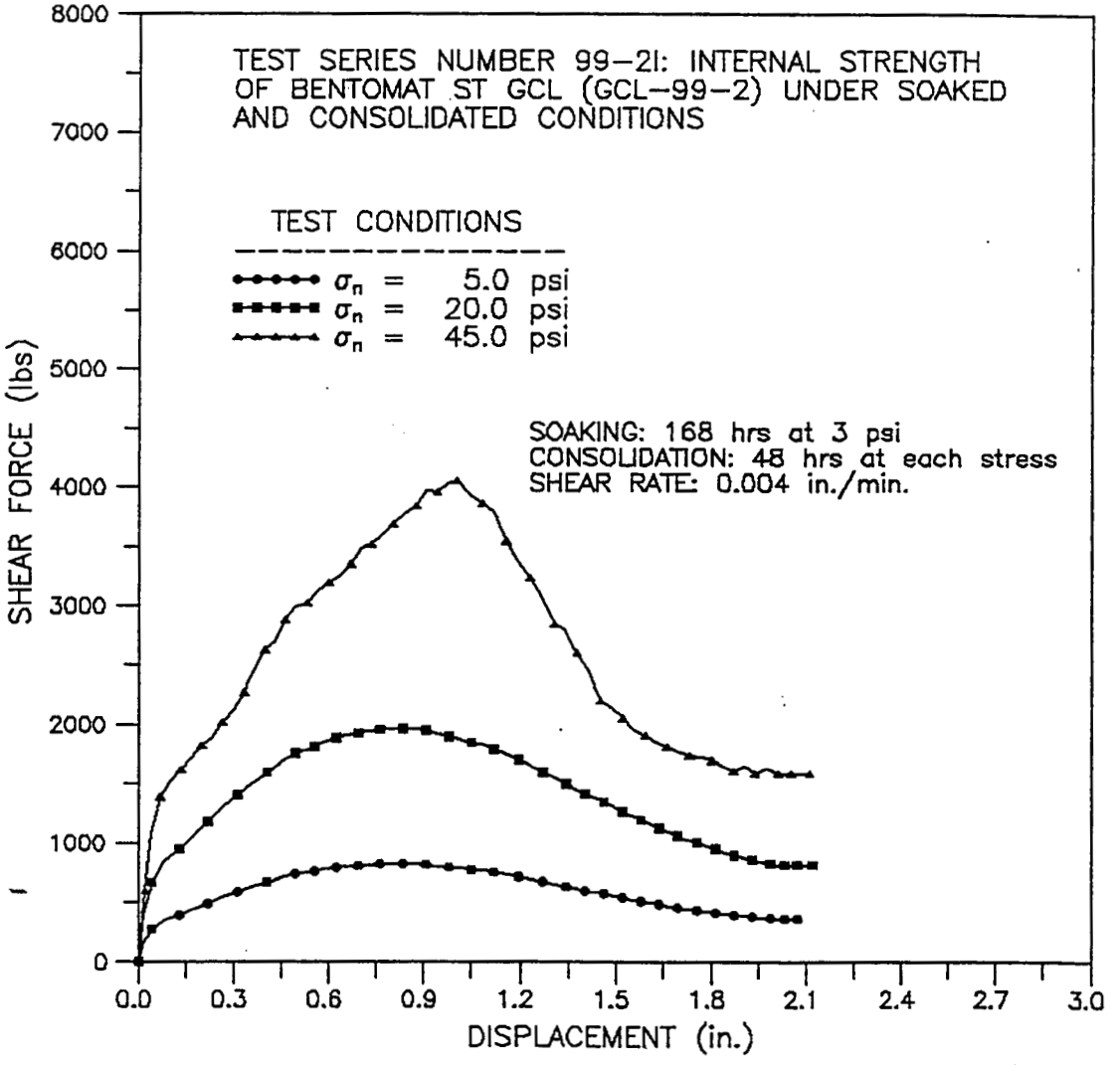
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

DKP
6 Aug 99

000083

DATE TESTED: 21 TO 30 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940002
FILE NO.	

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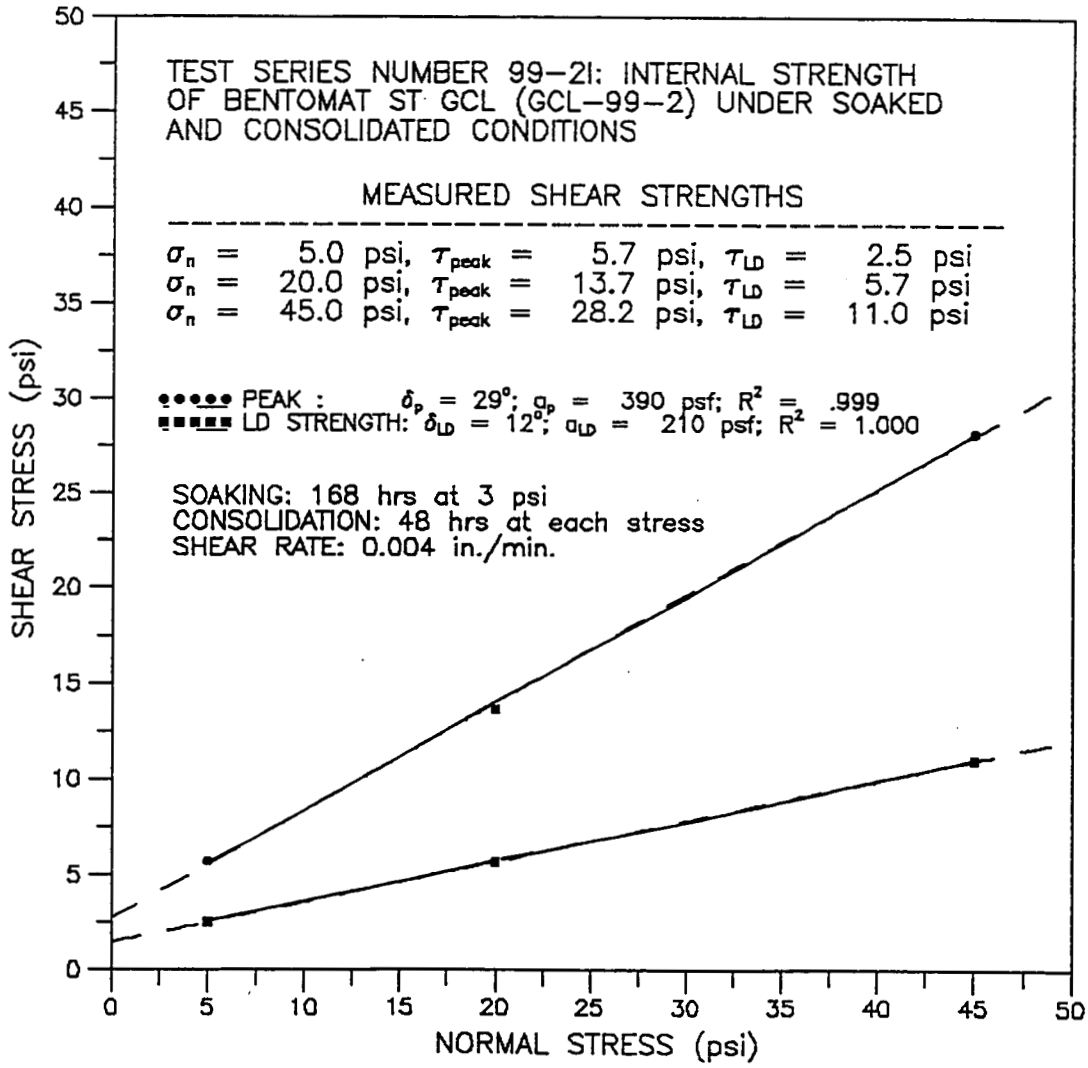
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

000084

DATE TESTED: 21 TO 30 JULY 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9940002
FILE NO.	

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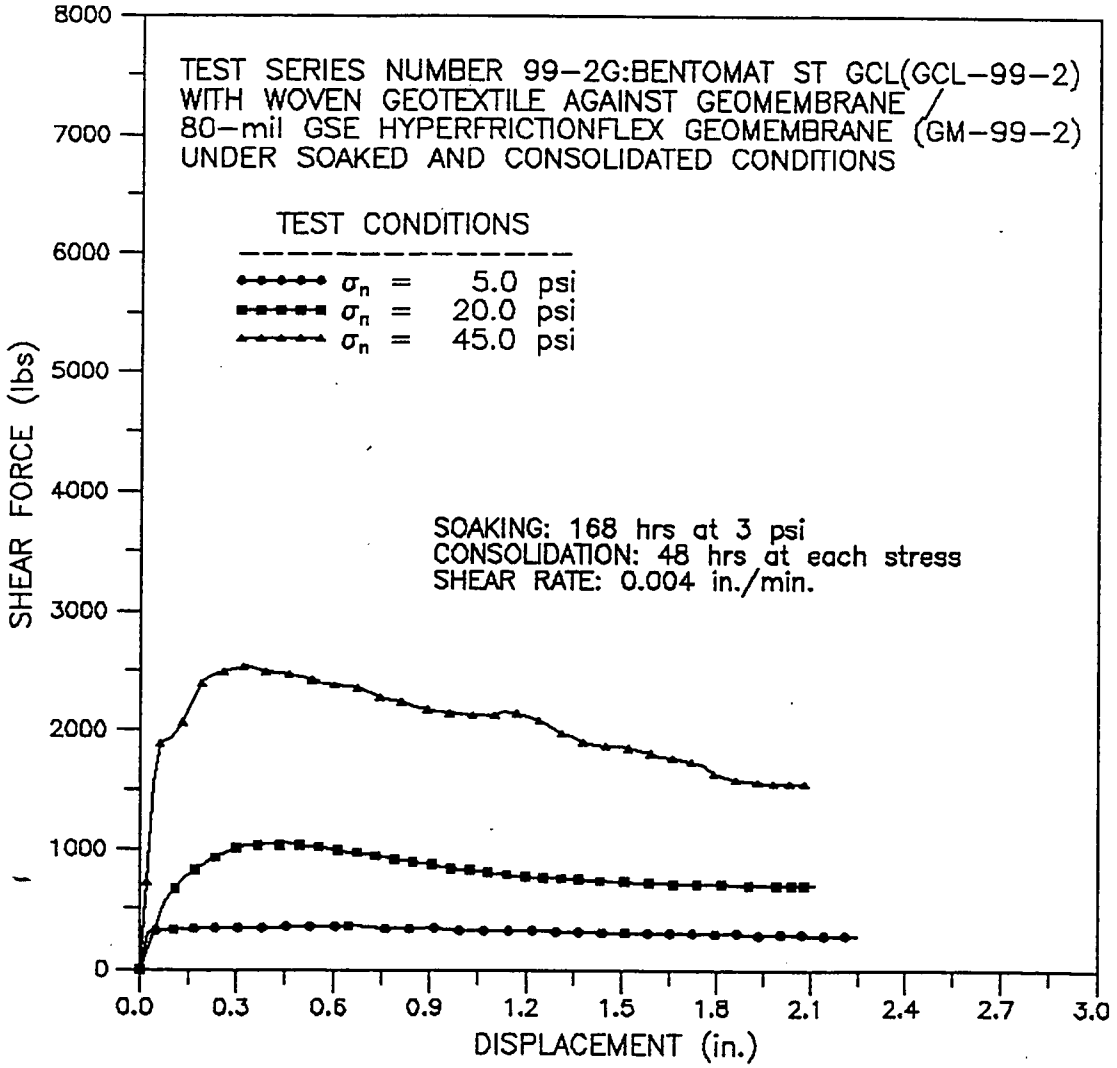
FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



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) Shear failure was observed to occur at the intended interface.

DKP
6 Aug 99

000085

DATE TESTED: 24 JULY TO 2 AUGUST 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940002
FILE NO.	

Note: Large displacement shear strength should be based on 2-in displacement rather than end-of-test. However, the end-of-test values reported here will be ~~[illegible]~~ DKP less than or equal to the 2-in values. OK DKP

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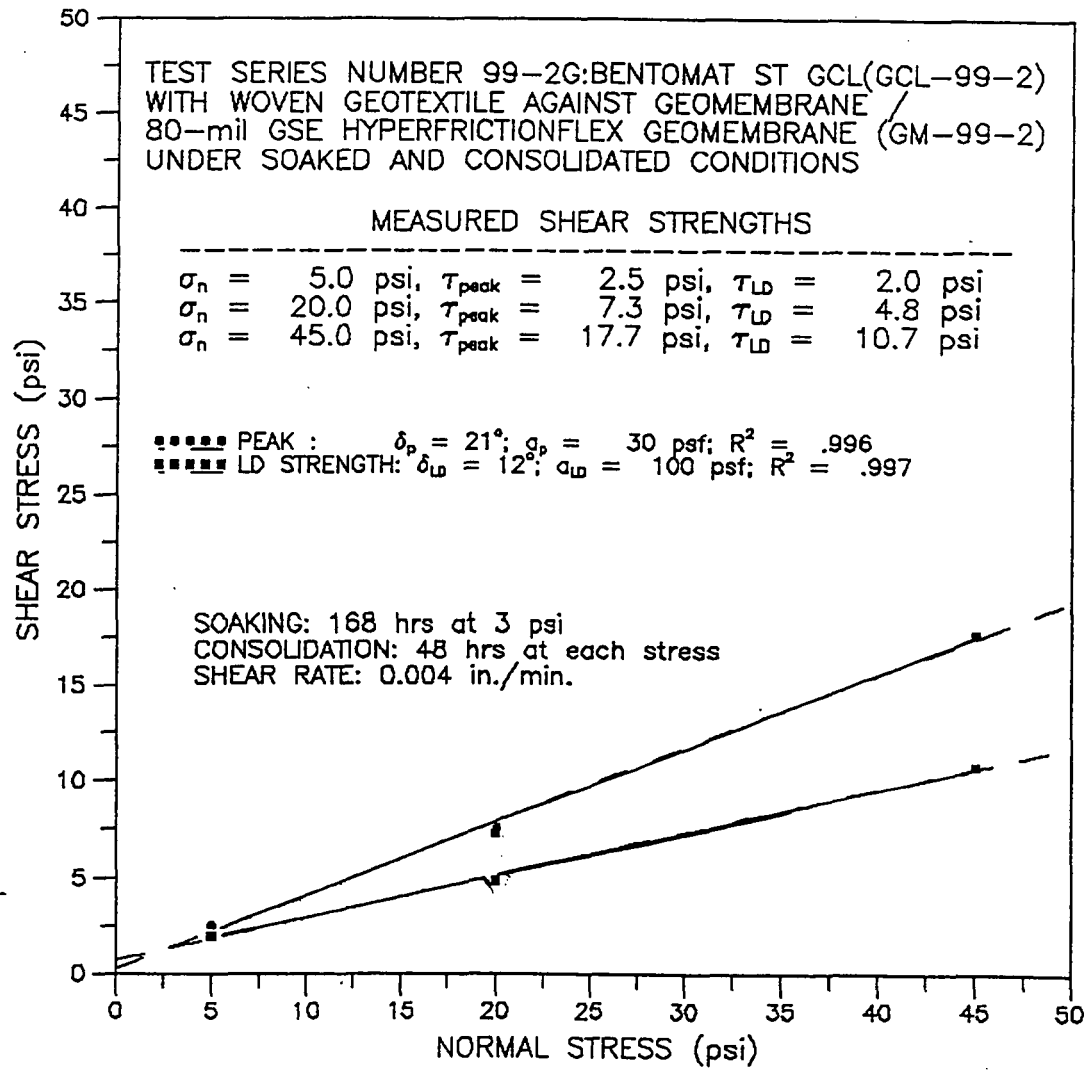
FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



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) Shear failure was observed to occur at the intended interface.

000086
DKP 6 Aug 99

DATE TESTED: 24 JULY TO 2 AUGUST 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940002
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-3I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-3). GCL's initial moisture content was 22.8%. GCL's final moisture content ranged from 54 to 97% 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.

DKP 28 July 1999

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-3G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-3) with woven geotextile against geomembrane. GCL's initial moisture content was 21.1%. GCL's final moisture content ranged from 55 to 91% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-3); and
- lower shear box: bedding layer of compacted concrete sand.

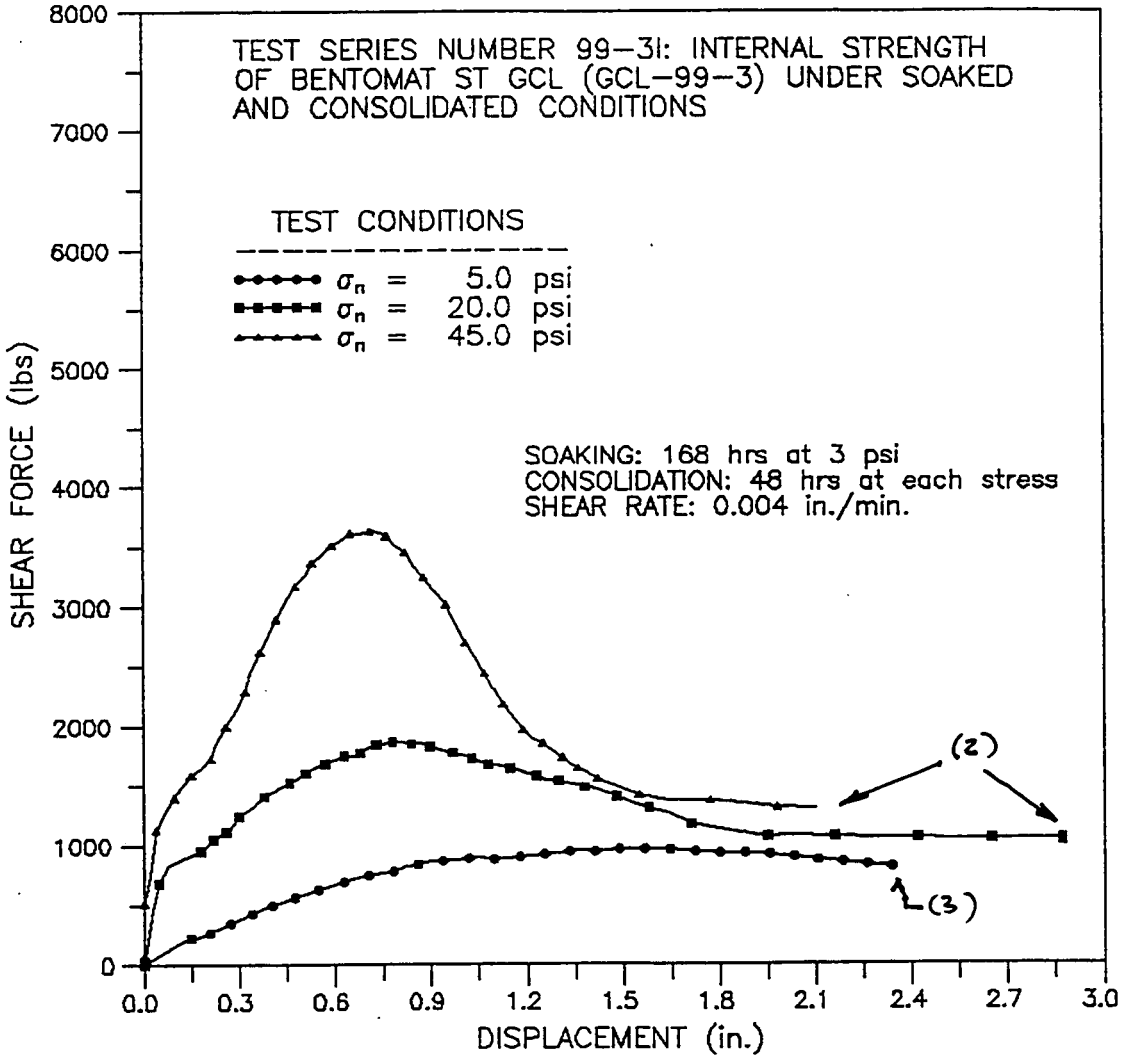
Test Interface: GCL against geomembrane

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.

DIG 28 July 1999

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.

DKP
28 July 1999

000089

DATE TESTED: 14 JULY TO 23 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940003
FILE NO.	

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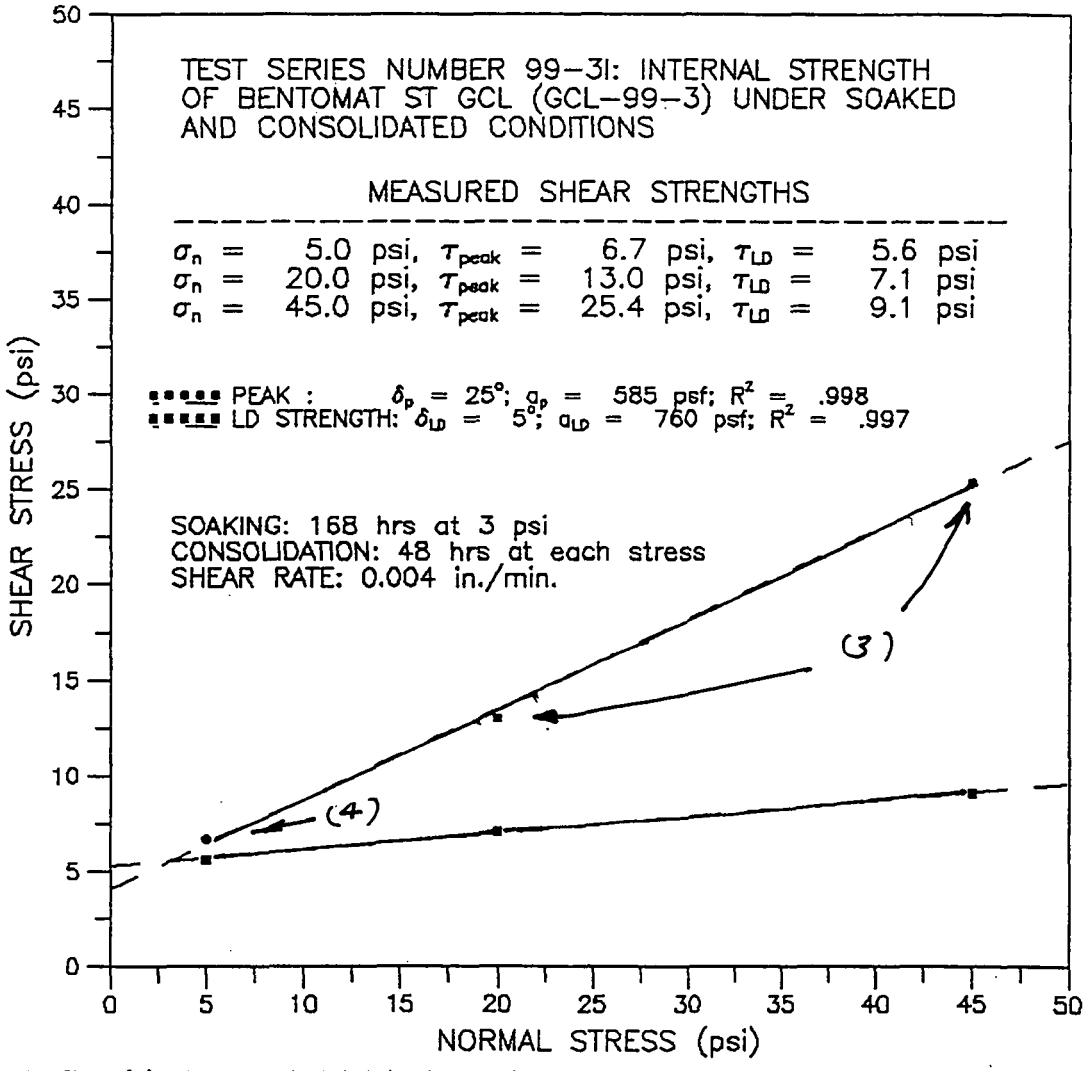
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

000090

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28 July 1999

DATE TESTED: 14 JULY TO 23 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940003
FILE NO.	

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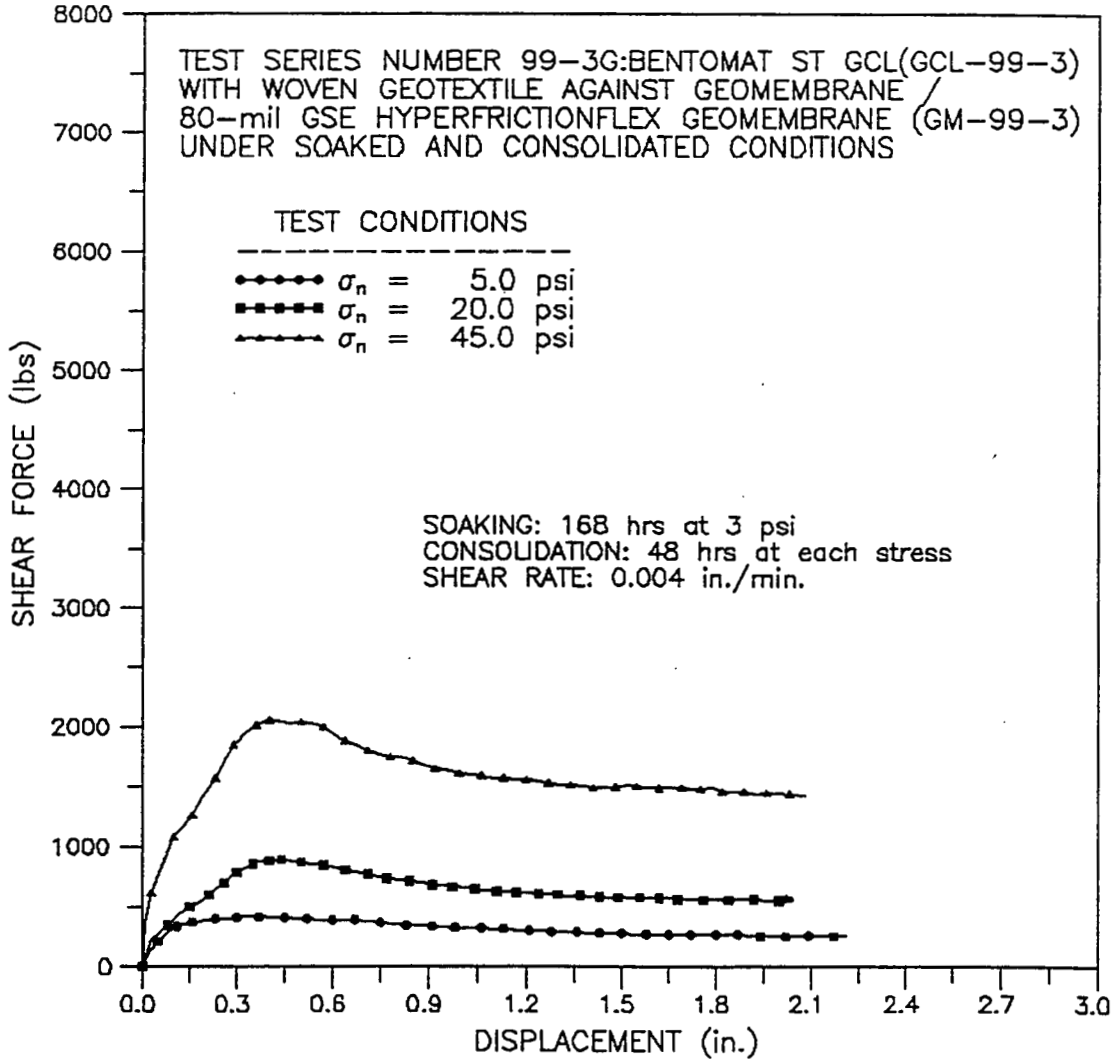
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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) Shear failure was observed to occur at the intended interface.

000031

DKP 29 July 1999

DATE TESTED: 17 TO 26 JULY 1999

GEOSYNTEC CONSULTANTS

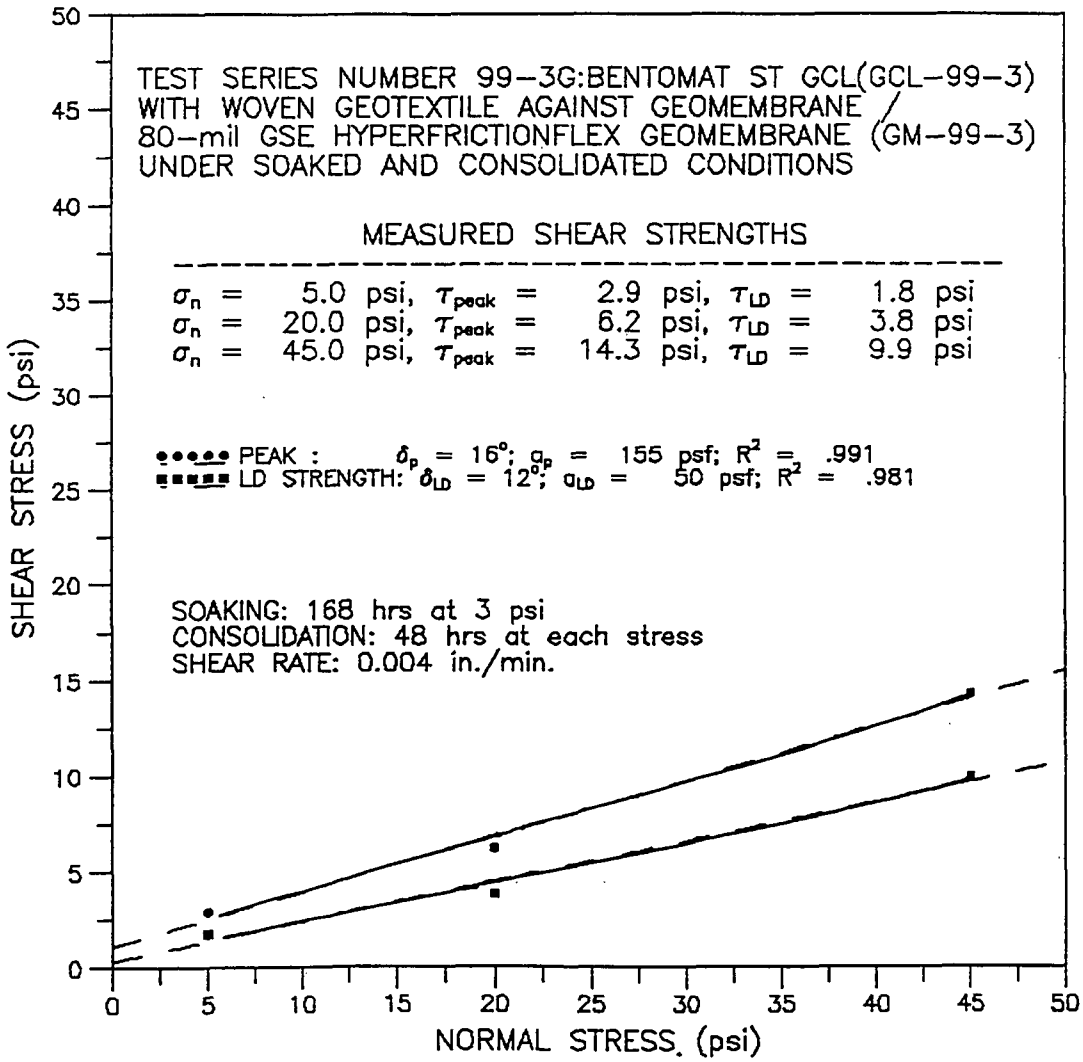
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GO0409-04
DOCUMENT NO.	F9940003
FILE NO.	

2740

NOTE: Large Displacement Shear Strength should be based on 2-in displacement rather than end-of-test. However, the end-of-test values reported here will be less than or equal to the 2-in values. DKP

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) Shear failure was observed to occur at the intended interface.

000092

DKP 28 July 1999

DATE TESTED: 17 TO 26 JULY 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940003
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-4I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-4). GCL's initial moisture content was 19.8%. GCL's final moisture content ranged from 57 to 90% 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.

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-4G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-4) with woven geotextile against geomembrane. GCL's initial moisture content was 19.9%. GCL's final moisture content ranged from 55 to 92% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-5); 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.

DKP 22 July 1999

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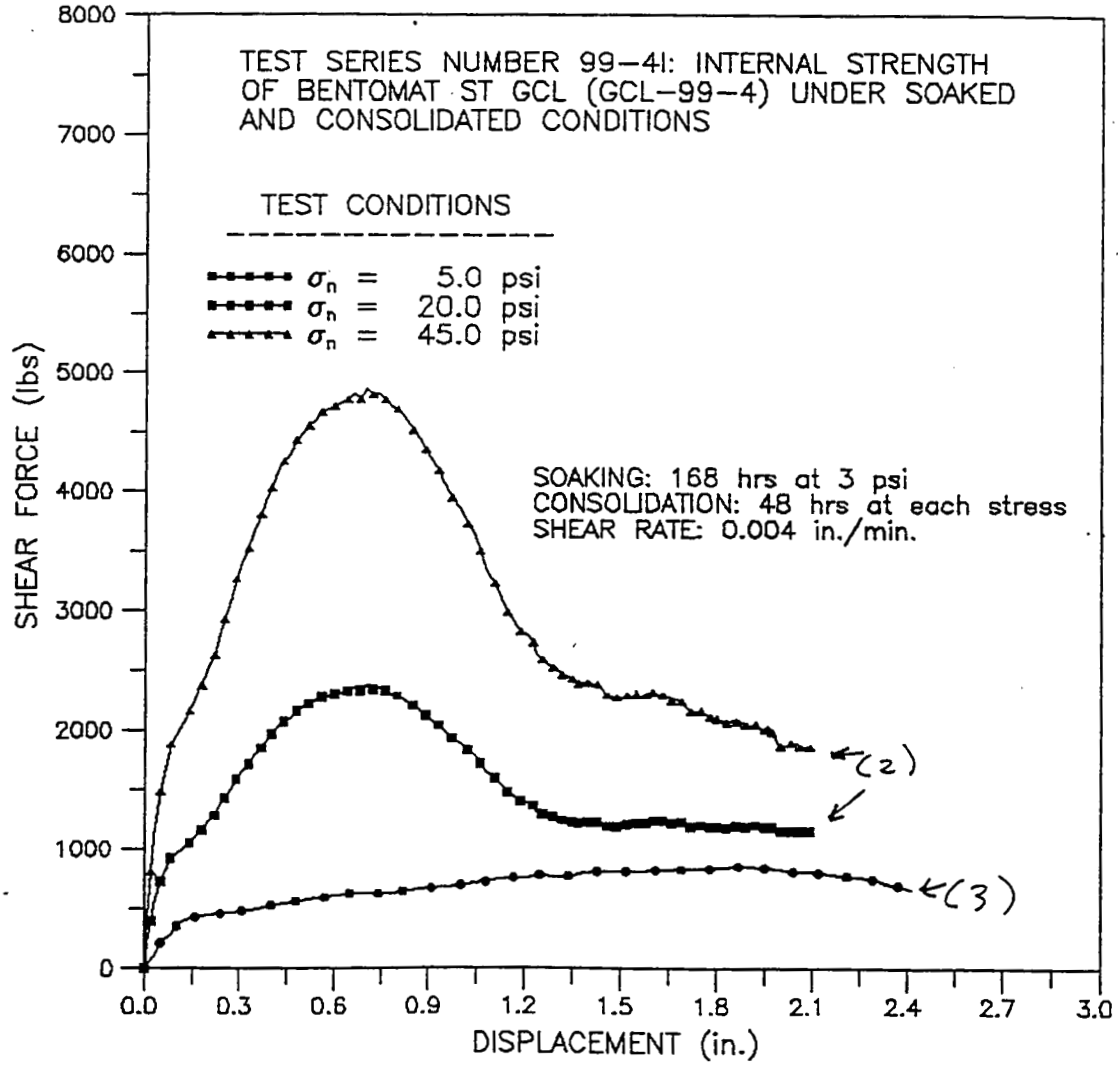
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

DKP
22 July 1999

000095

DATE TESTED: 7 TO 16 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	CQ0409-04
DOCUMENT NO.	F9940004
FILE NO.	

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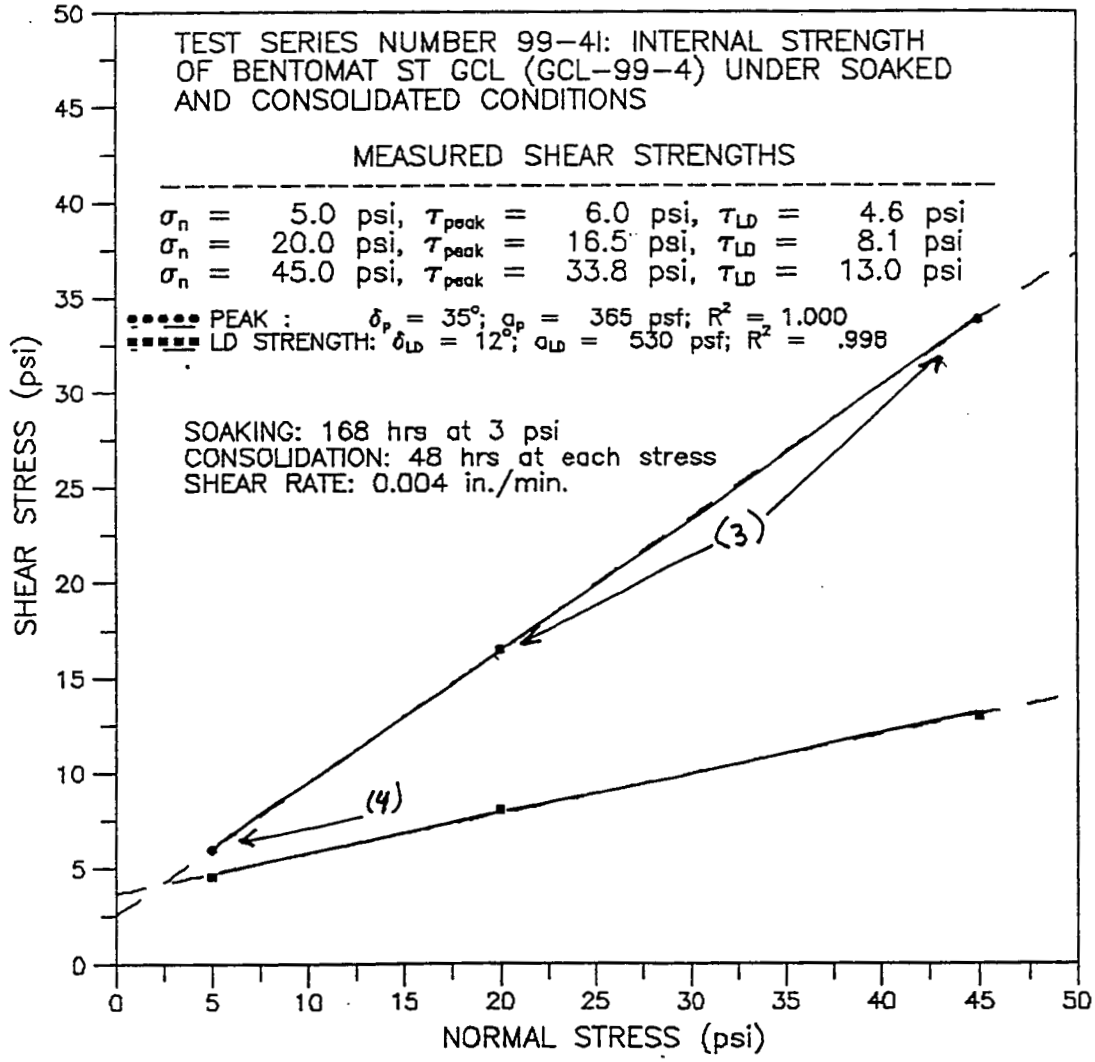
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

000096

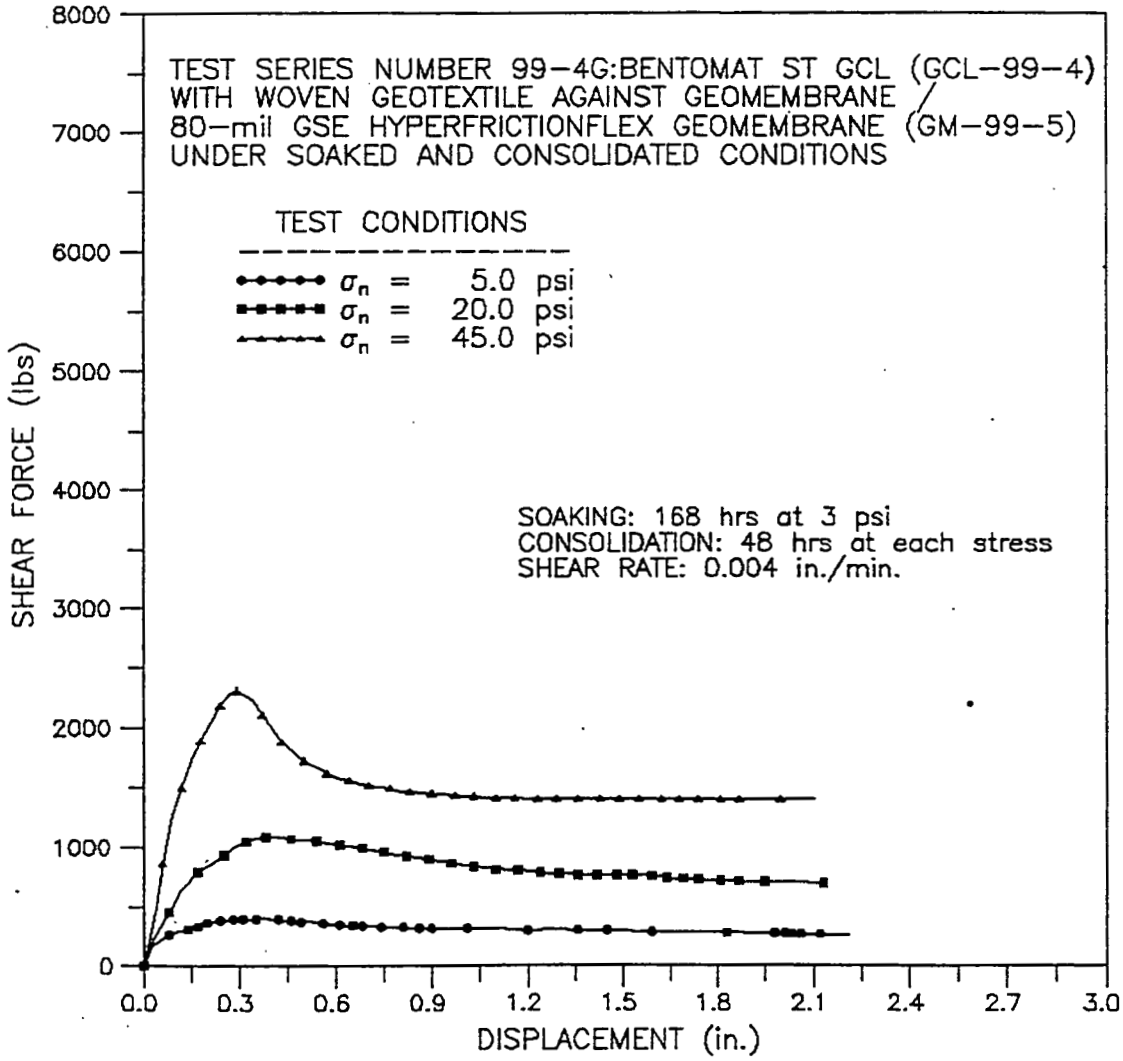
DKP
22 July 1999

DATE TESTED: 7 TO 16 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940004
FILE NO.	

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



NOTE: 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.

000097

DKP
22 July 1999

DATE TESTED: 10 TO 19 JULY 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940004
FILE NO.	

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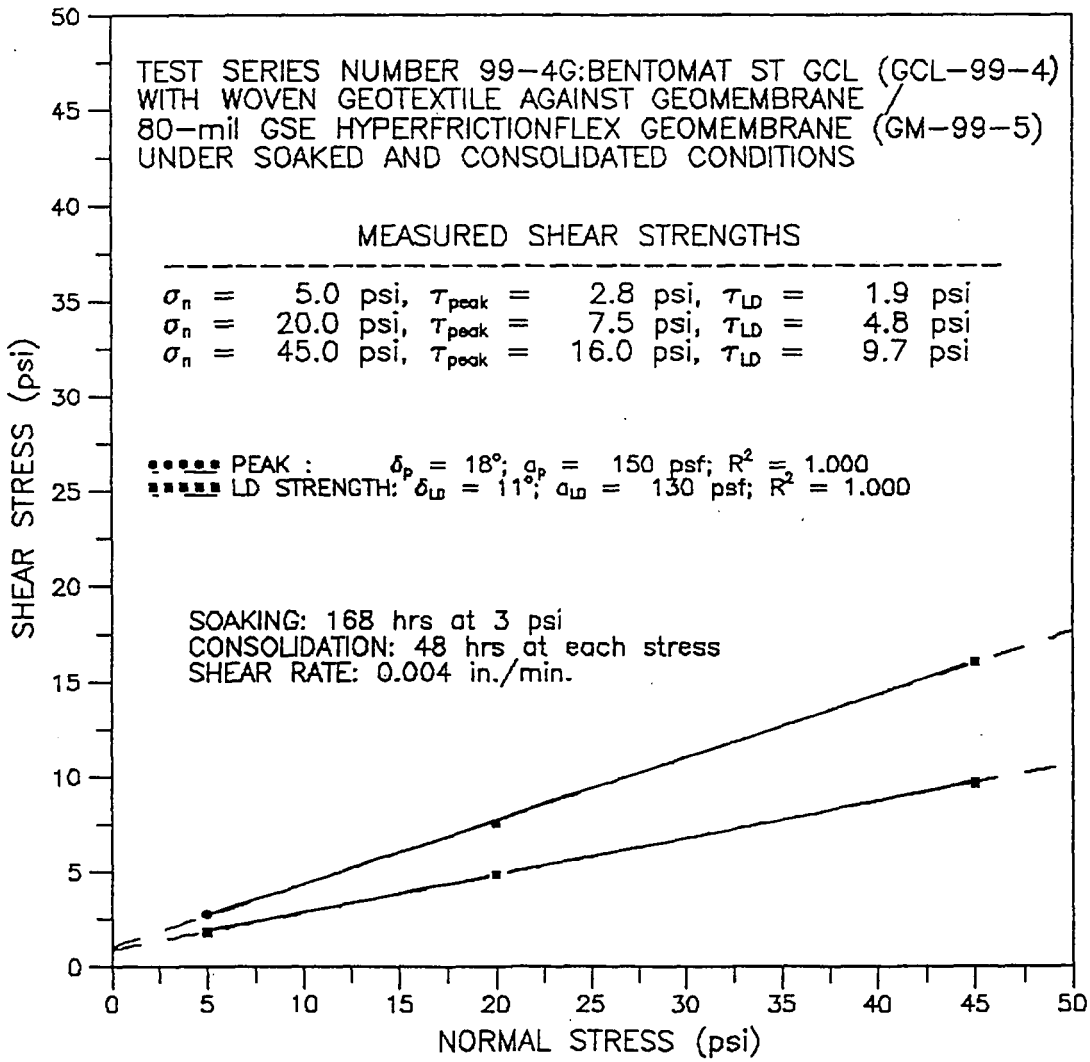
NOTE: Large Displacement Shear Strength should be based on 2-in. displacement rather than end-of-test. However, the end-of-test values reported here will be less than or equal to the 2-in values. OK DKP

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) Shear failure was observed to occur at the intended interface.

000098

DKP 22 July 1999

DATE TESTED: 10 TO 19 JULY 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940004
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-5I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-5). GCL's initial moisture content was 20.1%. GCL's final moisture content ranged from 61 to 102% 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.

DKP
15 July 1999

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-5G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-5) with woven geotextile against geomembrane. GCL's initial moisture content was 21.2%. GCL's final moisture content ranged from 55 to 97% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-5); and
- lower shear box: bedding layer of compacted concrete sand.

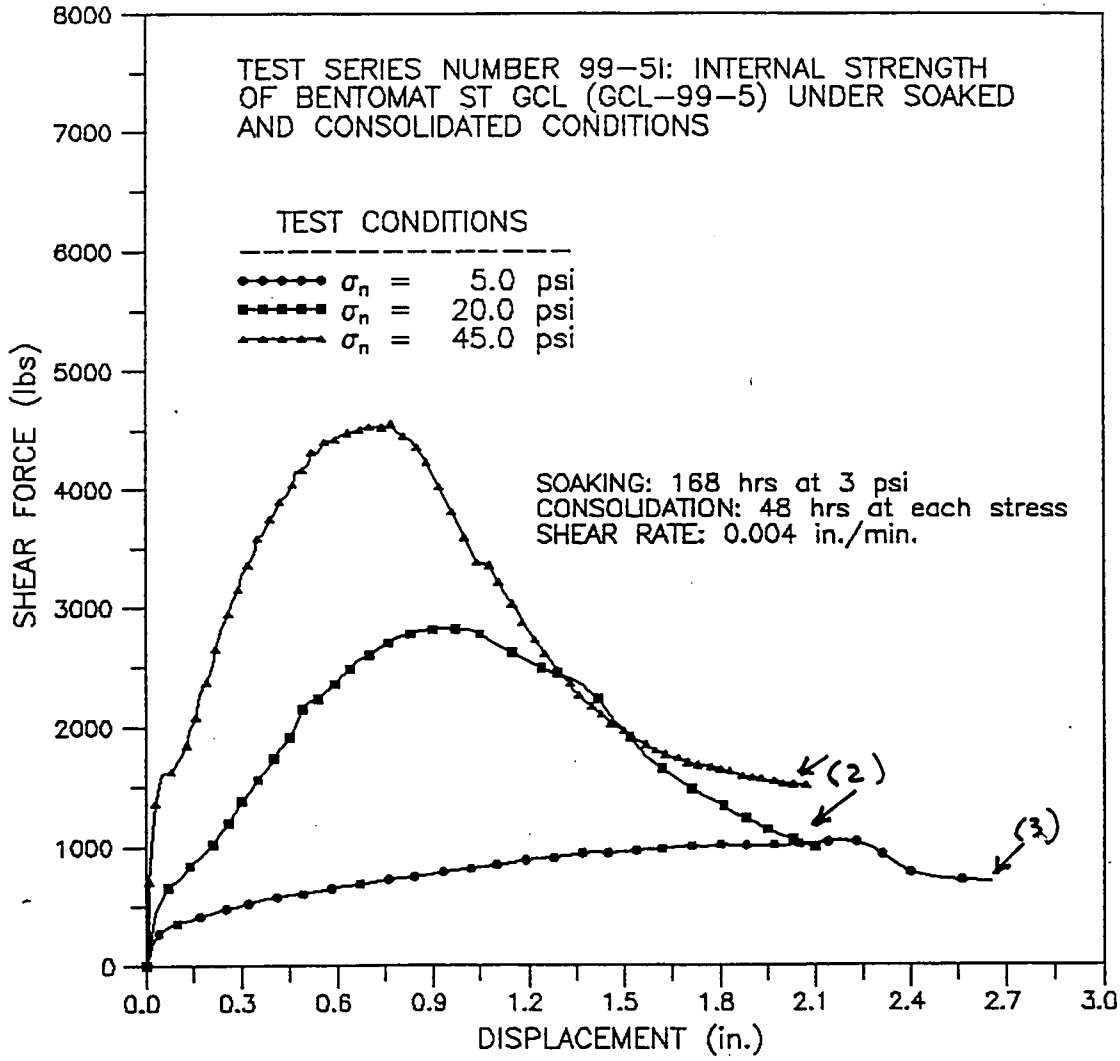
Test Interface: GCL against geomembrane

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.

DKP
15 July 1999

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.

000101

DKP 15 July 1999

DATE TESTED: 30 JUNE TO 9 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	G00409-04
DOCUMENT NO.	F9940005
FILE NO.	

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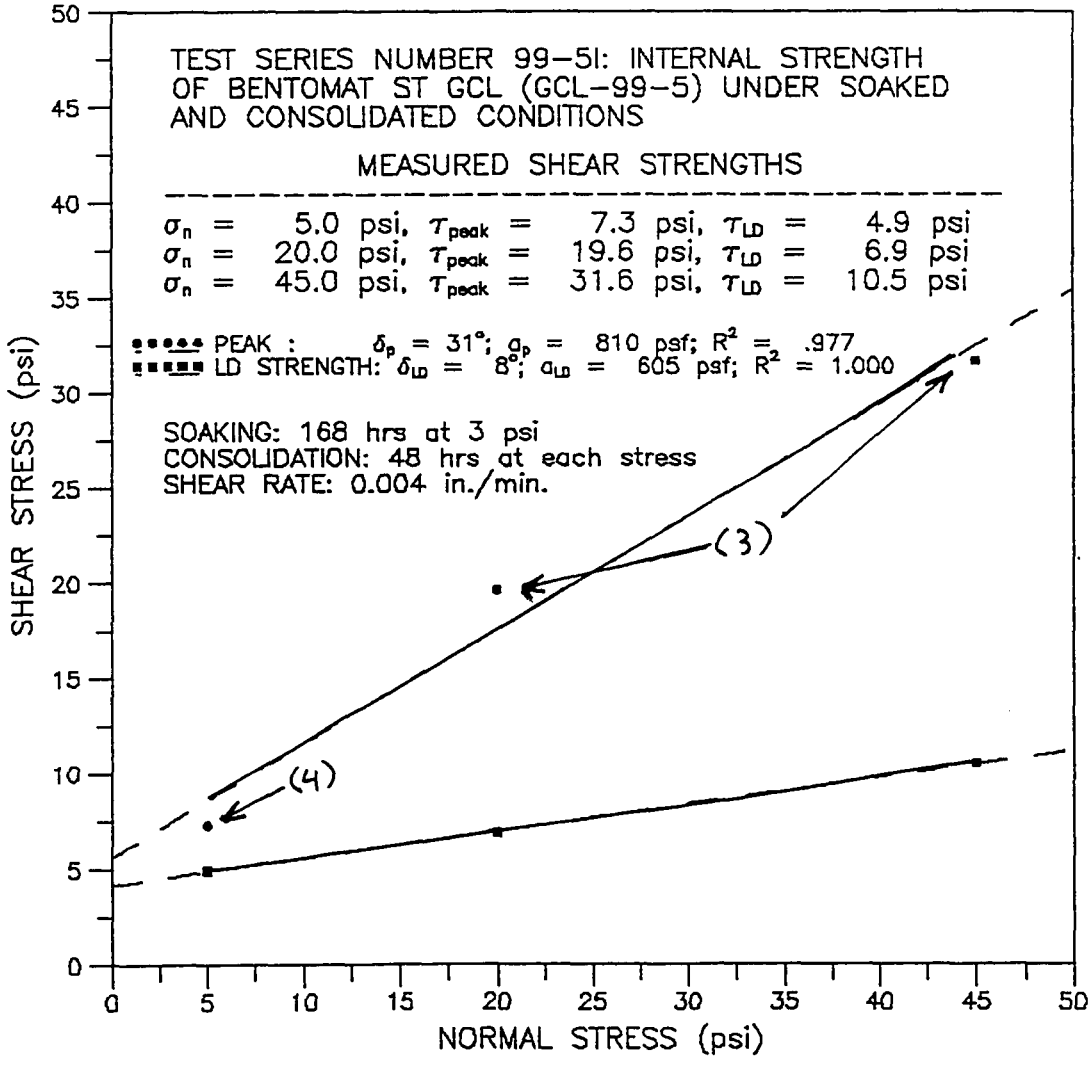
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

000102

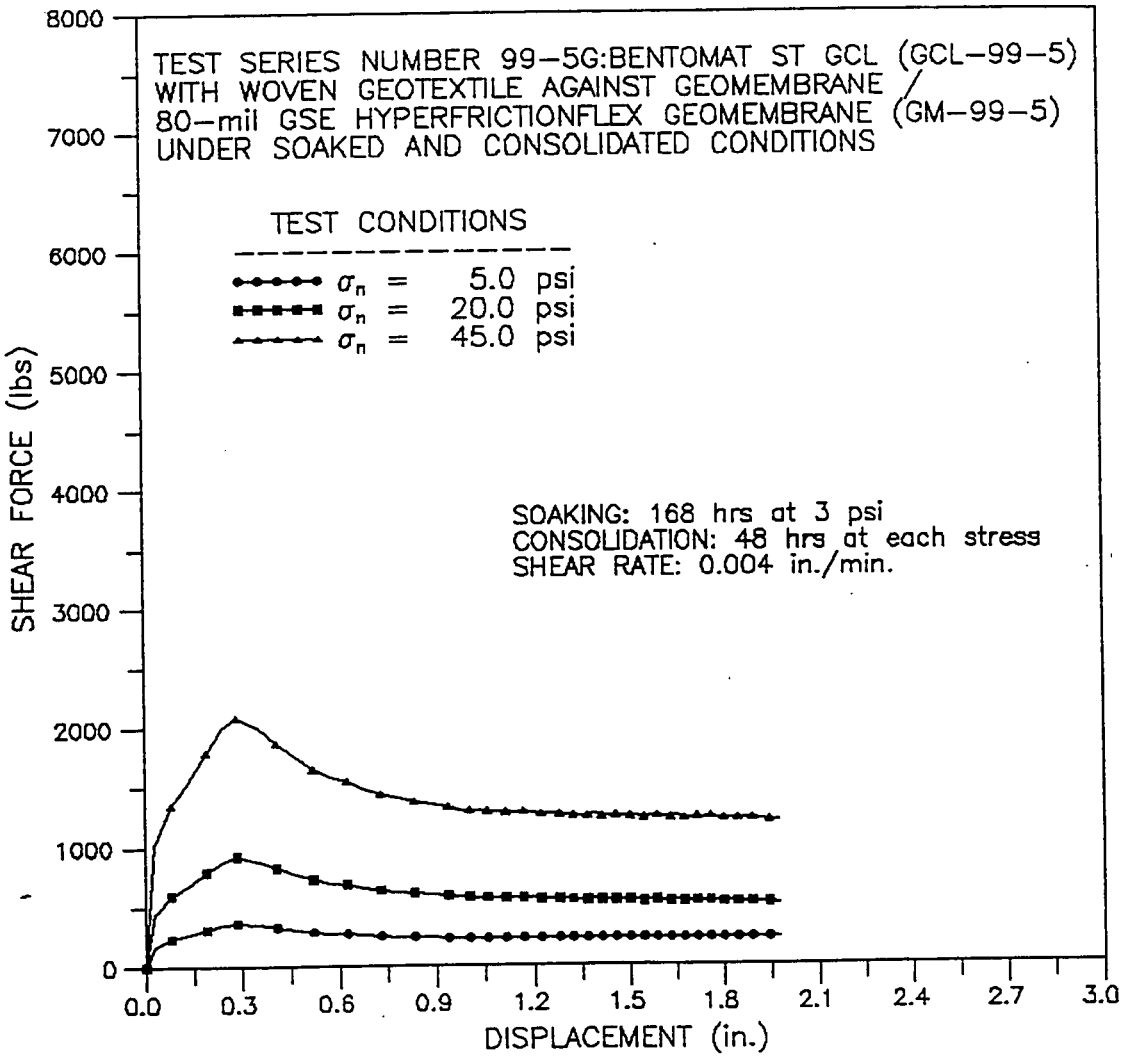
Dick
15 July 1999

DATE TESTED: 30 JUNE TO 9 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	G00409-04
DOCUMENT NO.	F9940005
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) Shear failure was observed to occur at the intended interface.

000103 DKP 15 July 1999

DATE TESTED: 3 TO 12 JULY 1999

GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

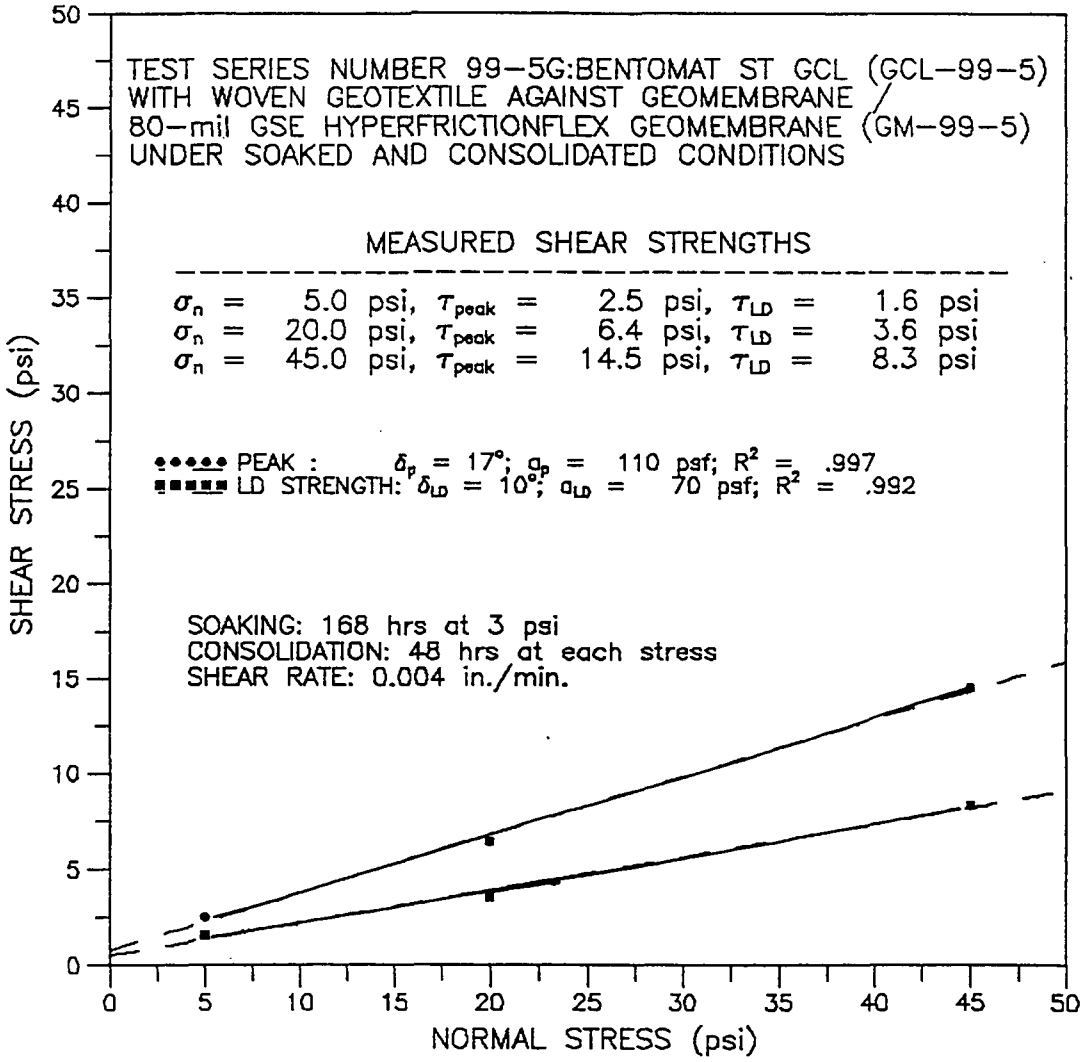
FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940005
FILE NO.	

2740

Note: Large-displacement Shear Strength should be based on 2-in. displacement rather than end-of-test. However, the end-of-test values reported here will be less than or equal to the 2-in. values. OK

DKP

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) Shear failure was observed to occur at the intended interface.

000104
DKP
15 July 1999

DATE TESTED: 3 TO 12 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940005
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-6I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-6). GCL's initial moisture content was 20.1%. GCL's final moisture content ranged from 70% to 107% 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
10 July 99

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-6G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-6) with woven geotextile against geomembrane. GCL's initial moisture content was 21.4%. GCL's final moisture content ranged from 58 to 92% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-6); 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
10 July 99

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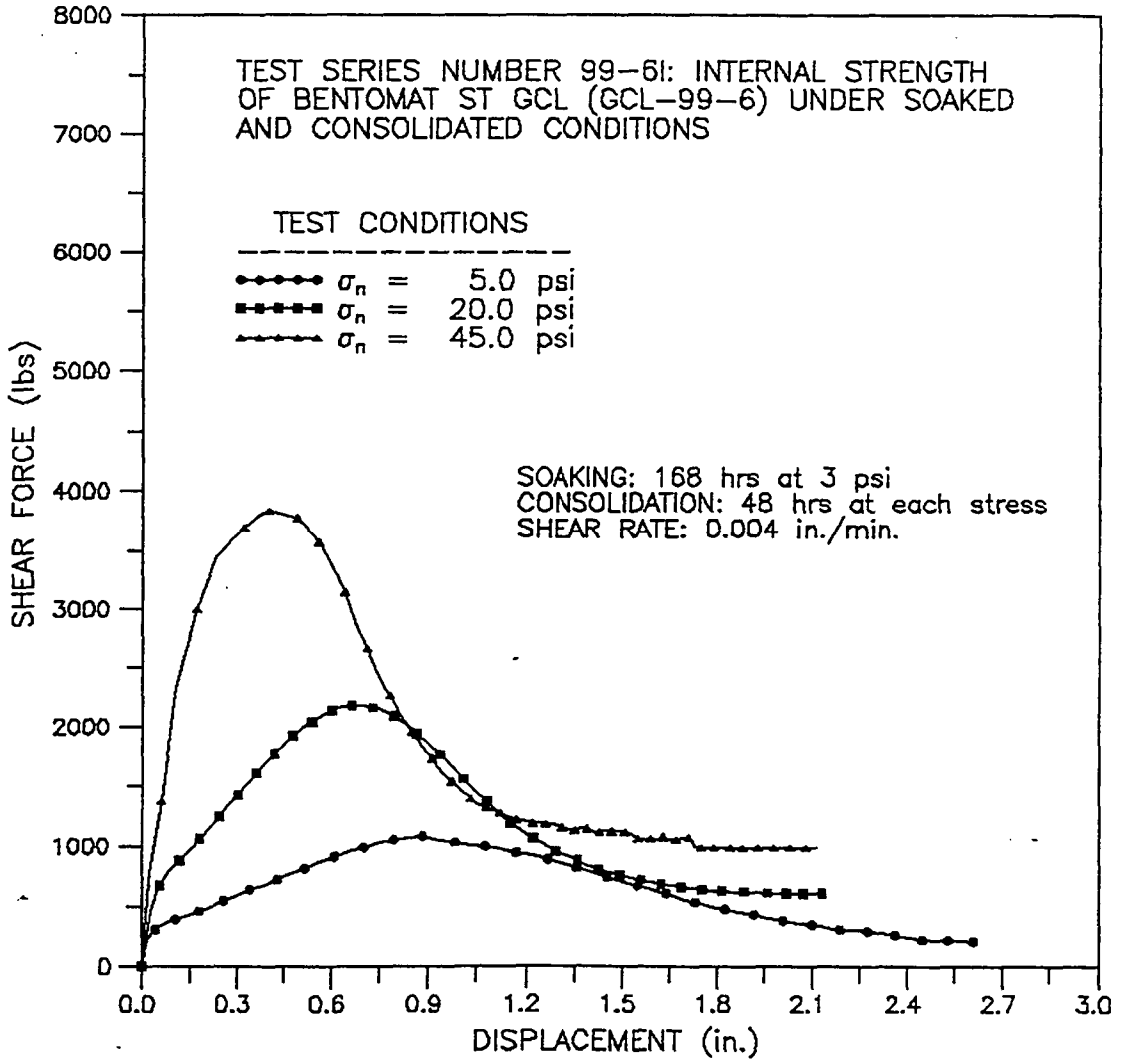
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

GRS
10 July 99

000107

DATE TESTED: 23 JUNE TO 2 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940006
FILE NO.	

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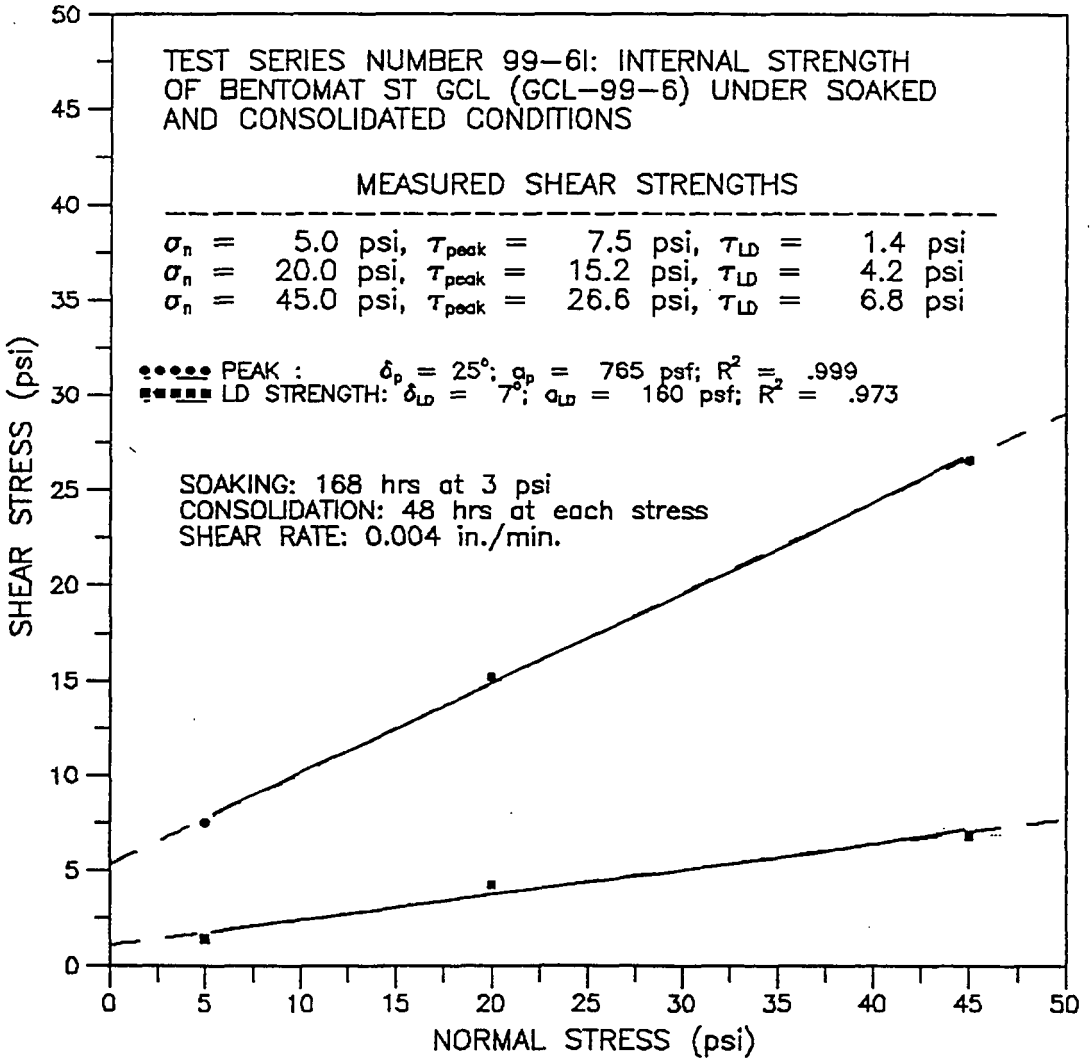
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

GRS 10 July 99

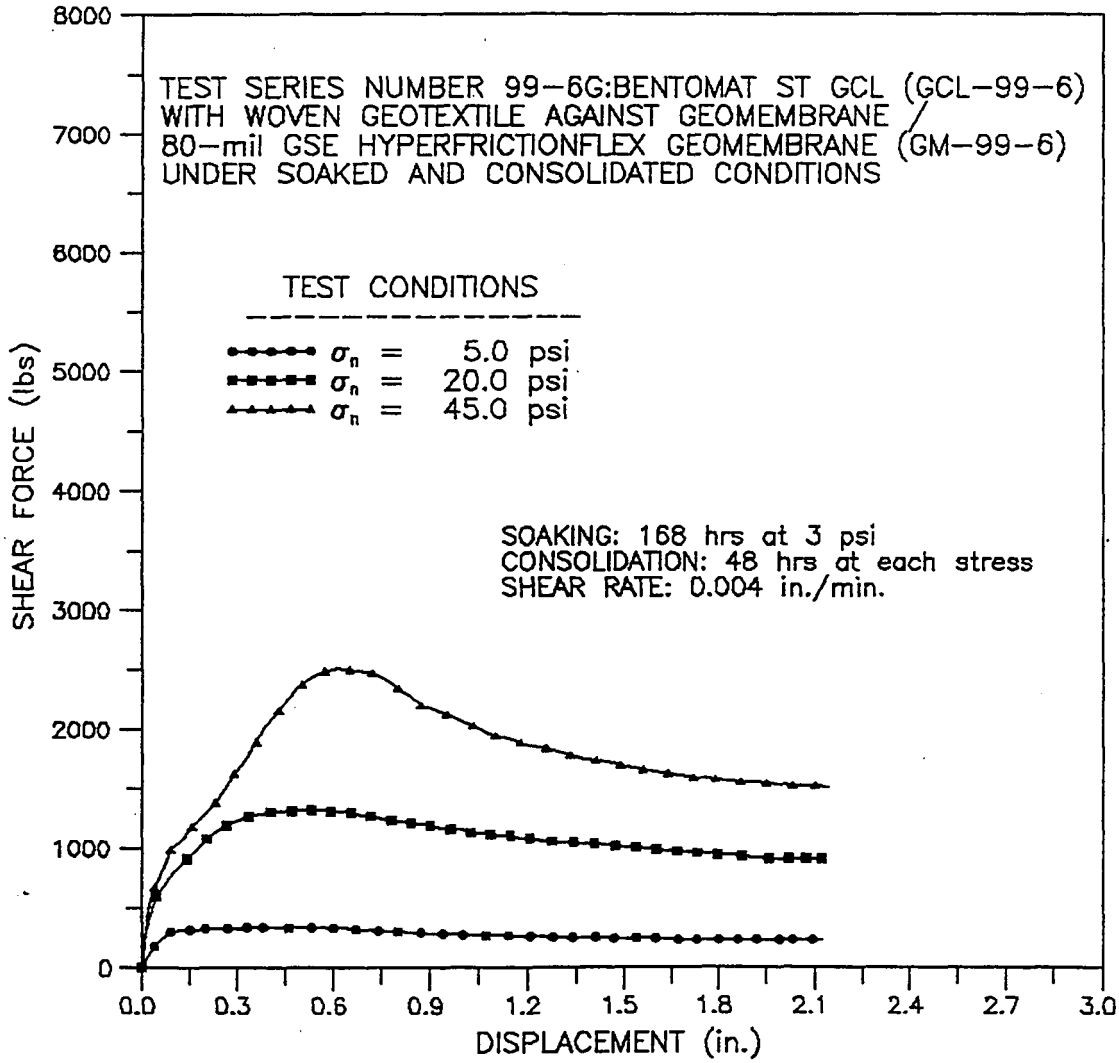
000108

DATE TESTED: 23 JUNE TO 2 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940006
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) Shear failure was observed to occur at the intended interface.

GRS 10 July 99

000109

DATE TESTED: 27 JUNE TO 6 JULY 1999

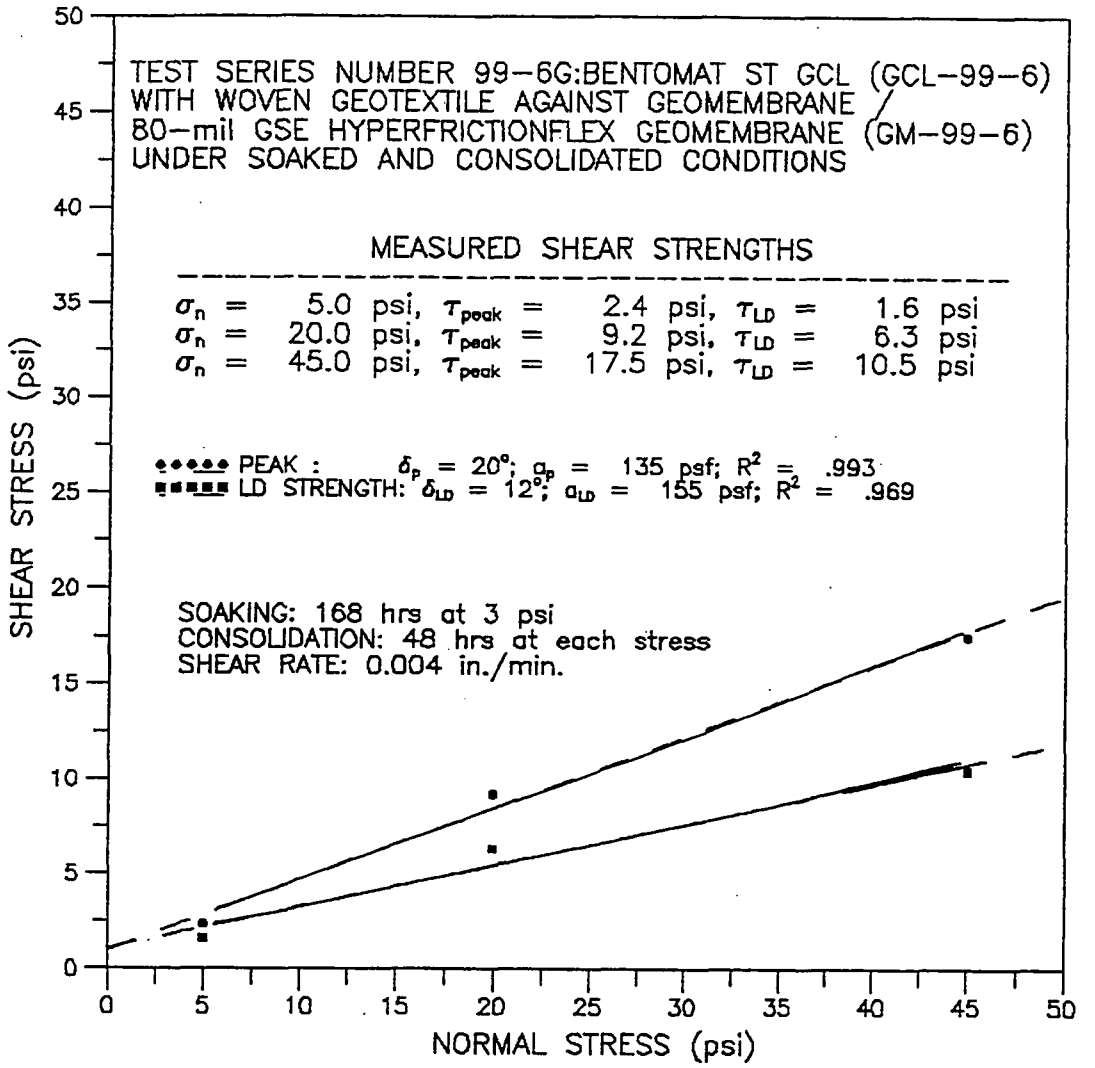
GEOSYNTEC CONSULTANTS

SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940006
FILE NO.	

Note: Large-displacement shear strength should be based on 2-in. displacement rather than end-of-test displacement. However, the end-of-test values reported here will be less than or equal to the 2-in. values. OK ✓ — 2740

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) Shear failure was observed to occur at the intended interface.

000110
GRS
10 July 99

DATE TESTED: 27 JUNE TO 6 JULY 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940006
FILE NO.	

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-7I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-7). GCL's initial moisture content was 17.7%. GCL's final moisture content ranged from 55% to 103% 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
6 July 99

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-7G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-7) with woven geotextile against geomembrane. GCL's initial moisture content was 17.8%. GCL's final moisture content ranged from 67 to 100% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-7); and
- lower shear box: bedding layer of compacted concrete sand.

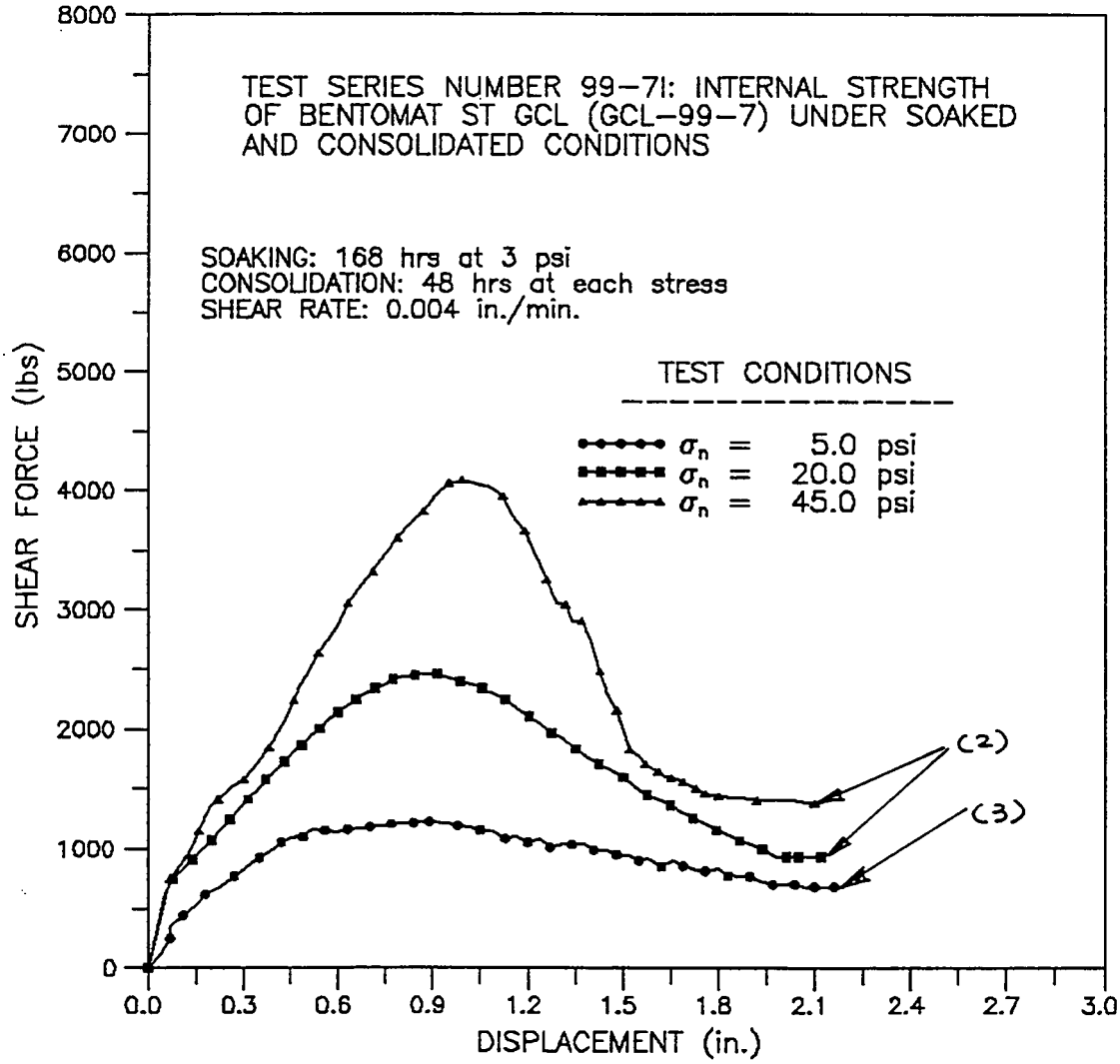
Test Interface: GCL against geomembrane

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
6 July 99

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.

000113 GRS 6 July 99

DATE TESTED: 16 TO 25 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940007
FILE NO.	

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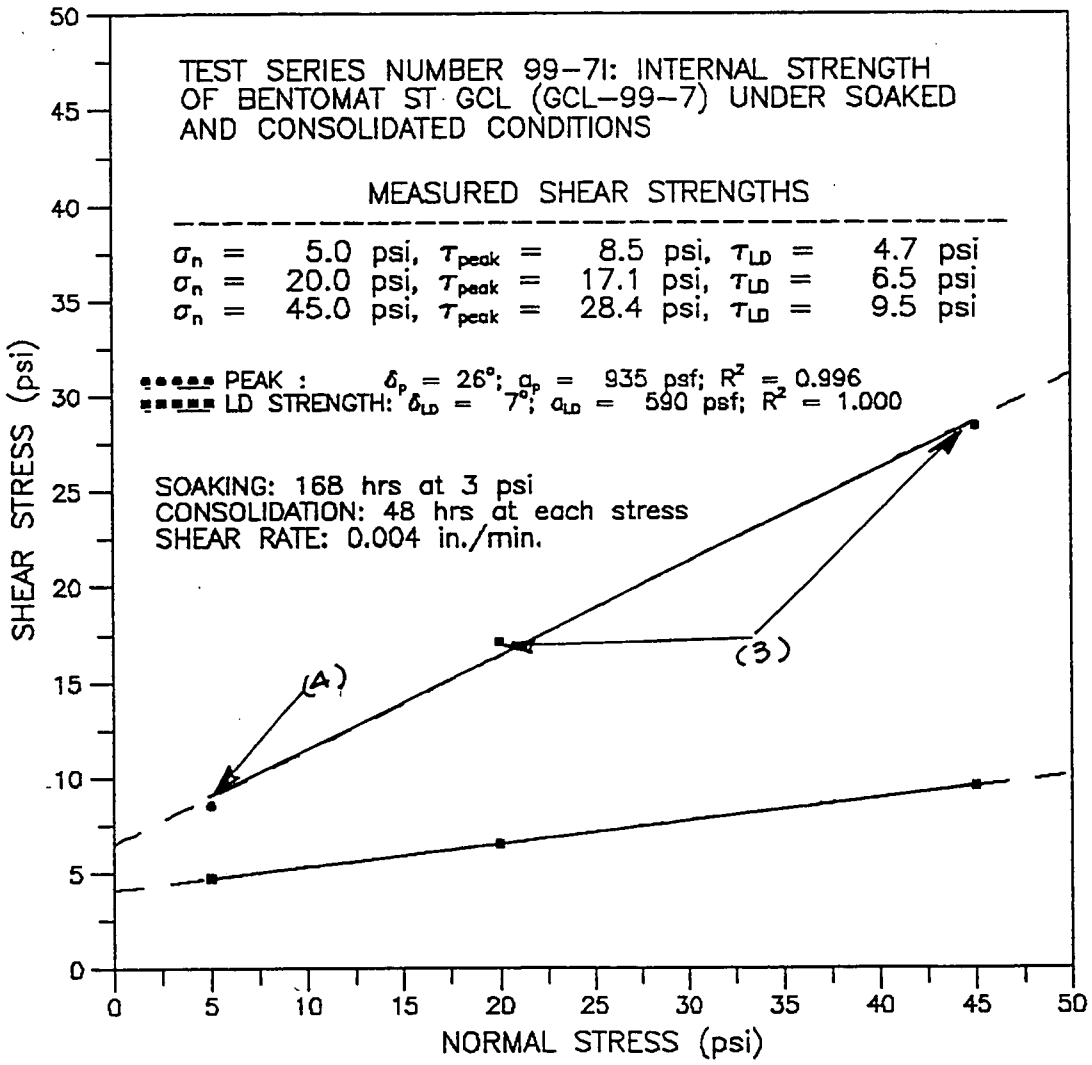
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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.

000114

GRS
6 July 99

DATE TESTED: 16 TO 25 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940007
FILE NO.	

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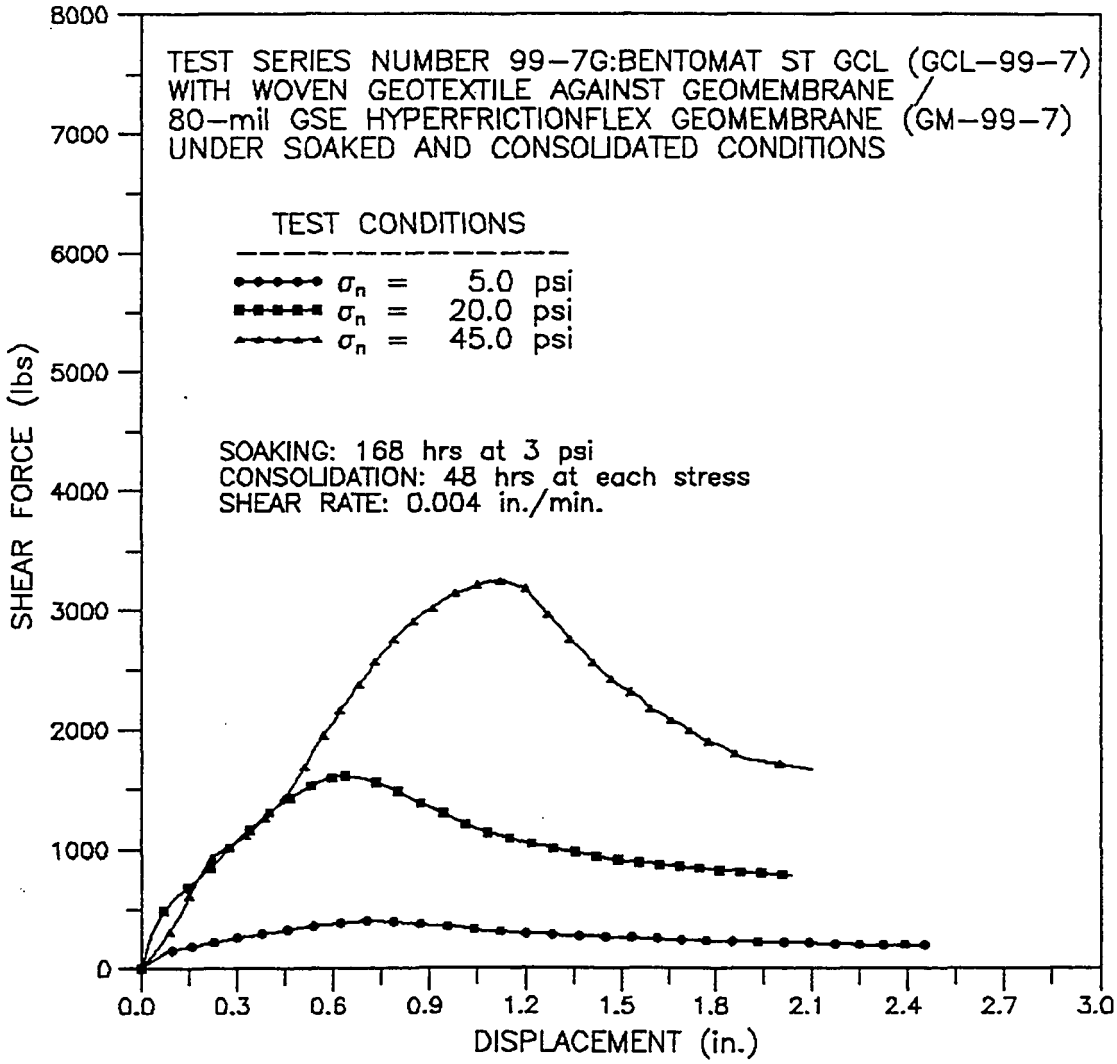
FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING



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) Shear failure was observed to occur at the intended interface.

000115 GRS 6 July 99

DATE TESTED: 19 TO 28 JUNE 1999

GEOSYNTEC CONSULTANTS

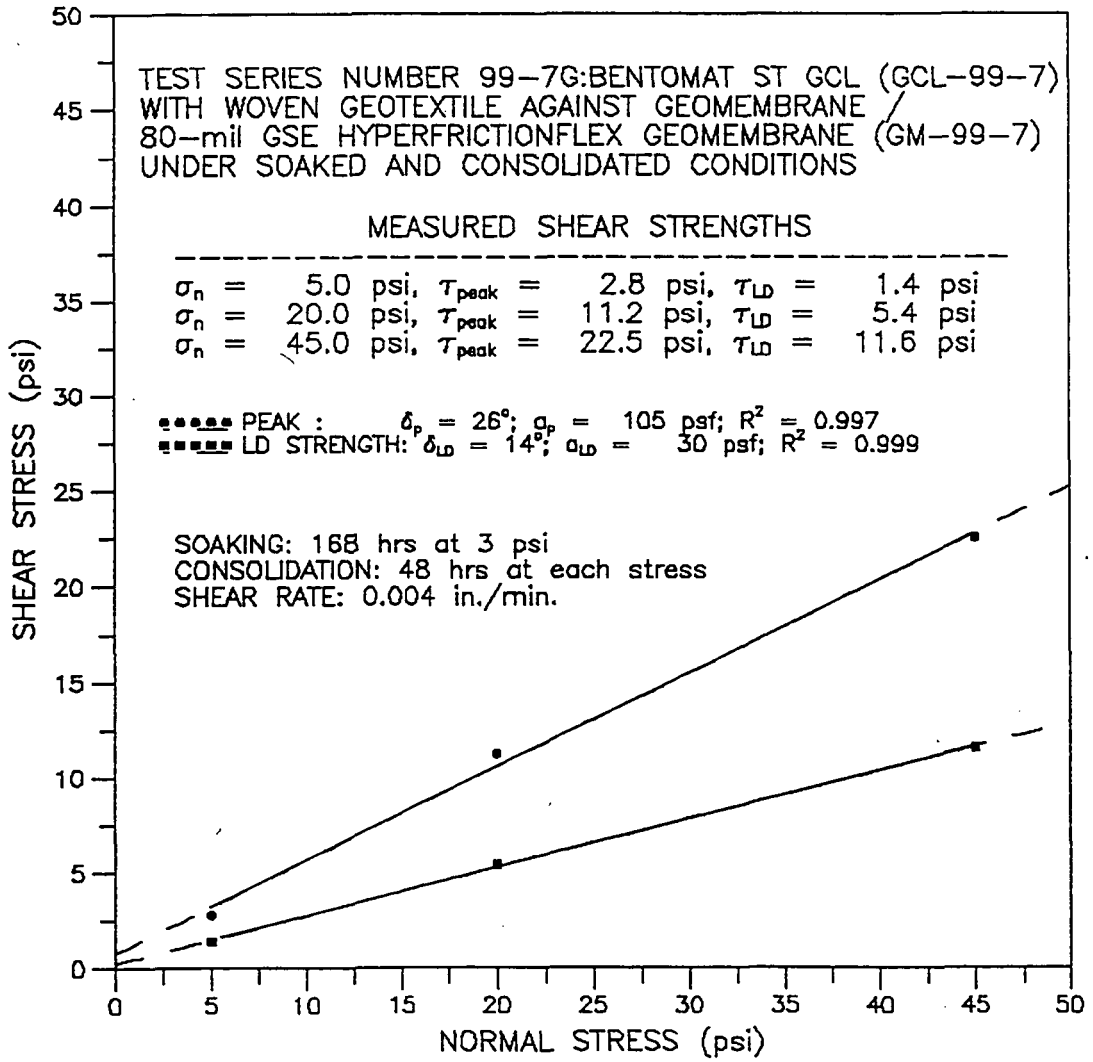
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	G00409-04
DOCUMENT NO.	F9940007
FILE NO.	

Note: Large-displacement shear strength should be based on 2-in. displacement rather than end-of-test displacement. 2-in. displacement strengths are equal to or greater than reported values. ✓

GRS
6 July 99

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY 2740
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) Shear failure was observed to occur at the intended interface.

GRS
6 July 99

000116

DATE TESTED: 19 TO 28 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940007
FILE NO.	

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- 2740

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-8I

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-8). GCL's initial moisture content was 22.3%. GCL's final moisture content ranged from 59% to 84% 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
6 July 99

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TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-8G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-8) with woven geotextile against geomembrane. GCL's initial moisture content was 22.6%. GCL's final moisture content ranged from 62 to 94% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-8); 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
6 July 99

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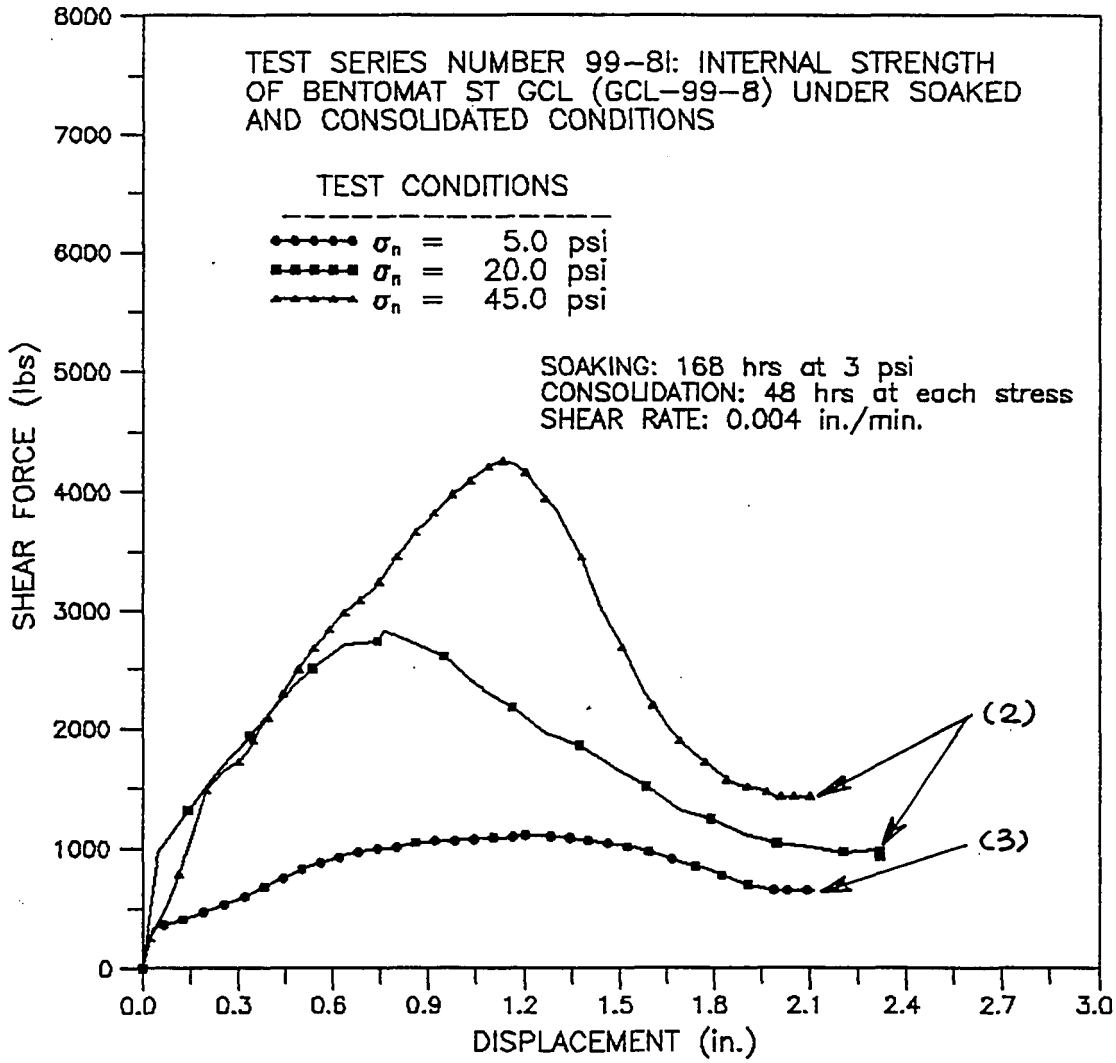
FLUOR DANIEL FERNALD ON-SITE DISPOSAL FACILITY PHASE 2 CONSTRUCTION DIRECT SHEAR TESTING



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.

GRS
6 July 99

000119

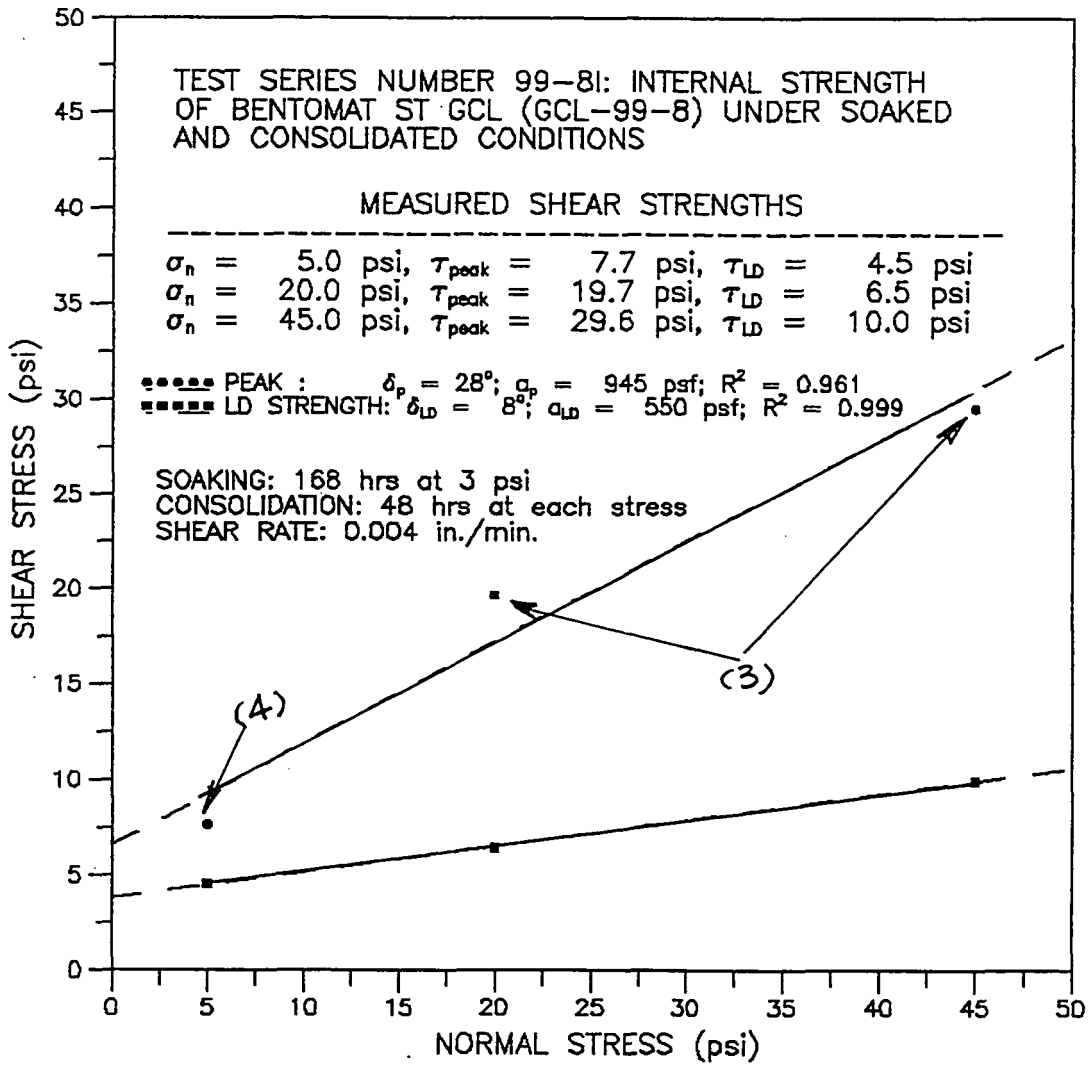
DATE TESTED: 5 TO 14 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940008
FILE NO.	

-- 2740

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
000120 6 July 99

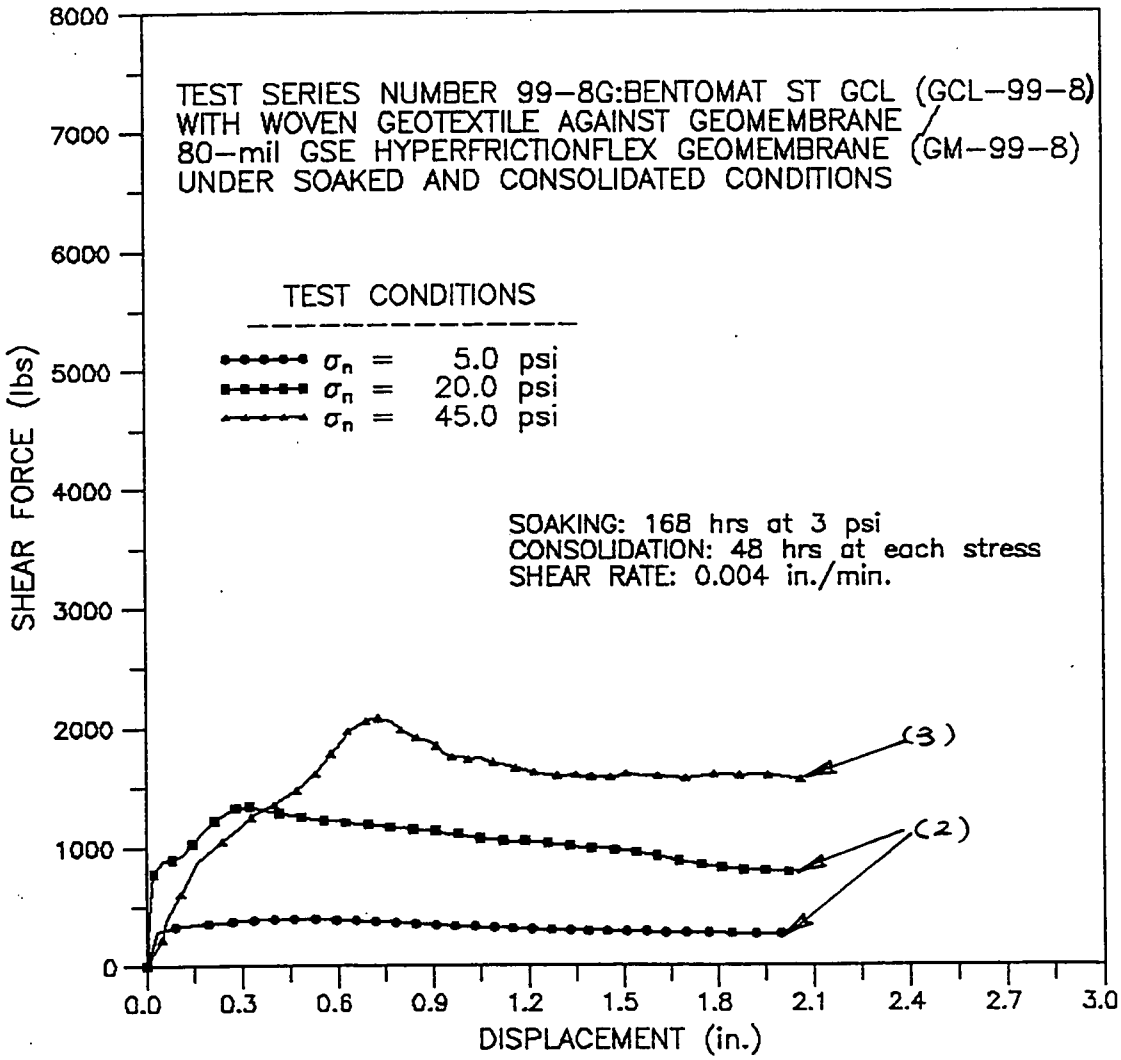
DATE TESTED: 5 TO 14 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940008
FILE NO.	

- 2740

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) Shear failure was observed to occur at the intended interface.

(3) Partial internal failure within GCL was observed.

GPS
6 July 99

000121

DATE TESTED: 12 TO 21 JUNE 1999

GEOSYNTEC CONSULTANTS

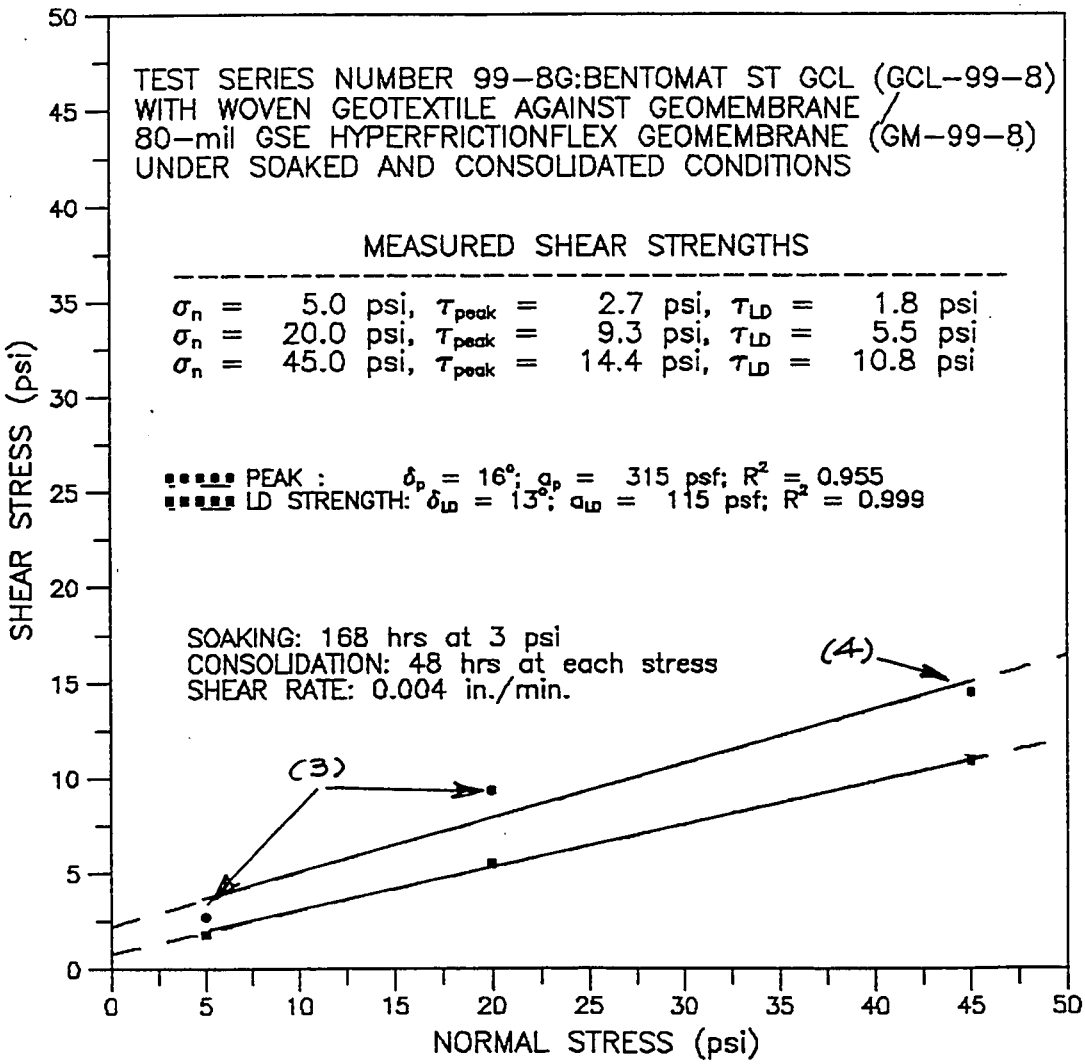
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940008
FILE NO.	

Note: Large-displacement shear strength should be based on 2-in. displacement rather than end-of-test displacement. 2-in. displacement strengths are equal to or greater than reported values. ✓

GRS

FLUOR DANIEL FERNALD
ON-SITE DISPOSAL FACILITY -- 2740 July 99
PHASE 2 CONSTRUCTION
DIRECT SHEAR TESTING -- 2740



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) Shear failure was observed to occur at the intended interface.
(4) Partial internal failure within GCL was observed.

GRS
0001226 July 99

DATE TESTED: 12 TO 21 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940008
FILE NO.	

©1999 GeoSyntec Consultants

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-9I

-- 2740

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-9). GCL's initial moisture content was 21.3%. GCL's final moisture content ranged from 60% 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
6 July 99

©1999 GeoSyntec Consultants

TEST PROCEDURES AND CONDITIONS
TEST SERIES NUMBER: 99-9G

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

- upper shear box: rigid substrate with textured steel gripping surface;
- Bentomat ST GCL (GCL-99-9) with woven geotextile against geomembrane. GCL's initial moisture content was 21.6%. GCL's final moisture content ranged from 59 to 84% for the test series;
- 80-mil GSE Hyperfrictionflex geomembrane (GM-99-9); and
- lower shear box: bedding layer of compacted concrete sand.

Test Interface: GCL against geomembrane

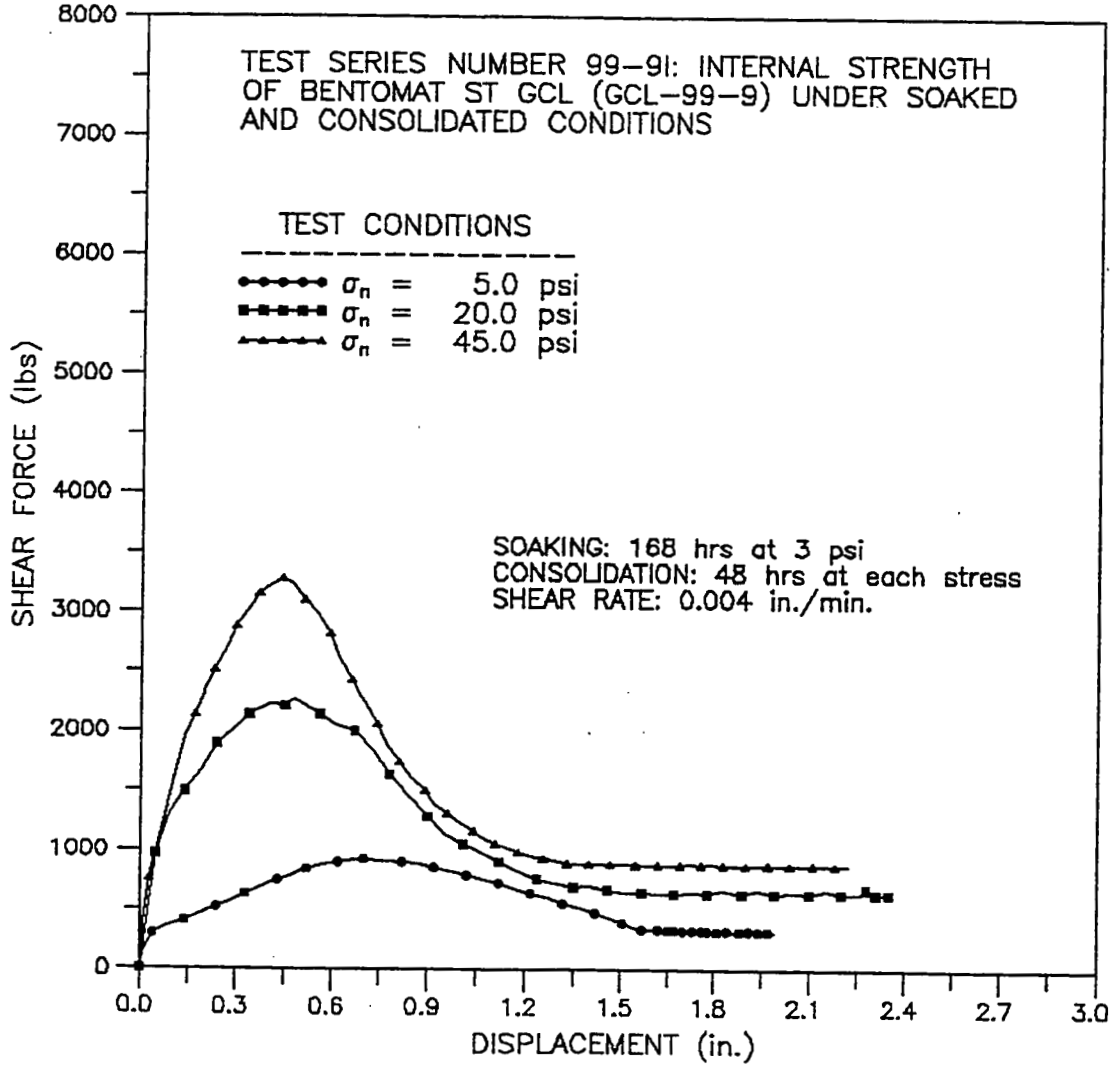
Test Procedures for Each Normal Stress Condition:

- 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
6 July 99

- 2740

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.

GRS
000125 6 July 99

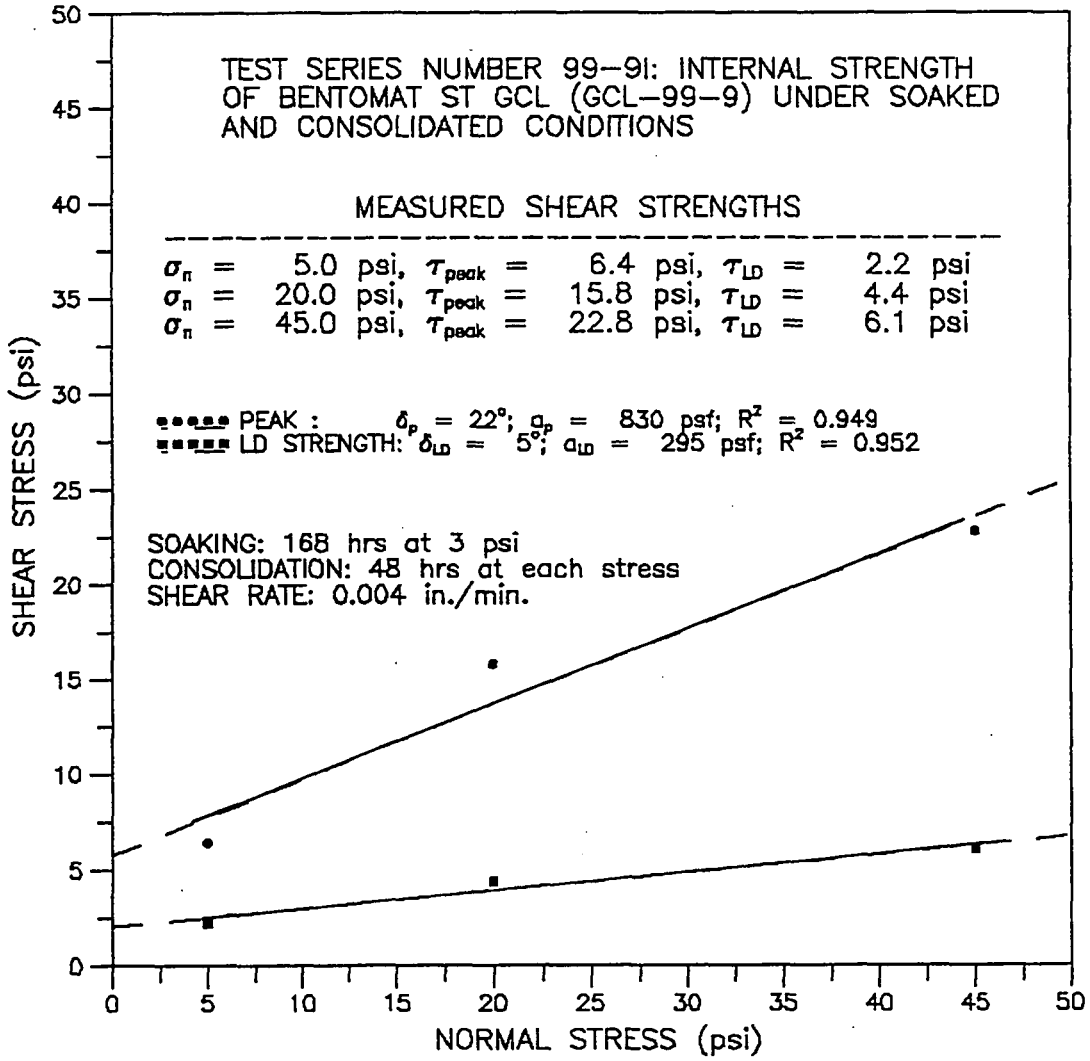
DATE TESTED: 2 TO 11 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-1
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940009
FILE NO.	

F-2740

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.

000126

GRS
6 July 99

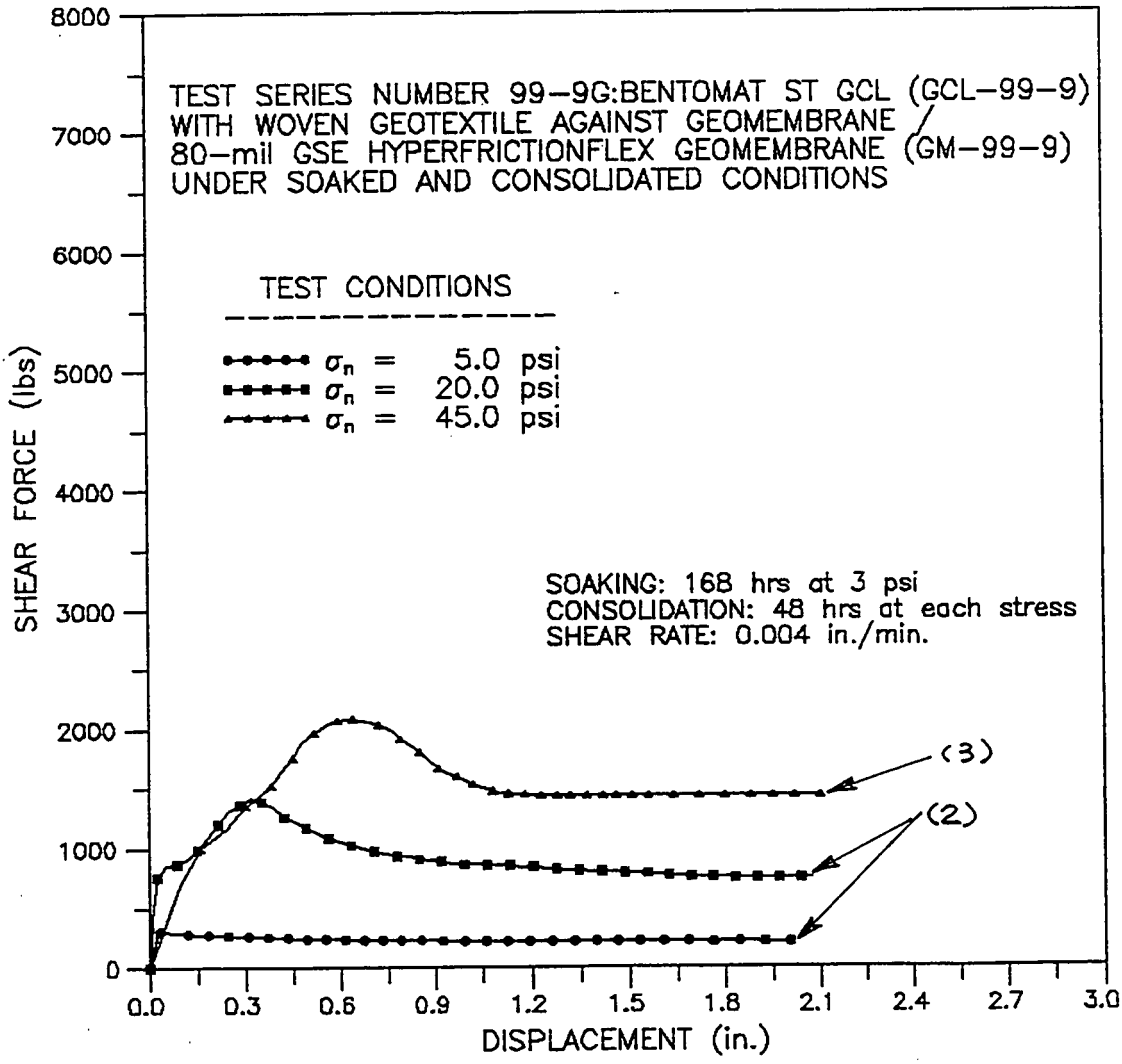
DATE TESTED: 2 TO 11 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-2
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940009
FILE NO.	

2740

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) Shear failure was observed to occur at the intended interface.

(3) Partial internal failure within GCL was observed.

GRS
6 July 99

000127

DATE TESTED: 9 TO 18 JUNE 1999

GEOSYNTEC CONSULTANTS

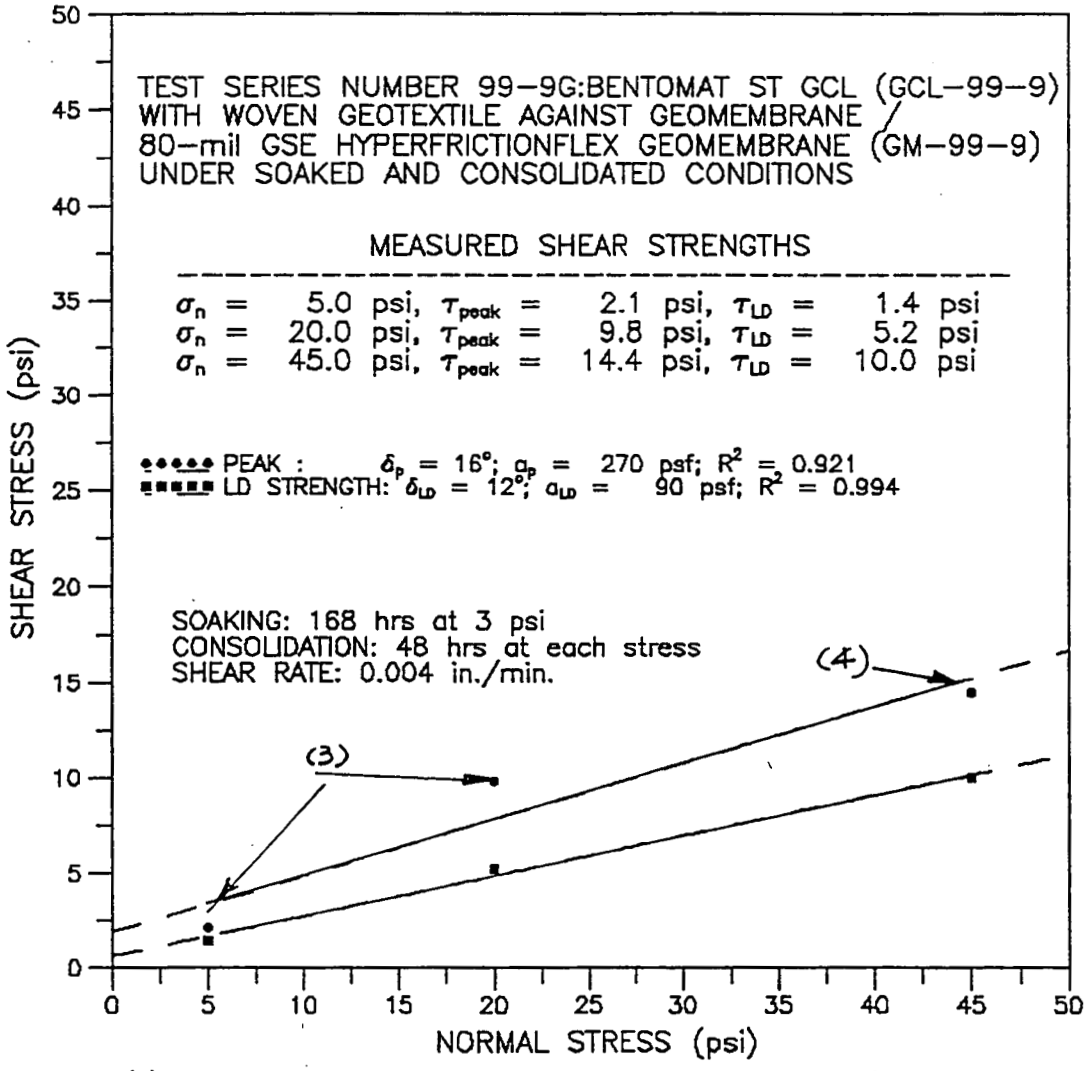
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-3
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940009
FILE NO.	

Note: Large-displacement shear strength should be based on 2-in. displacement rather than end-of-test displacement. 2-in. displacement strengths are equal to or greater than reported values. ✓
GRS
6 July 99

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

2740



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) Shear failure was observed to occur at the intended interface.
(4) Partial internal failure within GCL was observed.

GRS
000128 6 July 99

DATE TESTED: 9 TO 18 JUNE 1999

GEOSYNTEC CONSULTANTS
SOIL-GEOSYNTHETIC INTERACTION TESTING LABORATORY

FIGURE NO.	C-4
PROJECT NO.	GQ0409-04
DOCUMENT NO.	F9940009
FILE NO.	

2740

GEOMEMBRANE

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) -2740

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 80 mil Textured HDPE MANUFACTURER: GSE

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 July	A60646-114101734	CS								
	1735									
	1736									
	1737									
	1738									
	1739									
	1740		3 June	99-1	P	CS				
	1741									
	1742									
	1743									
	1744									
	1745									
	1748									
	1749									
	1750		3 June	99-2	P	CS				
	1798									
	1799									
	1808									
	1809									
	1746									
	1747									
	1751									
	1752									
	1753									
	114101754									

000130

AVG. ROLL WIDTH: 23-ft AVG. ROLL LENGTH: 398.7-ft

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

CUMULATIVE AREA: 229,244 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 80 mil Textured HDPE MANUFACTURER: GSE

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 July	A60646-114101755	CS								
	1756									
	1757									
	1758									
	1759									
	1760		3 June	99-3	P	CS				
	1761									
	1762									
	1764									
	1766									
	1767									
	1768									
	1769									
	1770		3 June	99-4	P	CS				
	1771									
	1772									
	1773									
	1774									
	1775									
	1776									
	1777									
	1779 ~~1778~~ @			@						
	1780		3 June	~~99-4~~ 99-5	P	CS				
	1781									
	1782									

000131

AVG. ROLL WIDTH: 23-ft AVG. ROLL LENGTH: 399.4-ft

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

CUMULATIVE AREA: 458,886 ft² NO. OF CONFORMANCE TESTS (page/total): 3 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 80 mil Textured HDPE MANUFACTURER: GSE

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 July	A60647-11410 1783	CA								
	1784									
	1785									
	1786									
	1787									
	1788									
	1789									
	1790		3 June	99-6	P	CA				
	1791									
	1792									
	1793									
	1794									
	1795 ~~1795~~									
	1796									
	1797									
	1800 ~~1798~~		3 June	99-7	P	CA				
	1801									
	1802									
	1803									
	1804									
	1806									
	1807									
	1810		3 June	99-8	P	CA				
	1811									
	1812									

000132

AVG. ROLL WIDTH: 23-ft AVG. ROLL LENGTH: 398.5-ft

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

CUMULATIVE AREA: 688,011 ft² NO. OF CONFORMANCE TESTS (page/total): 3 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 80 mil Textured HDPE MANUFACTURER: GSE

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 July	A60647-114101813	CS								
	1814									
	1815									
	1816									
	1817									
	1818		3 June	99-9	P	CS				
	1819									
	1820									

000133

AVG. ROLL WIDTH: 23-ft AVG. ROLL LENGTH: 403-ft

NUMBER OF ROLLS ABOVE: 8 ACCUMULATIVE NUMBER OF ROLLS: 83

CUMULATIVE AREA: 762,154 ft² NO. OF CONFORMANCE TESTS (page/total): 1 / 9

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 — 2740 SHIPPERS NO. 3554

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, destined as indicated below, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any 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 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 parties, 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 and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, or any other consequences occuring 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.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.

Sales Order 6181

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101774	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,274.21
2	114101741	9071	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,173.67
3	114101751	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,324.88
4	114101753	9142	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,348.35
5	114101754	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,314.97
6	114101755	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,384.37
7	114101758	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,442.75
8	114101779	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,384.37
9	114101789	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,372.25
10	114101791	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,373.35
11	114101807	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,317.17

Walla 7-6-99

Project# 502302

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up # 3738

Seal #

Truckers P.O. #

Total Quantity 100,698 Total Weight 47,710.334

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: ADS
CARRIER SIGNATURE:
DATE:

Sign Here For Shipper
Shipper:
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

000134

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

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 — 2740 — SHIPPERS NO. 3555

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 said 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 all 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 GSE 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 parties, 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 and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, or any other consequences occuring 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.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.

Sales Order 6181

Project# 502302

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	199905120	49	BX	HFROD5MM 5 mm HF Welding Rod HyperFlex Welding Rod	735.00
2	199905190	71	BX	HFROD5MM 5 mm HF Welding Rod HyperFlex Welding Rod	1,065.00

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up #

Seal #

Truckers P.O. #

Total Quantity 120 Total Weight 1,799.999

Wallace 7-6-99

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this BL must accompany Freight Invoice.

CARRIER NAME: ADS
CARRIER SIGNATURE: David Smith
DATE:

Sign Here For Shipper
Shipper:
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

000135

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

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 -- 2740 SHIPPERS NO. 3530

ed 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, estined as indicated below, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to rry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any ne 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 Lining Technology, Inc. as indicated by the signation 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 e parties, 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 rvice to be performed hereunder between the Shipper and the Carrier shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, estern, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. hen 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 cargo, damage to containers, any other consequences occuring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

ubject 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 e said terms and conditions are hereby agreed and accepted for himself and his assigns.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/1/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.

ETA: 7-6

Sales Order 6181

Project# 502302

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101734	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3923 ~~4,321.58~~
2	114101735	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3850 ~~4,241.16~~
3	114101745	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3940 ~~4,351.44~~
4	114101746	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3875 ~~4,268.70~~
5	114101766	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3928 ~~4,327.08~~
6	114101767	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3960 ~~4,368.95~~
7	114101777	9330	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3972 ~~4,454.60~~
8	114101787	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3997 ~~4,403.10~~
9	114101788	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3897 ~~4,292.94~~
10	114101793	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4055 ~~4,466.99~~
11	114101812	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3940 ~~4,340.30~~
12	114101815	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3955 ~~4,401.52~~

Wallace 7.6.99

47,262 LBS

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up # ~~3836~~ 3736

Seal #

Truckers P.O. #

Total Quantity 110,333 ETA 7-6-99 Total Weight ~~52,238.346~~

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281)-230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Murray
CARRIER SIGNATURE: M. Clark
DATE:

Sign Here For Shipper
Shipper:
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

000136

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

O BE RETAINED BY CONSIGNEE

CALL LOUISVILLE ON UNUSUAL DELAYS Order No. _____

MERCER TRANSPORTATION CO.
P.O. BOX 35610
1128 WEST MAIN STREET
Louisville, Kentucky 40232
Phone (502) 584-2301
Long WATS 1-800-626-5375

DELIVERY RECEIPT

NON REVENUE BILL
Billing and Collection will be made on REVENUE BILL

2740

Trip No. CAL 77584
Pick-up Date 7-1-99

(Consignee's Name and Address)
Fluor Daniel Fernald
Harrison Ohio

(Shipper's Name and Address)
GSE
Houston TX
SHIPPER'S NO. B/L NO. 3530 PPD. or COLL.

Waybill dates, numbers and points of transfer of all previous carriers must be shown in this space. I.C.C. Ruling.

NO. PIECES	DESCRIPTION OF ARTICLES	WEIGHT
12	Rolls Plastic Liner Dimension of Material: Height _____ Width _____ Length _____ Release Value $5,000 per ton unless otherwise specifically stated. Verified By Shipper _____ And Consignee _____	47,262

Received the above described property in good condition except as noted. CUSTOMER SIGNATURE:	Date of Delivery	Delivery Driver	Unit No.
Wallace	7-6-99		

NOTICE: CONTRACTOR SETTLEMENTS WILL BE HELD IF SHORTAGES OR DAMAGES ARE NOT REPORTED TO LOUISVILLE, KY., BEFORE CONSIGNEE SIGNS THESE BILLS!

THANK YOU FOR THE OPPORTUNITY TO HAUL YOUR SHIPMENT.

CALL MERCER TO MOVE YOUR NEXT SHIPMENT 800-626-5375

TWO DECADES OF EXCELLENCE
"THE REASONABLE CHOICE"

PICK-UP OR DELIVERY DETENTION REPORT

LOADING/UNLOADING

Date 7-1-99 Day 7-1-99

Scheduled Time of Arrival _____ Time Spotted for Work 4:00 PM

Actual Time of Arrival 1:30 PM Time Work Began 4:00 PM

Person Notified _____ Time Work Completed 5:30 PM

Time Released by Customer 6:30 PM

Lunch or Non-Working Periods _____

Joe Guinn M. Clark
Customer Signature/Title Driver Signature

CALL LOUISVILLE IF CUSTOMER DOESN'T SIGN

Remarks _____

000137

COPIES: WHITE - LOUISVILLE OFFICE COPY
YELLOW - TO BE RETAINED BY CONSIGNEE
PINK - DRIVER'S COPY

CALL LOUISVILLE ON UNUSUAL DELAYS
1-800-626-5375

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 — 2740 — SHIPPERS NO. 3532

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 said 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 all 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 GSE 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 parties, 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 and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, or any other consequences occuring 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.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/1/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.
ETA: 7-6

Sales Order 6181

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101736	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3883 ~~4,277.51~~
2	114101737	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3914 ~~4,311.06~~
3	114101738	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3897 ~~4,292.94~~
4	114101742	9095	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3870 ~~4,230.68~~
5	114101759	9283	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3920 ~~4,429.73~~
6	114101776	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3920 ~~4,323.79~~
7	114101781	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3987 ~~4,392.08~~
8	114101795	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3965 ~~4,367.84~~
9	114101799	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3907 ~~4,309.46~~
10	114101803	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3969 ~~4,340.30~~
11	114101808	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3970 ~~4,373.35~~
12	114101820	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3944 ~~4,383.73~~

Walker 7-6-99 47,200 LBS

Total Quantity ~~110,122~~ Total Weight ~~52,043.068~~

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification Signed X

Pick Up # ~~4101820~~ 3737

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Paul Smith
CARRIER SIGNATURE:
DATE: 7/1/99

Sign Here For Shipper
Shipper:
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

000138

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

RUEL SMITH TRANSPORTATION SERVICES, INC.
P. O. BOX 2285
HOUSTON, TX 77252-2285
800-330-7006
713-921-4441
FAX: 713-924-0225

ICC #: 250498
RRC #: 5408
CUSTOMS #: 539206371

COMBINED BILL OF LADING AND WAYBILL

FB # 95664 2740 DATE 7-6-99

SHIPPER	CONSIGNEE
SHIPPER: GSE	CONSIGNEE: Floor David Fresnald
STREET:	STREET: Dept. of Energy
CITY/STATE: Houston, TX	CITY/STATE: Harrison, OH
PHONE NO:	PHONE NO.:

SHIPPERS RELEASE NO.

PO / REFERENCE NO.

FREIGHT CHARGES ARE: Ppd. ☐ Collect ☐ COD ☐

3RD PARTY: _____ AMOUNT $ _____

UNLESS OTHERWISE AGREED BY OFFICERS OF CARRIER SHIPPER WILL LOAD AND CONSIGNEE WILL UNLOAD PROPERTY TRANSPORTED BY CARRIER

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statements.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

SIGNATURE OF CONSIGNOR

NO. OF PCS	HM	DESCRIPTION OF ARTICLES, SPECIAL MARKINGS & EXCEPTIONS	HAZARD CLASS	I D NO.	PKG. GROUP	WEIGHT	RATE
12		Rolls GSE Liner				47,200	
							000139

EMERGENCY RESPONSE NUMBERS
WATS NO.: 800-330-7006
OTHER: 713-921-4441

PLACARDS REQUIRED ☐ YES ☐ NO

PLACARDS SUPPLIED BY ☐ SHIPPER ☐ CARRIER

TRUCK NO. 2254
TRAILER NO. 22548

☐ TARP REQUEST
READ STATEMENT BELOW:
By: _____
Signature of consignor's agent hereby acknowledges request for carrier to tarp the goods or merchandise. In addition, such signature by consignor agent agrees to pay a minimum charge of $50 for such request.
Carrier shall not be liable for water damage on tarp loads where carrier has made reasonable efforts to secure tarp, and in no case shall carrier be liable whatsoever unless space provided above is signed requesting and acknowledging carrier to provide such service.

RECEIVED THE ABOVE DESCRIBED PROPERTY UNDER THE TERMS OF THIS BILL OF LADING AND IN GOOD CONDITION, EXCEPT AS OTHERWISE NOTED.

RECEIVED BY: [illegible]

REPRESENTING: _____ DATE: _____

SHIPPER HEREBY CERTIFIES the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable International and Department of Transportation regulations. UNLESS OTHERWISE NOTED, ANY VEHICLE CONTAINING HAZARDOUS MATERIALS IS PROPERLY PLACARDED IN ACCORDANCE WITH 49CFR172.506.

Scheduled Arrival Date / Time	Shipper Informed of Arrival at Gate Date / Time	Loading Began Date / Time	Loading Completed Date / Time	Unit Released Date / Time

Shipment Released and Pick-up Acknowledged

X

Shipper Co. Name _____ Shipper's Agent _____ Title _____

Received the property described above in good condition, except as noted.

DRIVER'S SIGNATURE X [signature] Date _____

Scheduled Arrival	Shipper Informed of Arrival at Gate Date / Time	Unloading Began Date / Time	Unloading Completed Date / Time	Unit Released Date / Time

CONSIGNEE

Co. Name _____ By X _____ TITLE _____

RECEIVED, subject to the contracts and tariffs (which are incorporated herein as if fully set forth) in effect on the date of issue of this Bill of Lading, the property described below, in apparent good order, except as noted (condition of contents of packages unknown), marked, consigned and destined as indicated below, which the above-indicated carrier agrees to carry. THE TERMS AND CONDITIONS OF THIS BILL OF LADING ARE PUBLISHED IN TARIFFS, as are other important rules and procedures that may apply to this shipment, which are maintained at Carrier's office and will be made available upon request. All parties hereto (shipper/consignor/consignee) hereby certify that they are familiar with the said terms and conditions of this BILL OF LADING and carrier's tariff, and the same as agreed to by the parties for themselves and their assigns. All documents issued by shipper become part of this bill of lading and any contradictory provisions are voided by the issuance of this bill of lading.

UNLESS A GREATER VALUE IS AGREED TO IN WRITING, SHIPPER HEREBY RELEASES THE VALUE TO $2.50 PER POUND FOR EACH ARTICLE OR $100,000 PER SHIPMENT, WHICHEVER IS GREATER.

Carrier shall have limited liability for delays for pickup or delivery in accordance with Carrier's Tariff or written Contracts. Carrier shall not be liable for any damage resulting from loss of use, profit, or business, non-operation or increased expense of operation, service interruption, or any special, indirect, incidental, or consequential damages. Carrier's maximum liability for delay for any cause, whatsoever, and regardless of the form of action (in contract or tort), shall be limited solely to the amount of freight charges on the shipment which is the basis of such claim.

TERMS: Shipments payable upon delivery, or within 30 days if prior credit arrangements have been made. If freight charges are not paid within 30 days of presentation of freight bill, carrier is entitled to collect a late payment collection charge of 25% of the unpaid charges. If carrier must retain an attorney or collection agency to collect charges owed, carrier is entitled to any attorney or collection fees thereby incurred.

BE SURE YOU HAVE READ AND UNDERSTOOD THE CONDITIONS AND TERMS ON BACK SIDE

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 — 2740 SHIPPERS NO. 3574

ved 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, stined as indicated below, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to o the place of delivery at said destination. It is mutually agreed as to each Carrier of all 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 GSE 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 he parties, 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 ervice to be performed hereunder between the Shipper and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, r any other consequences occuring 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 he said terms and conditions are hereby agreed and accepted for himself and his assigns.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.
ETA: 7/6

Sales Order 6181

Project# 502302

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101744	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,341.42
2	114101748	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,263.19
3	114101752	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,309.46
4	114101756	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,328.19
5	114101757	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,359.03
6	114101782	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,301.75
7	114101785	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,063.80
8	114101786	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,320.48
9	114101802	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,349.12
10	114101804	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,348.02
11	114101809	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,280.82
12	114101811	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,389.88

~~TERMS~~: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification Signed X

Pick Up # 3739

Seal #

Truckers P.O. #

Total Quantity 110,074 Total Weight 51,655.143

7-6-99

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Jordan
CARRIER SIGNATURE: X Jonathan Hyde
DATE: 7/3/99

Sign Here For Shipper
Shipper: Gary L. Brandt
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC. APPROVED AGENT FOR SHIPPER)

000140

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

Shipping Order - Packing List - Original - Not Negotiable

GSE

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 — 2740 SHIPPERS NO. 3574

ived 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, stined as indicated below, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to o the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any 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 Lining Technology, Inc. as indicated by the esignation 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 e parties, 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 ervice to be performed hereunder between the Shipper and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, r any other consequences occuring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

ubject 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 he said terms and conditions are hereby agreed and accepted for himself and his assigns.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.
ETA: 7/6

Sales Order 6181

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101744	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,341.42
2	114101748	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,263.19
3	114101752	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,309.46
4	114101756	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,328.19
5	114101757	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,359.03
6	114101782	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,301.75
7	114101785	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,063.80
8	114101786	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,320.48
9	114101802	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,349.12
10	114101804	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,348.02
11	114101809	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,280.82
12	114101811	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	4,389.88

Total Quantity 110,074 Total Weight 51,655.143

Project# 502302

~~TERMS:~~ Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up # 3739

Seal #

Truckers P.O. #

7-6-99

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Jordan
CARRIER SIGNATURE: X Jonathan Hyde
DATE: 7/3/99

Sign Here For Shipper
Shipper: Gary L. Brandt
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

000141

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

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 — 2740 SHIPPERS NO. 3578

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, ned as indicated below, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any e 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 Lining Technology, Inc. as indicated by the ignation 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 parties, 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 vice to be performed hereunder between the Shipper and the Carrier shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, stern, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. en 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 cargo, damage to containers, ny other consequences occuring during transportation, Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by GSE Lining Technology, Inc.

ject 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 said terms and conditions are hereby agreed and accepted for himself and his assigns.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.

ETA: 7/6

Sales Order 6181

Project# 502302

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101740	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3898 ~~4,294.04~~
2	114101750	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3977 ~~4,381.06~~
3	114101760	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3990 ~~4,395.38~~
4	114101762	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3950 ~~4,351.32~~
[illegible]	114101770	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3929 ~~4,328.19~~
6	114101780	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3930 ~~4,329.29~~
7	114101784	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3924 ~~4,322.68~~
8	114101790	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3900 ~~4,296.24~~
9	114101800	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3907 ~~4,303.95~~
10	114101810	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3925 ~~4,323.78~~
11	114101817	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3940 ~~4,395.96~~
12	114101818	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3934 ~~4,370.15~~

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up # 3746

Seal #

Truckers P.O. #

Walker 7-7-99

47,198

~~Total Quantity 110,168~~ Total Weight ~~52,100.032~~

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Lynn Collins
CARRIER SIGNATURE: George [illegible]
DATE: 7-2-99

Sign Here For Shipper
Shipper: [signature]
Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper
Agent for Shipper:
(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

000142

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

GSE

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

SHIPPERS NO. 3577

2740

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 said 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 all 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 GSE 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 parties, 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 and the Carrier 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 the applicable motor carrier 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 cargo, damage to containers, or any other consequences occuring 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.

Ship To: Fluor Daniel Fernald
Department of Energy
7400 Willey Road
Harrison OH 45030

Date: 7/2/99

Shipping Instructions: Contact Kathy Fisher @ (513) 648-3000.

ETA: 7/6

Sales Order 6181

Project# 502302

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks, and Exceptions	Weight
1	114101743	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3904 ~~4,300.65~~
2	114101747	9283	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3940 ~~4,396.25~~
3	114101749	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3880 ~~4,274.21~~
4	114101761	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3975 ~~4,423.78~~
5	114101771	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3969 ~~4,372.25~~
6	114101783	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3990 ~~4,395.38~~
7	114101794	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3915 ~~4,313.76~~
8	114101796	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3959 ~~4,348.02~~
9	114101801	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3992 ~~4,397.59~~
10	114101806	9165	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3985 ~~4,378.86~~
11	114101813	9330	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3985 ~~4,469.18~~
12	114101816	9259	SF	HMT080A004 80 mil Avg HyperFrictionF Blk, HD, 2 Side Tex, 23.5	3950 ~~4,368.13~~

[signature] 7-7-99

47,444

Total Quantity 110,451

Total Weight ~~52,437.055~~

TERMS: Prepaid / Collect

Customer P.O. #: L of I

Section 7

Load Verification

Signed

X

Pick Up # 3747

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this B/L must accompany Freight Invoice.

CARRIER NAME: Lynn Dollin

CARRIER SIGNATURE: [signature]

DATE: 7-2-99

Sign Here For Shipper

Shipper: [signature]

Address: GSE Lining Technology Inc.
19103 Gundle Rd.
Houston, Tx. 77073-3598

Sign Here For Agent Of Shipper

Agent for Shipper:

(GSE LINING TECHNOLOGY, INC.
APPROVED AGENT FOR SHIPPER)

000143

Agent must sign, detach and retain a copy of this Shipping Order

ORIGINAL

MATERIALS INVENTORY LOG

SWU EXCAVATION/OSDF (PHASE II) PROJECT
PROJECT NOs. 20102/402; CONTRACT No. FSC-614
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: July 6 - July 8, 1999 2740

PREPARED BY: J. Richard Schairbaum

MATERIAL DELIVERED: 80-mil Textured GML

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
A60646	114101734	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101735	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101736	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101737	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101738	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101739	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101740	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101741	9071 s.f.	*See notes below.	Roll delivered damaged due to pallet poking hole thru mtrl.
A60646	114101742	9095 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101743	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101744	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101745	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101748	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101749	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101750	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101798	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101799	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101808	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60646	114101809	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101746	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101747	9283 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101751	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101752	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101753	9142 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101754	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101755	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101756	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101757	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101758	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101759	9283 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101760	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101761	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101762	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101764	9165 s.f.	*See notes below.	No damage noted upon delivery.

000144

312,035 s.f.

2740

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
A60647	114101766	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101767	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101768	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101769	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101770	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101771	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101772	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101773	9212 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101774	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101775	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101776	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101777	9330 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101779	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101780	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101781	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101782	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101783	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101784	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101785	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101786	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101787	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101788	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101789	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101790	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101791	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101792	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101793	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101794	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101795	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101796	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101797	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101800	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101801	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101802	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101803	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101804	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101806	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101807	9165 s.f.	*See notes below.	No damage noted upon delivery.

000145

348,482 s.f.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition -- 2740
A60647	114101810	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101811	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101812	9165 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101813	9330 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101814	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60647	114101815	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60651	114101816	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60651	114101817	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60651	114101818	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60651	114101819	9259 s.f.	*See notes below.	No damage noted upon delivery.
A60651	114101820	9259 s.f.	*See notes below.	No damage noted upon delivery. 101,638 s.f.
	115102807	5805 s.f.	N/A	No damage noted upon delivery; Smooth roll-trial seams. 5805 s.f.
	104101745		N/A	No damage noted upon delivery; 30-mil sacr. - smooth.

:UR_JOBS\PHASEII\QUALCTRL\MTRL_INV\GML-DEL.XLS

Total - 162,155 s.f.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOMEMBRANE TEST REQUEST FORM NO. 1

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 80mil Geomembrane Liner, Textured YEAR: 1999

SAMPLED: 3,4 day June mo SAMPLER ID: DKP SHIPPED: 4 day June mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: ____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 3418 SITE FAX: (513) 648-3415

SAMPLE NO. GM-	BATCH NO./ ROLL NO.	TENSILE ASTM D638	DENSITY ASTM D1505 or D792 METH. A	MELT INDEX ASTM D1238	THICKNESS ASTM D5994 ~~D5199/D751~~ ~~D3342/D1593~~	CARBON BLACK CONTENT ASTM D1603	CARBON DISP. ASTM D5596	TEAR RESISTANCE ASTM D1004	PUNCTURE RESISTANCE FTMS 101C METHOD 2065	ESCR/NCTL SINGLE POINT ASTM D1693 D5397	OTHER SPECIFIC GRAVITY
99-1	A-60646/114101740	✓	✓		✓	✓	✓				
99-2	A-60646/114101750	✓	✓		✓	✓	✓				
99-3	A-60647/114101760	✓	✓		✓	✓	✓				
99-4	/114101770	✓	✓		✓	✓	✓				
99-5	/114101780	✓	✓		✓	✓	✓				
99-6	/114101790	✓	✓		✓	✓	✓				
99-7	/114101800	✓	✓		✓	✓	✓				
99-8	A60647/114101810	✓	✓		✓	✓	✓				
99-9	A-60651/114101818	✓	✓		✓	✓	✓				

SMOOTH OR TEXTURED MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOSYNTHETIC CLAY LINER TEST REQUEST FORM NO. 1

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Bentomat YEAR: 1999

SAMPLED: 25-26 day MAY mo SAMPLER ID: DKP SHIPPED: _____ day _____ mo SHIPPER ID: _____ RECEIVED: _____ day _____ mo LAB ID: _____

MANUFACTURED BY: _____ SAMPLE SHIPPED VIA: _____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 ~~3418~~ SITE FAX: (513) 648-3415

SAMPLE NO. GCL-	LOT NO. 199922020 BATCH NO./ ROLL NO.	MASS PER UNIT WEIGHT ASTM D3776	MOISTURE CONTENT ASTM D2216	FREE SWELL A.P.I. TEST NO. 1010	HYDRAULIC CONDUCTIVITY ASTM ~~D5084~~ D5887	THICKNESS ASTM D5199	OTHER DIRECT SHEAR ASTM D5321
99-1	~~5024~~ DKP 5002				✓		✓
99-2	5055				✓		✓
99-3	5098				✓		✓
99-4	5142				✓		✓
99-5	5195				✓		✓
99-6	5235				✓		✓
99-7	5278				✓		✓
99-8	5322				✓		✓
99-9	5360				✓		✓

REINFORCED OR NONREINFORCED MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items 99-9,

Direct Shear Testing (Internal and Interface) in accordance with procedures/instructions provided under seperate cover. Test order: GCL 99-8, 99-7, 99-6, 99-5, 99-4, 99-3, 99-2, 99-1.

2740

©GEOSYNTEC CONSULTANTS FILE NO.: 3-02A-TRF REVIEWED BY: _____ SHEET NO. 1 OF 1

000148

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOMEMBRANE TEST REQUEST FORM NO. 2

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 80 Mil Geomembrane Liner, Textured YEAR: 1999

SAMPLED: 3 ~~4~~ DWP day June mo SAMPLER ID: DWP SHIPPED: 4 day June mo SHIPPER ID: DWP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: ____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 3418 SITE FAX: (513) 648-3415

SAMPLE NO. GM-	BATCH NO./ ROLL NO.	TENSILE ASTM D638	DENSITY ASTM D792	MELT INDEX ASTM D1238	THICKNESS ASTM D5199/D751 D3342/D1593	CARBON BLACK CONTENT ASTM D1603	CARBON DISP. ASTM D5596	TEAR RESISTANCE ASTM D1004	PUNCTURE RESISTANCE FTMS 101C METHOD 2065	ESCR/NCTL SINGLE POINT ASTM D1693 D5397	SPECIFIC GRAVITY	OTHER INTERFACE DIRECT SHEAR * ASTM D 5321
99-1	A-60646/114101740											GCL-99-9
99-2	1 /114101750											99-8
99-3	A60647/114101760											99-7
99-4	/114101770											99-6
99-5	/114101780											99-5
99-6	/114101790											99-4
99-7	/114101800											99-3
99-8	/114101810											99-2
99-9	A60651/114101818											99-1

1-2740

SMOOTH OR TEXTURED MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items * Shear with GCL

GM Samples for Interface Direct Shear Testing with GCL per procedures provided under seperate cover.

000149

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 2

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 7 OZ Geotextile (Nonwoven) EO70 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DKP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: FEDEX

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-5319 SITE FAX: (513) 648-5315

SAMPLE NO. GT-7	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261	~~THICKNESS ASTM D1777 D5199~~	GRAB TENSILE ASTM D4632	TRAP TEAR ASTM D4533	MULLEN BURST ASTM D3786	AOS ASTM D4751	PERMITIVITY ASTM D4491	~~WIDE-WIDTH TENSILE ASTM D4595~~	~~WIDE-STRIP SEAM ASTM D4884~~	~~STRIP TENSILE ASTM D1682 D5035~~	PUNCTURE ASTM D4833	~~OTHER~~
✓ 99-1	30000 5435	✓		✓	✓	✓	✓	✓				✓	
✓ 99-2	5455	✓		✓	✓	✓	✓	✓				✓	
✓ 99-3	5469	✓		✓	✓	✓	✓	✓				✓	
✓ 99-4	5483	✓		✓	✓	✓	✓	✓				✓	
✓ 99-5	5497	✓		✓	✓	✓	✓	✓				✓	
99-6	30000 5440	✓		✓	✓	✓	✓	✓				✓	

1-2740

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

GEOSYNTEC CONSULTANTS FILE NO.: J-02E-TRF REVIEWED BY: ____ SHEET NO. 1 OF 1

000150

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRANSMITTAL LETTER

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: OSDF Phase II, Option A DATE: 22 day 06 month 1999 year

ATTENTION: FDF Engineering and QA

ADDRESS:

☐ FOR APPROVAL	☐ PRINTS	☒ TEST RESULTS	☐
☐ FOR COMMENTS	☐ PHOTOS	☐ DOCUMENTS	☐
☒ AS REQUESTED	☐ LOGS	☐ CONTRACTS	☐

NO. OF COPIES	DRAWING NUMBER	DESCRIPTION	DATE
		GML Conformance and Destructive Test Results	6/15/99

REMARKS

cc:
Tony Klimek, FDF Eng
Jim Turner, FDF QA
Collin Sukow, GeoSyntec CQE

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COPY TO: Project File FROM: Kwasi Badu-Tweneboah

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LETTER OF TRANSMITTAL

2740

TO

Mr. Collin Sukow
GeoSyntec Consultants
Fluor-Daniel Fernald
PO Box 538704
Cincinatti, OH 45253-8704

DATE: 06/15/99	GTX NO: 2318
RE: On-Site Disposal Facility	
Pages (excluding transmittal):	

We are sending you ☒ Attached ☐ Under separate cover via _____ the following items:
☒ Test results ☐ Proposal ☒ Report ☐ Samples ☐ Specifications ☐ Invoice
☐ Copy of letter ☐ Change order _____
☐ Other _____

COPIES	DATE	DESCRIPTION
1	06/15/99	June 1999 Laboratory Test Report (results through 06/15/99)

THESE ITEMS ARE TRANSMITTED as checked below:
☐ For approval ☐ Approved as submitted ☐ Resubmit _____ Copies for approval
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☒ As requested ☐ Returned for corrections ☐ Return
☐ For review and comment
☐ For bids due _____, 19_____
☐ _____

REMARKS

TO Mr. Dave Phillips

SIGNED Gary T. Tor

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Gary T. Torosian - Laboratory Manager

GeoTesting Express, Inc.
1145 MASSACHUSETTS AVE.
BOXBOROUGH, MA 01719
978-635-0424 (FAX) 978-635-0266

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June 15, 1999

Mr. Collin Sukow
GeoSyntec Consultants
Fluor-Daniel Fernald
PO Box 538704
Cincinnati, OH 45253-8704

RE: On-Site Disposal Facility (GTX-2318)

Dear Mr. Sukow:

Enclosed are the test results you requested for the above referenced project. Nine 80 mil textured HDPE geomembrane samples were delivered to our laboratory between June 7 and 9, 1999. A copy of the test request form is at the back of this report. In addition, one seam destructive sample was delivered on May 25, 1999. The test request form for this sample is also at the back of this report.

The following analyses were performed on the 80 mil textured HDPE geomembrane samples:

Tensile Properties of Plastics by ASTM D 638 (as modified by NSF Standard 54-1993)
Measurement of Core Thickness of Textured Geomembranes by ASTM D 5994
Density of Plastics by the Density-Gradient Technique by ASTM D 1505
Carbon Black in Olefin Plastics by ASTM D 1603
Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

The following analysis was performed on seam sample:

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty days and will then be discarded unless otherwise notified by you. Please call me directly if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity to provide your firm with geosynthetics testing. Please notify us if we may be of any further assistance to you on this project.

Respectfully yours;

Gary T. Torosian

Gary T. Torosian
Laboratory Manager

Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes by ASTM D 4437

peel shear / seam destructive test

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Client:	GeoSyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	05/25/99
Project Location:	Fernald, OH	**Report #:**	1
Installer:	---	**Page:**	1 of 1

Upper Geomembrane:	GSE 80 mil textured HDPE
Lower Geomembrane:	NSC 80 mil textured HDPE
Seaming Method:	Fillet-Extrusion weld

Testing Machine:	Instron 1123	**Grips:**	cam
Testing Speed:	2 in/min	**Specimen Size:**	1 in x 8 in
Sample ID:	DSD-1	**Date Sampled:**	05/24/99
Seam:	old/new	**Welder ID:**	---
Machine ID:	---		

	Peel Strength						Shear Strength		
	Weld A			Weld B					
Specimen Number	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type	lb./in	Delamination, %	Failure Type
1	114	---	FTB/SE3	---	---	---	201	---	*
2	96	---	FTB/SE3	---	---	---	200	---	*
3	90	---	FTB/SE3	---	---	---	203	---	*
4	93	---	FTB/SE3	---	---	---	201	---	*
5	119	---	FTB/SE3	---	---	---	204	---	*
Average	**102**	---	---	---	---	---	**202**	---	---

Comments:

Tested By: mhm
Checked By: gtt

* = test halted after 2 inches of displacement

Locus of Break Codes for seam break types taken from EPA guidance document EPA600-2-88/052 09/88

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Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638
(as modified by NSF Standard 54-1993)

Client: Geosyntec
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 06/11/99

Sample ID: 99-1; A-60646/114101740
Sample Description: 80 mil textured HDPE geomembrane

Testing Machine: Instron 1123
Grip Separation: 2.5 in

Testing Speed: 2 in/min
Grips: sq. jaw

Test Temperature, °F: 71
Test Relative Humidity: 40%

Die Type: IV

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	224	18	379	757
	2	223	18	379	762
	3	231	18	403	807
	4	213	18	411	874
	5	216	21	361	759
	Average	221	19	387	792
	Standard Deviation	7.09	1.3	20.2	50.4
Cross Machine	1	210	21	378	799
	2	209	21	396	839
	3	206	18	418	885
	4	210	21	379	782
	5	209	15	385	806
	Average	209	19	391	822
	Standard Deviation	1.64	2.7	16.6	40.8

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/11/99
Project Location:	Fernald, OH		
Sample ID:	99-2; A-60646/114101750		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	40%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	212	18	421	877
	2	212	18	403	842
	3	211	18	409	847
	4	211	21	404	832
	5	206	15	373	780
	Average	210	18	402	836
	Standard Deviation	2.51	2.1	17.7	35.3
Cross Machine	1	210	18	436	913
	2	211	18	437	908
	3	203	21	428	903
	4	209	18	422	886
	5	215	18	373	779
	Average	210	19	419	878
	Standard Deviation	4.34	1.3	26.5	56.2

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/11/99
Project Location:	Fernald, OH		
Sample ID:	99-3; A-60647/114101760		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	39%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	215	18	398	825
	2	218	18	404	842
	3	215	18	345	727
	4	212	21	424	880
	5	221	15	439	896
	Average	216	18	402	834
	Standard Deviation	3.42	2.1	35.8	66.2
Cross Machine	1	210	18	401	842
	2	214	18	424	893
	3	209	18	385	812
	4	216	18	403	847
	5	221	21	366	772
	Average	214	19	396	833
	Standard Deviation	4.85	1.3	21.7	44.8

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638 — 2740
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-4; A-60647/114101770		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	41%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	215	18	364	733
	2	219	18	416	827
	3	215	21	421	842
	4	210	18	423	856
	5	219	26	414	832
	Average	216	20	408	818
	Standard Deviation	3.71	3.5	24.6	48.8
Cross Machine	1	214	18	364	745
	2	218	21	345	707
	3	217	18	365	744
	4	204	18	355	734
	5	210	18	442	900
	Average	213	19	374	766
	Standard Deviation	5.73	1.3	38.8	76.5

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638 — 2740
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-5; A-60647/114101780		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	42%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	215	18	405	814
	2	218	18	427	854
	3	214	18	451	909
	4	209	18	387	775
	5	214	21	438	870
	Average	214	19	422	844
	Standard Deviation	3.24	1.3	25.7	51.6
Cross Machine	1	205	18	368	771
	2	209	21	409	847
	3	213	21	412	844
	4	211	18	425	870
	5	207	21	392	812
	Average	209	20	401	829
	Standard Deviation	3.16	1.6	22.0	38.3

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638 — 2740
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-6; A-60647/114101790		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	41%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	204	18	417	842
	2	205	18	436	895
	3	209	18	438	880
	4	210	21	430	912
	5	213	18	417	860
	Average	208	19	428	878
	Standard Deviation	3.70	1.3	10.1	27.7
Cross Machine	1	204	18	433	907
	2	205	18	401	847
	3	211	18	389	817
	4	208	18	353	759
	5	206	18	407	875
	Average	207	18	397	841
	Standard Deviation	2.77	0.0	29.2	56.7

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638
(as modified by NSF Standard 54-1993)

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-7; A-60647/114101800		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	42%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	211	18	377	775
	2	215	18	412	846
	3	218	21	431	875
	4	220	18	425	862
	5	221	18	448	914
	Average	217	19	419	854
	Standard Deviation	4.06	1.3	26.6	51.0
Cross Machine	1	211	18	403	847
	2	220	21	397	817
	3	217	18	424	877
	4	214	18	476	1001
	5	218	18	416	864
	Average	216	19	423	881
	Standard Deviation	3.54	1.3	31.4	70.6

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638
(as modified by NSF Standard 54-1993)

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Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-8; A-60647/114101810		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	43%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	212	18	399	822
	2	200	18	389	842
	3	209	21	435	912
	4	211	21	375	769
	5	205	18	435	889
	Average	207	19	407	847
	Standard Deviation	4.93	1.6	27.3	56.4
Cross Machine	1	210	21	416	866
	2	205	15	376	794
	3	211	18	370	784
	4	201	23	407	878
	5	221	52	416	893
	Average	210	26	397	843
	Standard Deviation	7.54	15	22.3	50.3

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Tensile Properties of Plastics by ASTM D 638 — 2740
(as modified by NSF Standard 54-1993)

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/14/99
Project Location:	Fernald, OH		
Sample ID:	99-9; A-60651/114101818		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Instron 1123	**Testing Speed:**	2 in/min
Grip Separation:	2.5 in	**Grips:**	sq. jaw
Test Temperature, °F:	71	**Die Type:**	IV
Test Relative Humidity:	42%		

Direction	Specimen Number	YIELD Tensile Strength, lb/in	YIELD Elongation, % (1.3 inch gauge length)	BREAK Tensile Strength, lb/in	BREAK Elongation, % (2.0 inch gauge length)
Machine	1	222	15	386	774
	2	227	23	423	880
	3	221	18	431	852
	4	221	18	439	880
	5	219	18	449	904
	Average	222	18	426	858
	Standard Deviation	3.00	2.9	24.1	50.4
Cross Machine	1	221	18	407	834
	2	225	28	393	825
	3	223	18	431	888
	4	216	18	410	859
	5	219	18	432	900
	Average	221	20	415	861
	Standard Deviation	3.49	4.5	16.7	32.7

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-1; A-60646/114101740		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	82.1
2	80.3
3	82.4
4	81.5
5	82.0
6	81.8
7	81.1
8	81.8
9	82.6
10	80.7
Average	81.6
Standard Deviation	0.74
Coefficient of Variation	0.91

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-2; A-60646/114101750		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	83.3
2	83.4
3	82.1
4	79.8
5	79.5
6	82.4
7	82.8
8	80.0
9	84.6
10	82.5
Average	82.0
Standard Deviation	1.71
Coefficient of Variation	2.08

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-3; A-60647/114101760		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	83.0
2	83.7
3	83.7
4	83.4
5	79.8
6	83.1
7	82.3
8	84.2
9	81.6
10	80.7
Average	82.5
Standard Deviation	1.43
Coefficient of Variation	1.73

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-4; A-60647/114101770		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	81.8
2	82.8
3	82.6
4	82.5
5	82.5
6	83.6
7	83.5
8	83.3
9	83.0
10	81.5
Average	82.7
Standard Deviation	0.68
Coefficient of Variation	0.83

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-5; A-60647/114101780		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	84.9
2	84.3
3	82.5
4	82.0
5	81.7
6	81.6
7	83.5
8	82.4
9	80.7
10	82.8
Average	82.6
Standard Deviation	1.28
Coefficient of Variation	1.55

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000169

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-6; A-60647/114101790		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	82.4
2	82.5
3	81.7
4	82.2
5	82.2
6	82.5
7	81.5
8	81.9
9	81.0
10	82.3
Average	82.0
Standard Deviation	0.48
Coefficient of Variation	0.59

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

-- 2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-7; A-60647/114101800		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	81.8
2	81.6
3	82.4
4	82.8
5	82.3
6	81.1
7	82.9
8	82.3
9	81.4
10	82.0
Average	82.0
Standard Deviation	0.58
Coefficient of Variation	0.71

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-8; A-60647/114101810		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	82.4
2	81.8
3	81.9
4	82.4
5	81.2
6	82.7
7	82.5
8	81.8
9	82.9
10	82.1
Average	82.1
Standard Deviation	0.50
Coefficient of Variation	0.61

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000172

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

2740

Client:	Geosyntec	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	06/10/99
Project Location:	Fernald, OH		
Sample ID:	99-9; A-60651/114101818		
Sample Description:	80 mil textured HDPE geomembrane		
Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	**Pressure:**	2.0 oz
Presser Foot:	cone point	**Loading Time:**	5 sec
Specimen Size:	2 inch diameter		

Measurement Number	Thickness, mil
1	82.2
2	80.2
3	82.9
4	81.6
5	82.1
6	82.5
7	81.4
8	83.0
9	81.0
10	82.1
Average	81.9
Standard Deviation	0.87
Coefficient of Variation	1.06

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000173

F-2740

AGP Laboratories, Inc.
2004 E. Randol Mill, Suite 512
Arlington, Texas 76011
(817) 861-9090 • (800) AGP-6030
Fax: (817) 861-5400

June 10, 1999

Geo Testing Express
Attn: Gary Torosian
1145 Massachusetts Ave.
Boxboro, MASS 01719-1408

RE: Client Job - GTX 2298
AGP Project Number: GTX 3310.001

Dear Mr. Torosian:

Seven (7) samples were received for testing on 5/25/99. The samples were identified as follows:

SAMPLE I.D.	AGP COMMENTS
99-1 80 mil Textured HDPE	GMT
99-2 80 mil Textured HDPE	GMT
99-3 80 mil Textured HDPE	GMT
99-5 80 mil Textured HDPE	GMT
99-7 80 mil Textured HDPE	GMT
99-8 80 mil Textured HDPE	GMT
99-9 80 mil Textured HDPE	GMT

The sample was tested in accordance with the test methods listed below:

ASTM D 1505, "Test Method for Density Of Plastics By The Density-Gradient Technique"

ASTM D 1603, "Test Method for Carbon Black in Olefin Plastics"

ASTM D 5596, "Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics"

All tests were performed at 73° F ± 3° with a relative humidity of 50% ± 5. Conditioning of the samples, before testing, is standard 40 hours at test temperature and relative humidity unless waived by the client.

The sample material was submitted by Geo Testing Express AGP Laboratories, Inc. has no specific knowledge as to conditioning, origin, sampling procedure, special use of material, or purpose of material. The testing listed herein is based upon accepted industry practice as well as by the test method listed. AGP Laboratories, neither accepts nor makes claim as to final use and purpose of the material. Results presented apply only to the items tested.

2740

DENSITY
ASTM D 1505

Tested: 6/10/99

SAMPLE NO.	DENSITY (g/cc) 1	2	3	AVG
99-1 80 mil Textured HDPE	0.945	0.945	0.945	0.945
99-2 80 mil Textured HDPE	0.946	0.946	0.946	0.946
99-3 80 mil Textured HDPE	0.945	0.945	0.945	0.945
99-5 80 mil Textured HDPE	0.947	0.947	0.947	0.947
99-7 80 mil Textured HDPE	0.946	0.946	0.946	0.946
99-8 80 mil Textured HDPE	0.948	0.948	0.948	0.948
99-9 80 mil Textured HDPE	0.946	0.946	0.946	0.946

CARBON BLACK CONTENT
ASTM D 1603

Tested
6/9/99

SAMPLE I.D.	CONTENT (%)		AVG.
99-1 80 mil Textured HDPE	2.6	2.6	2.6
99-2 80 mil Textured HDPE	2.2	2.5	2.4
99-3 80 mil Textured HDPE	2.3	2.3	2.3
99-5 80 mil Textured HDPE	2.6	2.2	2.4
99-7 80 mil Textured HDPE	2.5	2.3	2.4
99-8 80 mil Textured HDPE	2.4	2.2	2.3
99-9 80 mil Textured HDPE	2.6	2.7	2.7

-- 2740

CARBON BLACK DISPERSION
ASTM D 5596

Tested
6/10/99

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-1 mil Textured HDPE	1	Category 1	Category 1
	2	Category 2	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-2 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-3 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-5 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

-- 2740

ASTM D 5596

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-7 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-8 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 2
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-9 80 mil Textured HDPE	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

2740

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If there are any questions, please contact us.

Respectfully,

Neelam Asher

Neelam Asher
Laboratory Manager

- 2740

AGP Laboratories, Inc.
2004 E. Randol Mill, Suite 512
Arlington, Texas 76011
(817) 861-9090 • (800) AGP-6030
Fax: (817) 861-5400

June 15, 1999

Geo Testing Express
Attn: Gary Torosian
1145 Massachusetts Ave.
Boxboro, MASS 01719-1408

RE: Client Job - GTX 2318
AGP Project Number: GTX 3309.002

Dear Mr. Torosian:

Two (2) samples were received for testing on 6/10/99. The samples were identified as follows:

SAMPLE I.D.	AGP COMMENTS
99-4-80 mil	GMT
99-6-80 mil	GMT

The samples were tested in accordance with the test methods listed below:

ASTM D 1505, "Test Method for Density Of Plastics By The Density-Gradient Technique"

ASTM D 1603, "Test Method for Carbon Black in Olefin Plastics"

ASTM D 5596, "Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics"

All tests were performed at 73° F ± 3° with a relative humidity of 50% ± 5. Conditioning of the samples, before testing, is standard 40 hours at test temperature and relative humidity unless waived by the client.

The sample material was submitted by Geo Testing Express. AGP Laboratories, Inc. has no specific knowledge as to conditioning, origin, sampling procedure, special use of material, or purpose of material. The testing listed herein is based upon accepted industry practice as well as by the test method listed. AGP Laboratories, neither accepts nor makes claim as to final use and purpose of the material. Results presented apply only to the items tested.

-- 2740

DENSITY
ASTM D 1505

Tested: 6/15/99

SAMPLE NO.	DENSITY (g/cc) 1	2	3	AVG
99-4-80 mil	0.946	0.946	0.946	0.946
99-6-80 mil	0.947	0.947	0.947	0.947

CARBON BLACK CONTENT
ASTM D 1603

Tested
6/11/99

SAMPLE I.D.	CONTENT (%)		AVG.
99-4-80 mil	2.5	2.4	2.5
99-6-80 mil	2.6	2.3	2.5

CARBON BLACK DISPERSION
ASTM D 5596

Tested: 6/15/99

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-4-80 mil	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

- 2740

CARBON BLACK DISPERSION
ASTM D 5596

Tested 6/15/99

Sample I.D.	Specimen #	Rf_1*	Rf_2*
99-6-80 mil	1	Category 1	Category 1
	2	Category 1	Category 1
	3	Category 1	Category 1
	4	Category 1	Category 1
	5	Category 1	Category 1

***Rf: Random field of view.**

This report shall not be reproduced except in full, without written approval from this laboratory.

If there are any questions, please contact us.

Respectfully,

Neelam Asher

Neelam Asher
Laboratory Manager

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOMEMBRANE TEST REQUEST FORM NO. _____

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0166 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1999

SAMPLED: 24 day MAY mo SAMPLER ID: CS SHIPPED: 24 day MAY mo SHIPPER ID: FEDEX RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: New — GSE / OLD — NSC

SITE CONTACT: Collin Sukow SITE PHONE: 513-648-3419 SITE FAX: 513-648-3415

SAMPLE NO. GM-	BATCH NO./ ROLL NO.	~~TENSILE~~ ASTM D638	~~DENSITY~~ ASTM D792	~~MELT INDEX~~ ASTM D1238	~~THICKNESS~~ ASTM D5199/D751 D3342/D1593	~~CARBON BLACK CONTENT~~ ASTM D1603	~~CARBON DISP.~~ ASTM D5596	~~TEAR RESISTANCE~~ ASTM D1004	~~PUNCTURE RESISTANCE~~ FTMS 101C METHOD 2065	~~ESCR/NCTL SINGLE POINT~~ ASTM D1693 D5397	SPECIFIC GRAVITY OTHER
DSD-1											5 PEELS 5 SHEAR

SMOOTH OR TEXTURED MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

10% PEEL ALLOWABLE; SHEAR MIN: 151 lb/in; PEEL MIN: 84 lb/in

#-2740

0001183

©GEO SYNTEC CONSULTANTS FILE NO.: 3-028-TRF SHEET NO. 1 OF 1

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOMEMBRANE TEST REQUEST FORM NO. 1

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 80mil Geomembrane Liner, Textured YEAR: 1999

SAMPLED: 3,4 day June mo SAMPLER ID: DKP SHIPPED: 4 day June mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: ____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 3418 SITE FAX: (513) 648-3415

SAMPLE NO. GM-	BATCH NO./ ROLL NO.	TENSILE ASTM D638	DENSITY ASTM D1505 or D792 METH. A	MELT INDEX ASTM D1238	THICKNESS ASTM D5994 ~~D5199/D751~~ ~~D3342/D1593~~	CARBON BLACK CONTENT ASTM D1603	CARBON DISP. ASTM D5596	TEAR RESISTANCE ASTM D1004	PUNCTURE RESISTANCE FTMS 101C METHOD 2065	ESCR/NCTL SINGLE POINT ASTM D1693 D5397	OTHER SPECIFIC GRAVITY
99-1	A-60646/114101740	✓	✓		✓	✓	✓				
99-2	A-60646/114101750	✓	✓		✓	✓	✓				
99-3	A-60647/114101760	✓	✓		✓	✓	✓				
99-4	/114101770	✓	✓		✓	✓	✓				
99-5	/114101780	✓	✓		✓	✓	✓				
99-6	/114101790	✓	✓		✓	✓	✓				
99-7	/114101800	✓	✓		✓	✓	✓				
X 99-8	A60647/114101810	✓	✓		✓	✓	✓				
99-9	A-60651/114101818	✓	✓		✓	✓	✓				

-2740

SMOOTH OR TEXTURED MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

rec'd

000184

GEOSYNTEC CONSULTANTS FILE NO.: 3-028-TRF

SHEET NO. 1 OF 1

GEOTEXTILE

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 7 oz Geotextile MANUFACTURER: TSN Mills, 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 Aug	30000 5467	CS								
	5482									
	5474									
	5496									
	5500									
	5436									
	5449									
	5487									
	5491									
	5493									
	5498									
	5483		12 July	99-4	P	CS				
	5469		12 July	99-3	P	CS				
	5491		12 July	99-5	P	CS				
	5433									
	5432									
	5442									
	5441 *		12 July	99-6	P	CS				
	5438									
11 Aug	5501									
	5490									
	5492									
	5470									
	5481									
	5489									

000186

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 168,750 NO. OF CONFORMANCE TESTS (page/total): 4 / 6

* Note: No Previous Roll was sampled and Not delivered to the site

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

MATERIAL INVENTORY

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 7oz Geotextile MANUFACTURER: TSN Mills, 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
5 Aug	300005488									
	5478									
	5477									
	5479									
	5480									
	5472									
	5466									
	5456									
	5447									
	5461									
	5485									
	5446									
	5457									
	5476									
	5475									
	5448									
	5445									
	5460									
	5459									
	5471									
	5463									
	5465									
	5464									
	5462									
	5484									

000187

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 337,500 ft^3 NO. OF CONFORMANCE TESTS (page/total): 0 / 6

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 7 oz Geotextile MANUFACTURER: TSN, Mills 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
5 Aug	300005486	CL								
	5444									
	5473									
	5443									
	5430									
	5458									
	5434									
	5450									
	5435		12 July	99-1	P	CL				
	5499									
11 Aug	5428									
	5429									
	5431									
	5468									
14 Sept	5495									
	5455		12 July	99-2	P	CL				
	5437									
	5494									

000188

AVG. ROLL WIDTH: 15 ft AVG. ROLL LENGTH: 450 ft

NUMBER OF ROLLS ABOVE: 18 ACCUMULATIVE NUMBER OF ROLLS: 68

CUMULATIVE AREA: 459,000 ft² NO. OF CONFORMANCE TESTS (page/total): 2 / 6

Tr[illegible] # FL4866

SHIPPING MEMO

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

Date 8-3-99

US DOE

-- 2740

Sold To:

E160 180 X 450

Cust. Order No.:

Ship To:

E070-180 X 450

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	300005517 ✓				300005467 ✓			
2	5521 ✓				5482 ✓			
3	5515 ✓				5474 ✓			
4	5522 ✓				5496 ✓			
5	5513 ✓				5500 ✓			
6	5520 ✓	Shipment Damaged on Edge			5436 ✓			
7	5519 ✓				5449 ✓			
8	5518 ✓				5487 ✓			
9	5514 ✓				5491 ✓			
10	5523 ✓				5493 ✓			
11					5498 ✓			
12					5483 ✓	Damaged at Loading		
13					5469 ✓			
14					5497 ✓			
15					5433 ✓			
16					5432 ✓			
17					5442 ✓			
18					5441 ✓			
19					5438 ✓			
20								
21								
22								

000189

No. Cartons _____ Total Gross

Prepaid ( ) Total Tare

Collect ( )

Carrier _____ Total Net

2740

is to certify that the below-named materials are properly classified described packaged marked and labeled and are roper condition for transportation according to the applicable regulations of the Department of Transportation

This Memorandum is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Shipper No. 21254

Carrier No.

Date 8-3-99

US DOE — D M Kaye (Name of Carrier) (SCAC)

signee	c/o Fluor Daniel Fernald	FROM: Shipper	TNS ADVANCED TECHNOLOGIES
	On Collect on Delivery shipments, the letters "COD" must appear before consignee's name - - or as otherwise provided in Item 430, Sec. 1		
et	7400 Willey Road	Street	1075 Victor Hill Road
tination	Fernald, OH Zip Code 45030	Origin	Greer, SC Zip Code 29651
te			Vehicle Number

o. Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
		ROLLS OF POLYPROPYLENE GEOTEXTILES			
		NMFC 49160 CLASS 65			
19		E070 180 X 450	7,220		
10		E160 180 X 450	8,160		
		P.O. # 99SC 001 Total	15,380		
		PHONE # 513-648-5021 Tim McDorough			

te — Where the rate is dependent on value, shippers are required to state specifically in ng the agreed or declared value of the property.
agreed or declared value of the property is hereby specifically stated by the shipper to ot exceeding

per

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

TOTAL CHARGES: $

FREIGHT CHARGES: FREIGHT PREPAID ☑ FREIGHT COLLECT ☐

CEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and lition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person orporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route aid destination. It is mutually agreed as to each carrier of all 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 of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment. hipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper accepted for himself and his assigns.

PER	TNS ADVANCED TECHNOLOGIES	CARRIER	D M Kaye
	Roger E. Moon	PER	
		DATE	8-3-99

BLCC-602-4

* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.

000190

...is to certify that the below-named materials are properly classified described packaged marked and labeled and are ...roper condition for transportation according to the applicable regulations of the Department of Transportation

126003

This Shipping Order must be legibly filled in, in Ink, in Indelible Pencil, or in Carbon, and retained by the Agent

Shipper No. 21239 FLUE

-- 2740

Carrier No.

Date 8-3-99

US DOE

D M Kaye (Name of Carrier) (SCAC)

...e c/o Fluor Daniel Fernald

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name - - or as otherwise provided in Item 430, Sec. 1

...et 7400 Willey Road

...ination Fernald, OH Zip Code 45030

FROM: Shipper TNS ADVANCED TECHNOLOGIES

Street 1075 Victor Hill Road

Origin Greer, SC Zip Code 29651

...te

Vehicle Number

...Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
		ROLLS OF POLYPROPYLENE GEOTEXTILES			
		NMFC 49160 CLASS 65			
41		E070 180 X 450	14,375		
		TRL# 48131			
		Wallace 8.5-99			
		P.O. # 99SC001			
		PHONE # 513-648-5021 Jim McDonough			

...e — Where the rate is dependent on value, shippers are required to state specifically in ...g the agreed or declared value of the property.
...agreed or declared value of the property is hereby specifically stated by the shipper to ...t exceeding

_____ per _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

TOTAL CHARGES: $

FREIGHT CHARGES:
FREIGHT PREPAID ☐ FREIGHT COLLECT ☐

...EIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and ...ion of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person ...poration in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route ...estination. It is mutually agreed as to each carrier of all 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 ...d property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
...hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper ...ccepted for himself and his assigns.

...ER TNS ADVANCED TECHNOLOGIES

~~F. Graham~~ Roger E. Moon

CARRIER DM Kaye

PER Y Charles R. Reale

DATE 8-3-99

2

BLCC-602-4

* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.

13	5466	5443						
14	5456	5430						
15	5447	5458						
16	5461	5434						
17	5485	5450						
18	5446	5435						
19	5457	5499						
20	5476							
21	5475							
22	5448							

No. Cartons _____ Total Gross

Prepaid ( ) Total Tare

Collect ( )

Carrier _____ Total Net

000191

SHIPPING MEMO

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

Date _____

2740

Sold To:

E070 180X450 ✓O.K. TBC
05 AUGUST 1999

Cust. Order No.:

Ship To:

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	X30000550	5445 X						
2	X 5490	5460 X						
3	X 5492	5459 X						
4	X 5470	5471 X						
5	X 5481	5463 X						
6	X 5489	5464 X						
7	X 5488	5465 X						
8	X 5478	5462 X						
9	X 5477	5484 X						
10	X 5479	5486 X						
11	X 5480	5444 X						
12	X 5472	5473 X						
13	X 5466	5443 X						
14	X 5456	5430 X						
15	X5447	5458 X						
16	X5461	5434 X						
17	X5485	5450 X						
18	X5446	5435 X						
19	X5457	5499 X						
20	X5476							
21	X5475							
22	X5448							

000192

No. Cartons _____ Total Gross
Prepaid ( ) Total Tare
Collect ( )
Carrier _____ Total Net

MATERIALS INVENTORY LOG

SWU EXCAVATION/OSDF (PHASE II) PROJECT
PROJECT NOs. 20102/402; CONTRACT No. FSC-614
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: August 5 - September 15, 1999

PREPARED BY: J. Richard Schairbaum 2740

MATERIAL DELIVERED: 7-oz Geotextile

t Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
30000	5428	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5429	15-ft. x 450-ft.	*See notes below.	Delivered slightly damaged from manufacturer.
30000	5430	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5431	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5432	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5433	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5434	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5435	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5436	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5437	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5438	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5441	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5442	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5443	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5444	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5445	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5446	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5447	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5448	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5449	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5450	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5455	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5456	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5457	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5458	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5459	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5460	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5461	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5462	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5463	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5464	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5465	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5466	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5467	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.

t Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition - 2740
30000	5468	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5469	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5470	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5471	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5472	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5473	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5474	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5475	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5476	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5477	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5478	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5479	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5480	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5481	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5482	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5483	15-ft. x 450-ft.	*See notes below.	Damaged during delivery
30000	5484	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5485	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5486	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5487	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5488	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5489	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5490	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5491	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5492	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5493	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5494	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5495	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5496	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5497	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5498	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5499	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5500	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5501	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: 10 oz E100 Geotextile MANUFACTURER: TNS Mills 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 Aug	30,000 5424	CS								
	5353									
	5363									
	5402		12 July	99-8	P	CS				
	5422									
	5427									
	5415									
	5358									
	5419*		July 12	99-9	P	CS				
	5426									
	5361									
	5374		12 July	99-6	P	CS				
	5371									
	5373									
	5375									
	5370									
	5372									
	5276									
	5366									
	5283									
	5268									
	5278									
	5282									
	5367									
	5377									

000195

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 168,750 NO. OF CONFORMANCE TESTS (page/total): 3 / 9

©GEO SYNTEC CONSULTANTS FILE NO. 3-01-MIF REVIEWED BY: _____ SHEET NO. 1 OF 5

* Previous Roll sampled and not delivered on site

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: E100 10 oz Geotextile MANUFACTURER: TSN Mills 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 Aug	30,000 5369	CA								
	5261									
	5242									
	5365									
	5259									
	5405									
	5240									
	5378									
	5392									
	5273									
	5234									
	5233									
	5400									
	5368									
	5393									
	5238									
	5280									
	5258									
	5403									
	5412									
	5236									
	5411									
	5257									
5 Aug	5425									
	5410									

000196

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 337,500 NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: E100 10oz Geotextile MANUFACTURER: TSN Mills, 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
5 Aug	30,000 5420	CL								
	5414									
	5406									
	5279		12 July	99-4	P	CL				
	5356									
	5355									
	5265		12 July	99-3	P	CL				
	5360		12 July	99-5	P	CL				
	5237		12 July	99-1	P	CL				
	5417									
	5359									
	5364									
	5421									
	5409									
	5394									
	5407									
	5413									
	5362									
	5357									
	5354									
	5423									
	5251		12 July	99-2	P	CL				
	~~5452~~41									
	5243									
	5249									

000197

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 506,250 NO. OF CONFORMANCE TESTS (page/total): 5 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: E100 10 oz Geotextile MANUFACTURER: TSN Mills, 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
5 Aug	30,000, 5252	CS								
	5254									
	5255									
	5260									
	5262									
	5263									
	5269									
	5270									
	5271									
	5272									
	5275									
	5396									
	5376									
	5382									
	5383									
	5384									
	5385									
	5387									
	5395									
	5397									
	5399									
	5404									
	5408									
	5416									
11 Aug	5266									

000138

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

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

CUMULATIVE AREA: 675,000 NO. OF CONFORMANCE TESTS (page/total): 0 / 9

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: E100 10oz Geotextile MANUFACTURER: TSN Mills, 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
11 Aug	30,000; 5253	CA								
	5256									
	5401									
	5398									
	5264									
	5381									
	5277									
	5230									
	5235									
	5232									
	5380									
	5390									
	5389*		12 July	99-7	P	CA				
	5231									
	5239									
	5250									
	5379									
	5391									
	5274									
	5281									

000199

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

NUMBER OF ROLLS ABOVE: 20 ACCUMULATIVE NUMBER OF ROLLS: 120

CUMULATIVE AREA: 810,000 NO. OF CONFORMANCE TESTS (page/total): 1 / 9

©GEOSYNTEC CONSULTANTS FILE NO. 3-01-MF REVIEWED BY: _____ SHEET NO. 5 OF 5

* Note Previous roll sampled and not delivered on site

200878

SHIPPING MEMO

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

850F110

Date 8-2-99

--2740

Sold To: US DOE
c/o Fluor Daniel Fernald
7400 Willey Road
Fernald, OH

Cust. Order No.:

Ship To: 21231

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	300005424	10			300005282			
2	5353				5367			
3	5363							
4	5402							
5	5422							
6	5427							
7	5415							
8	5358							
9	5419							
10	5426							
11	5361							
12	5374							
13	5371							
14	5373							
15	5375							
16	5370							
17	5372							
18	5276							
19	5366							
20	5283							
21	5268							
22	5278							

[signature] 8-3-99

No. Cartons _____ Total Gross
Prepaid ( ) Total Tare
Collect ( ) 000200
Carrier _____ Total Net

SHIPPING MEMO

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

Date 8-2-99

-- 2740

Sold To:

E100 180 X450

Ship To:

Cust. Order No.:

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	30000 5377				30000 5411			
2	5369				5257			
3	~~5361~~	5261						
4	5242							
5	5365							
6	5259							
7	5405							
8	5240							
9	5378							
10	5392							
11	5273						000201	
12	5234							
13	5233							
14	5400							
15	5368							
16	5393							
17	5238							
18	5280							
19	5258							
20	5403							
21	5412 -D							
22	5236							

No. Cartons _____ Total Gross

Prepaid ( )

Total Tare

Collect ( )

Carrier _____ Total Net

2740

To certify that the below-named materials are properly classified described packaged marked and labeled and are condition for transportation according to the applicable regulations of the Department of Transportation

This Shipping Order must be legibly filled in, in Ink, in Indelible Pencil, or in Carbon, and retained by the Agent

125745
FL4882
Shipper No. 21232

Carrier No.

US DOE — D M KAYE (Name of Carrier) (SCAC) — Date 7-30-99

TO: Consignee c/o Fluor Daniel Fernald

FROM: Shipper TNS ADVANCED TECHNOLOGIES

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name - - or as otherwise provided in Item 430, Sec. 1

Street 7400 Willey Road

Street 1075 Victor Hill Road

Destination Fernald, OH Zip Code 45030

Origin Greer, SC Zip Code 29651

Route

Vehicle Number

No. Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
		ROLLS OF POLYPROPYLENE GEOTEXTILES			
		NMFC 49160 CLASS 65			
27		E100 120 X 450	16200		
		Bill to: US DOE Carol Collan			
		(24 Hours in Advance)		8.5.99	
		P.O. # 99SC 001			
		PHONE # 513-648-5021 Jim McDonnah			

Note — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

_____ per _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

TOTAL CHARGES: $

FREIGHT CHARGES:
FREIGHT PREPAID ☐ FREIGHT COLLECT ☐

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all 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 to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER TNS ADVANCED TECHNOLOGIES

PER ~~F. Graham~~ Roger E. Moon

CARRIER

PER Robert Baker

DATE 7-30-99

2

BLCC-602-4

* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.

FL4882

000202

SHIPPING MEMO

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

Date _____

2740

Sold To: ✓ O.K. TBL 05 Aug 1999

Cust. Order No.: 5100 180 Y450

Ship To:

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	300005425	✓			300005423	✓		
2	5410	✓			5251	✓		
3	5420	✓			Carol Callen			
4	5414	✓					8.5.99	
5	5406	✓						
6	5279	✓						
7	5356	✓						
8	5355	✓						
9	5265	✓						
10	5360	✓						
11	5237	✓						
12	5417	✓			FL 4882			
13	5359	✓						
14	5364	✓						
15	5421	✓			Carol Callen			
16	5409	✓					8.5.99	
17	5394	✓						
18	5407	✓						
19	5413	✓					000203	
20	5362	✓						
21	5357	✓						
22	5354	✓						

No. Cartons 27 Total Gross
Prepaid ( ) Total Tare
Collect ( )
Carrier _____ Total Net

PACKING LIST
TRL # 48205 B/L # 21237

E100 180 X 450 US DOE

8/5/99
TD

--2740

300005241
300005243
300005249 — ~~Damaged on off load~~ ok
300005252
300005254
300005255
300005260
300005262
300005263
300005269
300005270
300005271
300005272
300005275 — DAMAGED on off LOAD FORK THRU MATERIAL
? 300005369 — ~~TYPO should have been 5396~~
300005376
300005382
300005383
300005384
300005385
300005387
300005395
300005397
300005399
300005404
300005408
300005416
5396

5369 WAS NOT ON THE SHIPMENT
5396 WAS ON THE SHIPMENT
THIS IS A POSSIBLE TYPO
HOWEVER 5396 IS AN
APPROVED ROLL. FLUOR DANIEL
IS GOING TO CONTACT THE MFG.

FAX TO: FLUOR DANIEL FERNALD
513-648-5001

FROM: TNS ADV. TECH
ph 848-968-0592

2740

This is to certify that the below-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Trailer # FL48205

This Shipping Order

must be legibly filled in, in Ink, in Indelible Pencil, or in Carbon, and retained by the Agent

125843 ECROSS

Shipper No. 21237

Carrier No.

Date 8-2-99

US DOE

D M Kaye (Name of Carrier) (SCAC)

TO: Consignee c/o Fluor Daniel Fernald

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name - or as otherwise provided in Item 430, Sec. 1

Street 7400 Willey Road

Destination Fernald, OH Zip Code 45030

FROM: Shipper TNS ADVANCED TECHNOLOGIES

Street 1075 Victor Hill Road

Origin Greer, SC Zip Code 29651

Route

Vehicle Number

No. Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
		ROLLS OF POLYPROPYLENE GEOTEXTILES			
		NMFC 49160 CLASS 65			
27		E100 180 X 450	15,700		
		[illegible] 8-5-99			
		Bill to: US DOE			
		P.O. # 995C 001			
		PHONE # 513-648-5021 Jim McDonough			

Note — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ _____ per _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor.)

TOTAL CHARGES: $

FREIGHT CHARGES:
FREIGHT PREPAID ☑ FREIGHT COLLECT ☐

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all 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 to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER TNS ADVANCED TECHNOLOGIES

PER ~~[illegible]~~ Roger E. Moore

CARRIER D. M. Kaye

PER [illegible]

DATE 8-2-99

2

BLCC-602-4

* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.

000205

FL 48103 200878

SHIPPING MEMO FL 4833

TNS MILLS, INC.
Nonwoven Division
681 DeYoung Road
Greer, South Carolina 29651

790F110 Date _____

2740

Sold To:

1 100 180Y450

Cust. Order No.:

Ship To:

Our Order No.:

	Case No.	Type	Gross	Net	Case No.	Type	Gross	Net
1	30000 5266				30000 5274			
2	5253				5281			
3	5256				F070180450			
4	5401				30000 5428			
5	5398				5431			
6	5264				5468			
7	5381				5429			
8	5277							
9	5230							
10	5235							
11	5232							
12	5380							
13	5390							
14	5389							
15	5231							
16	5239							
17	[illegible]							
18	[illegible]							
19	[illegible]						000206	
20	5250				No. Cartons _____		Total Gross	
21	5379				Prepaid ( )		Total Tare	
22	5391				Collect ( )			
					Carrier _____		Total Net	

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 1

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 10 oz Geotextile (Nonwoven) E-100 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DKP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: FEDEX

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 SITE FAX: (513) 648-3415

	SAMPLE NO. GT-10	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261	~~THICKNESS ASTM D1777 D5199~~	GRAB TENSILE ASTM D4632	TRAP TEAR ASTM D4533	MULLEN BURST ASTM D3786	~~AOS ASTM D4751~~	~~PERMITIVITY ASTM D4491~~	~~WIDE-WIDTH TENSILE ASTM D4595~~	~~WIDE-STRIP SEAM ASTM D4884~~	~~STRIP TENSILE ASTM D1682 D5035~~	PUNCTURE ASTM D4833	~~OTHER~~
✓	99-1	300005237	✓		✓	✓	✓						✓	
✓	99-2	5251	✓		✓	✓	✓						✓	
✓	99-3	5265	✓		✓	✓	✓						✓	
✓	99-4	5278	✓		✓	✓	✓						✓	
✓	99-5	5360	✓		✓	✓	✓						✓	
✓	99-6	5374	✓		✓	✓	✓						✓	
✓	99-7	5388	✓		✓	✓	✓						✓	
✓	99-8	5402	✓		✓	✓	✓						✓	
✓	99-9	5418	✓		✓	✓	✓						✓	

1-2740

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

000207

GEOSYNTEC CONSULTANTS FILE NO.: J-02E-TRF REVIEWED BY: ____ SHEET NO. 1 OF 1

MATERIALS INVENTORY LOG

SWU EXCAVATION/OSDF (PHASE II) PROJECT
PROJECT NOs. 20102/402; CONTRACT No. FSC-614
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: August 3 - August 6, 1999

PREPARED BY: J. Richard Schairbaum

MATERIAL DELIVERED: 10-oz. Geotextile

2740

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
30000	5230	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5231	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5232	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5233	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5234	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5235	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5236	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5237	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5238	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5239	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5240	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5241	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5242	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5243	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5249	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5250	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5251	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5252	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5253	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5254	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5255	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5256	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5257	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5258	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5259	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5260	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5261	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5262	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5263	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5264	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5265	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery. 000208
30000	5266	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5268	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5269	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery. 229,500 s.f.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
30000	5270	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5271	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5272	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5273	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5274	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5275	15-ft. x 450-ft.	*See notes below.	Damaged during unloading.
30000	5276	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5277	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5278	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5279	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5280	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5281	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5282	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5283	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5353	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5354	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5355	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5356	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5357	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5358	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5359	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5360	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5361	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5362	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5363	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5364	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5365	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5366	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5367	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5368	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5369	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5370	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5371	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5372	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5373	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery. 000209
30000	5374	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5375	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5376	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery. 256,500 s.f.

2740

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
30000	5377	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5378	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5379	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5380	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5381	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5382	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5383	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5384	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5385	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5387	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5389	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5390	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5391	15-ft. x 450-ft.	*See notes below.	Delivered slightly damaged from manufacturer.
30000	5392	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5393	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5394	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5395	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5396	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5397	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5398	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5399	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5400	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5401	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5402	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5403	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5404	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5405	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5406	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5407	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5408	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5409	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5410	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5411	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5412	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5413	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5414	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5415	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5416	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.

000210

256,500 s.f.

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition 2740
30000	5417	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5419	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5420	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5421	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5422	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5423	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5424	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5425	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5426	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5427	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
				67,500 s.f.

\CUR_JOBS\PHASEII\QUALCTRL\MTRL_INV\99TEX10OZ-DEL.XLS

810,000 s.f. total

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

MATERIAL INVENTORY

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II YEAR: 1999

PRODUCT TYPE: E 160 - 180X450 MANUFACTURER: TNS Mills 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 Aug 99	30,000 5513	TD								
	5514									
	5515									
	5517									
	5518		12 July	99-1	P	CS				
	5519									
	5520									
	5521									
	5522									
	5523									
	5516									

000212

AVG. ROLL WIDTH: 15-ft AVG. ROLL LENGTH: 450-ft

NUMBER OF ROLLS ABOVE: 11 ACCUMULATIVE NUMBER OF ROLLS: 11

CUMULATIVE AREA: ~~67500 ft²~~ 74,250 NO. OF CONFORMANCE TESTS (page/total): 1 / 1

2740

is to certify that the below-named materials are properly classified described packaged marked and labeled and are
oper condition for transportation according to the applicable regulations of the Department of Transportation

This Shipping Order must be legibly filled in, in Ink, in Indelible Pencil, or in Carbon, and retained by the Agent

Shipper No. 21467

Carrier No.

Date 9-14-99

US DOE

D M KAYE (Name of Carrier) (SCAC)

signee % Fluor Daniel Fernald

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1

et 7400 Willey Road

tination Fernald, OH Zip Code 45030

FROM: Shipper TNS ADVANCED TECHNOLOGIES

Street 1075 Victor Hill Road

Origin Greer, SC Zip Code 29651

Bill to: US DOE

Vehicle Number

). Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
		ROLLS OF POLYPROPYLENE GEOTEXTILES (NW023)			
		NMFC 49160 CLASS 65			
1		E160 180 X 450 (30000551)	830		
4		E070 180 X 450 (30000549) 5455, 5437 5494	1,920		
		P.O. # 995C001			
		PHONE # 513-648-5021 Jim McDonough			

te — Where the rate is dependent on value, shippers are required to state specifically in
g the agreed or declared value of the property.
agreed or declared value of the property is hereby specifically stated by the shipper to
ot exceeding

per

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

Wallace 9-15-99
(Signature of Consignor.)

TOTAL CHARGES: $

FREIGHT CHARGES:
FREIGHT PREPAID ☑ FREIGHT COLLECT ☐

CEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and ition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person orporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route aid destination. It is mutually agreed as to each carrier of all 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 of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
ipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper accepted for himself and his assigns.

PER TNS ADVANCED TECHNOLOGIES

[redacted] Roger E. Moon

CARRIER D M KAYE

PER Roger Brownfield

DATE 9-14-99

2

BLCC-602-4

* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.

000213

MATERIALS INVENTORY LOG

SWU EXCAVATION/OSDF (PHASE II) PROJECT
PROJECT NOs. 20102/402; CONTRACT No. FSC-614
PETRO ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: August 5 to September 15, 1999

PREPARED BY: J. Richard Schairbaum

MATERIAL DELIVERED: 16 oz. Geotextile

2740

Lot Number	Roll Number	Dimensions	Sampled for Conformance Testing	Condition
30000	5513	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5514	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5515	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5517	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5518	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5519	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5520	15-ft. x 450-ft.	*See notes below.	Delivered with slight damage.
30000	5521	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5522	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5523	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.
30000	5516	15-ft. x 450-ft.	*See notes below.	No damage noted upon delivery.

\CUR_JOBS\PHASEII\QUALCTRL\MTRL_INV\99TEX16OZ-DEL.XLS

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 3

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 16 OZ Geotextile (Nonwoven) E-160 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DWP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: ____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 SITE FAX: (513) 648-3415

SAMPLE NO. GT-16	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261	~~THICKNESS ASTM D1777 D5199~~	GRAB TENSILE ASTM D4632	TRAP TEAR ASTM D4533	MULLEN BURST ASTM D3786	~~AOS ASTM D4751~~	~~PERMITIVITY ASTM D4491~~	~~WIDE-WIDTH TENSILE ASTM D4595~~	~~WIDE-STRIP SEAM ASTM D4884~~	~~STRIP TENSILE ASTM D1682 D5035~~	PUNCTURE ASTM D4833	~~OTHER~~
99-1	300005518	✓		✓	✓	✓						✓	

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

2740

000215

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

TRANSMITTAL LETTER

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: OSDF Phase II, Option A DATE: 26 day July month 1999 year

ATTENTION: FDF Engineering and QA

ADDRESS:

- [ ] FOR APPROVAL
- [ ] FOR COMMENTS
- [x] AS REQUESTED
- [ ] PRINTS
- [ ] PHOTOS
- [ ] LOGS
- [x] TEST RESULTS
- [ ] DOCUMENTS
- [ ] CONTRACTS
- [ ] _____
- [ ] _____
- [ ] _____

NO. OF COPIES	DRAWING NUMBER	DESCRIPTION	DATE
		Conformance Test Results on 7 oz/yd², 10 oz/yd² and 16 oz/yd² geotextiles to be used in Cell 3 liner system	26 July 1999

REMARKS

cc: Tony Klimek, FDF Engineering
Jim Turner, FDF QA
GeoSyntec File (Note: C. Sukow has original)

000216

COPY TO: FROM: Jim Burnett

©GEOSYNTEC CONSULTANTS FILE NO. 1-08-TLF SHEET NO. 1 OF 98

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LETTER OF TRANSMITTAL

-- 2740

Mr. Collin Sukow
GeoSyntec Consultants
Fluor-Daniel Fernald
PO Box 538704
Cincinatti, OH 45253-8704

DATE: 07/21/99	GTX NO: 2318
RE: On-Site Disposal Facility	
Pages (excluding transmittal):	

RECEIVED JUL 22 1999

are sending you ☒ Attached ☐ Under separate cover via _____ the following items:
☒ Test results ☐ Proposal ☒ Report ☐ Samples ☐ Specifications ☐ Invoice
☐ Copy of letter ☐ Change order _____
☐ Other _____

COPIES	DATE	DESCRIPTION
1	07/21/99	July 1999 Laboratory Test Report (results through 07/20/99)
		(Conformance testing of 7 oz/yd², 10 oz/yd²
		and 16 oz/yd² geotextiles for OSDF
		Cell 3 bottom liner system)

SE ITEMS ARE TRANSMITTED as checked below:
☐ For approval ☐ Approved as submitted ☐ Resubmit _____ Copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ Copies for distribution
☒ As requested ☐ Returned for corrections ☐ Return
☐ For review and comment
☐ For bids due _____, 19_____
☐ _____

ARKS

TO Mr. Dave Phillips

SIGNED Gary T. Torosian

000217

Gary T. Torosian - Laboratory Manager

-- 2740

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JUL 22 1999

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2740

July

June 20, 1999

RECEIVED
JUL 22 1999

Mr. Dave Phillips
GeoSyntec Consultants, Inc.
1100 Lake Hearn Drive
Suite 200
Atlanta, GA 30342-1523

RE: On-Site Disposal Facility (GTX-2318)

Dear Mr. Phillips:

Enclosed are the test results you requested for the above referenced project. Seven 7 oz, nine 10 oz and 1 16 oz geotextile samples were delivered to our laboratory on July 13, 1999. Copies of the test request forms are at the back of this report.

The following analyses were performed on all geotextile samples:

Mass per Unit Area by ASTM D 5261
Grab Tensile strength by ASTM D 4632
Trapezoidal Tearing strength by ASTM D 4533
Mullen Burst by ASTM D 3786
Puncture strength by ASTM D 4833

The following analyses were performed on the 7 oz geotextile in addition to analyses listed above:

Apparent Opening Size by ASTM D 4751
Permittivity by ASTM D 4491

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of these samples will be retained for a period of sixty days and will then be discarded unless otherwise notified by you. Please call me directly if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity to provide your firm with geosynthetics testing. Please notify us if we may be of any further assistance to you on this project.

Respectfully yours,

Gary T. Torosian
Laboratory Manager

Totally Automated
Geotechnical Testing

Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318 2740
Test Date: 07/16/99
Page 1 of 1

Sample ID: GT-7; 99-1
Description: 7 oz black geotextile; roll #: 300005435

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.75 inch (1.91 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	2.024	1.766	1.864	2.067
2	1.954	1.774	1.847	2.077
3	1.893	1.694	1.813	2.011
4	1.943	1.759	1.831	2.054
5	1.901	1.743	1.841	2.038
Average	1.943	1.747	1.839	2.049
Standard Deviation	0.052	0.032	0.019	0.026
Coefficient of Variation, %	2.684	1.824	1.035	1.262

Average Permittivity =	**1.895**	**sec^{-1}**
Standard Deviation =	**0.130**	
Coefficient of Variation =	**6.88**	**%**
Average Permeability =	**---**	**cm/sec**
Average Flow Rate =	**---**	**gal/min/ft^2**

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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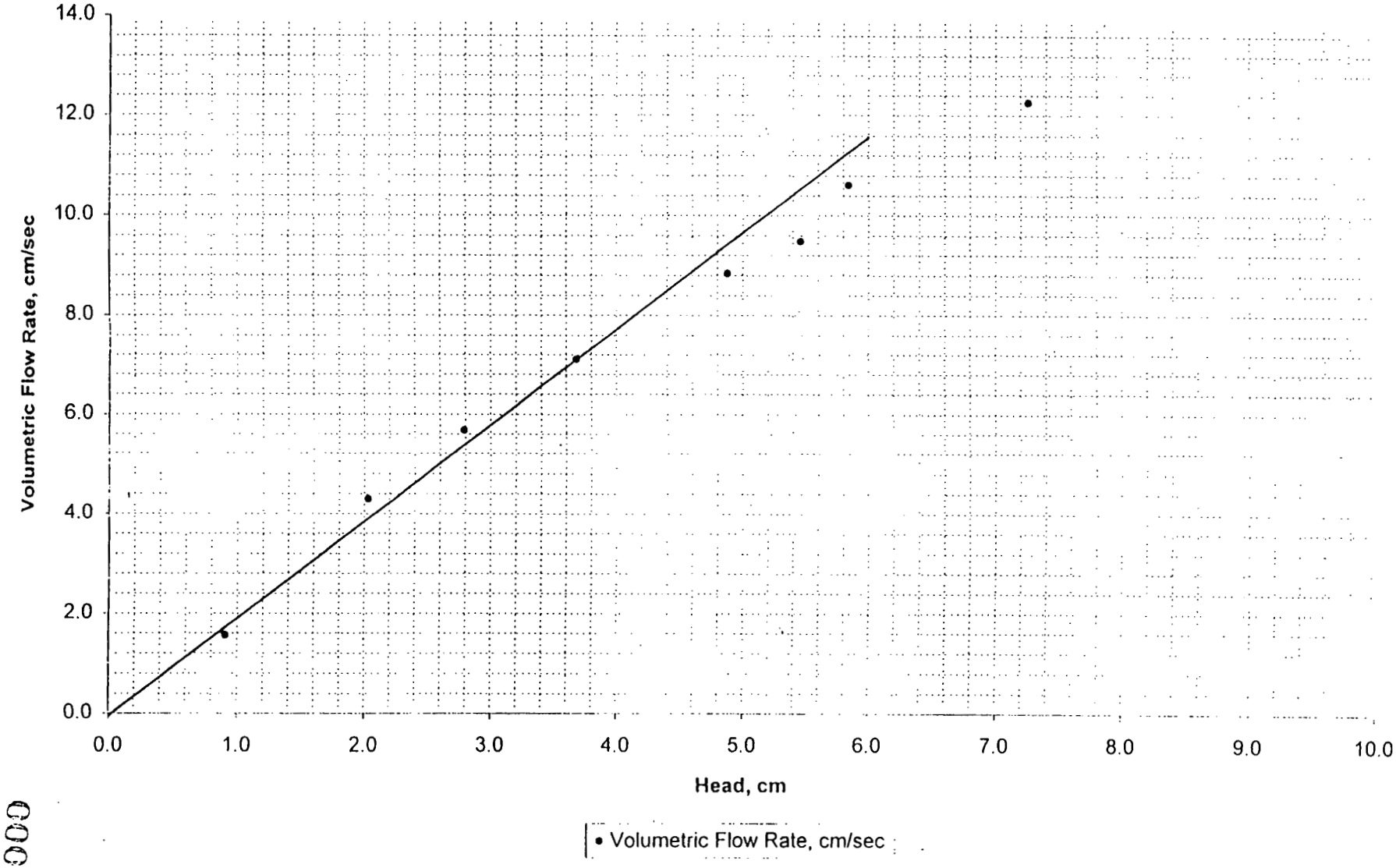
Laminar Flow Check (Specimen A only)



Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99
Page 1 of 1

Sample ID: GT-7; 99-2
Description: 7 oz black geotextile; roll #: 300005455

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.73 inch (1.85 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	1.713	1.813	1.780	1.724
2	1.666	1.878	1.788	1.721
3	1.686	1.853	1.713	1.692
4	1.697	1.821	1.728	1.689
5	1.679	1.799	1.733	1.697
Average	1.688	1.833	1.749	1.705
Standard Deviation	0.018	0.032	0.034	0.017
Coefficient of Variation, %	1.062	1.750	1.918	0.972

Average Permittivity =	**1.744**	**sec^{-1}**
Standard Deviation =	**0.065**	
Coefficient of Variation =	**3.71**	**%**
Average Permeability =	**---**	**cm/sec**
Average Flow Rate =	**---**	**$gal/min/ft^2$**

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000222

Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99
Page 1 of 1

Sample ID: GT-7; 99-3
Description: 7 oz black geotextile; roll #: 300005469

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.74 inch (1.88 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	1.881	1.938	2.277	2.232
2	1.866	1.979	2.294	2.301
3	1.881	1.955	2.186	2.250
4	1.890	1.955	2.244	2.178
5	1.882	1.907	2.236	2.178
Average	1.880	1.947	2.247	2.228
Standard Deviation	0.009	0.027	0.042	0.052
Coefficient of Variation, %	0.469	1.385	1.850	2.331

Average Permittivity =	**2.075**	**sec^{-1}**
Standard Deviation =	**0.189**	
Coefficient of Variation =	**9.11**	**%**
Average Permeability =	**---**	**cm/sec**
Average Flow Rate =	**---**	**gal/min/ft^2**

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000223

Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

--2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-7; 99-4
Description: 7 oz black geotextile; roll #: 300005483

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.78 inch (1.98 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	2.208	1.935	1.864	2.000
2	2.176	1.976	1.840	2.020
3	2.111	1.945	1.861	2.032
4	2.074	1.942	1.840	1.976
5	2.082	1.934	1.808	1.988
Average	2.130	1.947	1.843	2.003
Standard Deviation	0.059	0.017	0.022	0.023
Coefficient of Variation, %	2.765	0.884	1.211	1.136

Average Permittivity =	**1.981**	**sec^{-1}**
Standard Deviation =	**0.120**	
Coefficient of Variation =	**6.05**	**%**
Average Permeability =	**---**	**cm/sec**
Average Flow Rate =	**---**	**$gal/min/ft^2$**

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000224

Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99
Page 1 of 1

Sample ID: GT-7; 99-5
Description: 7 oz black geotextile; roll #: 300005497

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.79 inch (2.01 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	1.654	1.534	2.325	2.094
2	1.647	1.556	2.364	2.084
3	1.634	1.534	2.315	2.044
4	1.621	1.503	2.333	2.087
5	1.625	1.494	2.313	1.497
Average	1.636	1.524	2.330	1.961
Standard Deviation	0.014	0.025	0.021	0.260
Coefficient of Variation, %	0.866	1.666	0.883	13.263

Average Permittivity =	**1.863**	**sec^{-1}**
Standard Deviation =	**0.362**	
Coefficient of Variation =	**19.45**	**%**
Average Permeability =	**---**	**cm/sec**
Average Flow Rate =	**---**	**gal/min/ft^2**

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000225

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-7; 99-1
Sample Description: 7 oz black geotextile; roll #: 300005435

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	72	104
2	74	120
3	94	118
4	84	130
5	100	111
6	81	94
7	91	113
8	76	132
9	90	116
10	100	152
Average	86	119
Standard Deviation	10	16
Coefficient of Variation, %	12	14

Comments:
Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000226

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/19/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-2		
Sample Description:	7 oz black geotextile; roll #: 300005455		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	116	116
2	91	110
3	84	112
4	79	112
5	105	109
6	82	134
7	88	114
8	82	109
9	101	124
10	106	128
Average	93	117
Standard Deviation	13	8.79
Coefficient of Variation, %	14	7.53

Comments:

Tested By: mhm
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated st method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-7; 99-3
Sample Description: 7 oz black geotextile; roll #: 300005469

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	83	91
2	101	103
3	72	94
4	112	106
5	86	119
6	84	98
7	91	91
8	62	108
9	83	112
10	109	102
Average	88	102
Standard Deviation	16	9.2
Coefficient of Variation, %	18	9.0

Comments:

Tested By: mhm
Checked By: gtt

tes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated st method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-7; 99-4
Sample Description: 7 oz black geotextile; roll #: 300005483

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	91	94
2	82	108
3	82	105
4	101	101
5	91	93
6	96	127
7	109	130
8	103	127
9	85	93
10	68	111
Average	91	109
Standard Deviation	12	15
Coefficient of Variation, %	13	13

Comments:

Tested By: mhm
Checked By: gtt

tes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated t method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/20/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-5		
Sample Description:	7 oz black geotextile; roll #: 300005497		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	87	90
2	73	96
3	96	94
4	71	89
5	87	113
6	113	94
7	93	105
8	88	99
9	73	102
10	80	98
Average	86	98
Standard Deviation	13	7.2
Coefficient of Variation, %	15	7.4

Comments: Tested By: mhm
Checked By: gtt

s: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-10; 99-1
Sample Description: 10 oz black geotextile; roll #: 300005237

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	117	103
2	115	129
3	96	105
4	102	116
5	101	124
6	113	111
7	101	123
8	96	112
9	100	119
10	106	126
Average	105	117
Standard Deviation	7.7	8.92
Coefficient of Variation, %	7.4	7.63

Comments:
Tested By: mhm
Checked By: gtt

tes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated t method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000231

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

--2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-10; 99-2
Sample Description: 10 oz black geotextile; roll #: 300005251

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	104	107
2	102	108
3	83	135
4	110	129
5	105	135
6	77	110
7	95	106
8	81	97
9	97	143
10	96	131
Average	95	120
Standard Deviation	11	16
Coefficient of Variation, %	12	13

Comments:

Tested By: mhm
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-10; 99-3
Sample Description: 10 oz black geotextile; roll #: 300005265

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	98	141
2	94	111
3	110	114
4	108	144
5	129	142
6	101	130
7	112	113
8	116	127
9	101	126
10	109	123
Average	108	127
Standard Deviation	10	12.3
Coefficient of Variation, %	9.4	9.66

Comments:

Tested By: mhm
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-10; 99-4
Sample Description: 10 oz black geotextile; roll #: 300005279

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	99	119
2	102	129
3	123	128
4	94	166
5	117	152
6	102	138
7	104	145
8	104	122
9	92	139
10	103	116
Average	104	135
Standard Deviation	9.5	15.8
Coefficient of Variation, %	9.1	11.7

Comments:

Tested By: mhm
Checked By: gtt

s: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated t method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/20/99
Project Location:	Fernald, OH		

Sample ID: GT-10; 99-5
Sample Description: 10 oz black geotextile; roll #: 300005360

Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	152	142
2	102	166
3	96	165
4	102	144
5	102	165
6	122	159
7	156	160
8	118	147
9	102	167
10	114	141
Average	117	156
Standard Deviation	21	10.8
Coefficient of Variation, %	18	6.95

Comments:

Tested By: mhm
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated est method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

ent: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-10; 99-6
Sample Description: 10 oz black geotextile; roll #: 300005374

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	105	144
2	104	135
3	134	163
4	132	138
5	114	149
6	124	162
7	120	140
8	104	153
9	101	139
10	120	138
Average	116	146
Standard Deviation	12.1	10.2
Coefficient of Variation, %	10.4	7.00

Comments:

Tested By: mhm
Checked By: gtt

These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated ethod. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000236

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-10; 99-7
Sample Description: 10 oz black geotextile; roll #: 300005388

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	164	158
2	126	166
3	131	149
4	124	179
5	112	169
6	135	159
7	104	176
8	140	139
9	115	151
10	108	152
Average	126	160
Standard Deviation	17.9	12.7
Coefficient of Variation, %	14.2	7.93

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000237

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/20/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-8		
Sample Description:	10 oz black geotextile; roll #: 300005402		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	104	149
2	105	155
3	123	152
4	118	178
5	125	137
6	118	160
7	89	150
8	147	148
9	140	139
10	113	155
Average	118	152
Standard Deviation	17	11.5
Coefficient of Variation, %	14	7.52

Comments: Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000238

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/19/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-9		
Sample Description:	10 oz black geotextile; roll #: 300005418		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	136	164
2	118	170
3	115	163
4	89	148
5	96	137
6	103	134
7	100	170
8	98	149
9	98	146
10	97	159
Average	105	154
Standard Deviation	14	13.0
Coefficient of Variation, %	13	8.47

Comments: Tested By: mhm
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated st method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/19/99
Project Location:	Fernald, OH		

Sample ID: GT-16; 99-1
Sample Description: 16 oz black geotextile; roll #: 300005518

Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	1 in	**Grips:**	Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	133	227
2	138	201
3	152	193
4	168	176
5	147	237
6	169	209
7	156	218
8	133	196
9	149	188
10	144	199
Average	149	204
Standard Deviation	12.8	18.5
Coefficient of Variation, %	8.61	9.07

Comments:

Tested By: mhm
Checked By: gtt

000240

tes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated st method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/15/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-1		
Sample Description:	7 oz black geotextile roll #: 300005435		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	265	56	214	81
2	232	70	232	67
3	201	69	242	68
4	171	79	211	62
5	139	64	222	71
6	267	62	231	75
7	187	66	222	68
8	233	73	231	65
9	176	70	219	65
10	194	69	217	58
Average	207	68	224	68
Standard Deviation	41.8	6.3	9.6	6.5
Coefficient of Variation, %	20.3	9.3	4.3	9.6

Comments:

Tested By: gtt
Checked By: gph

000241

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

F-2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-2		
Sample Description:	7 oz black geotextile roll #: 300005455		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	168	66	252	60
2	179	61	207	63
3	170	71	221	50
4	181	65	223	67
5	175	53	207	71
6	173	63	236	62
7	166	53	273	64
8	255	67	264	61
9	212	59	191	59
10	240	58	232	78
Average	192	62	231	64
Standard Deviation	32.2	5.9	26.3	7.5
Coefficient of Variation, %	16.8	9.7	11.4	12

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000242

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/15/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-3		
Sample Description:	7 oz black geotextile roll #: 300005469		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	230	48	187	68
2	226	59	202	64
3	194	57	225	63
4	194	91	233	64
5	187	56	205	62
6	218	54	214	72
7	183	57	226	66
8	188	66	206	63
9	230	58	197	65
10	180	62	183	64
Average	203	61	208	65
Standard Deviation	20.5	11.6	16.7	3.0
Coefficient of Variation, %	10.1	19.1	8.04	4.5

Comments:

Tested By: gtt
Checked By: gph

000243

otes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the dicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2316 2740
Project Name:	On-Site Disposal Facility	**Test Date:**	07/15/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-4		
Sample Description:	7 oz black geotextile roll #: 300005483		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	287	49	241	56
2	186	62	206	63
3	173	56	256	65
4	223	52	219	63
5	187	57	244	65
6	223	55	188	67
7	201	53	210	64
8	178	52	184	63
9	154	62	200	59
10	187	55	237	63
Average	200	55	219	63
Standard Deviation	37.3	4.2	24.9	3.2
Coefficient of Variation, %	18.6	7.6	11.4	5.0

Comments:

Tested By: gtt
Checked By: gph

000244

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/15/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-5		
Sample Description:	7 oz black geotextile roll #: 300005497		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	278	51	221	77
2	219	59	245	66
3	194	54	221	60
4	158	62	203	62
5	183	58	249	64
6	321	53	189	70
7	191	53	189	64
8	214	65	298	66
9	226	61	232	61
10	194	59	231	60
Average	218	58	228	65
Standard Deviation	48.3	4.6	32.4	5.2
Coefficient of Variation, %	22.2	8.0	14.2	8.1

Comments:

Tested By: gtt
Checked By: gph

000245

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

— 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-1		
Sample Description:	10 oz black geotextile roll #: 300005237		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	273	74	308	69
2	273	50	267	62
3	295	60	272	64
4	241	56	265	67
5	271	57	267	67
6	273	60	307	71
7	281	63	297	70
8	259	59	289	69
9	261	54	286	68
10	374	55	264	72
Average	280	59	282	68
Standard Deviation	35.9	6.5	17.5	3.1
Coefficient of Variation, %	12.8	11	6.20	4.5

Comments:

Tested By: mhm
Checked By: gtt

000246

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-2		
Sample Description:	10 oz black geotextile roll #: 300005251		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	238	55	293	56
2	219	54	256	55
3	200	51	233	54
4	218	55	237	56
5	225	52	260	64
6	252	55	270	50
7	241	53	282	54
8	228	56	246	57
9	246	56	249	58
10	298	44	264	67
Average	237	53	259	57
Standard Deviation	26.5	3.6	19.1	5.0
Coefficient of Variation, %	11.2	6.8	7.36	8.7

Comments:

Tested By: mhm
Checked By: gtt

000247

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-3		
Sample Description:	10 oz black geotextile roll #: 300005265		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	273	63	271	54
2	281	63	351	65
3	285	58	334	64
4	318	66	363	64
5	361	55	357	73
6	291	62	327	62
7	272	62	322	66
8	258	60	320	58
9	289	65	328	60
10	314	52	327	61
Average	294	61	330	63
Standard Deviation	29.8	4.4	25.7	5.1
Coefficient of Variation, %	10.1	7.3	7.79	8.1

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000248

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-4		
Sample Description:	10 oz black geotextile roll #: 300005279		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	245	56	309	64
2	257	58	331	63
3	271	57	348	67
4	290	56	342	68
5	341	49	310	73
6	323	67	371	68
7	252	64	374	65
8	253	59	340	61
9	303	61	325	67
10	335	45	291	69
Average	287	57	334	67
Standard Deviation	36.6	6.5	26.7	3.4
Coefficient of Variation, %	12.8	11	7.98	5.1

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000249

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

— 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-5		
Sample Description:	10 oz black geotextile roll #: 300005360		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	241	65	338	67
2	282	64	375	71
3	323	72	334	70
4	420	69	335	78
5	294	66	362	72
6	247	70	352	70
7	258	72	368	69
8	266	66	352	70
9	332	71	352	75
10	425	64	345	77
Average	309	68	351	72
Standard Deviation	67.0	3.2	13.9	3.6
Coefficient of Variation, %	21.7	4.8	3.96	5.0

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-6		
Sample Description:	10 oz black geotextile roll #: 300005374		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	281	68	361	68
2	258	67	337	65
3	263	65	352	64
4	273	64	354	68
5	305	58	337	71
6	277	69	348	62
7	276	71	330	63
8	312	67	346	68
9	302	63	316	66
10	322	60	321	73
Average	287	65	340	67
Standard Deviation	21.8	4.0	14.7	3.5
Coefficient of Variation, %	7.59	6.2	4.31	5.2

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000251

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-7		
Sample Description:	10 oz black geotextile roll #: 300005388		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	287	71	352	72
2	282	77	335	69
3	263	70	305	67
4	268	71	321	72
5	431	65	298	85
6	280	76	337	74
7	287	71	345	71
8	289	72	349	73
9	323	73	336	71
10	380	63	342	85
Average	309	71	332	74
Standard Deviation	54.6	4.3	18.3	6.2
Coefficient of Variation, %	17.7	6.1	5.51	8.4

Comments:

Tested By: mhm

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000252

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-8		
Sample Description:	10 oz black geotextile roll #: 300005402		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	244	64	342	67
2	280	71	328	64
3	260	65	325	64
4	350	70	311	69
5	404	62	300	81
6	223	67	341	65
7	266	64	364	70
8	274	61	335	65
9	309	64	316	67
10	390	61	349	77
Average	300	65	331	69
Standard Deviation	61.8	3.5	19.1	5.8
Coefficient of Variation, %	20.6	5.4	5.77	8.4

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000253

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/16/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-9		
Sample Description:	10 oz black geotextile roll #: 300005418		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	250	73	337	66
2	264	73	321	67
3	280	70	376	70
4	302	71	353	69
5	391	61	307	85
6	245	73	342	71
7	281	70	353	69
8	268	67	363	74
9	287	66	332	70
10	341	59	322	81
Average	291	68	341	72
Standard Deviation	44.6	5.0	21.1	6.2
Coefficient of Variation, %	15.3	7.3	6.20	8.5

Comments:

Tested By: mhm

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000254

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine — 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/15/99
Project Location:	Fernald, OH		
Sample ID:	GT-16; 99-1		
Sample Description:	16 oz black geotextile roll #: 300005518		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	—
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	578	68	589	77
2	497	68	543	74
3	464	68	546	72
4	454	72	575	72
5	451	71	569	73
6	594	72	527	84
7	457	71	538	74
8	421	75	568	73
9	446	71	509	68
10	505	79	563	73
Average	487	72	553	74
Standard Deviation	57.7	3.4	24.4	4.2
Coefficient of Variation, %	11.9	4.8	4.41	5.6

Comments:

Tested By: gtt
Checked By: gph

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Apparent Opening Size of a Geotextile by ASTM D 4751

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-1
Sample Description: 7 oz black geotextile roll #: 300005435

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	13.52/13.5	80-100	0.150	18.7	0.196
		60-70	0.212	0.20	
2	12.04/12.02	80-100	0.150	16.9	0.195
		60-70	0.212	0.36	
3	15.3/15.27	80-100	0.150	18.4	0.196
		60-70	0.212	0.22	
4	12.75/12.7	80-100	0.150	18.0	0.197
		60-70	0.212	0.80	
5	11.93/11.91	80-100	0.150	17.5	0.195
		60-70	0.212	0.41	

Average AOS = O_{95}(mm):	**0.196**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000256

Apparent Opening Size of a Geotextile by ASTM D 4751

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/14/99
Project Location:	Fernald, OH		

Sample ID: GT-7; 99-2
Sample Description: 7 oz black geotextile roll #: 300005455

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	15.24/15.19	80-100	0.150	6.4	0.164
		60-70	0.212	0.10	
2	16.43/16.40	80-100	0.150	7.1	0.169
		60-70	0.212	0.18	
3	16.67/16.59	80-100	0.150	9.6	0.180
		60-70	0.212	0.04	
4	13.54/13.46	80-100	0.150	8.2	0.174
		60-70	0.212	0.06	
5	14.04/13.92	80-100	0.150	6.3	0.163
		60-70	0.212	0.08	

Average AOS = O_{95}(mm):	**0.170**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000257

Apparent Opening Size of a Geotextile by ASTM D 4751

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/14/99
Project Location:	Fernald, OH		

Sample ID: GT-7; 99-3

Sample Description: 7 oz black geotextile roll #: 300005469

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	12.19/12.15	80-100	0.150	27.9	0.202
		60-70	0.212	0.34	
2	14.81/14.77	80-100	0.150	11.2	0.185
		60-70	0.212	0.16	
3	14.43/14.4	80-100	0.150	9.2	0.179
		60-70	0.212	0.22	
4	13.51/13.48	80-100	0.150	19.2	0.197
		60-70	0.212	0.54	
5	15.35/15.32	80-100	0.150	13.6	0.190
		60-70	0.212	0.18	

Average AOS = O_{95}(mm):	**0.190**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000258

Apparent Opening Size of a Geotextile by ASTM D 4751

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-4
Sample Description: 7 oz black geotextile roll #: 300005483

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	13.73/13.68	80-100	0.150	14.2	0.191
		60-70	0.212	0.22	
2	16.27/16.25	80-100	0.150	12.9	0.189
		60-70	0.212	0.33	
3	13.29/13.21	80-100	0.150	12.2	0.188
		60-70	0.212	0.46	
4	15.53/15.48	80-100	0.150	15.6	0.193
		60-70	0.212	0.18	
5	12.58/12.5	80-100	0.150	11.5	0.186
		60-70	0.212	0.39	

Average AOS = O_{95}(mm):	**0.189**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Apparent Opening Size of a Geotextile by ASTM D 4751

-- 2740

Client: GeoSyntec Consultants, Inc. **GTX #:** 2318
Project Name: On-Site Disposal Facility **Test Date:** 07/14/99
Project Location: Fernald, OH

Sample ID: GT-7; 99-3
Sample Description: 7 oz black geotextile roll #: 300005469

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	12.19/12.15	80-100	0.150	27.9	0.202
		60-70	0.212	0.34	
2	14.81/14.77	80-100	0.150	11.2	0.185
		60-70	0.212	0.16	
3	14.43/14.4	80-100	0.150	9.2	0.179
		60-70	0.212	0.22	
4	13.51/13.48	80-100	0.150	19.2	0.197
		60-70	0.212	0.54	
5	15.35/15.32	80-100	0.150	13.6	0.190
		60-70	0.212	0.18	

Average AOS = O_{95}(mm):	**0.190**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

es: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the cated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000260

Apparent Opening Size of a Geotextile by ASTM D 4751

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-4
Sample Description: 7 oz black geotextile roll #: 300005483

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	13.73/13.68	80-100	0.150	14.2	0.191
		60-70	0.212	0.22	
2	16.27/16.25	80-100	0.150	12.9	0.189
		60-70	0.212	0.33	
3	13.29/13.21	80-100	0.150	12.2	0.188
		60-70	0.212	0.46	
4	15.53/15.48	80-100	0.150	15.6	0.193
		60-70	0.212	0.18	
5	12.58/12.5	80-100	0.150	11.5	0.186
		60-70	0.212	0.39	

Average AOS = O_{95}(mm):	**0.189**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Apparent Opening Size of a Geotextile by ASTM D 4751

— 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-5
Sample Description: 7 oz black geotextile roll #: 300005497

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	14.05/14.01	80-100	0.150	14.3	0.192
		60-70	0.212	0.46	
2	13.02/12.91	80-100	0.150	11.3	0.185
		60-70	0.212	0.18	
3	13.52/13.5	80-100	0.150	8.8	0.180
		60-70	0.212	0.87	
4	14.11/14.04	80-100	0.150	17.2	0.196
		60-70	0.212	0.71	
5	13.45/13.41	80-100	0.150	18.8	0.196
		60-70	0.212	0.34	

Average AOS = O_{95}(mm):	**0.190**
Average Sieve Number:	**70**

Comments:

Tested By: gph
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-7; 99-1
Sample Description: 7 oz black geotextile; Roll #: 300005435

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	116
2	134
3	106
4	99
5	104
6	126
7	137
8	151
9	115
10	110
11	112
12	109
13	147
14	137
15	146
Average	123
Standard Deviation	17.4
Coefficient of Variation, %	14.1

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000263

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

-- 2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/17/99

Sample ID: GT-7; 99-2
Sample Description: 7 oz black geotextile; Roll #: 300005455

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	185
2	149
3	95
4	151
5	152
6	143
7	148
8	149
9	134
10	109
11	127
12	188
13	174
14	143
15	103
Average	143
Standard Deviation	27.2
Coefficient of Variation, %	19.0

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

-- 2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/17/99

Sample ID: GT-7; 99-3
Sample Description: 7 oz black geotextile; Roll #: 300005469

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	117
2	112
3	141
4	119
5	92
6	134
7	143
8	152
9	125
10	156
11	110
12	141
13	149
14	122
15	149
Average	131
Standard Deviation	18.6
Coefficient of Variation, %	14.2

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

-- 2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/17/99

Sample ID: GT-7; 99-4
Sample Description: 7 oz black geotextile; Roll #: 300005483

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	135
2	144
3	165
4	131
5	178
6	178
7	119
8	131
9	135
10	143
11	138
12	121
13	111
14	170
15	103
Average	140
Standard Deviation	23.4
Coefficient of Variation, %	16.7

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000266

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/17/99

Sample ID: GT-7; 99-5
Sample Description: 7 oz black geotextile; Roll #: 300005497

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	226
2	153
3	163
4	156
5	161
6	162
7	165
8	157
9	176
10	150
11	118
12	142
13	144
14	118
15	128
Average	155
Standard Deviation	26.1
Coefficient of Variation, %	16.9

Comments:

Tested By: mhm
Checked By: gtt

otes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the ficated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000267

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

--2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/17/99

Sample ID: GT-10; 99-1
Sample Description: 10 oz black geotextile; Roll #: 300005237

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	177
2	200
3	188
4	150
5	202
6	185
7	194
8	195
9	183
10	189
11	170
12	197
13	193
14	199
15	184
Average	187
Standard Deviation	13.6
Coefficient of Variation, %	7.26

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the cated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000268

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/18/99

Sample ID: GT-10; 99-2
Sample Description: 10 oz black geotextile; Roll #: 300005251

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	209
2	237
3	195
4	207
5	206
6	195
7	197
8	181
9	198
10	154
11	172
12	169
13	210
14	169
15	177
Average	192
Standard Deviation	21.4
Coefficient of Variation, %	11.1

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000269

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/18/99

Sample ID: GT-10; 99-3
Sample Description: 10 oz black geotextile; Roll #: 300005265

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	223
2	202
3	210
4	188
5	192
6	221
7	235
8	176
9	213
10	181
11	170
12	207
13	223
14	198
15	214
Average	204
Standard Deviation	19.1
Coefficient of Variation, %	9.38

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/18/99

Sample ID: GT-10; 99-4
Sample Description: 10 oz black geotextile; Roll #: 300005279

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	219
2	229
3	232
4	174
5	207
6	183
7	176
8	207
9	228
10	214
11	224
12	242
13	194
14	190
15	197
Average	208
Standard Deviation	21.4
Coefficient of Variation, %	10.3

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the ated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000271

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

--2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/18/99

Sample ID: GT-10; 99-5
Sample Description: 10 oz black geotextile; Roll #: 300005360

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	224
2	223
3	189
4	210
5	167
6	205
7	224
8	209
9	189
10	176
11	219
12	205
13	209
14	206
15	215
Average	205
Standard Deviation	17.3
Coefficient of Variation, %	8.46

Comments:

Tested By: mhm
Checked By: gtt

otes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the licated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000272

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-10; 99-6
Sample Description: 10 oz black geotextile; Roll #: 300005374

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	193
2	224
3	198
4	226
5	196
6	179
7	194
8	216
9	206
10	206
11	212
12	189
13	207
14	183
15	253
Average	205
Standard Deviation	19.1
Coefficient of Variation, %	9.28

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-10; 99-7
Sample Description: 10 oz black geotextile; Roll #: 300005388

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	179
2	203
3	233
4	221
5	198
6	196
7	199
8	198
9	167
10	200
11	178
12	189
13	193
14	197
15	181
Average	195
Standard Deviation	16.5
Coefficient of Variation, %	8.44

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000274

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client:	GeoSyntect Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/19/99
Project Location:	Fernald, OH		
Sample ID:	GT-10; 99-8		
Sample Description:	10 oz black geotextile; Roll #: 300005402		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Clamping Method:	Circular clamp attachment		

Specimen Number	Puncture Resistance, lbs
1	204
2	208
3	171
4	221
5	227
6	170
7	190
8	212
9	219
10	224
11	210
12	181
13	202
14	194
15	230
Average	204
Standard Deviation	19.5
Coefficient of Variation, %	9.54

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000275

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

-- 2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-10; 99-9
Sample Description: 10 oz black geotextile; Roll #: 300005418

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	172
2	195
3	196
4	208
5	165
6	189
7	178
8	186
9	170
10	186
11	165
12	199
13	196
14	185
15	222
Average	187
Standard Deviation	16.0
Coefficient of Variation, %	8.56

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

2740

Client: GeoSyntect Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-16; 99-1
Sample Description: 16 oz black geotextile; Roll #: 300005518

Testing Machine: Instron 1000
Clamping Method: Circular clamp attachment

Testing Speed: 12 in/min

Specimen Number	Puncture Resistance, lbs
1	314
2	321
3	312
4	329
5	323
6	285
7	289
8	291
9	297
10	305
11	336
12	311
13	303
14	343
15	332
Average	313
Standard Deviation	17.9
Coefficient of Variation, %	5.72

Comments:

Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the ...icated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000277

Mass Per Unit Area of Geotextiles by ASTM D 5261 - 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-1
Sample Description: 7 oz black geotextile roll #: 30005435

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	6.9	232
2	6.7	229
3	6.9	232
4	6.9	232
5	7.5	255
Average	**7.0**	**236**
Standard Deviation	**0.31**	**10.5**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-2
Sample Description: 7 oz black geotextile roll #: 30005455

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	8.5	289
2	8.3	280
3	8.5	290
4	7.4	252
5	7.3	246
Average	**8.0**	**272**
Standard Deviation	**0.62**	**20.9**

Comments:

Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000279

Mass Per Unit Area of Geotextiles by ASTM D 5261

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-3
Sample Description: 7 oz black geotextile roll #: 30005469

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	7.0	237
2	7.2	246
3	7.7	261
4	6.8	230
5	7.0	237
Average	**7.1**	**242**
Standard Deviation	**0.35**	**11.8**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-4
Sample Description: 7 oz black geotextile roll #: 30005483

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	8.2	279
2	7.7	262
3	8.1	274
4	7.6	257
5	7.5	254
Average	**7.8**	**265**
Standard Deviation	**0.32**	**11.0**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000281

Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-7; 99-5
Sample Description: 7 oz black geotextile roll #: 30005497

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	8.8	298
2	8.7	295
3	8.8	298
4	7.6	258
5	8.4	284
Average	**8.5**	**287**
Standard Deviation	**0.50**	**17.1**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261 -- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-10; 99-1
Sample Description: 10 oz black geotextile roll #: 30005237

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	9.86	334
2	10.6	360
3	11.2	379
4	10.9	368
5	10.5	357
Average	**10.6**	**360**
Standard Deviation	**0.493**	**16.7**

Comments:

Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261 -- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/15/99

Sample ID: GT-10; 99-2
Sample Description: 10 oz black geotextile roll #: 30005251

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	9.7	330
2	9.2	311
3	9.7	329
4	9.3	316
5	9.6	325
Average	**9.5**	**322**
Standard Deviation	**0.26**	**8.65**

Comments: Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261 — 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/19/99

Sample ID: GT-10; 99-2
Sample Description: 10 oz black geotextile roll #: 30005251

Specimen Size, in: 6 in x 6 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	14.7	498
2	13.1	445
3	12.3	415
4	12.4	420
5	11.4	388
Average	**12.8**	**433**
Standard Deviation	**1.22**	**41.3**

Comments:

Tested By: mhm
Checked By: gtt

Re-Test

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000285

Mass Per Unit Area of Geotextiles by ASTM D 5261 — 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-10; 99-3
Sample Description: 10 oz black geotextile roll #: 30005265

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.5	355
2	10.6	359
3	10.9	370
4	11.4	388
5	11.2	379
Average	**10.9**	**370**
Standard Deviation	**0.401**	**13.6**

Comments: Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-10; 99-4
Sample Description: 10 oz black geotextile roll #: 30005279

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.4	354
2	10.1	343
3	10.9	370
4	11.6	394
5	11.2	380
Average	**10.9**	**368**
Standard Deviation	**0.591**	**20.0**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/15/99

Sample ID: GT-10; 99-5
Sample Description: 10 oz black geotextile roll #: 30005360

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.8	366
2	11.2	380
3	11.3	382
4	11.6	393
5	10.5	356
Average	**11.1**	**375**
Standard Deviation	**0.432**	**14.7**

Comments:
Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000288

Mass Per Unit Area of Geotextiles by ASTM D 5261

— 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-10; 99-6
Sample Description: 10 oz black geotextile roll #: 30005374

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.8	365
2	10.7	364
3	10.9	371
4	10.7	361
5	11.0	373
Average	**10.8**	**367**
Standard Deviation	**0.144**	**4.88**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000289

Mass Per Unit Area of Geotextiles by ASTM D 5261

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/15/99

Sample ID: GT-10; 99-7
Sample Description: 10 oz black geotextile roll #: 30005388

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.2	346
2	10.1	343
3	10.9	369
4	12.9	437
5	10.8	365
Average	**11.0**	**372**
Standard Deviation	**1.12**	**38.1**

Comments:
Tested By: mhm
Checked By: gtt

tes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the dicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000230

Mass Per Unit Area of Geotextiles by ASTM D 5261

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/16/99

Sample ID: GT-10; 99-8
Sample Description: 10 oz black geotextile roll #: 30005402

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	10.6	361
2	10.4	354
3	9.89	335
4	10.4	354
5	10.3	348
Average	**10.3**	**350**
Standard Deviation	**0.280**	**9.51**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000291

Mass Per Unit Area of Geotextiles by ASTM D 5261

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/15/99

Sample ID: GT-10; 99-9
Sample Description: 10 oz black geotextile roll #: 30005418

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	9.59	325
2	10.2	344
3	11.4	388
4	9.75	331
5	9.50	322
Average	**10.1**	**342**
Standard Deviation	**0.793**	**26.9**

Comments:
Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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Mass Per Unit Area of Geotextiles by ASTM D 5261

—2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/14/99

Sample ID: GT-16; 99-1
Sample Description: 16 oz black geotextile roll #: 30005518

Specimen Size, in: 5 in x 5 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	17.4	589
2	18.0	610
3	18.3	622
4	17.4	590
5	17.1	579
Average	**17.6**	**598**
Standard Deviation	**0.516**	**17.5**

Comments:
Tested By: srm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

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2740

AGP Laboratories, Inc.
2004 E. Randol Mill, Suite 512
Arlington, Texas 76011
(817) 861-9090 • (800) AGP-6030
Fax: (817) 861-5400

August 4, 1999

Geo Testing Express
Attn: Mr. Gary Torosian
1145 Massachusetts Ave.
Boxboro, MASS 01720

RE: Client Job - GTX-2318
AGP Project Number: GTX 3310.003 **REVISED WITH CORRECTION**

Dear Mr. Torosian:

Fifteen (15) samples were received for testing on 7/16/99. The samples were identified as follows:

SAMPLE I.D.	AGP COMMENTS
GT-7 99-1 Roll # 300005435	GT
GT-7 99-2 Roll # 300005455	GT
GT-7 99-3 Roll # 300005469	GT
GT-7 99-4 Roll # 300005483	GT
GT-7 99-5 Roll # 300005497	GT
GT-10 99-1 Roll # 300005237	GT
GT-10 99-2 Roll # 300005251	GT
GT-10 99-3 Roll # 300005265	GT
GT-10 99-4 Roll # 300005279	GT
GT-10 99-5 Roll # 300005360	GT
GT-10 99-6 Roll # 300005374	GT
GT-10 99-7 Roll # 300005388	GT
GT-10 99-8 Roll # 300005402	GT

--2740

GT-10 99-9 Roll # 300005418	GT
GT-16 99-1 Roll # 300005518	GT

The samples were tested in accordance with the test methods listed below:

ASTM D 3786, "Test Method for Hydraulic Bursting Strength Of Knitted Goods And Nonwoven Fabrics - Diaphragm Strength Tester Method"

All tests were performed at 73° F ± 3° with a relative humidity of 50% ± 5. Conditioning of the samples, before testing, is standard 40 hours at test temperature and relative humidity unless waived by the client.

The sample material was submitted by GeoTesting Express. AGP Laboratories, Inc. has no specific knowledge as to conditioning, origin, sampling procedure, special use of material, or purpose of material. The testing listed herein is based upon accepted industry practice as well as by the test method listed. AGP Laboratories, neither accepts nor makes claim as to final use and purpose of the material. Results presented apply only to the items tested.

-- 2740

MULLEN BURST
ASTM D 3786

Equipment: Motor Driven Hydraulic
Diaphragm Bursting Tester

Tested
7/16/99

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7 99-1	425	15	410
Roll # 300005435	465	15	450
	360	15	345
	410	15	395
	415	15	400
	420	15	405
	380	15	365
	415	15	400
	405	15	395
	370	15	355
AVG			392
S.D.			30.4
C.V. (%)			7.8

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7 99-2	460	15	445
Roll # 300005455	460	15	445
	470	15	455
	455	15	440
	490	15	475
	445	15	430
	500	15	485
	460	15	445
	420	15	405
	480	15	465
AVG			449
S.D.			22.8
C.V. (%)			5.1

--2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7 99-3	490	15	475
Roll # 300005265	415	15	400
	440	15	425
	370	15	355
	380	15	305
	400	15	385
	435	15	420
	445	15	430
	450	15	435
	365	15	350
AVG			403
S.D.			39.7
C.V. (%)			9.8

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7 99-4	415	15	400
Roll # 300005483	420	15	405
	410	15	395
	500	15	485
	470	15	455
	405	15	390
	495	15	480
	400	15	385
	450	15	435
	340	15	325
AVG			416
S.D.			48.8
C.V. (%)			11.8

-- 2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7 99-5	540	15	525
Roll # 300005497	415	15	400
	340	15	325
	435	15	420
	385	15	370
	525	15	510
	395	15	380
	450	15	435
	395	15	380
	430	15	415
AVG			416
S.D.			61.8
C.V. (%)			41.8

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-1	620	15	605
Roll # 300005237	565	15	550
	580	15	565
	545	15	530
	550	15	535
	585	15	570
	640	15	625
	630	15	615
	585	15	570
	675	15	660
AVG			583
S.D.			42.2
C.V. (%)			7.3

2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-2	630	15	615
Roll # 300005251	585	15	570
	680	15	665
	710	15	695
	760	15	745
	515	15	500
	590	15	575
	605	15	590
	650	15	635
	675	15	660
AVG			625
S.D.			70.5
C.V. (%)			11.3

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-3	630	15	615
Roll # 300005265	650	15	635
	660	15	645
	710	15	695
	695	15	680
	600	15	585
	610	15	595
	645	15	630
	680	15	665
	640	15	625
AVG			637
S.D.			35.3
C.V. (%)			5.5

2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-4	540	15	525
Roll # 300005279	540	15	525
	610	15	595
	690	15	575
	540	15	525
	585	15	550
	595	15	580
	545	15	530
	550	15	535
	580	15	565
AVG			551
S.D.			26.4
C.V. (%)			4.8

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-5	620	15	605
Roll # 300005360	570	15	555
	535	15	520
	580	15	565
	560	15	545
	530	15	515
	610	15	595
	570	15	495
	520	15	505
	480	15	465
AVG			537
S.D.			44.6
C.V. (%)			8.3

=-2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-6	605	15	590
Roll # 300005374	550	15	535
	545	15	530
	510	15	495
	580	15	565
	540	15	525
	540	15	525
	505	15	490
	530	15	515
	480	15	465
AVG			524
S.D.			36.1
C.V. (%)			6.9

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-7	585	15	570
Roll # 300005388	560	15	545
	540	15	525
	565	15	550
	500	15	485
	480	15	465
	510	15	495
	500	15	485
	505	15	490
	520	15	505
AVG			512
S.D.			34.2
C.V. (%)			6.7

2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-8	610	15	595
Roll # 300005402	585	15	570
	615	15	600
	520	15	505
	580	15	565
	605	15	590
	530	15	515
	530	15	515
	545	15	530
	525	15	510
AVG			550
S.D.			38.3
C.V. (%)			7.0

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-10 99-9	570	15	555
Roll # 300005418	510	15	495
	535	15	520
	490	15	475
	480	15	465
	505	15	490
	500	15	485
	570	15	555
	490	15	475
	480	15	465
AVG			498
S.D.			34.1
C.V. (%)			6.8

-- 2740

MULLEN BURST
ASTM D 3786

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-16 99-1	960	15	945
Roll # 300005518	980	15	965
	960	15	945
	1,000	15	985
	870	15	855
	890	15	875
	840	15	825
	870	15	855
	850	15	835
	830	15	815
AVG			890
S.D.			63.5
C.V. (%)			7.1

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If there are any questions, please contact us.

Respectfully,

Neelam Asher
Laboratory Manager

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 2

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 7 oz Geotextile (Nonwoven) E070 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DKP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: FEDEX

SITE CONTACT: Colton Sukow SITE PHONE: (513) 648-5319 SITE FAX: (513) 648-5315

SAMPLE NO. GT-7	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261 28	THICKNESS ASTM D1777 D5199	GRAB TENSILE ASTM D4632 75	TRAP TEAR ASTM D4533 75	MULLEN BURST ASTM D3786 79	AOS ASTM D4751 187	PERMITIVITY ASTM D4491 149	WIDE-WIDTH TENSILE ASTM D4595	WIDE-STRIP SEAM ASTM D4884	STRIP TENSILE ASTM D1682 D5035	PUNCTURE ASTM D4833 73	OTHER
✓ 99-1	30000 5435	✓ ✓		✓	✓	✓	✓	✓				✓	
✓ 99-2	5455	✓ ✓		✓	✓	✓	✓	✓				✓	
✓ 99-3	5469	✓ ✓		✓	✓	✓	✓	✓				✓	
✓ 99-4	5483	✓ ✓		✓	✓	✓	✓	✓				✓	
✓ 99-5	5497	✓ ✓		✓	✓	✓	✓	✓				✓	

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

1-2740

0003304

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 1

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 10 oz Geotextile (Nonwoven) E-100 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DKP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: FEDEX

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 SITE FAX: (513) 648-3415

SAMPLE NO. GT-10	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261 21	THICKNESS ASTM D1777 D5199	GRAB TENSILE ASTM D4632 78	TRAP TEAR ASTM D4533 75	MULLEN BURST ASTM D3786 79	AOS ASTM D4751	PERMITIVITY ASTM D4491	WIDE-WIDTH TENSILE ASTM D4595	WIDE-STRIP SEAM ASTM D4884	STRIP TENSILE ASTM D1682 D5035	PUNCTURE ASTM D4833 79	OTHER
99-1	3000005237	✓ ✓		✓	✓	✓						✓	
99-2	5251	✓ ✓		✓	✓	✓						✓	
99-3	5265	✓ ✓		✓	✓	✓						✓	
99-4	5277	✓ ✓		✓	✓	✓						✓	
99-5	5360	✓ ✓		✓	✓	✓						✓	
99-6	5374	✓ ✓		✓	✓	✓						✓	
99-7	5388	✓ ✓		✓	✓	✓						✓	
99-8	5402	✓ ✓		✓	✓	✓						✓	
99-9	5418	✓ ✓		✓	✓	✓						✓	

2740

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

0003305

GEOSYNTEC CONSULTANTS FILE NO.: 3-02E-TRF REVIEWED BY: ____ SHEET NO. 1 OF 1

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 3

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 16 OZ Geotextile (Nonwoven) E-160 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DWP SHIPPED: 13 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: ____

SITE CONTACT: Collin Sukow SITE PHONE: (513) 648-3419 SITE FAX: (513) 648-3415

SAMPLE NO. GT-16	ROLL NO./ BATCH NO.	MASS/ AREA ASTM ~~D3776~~ D5261 28	THICKNESS ASTM D1777 D5199	GRAB TENSILE ASTM D4632 75	TRAP TEAR ASTM D4533 75	MULLEN BURST ASTM D3786 79	AOS ASTM D4751	PERMITIVITY ASTM D4491	WIDE-WIDTH TENSILE ASTM D4595	WIDE-STRIP SEAM ASTM D4884	STRIP TENSILE ASTM D1682 D5035	PUNCTURE ASTM D4833 73	OTHER
99-1	300005518	✓✓		✓	✓	✓						✓	

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

1-2740

0003306

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRANSMITTAL LETTER

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: OSDF Phase II, Opt. A DATE: 16 day 08 month 99 year

ATTENTION: Jim Turner and Tony Klimek

ADDRESS: FDF QA and Engineering

- [ ] FOR APPROVAL
- [ ] FOR COMMENTS
- [x] AS REQUESTED
- [ ] PRINTS
- [ ] PHOTOS
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- [x] TEST RESULTS
- [ ] DOCUMENTS
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- [ ] _____
- [ ] _____
- [ ] _____

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		Revised Geotextile Conformance Test Results - GTX-7, 99-6	8/16/99

REMARKS

The Mullen Burst test for GTX-7, 99-6 has been retested. Results are attached.

000307

COPY TO: Project File FROM: Kwasi Badu-Tweneboah

GeoTesting Express
1145 Mass Avenue • Boxborough, MA 01719
(978) 635-0424 • Fax (978) 635-0266

LETTER OF TRANSMITTAL

2740

D:

Mr. Collin Sukow
GeoSyntec Consultants
Fluor-Daniel Fernald
PO Box 538704
Cincinnati, OH 45253-8704

DATE: 08/12/99	GTX NO: 2318
RE: On-Site Disposal Facility	
Pages (excluding transmittal):	

We are sending you ☒ Attached ☐ Under separate cover via _____ the following items:
☒ Test results ☐ Proposal ☒ Report ☐ Samples ☐ Specifications ☐ Invoice
☐ Copy of letter ☐ Change order _____
☐ Other _____

COPIES	DATE	DESCRIPTION
1	08/12/99	August 1999 Laboratory Test Report (results through 08/12/99)

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REMARKS

COPY TO Mr. Dave Phillips

SIGNED Gary T. Torosian

Gary T. Torosian - Laboratory Manager

GeoTesting Express, Inc.
1145 MASSACHUSETTS AVE.
BOXBOROUGH, MA 01719
978-635-0424 (FAX) 978-635-0266

2740

August 12, 1999

Mr. Dave Phillips
GeoSyntec Consultants, Inc.
1100 Lake Hearn Drive
Suite 200
Atlanta, GA 30342-1523

RE: On-Site Disposal Facility (GTX-2318)

Dear Mr. Phillips:

Enclosed are the test results you requested for the above referenced project. A re-test of sample GT-7, 99-6 for Mullen Burst was performed (ASTM D 3786).

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of this sample will be retained for a period of sixty days and will then be discarded unless otherwise notified by you. Please call me directly if you have any questions or require additional information. Please notify us if we may be of any further assistance to you on this project.

Respectfully yours,

Gary T. Torosian
Laboratory Manager

AGP Laboratories, Inc.
2004 E. Randol Mill, Suite 512
Arlington, Texas 76011
(817) 861-9090 • (800) AGP-6030
Fax: (817) 861-5400

2740

August 10, 1999

Geo Testing Express
Attn: Mr. Gary Torosian
1145 Massachusetts Ave.
Boxboro, MASS 01720

RE: Client Job - GTX-2318
AGP Project Number: GTX 3310.005

Dear Mr. Torosian:

One (1) sample was received for testing on 8/10/99. The sample was identified as follows:

SAMPLE I.D.	AGP COMMENTS
GT-7, 99-6, #300005440	GT

The sample was tested in accordance with the test methods listed below:

ASTM D 3786, "Test Method for Hydraulic Bursting Strength Of Knitted Goods And Nonwoven Fabrics - Diaphragm Strength Tester Method"

All tests were performed at 73° F ± 3° with a relative humidity of 50% ± 5. Conditioning of the samples, before testing, is standard 40 hours at test temperature and relative humidity unless waived by the client.

The sample material was submitted by Geo Testing Express. AGP Laboratories, Inc. has no specific knowledge as to conditioning, origin, sampling procedure, special use of material, or purpose of material. The testing listed herein is based upon accepted industry practice as well as by the test method listed. AGP Laboratories, neither accepts nor makes claim as to final use and purpose of the material. Results presented apply only to the items tested.

2740

MULLEN BURST
ASTM D 3786

Equipment: Motor Driven Hydraulic
Diaphragm Bursting Tester

Tested
8/10/99

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7, 99-6, #300005440	410	10	400
	385	10	375
	390	10	380
	350	10	340
	355	10	345
	360	10	350
	380	10	370
	380	10	370
	375	10	365
	410	10	400
AVG			370
S.D.			20.7
C.V. (%)			5.6

This report shall not be reproduced except in full, without written approval from this laboratory.

If there are any questions, please contact us.

Respectfully,

Neelam Asher
Laboratory Manager

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRANSMITTAL LETTER

E-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: OSDF Phase II, Opt. A DATE: 4 day Aug month 1999 year

ATTENTION: See Distribution

ADDRESS:

☐ FOR APPROVAL	☐ PRINTS	☒ TEST RESULTS	☐
☐ FOR COMMENTS	☐ PHOTOS	☐ DOCUMENTS	☐
☒ AS REQUESTED	☐ LOGS	☐ CONTRACTS	☐

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		Geotextile Conformance Test Results for GT-07-99-6	7/26/99

REMARKS

Distribution List
- Jim Turner, FDF QA
- Tony Klimek, FDF Eng.

000312

COPY TO: Project File FROM: [signature]

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F-2740

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2740

July ~~June~~ 26, 1999

Mr. Dave Phillips
GeoSyntec Consultants, Inc.
1100 Lake Hearn Drive
Suite 200
Atlanta, GA 30342-1523

RE: On-Site Disposal Facility (GTX-2318)

Dear Mr. Phillips:

Enclosed are the test results you requested for the above referenced project. One 7 oz geotextile sample was delivered to our laboratory on July 16, 1999. A copy of the test request form is located at the back of this report.

The following analyses were performed on this geotextile sample:

Mass per Unit Area by ASTM D 5261
Grab Tensile strength by ASTM D 4632
Trapezoidal Tearing strength by ASTM D 4533
Mullen Burst by ASTM D 3786
Puncture strength by ASTM D 4833
Apparent Opening Size by ASTM D 4751
Permittivity by ASTM D 4491

The results presented in this report apply only to the items tested. This report shall not be reproduced except in full, without written approval from GeoTesting Express. The remainder of this sample will be retained for a period of sixty days and will then be discarded unless otherwise notified by you. Please call me directly if you have any questions or require additional information. Thank you for allowing GeoTesting Express the opportunity to provide your firm with geosynthetics testing. Please notify us if we may be of any further assistance to you on this project.

Respectfully yours,

Gary T. Torosian
Laboratory Manager

Water Permeability of Geotextiles by Permittivity by ASTM D 4491

Constant Head Test

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/24/99
Page 1 of 1

Sample ID: GT-7; 99-6
Description: 7 oz black geotextile; roll #: 300005440

Specimen Size = 2.2 inch diameter
Effective Specimen Size = 2 inch diameter
Effective Area of Geotextile = 3.14 in^2

Head on Geotextile = 0.84 inch (2.13 cm)

	Permittivity, sec^{-1}			
Reading #	A	B	C	D
1	1.671	2.323	2.131	1.652
2	1.555	2.253	2.125	1.634
3	1.506	2.225	2.118	1.632
4	1.647	2.211	2.132	1.621
5	1.641	2.184	2.093	1.588
Average	1.604	2.239	2.120	1.625
Standard Deviation	0.070	0.053	0.016	0.024
Coefficient of Variation, %	4.388	2.359	0.763	1.453

Specs is min 0.5 sec^{-1}

Average Permittivity =	**1.897**	**sec^{-1}**	OK
Standard Deviation =	**0.330**		EBT
Coefficient of Variation =	**17.4**	**%**	8-3-99
Average Permeability =	**---**	**cm/sec**	
Average Flow Rate =	**---**	**gal/min/ft^2**	

Comments:

Tested By: swj

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000315

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

-- 2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-7; 99-6
Sample Description: 7 oz black geotextile; roll #: 300005440

Testing Machine: Instron 1000
Grip Separation: 1 in

Testing Speed: 12 in/min
Grips: Curtis "Geo" Grip

Condition: dry

Specimen Number	Maximum Tear Strength, lb	
	Direction A	Direction B
1	95	109
2	64	105
3	63	99
4	70	100
5	85	111
6	80	110
7	92	123
8	79	101
9	81	98
10	69	91
Average	78	105
Standard Deviation	11	9.0
Coefficient of Variation, %	14	8.6

specs. minimum 75 lb in both directions.

OK.
KBT
8-3-99

Comments:
Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000316

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

-- 2740

Client:	GeoSyntec Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/21/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-6		
Sample Description:	7 oz black geotextile roll #: 300005440		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Grip Separation:	3 in	**Grips:**	Curtis "Geo" Grip
Maximum Load Obtainable in Range:	1000 lb	**Padding:**	---
		Condition:	dry

Specimen Number	Direction A Maximum Breaking Strength, lb	Direction A Apparent Breaking Elongation, %	Direction B Maximum Breaking Strength, lb	Direction B Apparent Breaking Elongation, %
1	155	70	210	67
2	183	68	209	74
3	232	63	194	81
4	193	69	208	66
5	170	73	212	64
6	167	74	189	61
7	162	67	214	65
8	154	61	218	71
9	205	72	219	70
10	238	66	196	75
Average	186	68	207	69
Standard Deviation	30.6	4.2	10.4	6.0
Coefficient of Variation, %	16.5	6.2	5.01	8.7

Specs is minimum 180 lb in both directions.

Comments:

Tested By: mhm
Checked By: gtt

OK. KBT
8-3-99

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000317

Apparent Opening Size of a Geotextile by ASTM D 4751

2740

Client: GeoSyntec Consultants, Inc. **GTX #:** 2318
Project Name: On-Site Disposal Facility **Test Date:** 07/26/99
Project Location: Fernald, OH

Sample ID: GT-7; 99-6
Sample Description: 7 oz black geotextile roll #: 300005440

Shaker Type: CE Tyler Ro-Tap

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size: Sieve Number (U.S. Standard Size)	Bead Size: Diameter, mm	Passing, %	Size for 5% Passing, mm
1	12.67/12.62	80-100	0.150	8.6	0.178
		60-70	0.212	0.72	
2	11.68/11.63	80-100	0.150	16.2	0.194
		60-70	0.212	0.36	
3	13.57/13.54	80-100	0.150	12.5	0.190
		60-70	0.212	0.79	
4	11.80/11.75	80-100	0.150	11.2	0.186
		60-70	0.212	0.62	
5	13.77/13.70	80-100	0.150	9.7	0.180
		60-70	0.212	0.14	

Average AOS = O_{95}(mm): 0.186
Average Sieve Number: 70

Spec is maximum 0.212 mm

Comments:

Tested By: gph
Checked By: gtt

SK KBT 8-3-99

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000318

Index Puncture Resistance of Geotextiles, Geomembranes, and Related Projects by ASTM D 4833

— 2740

Client:	GeoSyntect Consultants, Inc.	**GTX #:**	2318
Project Name:	On-Site Disposal Facility	**Test Date:**	07/21/99
Project Location:	Fernald, OH		
Sample ID:	GT-7; 99-6		
Sample Description:	7 oz black geotextile; Roll #: 300005440		
Testing Machine:	Instron 1000	**Testing Speed:**	12 in/min
Clamping Method:	Circular clamp attachment		

Specimen Number	Puncture Resistance, lbs
1	115
2	131
3	92
4	92
5	124
6	110
7	116
8	128
9	124
10	99
11	100
12	126
13	108
14	111
15	128
Average	114
Standard Deviation	13
Coefficient of Variation, %	12

Specs is minimum 75 lb.

OK. KBT 8-3-99

Comments:

Tested By: mhm

Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

000319

Mass Per Unit Area of Geotextiles by ASTM D 5261

2740

Client: GeoSyntec Consultants, Inc.
Project Name: On-Site Disposal Facility
Project Location: Fernald, OH

GTX #: 2318
Test Date: 07/20/99

Sample ID: GT-7; 99-6
Sample Description: 7 oz black geotextile roll #: 30005440

Specimen Size, in: 6 in x 6 in

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	7.1	240
2	7.0	237
3	6.9	233
4	6.8	230
5	7.2	243
Average	7.0	237
Standard Deviation	0.15	5.13

Specs is minimum 7 oz/yd^2

OK. KBT
8-3-99.

Comments:
Tested By: mhm
Checked By: gtt

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting Express • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

AGP Laboratories, Inc.
2004 E. Randol Mill, Suite 512
Arlington, Texas 76011
(817) 861-9090 • (800) AGP-6030
Fax: (817) 861-5400

2740

July 26, 1999

Geo Testing Express
Attn: Mr. Gary Torosian
1145 Massachusetts Ave.
Boxboro, MASS 01720

RE: Client Job - GTX-2318
AGP Project Number: GTX 3310.004

Dear Mr. Torosian:

One (1) sample was received for testing on 7/23/99. The sample was identified as follows:

SAMPLE I.D.	AGP COMMENTS
GT-7, 99-6 Roll # 300005440	GT

The sample was tested in accordance with the test methods listed below:

ASTM D 3786, "Test Method for Hydraulic Bursting Strength Of Knitted Goods And Nonwoven Fabrics - Diaphragm Strength Tester Method"

All tests were performed at 73° F ± 3° with a relative humidity of 50% ± 5. Conditioning of the samples, before testing, is standard 40 hours at test temperature and relative humidity unless waived by the client.

The sample material was submitted by GeoTesting Express. AGP Laboratories, Inc. has no specific knowledge as to conditioning, origin, sampling procedure, special use of material, or purpose of material. The testing listed herein is based upon accepted industry practice as well as by the test method listed. AGP Laboratories, neither accepts nor makes claim as to final use and purpose of the material. Results presented apply only to the items tested.

MULLEN BURST
ASTM D 3786

F-2740

Equipment: Motor Driven Hydraulic Diaphragm Bursting Tester

Tested
7/23/99

SAMPLE I.D.	READING	TARE	BURST STRENGTH (psi)
GT-7, 99-6 Roll # 300005440	410	15	395
	325	15	310
	360	15	345
	355	15	340
	360	15	345
	320	15	305
	345	15	330
	410	15	395
	355	15	340
	360	15	345
AVG			345
S.D.			30.0
C.V. (%)			8.7

This report shall not be reproduced except in full, without written approval from this laboratory.

If there are any questions, please contact us.

Respectfully,

Neelam Asher

Neelam Asher
Laboratory Manager

Specs is minimum 350 psi.
Lab is performing another test on same roll.
LCBT
8/4/99

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

GEOTEXTILE TEST SUMMARY REQUEST FORM NO. 2

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: 7 oz Geotextile (Nonwoven) E070 YEAR: 1999

SAMPLED: 12 day July mo SAMPLER ID: DKP SHIPPED: 12 day July mo SHIPPER ID: DKP RECEIVED: ____ day ____ mo LAB ID: ____

MANUFACTURED BY: NTS Advanced Technologies SAMPLE SHIPPED VIA: FedEx

SITE CONTACT: Colton Sukow SITE PHONE: (513) 648-5319 SITE FAX: (513) 648-5315

SAMPLE NO. GT-7	ROLL NO./ BATCH NO.	20 MASS/ AREA ASTM ~~D3776~~ D5261	~~THICKNESS ASTM D1777 D5199~~	75 GRAB TENSILE ASTM D4632	75 TRAP TEAR ASTM D4533	79 MULLEN BURST ASTM D3786	107 AOS ASTM D4751	149 PERMITIVITY ASTM D4491	~~WIDE-WIDTH TENSILE ASTM D4595~~	~~WIDE-STRIP SEAM ASTM D4884~~	~~STRIP TENSILE ASTM D1682 D5035~~	73 PUNCTURE ASTM D4833	~~OTHER~~
99-1	30000 5425	✓		✓	✓	✓	✓	✓				✓	
99-2	5455	✓		✓	✓	✓	✓	✓				✓	
99-3	5469	✓		✓	✓	✓	✓	✓				✓	
99-4	5483	✓		✓	✓	✓	✓	✓				✓	
99-5	5497	✓		✓	✓	✓	✓	✓				✓	
99-6	30000 5440	✓		✓	✓	✓	✓	✓				✓	

WOVEN OR NONWOVEN MATERIAL

COMMENTS/SPECIAL INSTRUCTIONS/DISTRIBUTION: Strikeout nonapplicable items

APPENDIX J

CONTRACTOR'S CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE

SECONDARY

CERTIFICATE OF ACCEPTANCE SUBGRADE SURFACE

2740

INSTALLER	PROJECT
NAME: ISTRE CO.	NAME: OSDF PHASE II - CELL #3
ADDRESS: P.O. Box 451	
Crowley, LA 70527-1451	LOCATION: FERNALD, OHIO
	7400 Willey Rd
	Hamilton, OH 45013
INSTALLER AUTHORIZED REPRESENTATIVE: JERRY ISTRE	OWNER: FLUOR DANIEL/DOE

I, The undersigned, duly authorized representive of ISTRE CO. 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
17 AUG 1999	S-1	/CE
18 AUG 1999	S-2 THRU S-19	/CE
20 AUG 1999	S-21 & S-22	/CE
21 AUG 1999	S-20 & S-23 THRU S-30	/CE
23 AUG 1999	S-31 THRU S-34	/CE
27 AUG 1999	S-35 THRU S-37	/CE
28 AUG 1999	S-38 THRU S-42	/CE
30 AUG 1999	S-43 THRU S-46	/CE
31 AUG 1999	S-47 THRU S-58	/CE
01 SEPT 1999	S-59 THRU S-66	/CE
02 SEPT 1999	S-67 THRU S-71	/CE
10 SEPT 1999	S-72	/CE
11 SEPT 1999	S-73 & S-74	/CE

000326

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PRIMARY

CERTIFICATE OF ACCEPTANCE SUBGRADE SURFACE

INSTALLER	PROJECT
NAME: ISTRE Co.	NAME: OSDF PHASE II - CELL #3
ADDRESS:	LOCATION: FERNALD, OHIO
INSTALLER AUTHORIZED REPRESENTATIVE: JERRY ISTRE	OWNER: FLUOR DANIEL / DOE

I, the undersigned, duly authorized representative of the Installer, _____, 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.	SIGNATURES		
		INSTALLER	GEOSYNTEC	FDF
09 SEPTEMBER 1999	P-1 THRU P-9		Byron York	
10 SEPTEMBER 1999	P-10 THRU P-20		Byron York	
11 SEPTEMBER 1999	P-21 THRU P-22		Byron York	
14 SEPTEMBER 1999	P-23 THRU P-27		Byron York	
15 SEPTEMBER 1999	P-28 THRU P-33		Byron York	
22 SEPTEMBER 1999	P-34 THRU P-37		Byron York	
23 SEPTEMBER 1999	P-38 THRU P-49		Byron York	
24 SEPTEMBER 1999	P-50 THRU P-55		Byron York	
25 SEPTEMBER 1999	P-56 THRU P-63		Byron York	

GeoSyntec Consultants REVIEWED BY: _____ SHEET NO. 1 OF 1

APPENDIX K

GEOMEMBRANE PANEL PLACEMENT MONITORING LOGS

SECONDARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - Cell 3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: _____ PRODUCT TYPE: 80-mil Textured HDPE GEOMEMBRANE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-1	11410 1773	17 Aug	1311	E.B. slope @ G2 trench	23.0	~~378'~~ 379' MH	MH
S-2	AK2550FF	18 Aug	1057	E.B slope @ I.B.	23.0	24.5	RP
S-3	11410 1768	"	11:11	" , N. of S-2	"	35'	RP
S-4	"	"	11:20	" , S. of S-2	"	35.5'	RP
S-5	"	"	11:28	" , S. of S-4	"	58'	RP
S-6	"	"	12:53	Across I.B. , W. of S-2, 3, 4	"	41'	RP
S-7	AK5175FF	"	14:28	" , W. of S-6	"	88'	RP
S-8	"	"	14:40	" , " " S-7	"	88'	RP
S-9	"	"	15:10	" , " " S-8	"	88'	RP
S-10	AK4260FF	"	15:27	" , " " S-9	"	88'	RP
S-11	"	"	1540	" , " " S-10	"	88'	RP
S-12	"	"	1552	" , " " S-11	"	89'	RP
S-13	AK4235FF	"	1610	" , " " S-12	"	89'	RP
S-14	"	"	1615	" , " " S-13	"	89'	RP
S-15	"	"	1649	" , " " S-14	"	89'	RP
S-16	AK4294FF	"	1708	" , " " S-15	"	89'	RP
S-17	"	"	1729	" , " " S-16	"	89'	RP
S-18	"	"	1757	" , " " S-17	"	90'	RP
S-19	114101798	"	1830	E.B. slope onto floor, N. of S-3	"	326'	RP
* S-20	114101739	19 Aug	0840	E.B. slope onto floor, N. of S-19	"	taken back out	RP
~~S-21~~ RP						1963	
				TOTALS:(1)			

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 45149 (ft²) ACCUMULATED: 45149 (ft²)

NOTES:

* Panel 20 deployed, taken back out after rain damaged GCL

000331

©GEOSYNTEC CONSULTANTS FILE NO. 3-04-PPL REVIEWED BY: [illegible] SHEET NO. 1 OF: 4

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: _____ PRODUCT TYPE: 80 mil Textured HDPE GeoMembrane

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-21 (RP)	114101797	20 Aug.	15:39	E.B. slope onto floor, S. of S-1	23.0	379	RP
S-22	1819	"	16:19	" , S. of S-21	"	379 (RP)	RP
S-23	114101764	21 Aug	09:46	E.B. slope onto floor, S. of S-22	23.0	379 (RP)	RP
S-24	1772	"	10:22	" , " " S-23	"	379 (RP)	RP
S-25	AK2554FF	"	11:39	Across I.B., W. of S-18	"	90'	RP
S-26	AK2527FF	"	11:44	" , " " S-25	"	90'	RP
S-27	"	"	12:50	" , " " S-26	"	91'	RP
S-28	"	"	13:27	cell floor, W. end of S-19	"	52'	RP
S-20 (*)	114101792	"	15:47	E.B. slope onto floor, N. of S-19	"	387	RP
S-29	1769	"	17:00	" , N of S-20	"	383	RP
S-30	1775	"	17:35	" , N. of S-29	"	383	RP
S-31	114101814	23 Aug	13:30	E.B. slope to floor, N. of S-30	23.0	382	RP
S-32	1796	"	14:25	" , " " S-31	23.0	382	RP
S-33	1794	"	15:25	" , " " S-32	23.0	382	RP
S-34	1761	"	16:02	" , " " S-33	23.0	381	RP
S-35	AK2550FF	27 Aug	11:20	Across I.B., W. of S-27	23.0	90'	RP
S-36	"	"	15:36	" , W. of S-35	22	89'	RP
S-37	"	"	15:50	" , " " S-36	20	89'	RP
				TOTALS:(1)	22.06	4787	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: ~~105579.9~~ 105580 (ft²) ACCUMULATED: 150,729 (ft²)

NOTES:

(*) Replaced original S-20

000332

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GO0409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: _____ PRODUCT TYPE: 80 mil Textured HDPE Geomembrane

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-38	AK2528FF	~~28~~ Aug	10:20	Across I.B, West of S-37	~~23~~ 21	88'	RP
S-39	"	"	10:38	" " " S-38	~~23~~ 20	88'	RP
S-40	"	"	10:52	" " " S-39	~~23~~ 21	89'	RP
S-41	AK426IFF	"	11:23	" " " S-40	"	89'	RP
S-42	"	"	12:55	" " " S-41	~~23~~ 22	88'	RP
S-43	~~1140~~ 11410 1801 ~~1141 01801~~ RP	30 Aug	14:10	West Berm to cell floor	23'	359	RP
S-44	11410 1783 HMT 080A004	30 Aug	13:57	West Berm To Cell Floor	23'	359	DLE
S-45	1743	"	15:45	" " " " "	23'	360	RP
S-46	1816	"	16:36	" " " " "	23'	362	RP
S-47	11410 1806	31 Aug	10:55	Across I.B.	23'	88'	RP
S-48	1813	"	11:07	"	23'	87	RP
S-49	"	"	11:16	"	"	87	RP
S-50	"	"	11:25	"	"	88'	RP
S-51	1747	"	11:35	"	"	88'	RP
S-52	1747	"	11:45	"	"	88'	RP
S-53	1806	"	13:20	"	16'	31'	RP
S-54	"	"	13:50	West Berm to I.B	23'	21.5'	RP
S-55	"	"	14:00	" " , C-4	15'	28'	RP
S-56	"	"	14:15	" " "	23'	39'	RP
S-57	"	"	14:21	" " , C-3	"	34'	RP
S-58	1771	"	17:25	" " onto C-3 floor	"	353	RP
				TOTALS:(1)	21.8	2914.5	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 63564.0 (ft²) ACCUMULATED: 214,293 (ft²)

NOTES: S-56 AND A PORTION OF S-55 WAS CUT OUT.

000333

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

F-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: _____ PRODUCT TYPE: 80 mil HDPE Textured GEOMEMBRANE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
S-59	114101749	1 Sept	09:35	W. Berm to cell floor	23'	358	RP
60	1780	"	11:21	" " " "	"	358	RP
61	1770	"	12:53	" " " "	"	357	TD
62	1790	"	1620	Cell Floor	"	259	DLE
63	1810	"	1643	" "	"	259	DLE
64	1760	"	1710	" "	"	259	CS
65	1740	"	1755	" "	"	260	TD
66	1817	"	1845	" "	9'	260	TD
S-67	114101817	2 Sept	(PM) 1453	W. Berm slope	23'	99	RP
68	1760	"	15:20	" "	23'	100	RP
69	1740	"	16:17	" "	23'	102	RP
70	1790	"	16:30	" "	23'	102	RP
71	1810		17:50	" "		100	RP
72	1736	10 Sept	08:10	W. Berm, Cell IV Nth W. corner	23	48	DLE
S-73	114Ø1738	11 SEPT	162Ø	WEST ANCHOR TRENCH TO CELL FLOOR	23	1Ø6	TBW
74	114Ø1738	11 SEPT	1640	" "	23	106	TBW
				TOTALS:(1)	22.1	3433	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 75,755 (ft²) ACCUMULATED: 290,048 (ft²)

NOTES: S-72 REPLACED S-56 AND PART OF S-55.
S-73 REPLACED MOST OF S-70 & S-74 REPLACED ALL MOST OF S-69 & MOST OF S-71.

000334

F-2740

PRIMARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-1	11410818	09 SEPT	1445	ACROSS INTERCELL BERM IN S.E. CORNER	21	44	TBU
P-2	11410818	09 SEPT	1500	" "	23	100	TBU
P-3	11410818	09 SEPT	1513	" "	23	100	TBU
P-4	11410800	09 SEPT	1535	" "	23	100	TBU
P-5	11410800	09 SEPT	1552	" "	23	100	TBU
P-6	11410799	09 SEPT	1627	EAST ANCHOR TRENCH TO SE CORNER	23	59	TBU
P-7	11410799	09 SEPT	1636	" "	23	39	TBU
P-8	11410799	09 SEPT	1643	" "	23	30	TBU
P-9	11410799	09 SEPT	1654	" "	23	49	TBU
P-10	11410750	10 Sept	1107	ACROSS INTERCELL BERM TO CELL FLOOR	23	100	DLE
P-11	11410736	10 Sept	1120	" " " " "	23	100	DLE
P-12	11410750	10 Sept	1129	" " " " "	23	100	DLE
P-13	11410784	10 Sept	1137	" " " " "	23	100	DLE
P-14	11410800	10 Sept	1437	" " " " "	23	100	DLE
P-15	11410784	10 Sept	1451	" " " " "	23	100	DLE
P-16	11410750	10 Sept	1514	" " " " "	23	100	DLE
P-17	11410795	10 Sept	1540	" " " " "	23	100	DLE
P-18	11410803	10 Sept	1740	" " " " "	23	100	CS
P-19	11410795	10 Sept	1755	" " " " "	23	100	CS
P-20	11410803	10 Sept	1805	" " " " "	23	100	CS
P-21	11410737	11 SEPT	1015	EAST ANCHOR TRENCH TO CELL FLOOR	23	382	TBU
P-22	11410741	11 SEPT	1042	" "	23	375	TBU
P-23	11410759	14 Sept	1100	East Anchor trench To Cell Floor	23	390	DLE
				TOTALS:(1)	23	2868	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 65,964 (ft²) ACCUMULATED: 65,964 (ft²)

NOTES:

000336

©GEOSYNTEC CONSULTANTS FILE NO. 3-04-PPL REVIEWED BY: CS SHEET NO. 1 OF: 3

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) E 2740

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

DESCRIPTION: Phase II Cell #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: 80 M.L Textured HDPE Geomembrane

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-24	11410 1755	14 Sept	1145	East Anchor Trench To Cell Floor	23	385	DLE
P-25	11410 1781	14 Sept	1335	" " " " " "	23	383	DLE
P-26	11410 1774	14 Sept	1545	" " " " " "	23	381	DLE
P-27	11410 1807	14 Sept	1637	" " " " " "	23	375	DLE
P-28	2527	15 Sept	1010	East Anchor Trench To West of The East Toe Line	12	71	DLE
P-29	11410 1789	15 Sept	1130	East Anchor Trench To Cell Floor	23	388	DLE
P-30	1758	15 Sept	1300	" " " " " "	23	388	DLE
P-31	1791	15 Sept	1400	" " " " " "	23	387	DLE
P-32	1754	15 Sept	1430	" " " " " "	23	377	DLE
P-33	1753	15 Sept	1600	" " " " " "	23	366	DLE
P-34	1787	22 Sept	1340	West Anchor Trench To middle of Cell	23	381	TBY
P-35	1751	22 Sept	1440	" " " " " " "	23	376	DLE
P-36	1766	22 Sept	1620	" " " " " " "	23	378 ~~376~~	DLE
P-37	1767	22 Sept	1707	" " " " " " "	23	378	DLE
P-38	1803	23 Sept	0915	Inner Cell Beam From Cell 4 North To Cell 3	23	105	DLE
P-39	1808	23 Sept	0950	" " " " " " " "	23	105	DLE
P-40	1808	23 Sept	1007	" " " " " " " "	23	105	DLE
P-41	1795	23 Sept	1041	" " " " " " " "	23	105	DLE
P-42	1820	23 Sept	1109	" " " " " " " "	23	105	DLE
P-43	1742	23 Sept	1301	" " " " " " " "	23	105	DLE
P-44	1808	23 Sept	1350	" " " " " " " "	23	105	DLE
P-45	1820	23 Sept	1420	" " " " " " " "	23	105	DLE
P-46	1742	23 Sept	1445	" " " " " " " "	23	105	DLE
				TOTALS:(1)	22.5	5957	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 134,032.5 (ft^2) ACCUMULATED: 199,997 (ft^2)

NOTES:

000337

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PANEL PLACEMENT LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Phase II - Cell #3 YEAR: 1999

PRIMARY: ☒ SECONDARY: ☐ OTHER: _____ PRODUCT TYPE: 80-mil Textured HDPE Geomembrane

PANEL NO.	BATCH / ROLL NO.	DATE (day/mo)	TIME	PLACEMENT LOCATION COMMENTS	APPROX WIDTH (ft)	APPROX LENGTH (ft)	QA ID
P-47	114 101742	23 Sept.	1505	Inner Cell Beam from Cell 4 North to Cell 3	23	105	DLE
P-48	1820	23 Sept.	1540	" " " " " " " "	23	105	DLE
P-49	1736	23 Sept.	1550	" " " " " " " "	23	105	DLE
P-50	1735	24 Sept	1250	West Anchor Trench To Cell Floor	23	376	DLE
P-51	1746	24 Sept	1340	" " " " " "	23	380	DLE
P-52	1815	24 Sept	1432	West Anchor Trench To Cell Floor	23	379	MH
P-53	1812	24 SEPT	1541	" " " " " "	23	378	MH
P-54	1793	24 Sept	1630	" " " " " "	23	378	DLE
P-55	1752	24 Sept	1735	" " " " " "	23	377	DLE
P-56	1788	25 Sept	1252	" " " " " "	23	372	DLE
P-57	1745	25 Sept	1320	" " " " " "	23	372	DLE
P-58	1782	25 Sept	1450	" " " " " "	23	63	DLE
P-59	1782	25 Sept	1500	West Anchor Trench To Top of Berm	23	50	DLE
P-60	1782	25 Sept	1510	" " " " " " "	23	41	DLE
P-61	1782	25 Sept	1516	West Anchor Trench in To Cell 4	23	64	DLE
P-62	1782	25 Sept	1535	Inner Cell Berm From Cell 4 into Cell 3	23	101	DLE
P-63	1799	25 Sept	1600	" " " " " " " "	23	86	DLE
				TOTALS:(1)	23	3735	

NOTE: (1) APPROXIMATE AREA: THIS PAGE: 85,905 (ft^2) ACCUMULATED: 285,902 (ft^2)

NOTES:

000338

©GEOSYNTEC CONSULTANTS FILE NO. 3-04-PPL REVIEWED BY: _____ SHEET NO. 3 OF: 3

APPENDIX L

GEOMEMBRANE TRIAL SEAM LOGS

F-2740

FUSION

000340

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

TRIAL SEAM LOG - FUSION

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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 (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F-1	18 AUG	0930	01	LL	S/S	811	7.5	161/168	182	P	–	TBW
								163/157	201	P	–	TBW
F-2	18 AUG	0945	02	JM	S/S	811	7.5	152/152	162	P	–	TBW
								138/142	165	P	–	TBW
F-3	18 AUG	1305	01	LL	S/S	811	7.5	128/138	151	P	–	TBW
								133/135	152	P	–	TBW
F-4	18 AUG	1306	02	JM	S/T	811	7.0	PEEL	—	–	F	TBW
								PEEL	—	–	F	TBW
F-5	18 AUG	1310	02	JM	T/T	811	7.0	139/141	151	P	–	TBW
								141/140	154	P	–	TBW
F-6	18 AUG	1430	02	JM	S/T	811	7.0	163/147	158	P	–	TBW
								150/144	157	P	–	TBW
F-7	18 AUG	1500	02	JM	S/S	811	7.0	146/142	161	P	–	TBW
								134/145	172	P	–	TBW
F-8	18 AUG	1900	01	LL	S/T	811	6.0	182/182	192	P	–	TBW
								173/172	202	P	–	TBW
F-9	19 AUG	0800	01	LL	S/S	811	7.5	189/193	188	P	–	TBW
								175/189	198	P	–	TBW
F-10	20 AUG	1350	01	LL	S/S	811	7.5	128/127	159	P	–	TBW
								151/149	155	P	–	TBW
F-11	20 AUG	1530	02	JM	S/S	811	7.0	153/152	166	P	–	TBW
								154/150	161	P	–	TBW
F-12	21 AUG	0800	01	LL	S/S	811	7.5	176/160	182	P	–	TBW
								171/173	185	P	–	TBW

000341

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

E-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

TRIAL SEAM NO.	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	(1) MATERIAL DESCRIPTION	FUSION WEDGE (SET/°C/°F)	FUSION MEASURED SPEED (~~ft/min~~)	TEST RESULTS PEEL (ppi/psi)	TEST RESULTS SHEAR (ppi/psi)	PASS	FAIL	QA ID
F-13	21 AUG	0800	02	JM	S/S	811	7.0	186/173	202	P		TBC
								168/177	201	P		TBC
F-14	21 AUG	1313	01	LL	S/S	811	7.5	148/142	158	P		TBC
								133/141	153	P		TBC
F-15	21 AUG	1330	02	JM	S/S	811	7.0	121/127	162	P		TBC
								124/137	157	P		TBC
F-16	21 AUG	1500	02	JM	S/T	811	7.0	146/134	157	P		TBC
								143/141	163	P		TBC
F-17	21 AUG	1715	01	LL	S/S	811	7.5	150/151	178	P		TBC
								138/152	166	P		TBC
F-18	23 AUG	0900	02	JM	S/S	811	7.0	150/150	169	P		TBC
								152/160	170	P		TBC
F-19	23 AUG	0915	01	LL	S/S	811	7.5	150/142	176	P		TBC
								152/150	164	P		TBC
F-20	23 AUG	1300	02	JM	S/S	811	7.0	143/142	157	P		TBC
								140/138	156	P		TBC
F-21	23 AUG	1310	01	LL	S/S	811	7.5	161/151	154	P		TBC
								148/150	162	P		TBC
F-22	23 AUG	1830	01	LL	S/S	811	7.5	148/135	177	P		TBC
								139/135	176	P		TBC
F-23	23 AUG	1900	02	JM	S/T	811	7.0	142/147	170	P		TBC
								144/151	162	P		TBC
F-24	27 AUG	1045	01	LL	S/S	811	7.5	164/160	178	P		TBC
								160/170	181	P		TBC

000342

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

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE-II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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
F-25	27 AUG	1330	01	LL	S/S	811	7.5	142/PEEL	—	—	F	TBU
								PEEL/PEEL	—	—	F	TBU
F-26	27 AUG	1400	01	LL	S/S	811	7.5	130/133	154	P	—	TBU
								127/130	157	P	—	TBU
F-27	28 AUG	0815	01	LL	S/S	811	7.5	148/169	185	P	—	TBU
								153/160	187	P	—	TBU
F-28	28 AUG	1315	01	LL	S/S	811	7.5	148/148	153	P	—	TBU
								147/142	163	P	—	TBU
F-29	30 AUG	0915	02	LL	T/T	811	7.5	182/177	169	P	—	TBU
								182/186	202	P	—	TBU
F-30	30 AUG	0930	02	LL	T/T	811	8.0	166/181	199	P	—	TBU
								167/181	197	P	—	TBU
F-31	30 AUG	0945	02	LL	T/T	811	8.5	167/171	193	P	—	TBU
								156/178	188	P	—	TBU
F-32	30 AUG	1330	02	LL	T/T	811	9.5	136/144	157	P	—	TBU
								150/146	153	P	—	TBU
F-33	30 AUG	1510	02	JM	S/S	811	7.0	145/140	159	P	—	TBU
								149/143	154	P	—	TBU
F-34	30 AUG	1515	01	LL	S/S	811	7.0	149/147	155	P	—	TBU
								133/127	157	P	—	TBU
F-35	30 AUG	1530	01	LL	S/S	811	7.5	133/133	160	P	—	TBU
								129/128	159	P	—	TBU
F-36	30 AUG	1815	02	JM	T/T	811	7.5	149/158	176	P	—	TBU
								154/160	182	P	—	TBU

000343

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

F-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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
F-37	31 AUG	0830	02	JM	S/S	811	7.0	186/175	206	P	–	TBC
								175/171	202	P	–	TBC
F-38	31 AUG	1330	01	LL	S/S	811	7.5	116/125	164	P	–	TBC
								128/128	154	P	–	TBC
F-39	31 AUG	1430	02	JM	T/T	811	9.5	145/144	160	P	–	TBC
								147/151	158	P	–	TBC
F-40	31 AUG	1800	02	JM	S/T	811	7.5	147/148	153	P	–	TBC
								151/153	157	P	–	TBC
F-41	01 SEPT	0930	02	JM	S/S	811	7.0	157/146	195	P	–	TBC
								161/173	193	P	–	TBC
F-42	01 SEPT	1315	02	JM	S/S	811	7.5	138/136	152	P	–	TBC
								125/132	153	P	–	TBC
F-43	01 SEPT	1700	01	LL	S/S	811	7.5	132/128	154	P	–	TBC
								133/136	151	P	–	TBC
F-44	01 SEPT	1900	02	JM	S/T	811	7.5	148/150	167	P	–	TBC
								151/151	166	P	–	TBC
F-45	01 SEPT	1910	02	JM	S/S	811	7.5	144/149	171	P	–	TBC
								148/153	166	P	–	TBC
F-46	02 SEPT	0915	02	LL	S/T	811	7.0	160/170	191	P	–	TBC
								167/161	194	P	–	TBC
F-47	02 SEPT	1400	02	JM	S/S	811	7.5	131/143	153	P	–	TBC
								117/122	157	P	–	TBC
F-48	02 SEPT	1415	02	JM	T/T	811	7.5	144/135	153	P	–	TBC
								137/142	155	P	–	TBC

000344

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

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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
F-49	02 SEPT	1610	02	JM	S/T	811	8.0	132/135	152	P	—	TBC
								133/143	154	P	—	TBC
F-50	09 SEPT	1415	01	LL	S/S	811	7.5	155/163	171	P	—	TBC
								155/153	175	P	—	TBC
F-51	09 SEPT	1445	02	JM	S/S	811	7.0	152/150	163	P	—	TBC
								154/154	166	P	—	TBC
F-52	09 SEPT	1450	02	JM	S/T	811	7.5	146/152	164	P	—	TBC
								147/152	166	P	—	TBC
F-53	09 SEPT	1455	02	JM	T/T	811	7.5	140/146	160	P	—	TBC
								144/150	163	P	—	TBC
F-54	10 SEPT	0830	02	LL	S/S	811	7.5	179/174	191	P	—	TBC
								180/190	215	P	—	TBC
F-55	10 SEPT	0835	02	LL	S/T	811	7.0	177/179	208	P	—	TBC
								184/177	199	P	—	TBC
F-56	10 SEPT	0840	02	LL	T/T	811	7.0	173/183	211	P	—	TBC
								183/186	211	P	—	TBC
F-57	10 SEPT	0930	01	JM	S/S	811	7.0	174/173	191	P	—	TBC
								157/165	193	P	—	TBC
F-58	10 SEPT	1310	01	JM	S/S	811	7.0	150/153	177	P	—	TBC
								155/158	184	P	—	TBC
F-59	10 SEPT	1430	02	LL	S/S	811	7.5	145/149	157	P	—	TBC
								142/140	162	P	—	TBC
F-60	10 SEPT	1715	01	JM	S/S	811	7.0	137/152	175	P	—	TBC
								141/150	165	P	—	TBC

000345

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

=-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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
F-61	11 SEPT	0900	01	LL	S/S	811	7.5	162/158	203	P	-	TBG
								162/175	202	P	-	TBG
F-62	11 SEPT	0900	02	JM	S/S	811	7.0	162/175	204	P	-	TBG
								176/180	203	P	-	TBG
F-63	11 SEPT	0910	02	JM	S/T	811	7.5	176/177	198	P	-	TBG
								181/183	205	P	-	TBG
F-64	11 SEPT	0920	02	JM	T/T	811	7.5	180/184	219	P	-	TBG
								184/183	214	P	-	TBG
F-65	11 SEPT	1330	02	JM	S/S	811	7.0	149/157	162	P	-	TBG
								151/150	163	P	-	TBG
F-66	11 SEPT	1400	01	LL	S/S	811	7.5	131/131	154	P	-	TBG
								139/145	152	P	-	TBG
F-67	14 SEPT	0830	02	JM	S/S	811	7.0	176/182	227	P	-	TBG
								184/195	240	P	-	TBG
F-68	14 SEPT	1315	02	JM	S/S	811	7.0	150/154	165	P	-	TBG
								152/149	174	P	-	TBG
F-69	14 SEPT	1415	01	MM	S/S	811	7.5	158/144	162	P	-	TBG
								141/140	164	P	-	TBG
F-70	15 SEPT	1030	02	JM	S/S	811	7.0	143/160	195	P	-	TBG
								160/155	195	P	-	TBG
F-71	15 SEPT	1300	02	JM	S/S	811	7.0	133/146	161	P	-	TBG
								138/133	164	P	-	TBG
F-72	15 SEPT	1830	01	LL	S/S	811	7.0	153/155	189	P	-	TBG
								151/160	187	P	-	TBG

000346

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

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE.

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
F-73	22 SEPT	1330	01	JM	S/S	811	6.8	150/147	156	P	–	TBD
								125/122	158	P	–	TBD
F-74	22 SEPT	1645	02	LL	S/S	811	6.8	152/157	190	P	–	TBD
								156/164	191	P	–	TBD
F-75	23 SEPT	0900	01	JM	S/S	818	7.0	170/174	204	P	–	TBD
								169/187	211	P	–	TBD
F-76	23 SEPT	1300	01	JM	S/S	818	7.0	148/149	162	P	–	TBD
								146/150	165	P	–	TBD
F-77	24 SEPT	1300	01	JM	S/S	818	7.0	146/145	161	P	–	TBD
								150/147	176	P	–	TBD
F-78	24 SEPT	1315	02	LL	S/S	811	7.2	129/137	153	P	–	TBD
								130/141	167	P	–	TBD
F-79	25 SEPT	1330	01	JM	S/S	818	7.0	144/150	165	P	–	TBD
								150/151	167	P	–	TBD
F-80	25 SEPT	1530	02	JB	S/S	811	7.5	135/136	164	P	–	TBD
								138/134	162	P	–	TBD
F-81	25 SEPT	1645	01	JM	T/T	818	7.0	146/150	165	P	–	TBD
								151/144	169	P	–	TBD
F-82	25 SEPT	1730	01	JM	S/T	818	7.0	144/140	155	P	–	TBD
								145/146	170	P	–	TBD

000347

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) --2740

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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-1	17 AUG	1315	06	JB	S/T	425	480	110/103	168/152	P		—	TBU
E-2	↓	1320	06	JB	T/T	425	480	111/115	154/155	P		—	TBU
E-3	↓	1330	06	JB	S/S	425	480	110/92	155/155	P		—	TBU
E-4	18 AUG	0900	06	JB	T/T	425	480	155/150	185/202	P		—	TBU
E-5	18 AUG	1005	06	MM	T/T	425	480	PEEL	—	F	F	E-6	TBU
E-6	18 AUG	1045	06	MM	T/S	425	480	128/147	172/167	P		—	TBU
E-7	18 AUG	1300	06	JB	S/S	425	480	134/133	156/151	P		—	TBU
E-8	18 AUG	1300	06	MM	S/S	425	480	116/110	155/159	P		—	TBU
E-9	18 AUG	1730	06	JB	T/T	425	480	145/143	185/190	P		—	TBU
E-10	19 AUG	0806	06	JB	T/T	425	480	141/136	205/204	P		—	TBU
E-11	19 AUG	0820	06	MM	T/T	425	480	142/127	203/196	P		—	TBU
E-12	20 AUG	0815	06	JB	T/T	425	480	145/132	198/197	P		—	TBU
E-13	20 AUG	0830	03	MM	T/T	490	495	146/149	206/216	P		—	TBU
E-14	20 AUG	1300	06	JB	T/T	425	480	140/147	157/157	P		—	TBU
E-15	20 AUG	1315	03	MM	T/T	490	495	158/159	168/162	P		—	TBU
E-16	21 AUG	0800	06	JB	T/T	425	480	114/136	213/200	P		—	TBU
E-17	21 AUG	0815	03	MM	T/T	490	495	136/138	178/181	P		—	TBU
E-18	21 AUG	1300	06	JB	T/T	425	480	126/136	152/159	P		—	TBU
E-19	21 AUG	1320	03	MM	T/T	490	495	146/149	169/157	P		—	TBU
E-20	23 AUG	0800	03	MM	T/T	490	495	140/150	202/207	P		—	TBU
E-21	23 AUG	0815	06	JB	T/T	425	480	166/162	198/195	P		—	TBU
E-22	23 AUG	1300	06	JB	T/T	425	480	131/119	168/170	P		—	TBU
E-23	23 AUG	1300	03	MM	T/T	490	495	136/150	160/171	P		—	TBU
E-24	23 AUG	1800	06	JB	S/S	425	480	154/148	160/157	P		—	TBU
E-25	25 AUG	0800	06	JB	T/T	425	480	144/141	190/193	P		—	TBU

000349

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) — 2740

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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-26	27 AUG	0815	03	MM	T/T	490	495	111/129	186/182	P	–	–	TBK
E-27	28 AUG	0800	06	JB	S/S	425	480	93/126	189/165	P	–	–	TBK
E-28	28 AUG	1315	06	JB	S/S	425	480	117/121	135/141	–	F	E-29	TBK
E-29	28 AUG	1345	06	JB	T/T	425	480	130/134	158/157	P	–	–	TBK
E-30	28 AUG	1600	06	JB	T/T	425	480	146/148	151/151	P	–	–	TBK
E-31	30 AUG	0830	06	JB	T/T	420	480	170/171	203/200	P	–	–	TBK
E-32	30 AUG	1500	06	JB	T/T	420	480	134/128	154/154	P	–	–	TBK
E-33	31 AUG	0815	06	JB	T/T	420	480	137/130	203/204	P	–	–	TBK
E-34	31 AUG	0900	03	MM	T/T	490	495	168/168	197/200	P	–	–	TBK
E-35	31 AUG	1300	03	MM	T/T	400	455	130/132	151/153	P	–	–	TBK
E-36	31 AUG	1715	04	JB	T/T	400	480	152/149	156/163	P	–	–	TBK
E-37	01 SEPT	0830	04	JB	T/T	420	480	147/149	209/212	P	–	–	TBK
E-38	01 SEPT	1345	03	MM	T/T	410	465	153/144	151/154	P	–	–	TBK
E-39	01 SEPT	1415	04	JB	T/T	400	480	122/128	158/161	P	–	–	TBK
E-40	01 SEPT	1730	04	JB	T/T	400	480	143/143	156/166	P	–	–	TBK
E-41	02 SEPT	0800	04	JB	T/T	400	480	130/134	195/187	P	–	–	TBK
E-42	02 SEPT	0800	03	MM	T/T	490	495	142/160	192/185	P	–	–	TBK
E-43	02 SEPT	1300	04	JB	T/T	400	480	120/132	152/155	P	–	–	TBK
E-44	02 SEPT	1300	03	MM	T/T	410	425	128/125	152/154	P	–	–	TBK
E-45	02 SEPT	1700	04	JB	T/T	400	480	147/148	155/159	P	–	–	TBK
E-46	02 SEPT	1700	03	MM	T/T	410	425	121/126	153/155	P	–	–	TBK
E-47	07 SEPT	0815	04	JB	T/T	400	480	143/148	199/195	P	–	–	TBK
E-48	07 SEPT	1315	04	JB	T/T	400	480	136/154	169/169	P	–	–	TBK
E-49	09 SEPT	1645	04	JB	T/T	400	480	147/140	178/169	P	–	–	TBK
E-50	10 SEPT	0915	04	JB	T/T	400	480	140/135	171/184	P	–	–	TBK

000350

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

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: PHASE II YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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-51	10 SEPT	1315	03	MM	T/T	410	425	157/156	173/169	P	—	—	TBK
E-52	10 SEPT	1745	04	JB	T/T	400	480	139/140	200/183	P	—	—	TBK
E-53	11 SEPT	0900	04	JB	T/T	400	480	178/169	192/197	P	—	—	TBK
E-54	11 SEPT	1345	03	MM	T/T	410	425	142/140	162/159	P	—	—	TBK
E-55	11 SEPT	1730	04	JB	T/T	400	480	122/124	158/166	P	—	—	TBK
E-56	14 SEPT	0915	04	JB	T/T	400	480	167/150	202/213	P	—	—	TBK
E-57	14 SEPT	1315	04	JB	T/T	375	425	134/139	160/161	P	—	—	TBK
E-58	15 SEPT	0815	03	MM	T/T	490	495	117/101	186/199	P	—	—	TBK
E-59	15 SEPT	0820	03	EM	T/T	490	495	94/100	184/190	P	—	—	TBK
E-60	15 SEPT	1300	04	JB	T/T	400	425	124/133	171/161	P	—	—	TBK
E-61	15 SEPT	1315	03	MM	T/T	410	425	129/131	155/162	P	—	—	TBK
E-62	16 SEPT	1315	04	JB	T/T	380	425	158/157	204/215	P	—	—	TBK
E-63	16 SEPT	1315	03	MM	T/T	425	435	148/155	187/182	P	—	—	TBK
E-64	16 SEPT	1500	06	JB	T/T	410	480	126/118	170/166	P	—	—	TBK
E-65	17 SEPT	0800	03	MM	T/T	490	495	173/159	205/203	P	—	—	TBK
E-66	17 SEPT	0810	04	JB	T/T	375	480	156/168	205/207	P	—	—	TBK
E-67	17 SEPT	0930	06	JM	T/T	445	475	140/130	182/184	P	—	—	TBK
E-68	17 SEPT	1300	03	MM	T/T	420	425	142/135	167/164	P	—	—	TBK
E-69	17 SEPT	1315	04	JB	T/T	375	425	125/153	185/171	P	—	—	TBK
E-70	17 SEPT	1300	06	JM	T/T	400	450	135/131	187/183	P	—	—	TBK
E-71	17 SEPT	1745	04	JB	T/T	375	450	142/121	174/184	P	—	—	TBK
E-72	17 SEPT	1755	06	JM	T/T	400	450	129/143	163/173	P	—	—	TBK
E-73	17 SEPT	1800	03	MM	T/T	420	425	150/149	199/170	P	—	—	TBK
E-74	20 SEPT	0900	04	JB	T/T	375	450	133/134	199/197	P	—	—	TBK
E-75	21 SEPT	0845	04	JB	T/T	400	475	147/178	215/215	P	—	—	TBK

000351

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) 2740

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TENSIOMETER DESCRIPTION: COLUMBINE ACCURA-LITE

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-76	21 SEPT	1100	03	MM	T/T	490	495	168/184	205/210	P	—	—	TBV
E-77	21 SEPT	1330	04	JB	T/T	400	475	162/160	196/200	P	—	—	TBV
E-78	21 SEPT	1345	06	JM	T/T	450	480	121/128	169/176	P	—	—	TBV
E-79	22 SEPT	0800	04	JB	T/T	400	480	124/117	208/231	P	—	—	TBV
E-80	22 SEPT	0815	03	MM	T/T	490	495	137/139	187/189	P	—	—	TBV
E-81	22 SEPT	1615	03	MM	T/T	415	420	160/161	155/153	P	—	—	TBV
E-82	22 SEPT	1630	04	JB	T/T	400	480	160/171	182/187	P	—	—	TBV
E-83	23 SEPT	0800	04	JB	T/T	400	480	151/164	240/236	P	—	—	TBV
E-84	23 SEPT	0945	03	MM	T/T	460	465	158/170	196/187	P	—	—	TBV
E-85	23 SEPT	1315	03	MM	T/T	415	420	150/147	184/189	P	—	—	TBV
E-86	23 SEPT	1330	04	JB	T/T	400	480	164/137	187/180	P	—	—	TBV
E-87	23 SEPT	1430	03	JB	T/T	415	420	126/125	166/159	P	—	—	TBV
E-88	24 SEPT	0915	04	JB	T/T	400	480	128/139	182/191	P	—	—	TBV
E-89	24 SEPT	1330	04	JB	T/T	400	480	118/115	150/163	P	—	—	TBV
E-90	25 SEPT	0830	04	JB	T/T	400	480	146/145	193/198	P	—	—	TBV
E-91	25 SEPT	1315	04	JB	T/T	400	480	126/142	154/157	P	—	—	TBV
E-92	27 SEPT	0830	04	JB	T/T	400	480	137/138	190/187	P	—	—	TBV
E-93	27 SEPT	0830	03	JM	T/T	425	475	120/133	183/202	P	—	—	TBV
E-94	27 SEPT	1300	04	JB	T/T	400	480	126/117	165/177	P	—	—	TBV
E-95	27 SEPT	1300	03	JM	T/T	400	420	130/133	174/167	P	—	—	TBV
E-96	28 SEPT	0800	04	JB	T/T	400	480	138/134	190/189	P	—	—	TBV

000352

NOTE: (1) MATERIAL DESCRIPTION REFERS TO EITHER SMOOTH/SMOOTH (S/S); SMOOTH/TEXTURED (S/T); OR TEXTURED/TEXTURED (T/T).

APPENDIX M

GEOMEMBRANE PRODUCTION SEAM LOGS

2740

SECONDARY

F-2740

FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__± psi for 5 min.) TIME	PSI	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
18 AUG	1434	Ø1	LL	S-4/S-5	Ø	45	45	TBY	Ø - 45	1Ø15-1Ø2Ø	3Ø-29	NA	RS 2ØAUG	P	NA	TBY
18 AUG	1454	Ø1	LL	S-6/S-7	Ø	66	66	TBY	Ø - 66	1755-1800	30-28	NA	RS 18 AUG	P	NA	TBY
18 AUG	15Ø9	Ø1	LL	S-7/S-8	Ø	88	88	TBY	Ø - 61 61 - 88	1745-1750 1730-1735	30-30 30-29	NA	RS 18 AUG	P	NA	TBY
18 AUG	153Ø	Ø2	JM	S-2/S-3	25	Ø	25	TBY	Ø - 25	17ØØ-1705	30-29	NA	RS 18 AUG	P	NA	TBY
18 AUG	1533	Ø1	LL	S-8/S-9	Ø	88	88	TBY	Ø - 88	1821-1826	30-28	NA	RS 18 AUG	P	NA	TBY
18 AUG	1548	Ø1	LL	S-9/S-1Ø	Ø	88	88	TBY	Ø - 88	Ø905-Ø91Ø	3Ø-27	NA	RS 2ØAUG	P	NA	TBY
18 AUG	16ØØ	Ø2	JM	S-2/S-4	Ø	25	25	TBY	Ø - 25	171Ø-1715	3Ø-29	NA	RS 18 AUG	P	NA	TBY
18 AUG	161Ø	Ø2	JM	S-10/S-11	Ø	88	88	TBY	Ø - 88	Ø91Ø-Ø915	3Ø-29	NA	RS 2Ø AUG	P	NA	TBY
18 AUG	161Ø	Ø1	LL	S-11/S-12	Ø	89	89	TBY	Ø - 89	Ø925-Ø93Ø	3Ø-29	NA	RS 2Ø AUG	P	NA	TBY
18 AUG	1628	Ø2	JM	S-12/S-13	Ø	89	89	TBY	Ø - 89	Ø928-Ø933	3Ø-29	NA	RS 2Ø AUG	P	NA	TBY
18 AUG	1645	Ø1	LL	S-13/S-14	Ø	9Ø	9Ø	TBY	Ø - 9Ø	Ø933-Ø938	3Ø-29	NA	RS 2Ø AUG	P	NA	TBY
18 AUG	17Ø1	Ø2	JM	S-14/S-15	Ø	89	89	TBY	Ø - 9Ø	Ø94Ø-Ø945	3Ø-29	NA	RS 2Ø AUG	P	NA	TBY
18 AUG	171Ø	Ø1	LL	S-15/S-16	Ø	89	89	TBY	Ø - 89	Ø95Ø-Ø955	3Ø-3Ø	NA	RS 2Ø AUG	P	NA	TBY
						TOTAL (1)	959									

NOTE: (1) SEAM LENGTH: THIS PAGE 959 ft (ft) ACCUMULATED 959 (ft)

N/A = NOT APPLICABLE

T-2740

000356

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.) TIME	Psi	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
18 AUG	1735	02	JM	S-16/S-17	0	89	89	TBY	0-89	0951-0956	30-28	NA	RS 20 AUG	P	NA	TBY
18 AUG	1755	01	LL	S-17/S-18	0	90	90	TBY	0-90	1000-1005	30-30	NA	RS 20 AUG	P	NA	TBY
18 AUG	1930	01	LL	S-18/S-19	326	303	23	TBY	256-326	1030-1035	30-30	NA	RS 20 AUG	P	NA	TBY
18 AUG	1933	01	LL	S-17/S-19	303	279	24	TBY	256-326	1030-1035	30-30	NA	RS 20 AUG	P	NA	TBY
18 AUG	1935	01	LL	S-16/S-19	279	256	23	TBY	256-326	1030-1035	30-30	NA	RS 20 AUG	P	NA	TBY
18 AUG	1938	01	LL	S-15/S-19	256	233	23	TBY	CAPPED BY SR-31							TBY
18 AUG	1941	01	LL	S-14/S-19	233	210	23	TBY	CAPPED BY SR-31							TBY
18 AUG	1944	01	LL	S-13/S-19	210	186	24	TBY	CAPPED BY SR-31							TBY
18 AUG	1947	01	LL	S-12/S-19	186	163	23	TBY	CAPPED BY SR-31							TBY
18 AUG	1950	01	LL	S-11/S-19	163	140	23	TBY	CAPPED BY SR-31							TBY
18 AUG	1954	01	LL	S-10/S-19	140	117	23	TBY	117-140	0855-0900	30-29	NA	RS 19 AUG	P	2740	TBY
18 AUG	1957	01	LL	S-9/S-19	117	93	24	TBY	93-117	0855-0900	30-29	NA	RS 19 AUG	P		TBY
18 AUG	2000	01	LL	S-8/S-19	93	70	23	TBY	70-93	0855-0900	30-29	NA	RS 19 AUG	P		TBY
						TOTAL (1)	435									

NOTE: (1) SEAM LENGTH: THIS PAGE 435 ft (ft) ACCUMULATED 1394 (ft)

N/A = NOT APPLICABLE

SEAMS S-7/S-19 THRU S-10/S-19 WERE AIR TESTED CONTINUOUSLY.

SEAMS S16/S-19 THRU S-18/S-19 WERE AIR TESTED CONTINUOUSLY.

0003357

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
18 AUG	2ØØ2	Ø1	LL	S-7/S-19	7Ø	47	23	TBY	47-7Ø	Ø855-Ø9ØØ	30-29	NA	RS 19 AUG	P	NA	TBY
18 AUG	2ØØ5	Ø1	LL	S-3/S-19	47	Ø	47	TBY	— CAPPED BY SR-31							TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2Ø AUG	161Ø	Ø2	JM	S-1/S-21	Ø	382	382	TBY	0-237	1115-112Ø	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
									237-382	1115-112Ø	3Ø-3Ø					
2Ø AUG	1653	Ø1	LL	S-21/S-22	Ø	381	381	TBY	0-381	113Ø-1135	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
21 AUG	1Ø11	Ø1	LL	S-22/S-23	Ø	382	382	TBY	Ø-382	113Ø-1135	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
21 AUG	1Ø45	Ø2	JM	S-23/S-24	Ø	382	382	TBY	Ø-8Ø	1403-1408	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
									8Ø-382	1311-1316	3Ø-27					
21 AUG	1415	Ø1	LL	S-25/S-26	Ø	9Ø	9Ø	TBY	Ø-7	1635-1640	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
									7-9Ø	1633-1638	3Ø-3Ø					
21 AUG	142Ø	Ø2	JM	S-18/S-25	Ø	9Ø	9Ø	TBY	Ø-9Ø	1605-1610	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
21 AUG	144Ø	Ø1	LL	S-26/S-27	Ø	91	91	TBY	Ø-91	1618-1623	3Ø-3Ø	NA	RS 21 AUG	P	NA	TBY
21 AUG	1555	Ø2	JM	S-27/S-28	396	373	23	TBY	396-35Ø	1615-162Ø	29-29	NA	RS 21 AUG	P	NA	TBY
21 AUG	1559	Ø2	JM	S-26/S-28	373	35Ø	23	TBY	396-350	1615-162Ø	29-29	NA	RS 21 AUG	P	NA	TBY
21 AUG	16Ø3	Ø2	JM	S-25/S-28	35Ø	326	24	TBY	35Ø-326	1611-1616	3Ø-29	NA	RS 21 AUG	P	NA	TBY
						TOTAL (1)	1938									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 1938 ft (ft) ACCUMULATED 3332 (ft)

N/A = NOT APPLICABLE

SEAMS S-26/S-28 & S-29/S-28 WERE AIR TESTED CONTINUOUSLY.

000358

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.) TIME	PSI	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
21 AUG	1607	01	LL	S-20/S-28	388	326	57	TBW	388-326	1650-1655	30-30	NA	RS 21 AUG	P	NA	TBW
21 AUG	1615	01	LL	S-19/S-20	326	0	326	TBW	326-0	1721-1726	30-30	NA	RS 21 AUG	P	NA	TBW
21 AUG	1710	02	JM	S-20/S-29	383	0	383	TBW	383-0	1830-1835	30-29	NA	RS 21 AUG	P	NA	TBW
21 AUG	1745	01	LL	S-29/S-30	386	0	386	TBW	386-0	1855-1900	30-30	NA	RS 21 AUG	P	NA	TBW
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23 AUG	1455	01	LL	S-30/S-31	390	0	390	TBW	0-390	1921-1926	30-30	NA	RS 23 AUG	P	NA	TBW
23 AUG	1500	02	JM	S-31/S-32	383	0	383	TBW	383-300 300-0	1805-1810 1930-1935	30-30 30-30	NA	RS 23 AUG	P	NA	TBW
23 AUG	1647	02	JM	S-32/S-33	383	320	63	TBW	383-320	1806-1811	30-30	NA	RS 23 AUG	P	NA	TBW
23 AUG	1705	01	LL	S-32/S-33	320	0	320	TBW	0-320	1940-1945	30-30	NA	RS 23 AUG	P	NA	TBW
23 AUG	1900	01	LL	S-24/S-34	0	381	381	TBW	0-381	0738-0743	30-30	NA	RS 25 AUG	P	NA	TBW
23 AUG	1930	02	JM	S-33/S-34	382	0	382	TBW	0-382	0735-0740	30-30	NA	RS 25 AUG	P	NA	TBW
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
						TOTAL (1)	3071'									

NOTE: (1) SEAM LENGTH: THIS PAGE 3071 ft (ft) ACCUMULATED 6403' (ft)

N/A = NOT APPLICABLE

2740

000359

©GEOSYNTEC CONSULTANTS FILE NO. 3-07-SSI REVIEWED BY: CJ SHEET NO. 4 OF 10

GeoSyntec Consultants

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
27 AUG	1145	01	LL	S-27/S-35	0	91	91	TBY	91-55 55-24	1350-1355 1405-1410	30-30 30-30	* NA	RS 27 AUG	P -	NA	TBY
27 AUG	1545	01	LL	S-35/S-36	0	90	90	TBY	0-90	0915-0920	30-30	NA	RS 28 AUG	P -	NA	TBY
27 AUG	1600	01	LL	S-36/S-37	0	92	92	TBY	0-92	0821-0826	30-30	NA	RS 28 AUG	P -	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
28 AUG	1045	01	LL	S-37/S-38	0	88	88	TBY	14-88 0-14	1150-1155 1300-1305	30-30 30-30	NA	RS 28 AUG	P -	NA	TBY
28 AUG	1110	01	LL	S-38/S-39	0	91	91	TBY	0-91	1325-1330	30-30	NA	RS 28 AUG	P -	NA	TBY
28 AUG	1129	01	LL	S-39/S-40	0	92	92	TBY	0-92	1335-1340	30-30	NA	WA 28 AUG	P -	NA	TBY
28 AUG	1146	01	LL	S-40/S-41	0	92	92	TBY	0-92	1342-1347	30-30	NA	WA 28 AUG	P -	NA	TBY
28 AUG	1405	01	LL	S-41/S-42	0	92	92	TBY	0-92	1511-1516	30-30	NA	WA 28 AUG	P -	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
* 30 AUG	0949	02	LL	S-36/S-37	0	90	90	TBY	0-90	0758-0803	30-29	NA	RS 31 AUG	P -	NA	TBY
* 30 AUG	1058	02	LL	S-37/S-38	0	23	23	TBY	0-23	0741-0746	30-30	NA	RS 31 AUG	P -	NA	TBY
* 30 AUG	1355	02	LL	S-37/S-38	23	89	66	TBY	23-89	0740-0745	30-30	NA	RS 31 AUG	P -	NA	TBY
					TOTAL (1)		907									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 7310 (ft)

N/A = NOT APPLICABLE * 0-24' ON SEAM S-27/S-35 WAS CAPPED.

SEAMS S-36/S-37, S-37/S-38, S-38/S-39, S-39/S-40, S-40/S-41, S-41/S-42 WERE ALL CUT OUT AND THE PANELS WERE MOVED TOGETHER AND RE-WELDED. * THESE ARE THE REPLACEMENT WELDS OF THE NARROW PANELS.

000360

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)		V-BOX (sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
* 30 AUG	1400	02	LL	S-38/S-39	0	91	91	TBY	0-91	0759-0804	30-30	NA	RS 31AUG	P -	NA	TBY
30 AUG	1530	02	JM	S-43/S-44	360	0	360	TBY	50-360	1915-1920	30-30	NA	RS 30AUG	P -	NA	TBY
									0-50	1815-1820	30-30					
30 AUG	1635	02	JM	S-44/S-45	360	0	360	TBY	0-360	1837-1842	30-30	NA	RS 30AUG	P -	NA	TBY
30 AUG	1645	01	LL	S-45/S-46	360	31	329	TBY	31-360	1859-1904	30-30	NA	RS 30AUG	P -	NA	TBY
30 AUG	1735	02	JM	S-45/S-46	31	0	31	TBY	0-31	1853-1858	30-30	NA	RS 30AUG	P -	NA	TBY
* 30 AUG	1830	02	JM	S-39/S-40	0	92	92	TBY	0-17	0915-0920	30-30	NA	RS 31AUG	P -	NA	TBY
									17-92	0910-0915	30-30					
* 30 AUG	1845	02	JM	S-40/S-41	0	92	92	TBY	0-92	0820-0825	30-30	NA	RS 31AUG	P -	NA	TBY
* 30 AUG	1900	02	JM	S-41/S-42	0	92	92	TBY	0-28	0847-0853	30-30	NA	RS 31AUG	P -	NA	TBY
									28-92	0935-0940	30-30					
—	—	—	—	—	—	—	—	—	—	—		—	—	— -	—	—
31 AUG	1100	02	JM	S-42/S-47	0	87	87	TBY	0-87	1141-1146	30-30	NA	RS 31AUG	P -	NA	TBY
31 AUG	1120	02	JM	S-47/S-48	0	87	87	TBY	0-87	1142-1147	30-30	NA	RS 31AUG	P -	NA	TBY
31 AUG	1138	02	JM	S-48/S-49	0	87	87	TBY	0-87	1315-1320	30-30	NA	RS 31AUG	P -	NA	TBY
31 AUG	1152	02	JM	S-49/S-50	0	88	88	TBY	0-88	1315-1320	30-30	NA	RS 31AUG	P -	NA	TBY
					TOTAL (1)		1796									

-2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 9106 (ft)

N/A = NOT APPLICABLE * REPLACEMENT SEAMS AFTER FAILING WELDS WERE CUT OUT.

0003361

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.)		V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
31 AUG	1210	02	JM	S-50/S-51	0	89	89	TBY	0-89	1323-1328	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1345	01	LL	S-51/S-52	0	88	88	TBY	0-88	1633-1638	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1425	01	LL*	S-55/S-56	48	0	48	TBY	0-48	1542-1547	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1440	01	LL	S-54/S-55	24	0	24	TBY	0-24	1532-1537	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1515	01	LL	S-52/S-53	48	0	48	TBY	0-48	1550-1555	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1528	01	LL	S-54/S-57	0	25	25	TBY	0-25	1531-1536	30-30	NA	RS 31 AUG	P -	NA	TBY
31 AUG	1810	02	JM	S-52/S-57	0	15	15	TBY	0-15	1503-1508	30-30	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1814	02	JM	S-53/S-57	15	29	14	TBY	15-29	1510-1515	30-30	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1817	02	JM	S-53/S-54	29	56	27	TBY	29-56	1516-1521	30-30	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1821	02	JM	S-53/S-55	56	74	18	TBY	56-74	1516-1521	30-30	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1830	02	JM	S-57/S-58	0	44	44	TBY	0-44	0930-0935	30-30	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1838	02	JM	S-52/S-58	44	58	14	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1840	02	JM	S-51/S-58	58	81	23	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
					TOTAL (1)		~~454~~ 477									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED ~~9560~~ 9583 (ft)

N/A = NOT APPLICABLE

SEAMS S-51/S-58 THRU S-52/S-58 WERE AIR TESTED CONTINUOUSLY.

*Panel #56 removed

000362

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.)		V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
31 AUG	1844	02	JM	S-50/S-58	81	104	23	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1847	02	JM	S-49/S-58	104	128	24	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1850	02	JM	S-48/S-58	128	151	23	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1854	02	JM	S-47/S-58	151	174	23	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1857	02	JM	S-42/S-58	174	196	22	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1900	02	JM	S-41/S-58	196	217	21	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1903	02	JM	S-40/S-58	217	238	21	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1907	02	JM	S-39/S-58	238	258	20	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1910	02	JM	S-38/S-58	258	279	21	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1913	02	JM	S-37/S-58	279	299	20	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1916	02	JM	S-36/S-58	299	321	22	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
31 AUG	1920	02	JM	S-35/S-58	321	344	23	TBY	344-44	0920-0925	30-28	NA	RS 01 SEPT	P -	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
					TOTAL (1)		263									

= 2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED ~~9823~~ 9846 (ft)

N/A = NOT APPLICABLE

ALL SEAMS ON THIS PAGE WERE AIR TESTED CONTINUOUSLY.

000363

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)		V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL		RETEST DATE	QA ID
Ø1 SEPT	Ø954	Ø2	JM	S-58/S-59	Ø	355	355	TBM	Ø-355	1355-1400	30-28	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	114Ø	Ø2	JM	S-59/S-60	Ø	358	358	TBM	Ø-358	1407-1412	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	1325	Ø2	JM	S-60/S-61	Ø	359	359	TBM	Ø-359	1418-1423	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	163Ø	Ø2	JM	S-61/S-62	98	359	261	TBM	98-359	1824-1829	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	17Ø5	Ø1	LL	S-62/S-63	98	359	261	TBM	98-359	1825-1830	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	1714	Ø2	JM	S-63/S-64	97	359	262	TBM	97-359	1854-1859	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	1813	Ø2	JM	S-64/S-65	96	361	265	TBM	96-361	1905-1910	30-30	NA	WA Ø1 SEPT	P	-	NA	TBM
Ø1 SEPT	1915	Ø2	JM	S-65/S-66	36Ø	96	264	TBM	96-306 306-360	0900-0905 0935-0940	30-30 30-30	NA	RS Ø2 SEPT	P	-	NA	TBM
Ø2 SEPT	Ø94Ø	Ø2	LL	S-66/S-46	359	262	97	TBM	359-262	1011-1016	30-30	NA	RS Ø2 SEPT	P	-	NA	TBM
Ø2 SEPT	154Ø	Ø2	JM	S-61/S-67	Ø	1ØØ	1ØØ	TBM	Ø-1ØØ	1611-1616	30-30	NA	RS Ø2 SEPT	P	-	NA	TBM
Ø2 SEPT	1555	Ø2	JM	S-67/S-68	Ø	1ØØ	1ØØ	TBM	Ø-1ØØ	1610-1615	30-30	NA	RS Ø2 SEPT	P	-	NA	TBM
Δ Ø2 SEPT	1635	Ø2	JM	S-68/S-70	Ø	1Ø4	1Ø4	TBM	Ø-1Ø4	1708-1713	30-30	NA	RS Ø2 SEPT	P	-	NA	TBM
					TOTAL (1)		2682										

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED ~~12,505~~ 12528 (ft)

N/A = NOT APPLICABLE Δ THIS SEAM WAS WELDED TO TEMPORARILY COVER THE PENETRATION BOX AREA, NOT INTENDED FOR PERMANENT SEAMING LOG CUMULATIVE LINEAR FEET.

000364

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.)		V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
02 SEPT	1700	02	JM	S-66/S-46	262	107	155	TBY	262-173 173-107	1810-1815 1810-1815	30-30 30-30	NA	RS 02 SEPT	P -	NA	TBY
02 SEPT	1740	02	JM	S-46/S-70	107	0	107	TBY	0-107	1825-1830	30-30	NA	RS 02 SEPT	P -	NA	TBY
Δ 02 SEPT	1800	02	JM	S-69/S-71	0	100	100	TBY	0-58 58-100	1840-1845 1836-1841	30-30 30-30	NA	RS 02 SEPT	P -	NA	TBY
02 SEPT	1830	02	JM	S-68/S-71	0	100	100	TBY	0-100	1856-1901	30-30	NA	RS 02 SEPT	P -	NA	TBY
10 SEPT	0900	02	LL	S-55/S-72	37	0	37	TBY	0-37	0920-0925	30-30	NA	RS 10 SEPT	P -	NA	TBY
11 SEPT	1650	01	LL	S-73/S-74	0	106	106	TBY	0-106	1730-1735	30-30	NA	RS 13 SEPT	P -	NA	TBY
						TOTAL (1)	505									

000365

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED ~~13,010~~ 13,033 (ft)

N/A = NOT APPLICABLE Δ THIS SEAM WAS WELDED TO TEMPORARILY COVER THE PENETRATION BOX AREA, NOT INTENDED FOR PERMANENT SEAMING LOG CUMULATIVE LINEAR FEET.

2740

EXTRUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
17 AUG	1500	06	JB	S-1/CII S-24	0	64	64	TBY	0-64	NA	VTOK	WA 25AUG	P -	NA	TBY
17 AUG	1615	06	JB	S-1/CII S-21	64	87	23	TBY	64-87	NA	VTOK	WA 25AUG	P -	NA	TBY
17 AUG	1757	06	JB	S-1/CII S-27	87	105	18	TBY	87-105	NA	VTOK	WA 25AUG	P -	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18 AUG	0900	06	JB	S-1/CII S-27	105	110	5	TBY	105-110	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	0907	06	JB	S-1/CII S-28	110	133	23	TBY	110-133	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	0922	06	JB	S-1/CII S-33	133	156	23	TBY	133-156	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	0940	06	JB	S-1/CII S-34	156	180	24	TBY	156-180	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	0950	06	JB	S-1/CII S-38	180	203	23	TBY	180-203	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	1012	06	JB	S-1/CII S-39	203	226	23	TBY	203-226	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	1035	06	JB	S-1/CII S-40	226	249	23	TBY	226-249	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	1100	06	MM	S-1/CII S-45	249	273	24	TBY	249-273	NA	VTOK	WA 25AUG	P -	NA	TBY
18 AUG	1120	06	MM	S-1/CII S-47	273	286	13	TBY	273-286	NA	VTOK	WA 25AUG	P -	NA	TBY
					TOTAL (1)		286								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 286 ft (ft) ACCUMULATED 286 (ft)

N/A = NOT APPLICABLE

000367

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
18 AUG	134Ø	Ø6	JB	S-1/CII/S-50	296	311	15	TBY	296-311	NA	VTOK	WA 25AUG	P	NA	TBY
18 AUG	141Ø	Ø6	MM	S-1/CII/S-50	311	319	8	TBY	311-319	NA	VTOK	WA 24AUG	P	NA	TBY
18 AUG	142Ø	Ø6	MM	S-1/CII/S-53	319	341	22	TBY	319-341	NA	VTOK	WA 24AUG	P	NA	TBY
18 AUG	1433	Ø6	JB	S-1/CII/S-55	341	364	23	TBY	341-364	NA	VTOK	WA 24AUG	P	NA	TBY
18 AUG	1451	Ø6	MM	S-1/CII/S-57	364	374	1Ø	TBY	364-374	NA	VTOK	WA 24AUG	P	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19 AUG	Ø84Ø	Ø6	JB	S-2/S-6	64	8Ø	16	TBY	64-80	NA	VTOK	WA 21AUG	P	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2ØAUG	Ø83Ø	Ø6	JB	S-3/S-6	8Ø	1Ø2	22	TBY	— CAPPED BY SR-32 & SR-34 —						TBY
2ØAUG	Ø841	Ø6	JB	S-2/S-6	64	61	3	TBY	64-61	NA	VTOK	WA-21AUG	P	NA	TBY
2ØAUG	Ø85Ø	Ø3	MM	S-19/SR-31	63	1Ø1	38	TBY	63-1Ø1	NA	VTOK	WA-21AUG	P	NA	TBY
2ØAUG	Ø912	Ø3	MM	S-8/SR-31	85	7Ø	15	TBY	85-7Ø	NA	VTOK	WA-21AUG	P	NA	TBY
2ØAUG	Ø922	Ø3	MM	S-7/SR-31	7Ø	63	7	TBY	7Ø-63	NA	VTOK	WA-21AUG	P	NA	TBY
						TOTAL (1)	179								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 179 ft (ft) ACCUMULATED 465 (ft)

N/A = NOT APPLICABLE

000368

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04/09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
20 Aug	0930	03	MM	S-19/SR-31	101	104	3	TBU	101-104	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0932	03	MM	S-9/SR-31	104	93	11	TBU	104-93	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0935	03	MM	S-8/SR-31	93	85	8	TBU	93-85	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0930	06	JB	S-3/SR-32	85	101	16	TBU	85-101	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0935	06	JB	S-6/SR-32	101	85	16	TBU	101-85	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0945	03	MM	S-9/SR-31	117	104	13	TBU	117-104	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	0950	03	MM	S-19/SR-31	104	117	13	TBU	104-117	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1010	03	MM	S-19/SR-31	117	127	10	TBU	117-127	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1022	03	MM	S-10/SR-31	117	140	23	TBU	117-140	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1040	06	JB	S-6/SR-34	101	108	7	TBU	101-108	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1045	06	JB	S-7/SR-31	48	54	6	TBU	48-54	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1047	06	JB	S-19/SR-31	54	47	7	TBU	54-47	NA	NA	VTOK	WA	P	NA	TBU
20 Aug	1047	03	MM	S-19/SR-31	140	127	13	TBU	140-127	NA	NA	VTOK	WA	P	NA	TBU
						TOTAL (1)	146									

NOTE: (1) SEAM LENGTH: THIS PAGE 146 ft (ft) ACCUMULATED 611 (ft)

N/A = NOT APPLICABLE

0003369

GeoSyntec Consultants

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
20AUG	1100	06	JB	S-19/SR-31	47	38	9	TBY	47-38	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1105	06	JB	S-3/SR-31	38	47	9	TBY	38-47	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1113	06	JB	S-3/SR-34	108	101	7	TBY	108-101	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1130	06	JB	S-3/SR-31	0	38	38	TBY	0-38	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1138	03	MM	S-11/SR-31	159	151	8	TBY	159-151	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1145	06	JB	S-19/SR-31	0	17	17	TBY	0-17	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1320	06	JB	S-19/SR-31	17	38	21	TBY	17-38	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1330	03	MM	S-11/SR-31	140	183	43	TBY	140-183	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1348	03	MM	S-12/SR-31	183	163	20	TBY	183-163	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1352	06	JB	S-7/SR-31	63	54	9	TBY	63-54	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1358	06	JB	S-19/SR-31	54	63	9	TBY	54-63	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1403	03	MM	S-11/SR-31	163	159	4	TBY	163-159	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
20AUG	1408	03	MM	S-11/SR-31	151	140	11	TBY	151-140	NA	NA	VTOK	WA 21 AUG	P	NA	TBY
					TOTAL (1)		205									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 205 ft (ft) ACCUMULATED 816 (ft)

N/A = NOT APPLICABLE

000370

GeoSyntec Consultants

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.) TIME	PSI	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
20 Aug	1430	06	JB	S-4/S-6	61	31	30	TBW	61-31	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1448	06	JB	S-5/S-6	31	28	3	TBW	31-28	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1455	06	JB	S-5/S-7	28	16	12	TBW	28-16	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1515	06	JB	S-5/S-7	16	0	16	TBW	0-16	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1522	03	MM	S-12/SR-31	186	183	3	TBW	186-183	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1525	03	MM	S-19/SR-31	183	249	66	TBW	183-249	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1600	06	JB	S-13/SR-31	186	210	24	TBW	186-210	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1605	03	MM	S-19/SR-31	249	259	10	TBW	249-259	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1609	03	MM	S-16/SR-31	259	256	3	TBW	259-256	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1610	03	MM	S-15/SR-31	256	233	23	TBW	256-233	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1614	06	JB	S-14/SR-31	210	226	16	TBW	210-226	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
20 Aug	1620	03	MM	S-14/SR-31	233	226	7	TBW	233-226	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
21 Aug	1600	06	JB	S-19/S-28	90	113	23	TBW	90-113	NA	NA	VTOK	WA 21 Aug	P	NA	TBW
					TOTAL (1)		236									

NOTE: (1) SEAM LENGTH: THIS PAGE 236 ft (ft) ACCUMULATED 1052 (ft)

N/A = NOT APPLICABLE

1-2740

000371

GeoSyntec Consultants

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
23 AUG	1400	06	JB	SR-68/S-20	150	168	18	TBY	150-168	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1410	06	JB	SR-68/S-29	168	150	18	TBY	168-150	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1510	06	JB	SR-69/S-29	172	195	23	TBY	172-195	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1525	06	JB	SR-69/S-20	195	172	23	TBY	195-172	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1600	06	JB	SR-69/S-29	195	217	22	TBY	195-217	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1610	06	JB	SR-69/S-20	217	195	22	TBY	217-195	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1620	06	JB	SR-69/S-20	217	227	10	TBY	217-227	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1625	06	JB	SR-69/S-29	227	217	10	TBY	227-217	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1640	06	JB	SR-69/S-29	227	239	12	TBY	227-239	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1646	06	JB	SR-69/S-20	239	227	12	TBY	239-227	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1651	06	JB	SR-69/S-29	239	251	12	TBY	239-251	NA	NA	VTOK	WA 23AUG	P	NA	TBY
23 AUG	1657	06	JB	SR-69/S-20	251	239	12	TBY	251-239	NA	NA	VTOK	WA 23AUG	P	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
						TOTAL (1)	194									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 194 ft (ft) ACCUMULATED 1246 (ft)

N/A = NOT APPLICABLE

000372

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II-CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.) TIME	PSI	V-BOX (____sec.)	OPERATOR ID	PASS/FAIL		RETEST DATE	QA ID
28 AUG	Ø915	Ø6	JB	S-35/SR-79	27	8	19	TBW	27-8	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
28 AUG	Ø927	Ø6	JB	S-27/SR-79	8	27	19	TBW	8-27	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
28 AUG	Ø937	Ø6	JB	S-35/SR-79	8	Ø	8	TBW	8-Ø	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
28 AUG	Ø941	Ø6	JB	S-27/SR-79	Ø	8	8	TBW	Ø-8	NA	NA	VTOK	WA Ø1 SEPT	P	-	NA	TBW
28 AUG	171Ø	Ø6	JB	S-22/SR-84	35Ø	373	23	TBW	35Ø-373	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
28 AUG	1725	Ø6	JB	S-23/SR-84	373	35Ø	23	TBW	373-35Ø	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	-	—	—
31 AUG	0912	Ø6	JB	S-23/S-46	89	7Ø	19	TBW	7Ø-89	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
31 AUG	Ø925	Ø6	JB	S-22/S-45	7Ø	47	23	TBW	47-7Ø	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
31 AUG	Ø947	Ø3	MM	S-43/CII/S-104	739	677	62	TBW	739-677	NA	NA	VTOK	WA Ø7 SEPT	P	-	NA	TBW
31 AUG	1ØØØ	Ø6	JB	S-21/S-44	47	23	24	TBW	23-47	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
31 AUG	1Ø14	Ø3	MM	S-43/CII/S-109	677	642	35	TBW	677-642	NA	NA	VTOK	WA Ø7 SEPT	P	-	NA	TBW
31 AUG	1Ø16	Ø6	JB	S-1/S-43	23	Ø	23	TBW	Ø-23	NA	NA	VTOK	WA Ø2 SEPT	P	-	NA	TBW
					TOTAL (1)		286										

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1532 (ft)

N/A = NOT APPLICABLE

2740

000373

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FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST								
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
31 AUG	1Ø28	Ø6	JB	S-1/CII/S-57	375	378	3	TBU	375-378	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1Ø3Ø	Ø6	JB	S-43/CII/S-57	378	388	1Ø	TBU	378-388	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1Ø4Ø	Ø6	JB	S-43/CII/S-59	388	411	23	TBU	388-411	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1Ø45	Ø3	MM	S-43/CII/S-11Ø	642	608	34	TBU	642-608	NA	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
31 AUG	11ØØ	Ø3	MM	S-43/CII/S-111	6Ø8	573	35	TBU	6Ø8-573	NA	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
31 AUG	11Ø8	Ø6	JB	S-43/CII/S-64	411	434	23	TBU	411-434	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1122	Ø6	JB	S-43/CII/S-65	434	458	24	TBU	434-458	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1122	Ø3	MM	S-43/CII/S-112	573	539	34	TBU	573-539	NA	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
31 AUG	114Ø	Ø3	MM	S-43/CII/S-113	539	529	1Ø	TBU	539-529	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	114Ø	Ø6	JB	S-43/CII/S-67	458	462	4	TBU	458-462	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	133Ø	Ø3	MM	S-43/CII/S-113	529	5Ø4	25	TBU	529-5Ø4	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	161Ø	Ø3	MM	S-43/CII/S-69	5Ø4	481	23	TBU	481-5Ø4	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
31 AUG	1628	Ø3	MM	S-43/CII/S-67	481	462	19	TBU	481-462	NA	NA	VTOK	WA Ø2SEPT	P -	NA	TBU
						TOTAL (1)	267									

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1799 (ft)

N/A = NOT APPLICABLE

1-2740

000374

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ040 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__ psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
01 SEPT	0841	04	JB	S-38/SR-122	55	49	6	TBY	55-49	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	0845	04	JB	S-39/SR-122	55	49	6	TBY	55-49	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	0855	04	JB	S-39/SR-122	49	0	49	TBY	49-0	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	0923	04	JB	S-38/SR-122	49	0	49	TBY	49-0	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	0950	04	JB	S-39/SR-122	55	72	17	TBY	55-72	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1005	04	JB	S-38/SR-122	55	72	17	TBY	55-72	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1019	04	JB	S-38/SR-122	72	89	17	TBY	72-89	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1028	04	JB	S-39/SR-122	72	89	17	TBY	72-89	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1120	04	JB	S-39/SR-126	47	63	16	TBY	47-63	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1135	04	JB	S-40/SR-126	63	47	16	TBY	63-47	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1512	03	MM	S-41/SR-140	46	62	16	TBY	46-62	NA	VTOK	WA 01 SEPT	P -	NA	TBY
01 SEPT	1523	03	MM	S-42/SR-140	62	46	16	TBY	62-46	NA	VTOK	WA 01 SEPT	P -	NA	TBY
—	—	—	—	—	—	—	—	—	—	—	—	—	- -	—	—
						TOTAL (1)	242								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2041 (ft)

N/A = NOT APPLICABLE

000375

2740

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (± psi for 5 min.) TIME	PSI	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
02 SEPT	1000	03	MM	S-27/S-58	353	344	9	TBY	353-344	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1015	03	MM	S-28/S-58	287	266	21	TBY	287-266	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1028	03	MM	S-59/S-28	266	263	3	TBY	266-263	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1109	03	MM	S-59/S-20	263	243	20	TBY	263-243	NA	NA	VTOK	WA 02SEP	P -	NA	TBY
02 SEPT	1125	03	MM	S-60/S-29	243	219	24	TBY	243-219	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1315	04	JB	S-65/S-24	103	117	14	TBY	117-103	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1330	04	JB	S-65/S-34	117	127	10	TBY	127-117	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1355	03	MM	S-30/S-61	217	196	21	TBY	217-196	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1356	04	JB	S-34/S-64	127	139	12	TBY	127-139	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1405	04	JB	S-33/S-64	139	150	11	TBY	139-150	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1420	04	JB	S-32/S-63	150	170	20	TBY	150-170	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1425	03	MM	S-31/S-62	194	174	20	TBY	194-174	NA	NA	VTOK	WA 02SEPT	P -	NA	TBY
02 SEPT	1740	04	JB	S-63/S-68	0	23	23	TBY	0-23	NA	NA	VTOK	WA 07SEPT	P -	NA	TBY
					TOTAL (1)		208									

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2249 (ft)

N/A = NOT APPLICABLE

2740

000376

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

	PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
	Ø2SEPT	1750	Ø4	JB	S-67/S-67	Ø	23	23	TBU	Ø-23	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
Δ	Ø2SEPT	1855	Ø4	JB	S-64/S-71	Ø	8	8	TBU	Ø-8	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
Δ	Ø2SEPT	19Ø2	Ø4	JB	S-64/S-69	Ø	15	15	TBU	CUT OUT						TBU
Δ	Ø2SEP	191Ø	Ø4	JB	S-65/S-69	Ø	7	7	TBU	CUT OUT						TBU
Δ	Ø2SEP	1915	Ø3	MM	S-65/S-7Ø	Ø	15	15	TBU	Ø-15	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
Δ	Ø2SEP	1925	Ø3	MM	S-66/S-7Ø	Ø	8	8	TBU	Ø-8	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
	—	—	—	—	—	—	—	—	—	—	—	—	—	— -	—	—
	Ø7SEPT	1Ø58	Ø4	JB	S-66/SR-203	143	164	21	TBU	143-164	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
	Ø7SEPT	11Ø5	Ø4	JB	S-46/SR-203	164	143	21	TBU	164-143	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
	Ø7SEPT	1116	Ø4	JB	S-66/SR-204	140	126	14	TBU	14Ø-126	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
	Ø7SEPT	1125	Ø4	JB	S-46/SR-204	126	140	14	TBU	126-14Ø	NA	VTOK	WA Ø7SEPT	P -	NA	TBU
	Ø7SEPT	1615	Ø4	JB	S-46/SR-205	Ø	24	24	TBU	Ø-24	NA	VTOK	WA 14SEPT	P -	NA	TBU
	Ø7SEPT	163Ø	Ø4	JB	S-70/SR-205	24	Ø	24	TBU	Ø-24	NA	VTOK	WA 14SEPT	P -	NA	TBU
						TOTAL	(1)	141								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2399 (ft)

N/A = NOT APPLICABLE Δ THESE SEAMS WERE WELDED TO TEMPORARILY COVER THE PENETRATION BOX AREA. NOT INTENDED FOR THE PERMANENT SEAMING LOG.

000377

140

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__ ± __ psi for 5 min.)	V-BOX (____ sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
1Ø SEPT	1ØØØ	Ø4	JB	S-57/S-72	79	11Ø	31	TBU	79-11Ø	NA	VTOK	WA 13 SEPT	P	NA	TBU
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11 SEPT	165Ø	Ø3	MM	S-70/S-73	1Ø5	70	35	TBU	1Ø5-7Ø	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	1725	Ø3	MM	S-70/S-73	7Ø	Ø	7Ø	TBU	7Ø-Ø	NA	VTOK	WA 14 SEPT	P	NA	TBU
Δ 11 SEPT	18ØØ	Ø4	JB	S-74/SR-208	7	Ø	7	TBU	— CAPPED BY		SR-214				TBU
Δ 11 SEPT	1805	Ø4	JB	S-71/SR-208	Ø	18	18	TBU	— CAPPED BY		SR-214				TBU
Δ 11 SEPT	1812	Ø3	MM	S-74/SR-208	7	52	45	TBU	— CAPPED BY		SR-214				TBU
11 SEPT	182Ø	Ø4	JB	S-73/LCS BOX	0	28	28	TBU	Ø-28	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	1835	Ø4	JB	S-74/LCS BOX	Ø	28	28	TBU	Ø-28	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	184Ø	Ø3	MM	S-64/S-74	Ø	17	17	TBU	Ø-17	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	1845	Ø3	MM	S-65/S-74	Ø	6	6	TBU	Ø-6	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	1855	Ø3	MM	S-65/S-73	Ø	17	17	TBU	0-17	NA	VTOK	WA 14 SEPT	P	NA	TBU
11 SEPT	19Ø3	Ø3	MM	S-66/S-73	Ø	7	7	TBU	Ø-7	NA	VTOK	WA 14 SEPT	P	NA	TBU
						TOTAL (1)	239								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2,629 (ft)

N/A = NOT APPLICABLE Δ THESE SEAMS WERE WELDED TO TEMPORARILY COVER THE PENETRATION BOX AREA. NOT INTENDED FOR THE PERMANENT SEAMING LOG.

000378

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

	PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
	DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
	11 SEPT	1850	04	JB	S-71 LSR BOX	0	28	28	TBU	0-28	NA	VTOK	WA 14 SEPT	P -	NA	TBU
Δ	11 SEPT	1905	04	JB	S-71 SR-208	18	33	15	TBU	—	CAPPED BY SR-214					TBU
Δ	11 SEPT	1910	04	JB	S-71 SR-208	98	52	46	TBU	—	CAPPED BY SR-214					TBU
Δ	11 SEPT	1925	03	MM	S-71 SR-208	98	65	33	TBU	—	CAPPED BY SR-214					TBU
Δ	11 SEPT	1930	04	JB	S-71 S-208	52	65	13	TBU	—	CAPPED BY SR-214					TBU
Δ	11 SEPT	1935	04	JB	S-71 S-208	33	52	19	TBU	—	CAPPED BY SR-214					TBU
	14 SEPT	1126	04	JB	S-71 SR-214	70	98	28	TBU	70-98	NA	VTOK	WA 14 SEPT	P -	NA	TBU
	14 SEPT	1140	04	JB	S-71 SR-214	98	60	38	TBU	98-60	NA	VTOK	WA 14 SEPT	P -	NA	TBU
	14 SEPT	1335	04	JB	S-71 SR-214	70	64	6	TBU	70-64	NA	VTOK	WA 14 SEPT	P -	NA	TBU
	14 SEPT	1345	04	JB	S-71 SR-214	64	49	15	TBU	64-49	NA	VTOK	WA 14 SEPT	P -	NA	TBU
	14 SEPT	1352	04	JB	S-71 SR-214	49	60	11	TBU	49-60	NA	VTOK	WA 14 SEPT	P -	NA	TBU
	14 SEPT	1400	04	JB	S-71 SR-214	0	49	49	TBU	0-49	NA	VTOK	WA 14 SEPT	P -	NA	TBU
						TOTAL (1)		175								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2804 (ft)

N/A = NOT APPLICABLE Δ THESE SEAMS WERE WELDED TO TEMPORARILY COVER THE PENETRATION BOX AREA. NOT INTENDED FOR THE PERMANENT SEAMING LOG

2740

000379

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
14 SEPT	1420	04	JB	5-71/5-21A	0	49	49	TBU	0-49	NA	VTOK	WA 14 SEPT	P -	NA	TBU
						TOTAL (1)	49								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2853 (ft)

N/A = NOT APPLICABLE

080080

2740

PRIMARY

2740

FUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0040 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.) TIME	PSI	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
09 SEPT	1510	01	LL	P-1/P-2	0	69	69	TBU	0-69	1545-1550	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1525	02	JM	P-2/P-3	0	100	100	TBU	88-188 / 26-0	1600-1605 / 1557-1602 / 1607-1612	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1552	01	LL	P-3/P-4	0	100	100	TBU	0-100	1620-1625	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1605	02	JM	P-4/P-5	0	101	101	TBU	0-61 / 61-100	1626-1631 / 1632-1637	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1645	01	LL	P-6/P-7	0	48	48	TBU	0-48	1706-1711	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1653	02	JM	P-7/P-8	0	28	28	TBU	0-28	1705-1710	30-30	NA	RS 09 SEPT	P -	NA	TBU
09 SEPT	1708	02	[illegible]	P-8/P-9	35	0	35	TBU	35-0	1725-1730	30-30	NA	RS 09 SEPT	P -	NA	TBU
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10 SEPT	1110	01	JM	P-5/P-10	0	101	101	TBU	0-101	1446-1451	30-30	NA	WA 10 SEPT	P -	NA	TBU
10 SEPT	1130	01	JM	P-10/P-11	0	101	101	TBU	0-101	1448-1453	30-30	NA	WA 10 SEPT	P -	NA	TBU
10 SEPT	1315	01	JM	P-11/P-12	0	101	101	TBU	0-101	1518-1523	30-30	NA	WA 10 SEPT	P -	NA	TBU
10 SEPT	1332	01	JM	P-12/P-13	0	101	101	TBU	0-101	1519-1524	30-30	NA	WA 10 SEPT	P -	NA	TBU
10 SEPT	1445	01	JM	P-13/P-14	0	100	100	TBU	0-100	1603-1608	30-30	NA	WA 10 SEPT	P -	NA	TBU
						TOTAL (1)	985									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE 985 ft (ft) ACCUMULATED 985 (ft)

N/A = NOT APPLICABLE

000383

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60040 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTREE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)		V-BOX (sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
10 SEPT	1503	01	JM	P-14/P-15	0	100	100	TBW	0-100	1605-1610	30-30	NA	WA 10 SEPT	P -	NA	TBW
10 SEPT	1520	01	JM	P-15/P-16	0	100	100	TBW	0-100	1617-1622	30-30	NA	WA 10 SEPT	P -	NA	TBW
10 SEPT	1545	01	JM	P-16/P-17	0	100	100	TBW	0-100	1618-1623	30-30	NA	WA 10 SEPT	P -	NA	TBW
10 SEPT	1747	01	JM	P-17/P-18	0	102	102	TBW	0-102	0911-0916	30-30	NA	WA 11 SEPT	P -	NA	TBW
10 SEPT	1808	01	JM	P-18/P-19	0	104	104	TBW	0-104	0913-0918	30-30	NA	WA 11 SEPT	P -	NA	TBW
10 SEPT	1832	01	JM	P-19/P-20	0	103	103	TBW	0-103	0920-0925	30-30	NA	WA 11 SEPT	P -	NA	TBW
11 SEPT	1100	02	JM	P-20/P-21	383	375	8	TBW	375-383	1400-1405	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1102	02	JM	P-19/P-21	375	352	23	TBW	255-375	1423-1428	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1105	02	JM	P-18/P-21	352	328	24	TBW	255-375	1423-1428	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1108	02	JM	P-17/P-21	328	305	23	TBW	255-375	1423-1428	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1111	02	JM	P-16/P-21	305	282	23	TBW	255-375	1423-1428	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1115	02	JM	P-15/P-21	282	259	23	TBW	255-375	1423-1428	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1118	02	JM	P-14/P-21	259	236	23	TBW	—	CAPPED BY PR-39						TBW
				TOTAL (1)			756									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1741 (ft)

N/A = NOT APPLICABLE SEAMS P-19/P-21 THROUGH P-15/P-21 WERE AIR TESTED CONTINUOUSLY.

000384

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60409 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__t__psi for 5 min.)		V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
11 SEPT	1121	02	JM	P-13/P-21	236	212	24	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1125	02	JM	P-12/P-21	212	189	23	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1128	02	JM	P-11/P-21	189	166	23	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1131	02	JM	P-10/P-21	166	143	23	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1134	02	JM	P-5/P-21	143	119	24	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1138	02	JM	P-4/P-21	119	96	23	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1141	02	JM	P-3/P-21	96	73	23	TBW	73-241	1250-1255	30-30	NA	WA 15 SEPT	P -	NA	TBW
11 SEPT	1145	02	JM	P-2/P-21	73	50	23	TBW	— COVERED BY P-28 & PR-22							TBW
* 11 SEPT	1110	01	LL	P-21/P-22	375	0	375	TBW	0-375	1252-1257	30-30	NA	RS 15 SEPT	P -	NA	TBW
—	—	—	—	—	—	—	—	—	—	—	—	—	—	- -	2740	—
14 SEPT	1112	02	JM	P-22/P-23	374	0	374	TBW	0374	0941-0946	30-30	NA	WA 15 SEPT	P -	NA	TBW
14 Sept	1325	02	JM	P-23/P-24	385	0	385	CJ	0-60 60-385	0921-0926 0924-0929	30-30 30-30	NA	WA 15 SEPT	P -	NA	TBW
14 Sept	1440	02	JM	P-24/P-25	383	0	383	CJ	0-383	0940-0945	30-30	NA	WA 15 SEPT	P -	NA	TBW
					TOTAL (1)		1703									

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 3444 (ft)

N/A = NOT APPLICABLE SEAMS P-13/P-21 THROUGH P-3/P-21 WERE AIR TESTED CONTINUOUSLY.

000385

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: YEAR:

PRIMARY: ☐ SECONDARY: ☐ OTHER: ☐ CONTRACTOR:

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)		V-BOX (____sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
14 Sept	1618	Ø2	JM	P25/P26	381	Ø	381	CS	381-Ø	1034-1039	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
14 Sept	1647	Ø1	MM	P26/P27	375	Ø	375	CS	50-100 100-280 280-375	1515-1530 1560-1605 1526-1531	30-30 30-30 30-30	NA	WA 15 Sept	P -	NA	TBW
15 Sept	12ØØ	Ø2	JM	P-27/P-29	Ø	68	68	TBW	5Ø-68	163Ø-1635	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
15 Sept	1335	Ø2	JM	P-27/P-29	68	96	28	TBW	68-96	1644-1649	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
15 Sept	1405	Ø2	JM	P-29/P-30	Ø	87	87	TBW	Ø-87	1618-1623	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
15 Sept	1448	Ø2	JM	P-29/P-30	87	387	3ØØ	TBW	87-387	1609-1614	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
15 Sept	1600	Ø2	JM	P-30/P-31	Ø	383	383	TBW	Ø-383	173Ø-1735	3Ø-3Ø	NA	WA 15 Sept	P -	NA	TBW
15 Sept	1715	Ø2	JM	P-31/P-32	Ø	377	377	TBW	17-Ø 377-17	1458-1503 1417-1422	3Ø-3Ø 3Ø-3Ø	NA	WA 16 Sept	P -	NA	TBW
15 Sept	1825	Ø2	JM	P-27/P-29	96	375	279	TBW	250-325 250-300 300-375 Ø-98	8835-8840 8836-8841 Ø845-Ø850 1446-1451	3Ø-3Ø 3Ø-3Ø 3Ø-3Ø 3Ø-3Ø	NA	RS 17 Sept	P -	NA	TBW
15 Sept	1855	Ø1	LL	P-32/P-33	Ø	316	316	TBW	98-316	1434-1439	3Ø-3Ø	NA	WA 16 Sept	P -	NA	TBW
15 Sept	193Ø	Ø2	JM	P-32/P-33	316	366	5Ø	TBW	366-316	1432-1437	3Ø-3Ø	NA	WA 16 Sept	P -	NA	TBW
					TOTAL (1)		2644									

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 6088 (ft)

N/A = NOT APPLICABLE

SEAM P-27/P-29 FROM Ø-50' WAS CAPPED BY PR-77.

SEAM P-27/P-29 FROM 96'-225' WAS CAPPED BY PR-72.

000386

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
22 SEPT	1540	01	JM	P-34/P-35	378	0	378	TBU	0-6 378-6	1740-1745 1712-1717	30-30 30-30	RS 22 SEPT	P -	NA	TBU
22 SEPT	1715	01	JM	P-35/P-36	379	0	379	TBU	0-379	1815-1820	30-30	RS 22 SEPT	P -	NA	TBU
22 SEPT	1810	02	LL	P-36/P-37	379	0	379	TBU	0-313 313-379	0925-0930 0925-0930	30-30 30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	0930	01	JM	P-20/P-38	0	103	103	TBU	0-103	1100-1105	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1000	01	JM	P-38/P-39	0	104	104	TBU	0-104	1120-1125	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1030	01	JM	P-39/P-40	0	102	102	TBU	0-102	1115-1120	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1055	01	JM	P-40/P-41	0	102	102	TBU	0-102	1250-1255	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1130	01	JM	P-41/P-42	0	102	102	TBU	0-102	1251-1256	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1325	01	JM	P-42/P-43	0	102	102	TBU	0-102	1350-1355	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1405	01	JM	P-43/P-44	0	101	101	TBU	0-101	1450-1455	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1450	01	JM	P-44/P-45	0	101	101	TBU	0-101	1451-1456	30-30	RS 23 SEPT	P -	NA	TBU
23 SEPT	1500	01	JM	P-45/P-46	0	101	101	TBU	0-101	1550-1555	30-30	RS 23 SEPT	P -	NA	TBU
						TOTAL (1)	2054								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 8142 (ft)

N/A = NOT APPLICABLE

2740

000387

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)		V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
23 SEPT	1530	01	JM	P.46/P.47	0	102	102	TBW	0-102	1550-1555	30-30	NA	RS 23 SEPT	P -	NA	TBW
23 SEPT	1557	01	JM	P.47/P.48	0	101	101	TBW	0-101	1645-1650	30-30	NA	RS 23 SEPT	P -	NA	TBW
23 SEPT	1625	01	JM	P.48/P.49	0	101	101	TBW	0-101	1645-1650	30-30	NA	RS 23 SEPT	P -	NA	TBW
~~2~~ TBW	—	—	—	—	—	—	(304)	⇒	8446	—	—	—	—	- -	—	—
24 SEPT	1320	01	JM	P.37/P.50	377	0	377	TBW	0-60 60-377	1415-1420 1415-1420	30-30 30-30	NA	RS 24 SEPT	P -	NA	TBW
24 SEPT	1414	02	LL	P.50/P.51	377	0	377	TBW	0-377	1510-1515	30-30	NA	RS 24 SEPT	P -	NA	TBW
24 SEPT	1545	01	JM	P.51/P.52	0	381	381	TBW	0-381	1700-1705	30-30	NA	RS 24 SEPT	P -	NA	TBW
24 SEPT	1615	02	LL	P.52/P.53	0	381	381	TBW	0-56 56-381	1710-1715 1715-1720	30-30 30-30	NA	RS 24 SEPT	P -	NA	TBW
24 SEPT	1700	01	JM	P.53/P.54	0	380	380	TBW	0-380	1815-1820	30-30	NA	RS 24 SEPT	P -	NA	TBW
24 SEPT	1745	02	LL	P.54/P.55	0	379	379	TBW	0-379	0815-0820	30-30	NA	RS 25 SEPT	P -	NA	TBW
							(2275)		10721							
25 SEPT	1345	01	JM	P.55/P.56	0	372	372	TBW	0-61 61-372	0830-0835 0830-0835	30-30 30-30	NA	RS 27 SEPT	P -	NA	TBW
25 SEPT	1455	01	JM	P.56/P.57	0	372	372	TBW	0-372	0832-0837	30-30	NA	RS 27 SEPT	P -	NA	TBW
						TOTAL (1)	3323									

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 11,465 (ft)

N/A = NOT APPLICABLE

11,740

000388

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G2Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
25 SEPT	1533	Ø2	JB	P-57/P-58	Ø	64	64	TBD	Ø-64	Ø942-Ø947 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1545	Ø2	JB	P-58/P-59	Ø	43	43	TBD	Ø-43	Ø947-Ø952 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1555	Ø2	JB	P-59/P-60	Ø	29	29	TBD	Ø-29	Ø955-1ØØØ 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
~~25 SEPT~~	~~16ØØ~~	~~Ø2~~	~~JB~~	~~P-60/P-62~~	~~0~~	~~TBD~~	~~97~~								
25 SEPT	16Ø5	Ø2	JB	P-49/P-62	Ø	[illegible]	[illegible]	TBD	Ø-97	Ø93Ø-Ø935 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1613	Ø1	JM	P-62/P-63	67	Ø	67	TBD	Ø-67	Ø92Ø-Ø925 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	163Ø	Ø1	JM	P-60/P-61	4Ø	Ø	4Ø	TBD	Ø-4Ø	1Ø07-1Ø12 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	17ØØ	Ø1	JM	P-58/P-62	Ø	19	19	TBD	Ø-19	Ø940-Ø945 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	17Ø4	Ø1	JM	P-58/P-63	19	31	12	TBD	19-31	Ø946-Ø951 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	17Ø6	Ø1	JM	P-59/P-63	31	60	29	TBD	29-6Ø	1ØØ4-1ØØ5 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1711	Ø1	JM	P-60/P-63	60	88	28	TBD	6Ø-88	1Ø15-1ØØØ 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1715	Ø1	JM	P-61/P-63	88	105	17	TBD	88-1Ø5	1ØØ8-1Ø13 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
25 SEPT	1719	Ø1	JM	P-61/P-62	105	12Ø	15	TBD	1Ø5-12Ø	1Ø22-1Ø27 3Ø-3Ø	NA	RS 27 SEPT	P	NA	TBD
						TOTAL (1)	46Ø								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 11925 (ft)

N/A = NOT APPLICABLE

000389

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: _____ YEAR: _____

PRIMARY: ☐ SECONDARY: ☐ OTHER: ☐ _____ CONTRACTOR: _____

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)		V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
25 SEPT	1740	01	JM	P-62/P-57	64	75	11	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1742	01	JM	P-49/P-57	75	98	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1745	01	JM	P-48/P-57	98	121	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1748	01	JM	P-47/P-57	121	144	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1752	01	JM	P-46/P-57	144	167	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1755	01	JM	P-45/P-57	167	190	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1758	01	JM	P-44/P-57	190	214	24	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1801	01	JM	P-43/P-57	214	237	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1804	01	JM	P-42/P-57	237	260	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1808	01	JM	P-41/P-57	260	283	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1811	01	JM	P-40/P-57	283	306	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1815	01	JM	P-39/P-57	306	330	24	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
25 SEPT	1818	01	JM	P-38/P-57	330	353	23	TBH	64-373	0950-0955	30-29	NA	RS 27 SEPT	P	NA	TBH
					TOTAL (1)		289									

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 12214 (ft)

N/A = NOT APPLICABLE

ALL SEAMS ON THIS PAGE WERE AIR TESTED CONTINUOSLY.

GeoSyntec Consultants

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (FUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: _____ YEAR: _____

PRIMARY: ☐ SECONDARY: ☐ OTHER: ☐ _____ CONTRACTOR: _____

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST							
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)		V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
25 Sept	1822	01	JM	P.20/P.57	353	373	20	TBD	64-373	0950-0955	30-30	NA	RS 27 Sept	P -	NA	TBD
						TOTAL (1)	20									

= 2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 12234 (ft)

N/A = NOT APPLICABLE

000391

EXTRUSION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0409 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)	V-BOX (sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
10 SEPT	1355	03	MM	P-1/P-7	63	33	30	TBG	63-33	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1411	03	MM	P-1/P-6	33	30	3	TBG	33-30	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1418	03	MM	P-2/P-6	30	0	30	TBG	30-0	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1438	03	MM	P-1/P-8	63	89	26	TBG	63-89	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1505	03	MM	P-1/P-9	89	108	19	TBG	89-108	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1517	03	MM	P-2/P-9	108	123	15	TBG	108-123	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1620	03	MM	P-1/PR-14	56	40	16	TBG	56-40	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1630	03	MM	P-10/PR-14	40	63	23	TBG	40-63	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1640	03	MM	P-11/PR-14	63	56	7	TBG	63-56	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1645	03	MM	P-10/PR-15	67	84	17	TBG	67-84	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1654	03	MM	P-11/PR-15	84	67	17	TBG	84-67	NA	VTOK	WA 10 SEPT	P	NA	TBG
10 SEPT	1820	04	JB	P-14/PR-19	29	45	16	TBG	29-45	NA	VTOK	WA 13 SEPT	P	NA	TBG
10 SEPT	1830	04	JB	P-15/PR-19	45	29	16	TBG	45-29	NA	VTOK	WA 13 SEPT	P	NA	TBG
					TOTAL (1)		235								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 235 (ft)

N/A = NOT APPLICABLE

000393

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
1ØSEPT	184Ø	Ø4	JB	P-15/PR-20	24	5	19	TBU	24-5	NA	VTOK	WA 13SEPT	P -	NA	TBU
1ØSEPT	185Ø	Ø4	JB	P-14/PR-20	5	24	19	TBU	5-24	NA	VTOK	WA 13SEPT	P -	NA	TBU
—	—	—	—	—	—	—	—	—	—	—	—	—	- -	—	—
15SEPT	1Ø25	Ø3	EM	P-3/PR-22	62	97	35	TBU	CAPPED BY PR-97						TBU
15SEPT	1Ø52	Ø3	EM	P-2/PR-22	97	62	35	TBU	CAPPED BY PR-97						TBU
15SEPT	1117	Ø3	MM	P-3/PR-22	62	26	36	TBU	CAPPED BY PR-97						TBU
15SEPT	1327	Ø3	MM	P-21/P-28	Ø	71	71	TBU	Ø-71	NA	VTOK	WA 2ØSEPT	P -	NA	TBU
15SEPT	134Ø	Ø4	JB	P-9/P-28	Ø	57	57	TBU	Ø-57	NA	VTOK	WA 2ØSEPT	P -	NA	TBU
15SEPT	1403	Ø3	MM	P-8/P-28	142	133	9	TBU	COVERED BY PR-97						TBU
15SEPT	142Ø	Ø4	JB	P-2/P-28	119	133	14	TBU	119-133	NA	VTOK	WA 2ØSEPT	P -	NA	TBU
15SEPT	142Ø	Ø3	MM	P-2/PR-22	97	99	2	TBU	CAPPED BY PR-97						TBU
15SEPT	1422	Ø3	MM	P-3/PR-22	99	97	2	TBU	CAPPED BY PR-97						TBU
15SEPT	15ØØ	Ø4	JB	P-2/PR-22	62	19	43	TBU	CAPPED BY PR-97						TBU
					TOTAL (1)		342								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 577 (ft)

N/A = NOT APPLICABLE

000394

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
15 SEPT	1515	Ø4	JB	P-3/PR-22	26	12	14	TBY	CAPPED BY PR-97						TBY
15 SEPT	1528	Ø4	JB	P-2/PR-22	19	Ø	19	TBY	CAPPED BY PR-97						TBY
15 SEPT	154Ø	Ø4	JB	P-3/PR-22	Ø	12	12	TBY	CAPPED BY PR-97						TBY
15 SEPT	1645	Ø4	JB	P-4/PR-31	Ø	7	7	TBY	Ø-7	NA	VTOK	WA 2ØSEPT	P	NA	TBY
15 SEPT	1650	Ø4	JB	P-5/PR-31	7	Ø	7	TBY	Ø-7	NA	VTOK	WA 2ØSEPT	P	NA	TBY
15 SEPT	1735	Ø4	JB	P-10/PR-37	100	84	16	TBY	1ØØ-84	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	1745	Ø4	JB	P-11/PR-37	84	100	16	TBY	1ØØ-84	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	1815	Ø3	MM ~~JB~~ TBY	P-21/PR-39	22Ø	265	45	TBY	222-265	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	182Ø	Ø4	JB	P-12/PR-40	100	92	8	TBY	100-92	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	1825	Ø4	JB	P-11/PR-40	92	100	8	TBY	92-100	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	1835	Ø3	MM	P-15/PR-39	265	259	6	TBY	265-259	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	1839	Ø3	MM	P-14/PR-39	259	236	23	TBY	259-236	NA	VTOK	WA 17SEPT	P	NA	TBY
15 SEPT	184Ø	Ø4	JB	P-12/PR-40	92	82	1Ø	TBY	92-82	NA	VTOK	WA 17SEPT	P	NA	TBY
						TOTAL (1)	191								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 768 (ft)

N/A = NOT APPLICABLE

000395

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60040 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
15 SEPT	1850	03	MM	P-13/PR-39	236	200	16	TBM	236-220	NA	VTOK	WA 17 SEPT	P -	NA	TBM
15 SEPT	1851	04	JB	P-11/PR-40	82	92	10	TBM	82-92	NA	VTOK	WA 17 SEPT	P -	NA	TBM
15 SEPT	1900	04	JB	P-12/PR-40	82	75	7	TBM	82-75	NA	VTOK	WA 17 SEPT	P -	NA	TBM
—	—	—	—	—	—	—	—	—	—	—	—	—	- -	—	—
16 SEPT	1430	04	JB	P-33/CII P-35	0	22	22	TBM	0-22	NA	VTOK	WA 22 SEPT	P -	NA	TBM
16 SEPT	1515	06	JB	P-33/CII P-35	[redacted]	55	33	TBM	22-55	NA	VTOK	WA 22 SEPT	P -	NA	TBM
16 SEPT	1528	03	MM	P-32/PR-44	364	377	13	TBM	— CAPPED BY PR-110 —						TBM
16 SEPT	1535	03	MM	P-31/PR-44	377	364	13	TBM	— CAPPED BY PR-110 —						TBM
16 SEPT	1620	06	JB	P-33/CII P-35	55	175	120	TBM	175-55	NA	VTOK	WA 22 SEPT	P -	NA	TBM
16 SEPT	1750	06	JB	P-33/CII P-35	175	232	57	TBM	175-232	NA	VTOK	WA 22 SEPT	P -	NA	TBM
—	—	—	—	—	—	—	—	—	—	—	—	—	- -	—	—
17 SEPT	0815	03	MM	P-11/PR-55	40	0	40	TBM	0-40	NA	VTOK	WA 17 SEPT	P -	NA	TBM
17 SEPT	0830	03	MM	P-10/PR-55	0	40	40	TBM	0-40	NA	VTOK	WA 17 SEPT	P -	NA	TBM
						TOTAL (1)	371								

I-2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1139 (ft)

N/A = NOT APPLICABLE

000396

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (_±_psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
17 SEPT	Ø845	Ø4	JB	P-33/CII P-35	232	242	1Ø	TBV	232-242	NA	VTOK	WA 22SEPT	P / -	NA	TBV
17SEPT	Ø855	Ø4	JB	P-33/CII PR-298	242	347	105	TBV	242-347	NA	VTOK	WA 22SEPT	P / -	NA	TBV
17SEPT	Ø9ØØ	Ø3	MM	P-12 PR-40	75	Ø	75	TBV	Ø-75	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	Ø935	Ø3	MM	P-11 PR-4Ø	Ø	82	82	TBV	Ø-82	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	1Ø35	Ø4	JB	P-33/CII PR-297	347	353	6	TBV	347-353	NA	VTOK	WA 22SEPT	P / -	NA	TBV
17SEPT	1Ø4Ø	Ø4	JB	P-33/CII PR-296	353	368	13	TBV	353-368	NA	VTOK	WA 25SEPT	P / -	NA	TBV
17SEPT	1Ø45	Ø4	JB	P-23 PR-72	229	2Ø9	2Ø	TBV	209-229	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	11ØØ	Ø4	JB	P-29 PR-72	2Ø9	229	2Ø	TBV	2Ø9-229	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	11ØØ	Ø3	MM	P-24 PR-71	44	Ø	44	TBV	Ø-44	NA	VTOK	WA 2ØSEPT	P / -	NA	TBV
17SEPT	111Ø	Ø4	JB	P-29 PR-72	2Ø9	186	23	TBV	186-209	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	112Ø	Ø4	JB	P-27 PR-72	186	2Ø9	23	TBV	186-209	NA	VTOK	WA 17SEPT	P / -	NA	TBV
17SEPT	112Ø	Ø3	MM	P-27 PR-71	Ø	44	44	TBV	Ø-44	NA	VTOK	WA 2ØSEPT	P / -	NA	TBV
17SEPT	1125	Ø6	JM	P-27 PR-7Ø	163	14Ø	23	TBV	140-163	NA	VTOK	WA 17SEPT	P / -	NA	TBV
					TOTAL (1)		488								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1627 (ft)

N/A = NOT APPLICABLE

2740

000397

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTREE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)	V-BOX (sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
17 SEPT	1135	Ø6	JM	P-24/PR-72	14Ø	163	23	TBW	14Ø-163	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	1322	Ø3	MM	P-26/PR-71	5Ø	44	6	TBW	44-50	NA	VTOK	WA 2Ø SEPT	P	NA	TBW
17 SEPT	1326	Ø3	MM	P-27/PR-71	44	5Ø	6	TBW	44-50	NA	VTOK	WA 2Ø SEPT	P	NA	TBW
17 SEPT	1335	Ø6	JM	P-29/PR-72	14Ø	117	23	TBW	117-14Ø	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	134Ø	04	JB	P-27/PR-72	186	163	23	TBW	163-186	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	135Ø	Ø6	JM	P-27/PR-72	14Ø	117	23	TBW	117-140	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	1355	Ø4	JB	P-29/PR-72	163	186	23	TBW	163-186	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	141Ø	Ø3	MM	P-27/PR-77	39	Ø	39	TBW	Ø-39	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	1435	Ø6	JM	P-27/PR-72	117	94	23	TBW	94-117	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	1437	Ø3	MM	P-29/PR-77	Ø	39	39	TBW	Ø-39	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	15ØØ	Ø6	JM	P-29/PR-72	94	117	23	TBW	94-117	NA	VTOK	WA 17 SEPT	P	NA	TBW
17 SEPT	181Ø	Ø6	JM	P-3/PR-97	49	36	13	TBW	46-36	NA	VTOK	WA 21 SEPT	P	NA	TBW
17 SEPT	1815	Ø3	MM	P-3/PR-97	100	49	51	TBW	100-49	NA	VTOK	WA 21 SEPT	P	NA	TBW
					TOTAL	(1)	315								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 1942 (ft)

N/A = NOT APPLICABLE

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000398

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0404 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)	V-BOX (___sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
17 SEPT	1820	06	JM	P-2/PR-97	36	90	54	TBY	36-90	NA	VTOK	WA 21 SEPT	P -	NA	TBY
17 SEPT	1826	04	JB	P-3/PR-97	36	0	36	TBY	36-0	NA	VTOK	WA 21 SEPT	P -	NA	TBY
17 SEPT	1842	04	JB	P-2/PR-97	36	0	36	TBY	36-0	NA	VTOK	WA 21 SEPT	P -	NA	TBY
17 SEPT	1850	03	MM	P-28/PR-97	90	100	10	TBY	90-100	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1000	04	JB	P-2/PR-104	50	69	19	TBY	50-69	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1017	04	JB	PR-97/PR-104	69	50	19	TBY	69-50	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1025	04	JB	PR-97/PR-105	47	35	12	TBY	47-35	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1040	04	JB	P-2/PR-105	47 ~~36~~	35 ~~47~~	12	TBY	47-35	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1100	04	JB	PR-106/PR-97	34	49	15	TBY	34-49	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1110	04	JB	P-3/PR-106	49	34	15	TBY	49-34	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1120	04	JB	P-2/PR-104	69	90	21	TBY	69-90	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1140	04	JB	PR-97/PR-104	90	69	21	TBY	90-69	NA	VTOK	WA 21 SEPT	P -	NA	TBY
21 SEPT	1253	03	MM	P-29/PR-107	205	113	92	TBY	205-113	NA	VTOK	WA 22 SEPT	P -	NA	TBY
					TOTAL (1)		362								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2304 (ft)

N/A = NOT APPLICABLE

000399

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__+__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
21 SEPT	134Ø	Ø3	MM	P-30/PR-107	113	205	92	TBY	113-205	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	143Ø	Ø3	MM	P-30/PR-107	205	228	23	TBY	205-228	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	1445	Ø3	MM	P-29/PR-107	228	205	23	TBY	228-205	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	1435	Ø4	JB	P-29/PR-107	Ø	23	23	TBY	Ø-23	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	1445	Ø4	JB	P-30/PR-107	Ø	23	23	TBY	Ø-23	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	15ØØ	Ø6	JM	P-29/PR-107	113	87	26	TBY	113-87	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	15ØØ	Ø4	JB	P-30/PR-107	23	46	23	TBY	23-46	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	153Ø	Ø4	JB	P-29/PR-107	23	46	23	TBY	23-46	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	155Ø	Ø4	JB	P-30/PR-107	46	113	67	TBY	46-113	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	155Ø	Ø3	MM	P-30/PR-107	228	251	23	TBY	228-251	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	1615	Ø3	MM	P-29/PR-107	251	228	23	TBY	251-228	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	164Ø	Ø3	MM	P-30/PR-107	251	274	23	TBY	251-274	NA	VTOK	WA 22 SEPT	P -	NA	TBY
21 SEPT	164Ø	Ø4	JB	P-29/PR-107	46	87	41	TBY	46-87	NA	VTOK	WA 22 SEPT	P -	NA	TBY
					TOTAL (1)		433								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2737 (ft)

N/A = NOT APPLICABLE

2740

000400

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0404 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
21 SEPT	1653	03	MM	P-29/PR-107	274	251	23	TBU	274-251	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
21 SEPT	1700	04	JB	PR-107/PR-108	103	113	10	TBU	103-113	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
21 SEPT	1710	04	JB	P-29/PR-108	113	103	10	TBU	113-103	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
21 SEPT	1710	03	MM	P-30/PR-107	274	283	9	TBU	274-283	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
21 SEPT	1715	03	MM	P-29/PR-107	277	274	3	TBU	277-274	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
—	—	—	—	—	—	—	—	—	—	—	—	—	- / -	—	—
22 SEPT	0900	03	MM	P-30/PR-107	283	320	37	TBU	283-320	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	0905	04	JB	P-29/PR-107	277	313	36	TBU	277-313	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	0922	03	MM	P-29/PR-107	320	313	7	TBU	320-313	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	0940	03	MM	P-30/PR-107	320	343	23	TBU	320-343	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	0943	04	JB	P-29/PR-107	320	343	23	TBU	320-343	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	1018	03	MM	P-30/PR-107	343	355	12	TBU	343-355	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
22 SEPT	1024	03	MM	P-29/PR-107	355	343	12	TBU	355-343	NA	VTOK	WA 22 SEPT	P / -	NA	TBU
					TOTAL (1)		205								

= 2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 2942 (ft)

N/A = NOT APPLICABLE

000401

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__±__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
22 SEPT	1035	Ø3	MM	P-32/PR-110	342	360	18	TBK	342-360	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	1ØØØ	Ø4	JB	P-31/PR-110	342	360	18	TBK	342-360	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	165Ø	Ø4	JB	P-32/P-34	24	19	5	TBK	24-19	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	1655	Ø4	JB	P-33/P-34	19	Ø	19	TBK	Ø-19	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	1655	Ø3	MM	P-34/CII/P-84	749	711	38	TBK	749-711	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	172Ø	Ø4	JB	P-34/CII/PR-2740	368	39Ø	22	TBK	368-39Ø	NA	VTOK	WA 25 SEPT	P -	NA	TBK
22 SEPT	1745	Ø4	JB	P-32/P-35	24	43	19	TBK	24-43	NA	VTOK	WA 25 SEPT	P -	NA	TBK
23 SEPT	Ø9ØØ	Ø4	JB	P-32/PR-11Ø	373	360	13	TBK	373-360	NA	VTOK	WA 25 SEPT	P -	NA	TBK
23 SEPT	ØØØ7	Ø4	JB	P-31/PR-11Ø	360	373	13	TBK	373-36Ø	NA	VTOK	WA 25 SEPT	P -	NA	TBK
23 SEPT	Ø913	Ø4	JB	P-31/P-35	43	48	5	TBK	43-48	NA	VTOK	WA 25 SEPT	P -	NA	TBK
23 SEPT	Ø916	Ø4	JB	P-31/P-36	48	58	1Ø	TBK	48-58	NA	VTOK	WA 25 SEPT	P -	NA	TBK
23 SEPT	Ø933	Ø4	JB	P-31/P-36	58	67	9	TBK	58-67	NA	VTOK	WA 25 SEPT	P -	NA	TBK
					TOTAL (1)		189								

PR-2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 3131 (ft)

N/A = NOT APPLICABLE

000402

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__t__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
23 SEPT	Ø94Ø	Ø4	JB	P-30/P-36	67	71	4	TBC	67-71	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	Ø945	Ø4	JB	P-30/P-37	71	86	15	TBC	71-86	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	1000	Ø3	MM	P-34/CII/P-84	657	493	164	TBC	657-493	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	1Ø37	Ø4	JB	P-34/CII/PR-286	39Ø	423	33	TBC	39Ø-423	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	144Ø	Ø3	MM	P-34/CII/P-84	493	457	36	TBC	457-493	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	1515	Ø3	JB	P-34/CII/P-84	457	426	31	TBC	426-457	NA	VTOK	WA 25 SEPT	P -	NA	TBC
23 SEPT	154Ø	Ø3	JB	P-34/CII/PR-286	426	423	3	TBC	423-426	NA	VTOK	WA 25 SEPT	P -	NA	TBC
							286	⇒	3417	6446					
24 SEPT	1ØØØ	Ø4	JB	P-34/CII/P-84	657	682	25	TBC	657-682	NA	VTOK	WA 25 SEPT	P -	NA	TBC
24 SEPT	1Ø4Ø	Ø4	JB	P-34/CII/P-84	682	711	29	TBC	682-711	NA	VTOK	WA 25 SEPT	P -	NA	TBC
24 SEPT	1615	Ø4	JB	P-51/LCS/Pol. Box	Ø	28	28	TBC	Ø-28	NA	VTOK	WA 25 SEPT	P -	NA	TBC
24 SEPT	164Ø	Ø4	JB	P-51/LCS-R/Pol. Box	Ø	28	28	TBC	Ø-28	NA	VTOK	WA 25 SEPT	P -	NA	TBC
							(110)		3527	+10,721					
					TOTAL	(1)	396								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 3527 (ft)

N/A = NOT APPLICABLE

000403

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (__t__psi for 5 min.)	V-BOX (____sec.)	OPERATOR ID	PASS/ FAIL	RETEST DATE	QA ID
25 SEPT	Ø9Ø5	Ø4	JB	P-30/P-37	86	9Ø	4	TBK	86-9Ø	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	Ø91Ø	Ø4	JB	P-29/P-37	9Ø	95	5	TBK	9Ø-95	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	Ø915	Ø4	JB	P-29/PR-166	95	118	23	TBK	95-118	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	Ø94Ø	Ø4	JB	P-27/PR-166	118	113	5	TBK	118-113	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	Ø943	Ø4	JB	P-29/PR-166	113	95	18	TBK	113-95	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	Ø955	Ø4	JB	P-27/P-51	118	137	19	TBK	118-137	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1ØØ5	Ø4	JB	P-26/P-51	137	142	5	TBK	137-142	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø1Ø	Ø4	JB	P-26/P-52	142	16Ø	18	TBK	160-142	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø21	Ø4	JB	P-25/P-52	16Ø	165	5	TBK	165-16Ø	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø24	Ø4	JB	P-25/P-53	165	183	18	TBK	183-165	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø35	Ø4	JB	P-24/P-53	183	188	5	TBK	188-183	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø38	Ø4	JB	P-24/P-54	188	206	18	TBK	2Ø6-188	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
25 SEPT	1Ø49	Ø4	JB	P-23/P-54	206	209	3	TBK	2Ø9-2Ø6	NA	VTOK	WA 25 SEPT	P | -	NA	TBK
					TOTAL (1)		146								

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 3673 (ft)

N/A = NOT APPLICABLE

000404

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRODUCTION SEAM SUMMARY LOG (EXTRUSION)

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0040 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

PRODUCTION SEAM				LOCATION					NONDESTRUCTIVE TEST						
DATE (day/mo)	TIME	MACHINE NO.	OPER ID	SEAM NO.	BEGIN	END	ACTUAL SEAM LENGTH (ft)	QA ID	LOCATION (ft)	AIR PRESSURE (±psi for 5 min.)	V-BOX (sec.)	OPERATOR ID	PASS/FAIL	RETEST DATE	QA ID
27 SEPT	0925	03	JM	P-23/P-56	211	229	18	TBU	211-229	369' NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1045	03	JM	P-22/PR-188	239	229	10	TBU	229-239	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1100	03	JM	P-55/PR-188	229	234	5	TBU	229-234	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1105	03	JM	P-56/PR-188	234	252	18	TBU	234-252	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1323	03	JM	P-22/PR-188	239	252	13	TBU	239-252	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1410	03	JM	P-21/P-56	252	257	5	TBU	252-257	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1415	03	JM	P-21/P-57	257	275	18	TBU	257-275	NA	VTOK	WA 27 SEPT	P -	NA	TBU
27 SEPT	1540	03	JM	P-20/P-57	275	280	5	TBU	275-280	NA	VTOK	WA 27 SEPT	P -	NA	TBU
						TOTAL (1)	92								

2740

NOTE: (1) SEAM LENGTH: THIS PAGE _____ (ft) ACCUMULATED 3765 (ft)

N/A = NOT APPLICABLE

000405

APPENDIX N

GEOMEMBRANE DESTRUCTIVE SEAM TEST LOGS AND LABORATORY TEST RESULTS

2740

SECONDARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ☐ SECONDARY: ■ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA							LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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-1	E	S-1/CII S-24	39	Ø6	JB	124	—	172	P	–	18 AUG	TBD	19 AUG	14Ø	—	223	P	–	—	TBD
DS-2	F	S-14/S-15	3Ø	Ø2	JM	152	148	16Ø	P	–	2Ø AUG	TBD	23 AUG	163	175	2Ø2	P	–	—	TBD
DS-3	F	S-4/S-5	29	Ø1	LL	152	159	176	P	–	2Ø AUG	TBD	23 AUG	176	174	2Ø6	P	–	—	TBD
DS-4	F	S-2/S-3	12	Ø2	JM	159	146	165	P	–	2Ø AUG	TBD	23 AUG	178	177	2Ø4	P	–	—	TBD
DS-5	E	S-19/SR-31	203	Ø3	MM	171	—	205	P	–	21 AUG	TBD	23 AUG	185	—	2Ø8	P	–	—	TBD
DS-6	F	S-1/S-21	237	Ø2	JM	14Ø	125	152	P	–	21 AUG	TBD	23 AUG	183	181	2Ø2	P	–	—	TBD
DS-7	F	S-22/S-23	94	Ø1	LL	147	146	153	P	–	21 AUG	TBD	23 AUG	176	173	197	P	–	—	TBD
DS-8	F	S-23/S-24	37	Ø2	JM	148	144	155	P	–	21 AUG	TBD	23 AUG	171	162	191	P	–	—	TBD
DS-9	F	S-29/S-30	65	Ø1	LL	138	144	17Ø	P	–	23 AUG	TBD	24 AUG	161	156	184	P	–	—	TBD
DS-1Ø	F	S-20/S-29	17Ø	Ø2	JM	NO	OVERLAP		–	F	23 AUG	TBD	WAS NOT SENT TO THE LAB DUE TO NO OVERLAP				–	F	10A & 10B	TBD
DS-11	F	S-19/S-20	287	Ø1	LL	155	145	17Ø	P	–	23 AUG	TBD	24 AUG	175	168	187	P	–	—	TBD

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

2740

000408

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE Co. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ☐ SECONDARY: ■ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA							LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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-10A	F	S-20/S-29	153	Ø2	JM	144	155	154	P -	23 AUG	TBY	24 AUG	16Ø	172	196	P -	—	TBY
DS-10B	F	S-20/S-29	247	Ø2	JM	147	144	155	P -	23 AUG	TBY	24 AUG	17Ø	167	195	P -	—	TBY
DS-12	F	S-30/S-31	319	Ø1	LL	146	142	162	P -	25 AUG	TBY	26 AUG	153	165	189	P -	—	TBY
DS-13	F	S-31/S-32	139	Ø2	JM	152	145	167	P -	25 AUG	TBY	26 AUG	171	18Ø	195	P -	—	TBY
DS-14	F	S-32/S-33	240	Ø1	LL	140	142	17Ø	P -	25 AUG	TBY	26 AUG	171	177	196	P -	—	TBY
DS-15	F	S-33/S-34	304	Ø2	JM	148	155	167	P -	25 AUG	TBY	26 AUG	184	175	192	P -	—	TBY
DS-16	F	S-27/S-35	58	Ø1	LL	125	13Ø	151	P -	28 AUG	TBY	31 AUG	153	173	199	P -	—	TBY
DS-17	F	S-40/S-41	68	Ø1	LL	PEEL	PEEL	—	- F	28 AUG	TBY	FAILED	IN THE	FIELD		- F	17A & 17B	TBY
DS-17B	F	S-36/S-37	85	Ø1	LL	153	145	168	P -	28 AUG	TBY	31 AUG	176	161	193	P -	—	TBY
DS-17A	F	S-36/S-37	5	Ø2	LL	138	135	159	P -	31 AUG	TBY	Ø1 SEPT	177	186	2ØØ	P -	—	TBY

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

THE SEAM THAT DS-17A WAS TAKEN FROM (S-36/S-37) WAS A REWELDING OF THE TWO PANELS AFTER THE FAILING SEAMS WERE CUT OUT. SEE PRODUCTION SEAMING LOGS.

2740

000409

GEOSYNTEC CONSULTANTS

FLOOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ☐ SECONDARY: ■ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA						LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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-17A-1	F	S-45/S-46	359	Ø1	LL	14Ø	146	160	P -	31 AUG	TBY	Ø1 SEPT	169	168	198	P -	—	TBY
DS-18	F	S-45/S-46	98	Ø1	LL	145	146	152	P -	31 AUG	TBY	Ø1 SEPT	177	182	2Ø1	P -	—	TBY
DS-19	F	S-43/S-44	232	Ø2	JM	123	135	153	P -	31 AUG	TBY	Ø1 SEPT	168	171	187	P -	—	TBY
DS-2Ø	F	S-40/S-41	43	Ø2	JM	132	149	165	P -	31 AUG	TBY	Ø1 SEPT	179	176	2ØØ	P -	—	TBY
DS-21	E	S-43/CII/S-65	437	Ø6	JB	13Ø	—	157	P -	Ø1 SEPT	TBY	Ø2 SEPT	153	—	197	P -	—	TBY
DS-22	F	S-42/S-47	67	Ø2	JM	132	137	153	P -	Ø1 SEPT	TBY	Ø2 SEPT	175	172	193	P -	—	TBY
DS-23	F	S-51/S-52	27	Ø1	LL	124	13Ø	152	P -	Ø1 SEPT	TBY	Ø2 SEPT	167	18Ø	193	P -	—	TBY
DS-24	F	S-41/S-58	208	Ø2	JM	152	143	154	P -	Ø1 SEPT	TBY	Ø2 SEPT	177	177	2ØØ	P -	—	TBY
DS-25	F	S-58/S-59	318	Ø2	JM	135	132	156	P -	Ø1 SEPT	TBY	Ø2 SEPT	175	17Ø	196	P -	—	TBY
DS-26	F	S-59/S-60	204	Ø2	JM	136	13Ø	152	P -	Ø1 SEPT	TBY	Ø2 SEPT	18Ø	168	192	P -	—	TBY
DS-27	F	S-60/S-61	79	Ø2	JM	137	134	151	P -	Ø1 SEPT	TBY	Ø2 SEPT	169	173	19Ø	P -	—	TBY

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

000410

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GeoSyntec Consultants

FLOOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE Co. TEST REQUIREMENTS: FUSION: SHEAR - 151ppi PEEL - 115ppi EXTRUSION: SHEAR - 151ppi PEEL - 84ppi

PRIMARY: ☐ SECONDARY: ■ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA						LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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-28	F	S-62/S-63	309	01	LL	143	156	168	P -	02 SEPT	TBY	03 SEPT	168	163	195	P -	—	TBY
DS-29	F	S-64/S-65	202	02	JM	166	155	171	P -	02 SEPT	TBY	03 SEPT	175	176	199	P -	—	TBY
DS-30	E	S-32/S-63	158	04	JB	160	—	211	P -	07 SEPT	TBY	08 SEPT	168	—	203	P -	—	TBY
DS-31	F	S-46/S-66	142	02	JM	PEEL	PEEL	—	- F	07 SEPT	TBY	08 SEPT	FAILED IN THE FIELD			- F	DS-31B DS-31A	TBY
DS-32	F	S-68/S-71	67	02	JM	167	175	182	P -	07 SEPT	TBY	08 SEPT	178	177	199	P -	—	TBY
DS-31B	F	S-46/S-66	162	02	JM	160	156	172	P -	07 SEPT	TBY	08 SEPT	180	179	206	P -	—	TBY
DS-31A	F	S-46/S-66	128	02	JM	148	157	180	P -	07 SEPT	TBY	08 SEPT	174	178	210	P -	—	TBY
DS-33	E	S-74/SR-214	76	04	JB	125	—	154	P -	14 SEPT	TBY	15 SEPT	171	—	202	P -	—	TBY

= 2740

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

000411

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PRIMARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE Co. TEST REQUIREMENTS: FUSION: SHEAR - 151 PPI PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ■ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA							LABORATORY DATA							
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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
DP-1	F	P-2/P-3	52	Ø2	JM	166	152	162	P	-	1Ø SEPT	TBD	13 SEPT	100% PEEL	168	194	-	F	1A & 1B	TBD
DP-2	F	P-1Ø/P-11	65	Ø1	JM	PEEL	PEEL	—	—	F	1Ø SEPT	TBD	FAILED IN THE FIELD						2A & 2B	TBD
DP-2A	F	P-1Ø/P-11	81	Ø1	JM	144	146	154	P	-	1Ø SEPT	TBD	13 SEPT	100% PEEL	158	183	-	F	2A-1	TBD
DP-2B	F	P-1Ø/P-11	44	Ø1	JM	137	143	156	P	-	1Ø SEPT	TBD	13 SEPT	163	100% PEEL	188	-	F	2B-1	TBD
DP-3	F	P-14/P-15	27	Ø1	JM	PEEL	PEEL	—	—	F	1Ø SEPT	TBD	FAILED IN THE FIELD					-	3A & 3B	TBD
DP-3A	F	P-14/P-15	42	Ø1	JM	155	154	172	P	-	1Ø SEPT	TBD	13 SEPT	169	17Ø	191	P	-	—	TBD
DP-3B	F	P-14/P-15	8	Ø1	JM	148	153	17Ø	P	-	1Ø SEPT	TBD	13 SEPT	168	172	191	P	-	—	TBD
DP-4	F	P-19/P-20	68	Ø1	JM	138	141	16Ø	P	-	15 SEPT	TBD	17 SEPT	167	166	19Ø	P	-	—	TBD
DP-5	F	P-14/P-21	241	Ø2	JM	PEEL	PEEL	—	—	F	15 SEPT	TBD	FAILED IN THE FIELD				-	-	5A & 15B	TBD
DP-6	F	P-21/P-22	117	Ø1	LL	127	125	163	P	-	15 SEPT	TBD	17 SEPT	176	159	2Ø1	P	-	—	TBD
DP-7	F	P-22/P-23	18Ø	Ø2	JM	144	154	162	P	-	15 SEPT	TBD	17 SEPT	177	16Ø	193	P	-	—	TBD

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 - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE Co. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ■ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA						LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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
DP-8	F	P-24/P-25	257	02	JM	140	130	154	P -	15 Sept	TBY	17 Sept	172	174	194	P -	—	TBY
DP-9	F	P-25/P-26	222	02	JM	135	141	157	P -	15 Sept	TBY	17 Sept	176	177	198	P -	—	TBY
DP-10	F	P-26/P-27	281	01	MM	136	132	165	P -	15 Sept	TBY	17 Sept	168	165	195	P -	—	TBY
DP-1B	F	P-2/P-3	3	02	JM	185	161	210	P -	15 Sept	TBY	17 Sept	175	157	201	P -	—	TBY
DP-1A	F	P-4/P-5	3	02	JM	171	164	190	P -	15 Sept	TBY	17 Sept	175	175	200	P -	—	TBY
DP-2B-1	F	P-10/P-11	3	01	JM	162	154	180	P -	15 Sept	TBY	17 Sept	167	167	190	P -	—	TBY
DP-2A-1	F	P-11/P-12	96	01	JM	149	139	170	P -	15 Sept	TBY	17 Sept	172	167	190	P -	—	TBY
DP-5A	F	P-13/P-21	223	02	JM	139	136	165	P -	15 Sept	TBY	17 Sept	163	167	193	P -	—	TBY
DP-5B	F	P-15/P-21	261	02	JM	129	136	155	P -	15 Sept	TBY	17 Sept	180	179	202	P -	—	TBY

= 2740

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

000414

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ■ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA							LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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
DP-11	F	P-27/P-29	125	02	JM	PEEL	PEEL	—	-	F	16 SEPT	TBY	FAILED IN THE FIELD				-	-	11A & 11B	TBY
DP-12	F	P-29/P-30	200	02	JM	157	160	170	P	-	16 SEPT	TBY	17 SEPT	177	100% PEEL	192	-	F	12A & 12B	TBY
DP-13	F	P-30/P-31	300	02	JM	148	156	168	P	-	16 SEPT	TBY	17 SEPT	174	174	198	P	-	—	TBY
DP-14	F	P-32/P-33	98	01	LL	149	150	158	P	-	16 SEPT	TBY	17 SEPT	171	170	190	P	-	—	TBY
DP-11B	F	P-31/P-32	368	02	JM	152	148	176	P	-	16 SEPT	TBY	17 SEPT	178	139	202	-	F*	11B-1	TBY
DP-11A	F	P-27/P-29	222	02	JM	163	154	185	P	-	16 SEPT	TBY	17 SEPT	171	176	193	P	-	—	TBY
DP-15	E	P-33/CII/PR-298	263	04	JB	137	—	165	P	-	17 SEPT	TBY	20 SEPT	151	—	201	P	-	—	TBY
DP-16	E	P-10/PR-55	26	03	MM	122	—	158	P	-	17 SEPT	TBY	20 SEPT	147	—	203	P	-	—	TBY
DP-17	E	P-2/PR-97	49	06	JM	PEEL	—	—	-	F	20 SEPT	TBY	FAILED IN THE FIELD				-	-	17A & 17B	TBY
DP-17B	E	P-3/PR-97	43	06	JM	130	—	220	P	-	21 SEPT	TBY	22 SEPT	139	—	204	P	-	—	TBY

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION * TWO OF THE SPECIMENS HAD PEEL STRENGTHS OF 79 ppi & 96 ppi, THEREFORE THIS DESTRUCTIVE TEST IS FAILING.

000415

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DESTRUCTIVE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE CO. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 15 ppi PEEL - 84 ppi

PRIMARY: ■ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA						LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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
DP-12B	F	P-29/P-30	1Ø	Ø2	JM	164	161	174	P -	21 SEPT	TBW	22 SEPT	173	172	198	P -	—	TBW
DP-12A	F	P-29/P-30	35Ø	Ø2	JM	161	17Ø	17Ø	P -	21 SEPT	TBW	22 SEPT	18Ø	175	196	P -	—	TBW
DP-11B-1	F	P-31/P-32	346	Ø2	JM	167	155	166	P -	21 SEPT	TBW	22 SEPT	17Ø	17Ø	2Ø1	P -	—	TBW
DP-17A	E	P-29/PR-1Ø7	1Ø6	Ø6	JM	158	—	175	P -	21 SEPT	TBW	22 SEPT	156	—	2Ø4	P -	—	TBW
DP-18	E	P-30/PR-1Ø7	261	Ø3	MM	156	—	183	P -	21 SEPT	TBW	22 SEPT	172	—	2Ø2	P -	—	TBW
DP-19	F	P-34/P-35	151	Ø1	JM	152	16Ø	173	P -	22 SEPT	TBW	23 SEPT	176	173	194	P -	—	TBW
DP-2Ø	F	P-35/P-36	236	Ø1	JM	162	169	175	P -	22 SEPT	TBW	23 SEPT	174	175	199	P -	—	TBW
DP-21	F	P-36/P-37	313	Ø2	LL	16Ø	164	178	P -	22 SEPT	TBW	23 SEPT	179	175	198	P -	—	TBW
DP-22	F	P-20/P-38	66	Ø1	JM	133	144	17Ø	P -	23 SEPT	TBW	24 SEPT	176	169	19Ø	P -	—	TBW
DP-23	F	P-41/P-42	49	Ø1	JM	146	15Ø	165	P -	23 SEPT	TBW	24 SEPT	17Ø	173	193	P -	—	TBW
DP-24	E	P-34/CII P-84	588	Ø3	MM	12Ø	—	162	P -	23 SEPT	TBW	24 SEPT	165	—	181	P -	—	TBW

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.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: ISTRE Co. TEST REQUIREMENTS: FUSION: SHEAR - 151 ppi PEEL - 115 ppi EXTRUSION: SHEAR - 151 ppi PEEL - 84 ppi

PRIMARY: ■ SECONDARY: ☐ RE-TEST: ☐ OTHER: ☐

DISTRIBUTION: LABORATORY: ■ ARCHIVE: ■ INSTALLER: ■ OTHER:

SAMPLE DATA						FIELD DATA						LABORATORY DATA						
D.S. NO.	(1) TRACK	LOCATION SEAM	LOCATION DIST (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
DP-25	F	P-45/P-46	26	Ø1	JM	15Ø	152	169	P -	23 SEPT	TBW	24 SEPT	177	176	195	P -	—	TBW
DP-26	F	P-48/P-49	81	Ø1	JM	138	147	175	P -	23 SEPT	TBW	24 SEPT	16Ø	165	185	P -	—	TBW
DP-27	F	P-37/P-5Ø	73	Ø1	JM	137	133	17Ø	P -	24 SEPT	TBW	27 SEPT	175	174	194	P -	—	TBW
DP-28	F	P-50/P-51	167	Ø2	LL	143	148	171	P -	24 SEPT	TBW	27 SEPT	169	175	194	P -	—	TBW
DP-29	F	P-52/P-53	233	Ø2	LL	137	144	169	P -	24 SEPT	TBW	27 SEPT	168	173	192	P -	—	TBW
DP-3Ø	F	P-53/P-54	336	Ø1	JM	166	161	185	P -	27 SEPT	TBW	28 SEPT	169	172	194	P -	—	TBW
DP-31	E	P-26/P-52	152	Ø4	JB	113	—	161	P -	27 SEPT	TBW	28 SEPT	166	—	2Ø3	P -	—	TBW
DP-32	F	P-55/P-56	128	Ø1	JM	158	144	188	P -	27 SEPT	TBW	28 SEPT	159	169	194	P -	—	TBW
DP-33	F	P-49/P-62	53	Ø2	JB	164	151	19Ø	P -	27 SEPT	TBW	28 SEPT	175	164	192	P -	—	TBW
DP-34	F	P-43/P-57	228	Ø1	JM	177	178	2Ø2	P -	27 SEPT	TBW	28 SEPT	186	18Ø	198	P -	—	TBW

NOTES: (1) TRACK TYPES: E = EXTRUSION F = FUSION

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APPENDIX O

GEOMEMBRANE REPAIR SUMMARY LOGS

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SECONDARY

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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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-1 (P)	17 Aug	S-1	24	3' SOUTH OF TIE IN	E	3	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-2 (P)		S-1/CII S-24	23	—	E	3	1.5	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-3 (P)		S-1/CII S-24	36	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-4 (P)		S-1/CII S-24 CII S-21	64	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-5 (P)		S-1/CII S-21	78	—	E	3	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-6 (P)		S-1/CII S-21 CII S-27	87	—	E	4	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-7 (P)		S-1/CII S-27	105	—	E	—	—	2	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-8 (P)	18 Aug	S-1/CII S-27	108	—	E	3	1.5	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-9 (P)		S-1/CII S-28	112	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-10 (P)		S-1/CII S-28	116	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-11 (P)		S-1/CII S-28 CII S-33	133	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-12 (P)		S-1/CII S-33	143	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-13 (P)		S-1/CII S-33 CII S-34	156	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-14 (P)		S-1/CII S-34 CII S-38	180	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	TBY
SR-15 (P)		S-1/CII S-38 CII S-39	203	—	E	2	2	—	06	JB	TBY	25 Aug	WA	P -	VTOK	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.: GQ04 09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-16 (P)	18 AUG	S-1/CII S-39	222	—	E	2	1	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-17 (P)	18 AUG	S-1/CII S-39 CII S-40	226	—	E	2	1	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-18 (P)	18 AUG	S-1/CII S-40	234	—	E	2	1	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-19 (P)	18 AUG	S-1/CII S-40	247	—	E	2	1	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-20 (P)	18 AUG	S-1/CII S-45	252	—	E	2	2	—	06	MM	TBY	25 AUG	WA	P	VTOK	TBY
SR-21 (P)	18 AUG	S-1/CII S-45 CII S-47	273	—	E	2	1	—	06	MM	TBY	25 AUG	WA	P	VTOK	TBY
SR-22 (P)	18 AUG	S-1/CII S-47 CII S-50	286-296	—	E	10	2	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-23 (P)	18 AUG	S-1/CII S-50 CII S-53	319	—	E	2	2	—	06	MM	TBY	24 AUG	WA	P	VTOK	TBY
SR-24 (P)	18 AUG	S-1/CII S-53	330	—	E	2	2	—	06	MM	TBY	24 AUG	WA	P	VTOK	TBY
SR-25 (P)	18 AUG	S-1/CII S-53 CII S-55	341	—	E	2	2	—	06	MM	TBY	24 AUG	WA	P	VTOK	TBY
SR-26 (P)	18 AUG	S-1/CII S-55 CII S-57	364	—	E	3	2	—	06	JB	TBY	24 AUG	WA	P	VTOK	TBY
SR-27 (P)	18 AUG	S-1/CII S-57	367	—	E	1	1	—	06	MM	TBY	24 AUG	WA	P	VTOK	TBY
SR-28 (P)	18 AUG	S-1/CII S-24	39	—	E	5	2	—	06	JB	TBY	25 AUG	WA	P	VTOK	TBY
SR-29 (P)	19 AUG	S-2/S-3/S-6	80	—	E	4	3	—	06	JB	TBY	21 AUG	WA	P	VTOK	TBY
SR-30 (P)	20 AUG	S-2/S-4/S-6	61	—	E	3	3	—	06	JB	TBY	21 AUG	WA	P	VTOK	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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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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-31 (C)	20 AUG	S-3/S-7 THRU S-19	0-259	—	E	259	3	—	03 06	MM JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-32 (C)	20 AUG	S-3/S-6	85-101	—	E	16	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-33 (P)	20 AUG	S-7/S-8	61	—	E	4	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-34 (C)	20 AUG	S-6/S-7/S-3	101-108	—	E	7	4	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-35 (P)	20 AUG	S-19	47	—	E	8	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-36 (P)	20 AUG	S-10/S-11/SR-31	140'	—	E	4	2	—	03	MM	TBY	21 AUG	WA	P -	VTOK	TBY
SR-37 (P)	20 AUG	S-19/SR-31	138	—	E	6	2	—	03	MM	TBY	21 AUG	WA	P -	VTOK	TBY
SR-38 (P)	20 AUG	S-19/SR-31	141	—	E	3	1	—	03	MM	TBY	21 AUG	WA	P -	VTOK	TBY
SR-39 (P)	20 AUG	S-10/SR-31	138	—	E	3	1	—	03	MM	TBY	21 AUG	WA	P -	VTOK	TBY
SR-40 (P)	20 AUG	S-7	64	12' EAST OF S7/S8	E	2	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-41 (DS-4)	20 AUG	S-2/S-3	12	—	E	5	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-42 (P)	20 AUG	S-4/S-5/S-6	31	—	E	3	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-43 (P)	20 AUG	S-5/S-6/S-7	28	—	E	2	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-44 (DS-3)	20 AUG	S-4/S-5	29	—	E	5	2	—	06	JB	TBY	21 AUG	WA	P -	VTOK	TBY
SR-45 (DS-2)	20 AUG	S-14/S-15	30	—	E	6	2	—	06	JB	TBY	20 AUG	WA	P -	VTOK	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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FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-46(P)	2ØAUG	S-16/S-17/S-19	279	—	E	2	2	—	Ø3	MM	TBU	2ØAUG	WA	P	VTOK	TBU
SR-47(P)	2ØAUG	S-17/S-18/S-19	3Ø3	—	E	2	2	—	Ø6	JB	TBU	2ØAUG	WA	P	VTOK	TBU
SR-48(DS-5)	21 AUG	S-19/SR-31	2Ø3	—	E	6	2	—	Ø6	JB	TBU	21 AUG	WA	P	VTOK	TBU
SR-49(P)	21 AUG	S-13	59	5' WEST OF S-13/S-13	E	1	1	—	Ø6	JB	TBU	21 AUG	WA	P	VTOK	TBU
SR-50(DS-6)	21 AUG	S-1/S-21	237	—	E	10	2	—	Ø3	MM	TBU	25 AUG	WA	P	VTOK	TBU
SR-51(DS-7)	21 AUG	S-22/S-23	94	—	E	6	2	—	Ø3	MM	TBU	25 AUG	WA	P	VTOK	TBU
SR-52(P)	21 AUG	S-23/S-24	80	—	E	1	1	—	Ø3	MM	TBU	25 AUG	WA	P	VTOK	TBU
SR-53(P)	21 AUG	S-23/S-24	0-5	—	E	5	2	—	Ø3	MM	TBU	25 AUG	WA	P	VTOK	TBU
SR-54(P)	21 AUG	S-23/S-24	317	—	E	6	2	—	Ø3	MM	TBU	25 AUG	WA	P	VTOK	TBU
SR-55(P)	21 AUG	S-18/S-26/S-19/S-28	326	—	E	3	3	—	Ø6	JB	TBU	23 AUG	WA	P	VTOK	TBU
SR-56(P)	21 AUG	S-25/S-26/S-28	35Ø	—	E	2	1	—	Ø6	JB	TBU	23 AUG	WA	P	VTOK	TBU
SR-57(P)	21 AUG	S-26/S-27/S-28	373	—	E	2	1	—	Ø6	JB	TBU	23 AUG	WA	P	VTOK	TBU
SR-58(P)	21 AUG	S-19/S-28/S-2Ø	326	—	E	8	2	—	Ø6	JB	TBU	23 AUG	WA	P	VTOK	TBU
SR-59(P)	21 AUG	S-2Ø/S-28	355	—	E	1	—	—	Ø6	JB	TBU	23 AUG	WA	P	VTOK	TBU
SR-60(P)	21 AUG	S-25/S-26	7	—	E	2	2	—	Ø3	MM	TBU	23 AUG	WA	P	VTOK	TBU

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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
SR-61 (P)	23 AUG	SR-28 (TBY 23AUG99)	330	12' SOUTH OF S-20/S-28	E	—	—	1	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-62 (P)	23 AUG	SR-28	331	12' SOUTH OF S-20/S-28	E	—	—	1	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-63 (DS 11)	23 AUG	S-19/S-20	287	—	E	6	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-64 (P)	23 AUG	S-19	226	6' NORTH OF S-14/S-19	E	4	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-65 (P)	23 AUG	S-19	171	6' SOUTH OF S-19/S-20	E	—	—	1	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-66 (DS 10)	23 AUG	S-20/S-29	170	—	E	6	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-67 (DS 9)	23 AUG	S-29/S-30	65	—	E	6	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-68 (C)	23 AUG	S-20/S-29	150-168	—	E	18	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-69 (C)	23 AUG	S-20/S-29	172-251	—	E	79	2	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-70 (P)	23 AUG	S-31/S-32	300	—	E	3	3	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-71 (P)	23 AUG	S-32/S-33	320	—	E	3	3	—	06	JB	TBY	23 AUG	WA	P -	VTOK	TBY
SR-72 (DS 13)	25 AUG	S-31/S-32	139	—	E	6	2	—	06	JB	TBY	25 AUG	WA	P -	VTOK	TBY
SR-73 (DS 14)	25 AUG	S-32/S-33	240	—	E	6	2	—	06	JB	TBY	25 AUG	WA	P -	VTOK	TBY
SR-74 (DS 12)	25 AUG	S-30/S-31	319	—	E	5	2	—	06	JB	TBY	25 AUG	WA	P -	VTOK	TBY
SR-75 (DS 15)	25 AUG	S-33/S-34	304	—	E	6	2	—	06	JB	TBY	25 AUG	WA	P -	VTOK	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

2740

000424

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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
√ SR-76(P)	25 AUG	S-32	307	3' NORTH S-31/S-32	E	—	—	1	Ø6	JB	TBY	25 AUG	WA	P -	VTOK	TBY
√ SR-77(P)	25 AUG	S-32	310	3' NORTH S-31/S-32	E	—	—	1	Ø6	JB	TBY	25 AUG	WA	P -	VTOK	TBY
√ SR-78 (DS 16)	28 AUG	S-27/S-35	58	—	E	7	2	—	Ø6	JB	TBY	Ø1 SEPT	WA	P -	▲VTOK	TBY
√ SR-79(C)	28 AUG	S-27/S-35	Ø-27	—	E	27	3	—	Ø6	JB	TBY	Ø1 SEPT	WA	P -	VTOK	TBY
* SR-80(P)	28 AUG	S-37/S-38	14	—	E	2	1	—	Ø6	JB	TBY	— CUT OUT —				
* SR-81(P)	28 AUG	S-36/S-37	50	—	E	1	1	—	Ø6	JB	TBY	— CUT OUT —				
* SR-82 (DS 17)	28 AUG	S-40/S-41	68	—	E	5	2	—	Ø6	JB	TBY	— CUT OUT —				
* SR-83(P)	28 AUG	S-40/S-41	55	—	E	2	1	—	Ø6	JB	TBY	— CUT OUT —				
√ SR-84(C)	28 AUG	S-22/S-23	350-373	—	E	23	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P -	VTOK	TBY
√ SR-85(P)	31 AUG	S-22/S-23	373-377	—	E	4	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P -	VTOK	TBY
√ SR-86 (DS 17A1)	31 AUG	S-22/S-23 S-45/S-46	359	—	E	8	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P -	VTOK	TBY
√ SR-87(P)	31 AUG	S-21/S-22/ S-44/S-45	378	—	E	—	—	2	Ø6	JB	TBY	Ø2 SEPT	WA	P -	VTOK	TBY
√ SR-88(P)	31 AUG	S-43/CII S-104	733	—	E	1	1	—	Ø3	MM	TBY	Ø7 SEPT	WA	P -	VTOK	
√ SR-89(P)	31 AUG	S-1/S-21/ S-43/S-44	23	—	E	—	—	3	Ø6	JB	TBY	Ø2 SEPT	WA	P -	VTOK	TBY
√ SR-90(P)	31 AUG	S-43/CII S-104 CII S-109	677	—	E	3	2	—	Ø3	MM	TBY	Ø7 SEPT	WA	P -	VTOK	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

* THESE REPAIRS WERE CUT OUT TO REPAIR SEAMS DUE TO FAILING FIELD DESTRUCTIVE TESTS.

REVIEWED BY: [signature]

▲-HAD A LEAK INITIALLY BUT WAS REPAIRED BY A GRIND AND WELD

2740

SHEET NO. 6 OF 15

©GEOSYNTEC CONSULTANTS FILE NO. 3-09-RSL

000425

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-91(P)	31 AUG	S-43	358	12' SOUTH OF N. TIE IN	E	—	—	1	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-92(P)	31 AUG	S-43	351	12' SOUTH OF N. TIE IN	E	—	—	1	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-93(P)	31 AUG	S-1/CII S-57	367-375	—	E	8	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-94(P)	31 AUG	S-1/S-43/CII S-57	378	—	E	2	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-95(P)	31 AUG	S-43/CII S-57 CII S-59	388	—	E	2	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-96(P)	31 AUG	S-43/CII S-59	401	—	E	6	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-97(P)	31 AUG	S-43/CII S-59	409	—	E	2	1	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-98(P)	31 AUG	S-43/CII S-59 CII S-64	411	—	E	2	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-99(P)	31 AUG	S-43/CII S-64 CII S-65	434	—	E	2	1	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-1ØØ(P)	31 AUG	S-43/CII S-65	441	—	E	1	1	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-1Ø1(P)	31 AUG	S-43/CII S-112	558	—	E	2	1	—	Ø3	MM	TBY	Ø7 SEPT	WA	P	VTOK	TBY
SR-1Ø2(P)	31 AUG	S-43/CII S-112	552	—	E	2	2	—	Ø3	MM	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-1Ø3(P)	31 AUG	S-43/CII S-65	449	—	E	3	1	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-104(P)	31 AUG	S-43/CII S-65	453	—	E	2	2	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	TBY
SR-105(P)	31 AUG	S-43/CII S-65 CII S-67	458	—	E	3	3	—	Ø6	JB	TBY	Ø2 SEPT	WA	P	VTOK	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

000426

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04/09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
SR-106(P)	31 AUG	S-43/CII S-112	546	—	E	2	1	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-107(P)	31 AUG	S-43/CII S-113	520	—	E	2	1	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-108(P)	31 AUG	S-43/CII S-113	513	—	E	2	1	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-109(P)	31 AUG	S-43/CII S-113 CII S-69	504	—	E	3	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-110(P)	31 AUG	S-43/CII S-69 CII S-67	481	—	E	2	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-111(P)	31 AUG	S-43/CII S-67	471	—	E	2	1	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-112(DS 19)	31 AUG	S-43/S-44	232	—	E	6	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-113(DS 18)	31 AUG	S-45/S-46	98	—	E	6	2	—	03	MM	TBY	07 SEPT	WA	P -	VTOK	TBY
SR-114(P)	31 AUG	S-45/S-46	31	—	E	3	1	—	03	MM	TBY	07 SEPT	WA	P -	VTOK	TBY
SR-115(P)	31 AUG	S-44	31	10' NORTH OF S-44/S-45	E	—	—	1	03	MM	TBY	07 SEPT	WA	P -	VTOK	TBY
SR-116(P)	31 AUG	S-44	32	8' SOUTH OF S-43/S-44	E	—	—	1	03	MM	TBY	07 SEPT	WA	P -	VTOK	TBY
SR-117(P)	31 AUG	S-43/S-44	50	—	E	7	2	—	03	MM	TBY	07 SEPT	WA	P -	VTOK	TBY
SR-118(DS 14A)	31 AUG	S-36/S-37	5	—	E	6	2	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-119(P)	31 AUG	S-37/S-38	23	—	E	4	2	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-120(P)	31 AUG	S-43/S-44	89	—	E	2	1	—	03	MM	TBY	07 SEPT	WA	P -	VTOK	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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SHEET NO. 8 OF 15

2740

000427

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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
√ SR-121(P)	31 AUG	S-36	10	10' EAST OF S-36/S-37	E	—	—	1	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-122(C)	01 SEPT	S-38/S-39	0-89	—	E	89	3	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-123(P)	01 SEPT	S-37/S-58/S-38	279	—	E	—	—	2	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-124(P)	01 SEPT	S-36/S-37/S-58	299	—	E	3	2	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-125(P)	01 SEPT	S-35/S-36/S-58	321	—	E	—	—	2	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-126(C)	01 SEPT	S-39/S-40	47-63	—	E	16	3	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-127(P)	01 SEPT	S-39/S-40	18	—	E	3	1	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-128(P)	01 SEPT	S-39	57	6' EAST OF S-39/S-40	E	—	—	2	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-129(DS 20)	01 SEPT	S-40/S-41	43	—	E	6	2	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-130(P)	01 SEPT	S-51/S-58/S-52	58	—	E	—	—	3	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-131(P)	01 SEPT	S-50/S-58/S-51	81	—	E	—	—	3	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-132(P)	01 SEPT	S-49/S-58/S-50	104	—	E	—	—	3	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-133(P)	01 SEPT	S-48/S-49/S-58	128	—	E	—	—	3	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-134(P)	01 SEPT	S-47/S-48/S-58	151	—	E	—	—	3	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
√ SR-135(P)	01 SEPT	S-39/S-40/S-58	238	—	E	—	—	2	03	MM	TBY	01 SEPT	WA	P -	VTOK	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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2740

000428

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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
SR-136(P)	01 SEPT	S-40/S-41/S-58	217	—	E	2	1	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-137(DS 24)	01 SEPT	S-41/S-58	208	—	E	6	2	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-138(P)	01 SEPT	S-41/S-42/S-58	196	—	E	—	—	3	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-139(P)	01 SEPT	S-42/S-47/S-58	174	—	E	—	—	2	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-140(C)	01 SEPT	S-41/S-42	46-62	—	E	16	3	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-141(P)	01 SEPT	S-50	58	10' WEST OF S-41/S-50	E	—	—	2	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-142(DS 22)	01 SEPT	S-42/S-47	67	—	E	6	2	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-143(P)	01 SEPT	S-41/S-42	27	—	E	—	—	2	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-144(P)	01 SEPT	S-42	59	10' EAST OF S-42/S-47	E	1	1	—	03	MM	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-145(P)	01 SEPT	S-52/S-53/S-57	15	—	E	5	3	—	04	JB	TBY	01 SEPT	WA	P -	VTOK	TBY
SR-146(P)	01 SEPT	S-57/S-58	3-10	—	E	7	3	—	04	JB	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-147(DS 25)	01 SEPT	S-58/S-59	318	—	E	6	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-148(DS 26)	01 SEPT	S-59/S-60	204	—	E	6	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-149(DS 27)	01 SEPT	S-60/S-61	79	—	E	6	2	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	TBY
SR-150(P)	01 SEPT	S-52/S-57/S-58	37-45	—	E	8	4	—	03	MM	TBY	02 SEPT	WA	P -	VTOK	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

2740

000429

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04-09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
SR-151 (P)	01 SEPT	S-53/S-54/S-57	30	—	E	3	2	—	03	MM	TBY	02 SEPT	WA	P	VTOK	TBY
SR-152 (P)	01 SEPT	S-53/S-54/S-55	56	—	E	3	2	—	03	MM	TBY	02 SEPT	WA	P	VTOK	TBY
SR-153 (DS 23)	01 SEPT	S-51/S-52	27	—	E	6	2	—	03	MM	TBY	02 SEPT	WA	P	VTOK	TBY
SR-154 (DS 21)	01 SEPT	S-43/ CII S-65	437	—	E	5	2	—	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-155 (P)	01 SEPT	S-64	356	10' SOUTH OF S-64/S-65	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-156 (P)	01 SEPT	S-64	350	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-157 (P)	01 SEPT	S-64	343	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-158 (P)	01 SEPT	S-64	336	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-159 (P)	01 SEPT	S-64	329	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-160 (P)	01 SEPT	S-64	322	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-161 (P)	01 SEPT	S-64	316	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-162 (P)	01 SEPT	S-64	310	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-163 (P)	01 SEPT	S-64	303	"	E	—	—	1	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-164 (G)	01 SEPT	S-64	296	"	E	0.5	—	—	04	JB	TBY	02 SEPT	WA	P	VTOK	TBY
SR-165 (G)	01 SEPT	S-64	289	"	E	0.5	—	—	04	JB	TBY	02 SEPT	WA	P	VTOK	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

000430

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 - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
√ SR-166(P)	01 Sept	S-52/S-53/S-55	73	—	E	1	1	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-167(P)	01 Sept	S-52/S-55	76	—	E	3	2	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-168(DS 29)	02 Sept	S-64/S-65	202	—	E	5	2	—	04	JB	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-169(P)	02 Sept	S-27/S-35/S-58	344	—	E	7	4	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-170(P)	02 Sept	S-27/S-58	353	—	E	5	2	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-171(P)	02 Sept	S-27/S-28/S-58	353	—	E	2	1	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-172(P)	02 Sept	S-28/S-58/S-59	355	—	E	2	1	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-173(P)	02 Sept	S-20/S-28/S-59	387	—	E	2	1	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-174(P)	02 Sept	S-65/S-66	124	—	E	—	—	1	04	JB	TBY	07 Sept	WA	P -	VTOK	TBY
√ SR-175(DS 28)	02 Sept	S-62/S-63	309	—	E	6	2	—	04	JB	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-176(P)	02 Sept	S-65/S-66	306	—	E	11	2	—	04	JB	TBY	07 Sept	WA	P -	VTOK	TBY
√ SR-177(P)	02 Sept	S-59/S-60/S-20/S-29	242	—	E	3	2	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-178(P)	02 Sept	S-60/S-61/S-29	219	—	E	2	2	—	03	MM	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-179(P)	02 Sept	S-23/S-46	83-92	—	E	9	2	—	04	JB	TBY	02 Sept	WA	P -	VTOK	TBY
√ SR-180(P)	02 Sept	S-23/S-24/S-46/S-66	93	—	E	5	2	—	04	JB	TBY	02 Sept	WA	P -	VTOK	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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000431

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04-09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
SR-181 (P)	02 SEPT	S-24/S-66	93-103	—	E	10	4	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-182 (P)	02 SEPT	S-34/S-65/S-24	117	—	E	3	2	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-183 (P)	02 SEPT	S-34/S-64/S-65	127	—	E	4	3	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-184 (P)	02 SEPT	S-29/S-30/S-61	218	—	E	4	2	—	03	MM	TBW	02 SEPT	WA	P	VTOK	TBW
SR-185 (P)	02 SEPT	S-33/S-34/S-64	139	—	E	4	3	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-186 (P)	02 SEPT	S-61/S-62/S-30 S-31	195	—	E	4	2	—	03	MM	TBW	02 SEPT	WA	P	VTOK	TBW
SR-187 (P)	02 SEPT	S-32/S-33/ S-63/S-64	149	—	E	4	4	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-188 (P)	02 SEPT	S-31/S-32 S-62/S-63	170	—	E	10	5	—	04	JB	TBW	02 SEPT	WA	P	VTOK	TBW
SR-189 (P)	02 SEPT	S-62/S-63 S-67/S-68	100	—	E	5	2	—	04	JB	TBW	07 SEPT	WA	P	VTOK	TBW
SR-190 (P)	02 SEPT	S-61/S-62/S-67	100	—	E	8	2	—	03	MM	TBW	07 SEPT	WA	P	VTOK	TBW
* SR-191 (P)	02 SEPT	S-64/S-69/S-71	100	—	E	3	2	—	04	JB	TBW	07 SEPT	WA	P	VTOK	TBW
* SR-192 (P)	02 SEPT	S-64/S-65/S-69	100	—	E	—	—	2	04	JB	TBW	—	CUT	OUT	—	TBW
* SR-193 (P)	02 SEPT	S-65/S-69/S-70	100	—	E	3	2	—	03	MM	TBW	—	CUT	OUT	—	TBW
* SR-194 (P)	02 SEPT	S-63/S-64/S-68/S-71	100	—	E	7	4	—	04	JB	TBW	07 SEPT	WA	P	VTOK	TBW
* SR-195 (P)	02 SEPT	S-65/S-66/S-70	100	—	E	4	3	—	03	MM	TBW	07 SEPT	WA	P	VTOK	TBW

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

* THESE REPAIRS WERE CUT OUT.

0004432

GEOSYNTEC CONSULTANTS FILE NO. 3-09-RSL REVIEWED BY: A

SHEET NO. 13 OF 15

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
SR-196 (P)	Ø2 SEPT	S-46/S-66/S-70	106	—	E	12	4	—	Ø4 Ø3	JB MM	TBD	Ø7 SEPT	WA	P	VTOK	TBD
* SR-197 (P)	Ø2 SEPT	S-69/S-71	58	—	E	9	4	—	Ø3	MM	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-198 (P)	Ø2 SEPT	S-46/S-66	173	—	E	3	1	—	Ø3	MM	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-199 (P)	Ø2 SEPT	S-46/S-66	261	—	E	4	3	—	Ø3	MM	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2ØØ (DS 30)	Ø7 SEPT	S-32/S-63	158	—	E	6	2	—	Ø4	JB	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2Ø1 (DS 32)	Ø7 SEPT	S-68/S-71	67	—	E	6	2	—	Ø4	JB	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2Ø2 (DS 31)	Ø7 SEPT	S-46/S-66	142	—	E	6	2	—	Ø4	JB	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2Ø3 (C)	Ø7 SEPT	S-46/S-66	143-164	—	E	21	3	—	Ø4	JB	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2Ø4 (C)	Ø7 SEPT	S-46/S-66	140-126	—	E	14	3	—	Ø4	JB	TBD	Ø7 SEPT	WA	P	VTOK	TBD
SR-2Ø5 (C)	Ø7 SEPT	S-46/S-7Ø	Ø-24	—	E	24	3	—	Ø4	JB	TBD	14 SEPT	WA	P	VTOK	TBD
SR-2Ø6 (P)	1Ø SEPT	S-52/S-55/S-72	79	—	E	5	3	—	Ø4	JB	TBD	13 SEPT	WA	P	VTOK	TBD
SR-2Ø7 (P)	11 SEPT	S-63/S-64/S-68 S-71/S-74	98-106	—	E	12	8	—	Ø4	JB	TBD	14 SEPT	WA	P	VTOK	TBD
SR-2Ø8 (C)	11 SEPT	S-71/S-74	Ø-98	—	E	98	3	—	Ø4 Ø3	JB MM	TBD	CAPPED BY SR-214				TBD
SR-2Ø9 (P)	11 SEPT	S-65/S-73/S-74	106	—	E	2	2	—	Ø3	MM	TBD	14 SEPT	WA	P	VTOK	TBD
SR-21Ø (P)	11 SEPT	S-65/S-66/S-73	106	—	E	2	1	—	Ø3	MM	TBD	14 SEPT	WA	P	VTOK	TBD

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

* THIS REPAIR WAS CUT OUT.

00433 0 7 2

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
SR-211 (P)	11 SEPT	S-46/S-66/S-70/S-73	106	—	E	12	2	—	Ø3	MM	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-212 (P)	11 SEPT	S-73	101	10' SOUTH S-73/S-70	E	4	2	—	Ø3	MM	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-213 (P)	11 SEPT	S-64/S-65/S-74	106	—	E	2	1	—	Ø3	MM	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-214 (C)	14 SEPT	S-71/S-74 OVER SR-208	Ø-98	—	E	98	5	—	Ø4	JB	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-215 (DS 33)	14 SEPT	S-74/SR-214	76	—	E	6	2	—	Ø4	JB	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-216 (P)	14 SEPT	S-73	93	MIDDLE OF PANEL	E	6	6	—	Ø4	JB	TBD	14 SEPT	WA	P -	VTOK	TBD
SR-217 (G)	14 SEPT	S-46	56	"	E	4	—	—	Ø4	JB	TBD	14 SEPT	WA	P -	VTOK	TBD
(15)																

T-2740

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

0004434

F-2740

PRIMARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0404 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
PR-1(P)	09 SEPT	P-2/P-3	26	—	E	3	2	—	04	JB	TBU	10 SEPT	WA	P	VTOK	TBU
PR-2(P)	09 SEPT	P-2/P-3	80	—	E	5	2	—	04	JB	TBU	10 SEPT	WA	P	VTOK	TBU
PR-3(P)	09 SEPT	P-4/P-5	61	—	E	6	2	—	04	JB	TBU	10 SEPT	WA	P	VTOK	TBU
PR-4 (DP 1)	10 SEPT	P-2/P-3	52	—	E	6	2	—	03	MM	TBU	13 SEPT	WA	P	VTOK	TBU
PR-5 (P)	10 SEPT	P-1/P-6/P-7	33	—	E	3	2	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-6(P)	10 SEPT	P-1/P-2/P-6	30	—	E	—	—	1	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-7(P)	10 SEPT	P-1/P-7/P-8	63	—	E	2	2	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-8(P)	10 SEPT	P-1/P-2/P-9	108	—	E	2	2	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-9(P)	10 SEPT	P-1/P-8/P-9	89	—	E	3	3	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-10 (DP 2)	10 SEPT	P-10/P-11	65	—	E	5	3	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-11 (G)	10 SEPT	P-6	51	MIDDLE OF PANEL	E	0.5	—	—	03	MM	TBU	13 SEPT	WA	P	VTOK	TBU
PR-12 (G)	10 SEPT	P-6	44	" "	E	0.5	—	—	03	MM	TBU	13 SEPT	WA	P	VTOK	TBU
PR-13 (G)	10 SEPT	P-6	37	" "	E	0.5	—	—	03	MM	TBU	13 SEPT	WA	P	VTOK	TBU
PR-14 (DP 2B)	10 SEPT	P-10/P-11	40-63	—	E	23	2	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU
PR-15 (DP 2A)	10 SEPT	P-10/P-11	67-84	—	E	17	2	—	03	MM	TBU	10 SEPT	WA	P	VTOK	TBU

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

000436

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04/09 TASK NO.: 04.1

DESCRIPTION: PHASE II - Cell #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
PR-16 (DP 3)	10 Sept	P-14/P-15	27	—	E	6	2	—	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-17 (P)	10 Sept	P-15/P-16	28	—	E	6	2	—	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-18 (P)	10 Sept	P-15/P-16	42	—	E	—	—	1	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-19 (C)	10 Sept	P-14/P-15	29-45	—	E	16	2	—	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-20 (C)	10 Sept	P-14/P-15	5-24	—	E	19	2	—	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-21 (P)	11 Sept	P-16	51	MIDDLE OF PANEL	E	1	1	—	04	JB	TBY	13 Sept	WA	P	VTOK	TBY
PR-22 (C)	15 Sept	P-2/P-3	0-99	—	E	99	3	—	03	EM/JB MM	TBY	CAPPED BY PR-97				TBY
PR-23 (P)	15 Sept	P-3/PR-22	79	—	E	3	1	—	03	MM	TBY	CAPPED BY PR-97				TBY
PR-24 (DP 6)	15 Sept	P-21/P-22	117	—	E	6	2	—	03	MM	TBY	17 Sept	WA	P	VTOK	TBY
PR-25 (DP 7)	15 Sept	P-22/P-23	180	—	E	6	2	—	03	MM	TBY	17 Sept	WA	P	VTOK	TBY
PR-26 (P)	15 Sept	P-25/P-26	67	—	E	4	2	—	03	MM	TBY	20 Sept	WA	P	VTOK	TBY
PR-27 (P)	15 Sept	P-23/P-24	59	—	E	5	2	—	03	MM	TBY	20 Sept	WA	P	VTOK	TBY
PR-28 (DP 9)	15 Sept	P-25/P-26	222	—	E	6	2	—	03	MM	TBY	20 Sept	WA	P	VTOK	TBY
PR-29 (G)	15 Sept	P-2	51	MIDDLE OF PANEL	E	0.5	—	—	04	JB	TBY	17 Sept	WA	P	VTOK	TBY
PR-30 (G)	15 Sept	P-3	53	" "	E	0.5	—	—	04	JB	TBY	17 Sept	WA	P	VTOK	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

000437

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
PR-31 (C)	15 SEPT	P-4/P-5	Ø-7	—	E	7	2	—	Ø4	JB	TBU	2Ø SEPT	WA	P	VTOK	TBU
PR-32 (DP 8)	15 SEPT	P-24/P-25	257	—	E	6	2	—	Ø3	MM	TBU	2Ø SEPT	WA	P	VTOK	TBU
PR-33 (DP 10)	15 SEPT	P-26/P-27	281	—	E	6	2	—	Ø3	MM	TBU	17 SEPT	WA	P	VTOK	TBU
PR-34 (P)	15 SEPT	P-3/P-4/P-21	96	—	E	2	2	—	Ø4	JB	TBU	17 SEPT	WA	P	VTOK	TBU
PR-35 (P)	15 SEPT	P-4/P-5/P-21	119	—	E	2	2	—	Ø4	JB	TBU	17 SEPT	WA	P	VTOK	TBU
PR-36 (P)	15 SEPT	P-5/P-10/P-21	143	—	E	2	2	—	Ø4	JB	TBU	17 SEPT	WA	P	VTOK	TBU
PR-37 (C)	15 SEPT	P-10/P-11	84-100	—	E	16	2	—	Ø4	JB	TBU	17 SEPT	WA	P	VTOK	TBU
PR-38 (P)	15 SEPT	P-12/P-13/P-21	212	—	E	2	2	—	Ø3	MM	TBU	17 SEPT	WA	P	VTOK	TBU
PR-39 (C)	15 SEPT	P-13/P-14/P-15 P-21	220-265	—	E	45	2	—	Ø3	MM	TBU	17 SEPT	WA	P	VTOK	TBU
PR-40 (C)	15 SEPT	P-11/P-12	Ø-1Ø1	—	E	1Ø1	3	—	Ø3 Ø4	MM JB	TBU	17 SEPT	WA	P	VTOK	TBU
PR-41 (DP 13)	16 SEPT	P-30/P-31	300	—	E	6	2	—	Ø3	MM	TBU	2Ø SEPT	WA	P	VTOK	TBU
PR-42 (DP 12)	16 SEPT	P-29/P-3Ø	200	—	E	6	2	—	Ø3	MM	TBU	2Ø SEPT	WA	P	VTOK	TBU
PR-43 (DP 11)	16 SEPT	P-27/P-29	125	—	E	6	2	—	Ø3	MM	TBU	CAPPED BY PR-72			—	TBU
PR-44 (C)	16 SEPT	P-31/P-32	364-377	—	E	13	2	—	Ø3	MM	TBU	CAPPED BY PR-11Ø			—	TBU
PR-45 (P)	16 SEPT	P-32/P-33	316	—	E	2	2	—	Ø3	MM	TBU	2Ø SEPT	WA	P	VTOK	TBU

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

0004438

2740

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ040 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTREE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
		PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
PR-46(P)	16 SEPT	P-33/CII P-35	31	—	E	5	2	—	06	JB	TBU	22 SEPT	WA	P -	VTOK	TBU
PR-47(P)	16 SEPT	P-33/CII P-35	55	—	E	9	3	—	06	JB	TBU	22 SEPT	WA	P -	VTOK	TBU
PR-48(P)	16 SEPT	P-27/P-29	297	—	E	4	2	—	03	MM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-49(P)	16 SEPT	P-27/P-29	252	—	E	4	2	—	03	MM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-50(P)	16 SEPT	P-32/P-33	98	—	E	5	2	—	06	JB	TBU	20 SEPT	WA	P -	VTOK	TBU
PR-51(P)	16 SEPT	P-33/CII P-35	83	—	E	8	3	—	06	JB	TBU	22 SEPT	WA	P -	VTOK	TBU
PR-52(G)	16 SEPT	P-29	212	1' SOUTH OF P-29/P-30	E	0.5	—	—	03	MM	TBU	20 SEPT	WA	P -	VTOK	TBU
PR-53(P)	16 SEPT	P-33/CII P-35	109	—	E	3	1	—	06	JB	TBU	22 SEPT	WA	P -	VTOK	TBU
PR-54(P)	16 SEPT	P-33/CII P-35	141	—	E	3	2	—	06	JB	TBU	22 SEPT	WA	P -	VTOK	TBU
PR-55(C)	17 SEPT	P-10/P-11	0-40	—	E	40	3	—	03	MM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-56(P)	17 SEPT	P-15/P-16/P-21	282	—	E	2	2	—	06	JM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-57(P)	17 SEPT	P-16/P-17/P-21	305	—	E	2	2	—	06	JM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-58(P)	17 SEPT	P-17/P-18/P-21	328	—	E	2	2	—	06	JM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-59(P)	17 SEPT	P-18/P-19/P-21	352	—	E	2	2	—	06	JM	TBU	17 SEPT	WA	P -	VTOK	TBU
PR-60(P)	17 SEPT	P-11	51	MIDDLE OF PANEL	E	—	—	1	03	MM	TBU	17 SEPT	WA	P -	VTOK	TBU

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

2740

000439

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60Ø4Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
✓ PR-61(P)	17 SEPT	P-19/P-20/P-21	375	—	E	2	2	—	Ø6	JM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-62(P)	17 SEPT	P-33/CII PR-298 CII PR-297	347	—	E	2	2	—	Ø4	JB	TBW	22 SEPT	WA	P -	VTOK	TBW
✓ PR-63(P)	17 SEPT	P-33/CII PR-297 CII PR-296	353	—	E	2	2	—	Ø4	JB	TBW	22 SEPT	WA	P -	VTOK	TBW
✓ PR-64(G)	17 SEPT	P-33	362	MIDDLE OF PANEL	E	0.5	—	—	Ø4	JB	TBW	25 SEPT	WA	P -	VTOK	TBW
✓ PR-65(G)	17 SEPT	P-33	355	MIDDLE OF PANEL	E	0.5	—	—	Ø4	JB	TBW	25 SEPT	WA	P -	VTOK	TBW
✓ PR-66(DP 4)	17 SEPT	P-19/P-20	68	—	E	6	2	—	Ø6	JM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-67(P)	17 SEPT	P-4	53	MIDDLE OF PANEL	E	—	—	1	Ø3	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-68(G)	17 SEPT	P-3	82	" "	E	3	—	—	Ø3	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-69(P)	17 SEPT	P-17	8	" "	E	2	2	—	Ø6	JM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-70(P)	17 SEPT	P-26/P-27	51	—	E	2	2	—	Ø3	MM	TBW	2Ø SEPT	WA	P -	VTOK	TBW
✓ PR-71(C)	17 SEPT	P-26/P-27	Ø-50	—	E	50	3	—	Ø3	MM	TBW	2Ø SEPT	WA	P -	VTOK	TBW
✓ PR-72(C)	17 SEPT	P-27/P-29	94-229	—	E	135	3	—	Ø4	JB	TBW	17 SEPT	WA	P -	VTOK	TBW
									Ø6	JM						
✓ PR-73(G)	17 SEPT	P-22	342	5' SOUTH P-22/P-23	E	1	—	—	Ø6	JM	TBW	17 SEPT	WA	P -	VTOK	TBW
✓ PR-74(P)	17 SEPT	P-25/P-26	222	ON TOP OF PR-28	E	—	—	1	Ø6	JM	TBW	2Ø SEPT	WA	P -	VTOK	TBW
✓ PR-75(P)	17 SEPT	P-27	62	DIAGONAL ACROSS PANEL	E	24	4	—	Ø3	MM	TBW	17 SEPT	WA	P -	VTOK	TBW

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

000440

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04-09 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

	REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
			PANEL OR SEAM 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
√	PR-76(P)	17 SEPT	P-27/P-29	69	—	E	4	1	—	03	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-77(C)	17 SEPT	P-27/P-29	0-89	—	E	39	4	—	03	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-78(P)	17 SEPT	P-29/P-30	113	—	E	5	2	—	04	JB	TBW	CAPPED BY PR-107				TBW
√	PR-79(P)	17 SEPT	P-29/P-30	87	—	E	6	2	—	04	JB	TBW	CAPPED BY PR-107				TBW
√	PR-80(P)	17 SEPT	P-27	95	SE DIAGONAL TO MID-PANEL	E	9	1	—	06	JM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-81(P)	17 SEPT	P-26/P-27	100	—	E	2	1	—	04	JB	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-82(G)	17 SEPT	P-27	53	3' SOUTH P-29/P-29	E	1	—	—	03	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-83(G)	17 SEPT	P-27	58	3' SOUTH P-29/P-29	E	1	—	—	03	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-84(G)	17 SEPT	P-27	80	1' SOUTH P-29/P-29	E	1	—	—	03	MM	TBW	17 SEPT	WA	P -	VTOK	TBW
√	PR-85(G)	17 SEPT	P-30	65	1' NORTH P-30/P-29	E	1	—	—	04	JB	TBW	20 SEPT	WA	P -	VTOK	TBW
√	PR-86(P)	17 SEPT	P-31/P-32	16	—	E	5	3	—	04	JB	TBW	20 SEPT	WA	P -	VTOK	TBW
√	PR-87(P)	17 SEPT	P-20	53	12' WEST OF P-19/P-20	E	—	—	1	06	JM	TBW	20 SEPT	WA	P -	VTOK	TBW
√	PR-88(P)	17 SEPT	P-20	53	16' WEST P-19/P-20	E	—	—	1	06	JM	TBW	20 SEPT	WA	P -	VTOK	TBW
√	PR-89(P)	17 SEPT	P-22	369	5' NORTH P-21/P-22	E	1	1	—	06	JM	TBW	20 SEPT	WA	P -	VTOK	TBW
√	PR-90(P)	17 SEPT	P-33/CII PR-298	263	—	E	6	2	—	04	JB	TBW	22 SEPT	WA	P -	VTOK	TBW

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

000441

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: YEAR:

PRIMARY: ☐ SECONDARY: ☐ OTHER: ☐ CONTRACTOR:

	REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
			PANEL OR SEAM 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
✓	PR-91(P)	17 SEPT	P-26	25-62	DIAGONAL FROM P-26 TOE TO MID.	E	38	2	—	Ø3	MM	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-92(P)	17 SEPT	P-24	366	MID PANEL	E	2	2	—	Ø6	JM	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-93(P)	17 SEPT	P-24	372	MID PANEL	E	2	2	—	Ø6	JM	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-94(P)	17 SEPT	P-25/PR-32	257	—	E	—	—	1	Ø6	JM	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-95(P)	17 SEPT	P-10/PR-55	26	—	E	6	2	—	Ø6	JM	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-96(G)	17 SEPT	P-27	18	—	E	1	—	—	Ø3	MM	TBG	17 SEPT	WA	P	VTOK	TBG
✓	PR-97(C)	17 SEPT	P-2/P-3/	Ø-1ØØ	—	E	1ØØ	7	—	Ø3 Ø6 Ø4	MM JM JB	TBG	21 SEPT	WA	P	VTOK	TBG
✓	PR-98(G)	17 SEPT	P-21	48	4' SOUTH P-21/P-22	E	1.Ø	—	—	Ø4	JB	TBG	17 SEPT	WA	P	VTOK	TBG
✓	PR-99(G)	17 SEPT	P-22	113	8' NORTH P-21/P-22	E	1	—	—	Ø4	JB	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-100(P)	2Ø SEPT	P-2/PR-97	5Ø	—	E	6	2	—	Ø4	JB	TBG	21 SEPT	WA	P	VTOK	TBG
✓	PR-101(P)	2Ø SEPT	P-29/P-3Ø	186	—	E	6	2	—	Ø4	JB	TBG	CAPPED BY PR-107			—	TBG
✓	PR-102(P)	2Ø SEPT	P-29/P-30	168	—	E	2	2	—	Ø4	JB	TBG	CAPPED BY PR-107			—	TBG
✓	PR-103(G)	2Ø SEPT	P-22	36Ø	—	E	1	—	—	Ø4	JB	TBG	2Ø SEPT	WA	P	VTOK	TBG
✓	PR-104(C)	21 SEPT	P-2/PR-97	50-90	—	E	4Ø	3	—	Ø4	JB	TBG	21 SEPT	WA	P	VTOK	TBG
✓	PR-105(C)	21 SEPT	P-2/PR-97	47-35	—	E	12	3	—	Ø4	JB	TBG	21 SEPT	WA	P	VTOK	TBG

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

000042

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G0404 9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

	REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
			PANEL OR SEAM 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
✓	PR-106 (C)	21 SEPT	P-3/PR-97	49-34	—	E	15	3	—	Ø4	JB	TBW	21 SEPT	WA	P	VTOK	TBW
✓	PR-107 (C)	21 SEPT	P-29/P-30	Ø-355	—	E	355	5	—	Ø3 Ø4	MM JB	TBW	22 SEPT	WA	P	VTOK	TBW
✓	PR-108 (C)	21 SEPT	P-29/PR-107	103-113	—	E	10	3	—	Ø4	JB	TBW	22 SEPT	WA	P	VTOK	TBW
✓	PR-109 (PP-18)	22 SEPT	P-30/PR-107	261	—	E	5	2	—	Ø4	JB	TBW	22 SEPT	WA	P	VTOK	TBW
✓	PR-110 (C)	22 SEPT	P-31/P-32	342-371	—	E	29	4	—	Ø4 Ø3	JB MM	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-111 (P)	22 SEPT	P-33/CII P-35 CII PR-298	242	—	E	5	3	—	Ø3	MM	TBW	22 SEPT	WA	P	VTOK	TBW
✓	PR-112 (P)	22 SEPT	P-33/CII-P-35	202	—	E	2	2	—	Ø3	MM	TBW	22 SEPT	WA	P	VTOK	TBW
✓	PR-113 (P)	22 SEPT	P-32/P-33/P-34	19	—	E	3	3	—	Ø4	JB	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-114 (P)	22 SEPT	P-33/P34/CII PR-296	368	—	E	5	3	—	Ø4	JB	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-115 (P)	22 SEPT	P-34/CII P-84	722	—	E	2	2	—	Ø3	MM	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-116 (P)	22 SEPT	P-34/P-35/P-32	24	—	E	3	3	—	Ø4	JB	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-117 (PP-19)	22 SEPT	P-34/P-35	151	—	E	6	2	—	Ø3	MM	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-118 (PP-20)	22 SEPT	P-35/P-36	236	—	E	6	2	—	Ø3	MM	TBW	25 SEPT	WA	P	VTOK	TBW
✓	PR-119 (P)	23 SEPT	P-31/P-35/P-36	48	—	E	2	2	—	Ø4	JB	TBW	25 SEPT	WA	P	VTOK	TBW
	PR-120 (P)	23 SEPT	P-31/P-36	58	—	E	2	2	—	Ø4	JB	TBW	25 SEPT	WA	P	VTOK	TBW

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

000443

2740

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: YEAR:

PRIMARY: ☐ SECONDARY: ☐ OTHER: ☐ CONTRACTOR:

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
PR-121 (P)	23 SEPT	P-30/P-31/P-36	67	—	E	1	1	—	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-122 (P)	23 SEPT	P-30/P-36/P-37	71	—	E	1	1	—	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-123 (P)	23 SEPT	P-30/P-37	76	—	E	3	1	—	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-124 (DP 21)	23 SEPT	P-36/P-37	313	—	E	6	2	—	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-125 (P)	23 SEPT	P-34/CII P-84	645	—	E	3	1	—	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-126 (DP 22)	23 SEPT	P-20/P-38	66	—	E	6	2	—	Ø4	JB	TBK	27 SEPT	WA	P	VTOK	TBK
PR-127 (P)	23 SEPT	P-34/CII P-84	558	—	E	2	1	—	Ø3	MM	TBK	25 SEPT	WA	P	▲ VTOK	TBK
PR-128 (P)	23 SEPT	P-34/CII P-84	546	—	E	6	2	—	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-129 (P)	23 SEPT	P-38	51	—	E	—	—	2	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-130 (DP 23)	23 SEPT	P-41/P-42	49	—	E	6	2	—	Ø4	JB	TBK	25 SEPT	WA	P	VTOK	TBK
PR-131 (P)	23 SEPT	P-34/CII P-84	529	—	E	2	2	—	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-132 (P)	23 SEPT	P-34/CII P-84	520	—	E	2	2	—	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-133 (P)	23 SEPT	P-34/CII P-84	491	—	E	—	—	1	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-134 (P)	23 SEPT	P-34/CII P-84	483	—	E	—	—	3	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK
PR-135 (P)	23 SEPT	P-34/CII P-84	478	—	E	—	—	3	Ø3	MM	TBK	25 SEPT	WA	P	VTOK	TBK

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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▲ - HAD A LEAK INITIALLY BUT WAS REPAIRED.

000444

GEOSYNTEC CONSULTANTS

FLOOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
✓ PR-136 (P)	23 SEPT	P-34 / CII P-84	472	—	E	2	2	—	Ø3	MM	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-137 (P)	23 SEPT	P-34 / CII P-84	468	—	E	—	—	1	Ø3	MM	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-138 (P)	23 SEPT	P-34 / CII P-84	480	—	E	4	3	—	Ø3	MM	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-139 (P)	23 SEPT	P-34 / CII P-84	453	—	E	2	1	—	Ø3	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-140 (P)	23 SEPT	P-34 / CII P-84	446	—	E	—	—	1	Ø3	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-141 (P)	23 SEPT	P-34 / CII P-84	439	—	E	—	—	1	Ø3	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-142 (P)	23 SEPT	P-34 / CII P-84	434	—	E	—	—	3	Ø3	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-143 (P)	23 SEPT	P-34 / CII P-84 CII PR-296	426	—	E	—	—	3	Ø3	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-144 (DP 24)	23 SEPT	P-34 / CII P-84	588	—	E	6	2	—	Ø3	MM	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-145 (P)	23 SEPT	P-45	53	—	E	3	1	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-146 (DP 25)	23 SEPT	P-45 / P-46	26	—	E	6	2	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-147 (P)	24 SEPT	P-34 / CII P-84	659	—	E	4	2	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-148 (P)	24 SEPT	P-34 / CII P-84	672	—	E	5	2	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-149 (P)	24 SEPT	P-34 / CII P-84	684	—	E	4	2	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK
✓ PR-150 (P)	24 SEPT	P-34 / CII P-84	696	—	E	6	5	—	Ø4	JB	TBK	25 SEPT	WA	P -	VTOK	TBK

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

000445

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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 - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
PR-151 (P)	24 Sept	P-34/CII P-84	711	DIAGONAL TOWN	E	6	2	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-152 (P)	24 Sept	P-34/CII P-84	596	—	E	—	—	1.5	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-153 (P)	24 Sept	P-34/CII P-84	611	—	E	3	1	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-154 (P)	24 Sept	P-34/CII P-84	639	—	E	4	1	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-155 (P)	24 Sept	P-34/CII P-84	65	—	E	—	—	1	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-156 (P)	24 Sept	P-37/P-50	60	—	E	9	4	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-157 (DP 27)	24 Sept	P-50/P-37	73	—	E	6	2	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-158 (G)	24 Sept	P-36	86	MIDDLE OF PANEL	E	1	—	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
PR-159 (P)	24 Sept	P-51/LCS PEN. BOX	72	" "	E	—	—	1	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-160 (P)	24 Sept	P-50	68	4' SOUTH P-37/P-50	E	—	—	1	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-161 (P)	24 Sept	P-52/P-53	56	ACROSS P-52 (WIDTH)	E	24	3	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
PR-162 (G)	24 Sept	P-52	65	MIDDLE	E	0.5	—	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-163 (DP 28)	24 Sept	P-50/P-51	167	—	E	6	2	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-164 (DP 29)	24 Sept	P-52/P-53	233	—	E	6	2	—	04	JB	TBY	25 Sept	WA	P -	VTOK	TBY
PR-165 (P)	25 Sept	P-29/P-30/P-37	90	—	E	9	4	—	04	JB	TBY	25 Sept	WA	P -	VTOK	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

2740

000446

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04Ø9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
		PANEL OR SEAM 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
PR-166(C)	25 SEPT	P-27/P-29/P-50	95-118	—	E	23	3	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-167(P)	25 SEPT	P-27/P-50/P-51	118	—	E	3	1	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-168(P)	25 SEPT	P-27/P-29	369-773	—	E	4	3	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-169(P)	25 SEPT	P-26/P-27/P-51	137	—	E	2	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-17Ø(P)	25 SEPT	P-26/P-51/P-52	142	—	E	2	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-171(P)	25 SEPT	P-25/P-26/P-52	16Ø	—	E	2	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-172(P)	25 SEPT	P-25/P-52/P-53	165	—	E	2	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-173(P)	25 SEPT	P-24/P-25/P-53	183	—	E	—	—	1	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-174(P)	25 SEPT	P-24/P-53/P-54	188	—	E	1	1	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-175(P)	25 SEPT	P-23/P-24/P-54	206	—	E	2	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-176(P)	25 SEPT	P-26/P-52	152	—	E	6	2	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-177(P)	25 SEPT	P-52	370	MIDDLE	E	—	—	1	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-178(P)	25 SEPT	P-52	365	MIDDLE	E	—	—	1	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-179(P)	25 SEPT	P-5Ø	37Ø	MIDDLE	E	—	—	2	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU
PR-18Ø(C)	25 SEPT	CII P-84	457	0.5' NORTH OF P-3/4	C	Ø.5	—	—	Ø4	JB	TBU	25 SEPT	WA	P -	VTOK	TBU

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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000447

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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 - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE Co.

REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION: PANEL OR SEAM NO.	LOCATION: DIST. (ft)	LOCATION: OFFSET (ft)	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
✓ PR-181(G)	25 Sept	P-48	49	10' EAST P-48/P-49	E	0.5	—	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-182(P)	27 Sept	P-51	63'	MIDDLE NW CORNER LCS BOX	E	2	1	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-183(P)	27 Sept	P-23/P-54/P-55	211'	—	E	8	4	—	03	JM	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-184(P)	27 Sept	CII P-84	518	1' NORTH OF TIE IN	E	—	—	1	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-185(P)	27 Sept	P-54/P-55	61	—	E	4	2	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-186(G)	27 Sept	P-55	61	ACROSS PANEL (WRINKLE)	E	23	—	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-187(P)	27 Sept	P-22/P-23	229	—	E	6	3	—	03	JM	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-188(P)	27 Sept	P-22/P-55/P-56	229-252	—	E	23	2	—	03	JM	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-189(DP 30)	27 Sept	P-53/P-54	336	—	E	6	2	—	03	JM	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-190(P)	27 Sept	P-55/P-56	61	—	E	3	3	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-191(DP 32)	27 Sept	P-55/P-56	128	—	E	6	2	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-192(P)	27 Sept	P-49/P-62/P-57	75	—	E	1	1	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-193(P)	27 Sept	P-57/P-58/P-62	64	—	E	4	4	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-194(P)	27 Sept	P-58/P-62/P-63	19	—	E	1	1	—	04	JB	TBY	27 Sept	WA	P -	VTOK	TBY
✓ PR-195(P)	27 Sept	P-58/P-59/P-63	31	—	E	2	1	—	04	JB	TBY	27 Sept	WA	P -	VTOK	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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000448

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: 60Φ4Φ9 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

	REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				
			PANEL OR SEAM 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
✓	PR-196(P)	27SEPT	P-59/P-60/P-63	60	—	E	2	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-197(P)	27SEPT	P-60/P-63	72	—	E	4	4	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-198(P)	27SEPT	P-60/P-61/P-63	88	—	E	2	1	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-199(P)	27SEPT	P-61/P-62/P-63	105	—	E	2	1	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2ΦΦ(P)	27SEPT	P-49/P-62	53	—	E	6	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ1(P)	27SEPT	P-21/P-22/P-56	252	—	E	8	2	—	Φ3	JM	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ2(P)	27SEPT	P-48/P-49/P-57	98	—	E	2	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ3(P)	27SEPT	P-47/P-48/P-57	121	—	E	—	—	1	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ4(P)	27SEPT	P-46/P-47/P-57	144	—	E	2	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ5(P)	27SEPT	P-45/P-46/P-57	167	—	E	1	1	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ6(P)	27SEPT	P-44/P-45/P-57	19Φ	—	E	1	1	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ7(P)	27SEPT	P-21/P-56/P-57	257	—	E	2	1	—	Φ3	JM	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ8(P)	27SEPT	P-43/P-57	228	—	E	6	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-2Φ9(P)	27SEPT	P-43/P-44/P-57	214	—	E	2	2	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD
✓	PR-21Φ(P)	27SEPT	P-42/P-43/P-57	237	—	E	1	1	—	Φ4	JB	TBD	27SEPT	WA	P	VTOK	TBD

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

000449

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

REPAIR SUMMARY LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ04009 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ CONTRACTOR: ISTRE CO.

	REPAIR NO. AND CODE (1)	DATE (day/mo)	LOCATION			REPAIR TYPE (2)	SIZE			WELDER ID		QA ID	NON-DESTRUCTIVE TESTING				QA ID
			PANEL OR SEAM NO.	DIST. (ft)	OFFSET (ft)		LENGTH (ft)	WIDTH (ft)	DIA (ft)	MACH NO.	OPER ID		DATE (day/mo)	OPER ID	PASS/ FAIL	ACTION	
✓	PR-211(P)	27 SEPT	P-41/P-42/P-57	260	—	E	1	1	—	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-212(P)	27 SEPT	P-20/P-21/P-57	275	—	E	4	2	—	03	JM	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-213(P)	27 SEPT	P-57	275	5' NORTH OF P-41	E	—	—	2	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-214(P)	27 SEPT	P-40/P-41/P-57	288	—	E	1	1	—	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-215(P)	27 SEPT	P-39/P-40/P-57	306	—	E	1	1	—	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-216(P)	27 SEPT	P-38/P-39/P-57	330	—	E	1	1	—	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-217(P)	27 SEPT	P-20/P-38/P-57	353	—	E	1	1	—	04	JB	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-218(P)	27 SEPT	P-20/P-57	373	—	E	3	2	—	03	JM	TBU	27 SEPT	WA	P -	VTOK	TBU
✓	PR-219(P)	28 SEPT	P-58/P-59	4	—	E	—	—	2	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU
✓	PR-220(P)	28 SEPT	P-59	13	1' NORTH OF PS9/P10	E	2	1	—	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU
✓	PR-221(P)	28 SEPT	P-57/P-58	4	—	E	—	—	2	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU
✓	PR-222(P)	28 SEPT	P-52	48'	5' SOUTH OF PS1/PS2	E	—	—	3	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU
✓	PR-223(P)	28 SEPT	P-33/CII P-35	70'	NORTH TO SOUTH	E	19	3	—	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU
	PR-224(DP-26) (15)	28 SEPT *	P-48/P-49	81	—	E	6	2	—	04	JB	TBU	28 SEPT	WA	P -	VTOK	TBU

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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* UPON REVIEW OF THE PRIMARY GEOSYNTHETICS DOCUMENTATION, IT WAS FOUND THAT DP-26 DID NOT HAVE A DOCUMENTED REPAIR. ON 12 OCTOBER 1999, THE STONE AND GEOTEXTILE WERE REMOVED TO

2740

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APPENDIX P

GEOMEMBRANE SEAM AND PANEL REPAIR LOCATION LOGS

-- 2740

SECONDARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

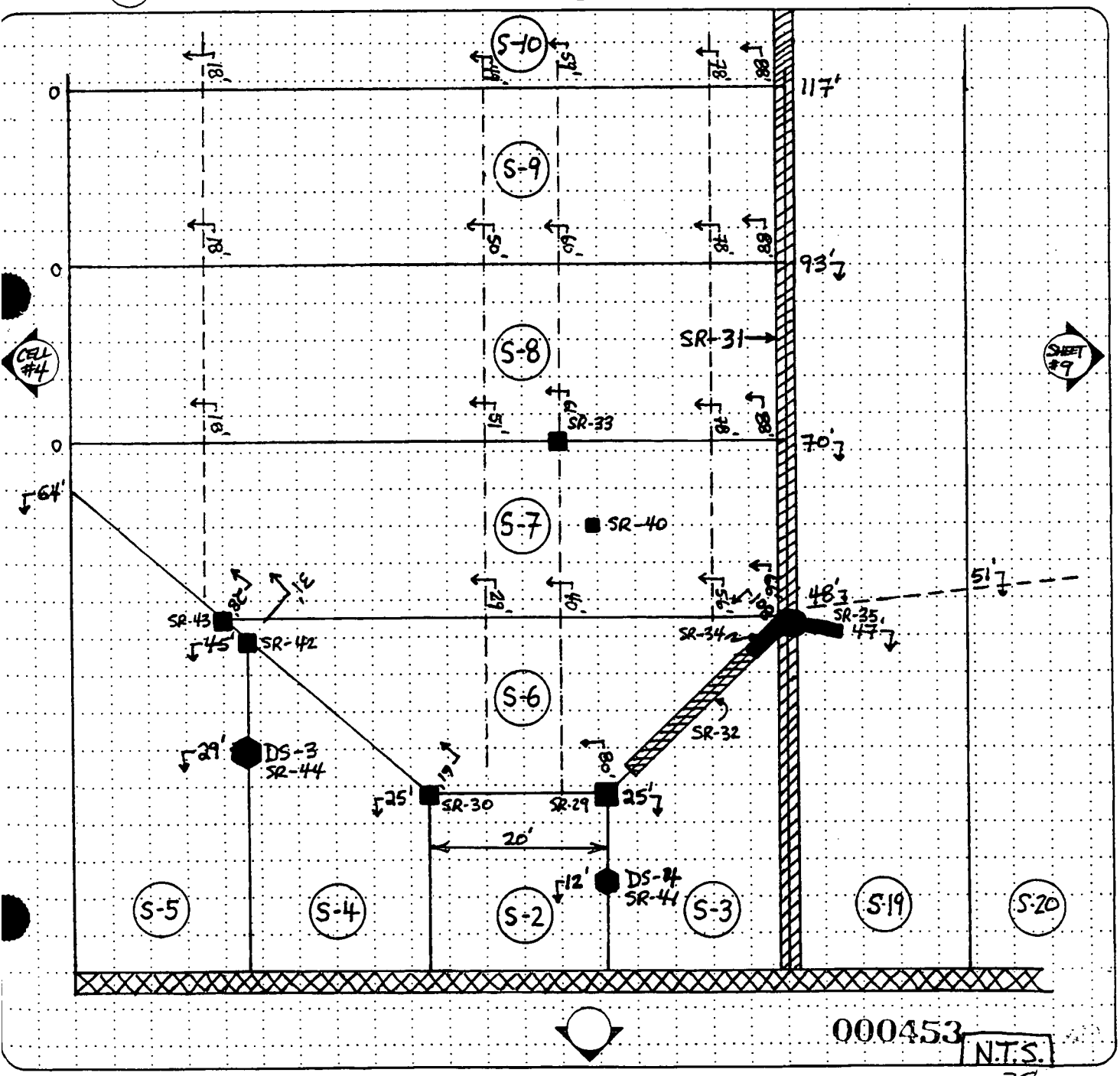
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #2

QA ID: TB



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N.T.S.

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GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

9 of 40

SEAM AND PANEL REPAIR LOCATION LOG

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE Co.

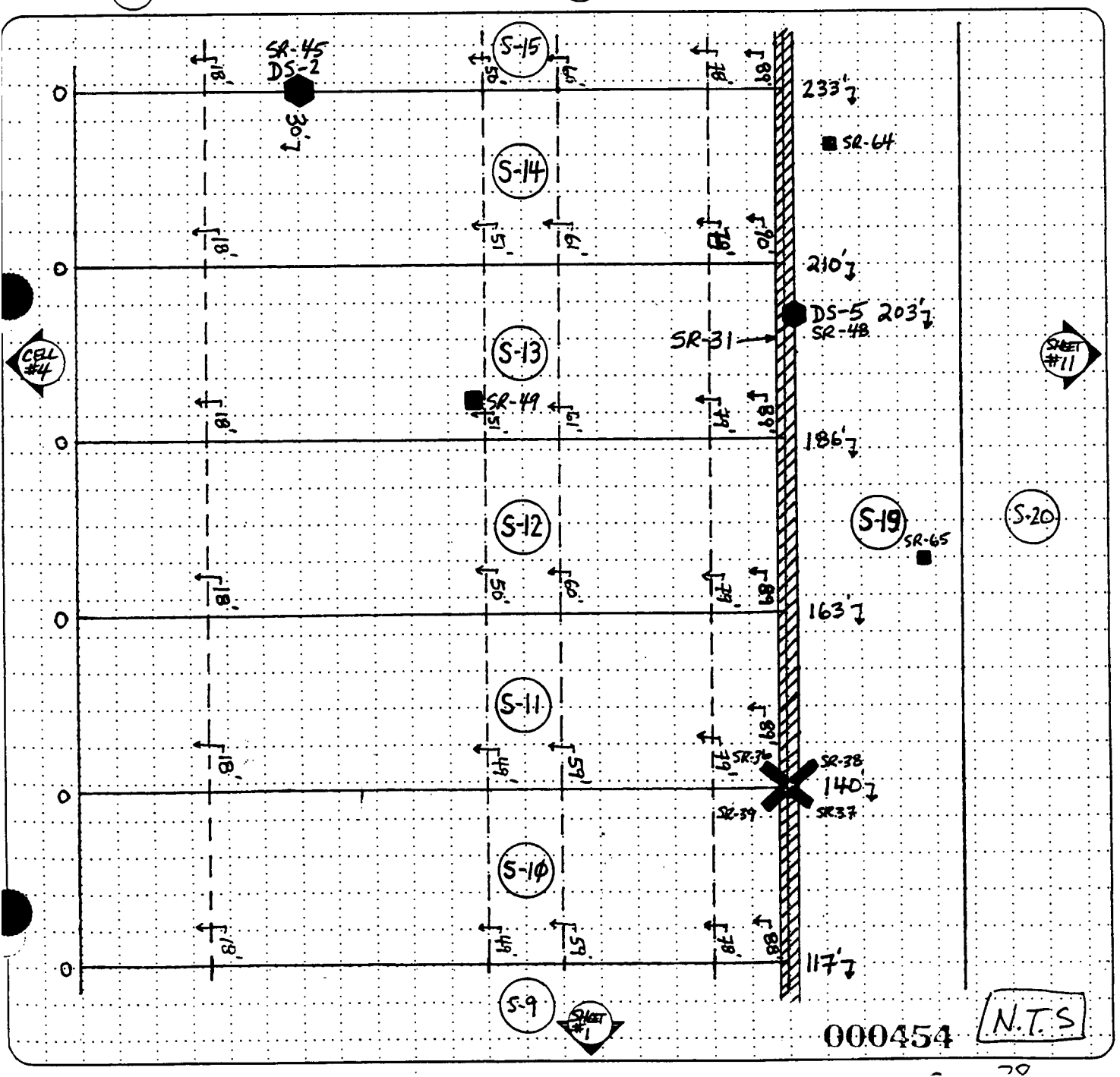
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #3

QA ID: TB



000454

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

2740

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 - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO

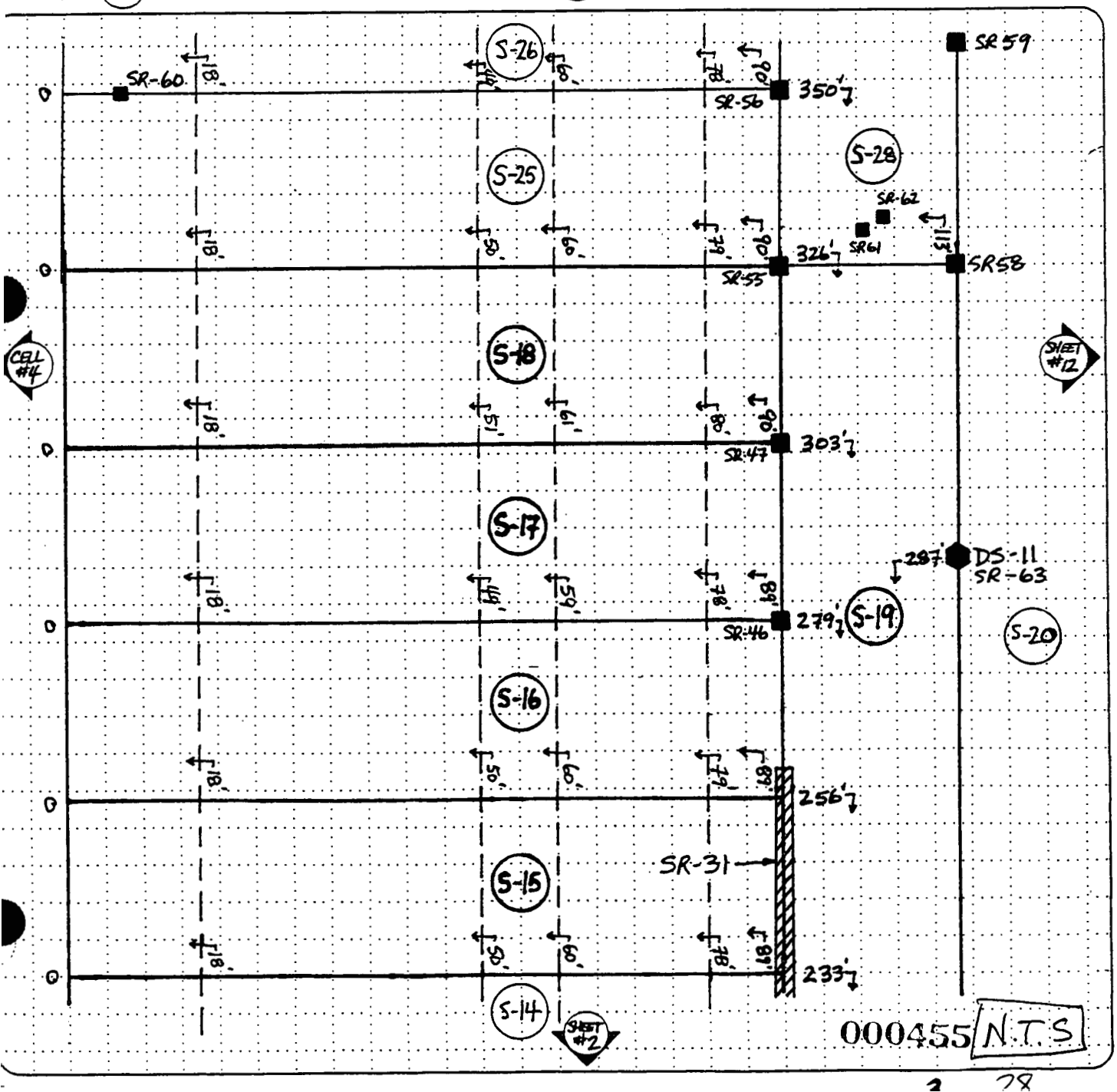
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #8

QA ID: 789



000455 N.T.S

3 28

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

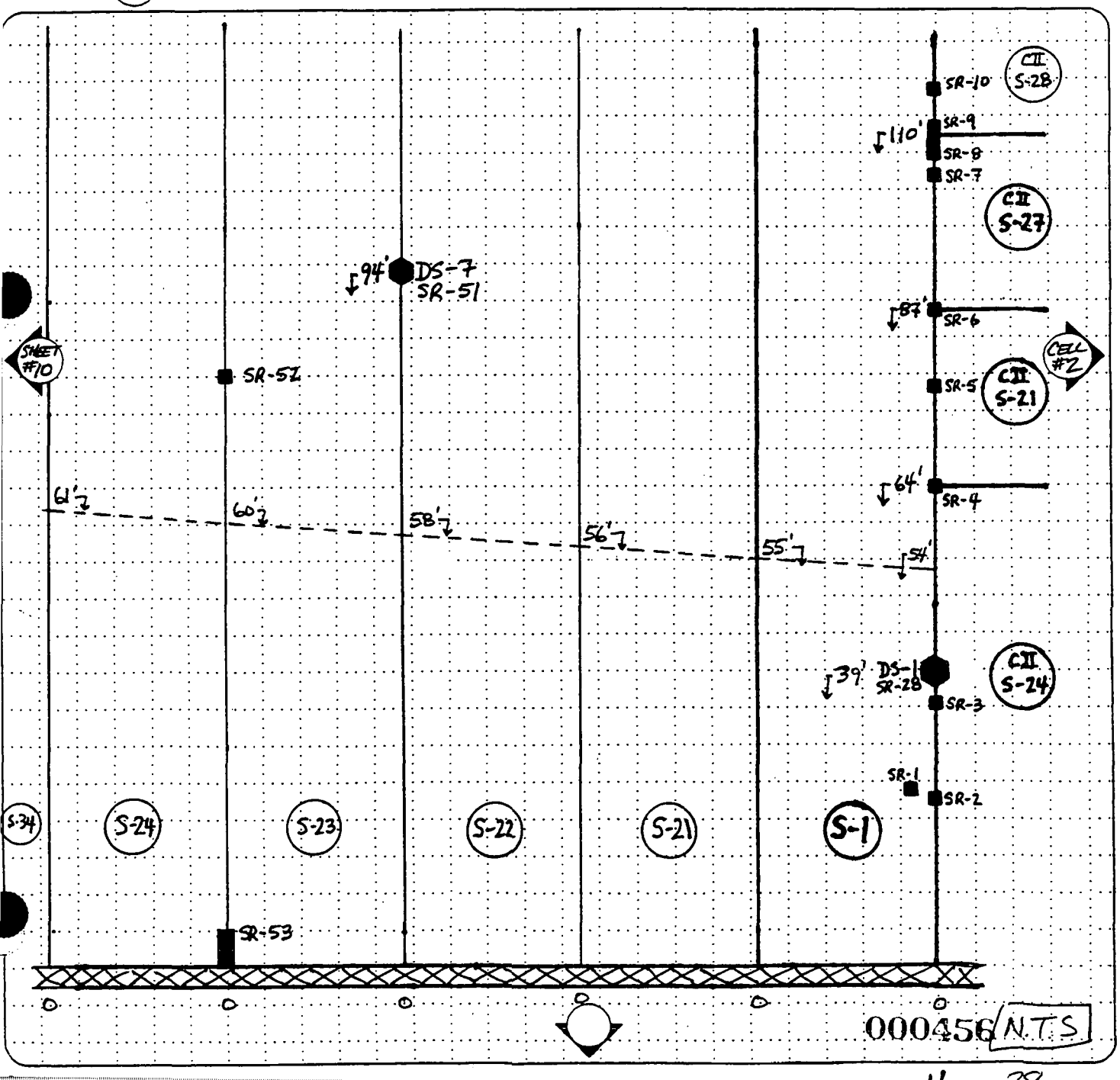
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #5

QA ID: TB



000456

N.T.S

GeoSyntec Consultants

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) 2740

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE Co.

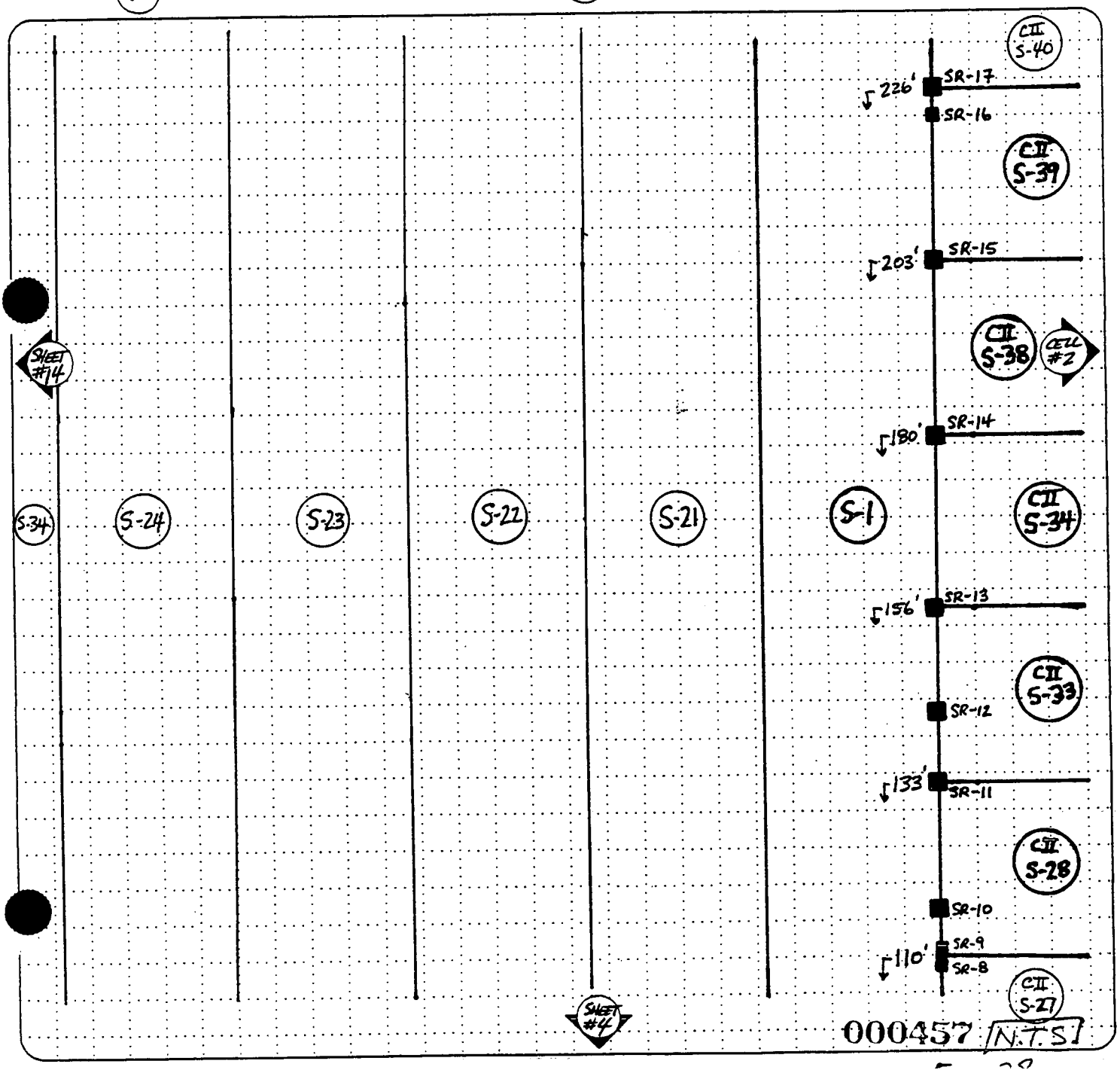
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #6

QA ID: TBY



000457 N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

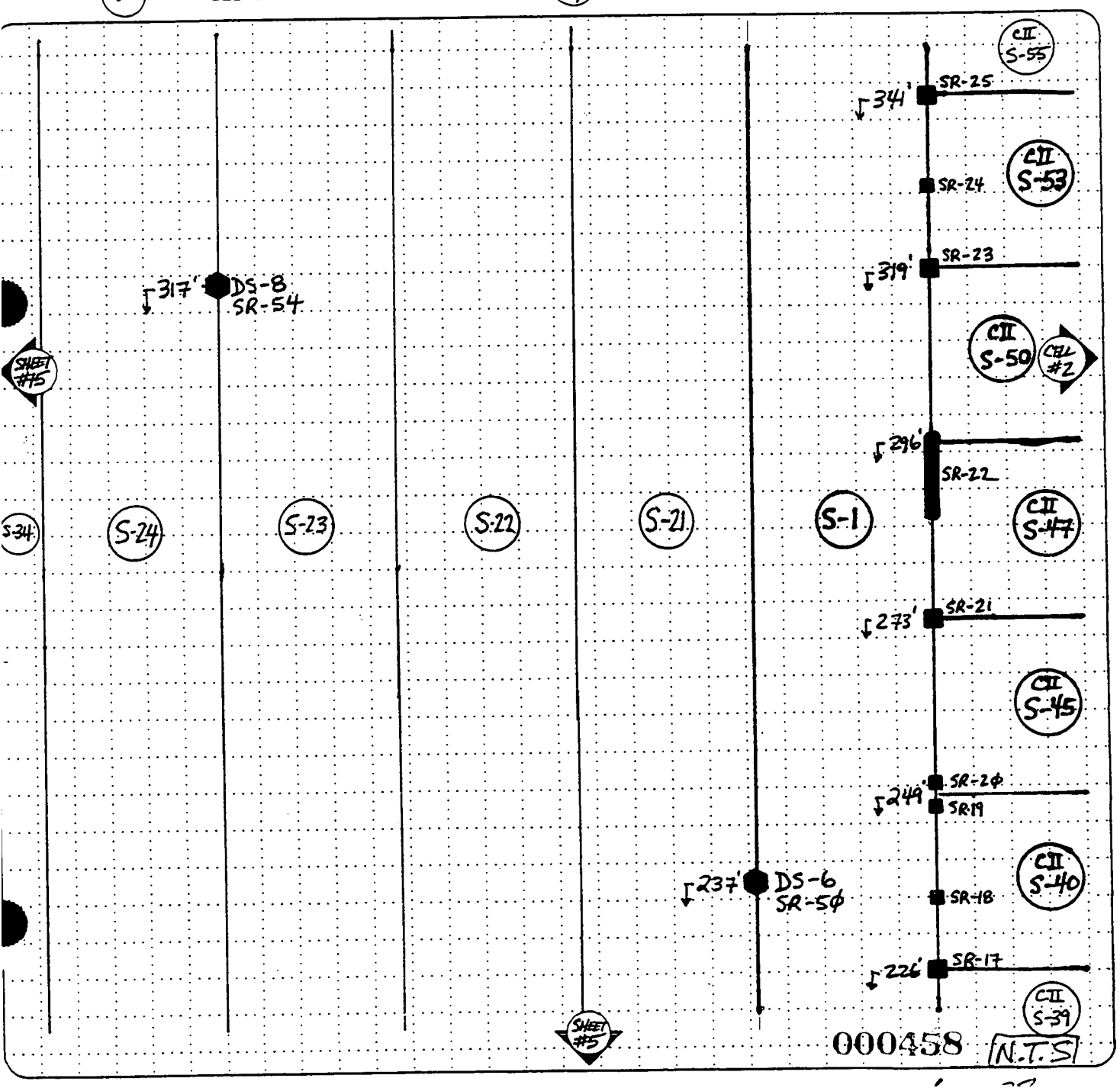
CONTRACTOR: ISTRE Co.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE: SEE OTHER SIDE FOR SYMBOLS

QA ID: TBK



000458

N.T.S

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

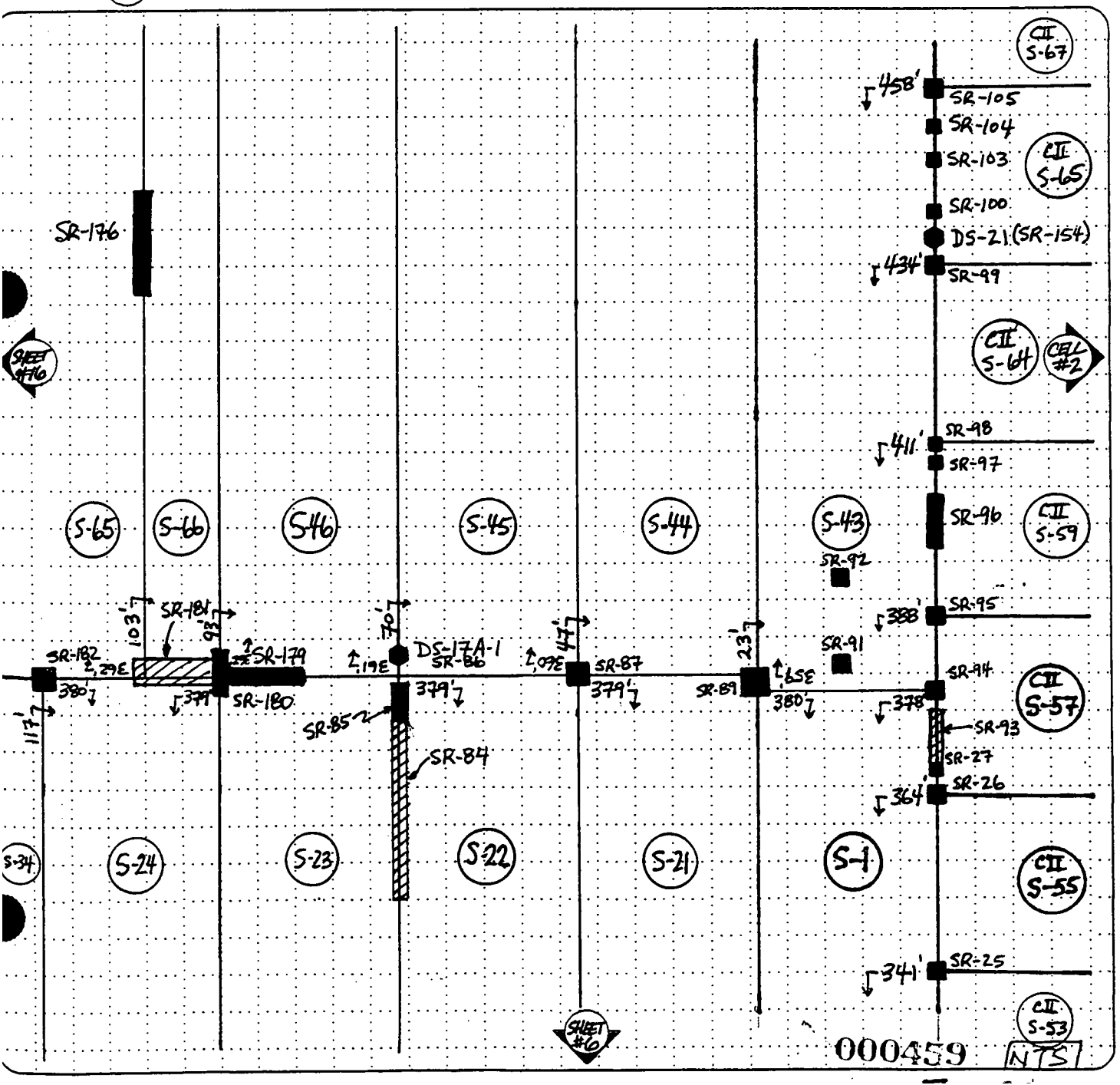
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #17

QA ID: TBD



000459

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: _____

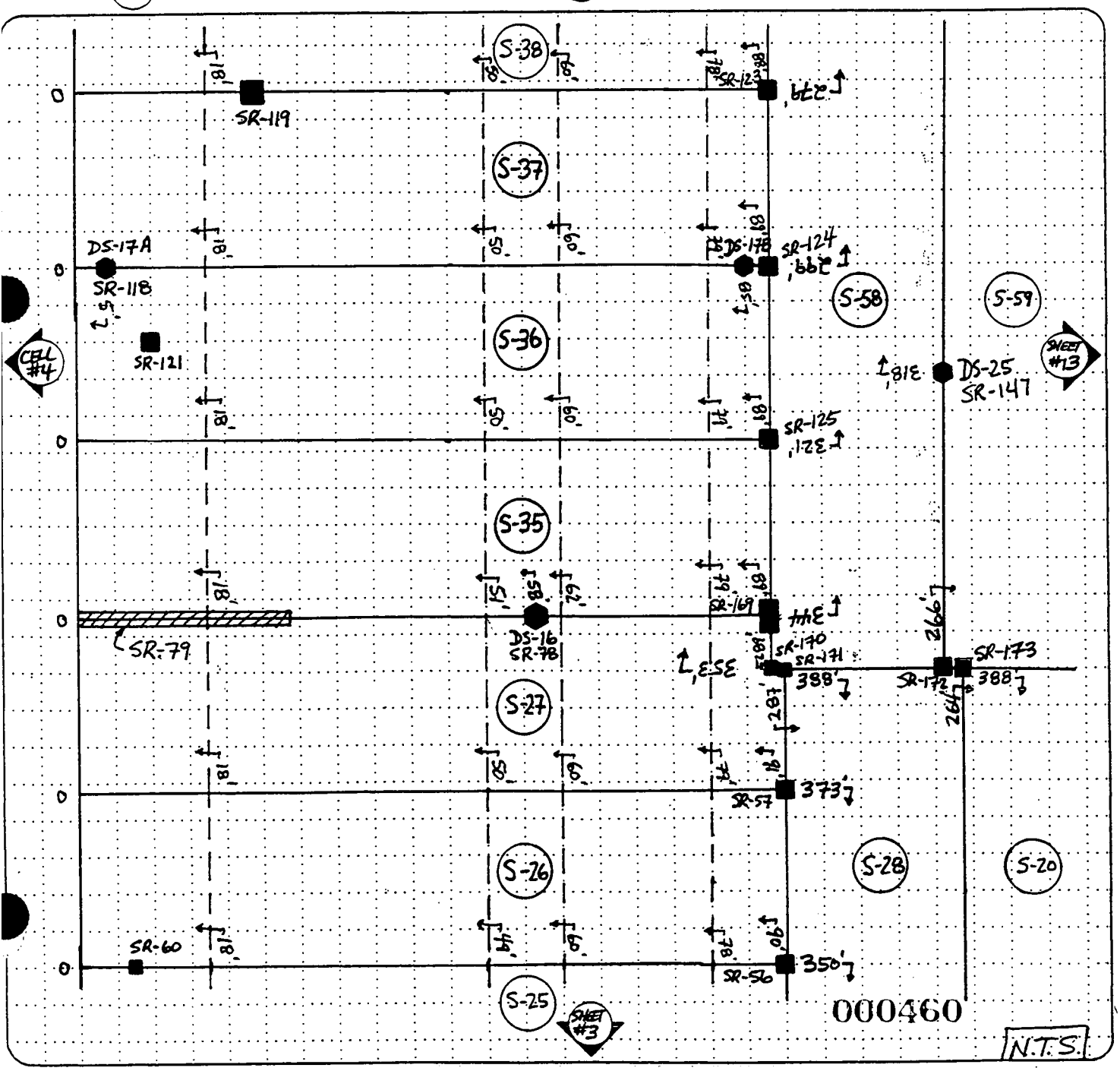
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #26

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

E-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: _____

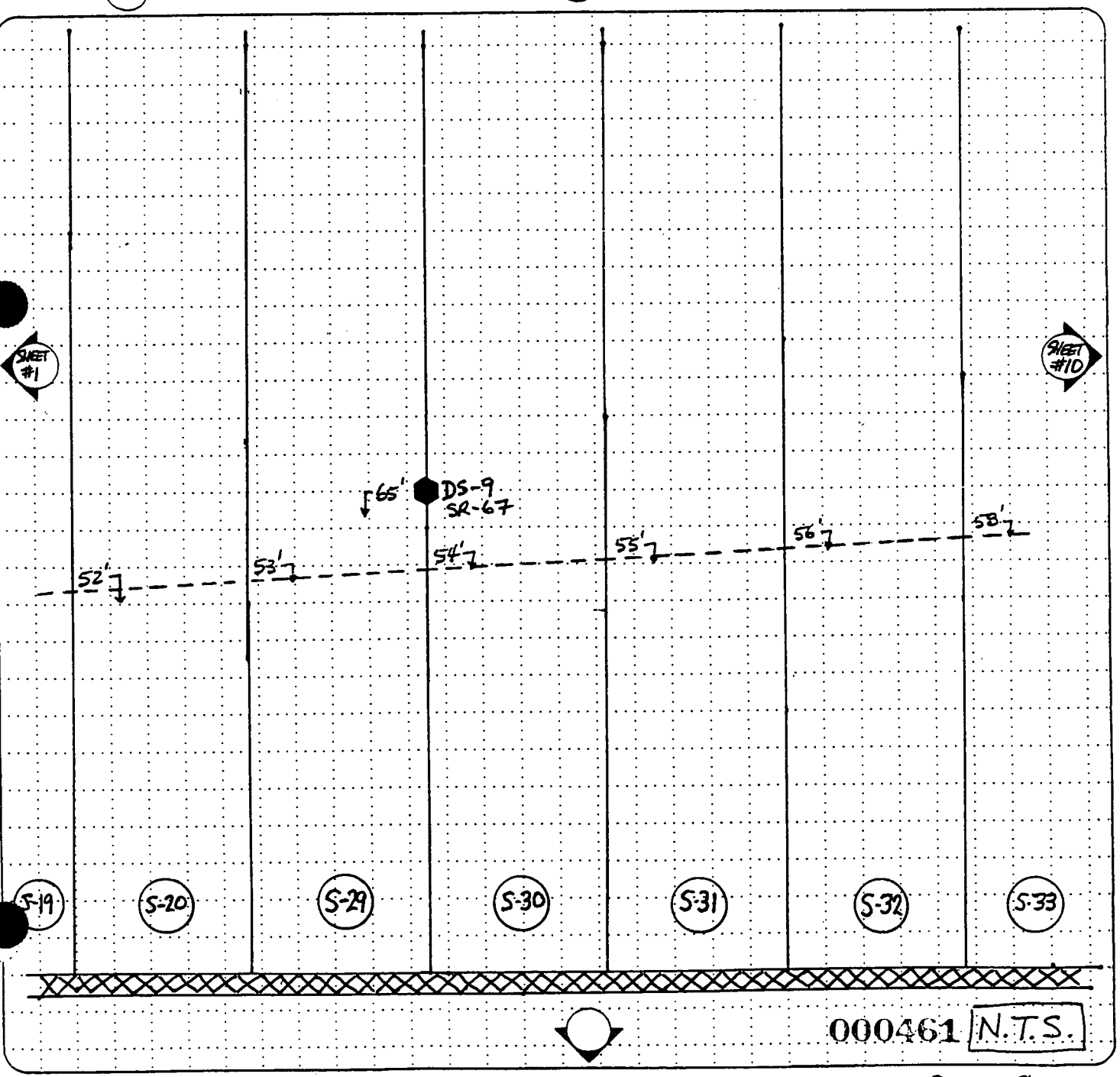
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #11

QA ID: TBD



000461 N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

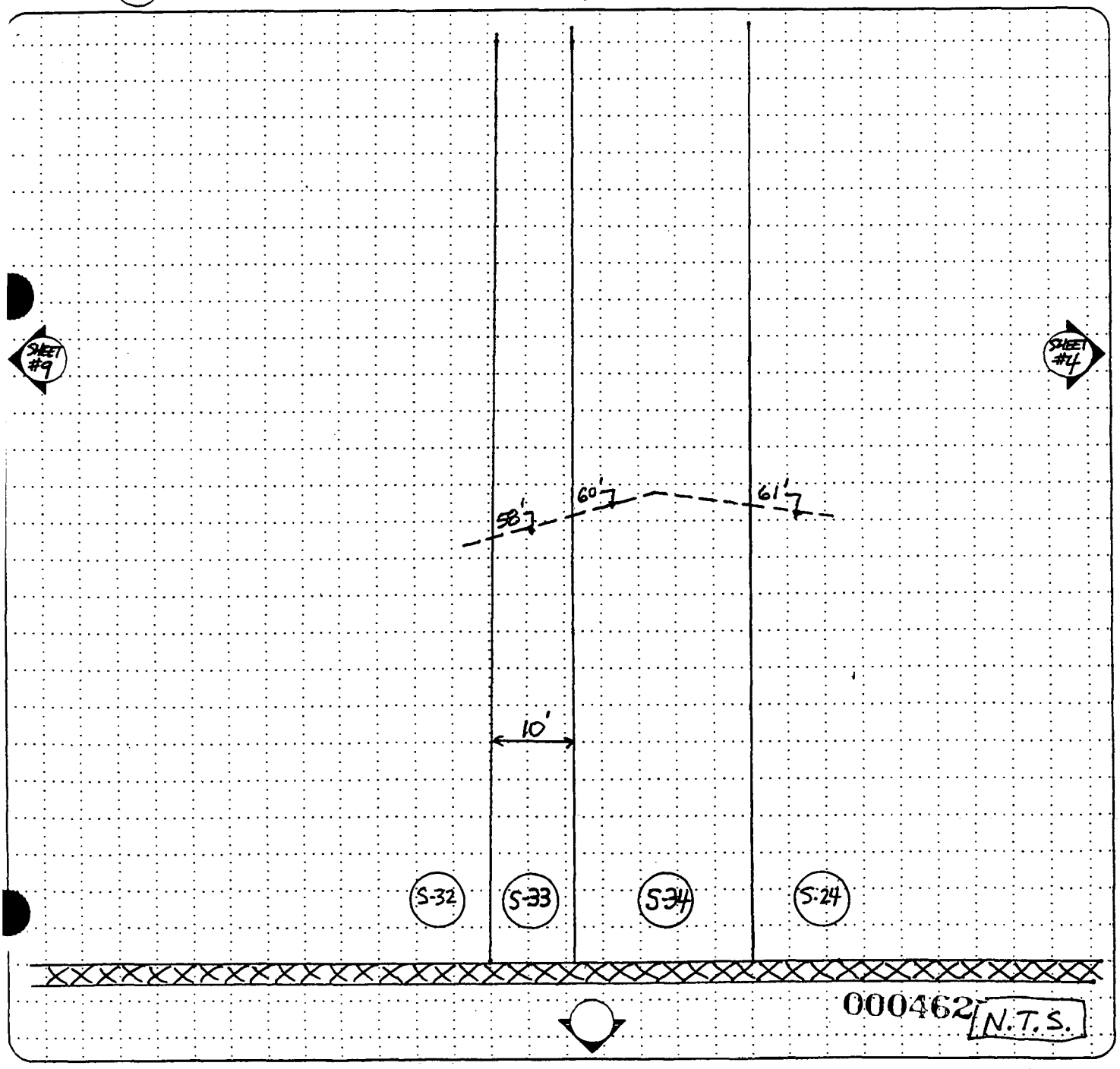
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #14

QA ID: TBD



000462

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ____

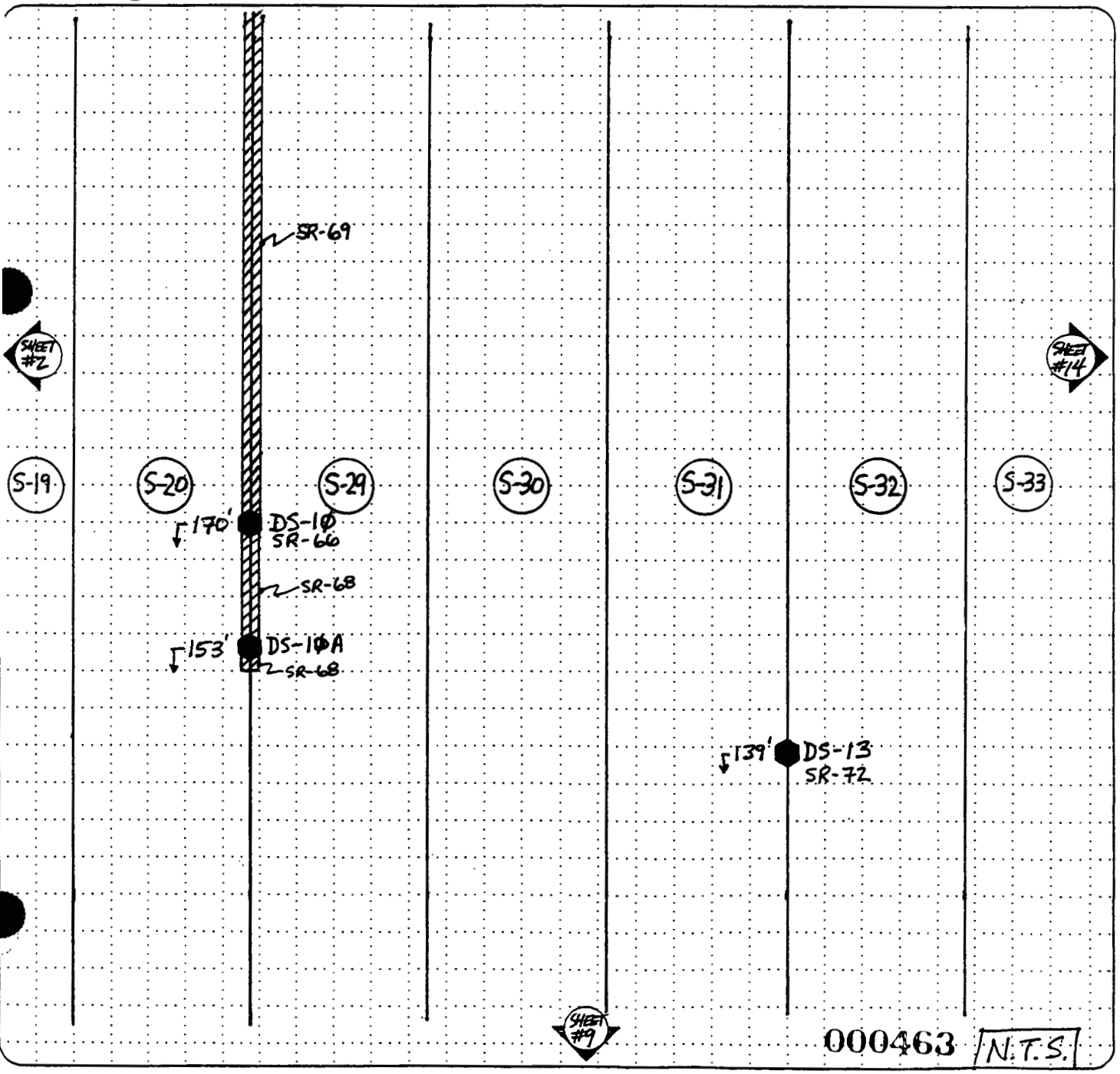
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #12

QA ID: TBW



000463

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

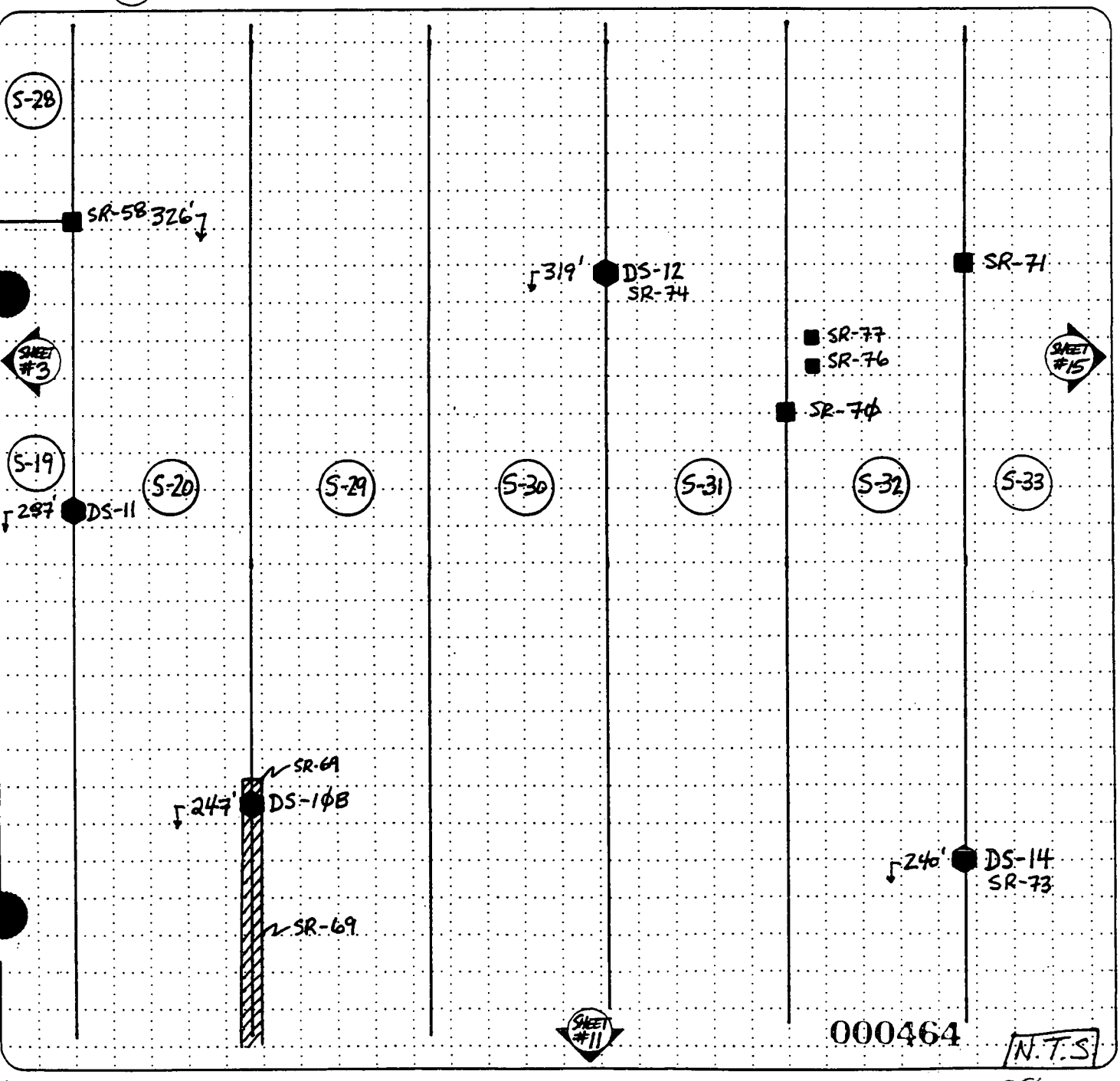
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #13

QA ID: TBY



000464

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE Co.

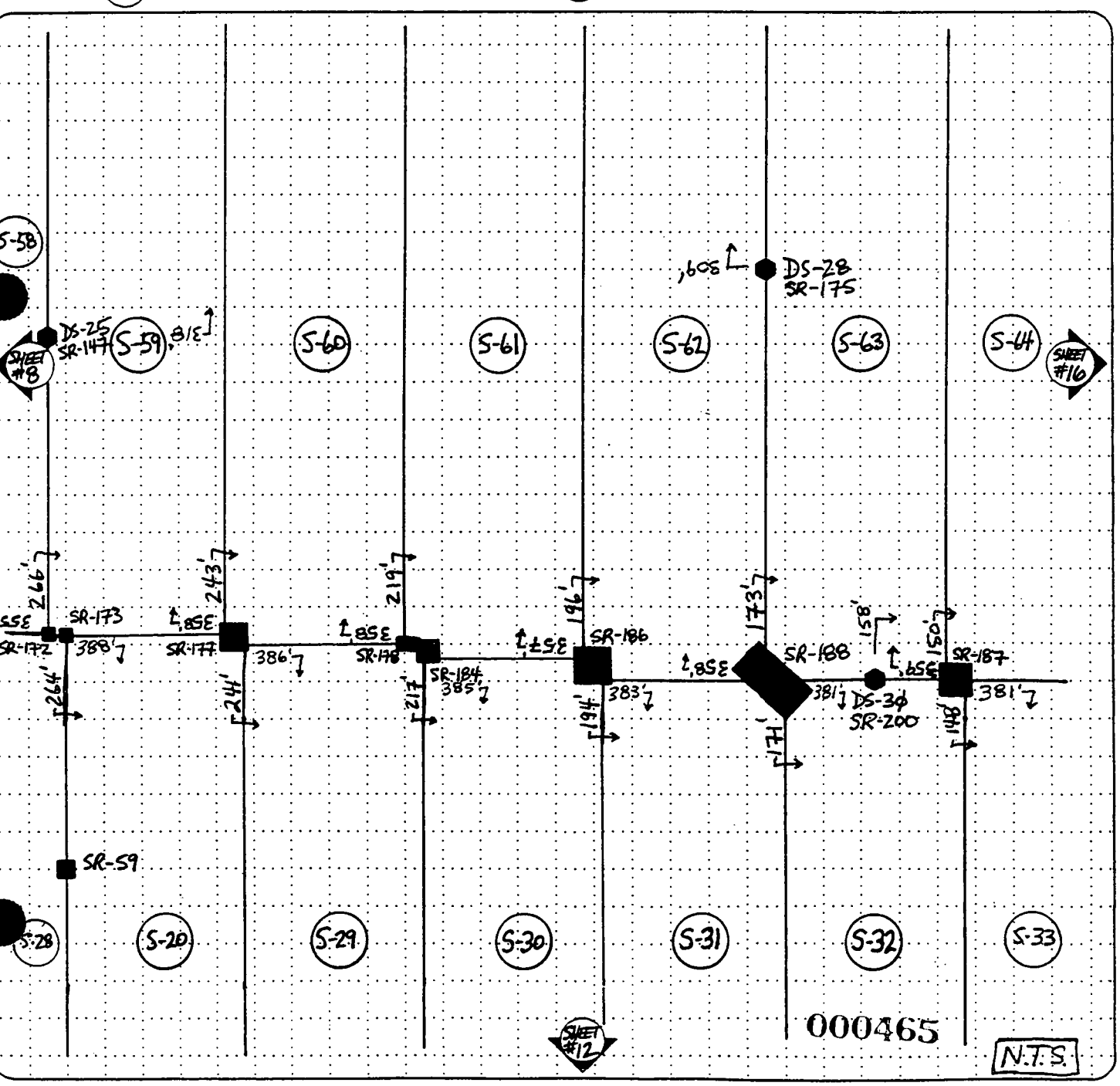
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #23

QA ID: 1880



000465

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

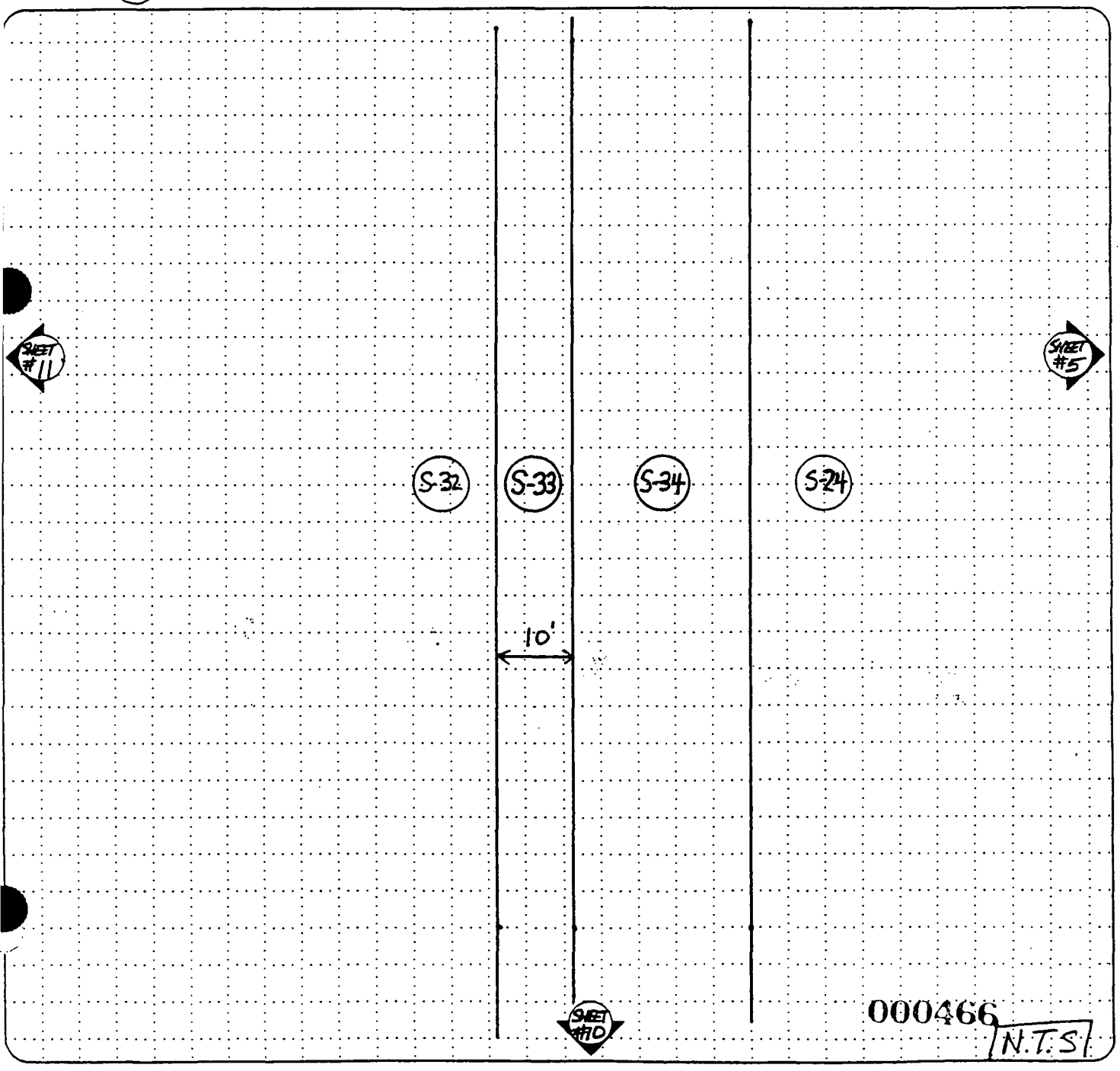
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #15

QA ID: TBD



000466

N.T.S

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

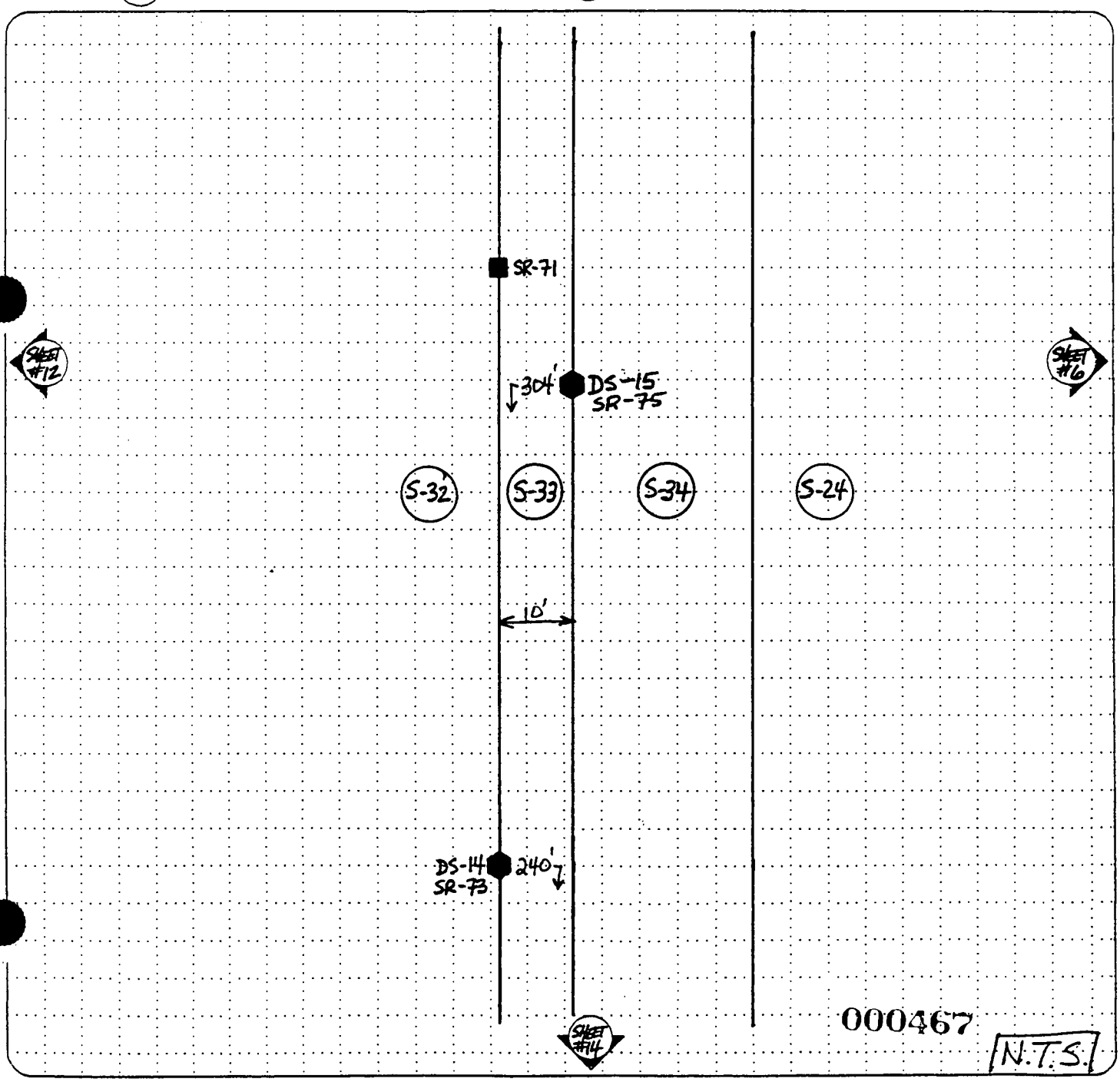
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #16

QA ID: TBD



000467

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

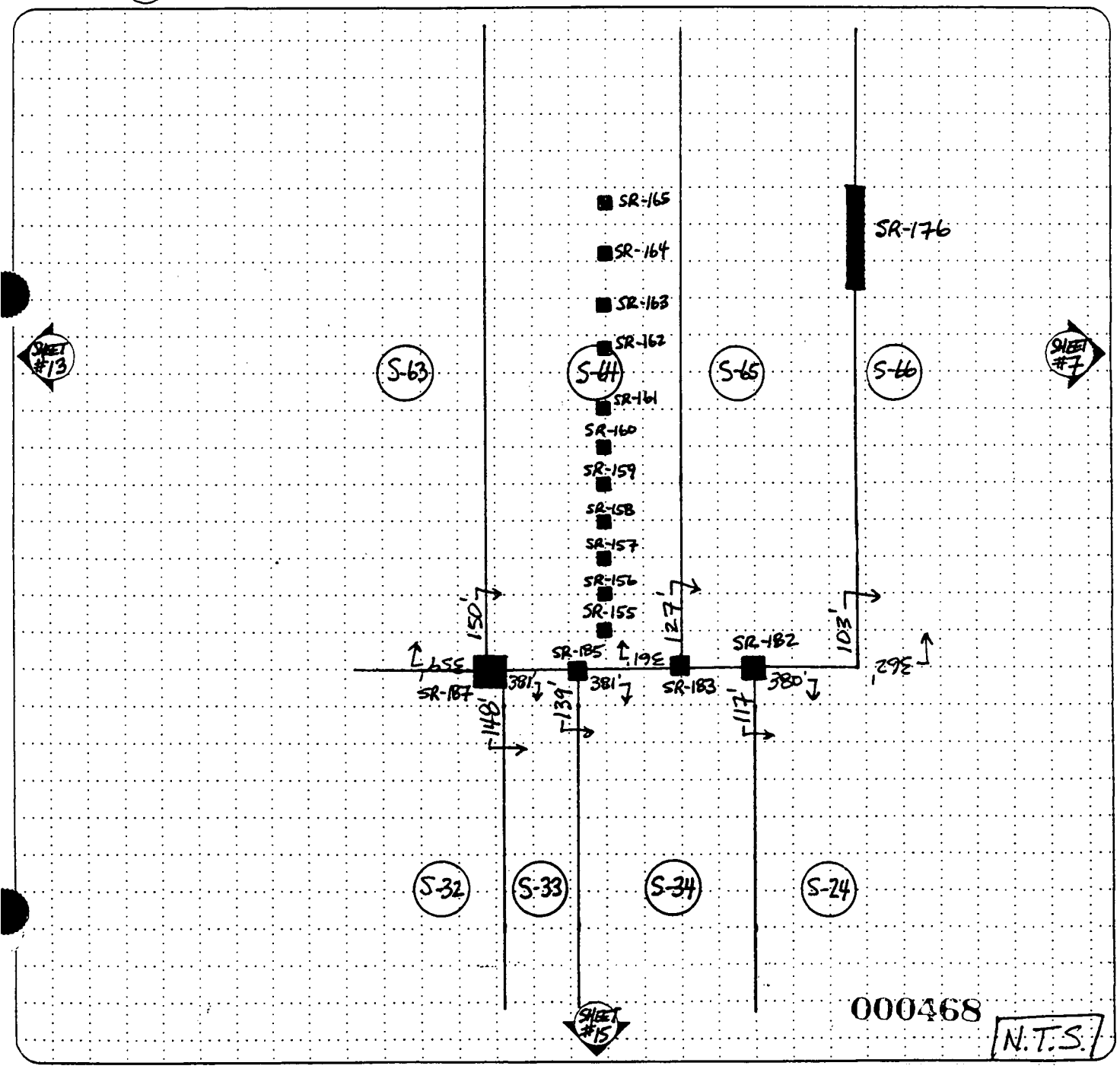
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #20

QA ID: TBD



000468

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE Co.

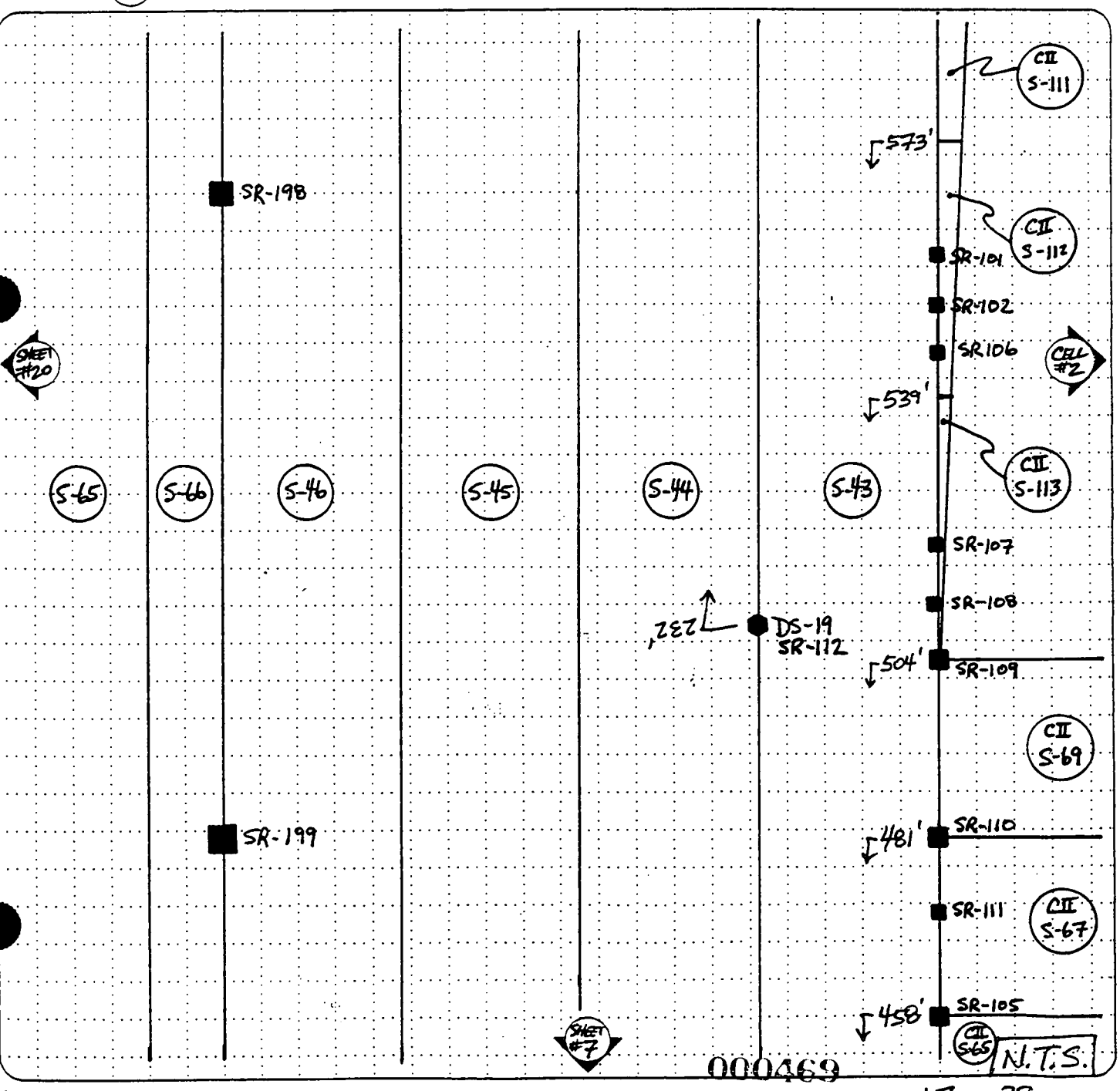
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #18

QA ID: TBD



000469

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

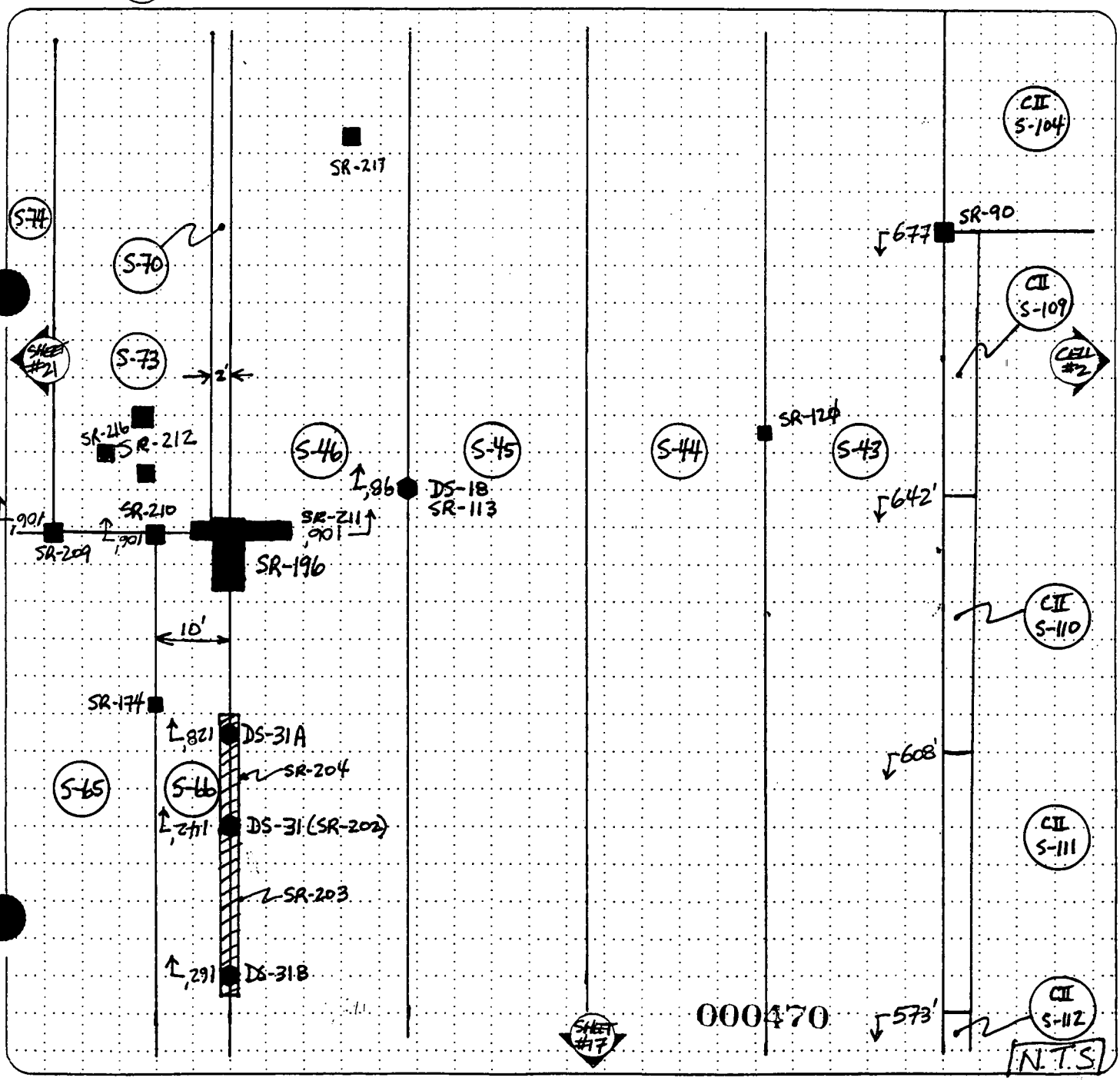
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #19

QA ID: TBD



000470

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

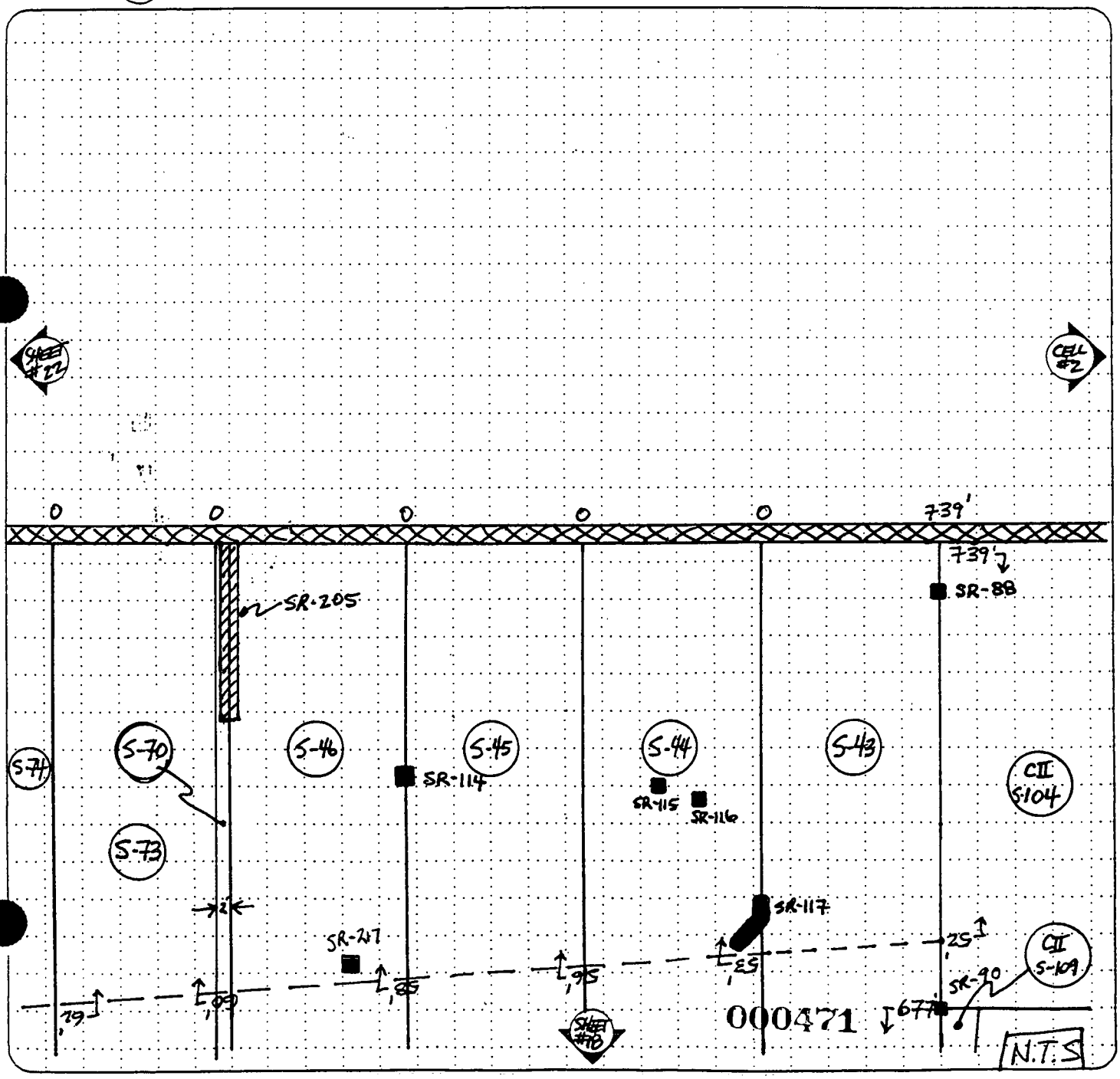
CONTRACTOR: _____

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBD



000471

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

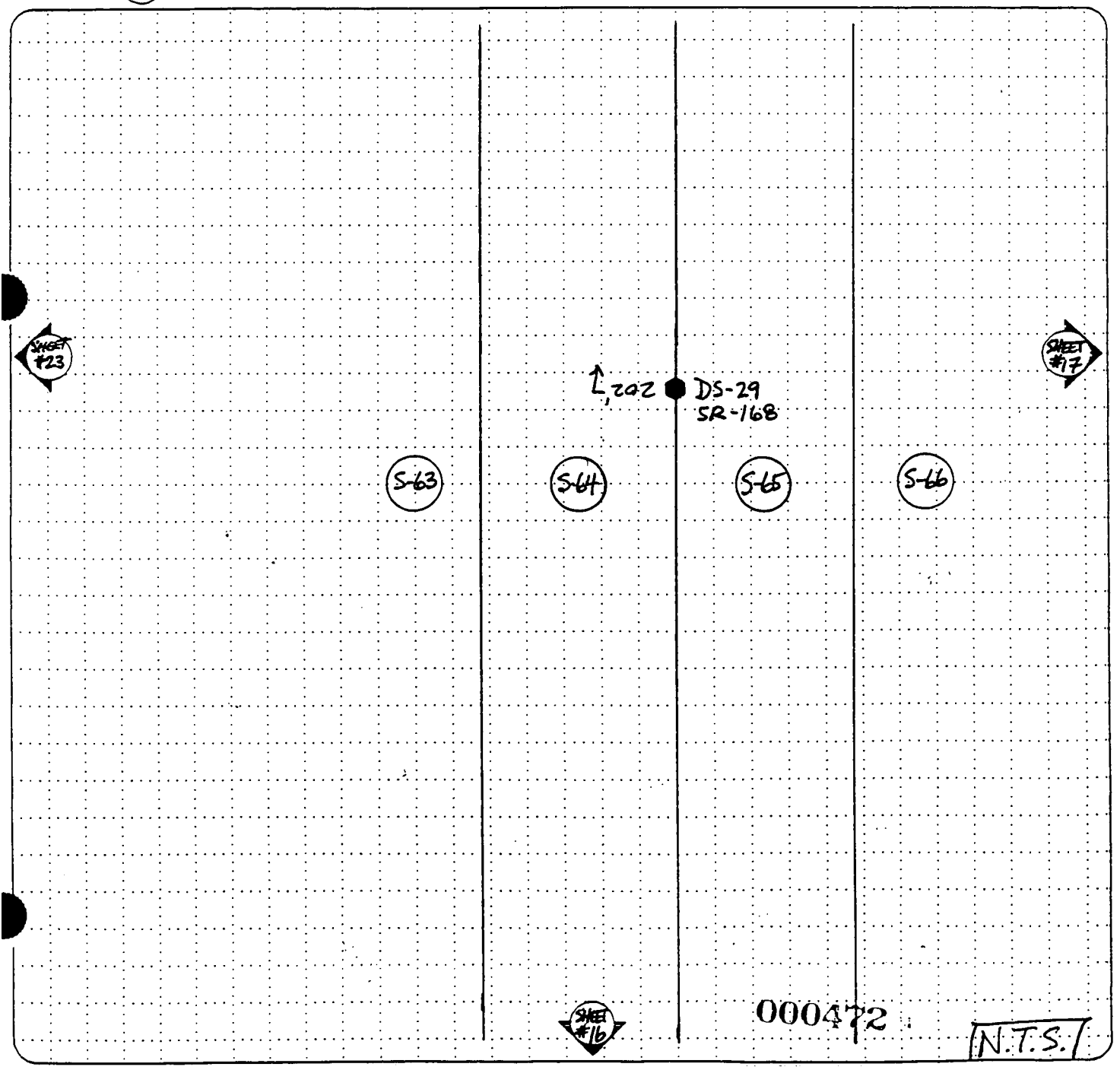
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #21

QA ID: TBY



000472

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE Co.

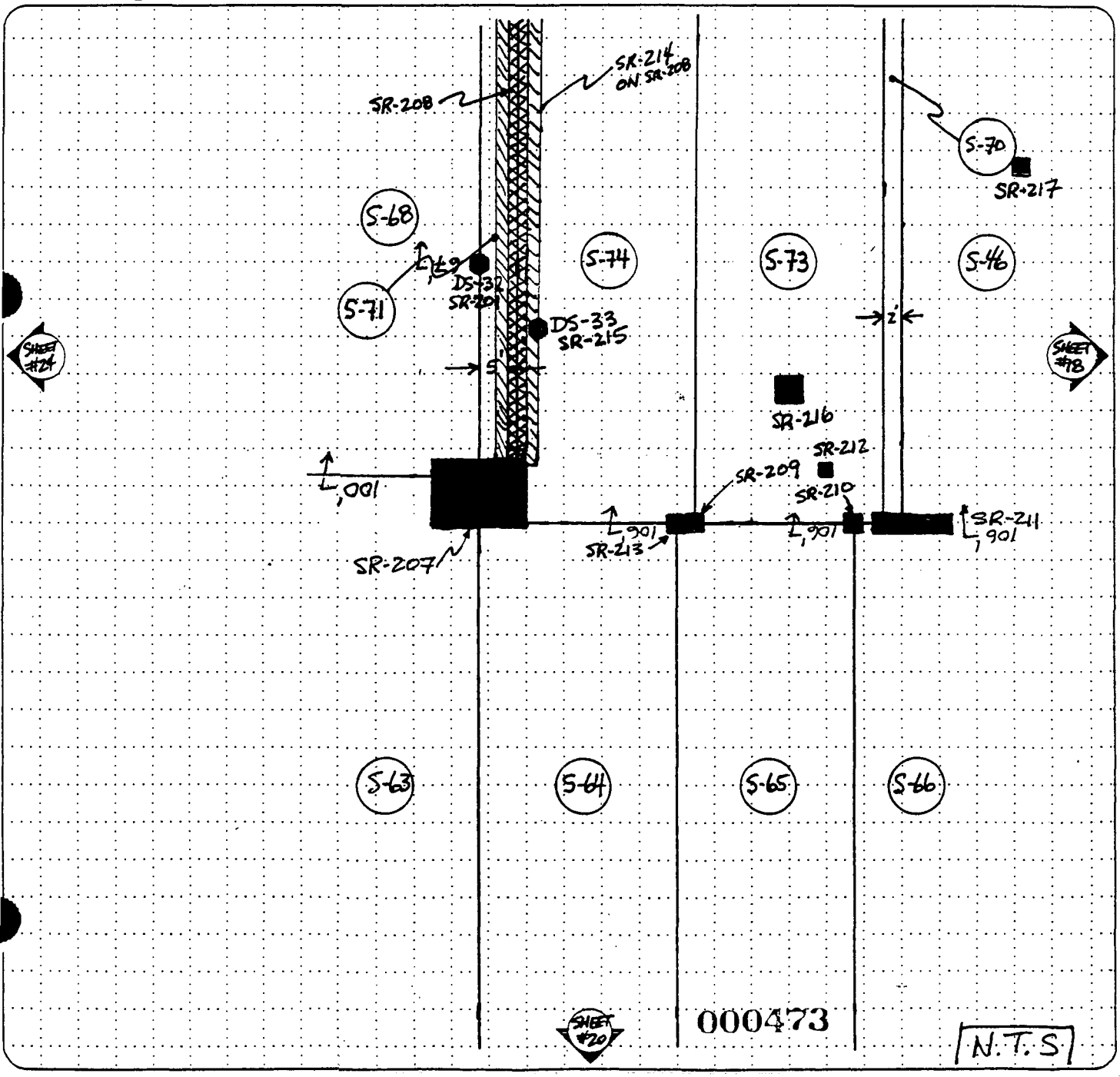
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #22

QA ID: TBY



000473

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

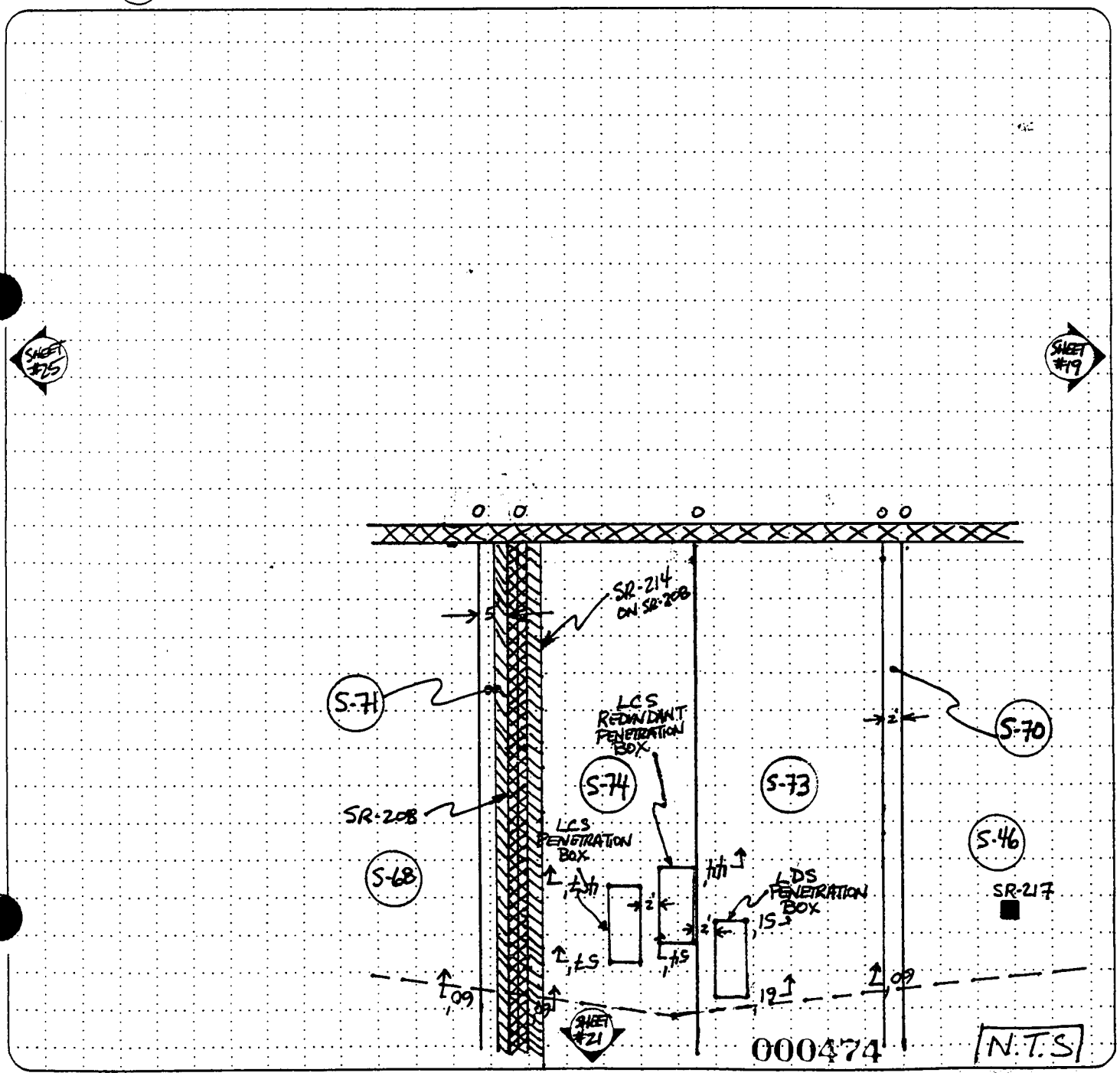
CONTRACTOR: ISTRE CO.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBV



000474

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: GQ0409 TASK NO.: 041

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

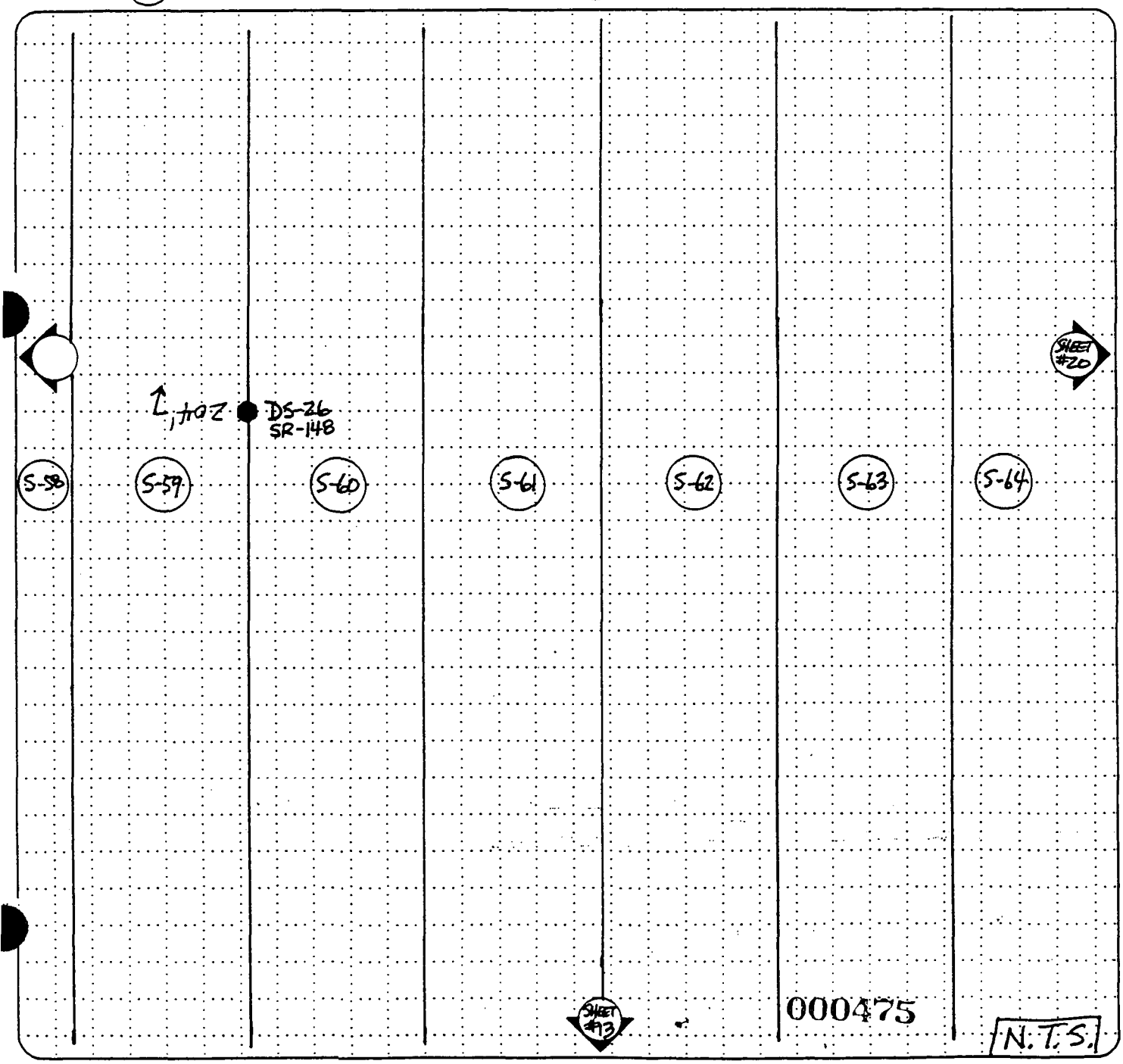
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #24

QA ID: TBD



000475

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO

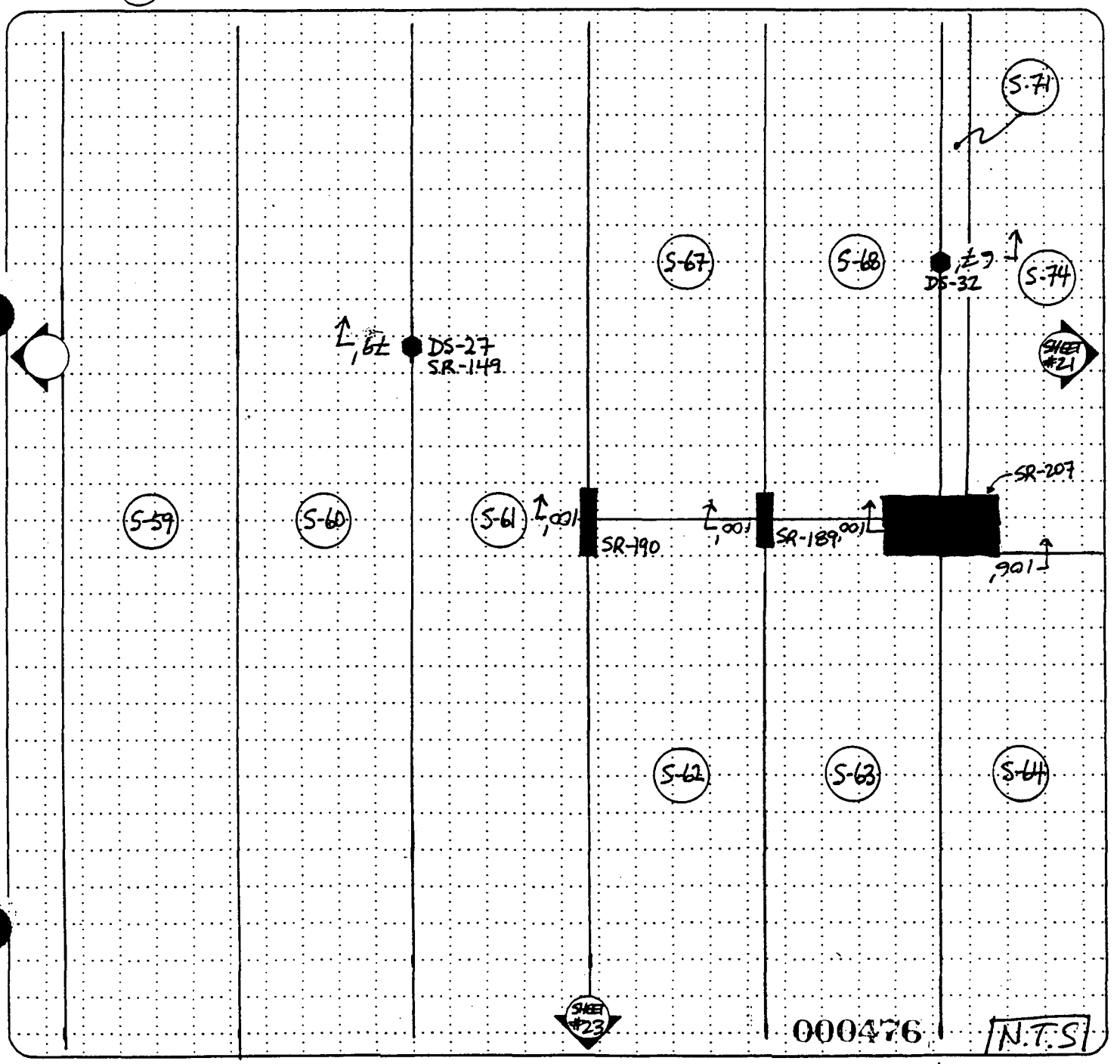
PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #25

QA ID: TBD



000476

N.T.S

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

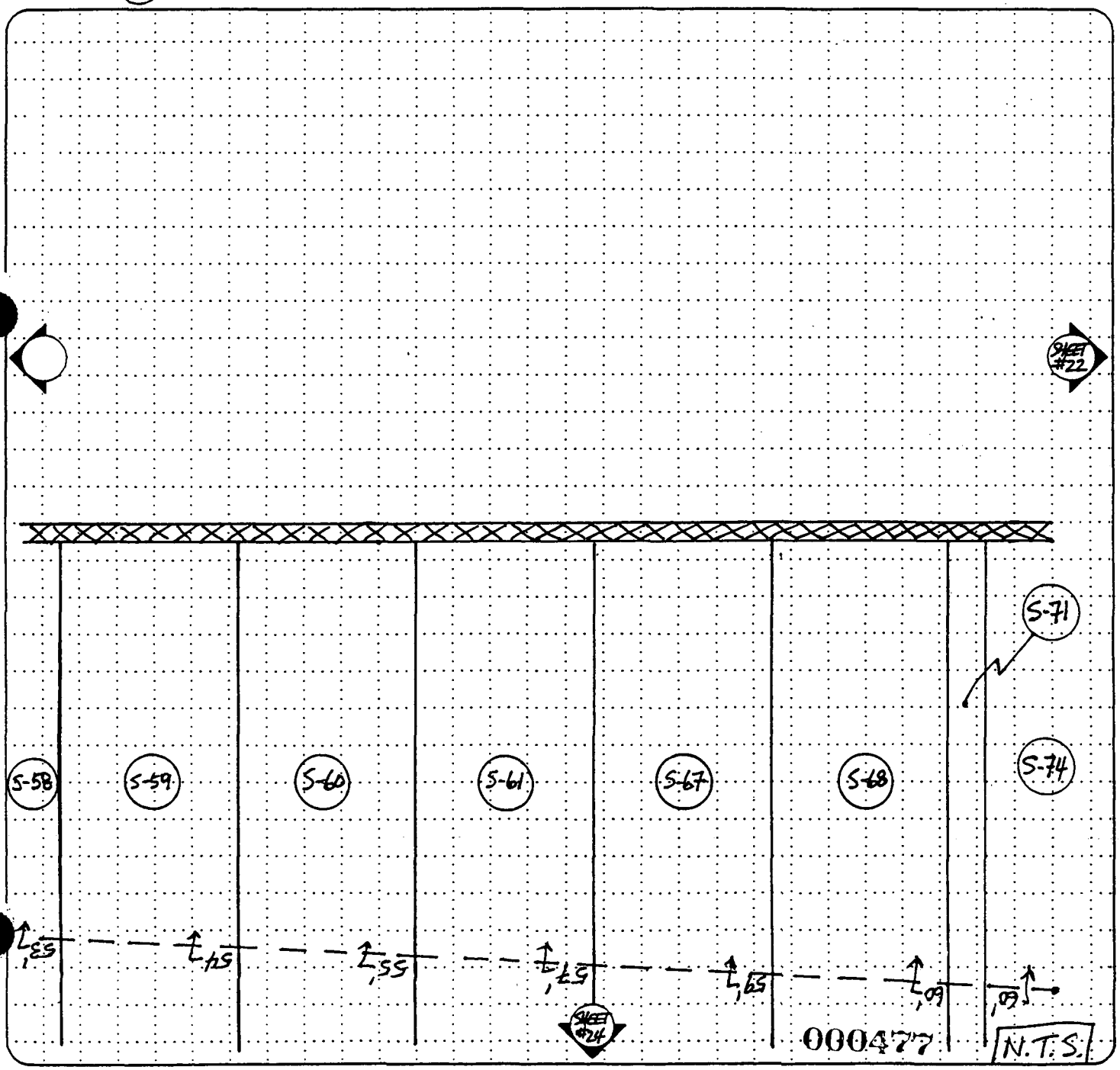
CONTRACTOR: ISTRE CO.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

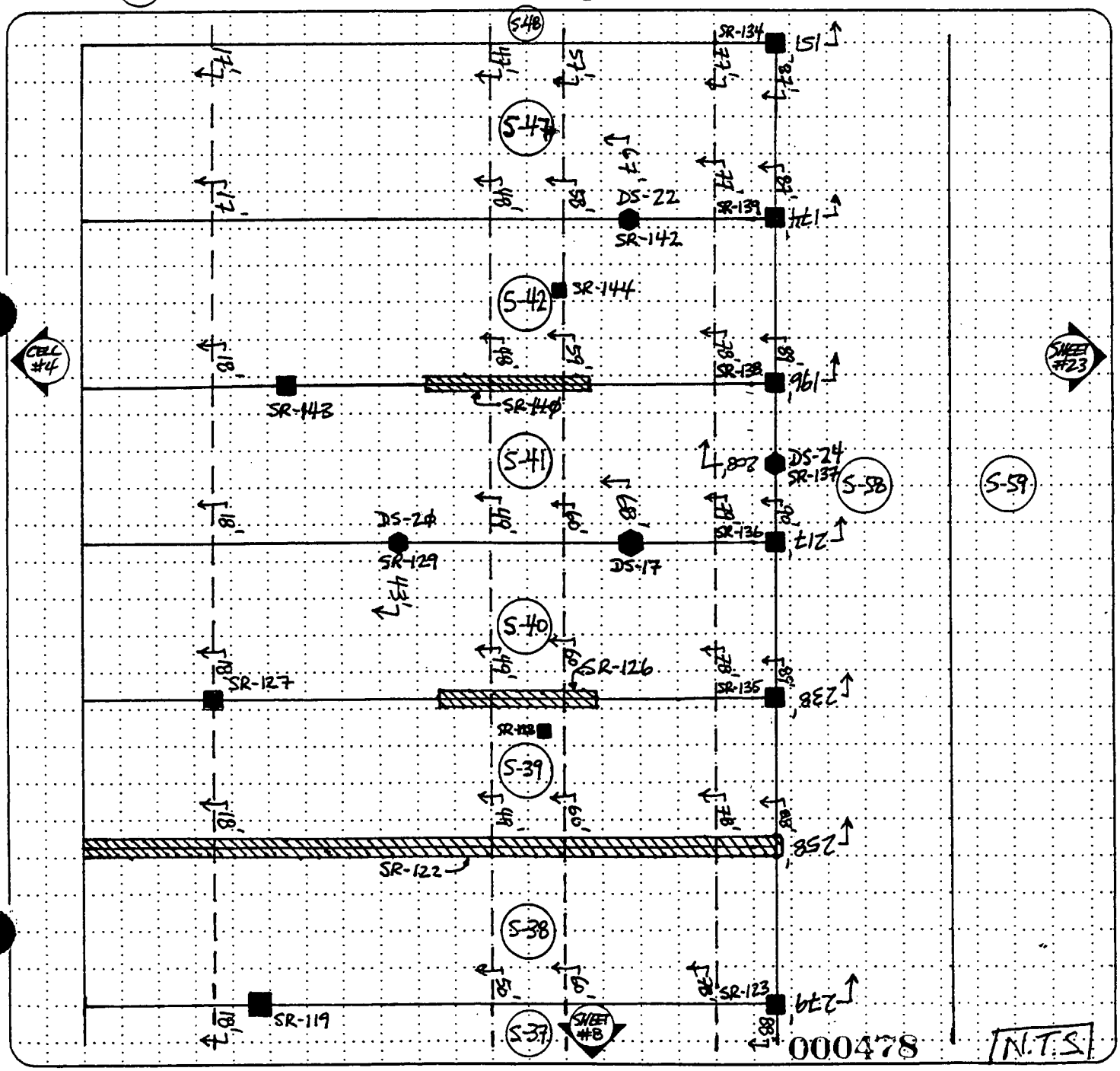
CONTRACTOR: ISTRE CO.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: 780



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

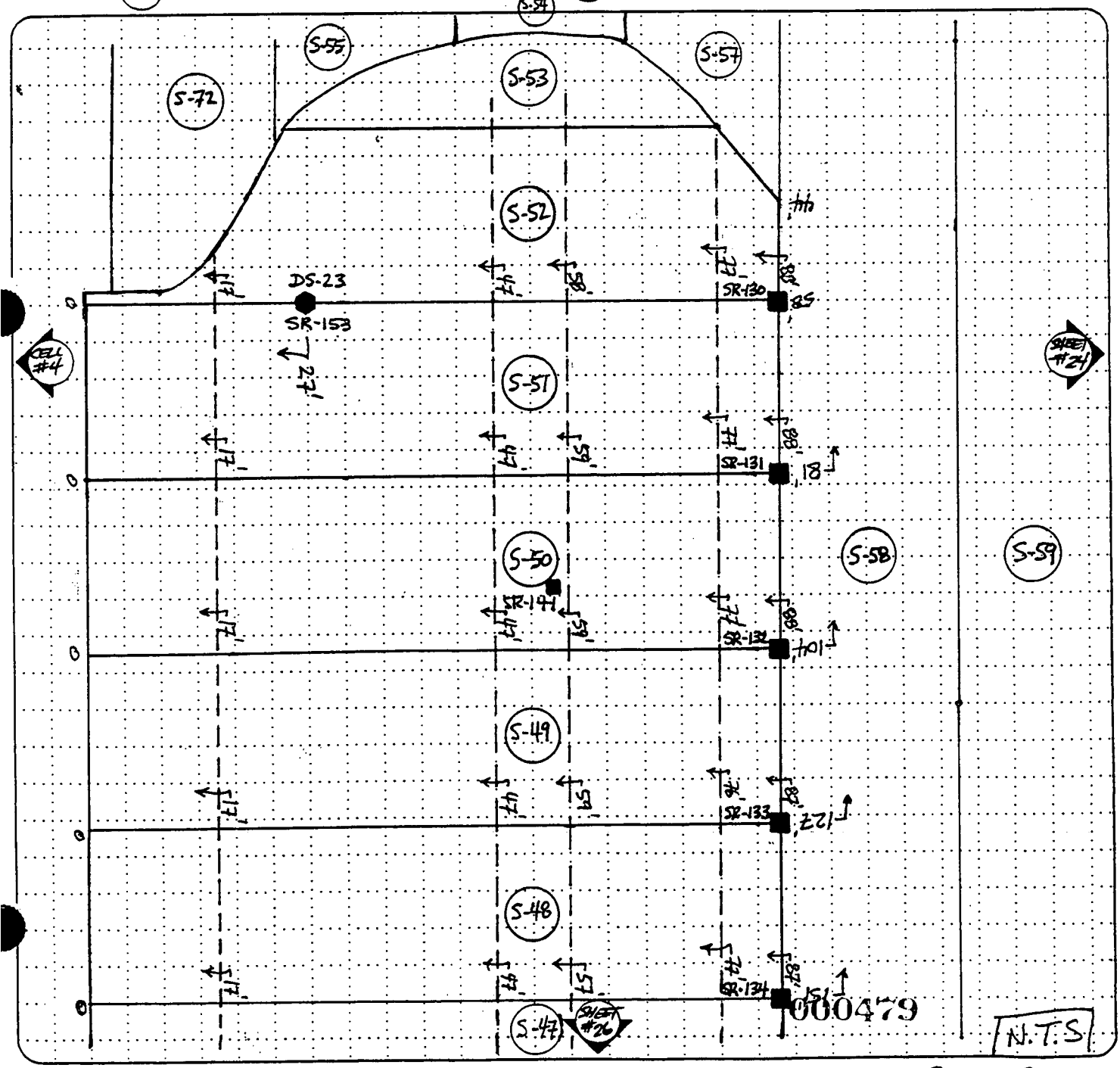
CONTRACTOR: ISTRE CO.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBD



000479

GEOSYNTEC CONSULTANTS FILE NO. 3-08-SPR

SHEET NO. 27 OF 28

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

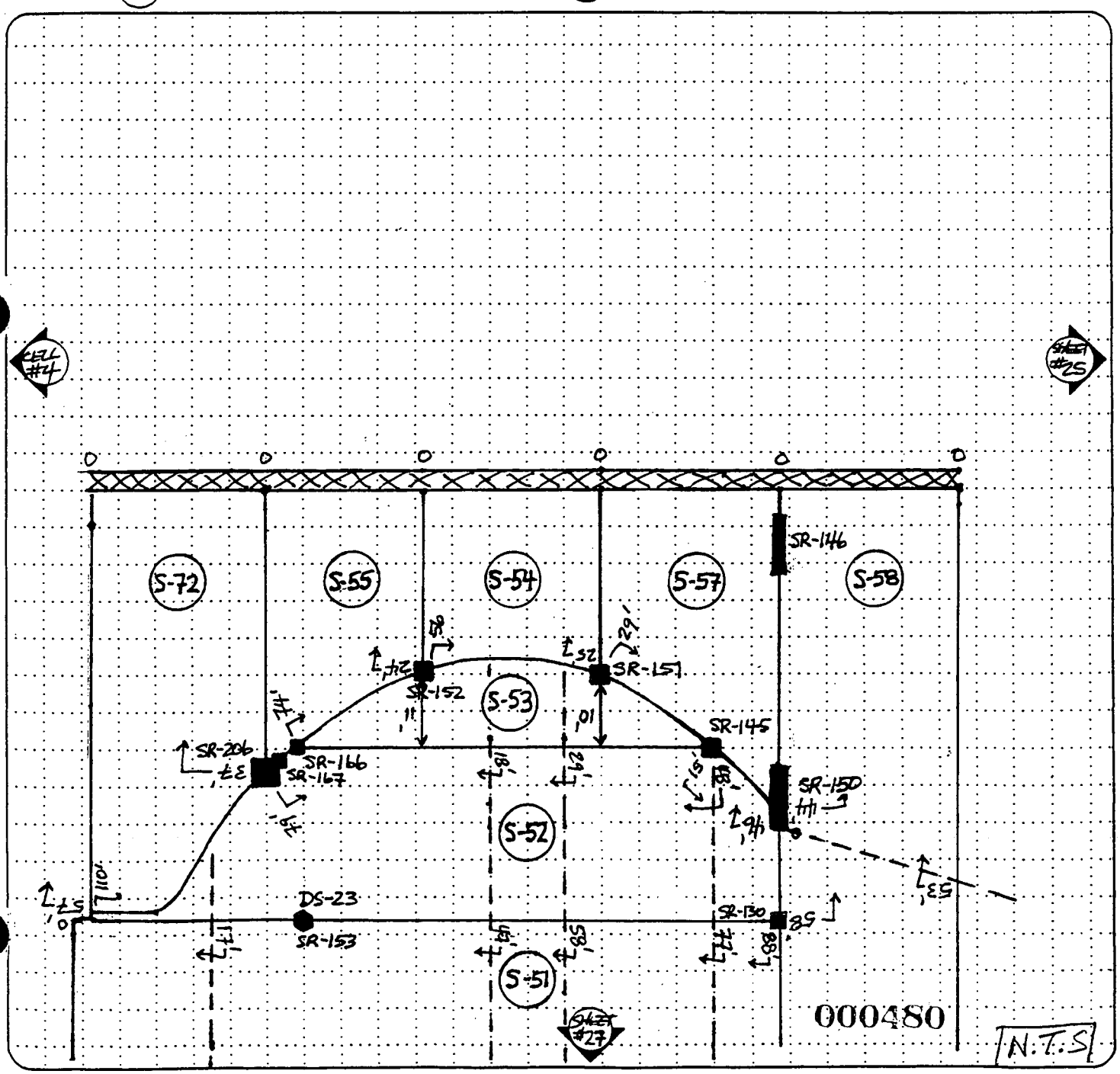
CONTRACTOR: ISTRE CO.

PRIMARY: ☐ SECONDARY: ■ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBH



2740

PRIMARY

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

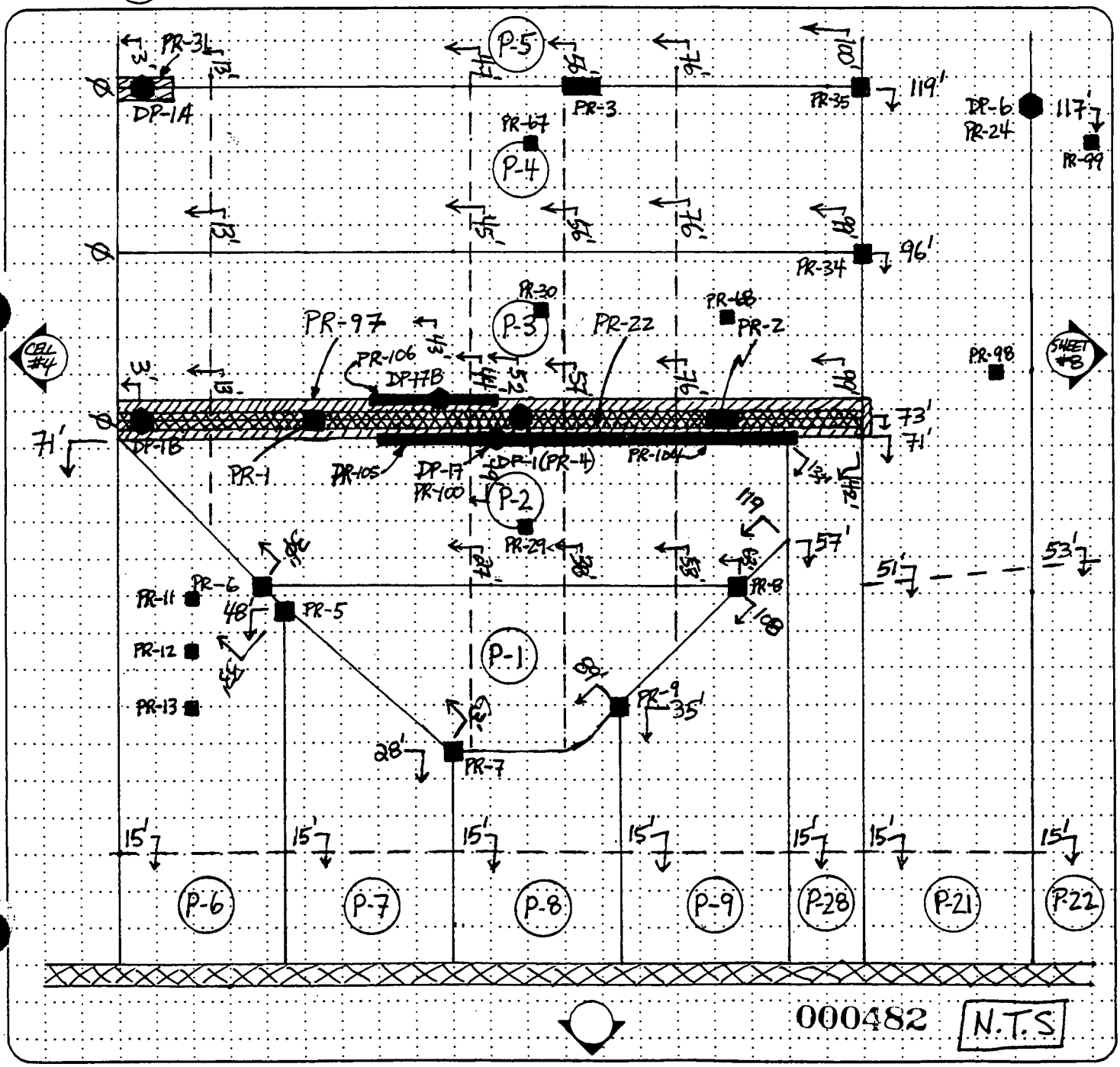
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE.

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #2

QA ID: TBY



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

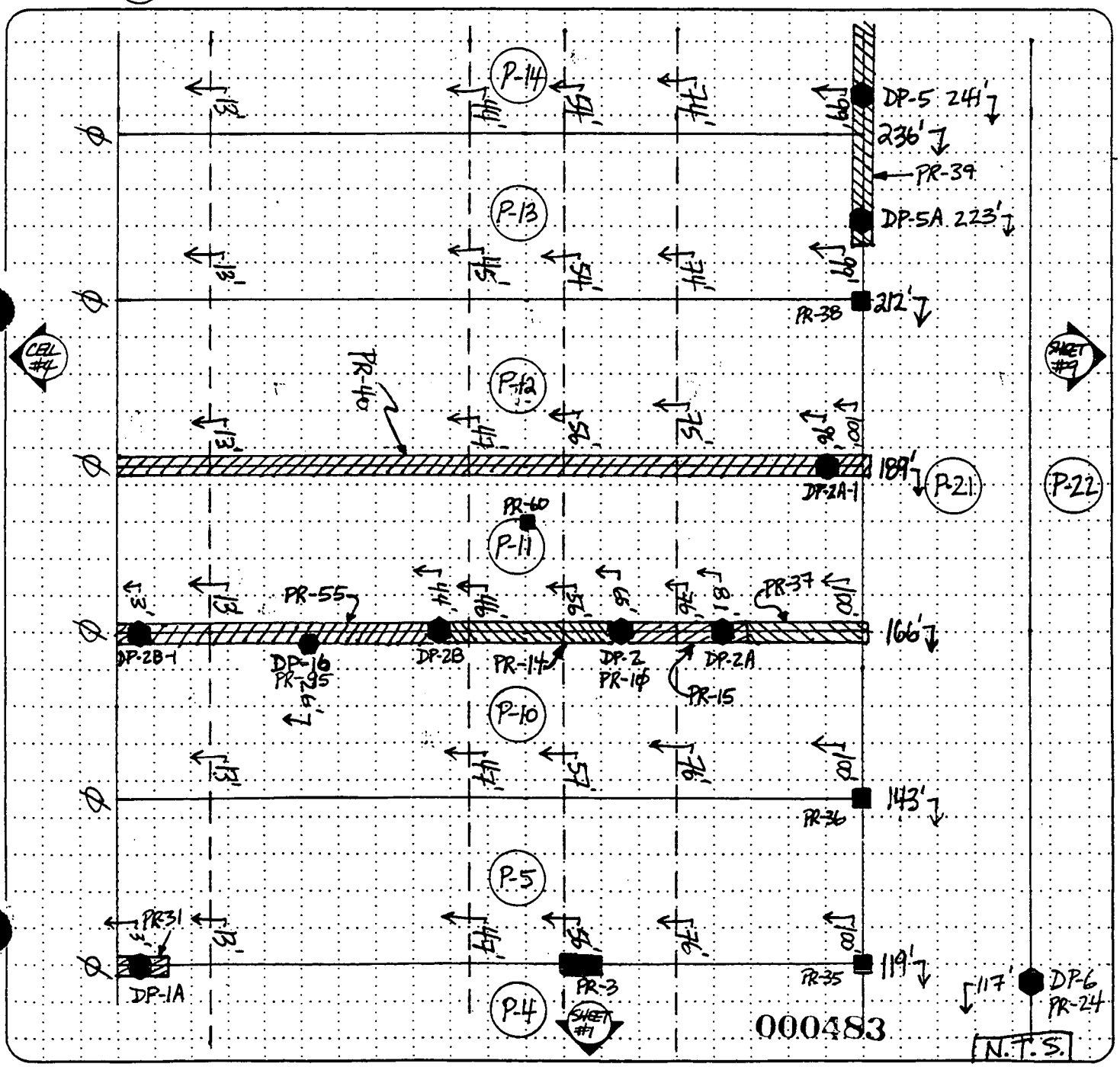
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #3

QA ID: TBD



000483

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

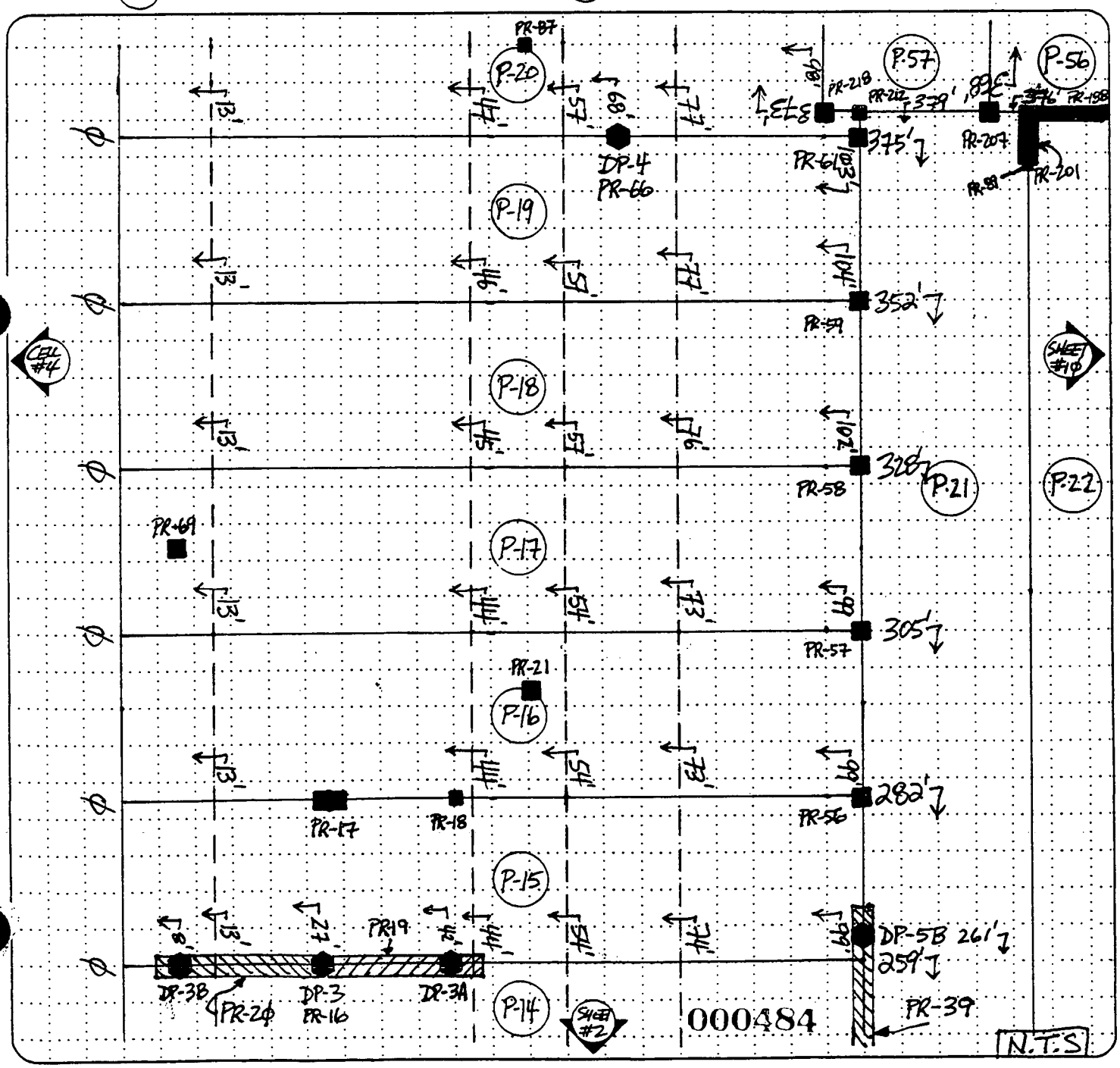
PRIMARY: ■ SECONDARY: □ OTHER: □ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #4

QA ID: TBD



000484

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

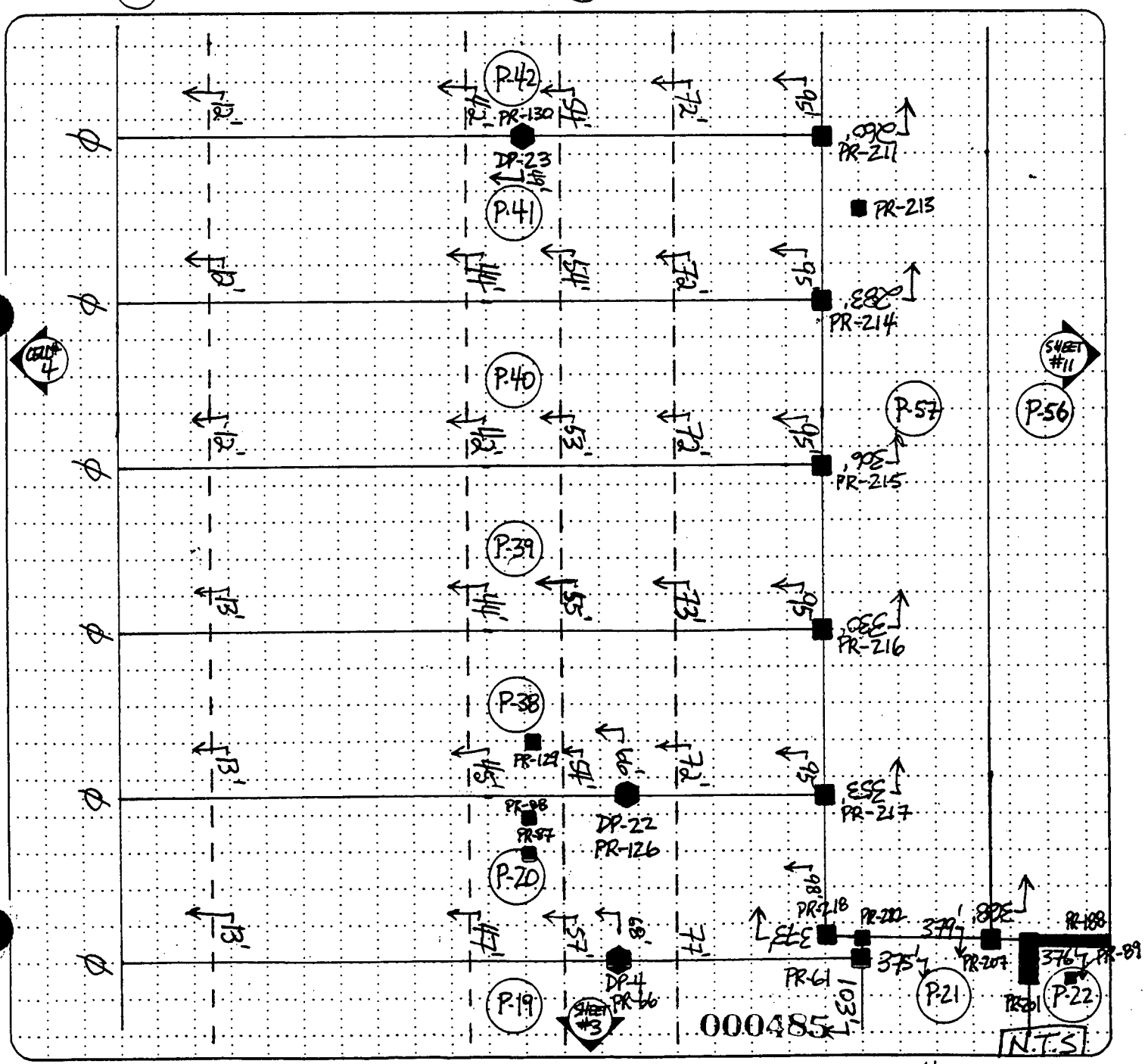
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #5

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: _____

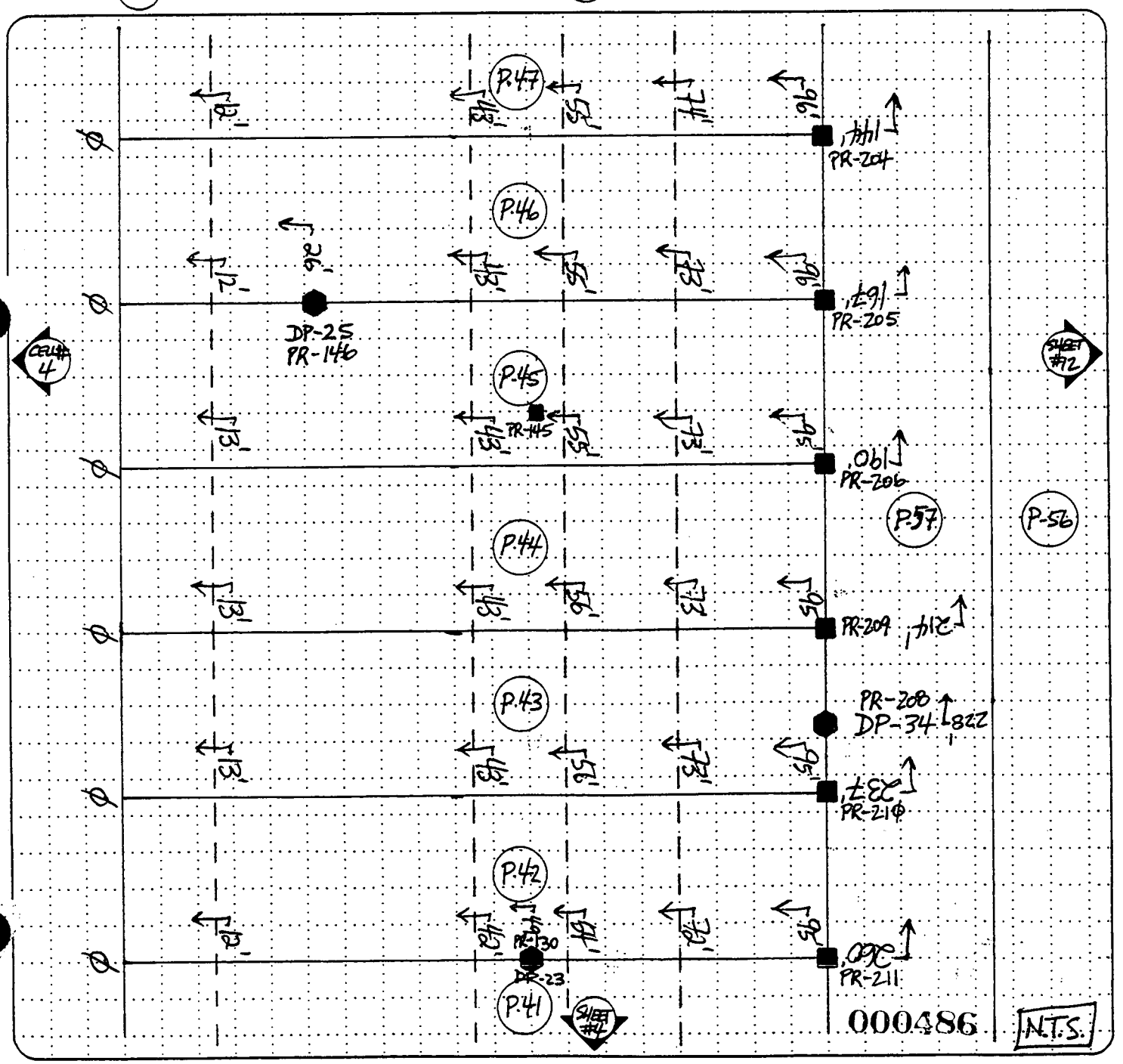
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #6

QA ID: RBW



000486

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

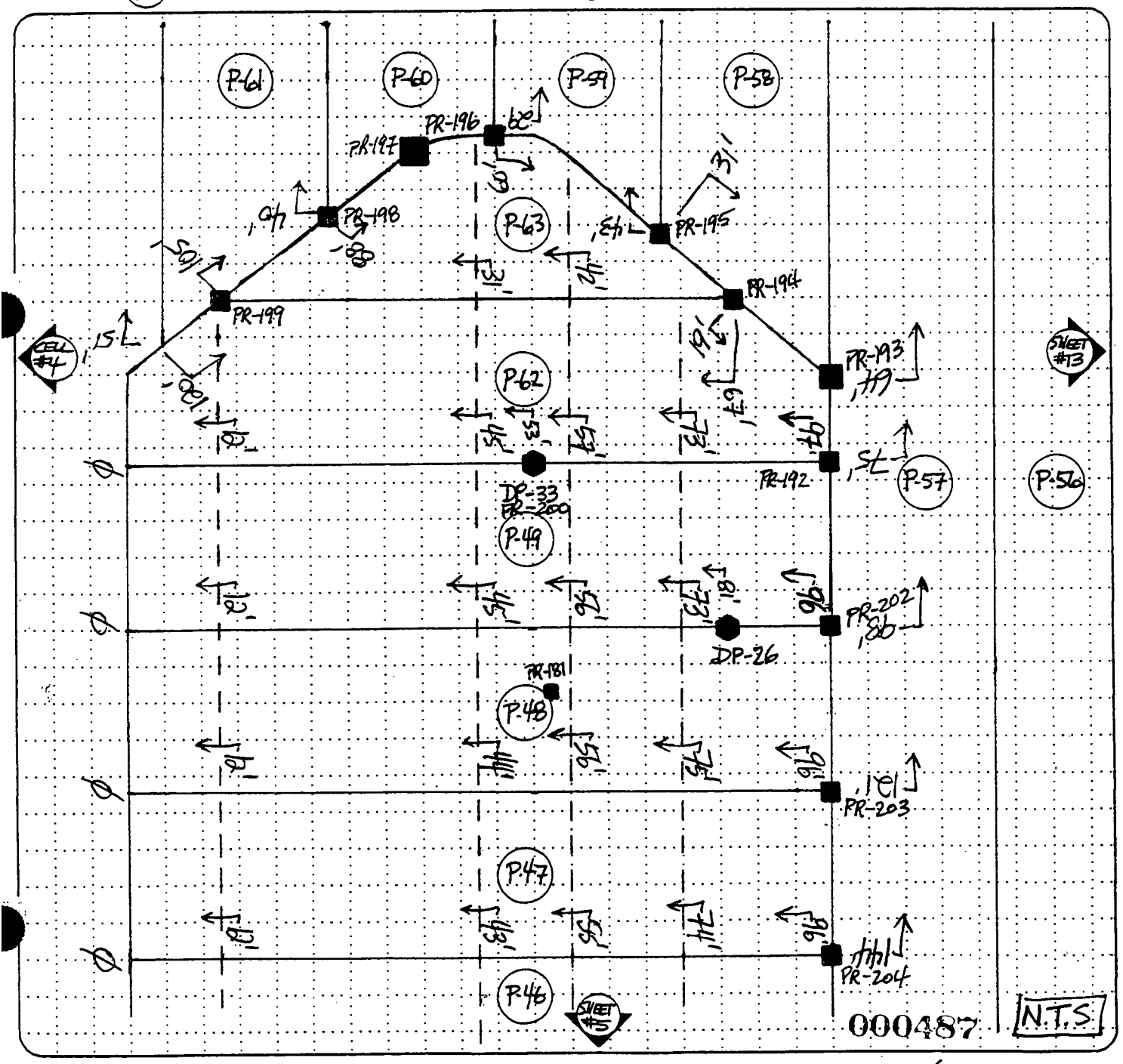
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #7

QA ID: TBY



000487

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

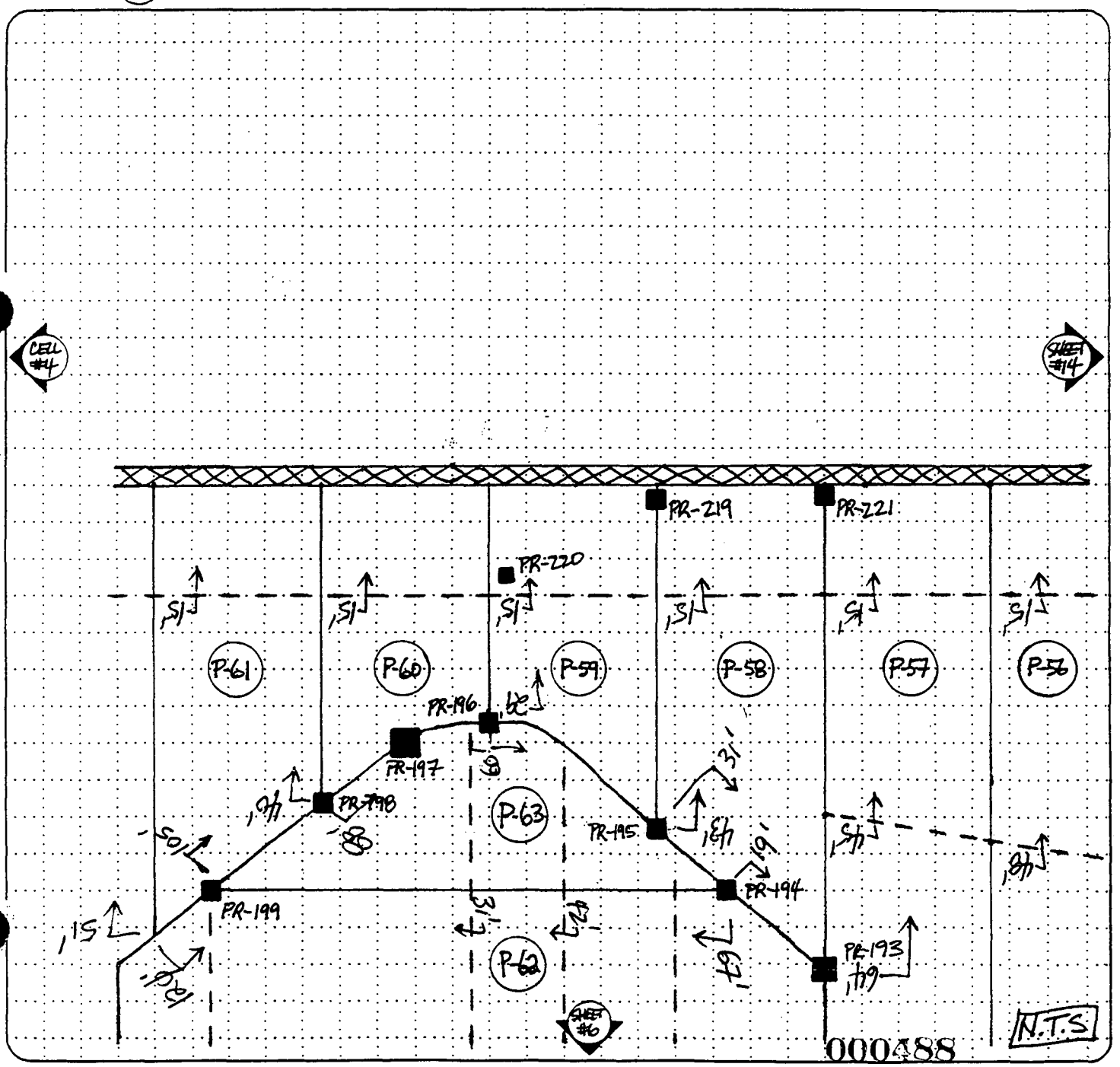
CONTRACTOR: _____

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TB



000488

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE Co.

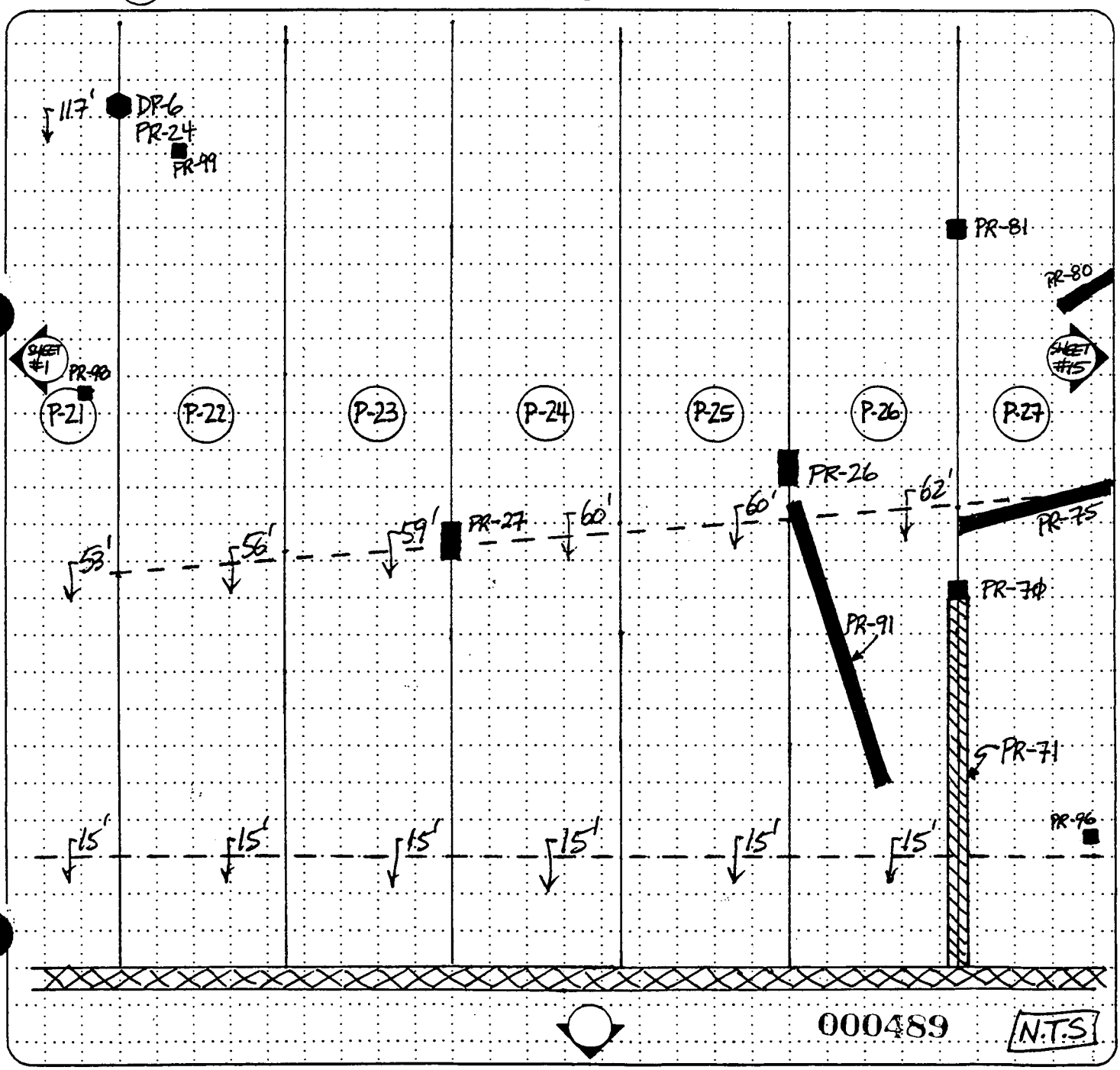
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #9

QA ID: TGV



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

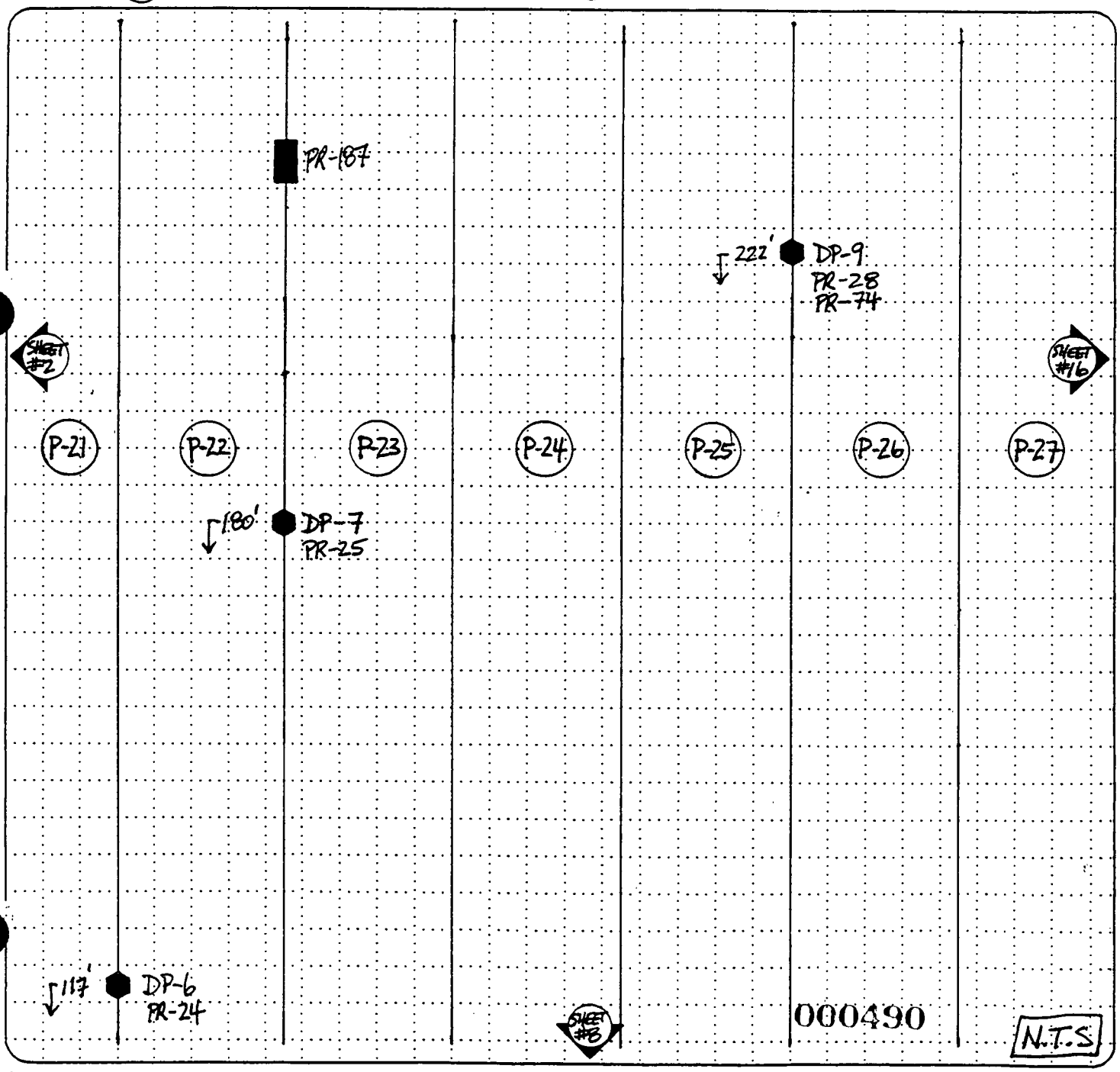
PRIMARY: ■ SECONDARY: □ OTHER: □ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #10

QA ID: TBW



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

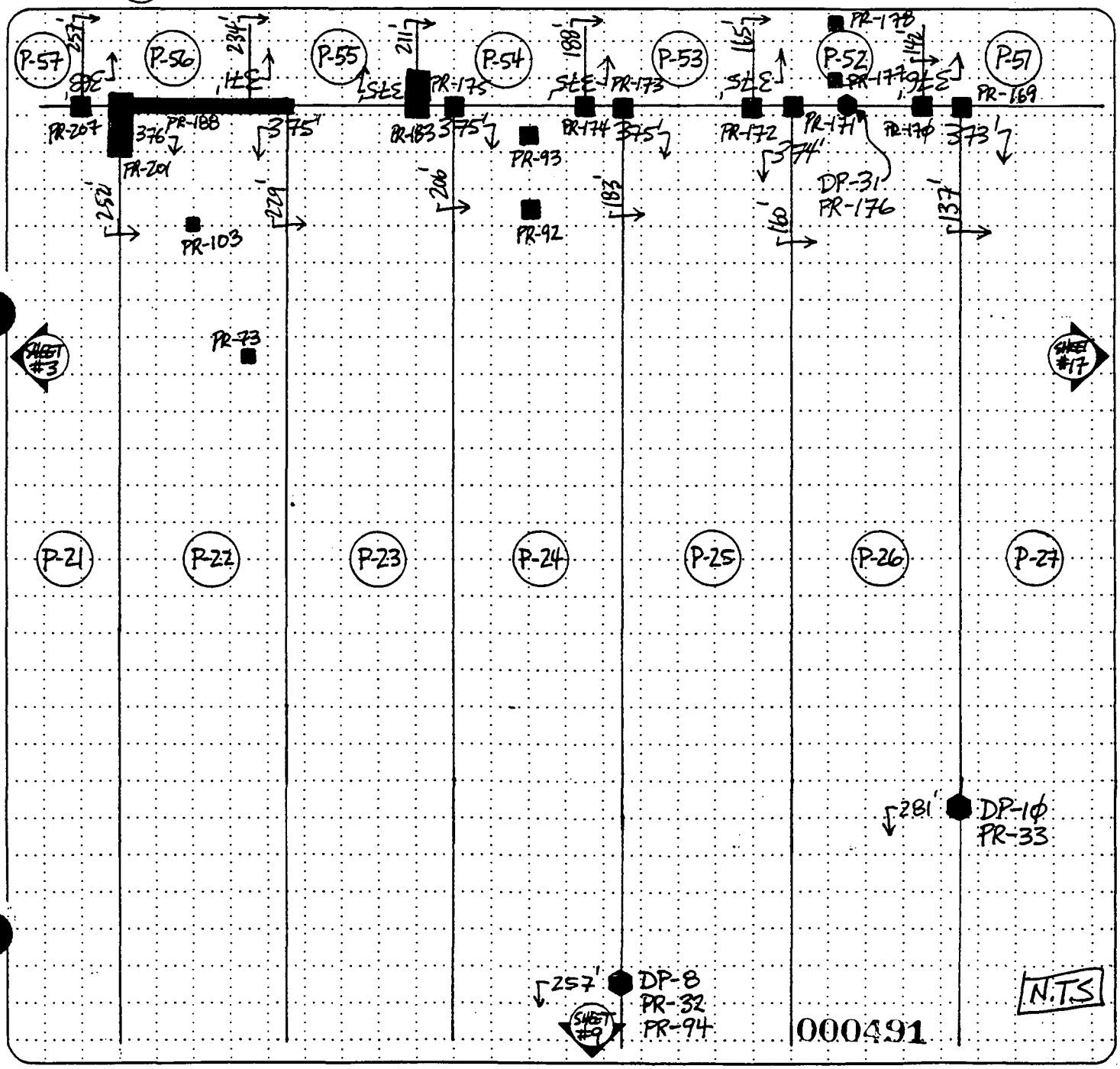
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #11

QA ID: TBU



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

= 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

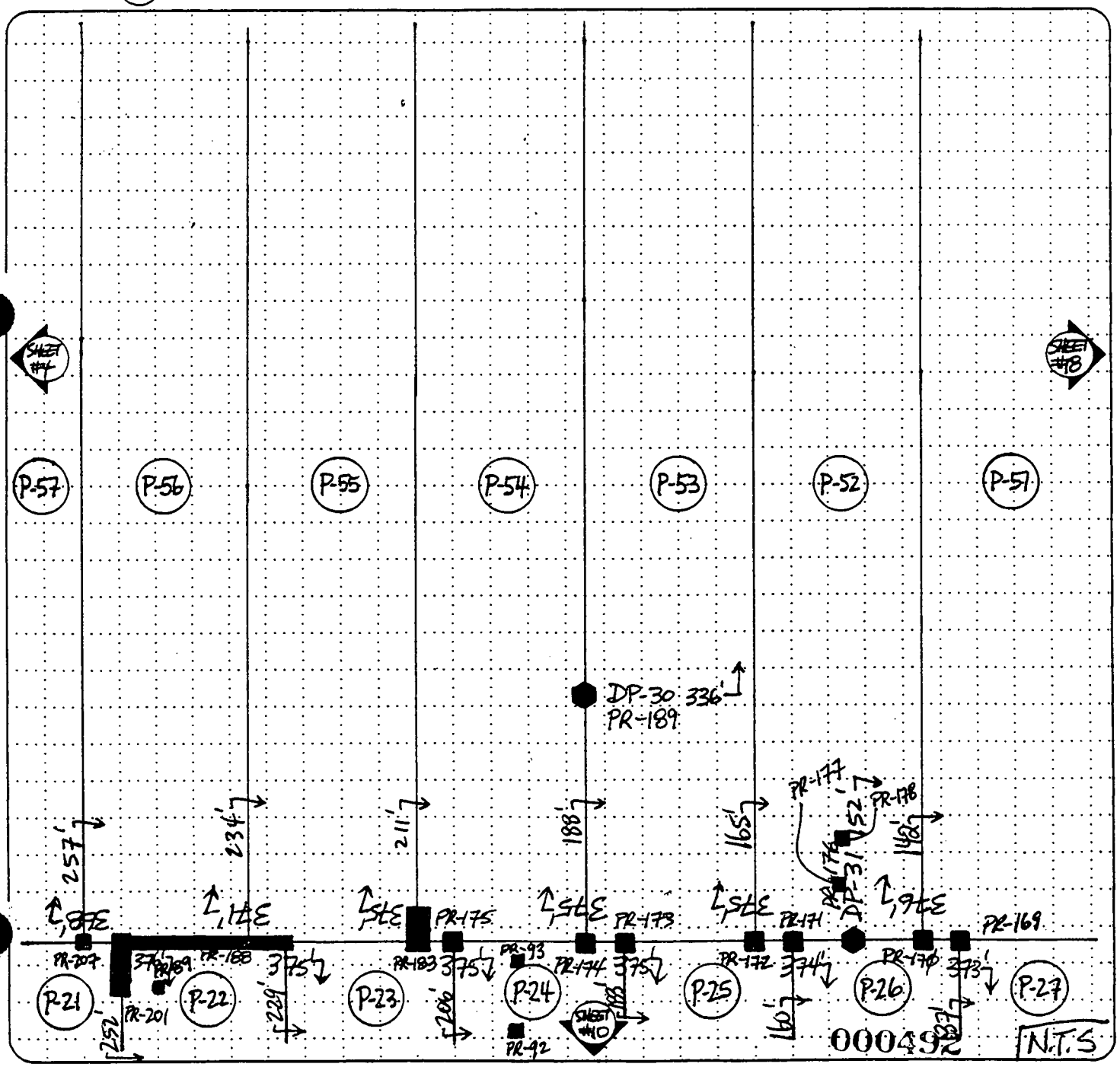
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #12

QA ID: 738



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

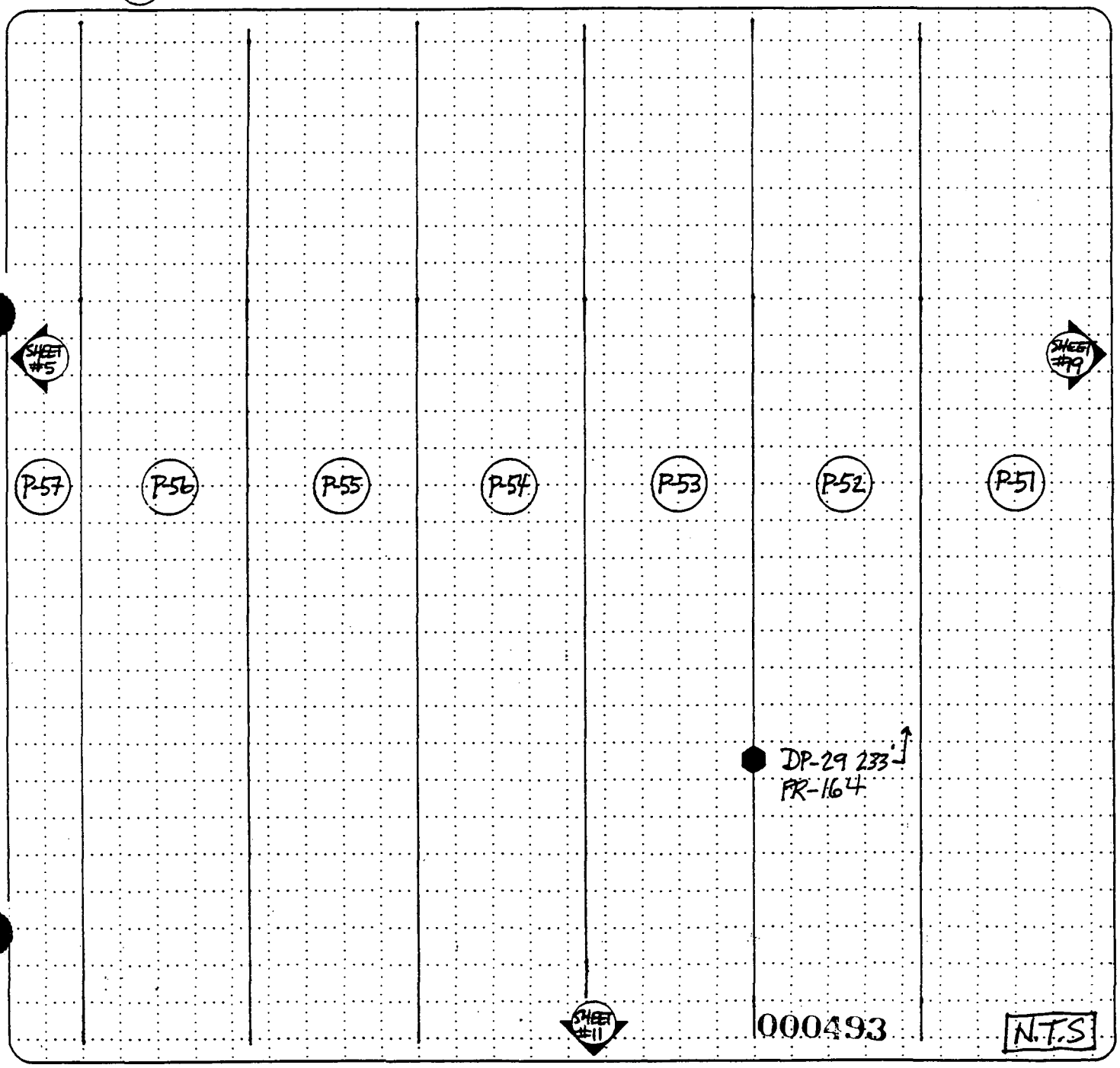
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #13

QA ID: TBH



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

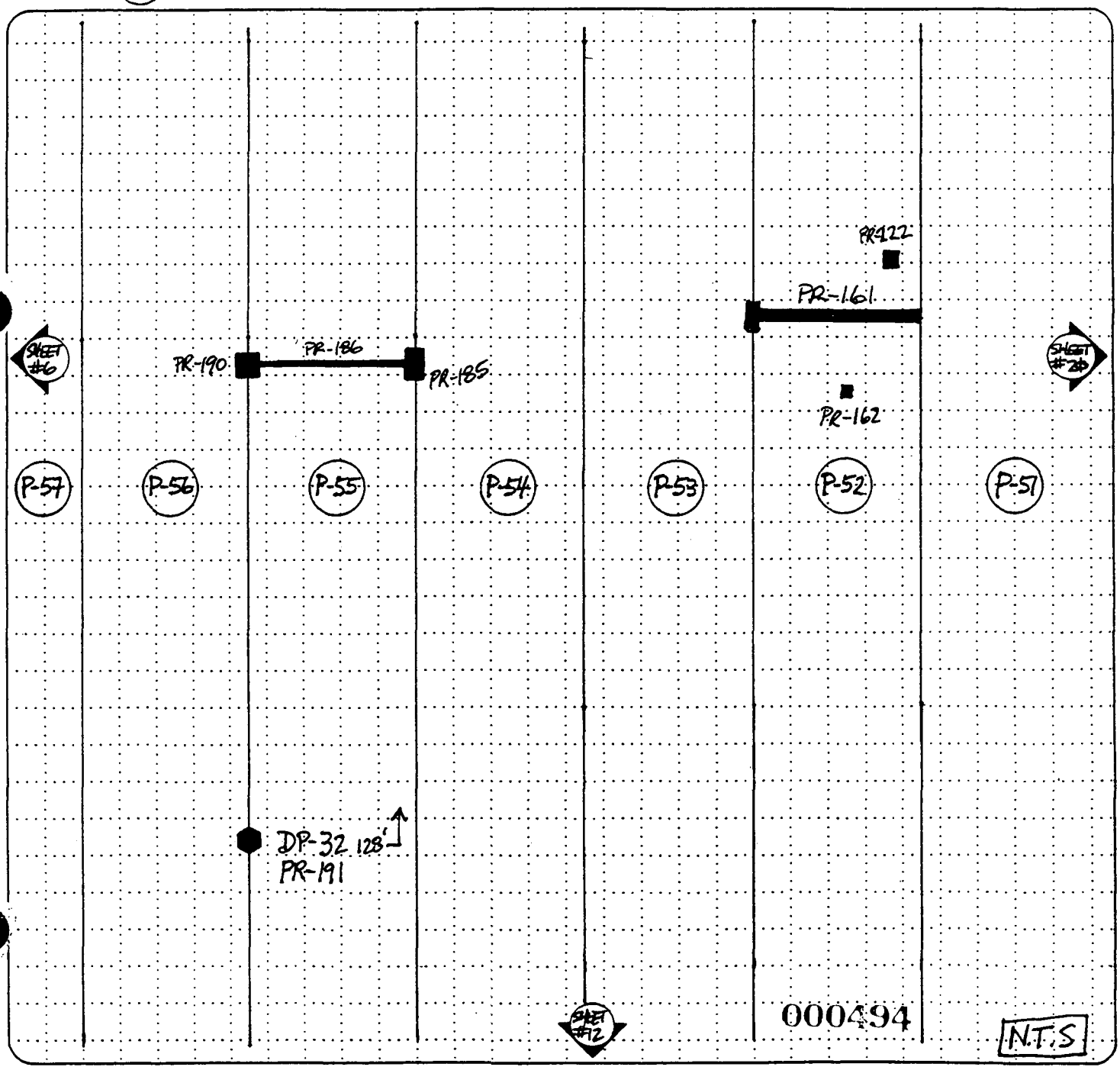
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #14

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

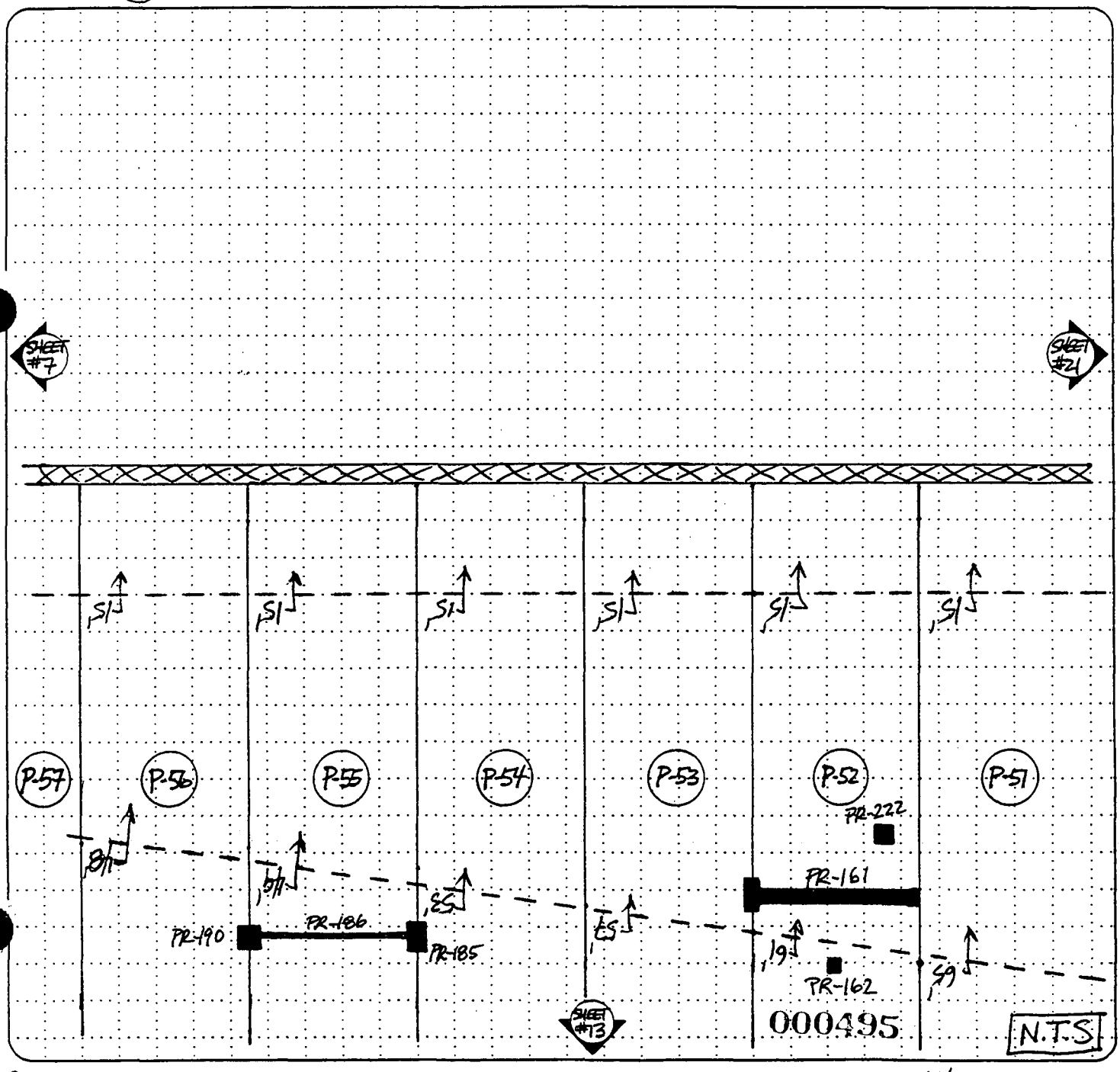
CONTRACTOR: ISTRE CO.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TB



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

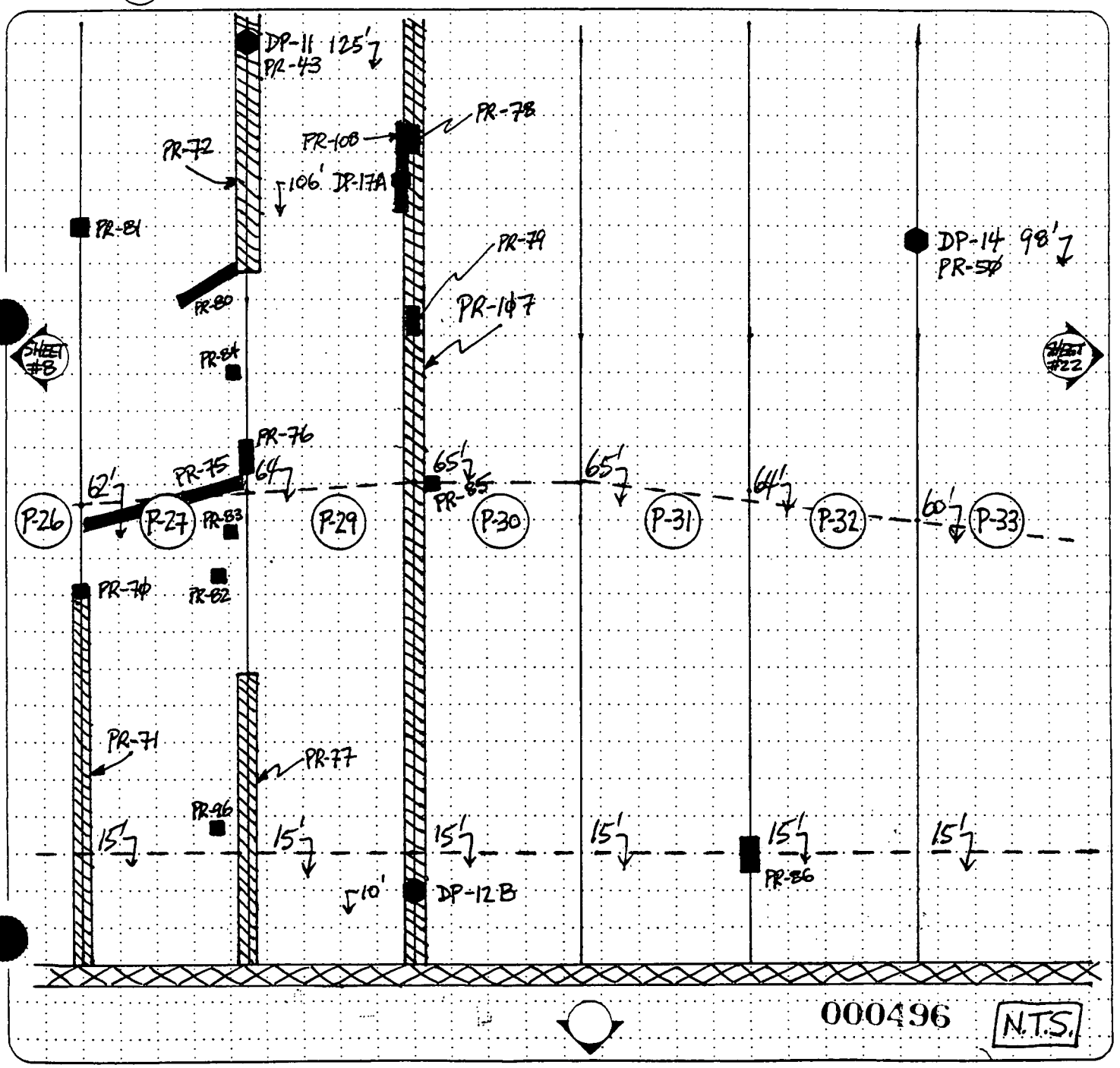
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #16

QA ID: TBD



000496

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

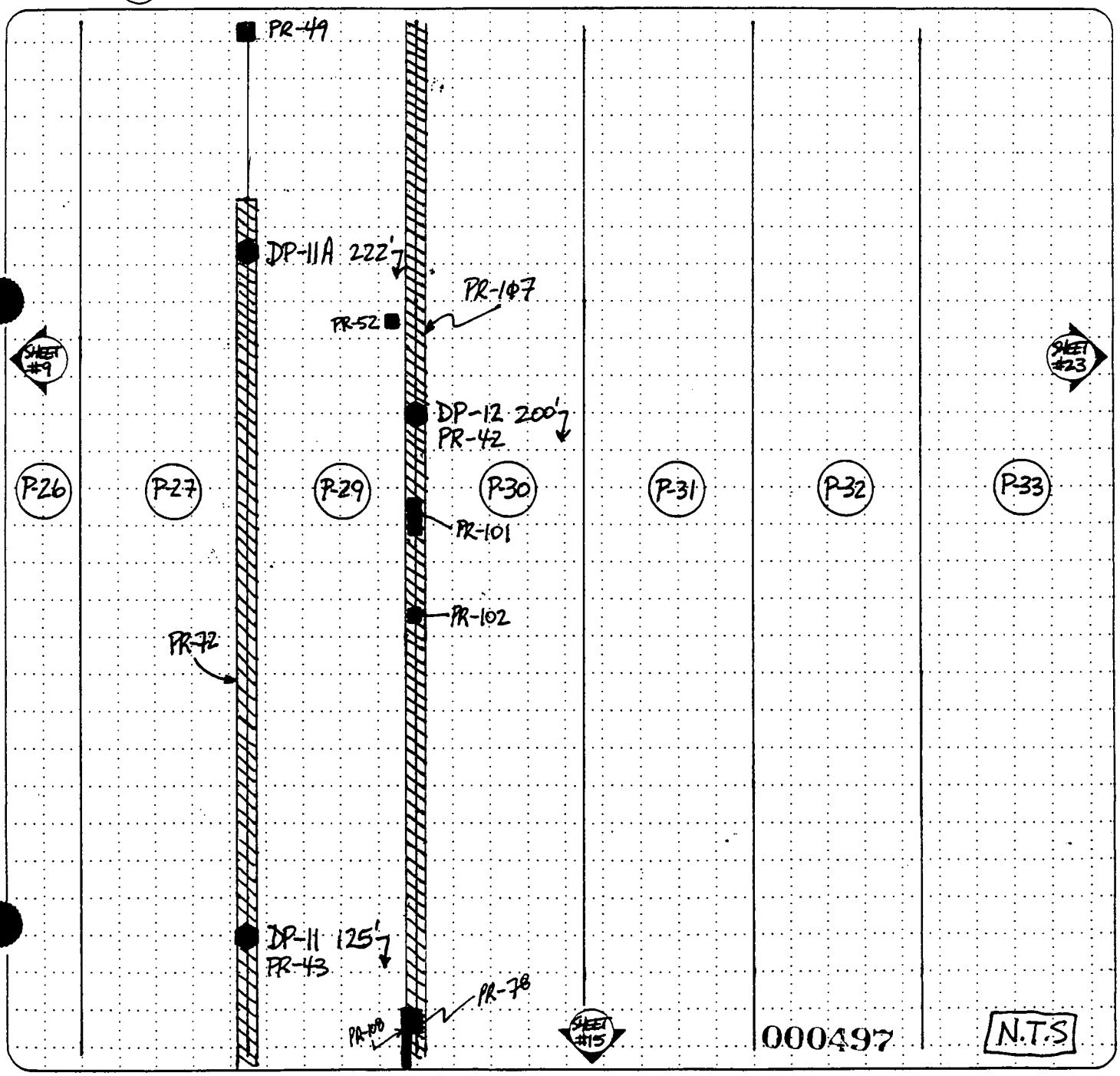
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #17

QA ID: 780



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

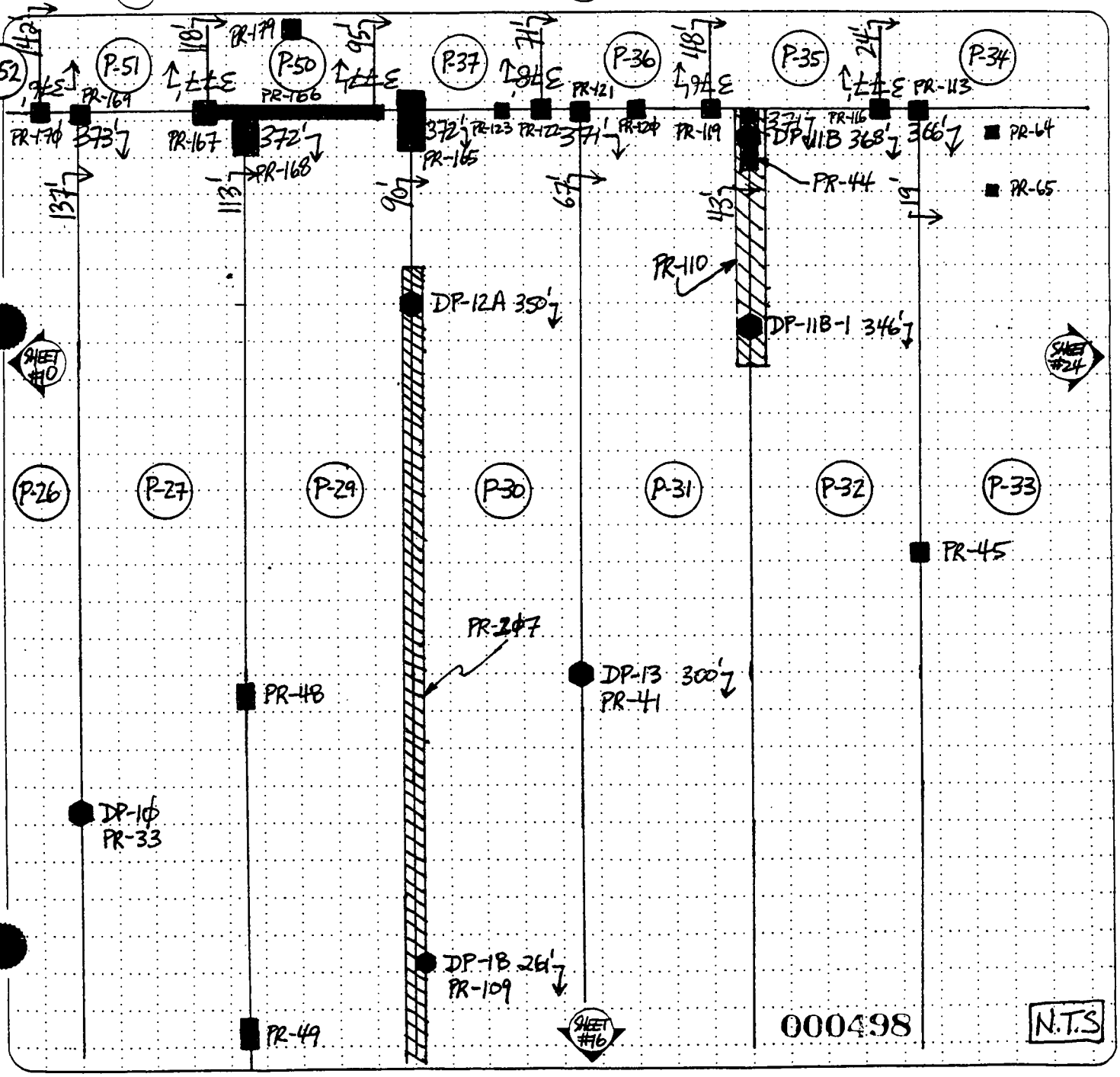
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #18

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

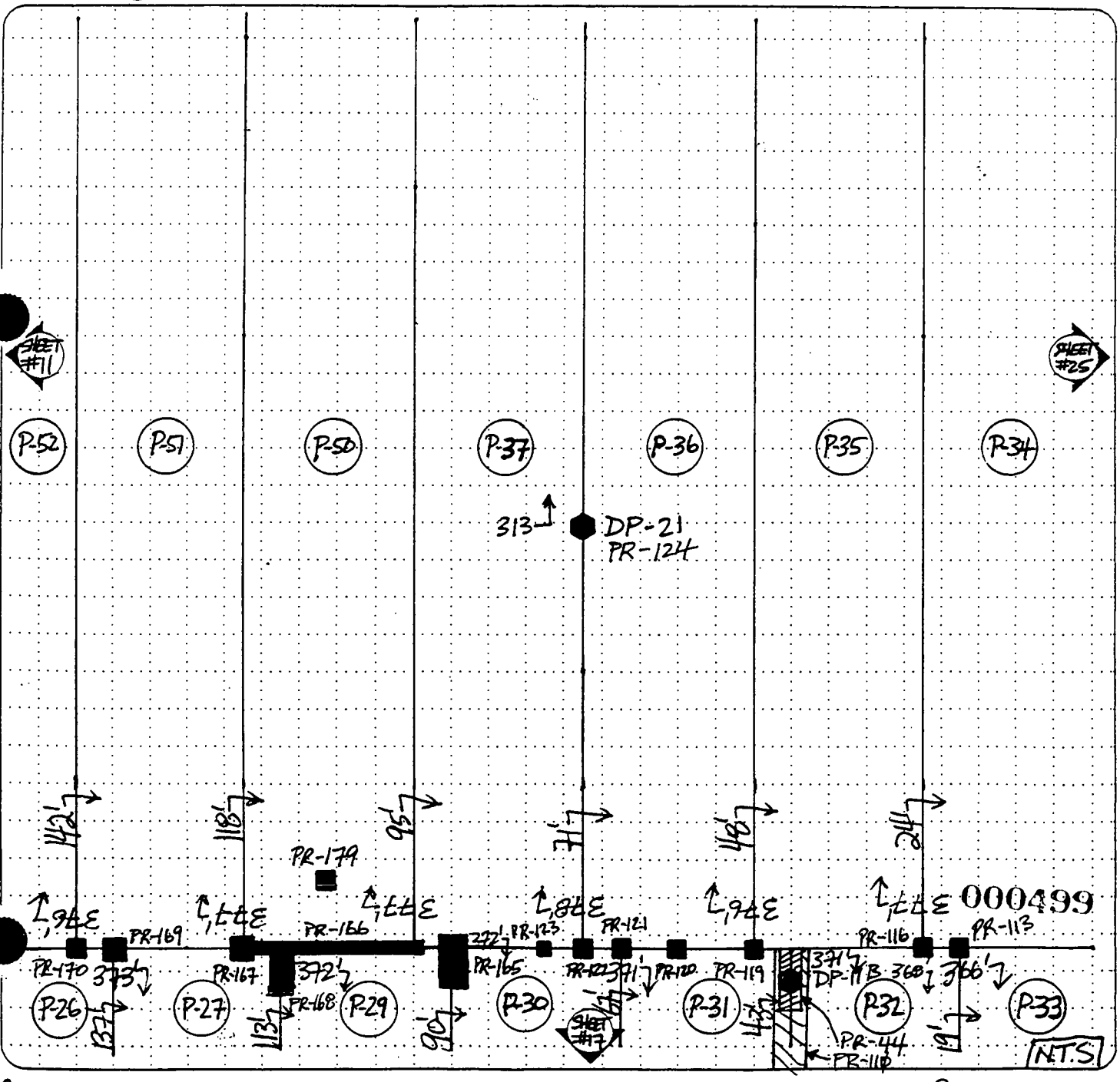
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #19

QA ID: TBD



000499

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE Co.

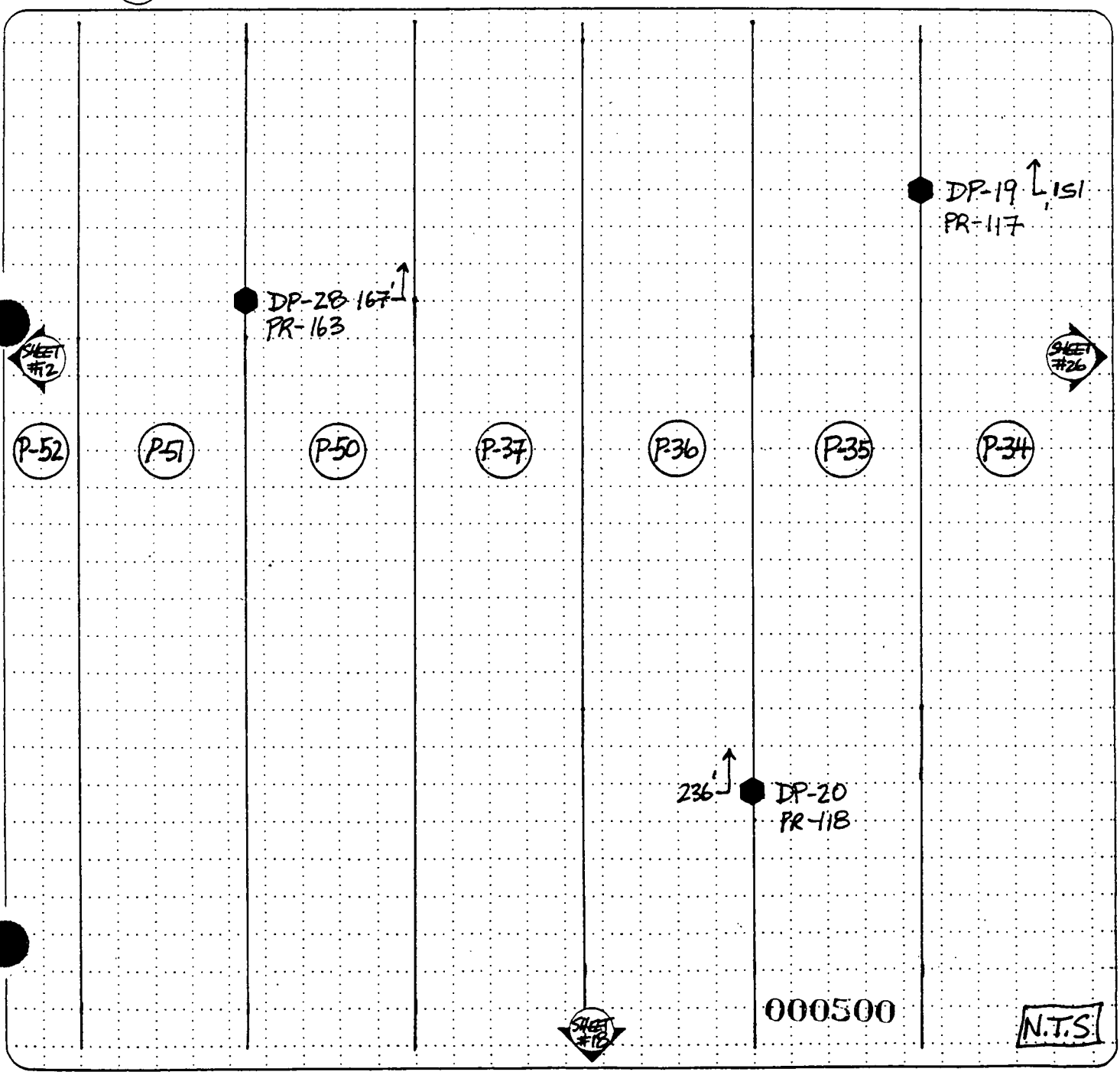
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #20

QA ID: TBV



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

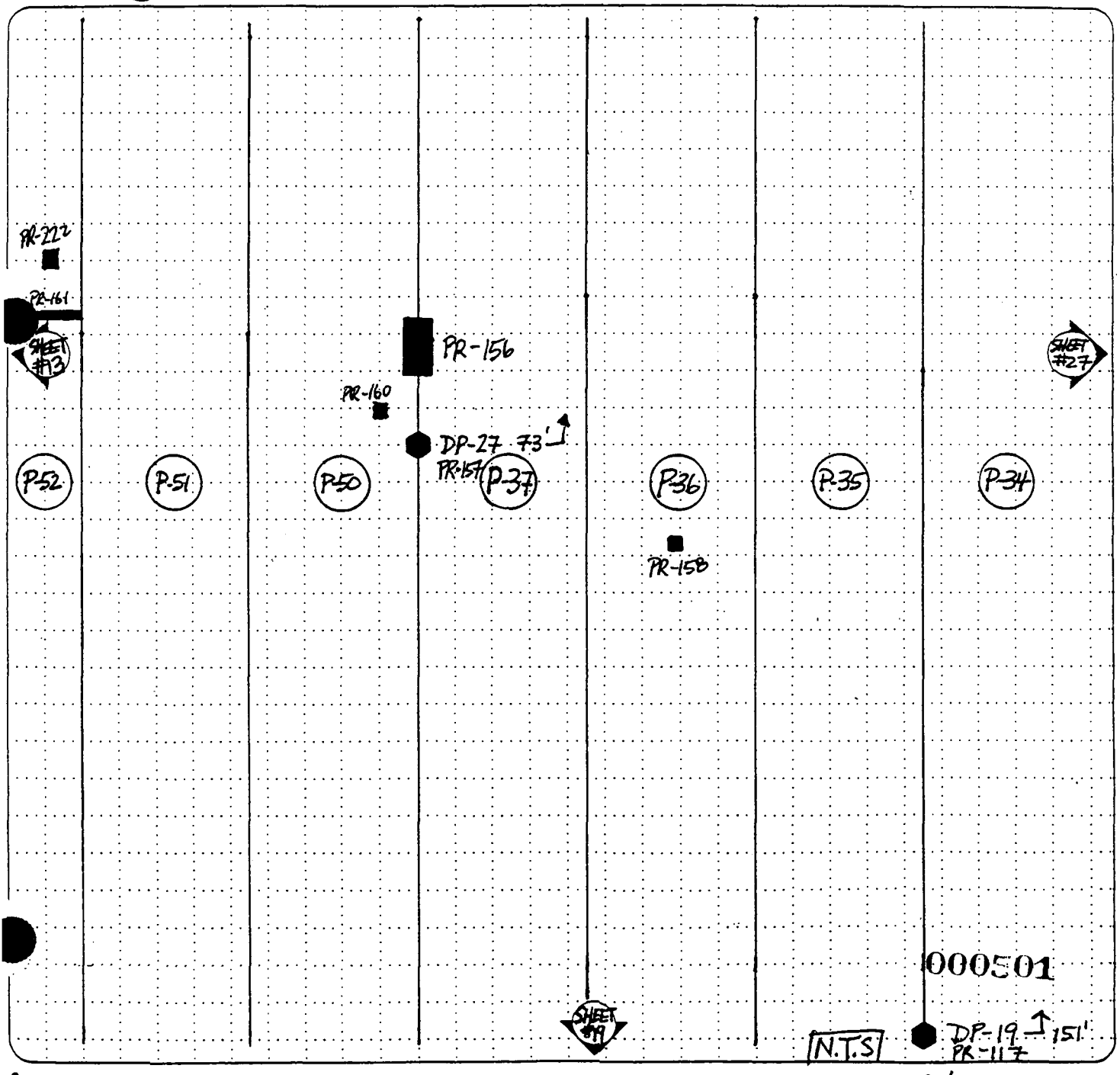
PRIMARY: ■ SECONDARY: □ OTHER: □ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #21

QA ID: TEB



000501

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

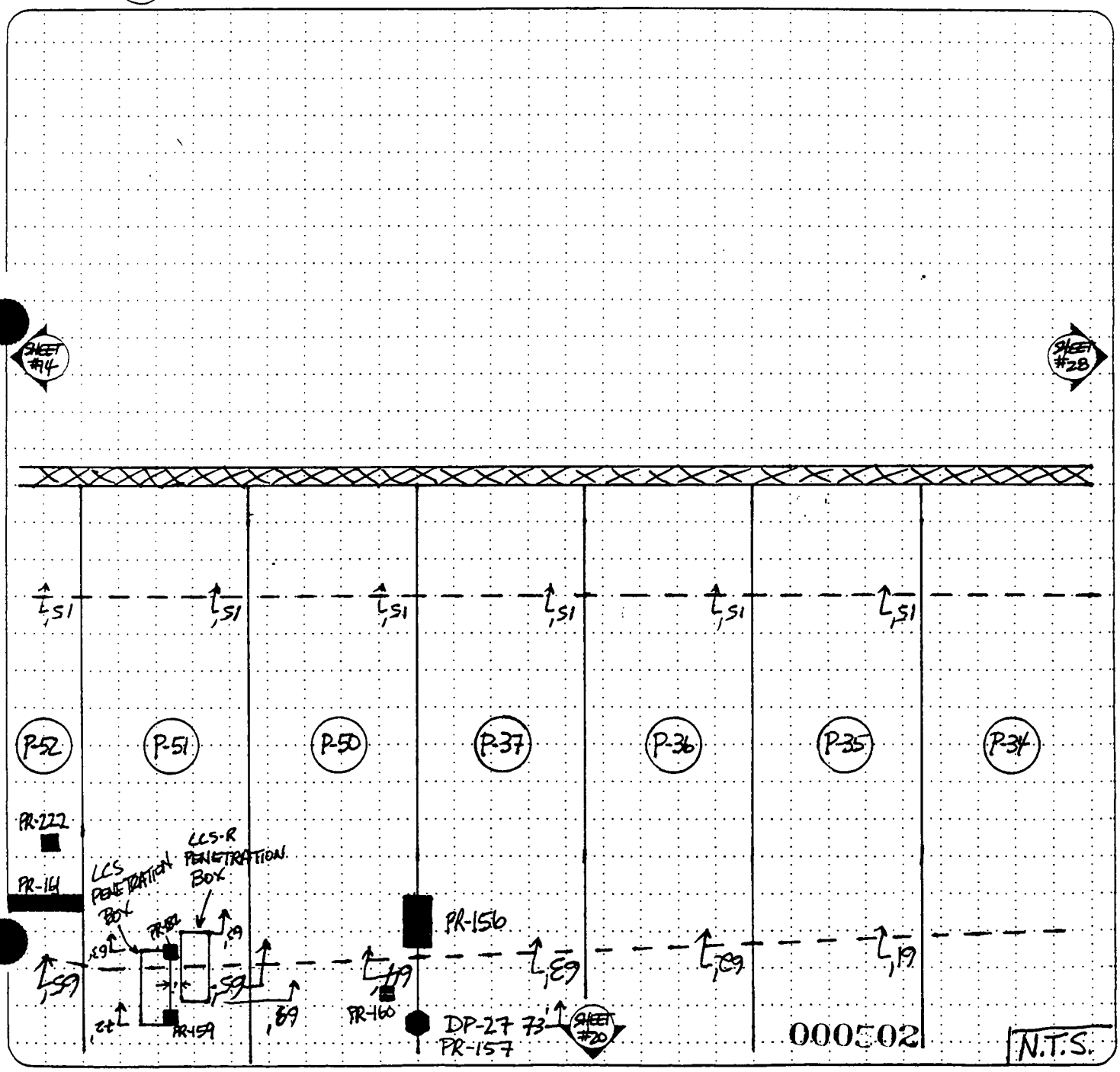
CONTRACTOR: ISTRE CO.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

QA ID: TBD



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO: G00409 TASK NO.: 04.1

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE Co.

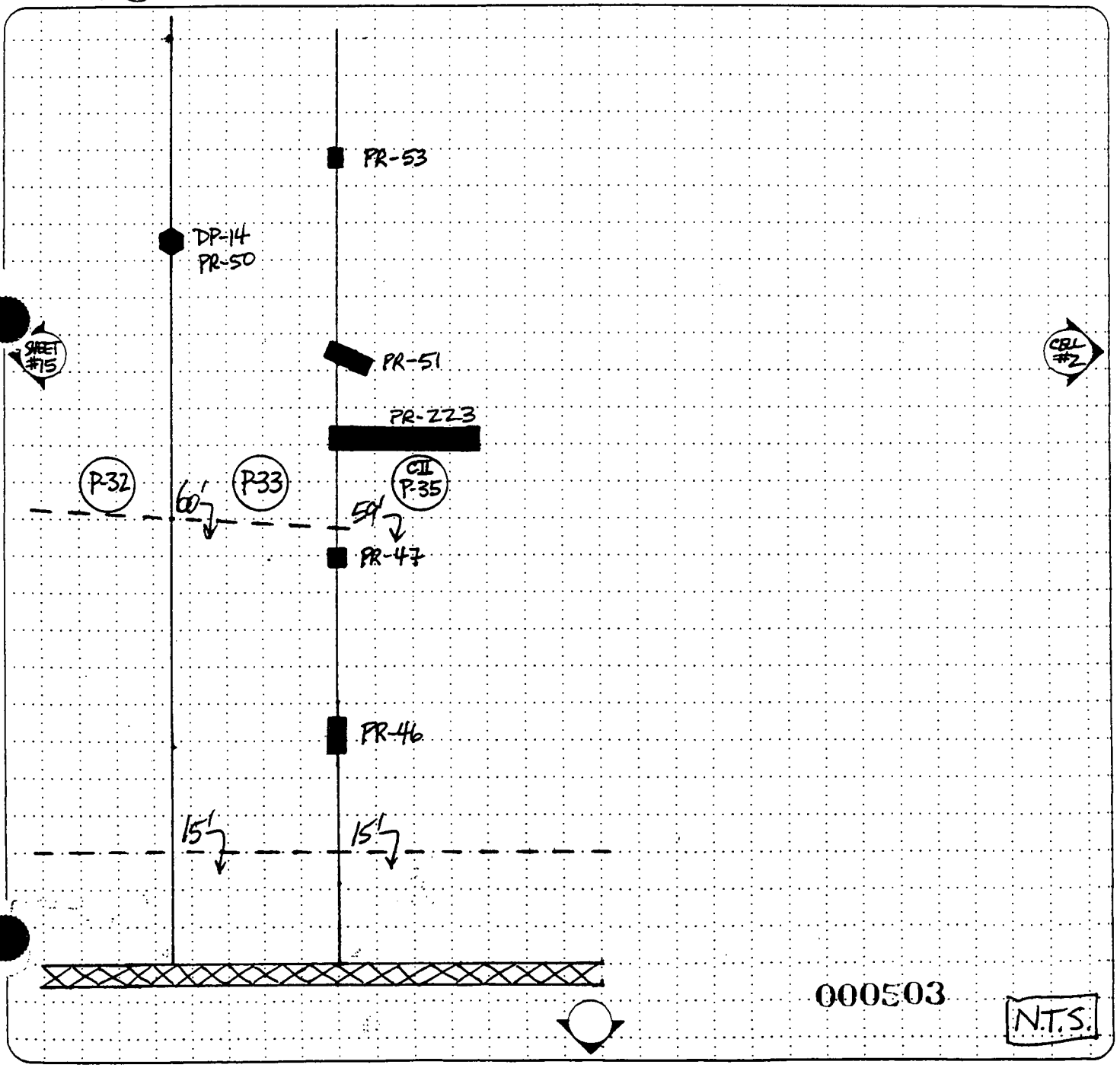
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #23

QA ID: 739



GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE Co.

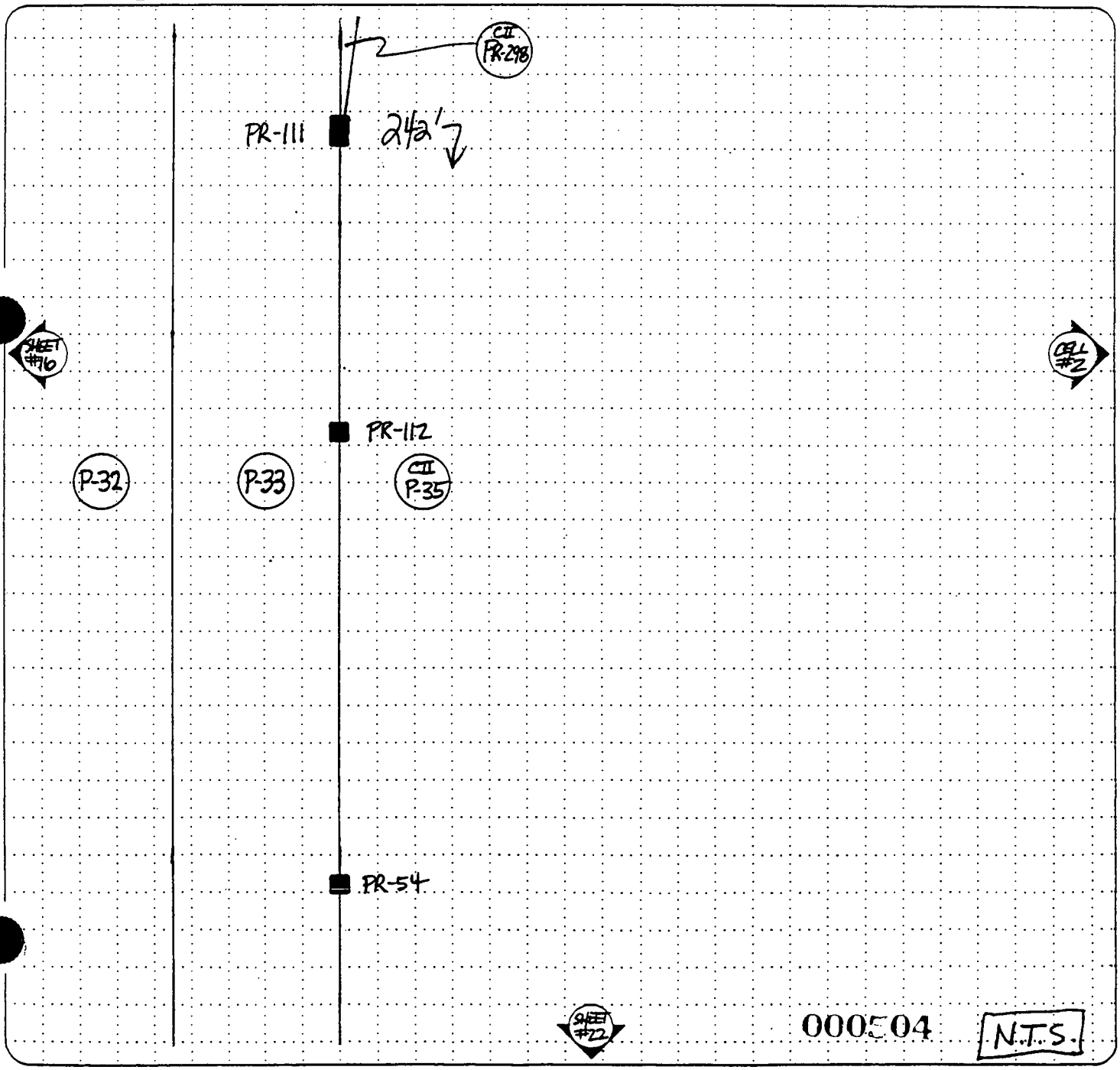
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE: SEE OTHER SIDE FOR SYMBOLS

SHEET #24

QA ID: TBW



000504

N.T.S.

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE CO.

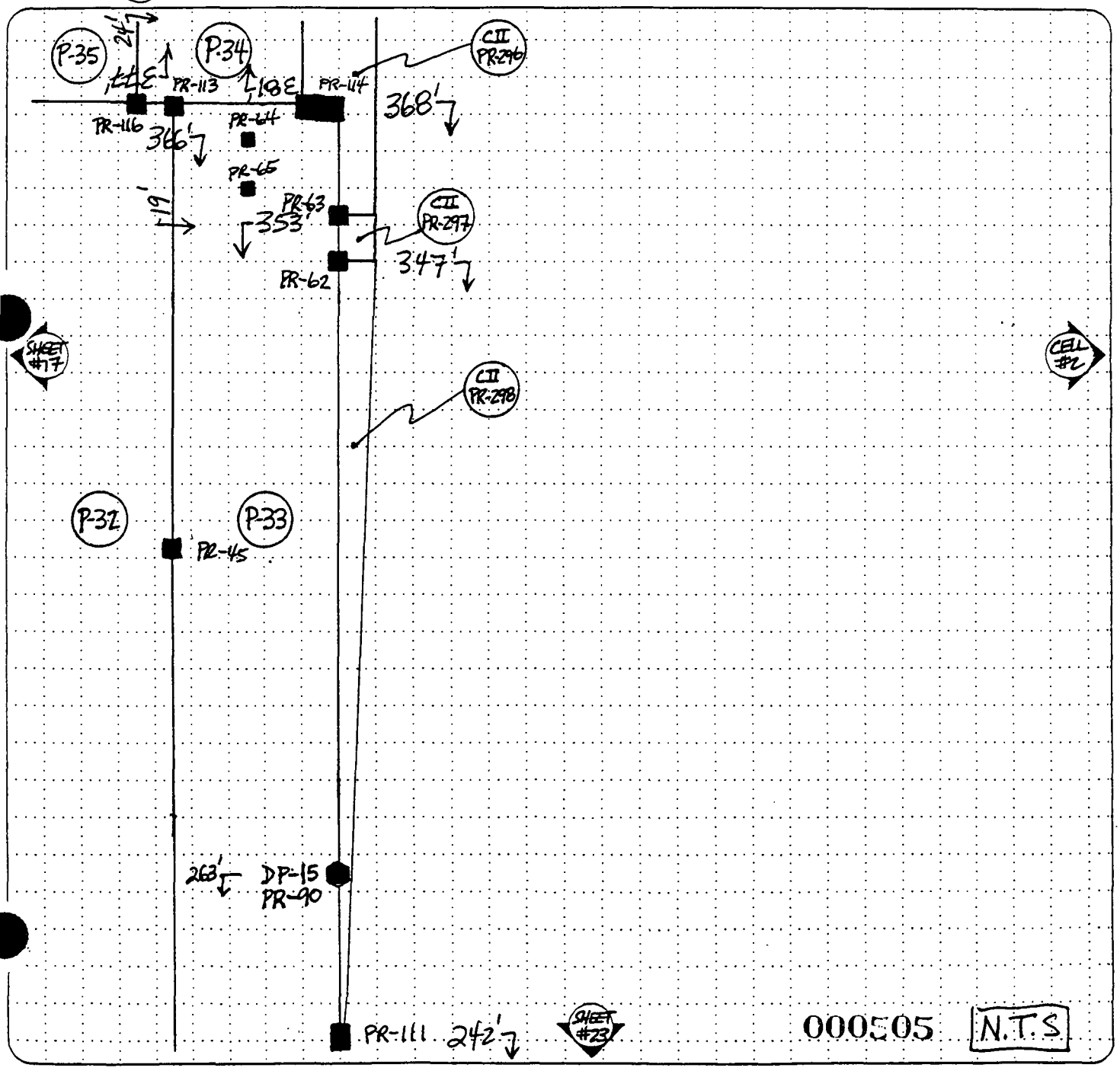
PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

SHEET #25

QA ID: TBD



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N.T.S

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FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: _____ day _____ month _____ year

CONTRACTOR: ISTRE Co.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

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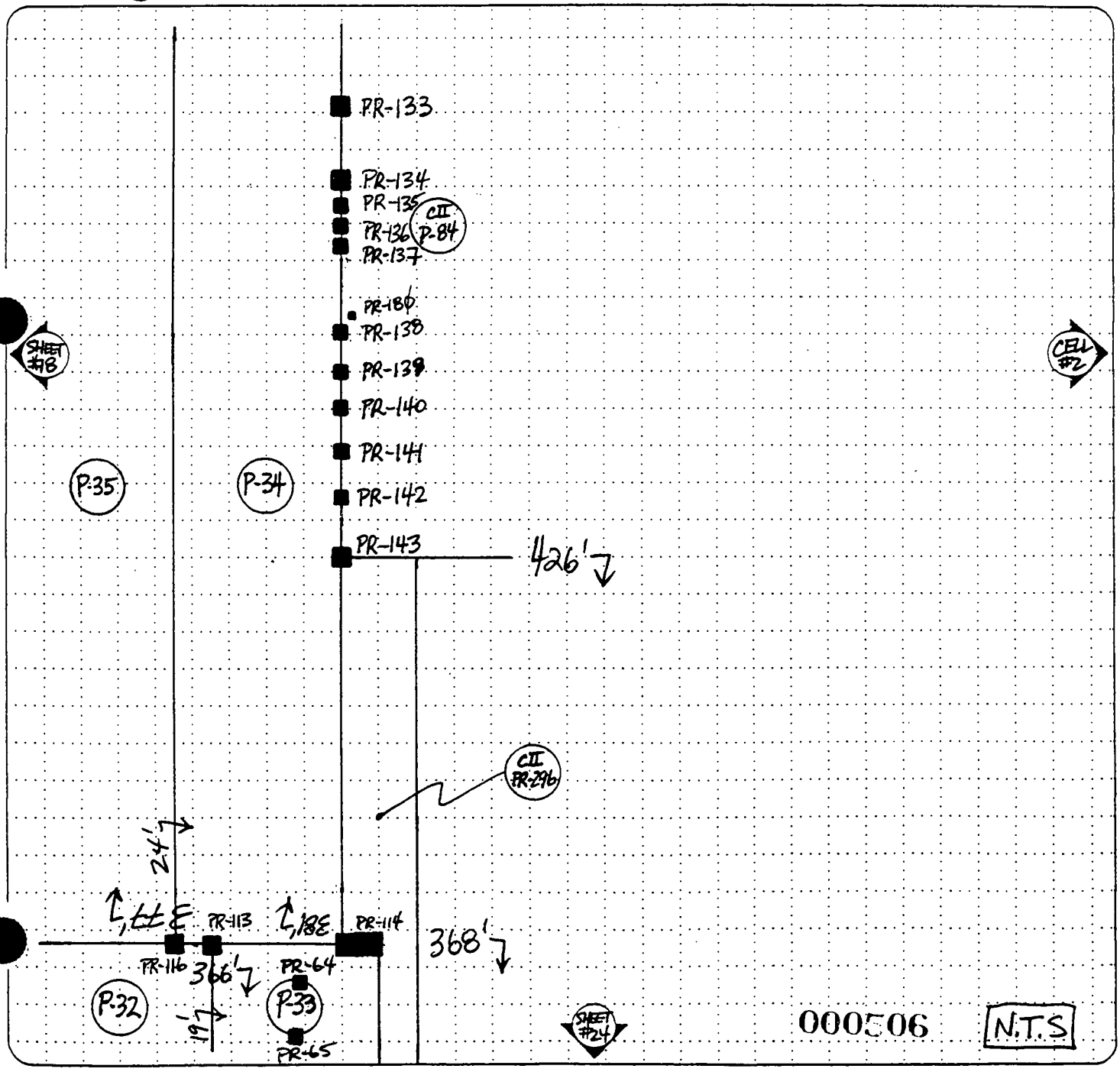

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FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

E-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

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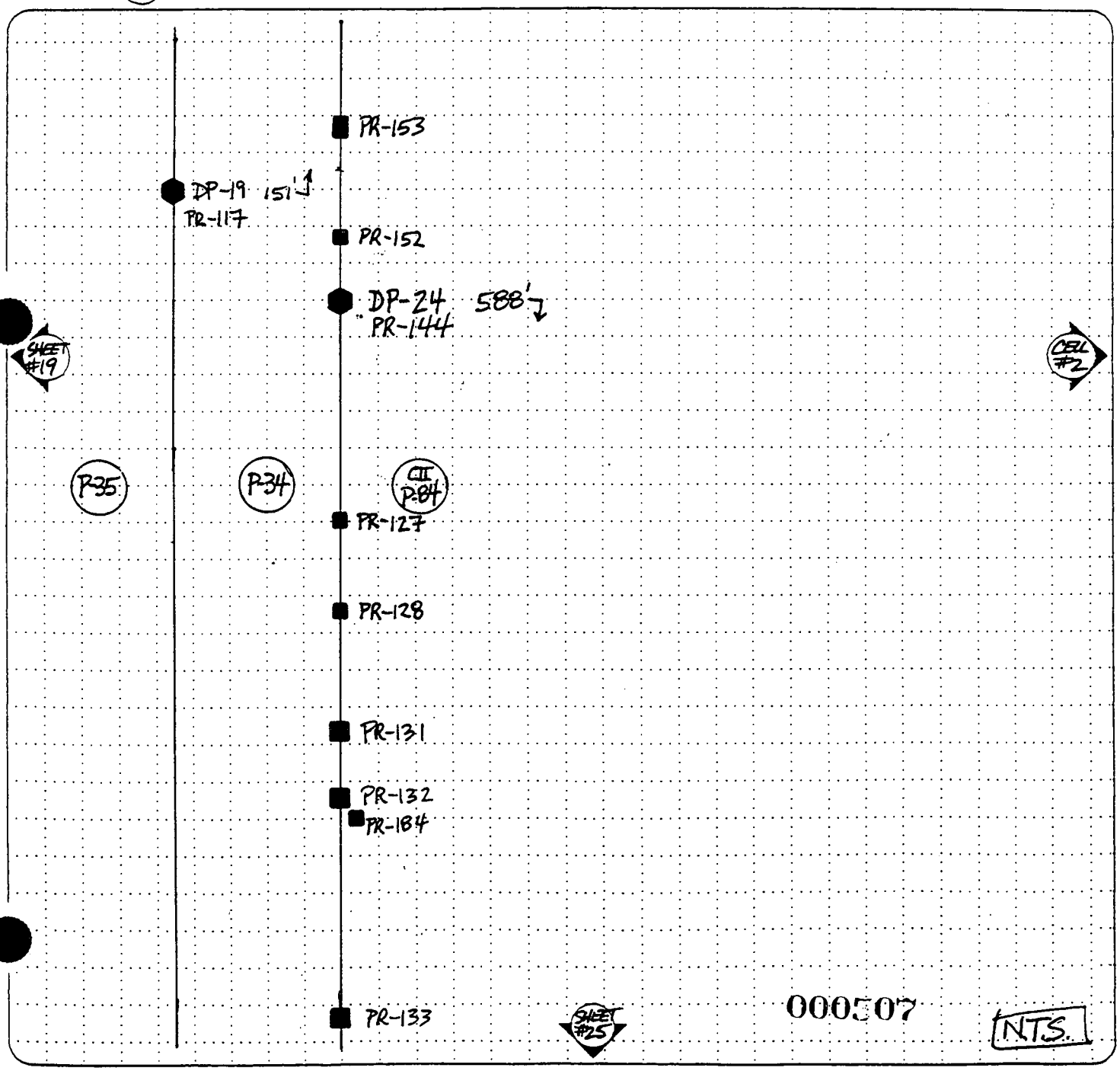

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SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

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NOTE:
SEE OTHER SIDE FOR SYMBOLS

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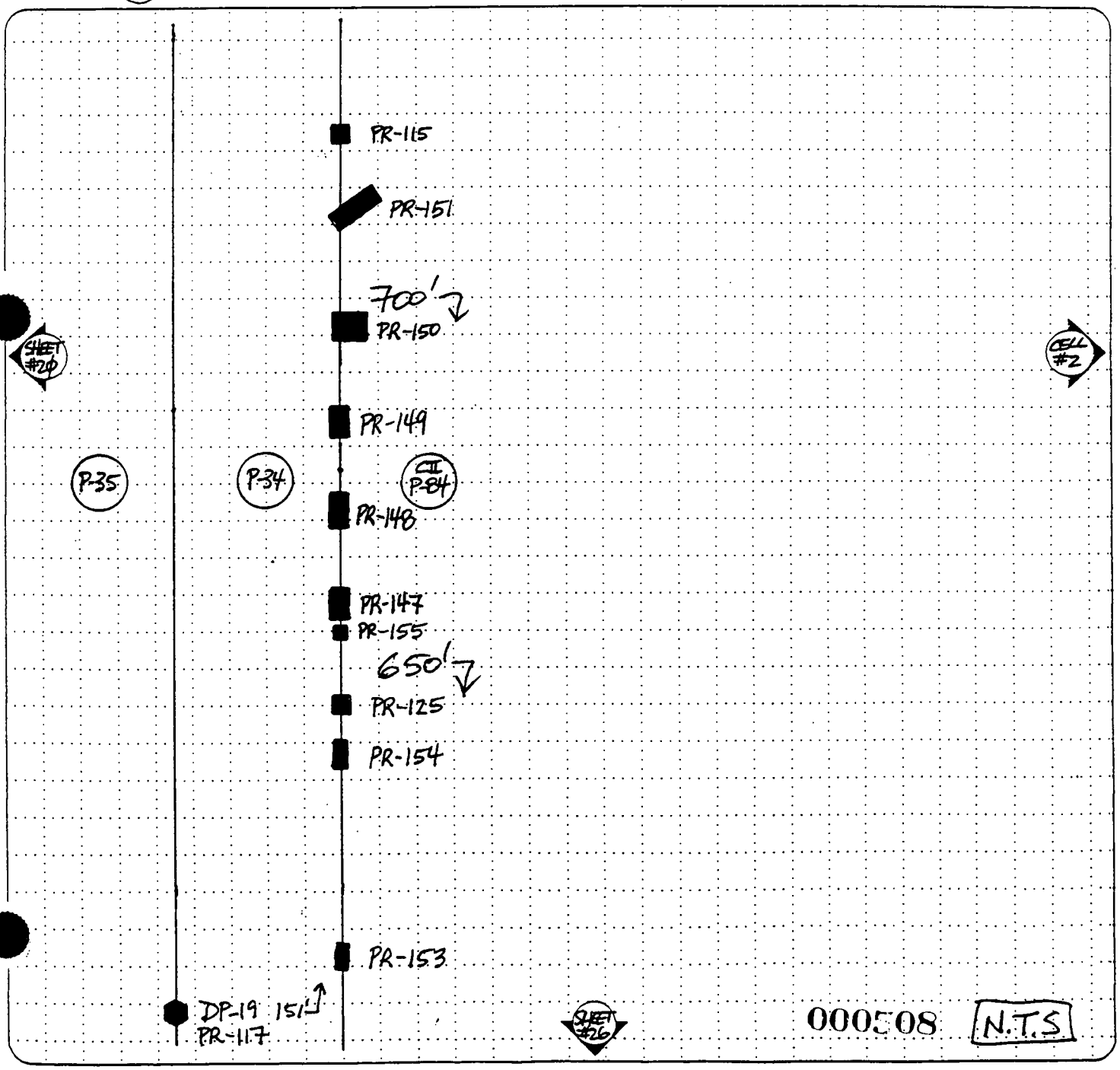

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FLUOR DANIEL FERNALD

SEAM AND PANEL REPAIR LOCATION LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: PHASE II - CELL #3 DATE: ____ day ____ month ____ year

CONTRACTOR: ISTRE CO.

PRIMARY: ■ SECONDARY: ☐ OTHER: ☐ PRODUCT TYPE: 80-MIL TEXTURED HDPE GEOMEMBRANE

NORTH

NOTE:
SEE OTHER SIDE FOR SYMBOLS

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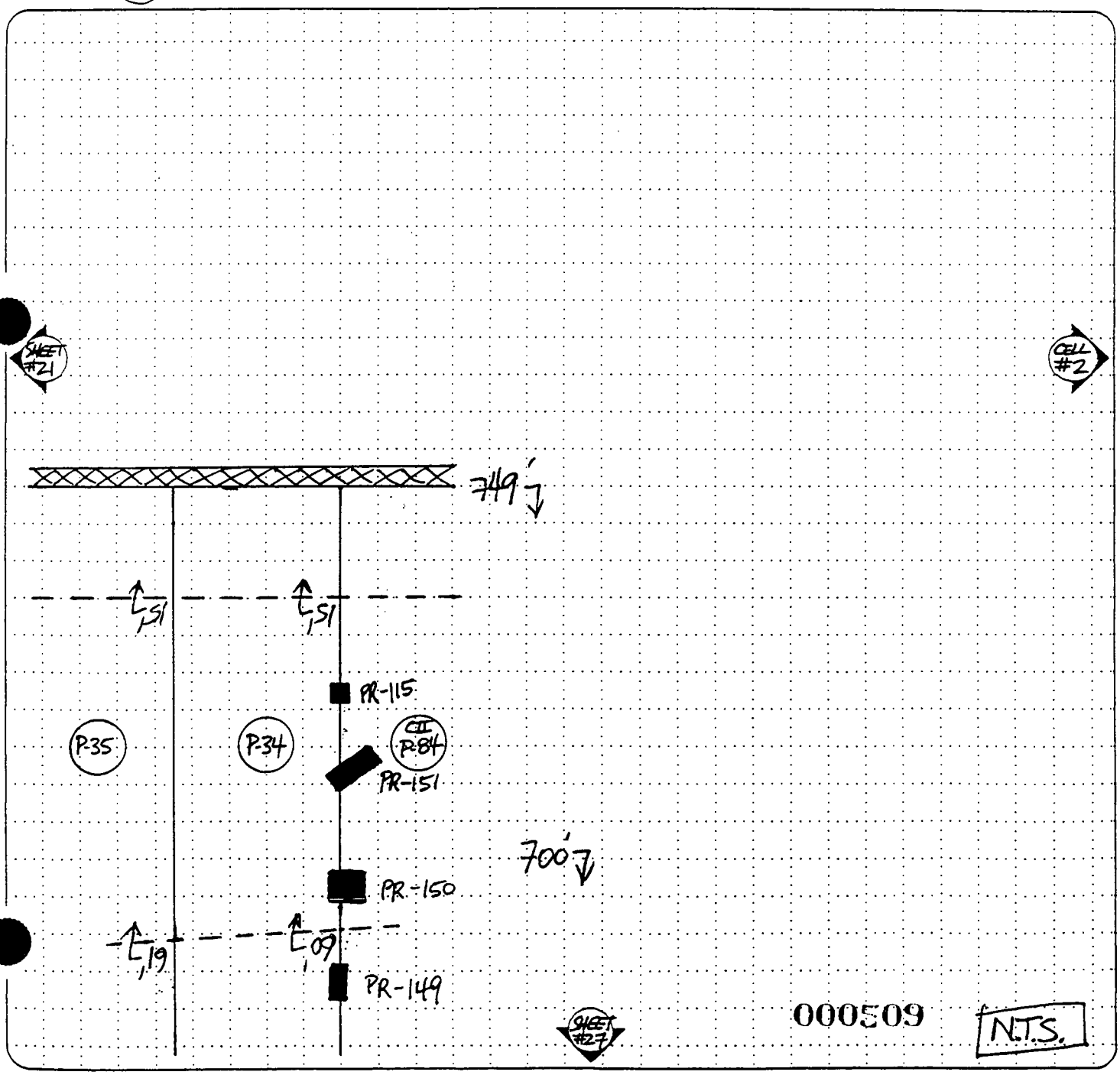

APPENDIX Q

ELECTRICAL LEAK DETECTION TESTING REPORT (DRAFT)

2740

ELECTRICAL LEAK DETECTION TESTING REPORT

Cell 3
On-Site Disposal Facility

Revision A
October 1999

United States Department of Energy

Fernald Environmental Management Project
Hamilton, Ohio

Prepared by

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

Under

Fluor Daniel Fernald
Subcontract 95PS005028

000511

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1. INTRODUCTION

1.1 Overview

The Fernald Environmental Management Project (FEMP) is a 1,050-acre facility located in southwestern Ohio approximately 18 miles northwest of Cincinnati, Ohio. An above ground engineered disposal facility for low level radioactive and treated RCRA wastes is being constructed within the boundaries of the FEMP. The disposal facility is commonly referred to as the On-Site Disposal Facility (OSDF). The OSDF design provides for a total of nine (9) disposal cells. Cell 1 was constructed and began receiving wastes in 1997. Cell 2 was constructed and began receiving waste in 1998. Cell 3 is under construction and will begin receiving waste in 1999. Phased construction for Cells 4 through 6, filling of Cells 1 through 6, and construction of the capping systems for all six (6) cells is scheduled to be complete by the end of the year 2006. Construction, filling, and closure of additional cells will be scheduled after the year 2006 based on the final projected volumes of waste generated from the FEMP.

As an on-going effort to assure that the highest levels of construction quality control (CQC) and Construction quality assurance (CQA) are applied to OSDF components, FDF instructed GeoSyntec Consultants (GeoSyntec) to review current technologies for supplemental CQC/CQA of the primary geomembrane liner systems of future OSDF cells. GeoSyntec identified electrical leak detection as a proven technology that may be appropriate for supplemental CQC/CQA of these primary liner systems. Options to demonstrate the technology and implement, as feasible, a supplemental CQC/CQA program for OSDF Cell 3 were examined by GeoSyntec and Flour Daniel Fernald (FDF).

1.2 Procurement of a Specialty Contractor

Detection and location of leaks in geomembrane using electrical methods is a proven technology that is well-documented in technical literature. Electrical leak detection surveys may be conducted on exposed geomembrane or on geomembrane that has been covered by the drainage layer and the protective layer. A primary advantage to performing leak detection testing on the exposed geomembrane liner is that identified

leaks may be repaired and re-tested prior to demobilization of the geosynthetics installer. A primary advantage to performing leak detection testing after placement of the drainage layer and the protective layer is that leaks that may have been created during placement of the drainage layer and the protective layer may be identified after the construction activities have been completed. Leaks discovered after placement of the drainage and protective layers (including undetected leaks that existed prior to these construction activities) must be repaired by removing the drainage layer and the protective layer in the area of the suspected leak. Following repair, the drainage layer and the protective layer must be replaced and the area must be re-tested.

GeoSyntec reviewed the testing methods, requested proposals from experienced specialty contractors, and provided a recommendation to FDF in a letter report dated 7 September 1999 titled, "Specialty Subcontractor Proposal Evaluation Report, Leak Detection Testing of Geomembrane Liner". A copy of the letter report evaluating the specialty subcontractors is included as Attachment 1. GeoSyntec recommended electrical leak detection testing of the exposed geomembrane liner using Solmers International (Solmers) as the specialty subcontractor. Key considerations influencing GeoSyntec's recommendation are as follows:

- Testing of the exposed geomembrane liner may be included as a part of construction quality control (CQC) testing during installation of the geomembrane liner with little or no impact on the construction schedule.

- Repair of detected leaks may be completed by the installer and re-tested prior to demobilization of the installer.

- GeoSyntec believes the potential for creating leaks during placement of the drainage layer and the protective layer is minimal because:

  - OSDF liner system design includes a geotextile cushion installed over the geomembrane liner providing added protection of the geomembrane from puncture during placement of the drainage layer and the protective layer;

  - OSDF liner system design includes an 80 mil HDPE geomembrane providing increased resistance to puncture from materials in contact with the geomembrane; and

- QC monitors provide 100 percent coverage during placement of the drainage layer and the protective layer to assure specified placement procedures and equipment are used during these construction activities.

- There is a potential for damaging the geomembrane during the removal of the drainage layer and protect layer.

- GeoSyntec recommended Solmers as the specialty subcontractor because of their extensive experience with testing of exposed geomembrane liners.

1.3 Report Organization

The remainder of this report is organized to provide information regarding: (i) description of test method; (ii) demonstration of the test method; (iii) testing in OSDF Cell 3; (iv) results and lessons learned; and (v) conclusions and recommendations.

2. DESCRIPTION OF TEST METHOD

2.1 Overview

Electrical leak detection is based on detection of an electrical current flowing through a leak in the geomembrane liner. The geomembrane acts as an insulator between the conductive soil below the liner and the water in the soil or on the exposed geomembrane above the liner. A leak in the liner allows current to flow through the insulator. The current flow is detected and recorded as a potential leak. Based on the particular method, once the potential leak is discovered the technician takes actions to identify and locate the leak. As described in Section 1.2, GeoSyntec recommended electrical leak detection testing of an exposed geomembrane for further evaluation. A description of the testing method is provided below.

2.2 Electrical Leak Detection Testing on Exposed Geomembrane

The principle behind this technique is to insert a DC voltage onto each side of a geomembrane liner and then detect areas where electrical current flow through leaks in the liner, as shown schematically in Figure 1. The geomembrane must be an insulator, which is the case for the HDPE geomembrane used in OSDF liner construction. Electrical potential is applied between a water puddle and the conductive layer below the liner as shown in Figure 2. Whenever water leaks through the geomembrane, an electrical current is detected by an audio signal and registered on a meter attached to the testing apparatus. The conductive layer below the geomembrane for the liner system of the OSDF is a geosynthetic clay liner (GCL). The moist bentonite in the GCL provides the conductive material below the geomembrane.

2.3 Limitations and Support Requirements

2.3.1 Limitations

Seams between the GCL panels are formed by overlapping the panels and applying bentonite between the panels at the overlaps. The electrical conductive properties of the GCL overlaps are not as good as the conductive properties of the GCL panel itself;

therefore, a drop in voltage potential at the overlap of GCL panels was identified as a concern for electrical leak detection of the OSDF liner system. A demonstration of the technique was programmed to observe the detection of known leaks on a test pad constructed to simulate the OSDF primary liner system prior to any testing in OSDF Cell 3. Additionally, with the potential drop in voltage across GCL seams, the distance from the grounding point (cathode) attached to the GCL and the anode at the leak detection testing apparatus was of concern to GeoSyntec and FDF. To address this concern, the demonstration of the technique was continued in Cell 3 to allow testing over a greater distance. The demonstrations of the electrical leak detection test method on the test pad and in Cell 3 are described in Section 3 of this report.

2.3.2 Support requirements

Electrical leak detection on an exposed geomembrane requires an adequate water supply and contact between the geomembrane and the conductive layer below the geomembrane to allow an electrical current to flow. Support requirements for the testing were as follows:

- Water was initially supplied successfully from a hydroseeder through a 2-inch supply line. During later testing in Cell 3, water was supplied successfully from a 2-inch water supply line connected to the dust control water supply on the intercell berm between Cell 2 and Cell 3. An attempt to supply water through a ¾ -inch water line from the dust control water supply proved to be inadequate.

- As the geomembrane warms under direct sunlight, expansion of the geomembrane creates wrinkles that cause loss of contact between the geomembrane and the conductive layer below. During these periods, the rate of testing slows as the technician works to force contact between the wrinkled geomembrane and the conductive layer below. To assist in dealing with the wrinkles, laborers were used to walk the wrinkles and create contact with the conductive layer below with each progressive pass of the testing apparatus.

- During testing in the east drainage corridor of Cell 3, water was managed through collection of the water behind a temporary dam created by extrusion welding of rain flaps to the primary geomembrane liner. During testing in the west drainage corridor and the catchment area, water was collected at the liner penetration boxes. In both cases, water was pumped from the temporary collection area to a discharge point south in the area of future Cell 4 construction.

3. DEMONSTRATION OF THE TEST METHOD

3.1 Overview

As a part of the process of evaluation of electrical leak detection specialty subcontractors, GeoSyntec consulted with two specialty subcontractors regarding the use of the GCL underlying the geomembrane as the conductive layer for electrical leak testing. Both specialty subcontractors expressed confidence that the conductive potential of the GCL is adequate for the testing method; however, neither had data to support the opinion. GeoSyntec and FDF agreed to conduct a demonstration of the test method on a test pad with 80 mil HDPE geomembrane installed over GCL (i.e., installed in a configuration similar to the OSDF Cell 3 primary geomembrane liner). Additionally, GeoSyntec and FDF visited an active project site where Solmers was conducting electrical leak detection testing of an exposed geomembrane. The remainder of this section is organized to present information regarding: (i) visit to Solmers' project; (ii) demonstration the test method on a test pad at the FEMP; and (iii) demonstration of the test method on portions of OSDF Cell 3.

3.2 Solmers Project

On 10 September 1999, GeoSyntec and FDF visited an active construction site located in Jouilette, Canada where Solmers was conducting electrical leak detection testing on exposed geomembrane liners. The construction site is for water storage impoundments for a Municipal water supply. Several ponds are under construction with each pond having a surface area of approximately 20 acres. The geomembrane is a very low-density polyethylene (VLDPE) installed over a sand base. GeoSyntec and FDF observed the testing method, were briefed on testing procedures, and were briefed on site safety measures. Several leaks had been detected and repaired. Three leaks had been detected and were awaiting repair. One leak was a small razor cut (approximately ¼ -inch in length) and the other two leaks were holes (punctures) in the geomembrane. Solmers re-tested the geomembrane at the location of the leaks to demonstrate the testing apparatus and the signals received when leaks are detected. Based on this demonstration, GeoSyntec and FDF agreed that the testing method is a technically acceptable option for the OSDF, providing a demonstration at the FEMP confirms

appropriate detection sensitivity using GCL as the conductive layer under the geomembrane.

3.3 Test Pad

A test pad was constructed outside the limits of construction of OSDF Cell 3 at the FEMP for a demonstration of the electrical leak detection method. A sketch showing the approximate layout of the test pad is presented as Attachment 2. Photographs of the test pad are presented in Attachment 3. Solmers conducted a demonstration of the testing method on the test pad on 15 September 1999. During the testing, GeoSyntec and FDF added small razor cuts (each approximately ¼-inch long) at known locations. Each of the leaks added by GeoSyntec and FDF was detected and located by Solmers. No unknown leaks were detected. Representatives from Ohio EPA, Department of Energy (DOE), FDF, and GeoSyntec observed the demonstration and each person was offered the opportunity to see and hear the signals emitted by the testing apparatus at the leak locations. GeoSyntec and FDF considered the demonstration a success; however, the concern over potential voltage loss at GCL overlaps, especially at long distances, was not adequately addressed by the small test pad. A continuation of the demonstration in Cell 3 of the OSDF was scheduled to demonstrate the sensitivity of the testing apparatus at greater distances and across GCL overlaps.

3.4 OSDF Cell 3

The demonstration of the electrical leak detection method was continued in OSDF Cell 3 on 16 September 1999. Two small leaks (razor cuts approximately ¼-inch long) were created in patches on the floor of Cell 3. The cathode for the testing apparatus was located in the anchor trench grounded in the GCL. The first razor cut was located approximately 222 feet from the anchor trench at a location across one lateral seam and one butt seam of the GCL from the grounding point. The second razor cut was located approximately 255 feet from the anchor trench at a location across two lateral seams and two butt seams of GCL from the grounding point. The signals (visual and audible) from the testing apparatus at the first razor cut were approximately the same as for the test pad (i.e., strong signals). The signals from the testing apparatus at the second razor cut were somewhat weaker than at the first location; however, the signals were still

clearly indicative of a leak (i.e., the anomaly in the visual and audible readings at the testing apparatus clearly indicated a current flow between the anode and the cathode). Daily reports from GeoSyntec and Solmers along with sketches of the tested area are included as Attachment 4.

Following the demonstration on the OSDF Cell 3 floor, the demonstration was continued on the south slope of the intercell berm between Cell 3 and Cell 4. No leaks were detected at this location.

4. TESTING IN OSDF CELL 3

4.1 Overview

On 16 September 1999, a meeting was held to decide if electrical leak detection testing would be implemented for OSDF Cell 3 as supplemental CQA and the level of testing to be implemented in 1999, if any. A copy of the meeting minutes for the decision meeting is included as Attachment 5. As a result of this meeting, Solmers was directed to test the Drainage Corridor and the Catchment Area of Cell 3. The east side of Cell 3 was scheduled to be tested upon completion of programmed CQA activities and detailed repair work. Upon completion of testing of the Drainage Corridor on the east side of Cell 3, Solmers was instructed to demobilize until the west side of Cell 3 was ready for testing. Solmers was scheduled to return to the FEMP to test the designated portions of the west side of Cell 3 upon notification by GeoSyntec.

4.2 Testing East Drainage Corridor

On 18 September 1999, Solmers performed electrical leak detection testing of the Drainage Corridor of the east side of OSDF Cell 3. Water was supplied for the leak detection testing using a hydroseeder supplied by Petro Environmental Technologies, Inc. (Petro). The water supply was from a 2-inch hose that connected to a 2-inch coupling on Solmers' leak detection testing apparatus. Water management was required to prevent hydration of installed GCL. Water was managed by The Istre Company (Istre) through the use of "rain flaps" welded to the geomembrane across the Drainage Corridor at approximately 350 feet from the east anchor trench. The water was pumped across the intercell berm between OSDF Cell 3 and future OSDF Cell 4.

Solmers conducted testing of the Drainage Corridor on the east side of Cell 3 using the following sequence:

- A 27 volt DC power source was used as shown in Figure 1 and discussed in Section 2.2;

- the 27 volt DC power source (cathode) was grounded to the primary GCL panel aligned with the Drainage Corridor in the east anchor trench;

- the entire Drainage Corridor for the east side of Cell 3 was located below geomembrane panel number P27; testing of the Drainage Corridor included all of panel P27 from 342 feet to 62 feet from the east anchor trench; testing of panel included the seams with the adjacent panels and portions of the adjacent panels to complete a 30-foot wide segment centered on the Drainage Corridor;

- the 27 volt DC power source (anode) was attached to the leak detection apparatus supplying water onto the geomembrane;

- testing began at approximately 342 feet from the east anchor trench and worked eastward (i.e., upslope);

- two testing apparatuses were used with one technician testing the north side of the Drainage Corridor and one technician testing the south side of the Drainage Corridor;

- testing was conducted during the hot portion of the day with numerous wrinkles in the geomembrane that required special effort to manage (i.e., as testing precedes, the geomembrane at the testing apparatus water supply must be in contact with the GCL underneath the geomembrane to allow completion of electrical contact between the geomembrane and the GCL at each point of a potential leak);

- testing of the Drainage Corridor was concluded at the toe of the east berm at approximately 62 feet from the anchor trench; and

- a large patch on the lower slope of the east berm on panel P27 was also tested.

As a result of the electrical leak detection testing of the Drainage Corridor on the east side of OSDF Cell 3, no leaks were discovered. Daily reports from GeoSyntec and Solmers along with sketches of the tested area are included as Attachment 6. Following

completion of testing on 18 September 1999, Solmers' personnel departed from the FEMP.

4.3 Testing West Drainage Corridor and Catchment Area

Solmers' personnel returned to the FEMP on 28 September 1999 to complete electrical leak detection testing of the Drainage Corridor and the Catchment Area of OSDF Cell 3. To improve testing sensitivity, Solmers increased the DC voltage from 27 volts to 54 volts. Water was supplied by Petro through a 2-inch water hose connected to the dust control water supply on the intercell berm between OSDF Cell 2 and OSDF Cell 3. Petro and Istre performed water management through collection of water in the Catchment Area at the liner penetration boxes and pumping across the intercell berm between OSDF Cell 3 and future OSDF Cell 4.

Solmers conducted testing of the Drainage Corridor and the Catchment Area of the west side of Cell 3 using the following sequence:

- A 54 volt DC power source was used as shown in Figure 1 and discussed in Section 2.2;
- the 54 volt DC power source (cathode) was grounded to the primary GCL panel aligned with the Drainage Corridor in the west anchor trench;
- the entire Drainage Corridor for the west side of Cell 3 was located below geomembrane panel number P51; testing of the drainage corridor included all of panel P51 from 200 feet to connection with panel P27 of the east side of Cell 3, and east to overlap the beginning point for testing of Panel P27 at 342 feet from the east anchor trench (i.e., 18 September 1999 testing); testing of panels included the seams with the adjacent panels and portions of the adjacent panels to complete a 30-foot wide segment centered on the Drainage Corridor;
- the 54 volt DC power source (anode) was attached to the leak detection apparatus supplying water onto the geomembrane;

- testing began at approximately 200 feet from the west anchor trench and worked eastward (i.e., upslope);

- two testing apparatuses were used with one technician testing the north side of the Drainage Corridor and one technician testing the south side of the Drainage Corridor;

- testing was conducted during the hot portion of the day with numerous wrinkles in the geomembrane that required special effort to manage (i.e., as testing precedes, the geomembrane at the testing apparatus water supply must be in contact with the GCL underneath the geomembrane to allow completion of electrical contact between the geomembrane and the GCL at each point of a potential leak);

- testing of the Drainage Corridor was concluded at the overlap with the tested area on the east side of Cell 3 at approximately 342 feet from the east anchor trench;

- testing of the Catchment Area began at panel P51 and moved upslope to the north end of the Catchment area at Panel P37 and then south to the south end of the Catchment area at panel P57;

- control of testing was managed by one technician testing each panel from approximately 50 feet from the west anchor trench to approximately 200 feet from the west anchor trench including the seams on each side of the panel (i.e., each seam was test twice, once by each technician); and

- testing was completed at approximately 11:30 a.m. on 29 September 1999.

As a result of the electrical leak detection testing of the Drainage Corridor and the Catchment Area on the west side of OSDF Cell 3, no leaks were discovered. Daily reports from GeoSyntec and Solmers along with sketches of the tested area are included as Attachment 7. Following completion of testing on 19 September 1999, Solmers' personnel departed from the FEMP.

5. RESULTS AND LESSONS LEARNED

5.1 Testing Results

The electrical leak detection test method was demonstrated on a test pad constructed to simulate the primary liner of OSDF Cell 3. The test method was also demonstrated in select portions of OSDF Cell 3. Razor cuts approximately ¼-inch in length were created by GeoSyntec and FDF at locations believed to be representative of distance and GCL overlap conditions in OSDF Cell 3. Each razor cut was detected and located by Solmers during the demonstration. GeoSyntec believes that the test method was proven to be capable of detecting small leaks in the primary geomembrane liner as constructed in OSDF Cell 3. During actual testing in OSDF Cell 3, no leaks were detected. GeoSyntec believes that the electrical leak detection testing provides a high level of confidence that the tested portions of OSDF Cell 3 are properly constructed.

5.2 Lessons Learned

5.2.1 Water Management

Electrical leak detection testing on an exposed geomembrane requires the addition of large quantities of water. Water must be managed to avoid wetting areas of geomembrane where the installer is continuing work (i.e., installation or repair activities). Additionally, water must be managed to protect the GCL from hydration. During electrical leak detection testing of OSDF Cell 3, water was managed by welding "rain flaps" at a location to collect water or by collecting the water at the liner penetration boxes. The water collected was then pumped out of Cell 3 to a runoff area in future Cell 4. Alternatives considered but rejected for Cell 3 were:

- allow water to run into the leak detection layer (i.e., gravel over leak detection geomembrane) and collect in the leak detection manhole during testing of the east side of the cell; and

- collect in the area of the primary liner penetration boxes and drain into the leachate collection manholes.

These alternatives were rejected during Cell 3 electrical leak detection testing; however, should be considered during any future testing of OSDF cells.

5.2.2 Geomembrane Wrinkles

Waves or wrinkles in the geomembrane slow the electrical leak detection process. The procedure requires that every portion of the geomembrane be brought into contact with the underlying conductive layer (i.e., GCL) as the testing apparatus is moved across the tested area. This is necessary to assure water leaking through a hole or cut makes contact with the conductive layer below and completes the electric circuit with the cathode grounded to the GCL. The current flow during this contact is detected to indicate a loss in the insulating quality of the geomembrane and thus a possible leak. Geomembrane wrinkles may be managed by:

- test in the morning, late evening, or at night (i.e., reduce testing activities when wrinkles are most prevalent);
- use a laborer to help walk down wrinkles during testing; and/or
- require the testing technician to press the geomembrane against underlying GCL with the testing apparatus.

It should be noted that a similar condition causing a loss of contact between the geomembrane and the GCL could occur during cool conditions when the geomembrane shrinks to cause a trampoline effect at the toe of slopes. This condition may be managed by testing these areas after the geomembrane warms to correct the trampoline effect.

5.2.3 Testing Voltage

Solmers uses 27 volt DC for most testing applications. The testing method requires that the material below the geomembrane be conductive. Overlaps in the GCL installed below the geomembrane in OSDF cells do not have the same conductive capability as the GCL panel itself. During demonstration of the test method at the FEMP, a voltage

drop was measured across GCL seams. The conductive capability was still sufficient to detect the ¼-inch razor cuts placed at locations requiring testing across multiple GCL seams. To help alleviate the voltage drop and weaker signal, Solmers increased voltage during the second phase of testing from 27 volts to 54 volts. This increase in voltage helped to account for losses in voltage across the GCL overlaps.

5.2.4 Grounding of the Testing Apparatus

To minimize the number of GCL overlaps between the grounding cathode and the testing apparatus (anode), the cathode was moved in the anchor trench to align closely with the tested panel. Time to move the cathode as testing moved from panel to panel averaged between 20 and 30 minutes each time the cathode was relocated. For future testing, a single grounding system running the length of the anchor trench and attached to each GCL panel should be considered.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Demonstration and testing using the electrical leak detection testing method at the FEMP provided added confidence that the installation, CQC, and CQA activities for the OSDF Cell 3 primary geomembrane liner have been completed to very high standards. A review of the available testing data from electrical leak detection testing reports reveal that the number of leaks detected are an indicator of the level of CQC and CQA implemented during liner construction. The results of testing on OSDF Cell 3 (i.e., no leaks detected) provides additional data to confirm that high quality work is being demanded and attained during OSDF construction.

6.2 Recommendations

6.2.1 Future Testing

GeoSyntec recommends that electrical leak detection testing be implemented for supplemental CQC testing of the primary geomembrane liner for future OSDF cells. Specifically, the following implementation parameters should be considered:

- a specialty subcontractor for electrical leak detection testing should be procured by the installer as supplemental CQC testing of the installed primary geomembrane liner;
- requirements for electrical leak detection testing should be included in the performance specifications for future OSDF primary geomembrane liners;
- the CQA Plan should be revised to provide requirements for the CQC Consultant to monitor electrical leak detection testing; and
- lessons learned during demonstration and testing at the FEMP should be integrated into requirements.

6.2.2 Cell 3 Certification

GeoSyntec recommends that a brief narrative description of electrical leak detection testing for OSDF Cell 3 be included in the certification report; tested area for OSDF Cell 3 be shown on the primary geomembrane liner panel layout drawings, and a copy of this report be included as an appendix to the Cell 3 certification report.

ATTACHMENT 1
SPECIALTY SUBCONTRACTOR
EVALUATION REPORT

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7 September 1999

Mr. Rick A. Holbrook
Procurement Supervisor
Fluor Daniel Fernald
MS: 64
P O Box 538704
Cincinnati, Ohio 45253-8704

Subject: Specialty Subcontractor Proposal Evaluation Report
Leak Detection Testing of Geomembrane Liner
On-Site Disposal Facility
FDF Subcontract No. 95PS005028

Dear Mr. Holbrook:

GeoSyntec Consultants, Inc. (GeoSyntec) is pleased to submit this letter report to present our evaluation of subcontractor proposals to perform leak detection testing of the primary geomembrane liner for Cell 3 of the On-Site Disposal Facility (OSDF). The remainder of this letter is organized to present information regarding: (i) leak detection techniques and recommended technique; (ii) subcontractor proposal evaluation; (iii) recommended specialty subcontractor; and (iv) closure.

LEAK DETECTION TECHNIQUES

Introduction

Electrical leak detection testing of installed geomembrane is the technology that is available for immediate subcontracting, and a proven technology familiar to GeoSyntec. Two techniques for performing electrical leak detection testing are available based on (i) testing exposed geomembrane, and (ii) testing geomembrane following placement of drainage layer materials (i.e., leachate collection system). The two techniques are presented in the following paragraphs.

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Electrical Leak Detection In Exposed Geomembrane Liners

An electrical leak detection technique is available to investigate leaks in exposed geomembrane liners. This technique has been successfully used to locate leaks in exposed geomembrane liners installed in basins, ponds, and landfill cells. An advantage to this technique is that testing may be conducted during installation of the geomembrane without delaying the installer. Identified leaks can then be repaired and retested in conjunction with liner installation. The end result is a higher level of confidence that the geomembrane liner is free of leaks at the time the geomembrane installer completes work and demobilizes. A disadvantage to this technique, if it is the only electrical leak testing, is that leaks caused during installation of the leachate collection system will not have been surveyed.

The principle behind this technique is to insert a 24 VDC voltage onto each side of a geomembrane liner and then detect areas where electrical currents flow through leaks in the liner as shown schematically in Figure 1, attached. The geomembrane must be an insulator, which is the case for HDPE geomembrane used for the liner system of the OSDF. Electrical potential is applied between a water puddle and the conductive layer below the liner as shown schematically in Figure 2, attached. Whenever water is leaking through the geomembrane, an electrical current is immediately detected by an audio signal or by measuring a current of magnitude to the size of the leak. The main advantage of this technique is the possibility to detect leaks in liner seams and panels as work progresses during the construction phase. The electrical survey rate of approximately 3,300 to 5,500 ft^2 (300 to 500 m^2) per hour per operator does not affect the installation work schedule and allows a rapid quality control of the installer's work.

Water is usually supplied by a water network or by gravity from a tank truck parked at the top edge of the pond or cell. The low voltage and current used with this technique do not involve any risk for the operator or anyone on the site.

The presence of wrinkles and waves, steep slopes and lack of contact between the liner and the conductive soil (i.e., geosynthetic clay liner for the OSDF) at the bottom of slopes can significantly slow down the survey speed. This technique cannot be used during stormy weather, when liners are installed on a non-homogeneous conductive layer and whenever isolation is not secured. To insure isolation at pipe penetration,

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flange bolts, steel drains and batten strips on concrete, insulation must be secured prior to a survey to avoid conduction of electricity through the liner thus masking the leaks. For the OSDF a homogeneous conductive layer is secured since liner penetrations are HDPE (an insulating material).

Electrical Leak Detection in Covered Geomembrane Liners

An electrical leak detection technique is available to investigate leaks in geomembrane liners covered with a protective soil (i.e., the leachate collection system drainage layer). This technique has been successfully used to locate leaks in landfill liners and caps, impoundments, tanks, and mine leach pads. An advantage to this technique is that testing may be conducted following exposure of the geomembrane liner to the construction activities associated with installation of the leachate collection system. A disadvantage to this technique, if it is the only electrical leak testing, is that leaks which may exist prior to covering the geomembrane will be discovered after installation of the drainage layer. In this case, repairs will be more complicated and more time consuming than those discovered prior to drainage layer construction, also, the repair process may cause additional damage. Note, damage caused by LCS drainage layer construction can be minimized by using a geotextile cushion and having 100 percent monitoring of LCS drainage material placement.

The principle behind this technique is to connect an electrical power supply to electrodes above and below the liner and then detect areas of localized electrical current flow through leaks in the otherwise insulating liner, as shown schematically in Figure 3. When no leaks are present, the voltage impressed across the liner produces a very low current flow and a relatively uniform voltage distribution in the material above the liner. If the liner has a leak, electrical current flows through the leak causing a localized anomaly in the potential gradient. Leaks are located by measuring potential gradients in the material above the liner to search for these localized areas of relatively high electrical potential gradients. The electrical leak location technique is used in liquid impoundments. and for pre-service inspection of solid waste landfills with soil cover.

With the proper implementation of equipment and survey procedures the electrical leak location technique is a very sensitive and accurate technique. The measured

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amplitude of the leak signal is proportional to the amount of electrical current flowing through the leak. Therefore, leak location surveys should be conducted with the maximum practical safe impressed voltage. To increase the leak detection reliability the detector electrical conductors such as metal pipes and pump wiring that provide an electrical conduction path through or around the geomembrane liner should be eliminated or insulated. For the OSDF, no extraneous electrical conductors should be present.

Recommended Technique

GeoSyntec strongly recommends testing of the exposed geomembrane liner. Data from surveys of more than 2.5 million ft^2 (240,000 m^2) of installed HDPE, PP, and bituminous geomembrane liners were analyzed and reported in an article titled "Leak Location in Exposed Geomembrane Liners Using An Electrical Leak Detection Technique" (Geosynthetics 99). The data suggest a high probability of discovery of leaks, even with the presence of a good construction quality control (CQC) and quality assurance (CQA) program during installation. GeoSyntec believes that the data collected from this testing will be useful in strengthening the OSDF CQA program and in providing added confidence to DOE, OEPA, USEPA, and stake holders. Also, this method can be implemented with little or no impact to the construction schedule.

Based on results of testing of the exposed geomembrane liner, FDF will still have the option of conducting additional testing following installation of the leachate collection system, if desired.

SUBCONTRACTOR PROPOSAL EVALUATION

Introduction

GeoSyntec discussed electrical leak detection techniques with two companies that have presented successful results in recognized publications. Copies of publications from each company, copied from Geosynthetics '99, were provided under separate cover to FDF for information.

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Following discussions with FDF OSDF Project Engineering, GeoSyntec requested proposals from each company to perform electrical leak detection testing of the exposed primary geomembrane liner for Cell 3 of the OSDF. The companies submitting proposals were Leak Location Services, Inc (LLSI) of San Antonio, Texas and Solmers International (Solmers) of Lonqueuil, Canada.

Proposal Evaluation

Overview

Three criteria were used to evaluate the proposals. Criteria 1, considered by GeoSyntec to be the leading criteria, is experience with the technique being evaluated. Criteria 2 is the application of the technique. Criteria 3 is the cost to perform work.

Criteria 1

Solmers has experience using the requested technique in several million square feet of exposed geomembrane (see list at Attachment 1). LLSI has only recently begun the testing of exposed geomembrane and has only limited field experience (i.e., 2 to 3 acres) and no experience on textured geomembrane.

Criteria 2

The technique and procedure proposed by Solmers and LLSI are the same.

Criteria 3

The cost to perform testing services for the OSDF are compared in Table 1. The total cost for services for each subcontractor is essentially the same. It should be noted that LLSI allowed 10 days on-site versus 8 days on-site for Solmers. The two extra days in LLSI proposal include one day for on-site training and one additional day for on-site work. GeoSyntec believes that deducting the day for training presents the best true comparison of the cost proposals. Deducting $1,285 from LLSI's proposal reduces their cost to $16,765 or approximately ten (10) percent difference in final cost.

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RECOMMENDED SUBCONTRACTOR

GeoSyntec recommends selection of Solmers to perform electrical leak detection testing of the exposed primary geomembrane liner for Cell 3 of the OSDF. This recommendation is based largely on experience using the selected technique. Other criteria are essentially the same (i.e., for the experience difference, a 10% cost variance is not considered significant).

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TABLE 1

SPECIALTY SUBCONTRACTOR

COST COMPARISON

	SOLMERS			LLSI		
ITEM	DAYS	DAILY RATE	TOTAL	DAYS	DAILY RATE	TOTAL
Mobilization and Demobilization	--	--	$4,200	--	--	$5,200
On-site work at the FEMP (including 2 days of weather delays)	8	$1,650	$13,200	10	$1,285	$12,850
Prepare report	--	--	$1,200	--	--	Included Above
Cost of additional days beyond contract of subcontractor	--	$1,650	--	--	$1,500	--
Total	8	--	$18,600	10	--	$18,050

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CLOSURE

GeoSyntec believes that electrical leak detection testing of the primary geomembrane liner for Cell 3 of the OSDF will provide valuable information for improvement of geosynthetic installation procedures and CQC/CQA procedures. We look forward to implementing the testing program.

Please do not hesitate to contact the undersigned or Dr. Jay Beech if your have questions regarding this letter report. We are prepared to issue a contract to the selected Specialty Contractor upon receipt of your authorization and your approval of the procurement package submitted on 2 September 1999.

Sincerely

David K. Phillips, P.E.
Senior Project Engineer

Figures 1, 2 and 3
Attachment

Copy to: Mr. Uday Kumthekar, FDF
Dr. Jay Beech, GeoSyntec
Mr. Jim Burnett, GeoSyntec

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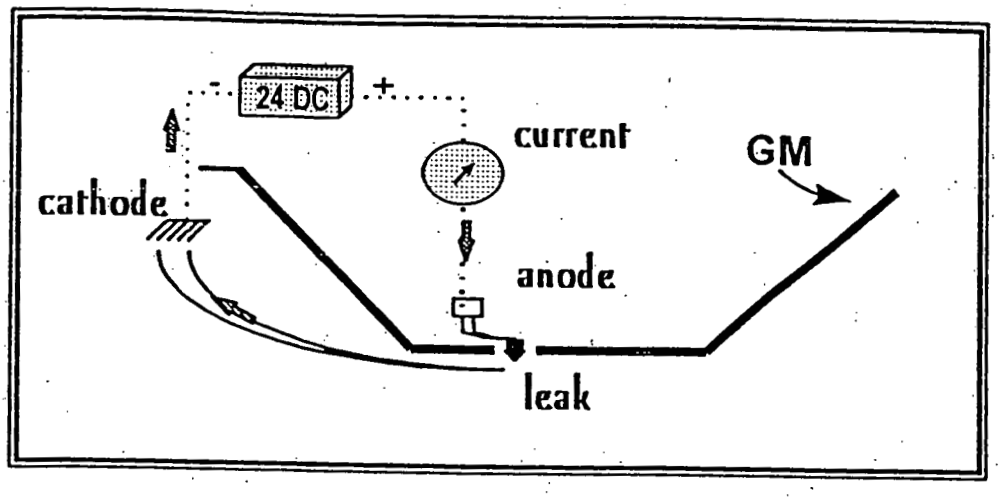

Figure 1. Schematic of electrical leak detection method

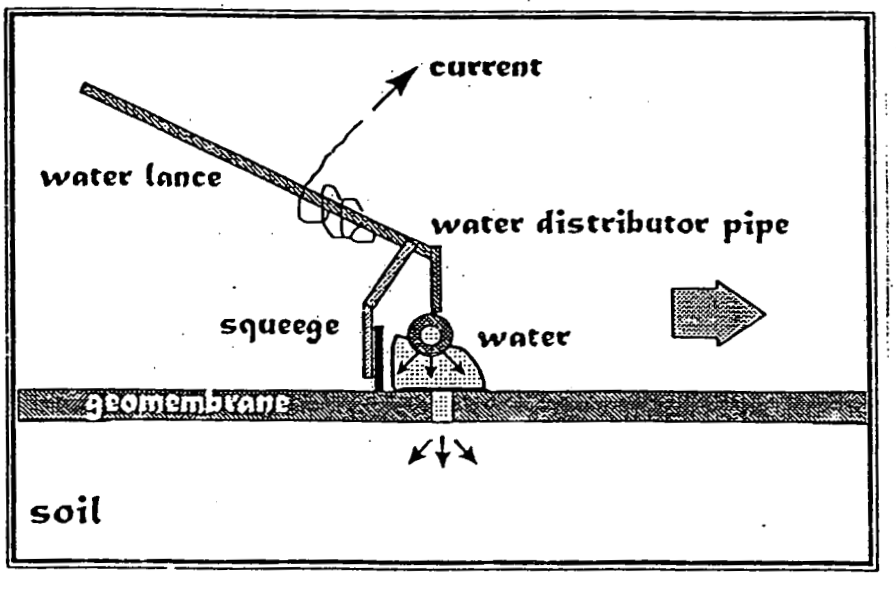

Figure 2. Schematic of electrical leak detection apparatus

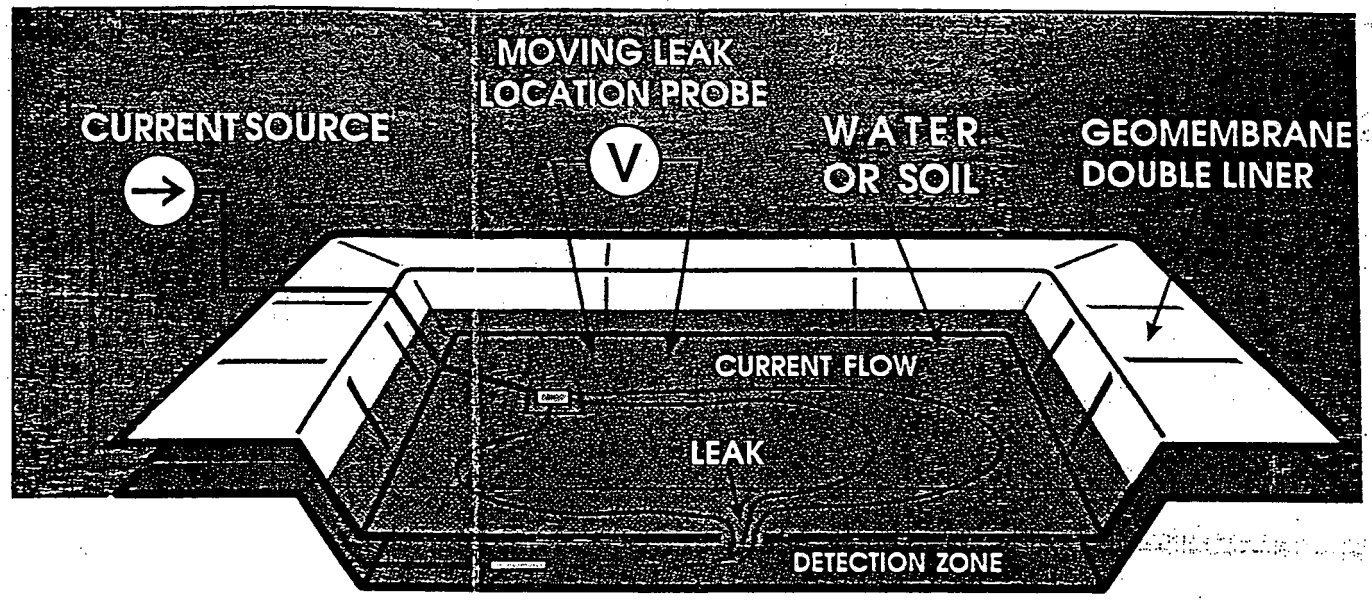

Figure 3

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PRINCIPAUX PROJETS EN DÉTECTION DE FUITES SUR GÉOMEMBRANES

Projets à réaliser à l'été 1999

Bassin à sécurité maximale pour résidus Jarosite
MECON Ltd., Nouvelle Delhi, Indes
Géomembrane PEHD, 40,000 m²+

Étangs aérés pour le traitement de eaux usées de Joliette
SOLMAX-TEXEL, Joliette, Québec, Canada
Géomembrane PEHD, 196 900 m²

Cellule de stockage de déchets
SÉCHÉ Éco-Industries, Changé, France
Géomembrane PEHD, 9 000 m²

Lagunes de rétention et d'évaporation des eaux
SQM Salar, Antofagasta, Chili
Géomembrane PVC, 240 000 m² (prospection partielle)

Projets complétés

Site d'enfouissement de déchets domestiques, bassins de rétention de lixiviat
CINTEC, San Salvador, El Salvador (1999)
Géomembrane VLDPE, 35 500 m² (prospection partielle)

Cellule de confinement de déchets ultimes, bassin de rétention de lixiviat
SÉCHÉ Éco -Industries, Changé, France (1999)
Géomembrane PEHD, 16 600 m²

Cellule de confinement de déchets ultimes
SÉCHÉ Éco-Industries, Changé, France (1998)
Géomembrane PEHD, 9 284 m²

Cellule de stockage de déchets domestiques
COVED, Château-Landon, France (1998)
Géomembrane PEHD, 18 135 m²

Cellule de stockage de déchets domestiques
SÉCHÉ Éco-Industries, Changé, France (1998)
Géomembrane PEHD, 9 500 m²

Bassin de rétention de liqueur noire
DOMTAR, Trenton, Ontario, Canada (1998)
Géomembrane de polypropylène, 7 182 m²

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Cellule de confinement de déchets ultimes
LAVAL Services, Changé, France (1997)
Géomembrane PEHD, 8 200 m²

Bassin de rétention de liqueur noire
DOMTAR, Trenton, Ontario, Canada (1997)
Géomembrane de polypropylène, 11 460 m²

Cellule de stockage de déchets domestiques
LAVAL Services, Changé, France (1996)
Géomembrane PEHD, 14 296 m²

Cellule de stockage de déchets domestiques
LAVAL Services, Changé, France (1995)
Géomembrane PEHD, 18 500 m²

Cellule de confinement de déchets ultimes
LAVAL Services, Changé, France (1995)
Géomembrane PEHD, 11 652 m²

Bassins de traitements des eaux usées de Drummondville
SOPREMA, Drummonville, Québec, Canada (1995)
Géomembrane bitumineuse, 133 250 m²

Bassins de rétention d'effluents industriels
Matériaux Techniques Côté Goderich, Ontario, Canada (1995)
Géomembrane PEHD, 2 021 m²

Cellule de confinement de déchets ultimes
LAVAL Services, Changé, France (1994)
Géomembrane PEHD, 13 480 m²

ATTACHMENT 2
TEST PAD LAYOUT FOR LEAK DETECTION DEMONSTRATION

Written by: D.K. Phillips Date: 99/09/07 (YY MM DD) Reviewed by: 2740 Date: / / (YY MM DD)

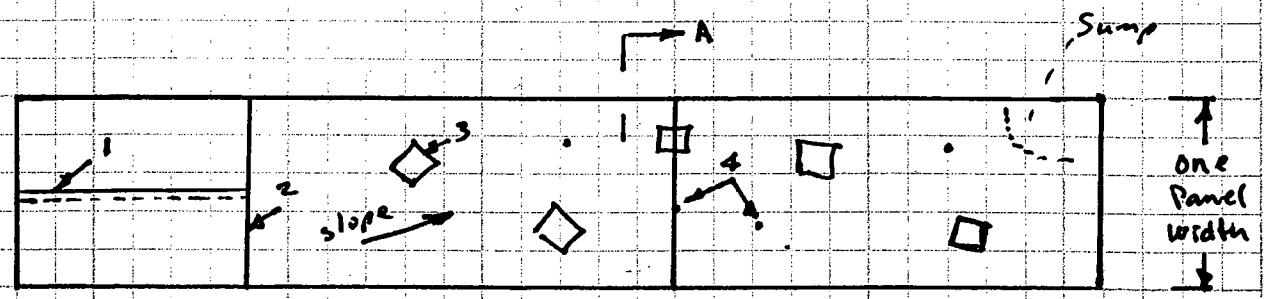
Client: FDF Project: OSDF - Leak Detection Project/Proposal No.: GR0573 Task No.: 09

LEAK DETECTION TESTING of Primary GML for Cell 3

Test Section for Demonstration of Technique

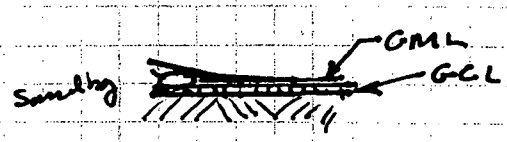
CRITERIA

1. 80 mil HDPE Geomembrane (Textured) installed over GCL.
2. Installation Area should simulate conditions (i.e., slopes) expected for primary GML in Cell 3.
3. Minimum Size 22 ft (one panel width) x 75 ft long
4. Place to allow water from testing process to be captured and recirculated (if feasible), otherwise water supply by FDF will increase. Perhaps a sump using sandbags at low point.
5. Including seaming, patches, and other features to allow testing of expected features of OSDF. Possible layout shown below (Note: Create known or probably leaks)



Notes:

1. Two half panels joined by fusion weld.
2. Typical butt joint (extrusion weld).
3. Typical patch (Note: must cover large hole in geomembrane)
4. Holes or razor cuts (Typ).



SECTION A

Water Flow control

ATTACHMENT 3
PHOTOGRAPHS OF ELECTRICAL LEAK DETECTION DEMONSTRATION AND TESTING ACTIVITIES

Photo 8. Solmers technicians performing electrical leak detection testing in Catchment Area of OSDF Cell 3.

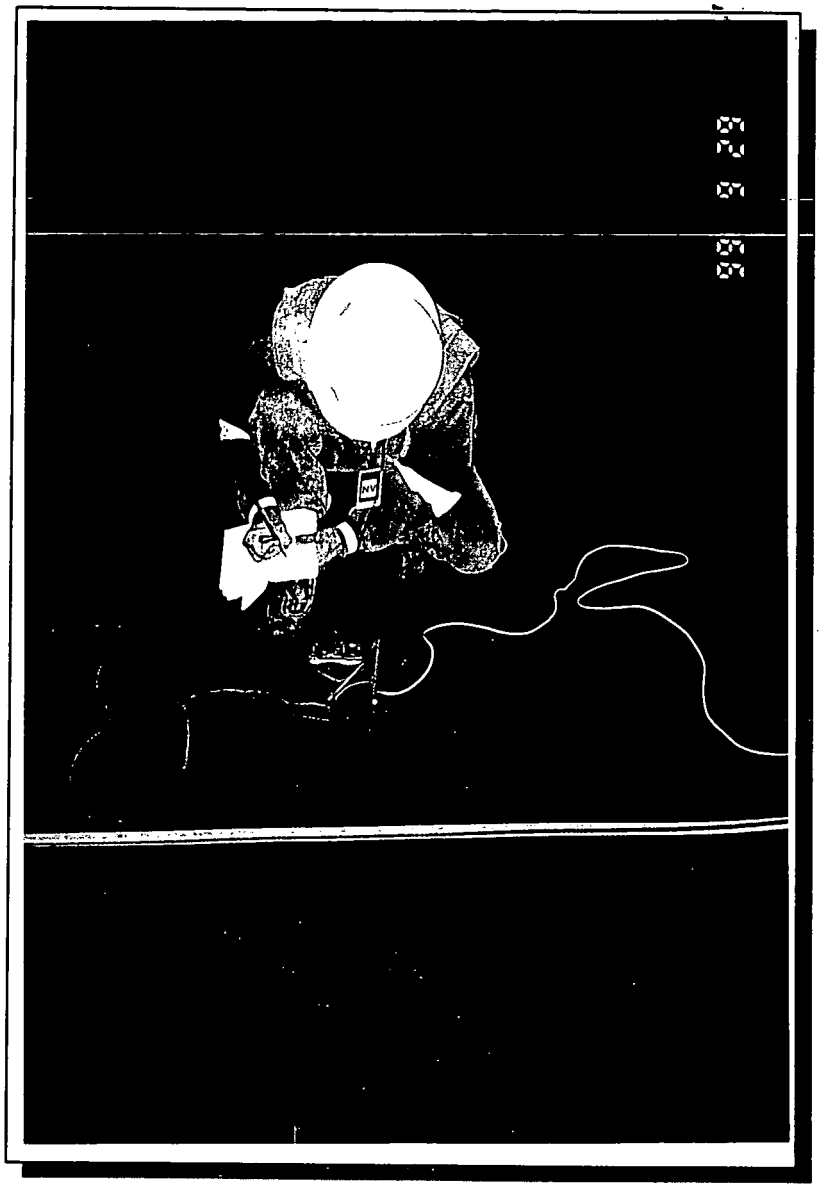


Photo 7. **Solmers technician performing voltage check during set-up for testing Catchment Area of OSDF Cell 3.**

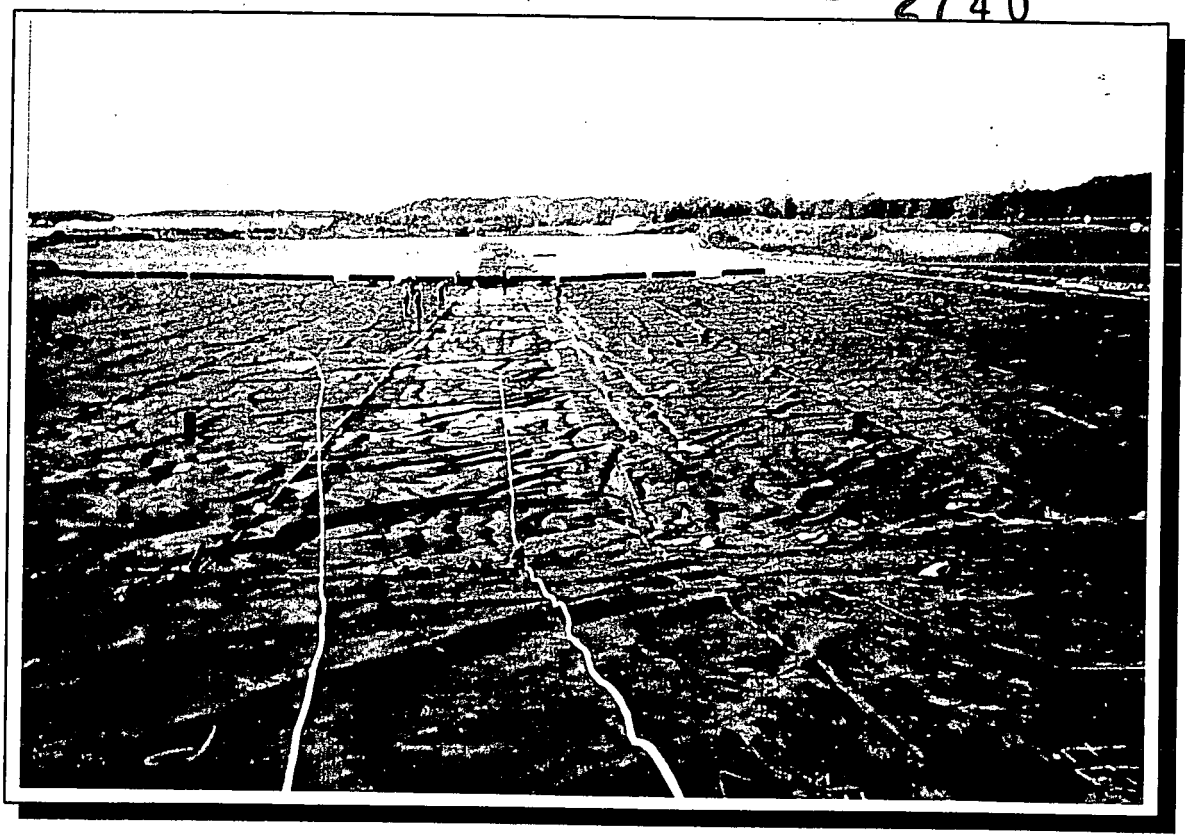


Photo 5. Testing of east drainage corridor of OSDF Cell 3.

Photo 6. Water collection area of east drainage corridor of OSDF Cell 3.

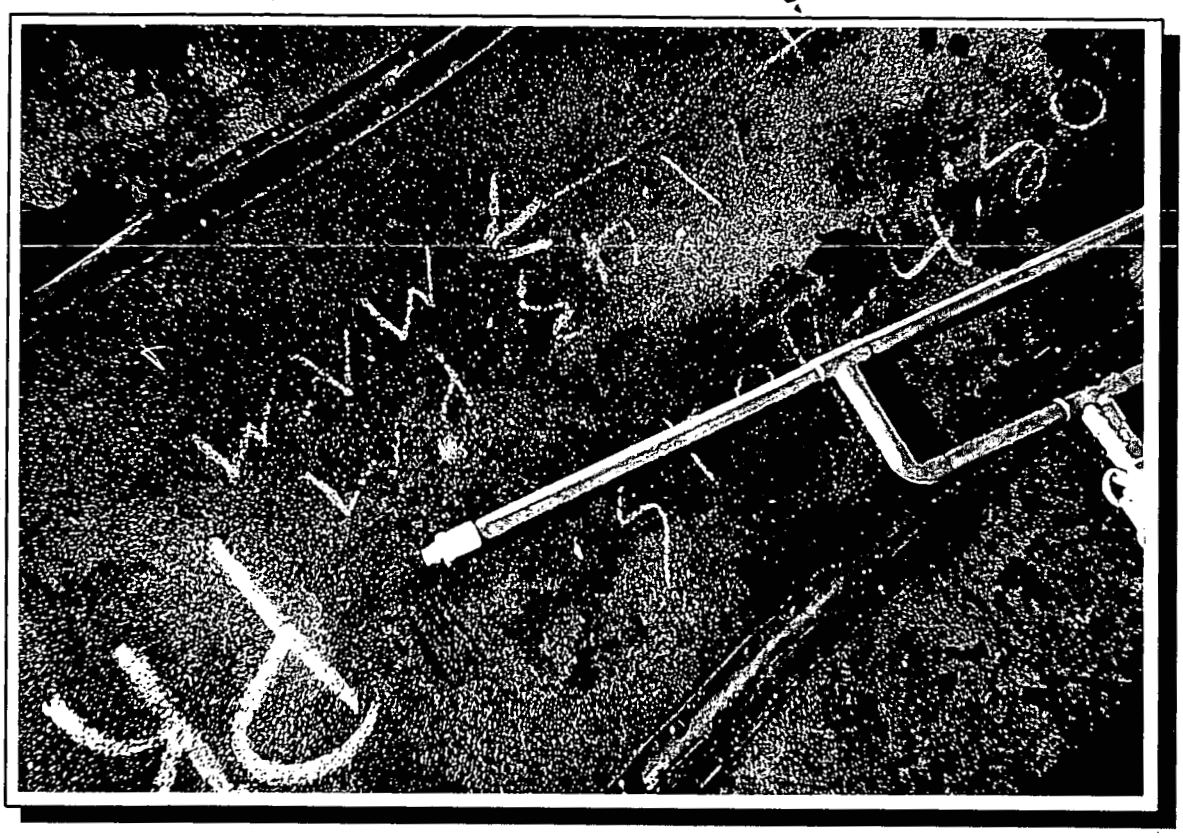


Photo 3. Puncture added to OSDF Cell 3 patch during electrical leak detection demonstration.

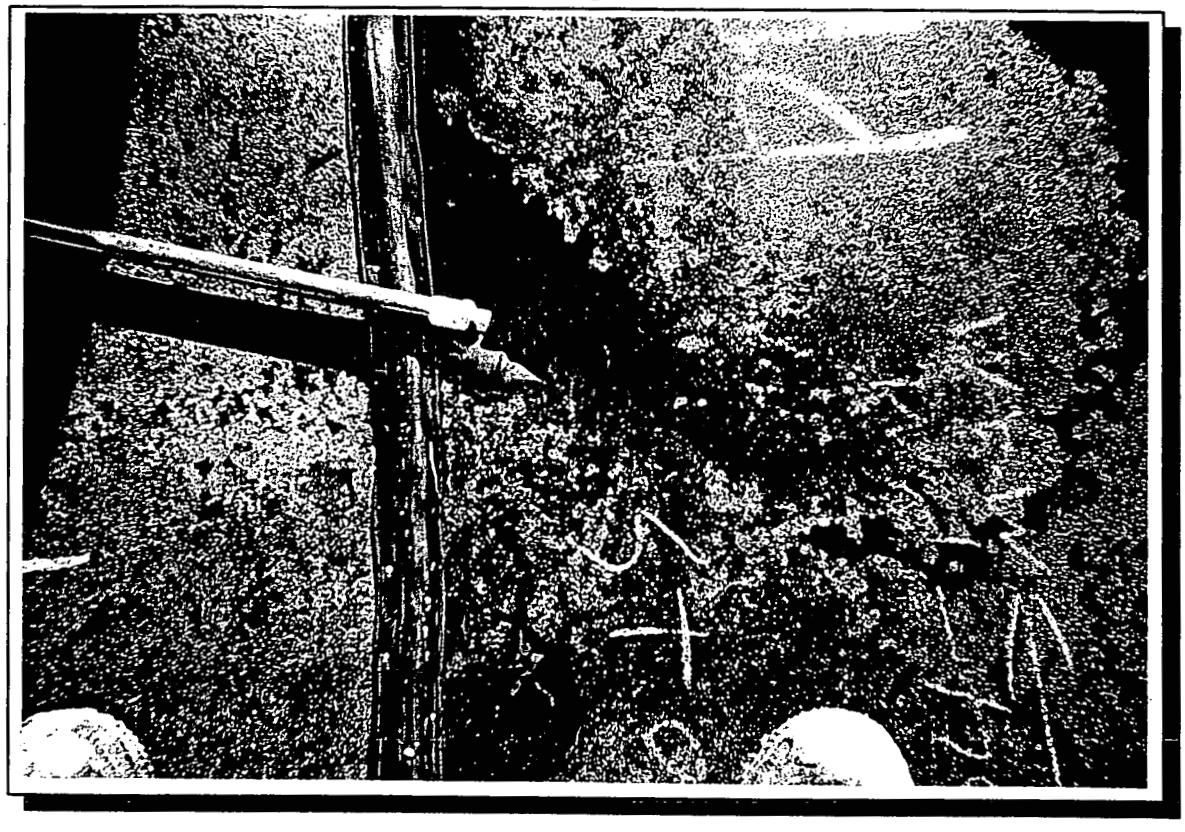


Photo 4. Razor cut added to OSDF Cell 3 patch during electrical leak detection demonstration.

Photo 2. FDF QA Engineer listens to audible signal at leak 1 on Test Pad.

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Photo 1. Test Pad for electrical leak detection demonstration.

ATTACHMENT 4
DAILY REPORTS FOR LEAK DETECTION DEMONSTRATION

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DAILY FIELD REPORT

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Electrical Leak Detection DATE: 15 day Sep month 1999 year

CONTRACTOR: Solmes International

WEATHER: Good

0655 - Arrived on Site and processed Solmes personnel through Badging
0830 - 0930 Drug Screening Geosyntec / Solmes
0930 - 1030 Drive By view of Test Pad Section and Cell 3 East Side (i.e. exposed GMC installed to date)
1030 - 1130 PreTest Meeting with FDF / Geosyntec / Solmes / Petro / Istine. Tony Klinek chaired meeting and agreed to prepare minutes.
1145 - 1200 Petro Safety Briefing / Geosyntec Safety Briefing
1200 - 1230 Lunch
1245 - Solmes prepares for testing at test pad.
1300 - Demonstration of the electrical leak detection testing technique on Test Pad. No unknown leaks detected. Leaks placed by FDF/Geosyntec were detected. Verified that readings on test apparatus were valid across both lateral and butt laps of GCL (i.e., laps of GCL were of concern due to potential loss of electrical conductivity across the laps). Demonstration provided opportunity for DOE, USEPA, FDF, and others to see and hear signals when leak is detected. The signals, both visual and audible, were unmistakably clear even for a small ¼" razor cut that was not detectable to visual examination. Each person observing demonstration was allowed to see and hear the signals. All present were satisfied that the technique is viable for the testing conditions. FDF desires to demonstrate the technique on the cell floor of Cell 3 at greater distance from grounding point to a small razor cut.
Additional demonstration scheduled for 16 Sep 1999

— end —

COPY TO: PER: HRS:

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DAILY FIELD REPORT

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Electrical Leak Detection DATE: 16 day Sep month 1999 year

CONTRACTOR: Solmes International

WEATHER: Cool

0640 - Arrived on-site with Solmes
0700 - Attended Petro Safety Briefing
0730 - GeoSyntec Safety Briefing
0820 - Solmes completes set-up for testing on cell floor of Cell 3. Awaiting water contract to be established by Petro/Istec.
0915 - Solmes begins testing of two specific areas designated by FDF. Both areas at Patches with small razor cut (i.e. razor cut x 1/4") The razor cuts were at 222 ft and 255 ft respectively with 2 Butt seams of GCL and one lateral seam of GCL between grounding point and testing points. Signals were clearly detectable. FDF and GeoSyntec satisfied that ~~dect~~ electrical leak detection viable for cell configuration.

Decision meeting planned for afternoon of 16 Sep. See minutes of decision meeting prepared by GeoSyntec.

Testing of drainage corridors for Cell 3, East side scheduled to begin at first light on Sat. 18 Sep 1999

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COPY TO: PER: D.K. Phillips HRS:

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EXAMPLE

Solmers
Internationale • International
EXPERTS-CONSEILS INC. • CONSULTANTS INC.
2160, chemin du Tremblay, bureau 205
Longueuil (Québec) CANADA J4N 1A8
Tél.: (450) 448-0870 • Fax: (450) 448-1070
Internet: solmers @ sympatico.ca

DÉTECTION DE FUITES /RAPPORT JOURNALIER
LEAK DETECTION /DAILY REPORT

Projet / Project N°: 2093 Geosyntec Consultant
Date : 9/16/99 Feuille / Sheet 1 de / of 1
Conditions climatiques / Weather conditions: T (°C)_____ Heure / Time_____
Préparé par / Prepared by : J-Y MORENCY

Opérateur / Operator	Heure / Time	Équipements utilisés / Equipment used
J. Trudel		Blocs d'alimentation / power supply : V_{OR-1} : 27,32 volts V_{OR-2} = 28.20V
J-Y Morency		Détecteurs de courant / current detector : No 5 No 8
		autres / others Calibration : ✓

Superficie prospectée / Prospected area : 20 pi²

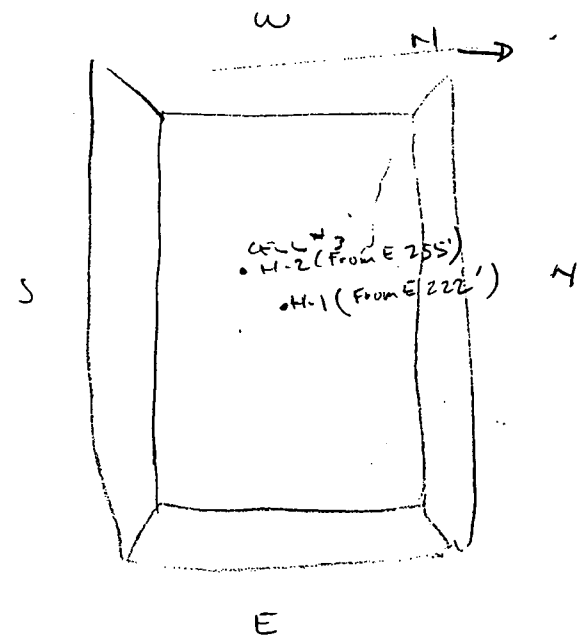
Géomembrane / Géomembrane: HDPE

Trous détectés / detected leaks

N°	Localisation / Localization — Feuille / Parent material: Partie centrale/ Central part	bas pentes/ Downhill	près tuyaux/ Near pipes	Distance de / from Soudure / Seam: Extrusion	Fusion	Description Dommage/damage (Voir la légende/seek for legend)	Dimensions
1	P.25/P.26			9"		C (on patch)	1/8"
2	P.2[illegible]/P.25			1/4"		C (on patch)	3/16"

Vérifications des réparations / Repairs verification

N°	Type de réparation / Type of repair	Numéro QACQ	Conformité/Conformity: Oui / Yes	Non / No



Plan de localisation des fuites / Localisation leaks map

** Indiquer par un cercle plein la localisation des fuites par rapport aux panneaux vérifiés

** Indicate by a full circle the localisation of the leak on the verificated panels.

Type de dommage / Damage type
A : dans le joint / seaming failures
B : craquelure (fissure, déchirure) / tear
C : coupure (coup de couteau) / razor cut
D : poinçonnement (présence lèvres) / hole
E : marques ou traits superficiels / superficial

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Commentaires / Comments

Test Hole #1 5' across overlap of GCL with source
Test Hole #2 on the GCL with source

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ATTACHMENT 5
DECISION MEETING MINUTES

MEMORANDUM

TO: See Distribution

FROM: Dave Phillips DLP

DATE: 7 October 1999

SUBJECT: Decision Meeting for Electrical Leak Detection Testing for Cell 3, Primary GML
Fernald Environmental Management Project
Fernald, Ohio

A meeting was held at 4:00 p.m. on 16 September 1999 in the conference room of building T-193 to discuss results of the 15 and 16 September 1999 demonstration of an electrical leak detection technique for exposed geomembrane liner. At the close of the meeting D. Carr provided guidance for implementation of testing of the Cell 3 primary geomembrane liner.

The remainder of this memorandum is organized to present: (i) attendees; (ii) electrical leak detection demonstration; (iii) implementation concerns for Cell 3 Primary GML; (iv) implementation guidance for Cell 3 Primary GML; (v) safety; and (vi) closure.

ATTENDEES

FDF was represented at the meeting by D. Carr, W. Hooper, J.D. Chiou, U. Kumthekar, B. Zebick, T. Klimek, B. Edmondson, G. Johnson, Lou Wehlitz and J. Turner. J. Istre represented The Istre Company. GeoSyntec was represented by J. Burnett and D. Phillips.

GQ0409/FDF99014.DOC

ELECTRICAL LEAK DETECTION DEMONSTRATION

Solmers International (Solmers) conducted a demonstration of an electrical leak detection technique for exposed geomembrane. The technique was first demonstrated on a test section prepared outside the limits of Cell 3 of the OSDF on 15 September 1999. The demonstration was then continued on the primary geomembrane liner in Cell 3 and on the intercell berm between Cell 3 and future Cell 4 on 16 September 1999. FDF and GeoSyntec observed the demonstration. Ohio EPA (Tom Ontko) observed demonstration of the testing technique. During the testing, all holes that were deliberately placed in the GML were detected by the testing. No unknown holes were detected.

During the meeting, the following areas were identified as potential areas for priority testing of Cell 3 primary geomembrane liner: (i) drainage corridor; (ii) catchment area; and (iii) liner tie-in at Cells 2 and 3. The drainage corridor and catchment area were identified as critical areas because leaks in those areas are more likely to allow discharges to the leak detection system (i.e, secondary liner).

Based on observations during testing, both FDF and GeoSyntec concluded that the demonstrated technique is technically acceptable and could be a viable means of conducting additional (supplemental) construction quality assurance testing of a geomembrane liner in the future.

Some of the issues/potential difficulties using this technology include:

- Wrinkles. High temperatures during the day create wrinkles which slow surveying of an area and increase total testing time.
- GCL Conductivity. GCL laps reduces good conductivity especially in 6-inch lap at sides of GCL panels.

- Water Management. Water used in leak detection testing must be managed to prevent hydration of GCL.

All of these issues can be addressed and managed based on techniques used during the demonstration.

GeoSyntec recommended implementation; as scheduling will allow, on the exposed primary GML of Cell 3. Data collected during the demonstration and implementation will be used by GeoSyntec to make a recommendation, in a letter report, for implementation in future cell and cap construction.

IMPLEMENTATION CONCERNS FOR CELL 3

Jerry Istre briefed the group on the status of primary liner installation. Approximately 50 percent of Cell 3 is covered with GML; however, no areas are complete in terms of detail work. The major concern recognized by the group is management of water from the testing technique to avoid hydration of geosynthetic clay liner and interference with detail work on the GML. FDF construction stated that full implementation of testing of the exposed GML would require the imposition of an unprogrammed hold point for one to two weeks at a cost of $10,000 per day. A more limited implementation could be accommodated with little or no delay of liner installation and at a manageable cost in support.

IMPLEMENTATION GUIDANCE FOR CELL 3

Following detailed discussion, D. Carr provided the following guidance:

- Electrical leak detection testing of the Cell 3 primary GML within the LCS drainage corridor and catchment area of Cell 3 will be implemented, pending resolution of any coordination concerns.

- J. D. Chiou is the authority to reduce or cancel further electrical leak detection testing.

- GeoSyntec will provide a recommendation for implementation in future cell construction in a letter report.

SAFETY

G. Johnson reminded the group that a work permit was not required for the demonstration. A work permit will be required prior to performing leak detection services in Cell 3. FDF construction has the action to obtain a work permit.

CLOSURE

The following coordination items were discussed:

- The Istre Company will place priority on detail work on the Cell 3 primary GML within the east half of the LCS drainage corridor to complete work by end of business on Friday 18 September 1999.

- The Istre Company will attempt to obtain and install a dam for water management; the dam should arrive on-site by 0730 a.m. 19 September 1999 for immediate installation. If the dam does not arrive on-site, a GML rain flap shall be used to contain water for pumping outside the cell.

- Solmers will begin set-up for testing the drainage corridor of the east end of Cell 3 following the 0700 a.m. Petro Safety Briefing on 19 September 1999.
- Solmers will begin leak detection testing immediately following installation of the dam or rain flap for water management.
- Solmers will complete work on the east end of Cell 3 on the evening of 19 September 1999.
- Solmers will demobilize following completion of testing, to include presentation of results on testing forms.
- Based on the projected completion of Cell 3 primary liner construction, Solmers will schedule to remobilize to be on-site at the FEMP at 0700 a.m. on Thursday, 23 September 1999. NOTE: Solmers actual remobilization was on 22 September 1999.
- Solmers will perform leak detection testing of the remainder of the drainage corridor including LCS liner penetration box area and the catchment area of Cell 3 on 27 and 28 September, weather and schedule permitting.
- Upon completion of testing and completion of field forms, Solmers will demobilize from the site.
- Solmers will present results in a letter report to GeoSyntec approximately 5 working days following completion of on-site work.

* * * * *

Distribution:

D. Carr, FDF
J. D. Chiou, FDF
B. Edmondson, FDF
W. Hooper, FDF
G. Johnson, FDF
T. Klimek, FDF
U. Kumthekar, FDF
J. Turner, FDF
L. Wehlitz, FDF
B. Zebick, FDF
J. Istre, The Istre Co.
J. Burnett, GeoSyntec
GeoSyntec, Atlanta File
GeoSyntec, Site File

ATTACHMENT 6
DAILY REPORTS FOR LEAK DETECTION TESTING 18 SEPTEMBER 1999

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DAILY FIELD REPORT -- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Electrical Leak Detection Testing DATE: 18 day Sep month 1999 year

CONTRACTOR: Solmers International

WEATHER: Good

0645 - Arrived on Site with Solmers personnel.

0700 - Attended Petro Safety Briefing followed by GeoSyntec Safety Briefing

0720 - Istre informs GeoSyntec that a Dam will be prepared to collect testing water by welding rain flaps.

0825 - Solmers completes all set-up and ready to begin testing of the drainage corridor of the East end of cell 3 as per decision of FDF (see meeting minutes of 16 September 1999 meeting)

1100 - Petro / Istre have water controls established and give Okay for Solmers to begin testing. It is noted that the liner is hot from exposure to direct sun and large wrinkles in geomembrane will slow testing rate.

1120 - Testing halted due to water supply (Hydroseeder out of water)

1130 - Petro breaks for Lunch

1230 - On-site. Petro Safety meeting conducted

1255 - Solmers resumes testing of East end of drainage corridor.

1310 - Water supply halted. Petro informs GeoSyntec that tanker which supplied water to hydroseeder had very little water due to dust control priority and had only add a small amount to hydroseeder

1335 - Water replenished and Solmers resumes testing.

1500 - Solmers completes testing of East drainage corridor of cell 3 plus large patch on panel 27 (i.e. drainage corridor) on the east berm just above the toe of the berm. No Leaks Detected in tested area.

000567

COPY TO: PER: D. K. Phillips HRS:

©GEO SYNTEC CONSULTANTS FILE NO. 1-04-DFR SHEET NO. 1 OF 1

GEOSYNTEC CONSULTANTS

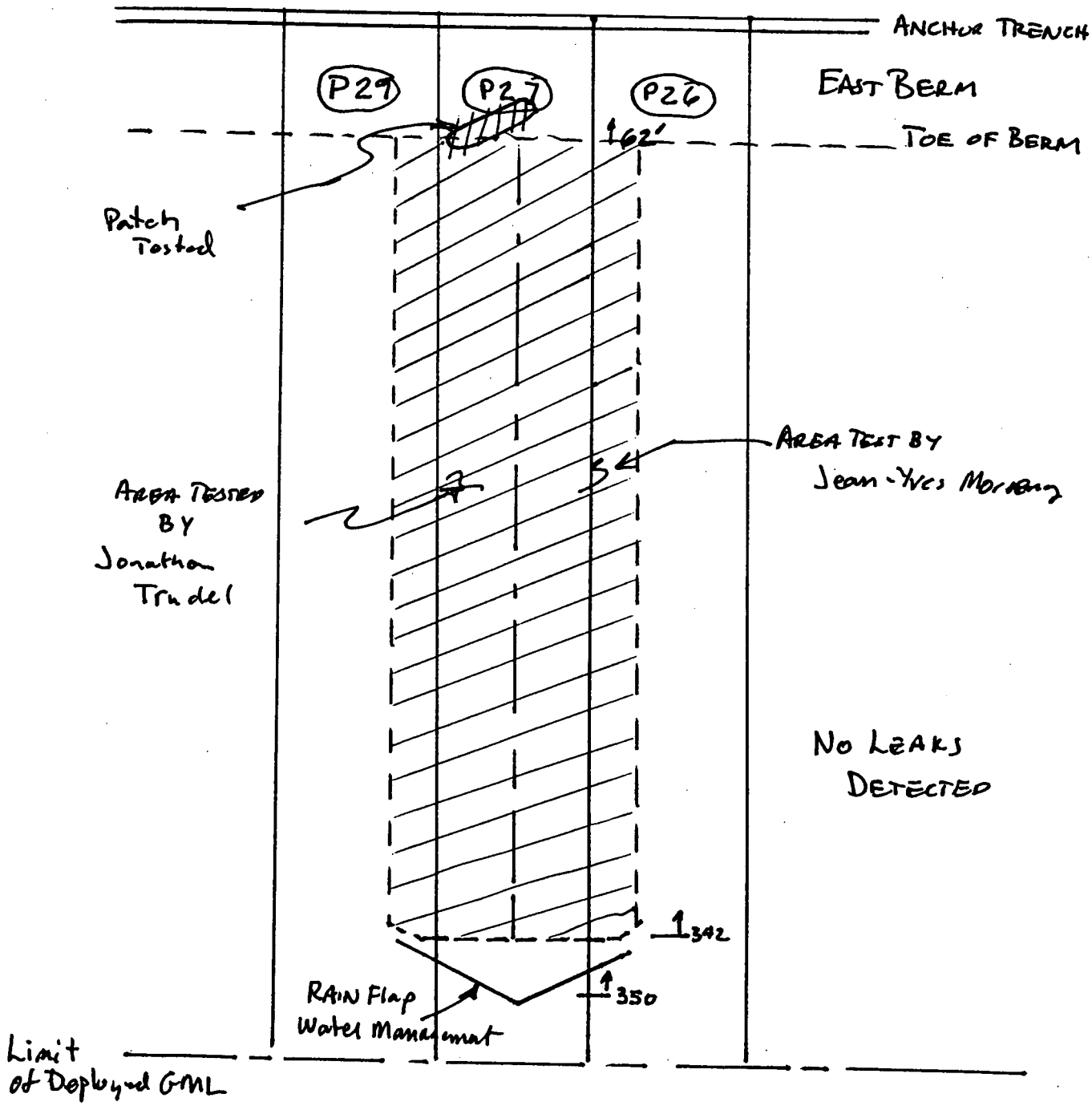
Written by: D.K. Phillips Date: 99/09/13 (YY MM DD) Reviewed by: _____ Date: __/__/__ (YY MM DD)

Client: FDF Project: Leak Detection Project/Proposal No.: _____ Task No.: _____

Electrical Leak Detection Testing, Cell 3 OSDF 2740

Sat. 18 Sep 1999

SURVEY OF DRAINAGE CORRIDOR, EAST END CELL 3



NOT TO SCALE

000568

Solmers
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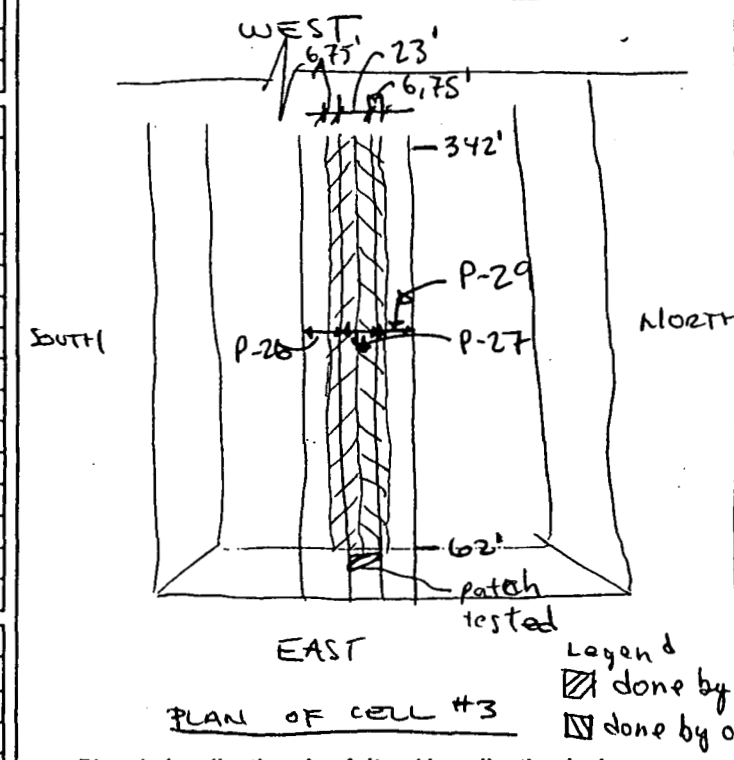
DÉTECTION DE FUITES /RAPPORT JOURNALIER
LEAK DETECTION /DAILY REPORT

Projet / Project N°: 2093 GEOSYNTEC CONSULTANT, Cincinnati project
Date : September 18/1999 Feuille / Sheet 1 de / of 1
Conditions climatiques / Weather conditions: T (°C) ±70 Heure / Time 12h00
Préparé par / Prepared by : J-Y MORENCY

Opérateur / Operator	Heure / Time	Équipements utilisés / Equipment used
J TRUDEL (B-1)	8h	Blocs d'alimentation / power supply :
J-Y MORENCY (B-2)	8h	B-1 = 27,84 volts B-2 = 28,19 Volts
		Détecteurs de courant / current detector :
		No 5 No 8
		autres / others Calibration : ☑

Superficie prospectée / Prospected area : 10 220 ft²

Géomembrane / Géomembrane: HDPE 80mils



Plan de localisation des fuites / Localisation leaks map

** Indiquer par un cercle plein la localisation des fuites par rapport aux panneaux vérifiés

** Indicate by a full circle the localisation of the leak on the verificated panels.

Trous détectés / detected leaks

N°	Localisation / Localization – Feuille / Parent material: Partie centrale / Central pad	Bas pentes / Downhill	près tuyaux / Near pipes	Distance de / from Soudure / Seam: Extrusion	Fusion	Description Dommage/damage (Voir la légende/seek for legend)	Dimensions

Vérifications des réparations / Repairs verification

N°	Type de réparation / Type of repair	Numéro QACQ	Conformité/Conformity: Oui / Yes	Non / No

Type de dommage / Damage type
A : dans le joint / seaming failures
B : craquelure (fissure, déchirure) / tear
C : coupure (coup de couteau) / razor cut
D : poinçonnement (présence lèvres) / hole
E : marques ou traits superficiels / superficial

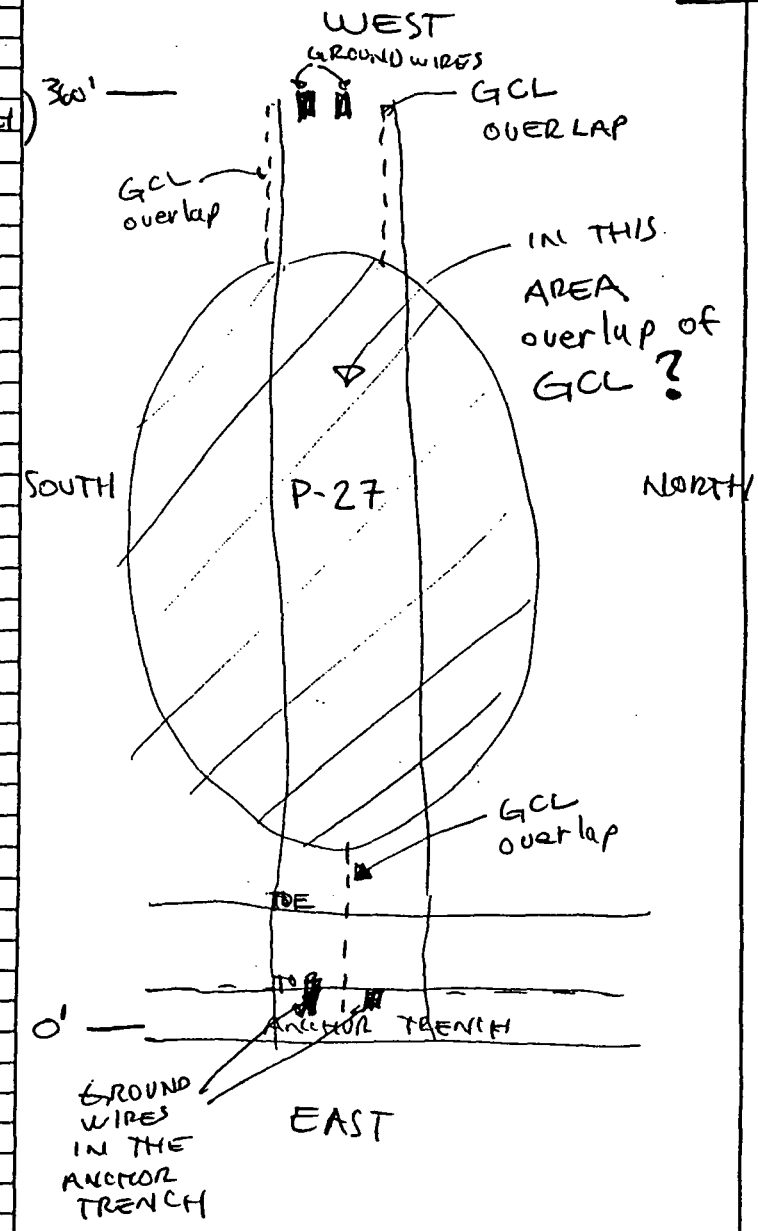
000569

I-2740

Commentaires / Comments

- FOR DISTANCE 342' TO 244' THE GROUND WIRES WAS PLACED AT DISTANCE 360'
- FOR DISTANCE 244' TO 62' THE GROUND WIRES WAS PLACED AT DISTANCE 0' (ANCHOR TRENCH)
- THE SKETCH ABOVE EXPLAIN THE POSITION OF ~~OVERLAP~~ GCL overlap in the middle the position is unknow
- AT 360' SOME PROBLEM TO OBTAIN THE ELECTRICAL CONTACT.

OVERVIEW OF GCL IN CELL #3



-2740

000520

ATTACHMENT 7
DAILY REPORTS FOR LEAK DETECTION TESTING 28-29 SEPTEMBER 1999

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DAILY FIELD REPORT

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) # 2740

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

DESCRIPTION: Electrical Leak Detection Testing DATE: 28 day Sep month 1999 year

CONTRACTOR: Solmers International

WEATHER: Good to Cloudy and Overcast with ~~threat~~ DTP threat of rain

0630 - Arrived on-site and processessed Solmers personnel through badging.

0700 - GeoSyntec Safety Briefing

0730 - Arrived at West Berm of Cell 3. Solmers begins preparation for testing. No Water supply. GeoSyntec informed that water supply would be supplied from Cell 2 area by hose.

1050 - Water supplied to Solmers through 2" supply line running to fire hydrant at Cell 2/Cell 3 Intercell Berm. Solmers begins testing of drainage corridor from 200 ft (measured to West Berm Anchor Trench) toward the East Berm.

1145 - Petro breaks for Lunch. GeoSyntec breaks for Lunch

1200 - Solmers resumes testing.

1315 - Solmers completes testing of drainage corridor to overlap area tested on East side Cell on 18 Sep. Begins to relocated testing apparatus to test "catchment basin"

1410 - Solmers resumes testing in Catchment basin. Start Point is a 50 ft to West Berm testing east. One technician testing Panel 37 the other testing Panel 51. Sequence of testing is from North to south covering floor of cell from 50 ft to West Berm to 200 ft from West Berm.

1600 - Petro announces that a lightning strike was observed and all outdoor activity to cease for a minimum of 30 minutes

1630 - Solmers begins to reset equipment.

1700 - Solmers resumes testing

1840 - Testing stopped for day. Testing ended on Panels 54 and 55 at 75 ft and 80 ft respectively

1900 - Solmers / GeoSyntec depart site.

000572

COPY TO: PER: D.K. Phillips HRS:

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

DAILY FIELD REPORT

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

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

DESCRIPTION: Electrical Leak Detection Testing DATE: 29 day Sep month 1995 year

CONTRACTOR: Solmers International

WEATHER: Cloudy. Rain expected.

0650 - Arrived on-site with Solmers personnel
0710 - GeoSyntec Safety meeting
0730 - Solmers begins set-up in Catchment Area of Cell 3
0805 - Testing begun on Panels 54 and 55 at end point for 28 September Testing
1130 - Testing completed over entire cell floor in Catchment Area of Cell 3 plus seam connecting West Berm with Intercell Berm (Cell 3 to Cell 4) on Cell 3 side of Intercell Berm.
- Please refer to sketch attached showing tested area for West side of Cell 3. No Leaks Detected!
1130 - Hard rain begins

Note: During afternoon briefed Uday Kumthekar, Bill Zebick, and Lou Wahlitz on the testing sequence, method, and results.

000573

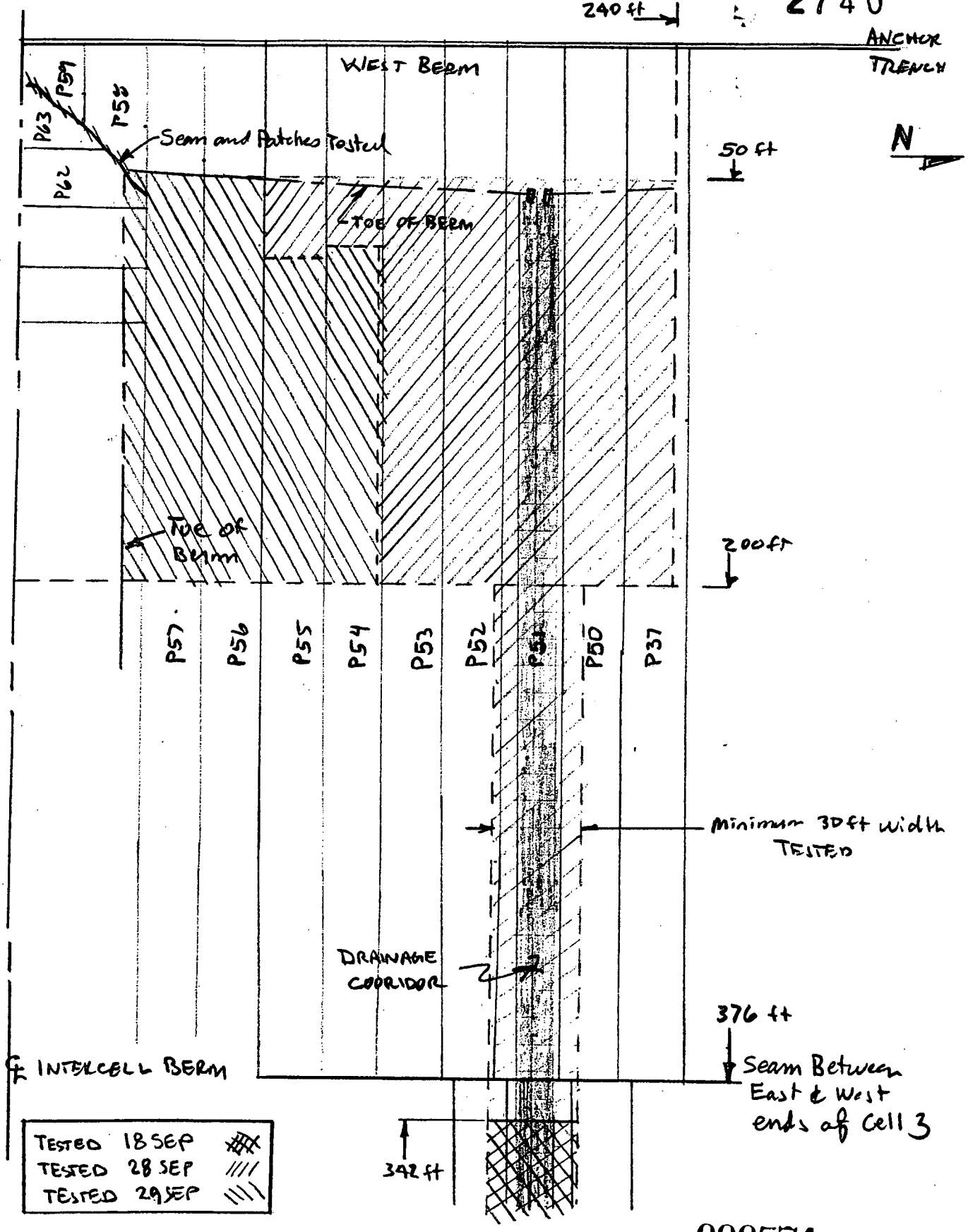
COPY TO: PER: D. K. Phillips HRS:

GEOSYNTEC CONSULTANTS

Page ____ of ____

Written by: D.K. Phillips Date: 99/09/29 (YY MM DD) Reviewed by: ____ Date: __/__/__ (YY MM DD)

Client: FDF Project: Electrical Leak Detection Cell 3, OSDF Project/Proposal No.: ____ Task No.: ____



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DÉTECTION DE FUITES /RAPPORT JOURNALIER
LEAK DETECTION /DAILY REPORT

Projet / Project N°: 2093 Geosyntec FEMP, Cincinnati
Date: September 28/1999 Feuille / Sheet 1 de / of 1
Conditions climatiques / Weather conditions: T (°C/F) 77° Heure / Time 10h00
Préparé par / Prepared by: J-Y MORENCY

Opérateur / Operator	Heure / Time	Équipements utilisés / Equipment used
J-Y MORENCY	12 h	Blocs d'alimentation / power supply :
J. TRUDEL	12 h	(1-1)+(1-2) > 56,5V volts (2-1)+(2-2) = 57,2V
		Détecteurs de courant / current detector :
		No DV-05 No D-08
		autres / others Calibration : ✓

Superficie prospectée / Prospected area : 22099 ft²

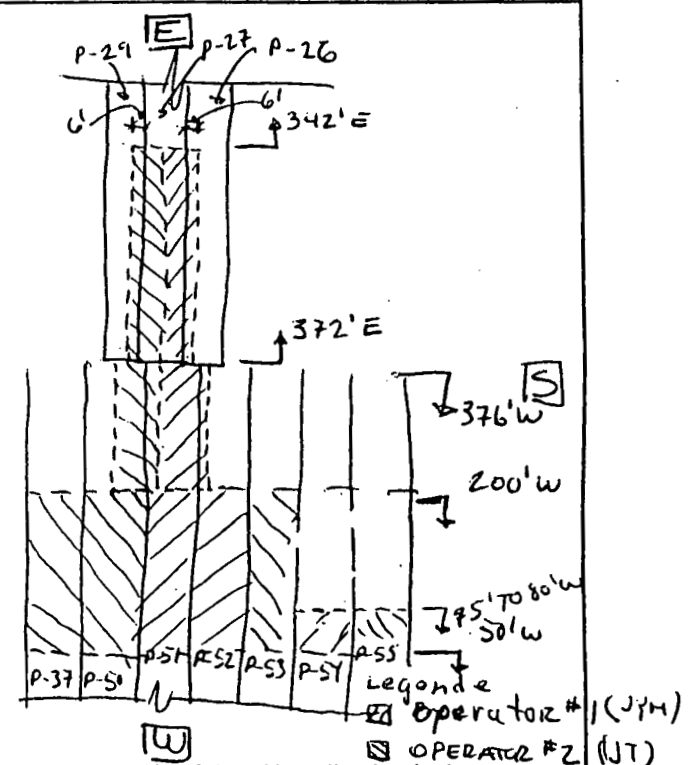
Géomembrane / Géomembrane: HDPE 80 mils

Trous détectés / detected leaks

N°	Localisation / Localization – Feuille / Parent material: Partie centrale/ Central part	bas pentes/ Downhill	près tuyaux/ Near pipes	Distance de / from Soudure / Seam: Extrusion	Fusion	Description Dommage/damage (Voir la légende/seek for legend)	Dimensions
NO	LEAK	FOUND					

Vérifications des réparations / Repairs verification

N°	Type de réparation / Type of repair	Numéro QACQ	Conformité/Conformity: Oui / Yes	Non / No



Plan de localisation des fuites / Localisation leaks map

** Indiquer par un cercle plein la localisation des fuites par rapport aux panneaux vérifiés

** Indicate by a full circle the localisation of the leak on the verificated panels

Type de dommage / Damage type

A : dans le joint / seaming failures
B : craquelure (fissure, déchirure) / tear
C : coupure (coup de couteau) / razor cut
D : poinçonnement (présence lèvres) / hole
E : marques ou traits superficiels / superficial

000575

2740

2740

Commentaires / Comments

PANELS DONE:

P-27 342' E TO 372' E
P-29 342' E TO 372' E (6' WIDE ON THE SOUTH SIDE OF P)
P-26 342' E TO 372' E (6' WIDE ON THE NORTH SIDE OF P)
P-51 376' W TO 200' W
P-50 376' W TO 200' W (10' WIDE ON THE SOUTH SIDE OF P)
P-52 376' W TO 200' W (1' WIDE ON THE NORTH SIDE OF P)
P-51 50' W TO 200' W
P-52 50' W TO 200' W
P-53 50' W TO 200' W
P-54 50' W TO 75' W
P-55 50' W TO 80' W
P-37 50' W TO 200' W

→ THE GROUND WIRE WAS PLACED IN THE ANCHOR TRENCH ON TOP OF WEST BERM

→ THE GCL WIDE IS 15'
OVERLAP 6" (14.5' between overlap)

→ THE LINER IS 23' WIDE BETWEEN SEAM

AT THE BOTTOM OF BERM (P-51) 2 EXITS PIPES

000576

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DÉTECTION DE FUITES /RAPPORT JOURNALIER
LEAK DETECTION /DAILY REPORT

Projet / Project N° : 2093 Geosyntec, FEMP, Cincinnati

Date : September/29/1999 Feuille / Sheet 1 de / of 1

Conditions climatiques / Weather conditions: T (°C/F) 70 Heure / Time 8h00

Préparé par / Prepared by : J-Y MORENCY

Opérateur / Operator	Heure / Time	Équipements utilisés / Equipment used
J-Y MORENCY	8h	Blocs d'alimentation / power supply :
J TRUDEL	8h	(1-1)+(1-2) → 56,4 V volts (2-1)+(2-2) = 57,2 V
		Détecteurs de courant / current detector :
		No DV-05 No D-08
		autres / others Calibration : ☑

Superficie prospectée / Prospected area : 12535 ft²

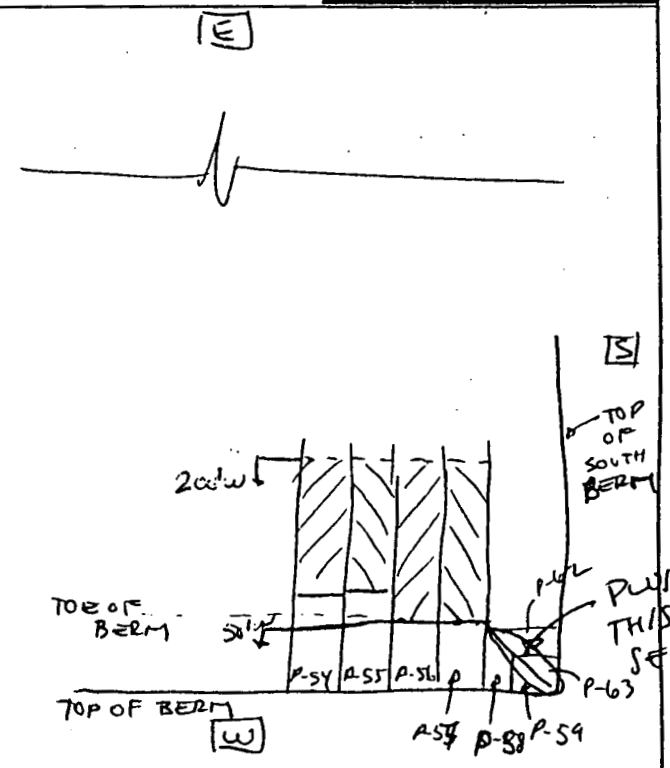
Géomembrane / Géomembrane: HDPE 80 mils

Trous détectés / detected leaks

N°	Localisation / Localization – Feuille / Parent material: Partie centrale/ Central part	Bas pentes/ Downhill	près tuyaux/ Near pipes	Distance de / from Soudure / Seam: Extrusion	Fusion	Description Dommage/damage (Voir la légende/seek for legend)	Dimensions
NO LEAK FOUND							

Vérifications des réparations / Repairs verification

N°	Type de réparation / Type of repair	Numéro QACQ	Conformité/Conformity: Oui / Yes	Non / No



Plan de localisation des fuites / Localisation leaks map

** Indiquer par un cercle plein la localisation des fuites par rapport aux panneaux vérifiés

** Indicate by a full circle the localisation of the leak on the verificated panels.

Type de dommage / Damage type

A : dans le joint / seaming failures
B : craquelure (fissure, déchirure) / tear
C : coupure (coup de couteau) / razor cut
D : poinçonnement (présence lèvres) / hole
E : marques ou traits superficiels / superficial

Legend
☒ OPERATOR #1 (JYM)
☒ OPERATOR #2 (JT)

000577

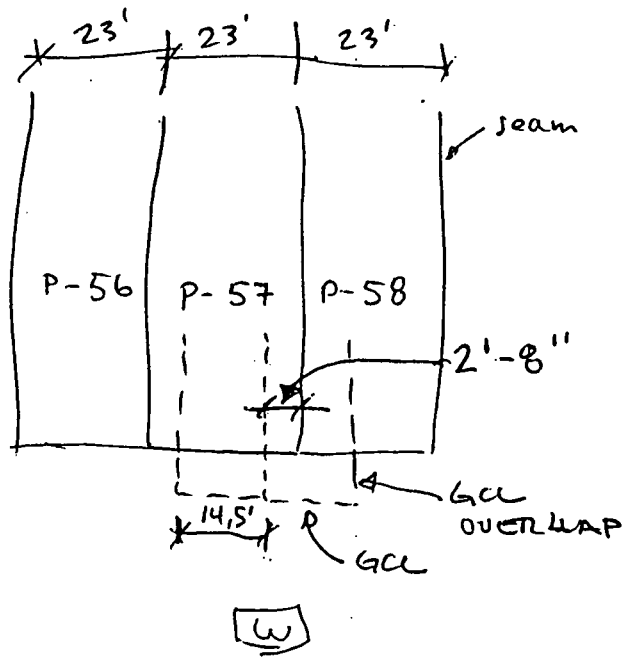
-2740

Commentaires / Comments

PANELS DONE:
P-54 75'W TO 200'W
P-55 80'W TO 200'W
P-56 50'W TO 200'W
P-57 50'W TO 200'W
Seam between P-59/P-63 and P-58/P-62
(It's the seam at the Junction of WEST AND SOUTH BERMS)

→ THE GROUND WIRE WAS PLACED IN THE ANCHOR TRENCH ON TOP OF WEST BERM

→ AT PANEL P-57 (SEE SKETCH ABOVE)
THE DISTANCE BETWEEN GCL OVERLAP AND SEAM IS 2'-8"



2740

000578

APPENDIX R

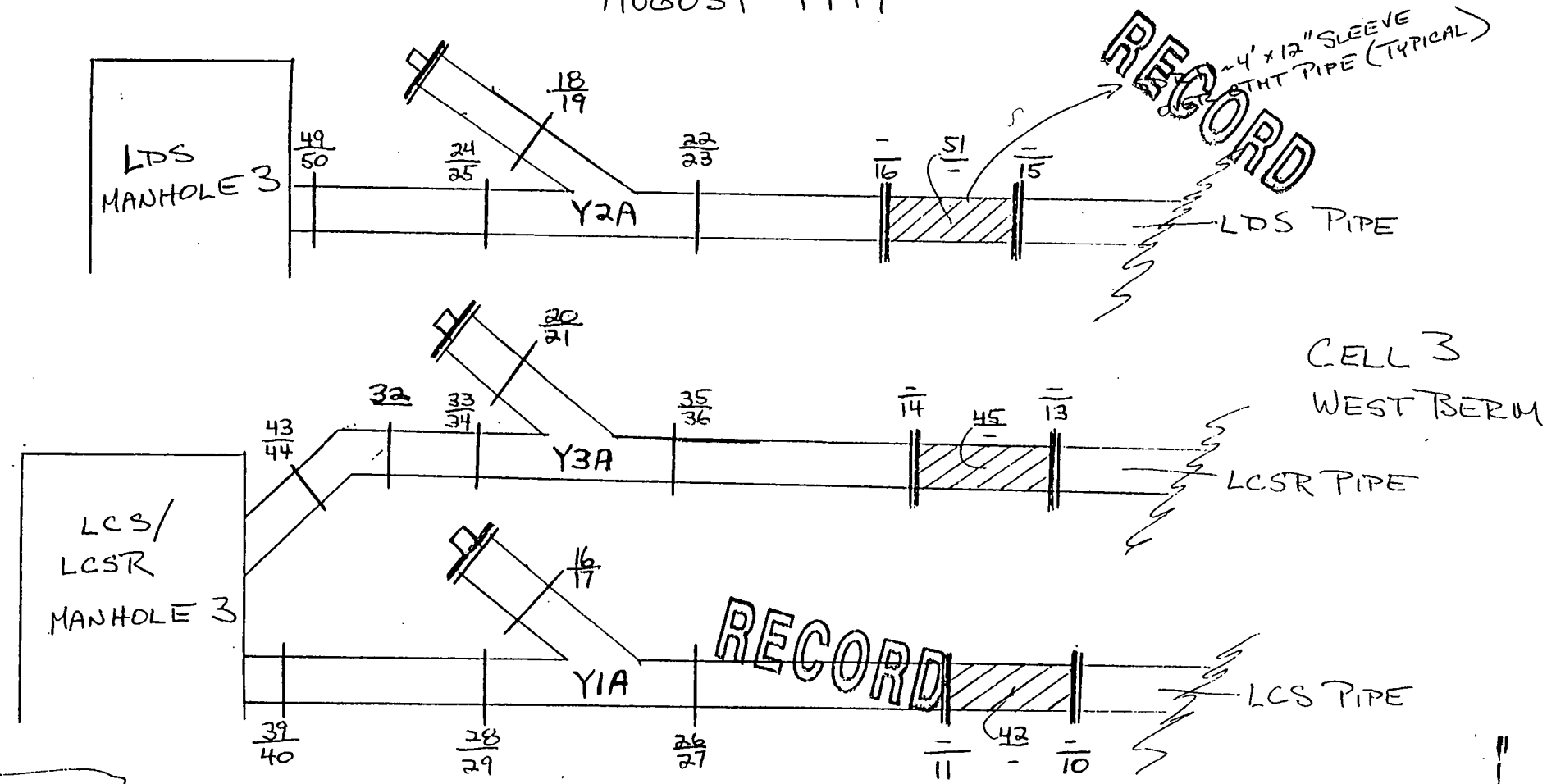
ENHANCEMENT TO LEACHATE CONVEYANCE SYSTEM TEST LOGS

--2740

HDPE PIPE WELDING

BUTT FUSION

CELL 3/MH3
COUPLING REPLACEMENT
WELD MAP
AUGUST 1999



LEGEND:

CARRIER 6" WELD#

CTMT 10" WELD#

| → FUSION WELD

|| → EXTRUSION WELD

NOTE: CTMT PIPE WELDS ONLY SHOWN ON MAP; CARRIER PIPE WELDS ARE AT APPROXMATELY THE SAME LOCATIONS.

2740

000582

2000 880 275 of 795

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

BUTT FUSION WELDING LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II Man Hole 3 YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const.

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ (10") CARRIER: ☒ (6") OTHER: ☐

PIPE DIAMETER: 6 in and 10 in as indicated SDR: 11

JOINT NO.	DATE (day/mo)	OPER. ID	MACH. ID	GAUGE PRESSURE ( ) WELDING	GAUGE PRESSURE ( ) COOL DOWN	PLATE TEMPERATURE (°F)	PIPE ALIGNMENT ACCEPT/REJECT	ROLL BACK DIMENSION	PASS/ FAIL	QA ID
1	3 Aug	JL	1	180	180	460°	Accept	1/4	P	DLE
2	"	JL	1	400	400	440°	Accept	1/4	P	DLE
3	"	JL	1	180	180	460°	Accept	1/4	P	DLE
4	"	JL	1	180	180	460°	Accept	1/4	P	DLE
5	"	JL	1	400	400	440°	Accept	1/4	P	DLE
6	3 Aug	JS	2	180	180	450°	Accept	1/4	P	DLE
7	"	JL	1	400	400	440°	Accept	1/4	P	DLE
8	"	JS	2	180	180	450°	Accept	3/16	P	DLE
9	"	JS	2	180	180	480°	Accept	1/4	P	DLE
10	4 Aug	JL	1	400	400	440°	Accept	1/4	P	DLE
11	4 Aug	JL	1	180	180	460°	Accept	1/4	P	DLE
12	5 Aug	JL	1	180	180	450°	Accept	1/4	P	DLE
13	"	JL	1	400	400	460°	Accept	1/4	P	DLE
14	5 Aug	JL	1	180	180	450°	Accept	1/4	P	DLE Y1A
15	5 Aug	JL	1	180	180	450°	Accept	1/4	P	DLE Y2A
16	5 Aug	JL	1	180	180	475°	Accept	1/4	P	DLE
17	"	JL	1	400	400	460°	Accept	5/16	P	DLE
18	"	JL	1	180	180	480°	Accept	1/4	P	DLE
19	"	JL	1	400	400	465°	Accept	5/16	P	DLE
20	"	JL	1	180	180	450°	Accept	1/4	P	DLE Y3A
21	"	JL	1	400	400	460°	Accept	1/2	P	DLE
22	"	JL	1	180	180	470°	Accept	1/4	P	DLE Y2B
23	5 Aug	JL	1	400	400	460°	Accept	5/16	P	DLE

RECORD

000383

COPY TO:

2000 884 276 87795

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

BUTT FUSION WELDING LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II Man Hole 3 YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const.

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ (10 inch) CARRIER: ☒ (6 inch) OTHER: ☐

PIPE DIAMETER: 6 in. and 10 in. as indicated SDR:

JOINT NO.	DATE (day/mo)	OPER. ID	MACH. ID	GAUGE PRESSURE ( ) WELDING	GAUGE PRESSURE ( ) COOL DOWN	PLATE TEMPERATURE (°F)	PIPE ALIGNMENT ACCEPT/REJECT	ROLL BACK DIMENSION	PASS/ FAIL	QA ID	Location
24	5 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	LDS
25	"	JL	1	400	400	470°	Accept	5/16	P	DLE	LDS
26	5 Aug	JL	1	180	180	480°	Accept	1/4	P	DLE	LCS
27	"	JL	1	400	400	460°	Accept	5/16	P	DLE	LCS
28	"	JL	1	180	180	470°	Accept	1/4	P	DLE	LCS
29	"	JL	1	400	400	465°	Accept	3/4	P	DLE	LCS
30	6 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	
31	"	JL	1	400	400	465°					
32	6 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	1/3A LCSR
~~33~~	~~"~~	~~JL~~	~~1~~	~~400~~	~~400~~	~~465°~~	additional weld	To shorten 6" carrier			
33	6 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	1/3A LCSR
34	6 Aug	JL	1	400	400	465°	Accept	1/2	P	DLE	"
35	6 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	
36	6 Aug	JL	1	400	400	475°					
37	9 Aug	JL	1	190	190	465	Accept	5/16	P	DLE	
38	9 Aug	JL	1	400	400		Accept	5/6	P	DLE	
39	9 Aug	JL	1	190	190	465°	Accept	5/16	P	DLE	LCS TO MANH
40	9 Aug	JL	1	400	400		Accept	5/16	P	DLE	
41	10 Aug	JL	1	180	180	470°	Accept	1/4	P	DLE	

RECORD

000584

COPY TO: Note S.R. = Split Ring Heater / Note * Double weld 2 of 4

2000 880 277 of 795

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

BUTT FUSION WELDING LOG

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II Man hole 3 YEAR: 1999

CONTRACTOR: Lee Supply / Wise Coast

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ (10 inch) CARRIER: ☒ (6 inch) OTHER: ☐

PIPE DIAMETER: 6 in and 10 in as indicated SDR:

JOINT NO.	DATE (day/mo)	OPER. ID	MACH. ID	GAUGE PRESSURE ( ) WELDING	GAUGE PRESSURE ( ) COOL DOWN	PLATE TEMPERATURE (F)	PIPE ALIGNMENT ACCEPT/REJECT	ROLL BACK DIMENSION	PASS/ FAIL	QA ID	Location
42	10 Aug	JL	1	180	180	463°	Accept	1/4	Pass	DLE	LCS To Ber.
* 43	10 Aug	JL	1	180 580°	180 580°	475°	Accept	1/2	Pass	DLE	
* 44	10 Aug	JL	1	400	400	475°	Accept	1/2	Pass	DLE	
45	10 Aug	JL	1	180	180	475°	Accept	3/16	Pass	DLE	LCSR; Beam
46	11 Aug	JL	1	180	180	465°	Accept	1/4	Pass	DLE	Test
47	11 Aug	JL	1	400	400	465°	Accept	1/4	Pass	DLE	Test
48	11 Aug	JL	1	400	400	465°	Accept	1/4	Pass	DLE	Test Ex
49	11 Aug	JL	1	190	190	450°	Accept	3/16	Pass	DLE	LDS To Manhole
50	11 Aug	JL	1	400	400	450°	Accept	3/16	Pass	DLE	LDS To Manhole
51	12 Aug	JL	1	180	180	470°	Accept	1/4	Pass	DLE	Test
52	12 Aug	JL	1	180	180	475°	Accept	1/4	Pass	DLE	Man Hole
53	12 Aug	JL	1	180	180	470°	Accept	1/4	Pass	DLE	Connec.

RECORD

000585

COPY TO: Note Double Weld *

2080 880 278 795

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FLUOR DANIEL FERNALD

BUTT FUSION WELDING LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II Cell III YEAR: 1999

CONTRACTOR: Petro / DeBra / Lee Supply

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER: ☐ OTHER: ☐

PIPE DIAMETER: 10 inch SDR:

JOINT NO.	DATE (day/mo)	OPER. ID	MACH. ID	GAUGE PRESSURE ( ) WELDING	GAUGE PRESSURE ( ) COOL DOWN	PLATE TEMPERATURE (F)	PIPE ALIGNMENT ACCEPT/REJECT	ROLL BACK DIMENSION	PASS/ FAIL	QA ID	
#1	12 Aug	JL	1	400°	400°	465°	Accept	3/16	Pass	DLE	Pen. B. Weld LCS
#2	12 Aug	JL	1	400°	400°	465°	Accept	3/16	Pass	DLE	Pen. Bo LCS R
#3	12 Aug	JL	1	400	400	470°	Accept	1/2	Pass	DLE	Pen Bo LDS

RECORD

000586

COPY TO: Split Ring Heater used / Note ✱

4 of 4

EXTRUSION WELDED SLEEVE

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FLUOR DANIEL FERNALD

EXTRUSION WELDED SLEEVE LOG

RECORD

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO — PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II — welding at 220° — DATE: 6 day Aug month 1999 year

CONTRACTOR: Lee Supply/Wise Const

MATERIAL DESCRIPTION: — FORCEMAIN: ☐ — CONTAINMENT ☒ (8in/10in) — CARRIER: ☒ (8in/6in) — OTHER:

PIPE DIAMETER: 10" and 6" — SDR: 11 — Model No. Weg 342F — Wegener — SN 7113820

JOINT NO.	DATE (day/mo)	CAP ~~LENGTH~~ End	~~SLEEVE LENGTH~~ End Seal	SURFACE PREPARATION: GRIND/CLEAN	SURFACE PREPARATION: ACCEPTANCE	~~End Seal~~ SLEEVE CENTERED	SLEEVE ALIGNED	TRIAL WELD P/F	PERFORM HOT AIR DRYING	OPERATOR ID	MACHINE ID	EXTRUSION WELD COMPLETED	ACCEPT/ REJECT	QA ID	
(1) Test	6 Aug			Grind/C	1010 comp.	Yes	Yes	Pass	Yes	JL	#1-A			DJE	1
(2) 1-LCS	6 Aug	10"		Grind/C	1015 comp.	↑	↑	Pass	Yes	JL	#1-A	P	Accept	↓	2
(3) 1A-LCS	6 Aug	6"		Grind/C	1030 comp.	↓	↓	Pass	Yes	JL	1-A	P	Accept	↓	3
(4) Test	6 Aug			Grind/C	1025 comp.	Yes	Yes	Pass	Yes	JL	1-A			DJE	4
(5) 1-LDS	6 Aug	10"	000588	Grind/C	1050 comp.	Yes	Yes	Pass	Yes	JL	1-A	P	Accept	DJE	5
(6) 1A-LDS	6 Aug	6"		Grind/C	1040 comp	Yes	Yes	Pass	Yes	JL	1-A	P	Accept	DJE	6
(7) 1-LCSR	6 Aug	10"		Grind/C	1105 comp	Yes	Yes	Pass	Yes	JL	1-A	P	Accept	DJE	7
(8) 1A-LCSR	6 Aug	6"		Grind/C	1110 comp	Yes	Yes	Pass	Yes	JL	1-A	P	Accept	DJE	8
(9) Test	10 Aug	Sleeve	Test 2 ft	Grind/C	0917 comp	Yes	Yes	Pass	Yes	JL	1-A	P	Accept	DJE	9
(10) LCS TO Begin Pipe	10 Aug	Sleeve	5 ft	Grind/C	1000 comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DJE	10
(11)	10 Aug	Sleeve	5 ft	Grind/C	1000 comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DJE	11
(12) TEST LCSR	11 Aug	Sleeve	Test 2 ft	Grind/C	0845 comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DJE	12
(13)	11 Aug	11	5 ft 5 ft	Grind/C	0955 comp	Y	Y	Pass	Y	JL	1-A	P	Acc	DJE	13

2740

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FLUOR DANIEL FERNALD

EXTRUSION WELDED SLEEVE LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO

PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II

DATE: 20 day Aug month 1999 year

CONTRACTOR: Wise Const. / Lee Supply / Petro / DeBrx

MATERIAL DESCRIPTION:

PIPE DIAMETER: 3in / 8in / 10in

FORCEMAIN: ☐

CONTAINMENT ☒ 8in/10in

SDR:

CARRIER: ☒ 3in

model Weg 342F SN 7113820

OTHER:

JOINT NO.	DATE (day/mo)	CAP ~~LENGTH~~ End	SLEEVE LENGTH	SURFACE PREPARATION GRIND/CLEAN	SURFACE PREPARATION ACCEPTANCE	SLEEVE CENTERED	SLEEVE ALIGNED	TRIAL WELD P/F	PERFORM HOT AIR DRYING	OPERATOR ID	MACHINE ID	EXTRUSION WELD COMPLETED	ACCEPT/ REJECT	QA ID
(14) 10in LCSR	11 Aug	Sleeve	5ft	Grind/clean	0915 Comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DLE
(15) LDS 10in	11 Aug	"	5ft	" "	1600 comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DLE
(16) LDS 10in	11 Aug	"	5ft	" "	1610 Comp	Yes	Yes	Pass	Y	JL	1-A	P	Accept	DLE
(17) Test	20 Aug	End Cap	3in TO Bin	Grind/Clean	0805 complete	N/A	N/A	Pass	Y	JL	1-A	P	Accept	DLE
(18) weld	20 Aug	End Cap	3in TO Bin	" "	0825 complete	N/A	N/A	Pass	Y	JL	1-A	P	Accept	DLE

In manhole 3 work Area

RECORD

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2740

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PRESSURE TEST RESULTS

CELL 3

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: PHASE II YEAR: 1999

CONTRACTOR: PETRO/DEBRA

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☒

PASS/FAIL CRITERION:

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☒

TARGET PRESSURE: TEST DURATION: Ø.5 HRS GAUGE NO.: 99-5007 GAUGE LOCATION: ON BOX

TEST LOCATION: LCS-R PENETRATION BOX TO LCS-R PENETRATION BOX

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☒ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	NA	27 AUG	Ø845	11.7 psi	—	TBW
2	NA	27 AUG	Ø915	11.7 psi	Ø psi	TBW

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 13 OCT 99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr; [signature] 13 OCT 1999 — CQA REPRESENTATIVE, day/mo/yr

FINAL APPROVAL: [signature] 15/Nov/99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr; [signature] 15 NOV 1999 — CQA REPRESENTATIVE, day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GO0409 TASK NO.: 4.1

DESCRIPTION: PHASE II YEAR: 1999

CONTRACTOR: PETRO / DEBRA

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☒

PASS/FAIL CRITERION:

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☒

TARGET PRESSURE: TEST DURATION: 0.5 HRS GAUGE NO.: 99-5007 GAUGE LOCATION: ON BOX

TEST LOCATION: LCS PENETRATION BOX TO LCS PENETRATION BOX

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ~~NA~~ YES ~~NA~~ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	NA	27 AUG	0807	11.3 psi	—	TBY
2	NA	27 AUG	0837	11.3 psi	0 psi	TBY

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 13 OCT 99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr; Bryan York 13 OCT 1999 — CQA REPRESENTATIVE, day/mo/yr

FINAL APPROVAL: [signature] 15 Nov 99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr; [signature] 15 Nov 1999 — CQA REPRESENTATIVE, day/mo/yr

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PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: DeBra / Petro

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (~~ATTACH WRITTEN AUTHORIZATION~~): ☒

PASS/FAIL CRITERION: Stab. Time Then (1/2 hr) 30 min No Pressure Loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☒

TARGET PRESSURE: 11. psi TEST DURATION: 30 min GAUGE NO.: Gauge Cert. # 99-5212 GAUGE LOCATION: Penetration Box

TEST LOCATION: Penetration Box Air test to (LDS Box)

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
X	1550 To	31 Aug	1550	11.2	—	DLE
1	1600 To 1630		1600	11.0	.2	DLE
2	Test		1610	11.0	.0	DLE
3			1615	11.0	.0	DLE
4			1625	11.0	.0	DLE
5			1630	11.0	.0	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 31 Aug 99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr [signature] 31/Aug/1999 — CQA REPRESENTATIVE, day/mo/yr

FINAL APPROVAL: [signature] 8/OCT/99 — CONTRACTOR'S REPRESENTATIVE, day/mo/yr [signature] 12/OCT/99 — CQA REPRESENTATIVE, day/mo/yr

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FLUOR DANIEL FERNALD

2740

PRESSURE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II Cell 3 YEAR: 1999

CONTRACTOR:

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC ~~(ATTACH WRITTEN AUTHORIZATION)~~: ☒

PASS/FAIL CRITERION: 30 min. Hold Pressure

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☒

TARGET PRESSURE: TEST DURATION: GAUGE NO.: Air Gauge Cert # 99-5212 n/a GAUGE LOCATION: on Box

TEST LOCATION: Pipe Penetration Box, LDS Cell III

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Stab.	2-Sept	1315	11.4	—	DLE
2	Stab.	2-Sept	1320	11.3	.1	DJE
3	Test	2-Sept	1325	11.3	Ø	DJE
4	Test	2-Sept	1330	11.3	Ø	DJE
5	Test	2-Sept	1340	11.3	Ø	DJE
6	Test	2 Sept	1350	11.3	Ø	DJE
7	Test	2 Sept	1400	11.3	Ø	DJE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 2/Sep/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; [signature] 2 Sep 1999 — CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 10/02/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; [signature] 12/Oct/99 — CQA REPRESENTATIVE day/mo/yr

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PRESSURE TEST LOG

- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GO0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Petro / DeBra

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr. Stabilization 3 hr. Pressure hold

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ 6" OTHER: ☐

TARGET PRESSURE: 120 PSI TEST DURATION: 3 hr. GAUGE NO.: 99-5212 GAUGE LOCATION: MH3

TEST LOCATION: Manhole 3 TO Penetration Box cell III (LDS)

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	fill	3 Sept	1120	121 PSI	0	DLE
2	Stab		1130	119	2.0	DLE
3	Stab		1140	117	4.0	DLE
4	1220 Hold		1220	108	13.0	DLE
5	"		1230	108		DLE
6	"		1300	108		DLE
7	"		1310	108		DLE
8	1330 Hold	3 Sept	1320	108		DLE
9, Pump	up To 122 PSI		1330	122 PSI	0	DLE
10	Test	3 Sept	1400	118	4.0	DLE
11			1430	116	6.0	DLE
12			1500	115	7.0	DLE
13			1530	114	8.0	DLE
14			1600	114	8.0	DLE
15	Test	3 Sept	1630	114	8.0	DLE

PASS: ☒ @ 1631 hrs, Pumped Back To 122 PSI, Drew off 12 oz. of Water

FAIL: ☐

VISUAL MONITORING: [signature] 3/Sept/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr

[signature] 3 Sept 1999 — CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 14/OCT/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr

[signature] 12/Oct/99 — CQA REPRESENTATIVE day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Debra, Petro

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☒

PASS/FAIL CRITERION: 1 hour, no pressure loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 15psi TEST DURATION: 1 hour GAUGE NO.: 99-5212 GAUGE LOCATION: penetration box

TEST LOCATION: 10" containment: secondary penetration box TO MH3, LCS line

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	—	7 Sept 1999	1545	15 psi	—	RP
2.	—	7 Sept 1999	1645	15 psi	Ø	RP

PASS: ☐

FAIL: ☐

VISUAL MONITORING: [signature] 7/Sep/99 — Rob Peddicord 7 Sept 1999

CONTRACTOR'S REPRESENTATIVE day/mo/yr CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 13/Sept/99 — Rob Peddicord 7 Sept 1999

CONTRACTOR'S REPRESENTATIVE day/mo/yr CQA REPRESENTATIVE day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G00409 TASK NO.: 4.1

DESCRIPTION: PHASE II YEAR: 1999

CONTRACTOR: PETRO / DEBRA

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☒

PASS/FAIL CRITERION:

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: TEST DURATION: 1.0 HR GAUGE NO.: GAUGE LOCATION: EAST OF PEN. BOX

TEST LOCATION: LDS LINE FROM MH #3 TO PENETRATION BOX

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	NA	08 SEPT	1110	15.4 psi	—	TBM
2	NA	08 SEPT	1210	15.4 psi	0 psi	TBM

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 8/Sep/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; Byron York 11 OCT 1999 — CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 8/OCT/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; [signature] 14/OCT/99 — CQA REPRESENTATIVE day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: PHASE II - CELL #3 YEAR: 1999

CONTRACTOR: PETRO / DEBRA

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☒

PASS/FAIL CRITERION:

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: TEST DURATION: 1.0 HR GAUGE NO.: GAUGE LOCATION: EAST OF PEN. BOX

TEST LOCATION: LCS-R LINE FROM MH#3 TO PENETRATION BOX

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	NA	08 SEPT	1250	14.8 psi	—	TBM
2	NA	08 SEPT	1350	14.8 psi	0 psi	TBM

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 8/Sept/99 day/mo/yr — CQA REPRESENTATIVE 11 OCT 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 14/OCT/99 day/mo/yr — CQA REPRESENTATIVE 13/OCT/99 day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II - Cell 3 YEAR: 1999

CONTRACTOR: Petro, DeBra

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC ~~(ATTACH WRITTEN AUTHORIZATION)~~ DLE: ☒

PASS/FAIL CRITERION: .50 hours, no Pressure loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ DLE OTHER: ☒

TARGET PRESSURE: 10.8 TEST DURATION: .50 hr Next Cal Date 8-30-2000 GAUGE NO.: 99-5212 GAUGE LOCATION:

TEST LOCATION: Gauge Attached To Primary ~~10~~ DLE LCS Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	N/A	20 Sept	0905	11.2	Ø	DLE
2	Test	20 Sept	0920	11.2	Ø	DLE
3	Test	20 Sept	0935	11.2	Ø	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: 20/9/99 CONTRACTOR'S REPRESENTATIVE day/mo/yr — 20/Sept/99 CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: 15/Nov/99 CONTRACTOR'S REPRESENTATIVE day/mo/yr — 21 Sept 99 CQA REPRESENTATIVE day/mo/yr

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF) --2740

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II - Cell 3 YEAR: 1999

CONTRACTOR: Petro, DeBAA

TEST DESCRIPTION: HYDROSTATIC: ☐ PNEUMATIC (~~ATTACH WRITTEN AUTHORIZATION~~ DLE): ☒

PASS/FAIL CRITERION: 150 hour, No Pressure Loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☒

TARGET PRESSURE: 11.4 TEST DURATION: 150 GAUGE NO.: 99-5212 (next Cal. Date 8.30.2000) GAUGE LOCATION:

TEST LOCATION: Gauge Attached To Primary ~~10~~ DLE LCSR Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	N/A	20 Sept	10 15	11.4	Ø	DLE
2	Test	20 Sept	10 30	11.4	Ø	DLE
3	Test	20 Sept	10 45	11.4	Ø	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 20/9/99 day/mo/yr — CQA REPRESENTATIVE 20 Sept 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 14/OCT/99 day/mo/yr — CQA REPRESENTATIVE 12/Oct/99 day/mo/yr

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000601

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FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: G00409 TASK NO.: 4.1

DESCRIPTION: Phase II, Cell 3 Manbolet to Cell 3 YEAR: 1999

CONTRACTOR: Petro / DeBRA (LCSR)

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 Hour, No Pressure Loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ OTHER: ☐

TARGET PRESSURE: 120 PSI TEST DURATION: 1 Hr. Stab / 1 Hr. Test GAUGE NO.: 99-5212 Next Cal. Date 8-30-2000 GAUGE LOCATION: M/H 3

TEST LOCATION: Man hole 3, LCSR 6" pipe TO last weld on carrier cell 3

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Stabilization	21 Sept	1145	96 PSI	0	DLE
2	↓	↓	1200	96 PSI	0	DLE
3			1230	96 PSI	0	DLE
4	Stabilization	21 Sept	1245	96 PSI	0	DLE
5	Test		1350	~~121~~ PSI	0	DLE
6			1405	118	3	DLE
7			1420	117	4	DLE
8			1435	117	4	DLE
9			1450	116	5	DLE
Make up water added			1500	-121 PSI		DLE
12 oz Drained off at 116 PSI						

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 21/Sept/99 day/mo/yr — CQA REPRESENTATIVE 21/Sept/1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 14/OCT/99 day/mo/yr — CQA REPRESENTATIVE 12/oct/99 day/mo/yr

COPY TO:

000602

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II, Cell 3 Manhole To Cell 3 (LCS) YEAR: 1999

CONTRACTOR: Petro / DeBAA

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hour, No Pressure Loss

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ■ OTHER: ☐

TARGET PRESSURE: 120 PSI TEST DURATION: 1 hr Stab 1 hr Test GAUGE NO.: 99-5212 Next Cal Date 8-30-2000 GAUGE LOCATION: MH3

TEST LOCATION: Manhole 3 LCS, 6" pipe TO last weld on carrier cell 3

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: N/A ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	stabilization 0900	22 Sept.	0900	120	0	DLE
2	stab.		0915	117	3	DLE
3	stab.		0930	114	6	DLE
4	stab.		0945	114	6	DLE
5	stab.		1000	112	8	DLE
6	stab.		1015	110	10	DLE
7	stab.		1030	110	10	DLE
8	stab.		1045	110	10	DLE
9	stab		1100	110	10	DLE
10	stab.	22 Sept	1115	110	10	DLE
Pumped Back up To 126 PSI			1120	126	—	DLE
11 Fill and Settle			1130	121	—	DLE
12	Test		1145	120	1	DLE
13	test		1200	119	2	DLE
14	Test		1230	118	3	DLE
15	Test		1245	118	3	DLE

PASS: ☑ at 1245 hrs. Refilled To 121 PSI, Remained off 7 oz makeup water

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 22/Sept/99 day/mo/yr CQA REPRESENTATIVE 22/Sept/99 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 13/10/99 day/mo/yr CQA REPRESENTATIVE 12/Oct/99 day/mo/yr

COPY TO:

000603

MANHOLE MH-3

3 inch, Manhole

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

-2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr.

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ OTHER: ☐

TARGET PRESSURE: 50 PSI TEST DURATION: 1 hr. GAUGE NO.: SN 00-0A353 PI Cal. Date 12-8-98 GAUGE LOCATION: MH 3

TEST LOCATION: Connection 3 inch MH3 so TO MH3 north

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Fill and Start test	8-16-98	1000	52 PSI	Ø	DLE
2	Test	8-16-98	1030	52 PSI	Ø	DLE
3	Test	8-16-99	1100	52 PSI	Ø	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 16 Aug 99 day/mo/yr — CQA REPRESENTATIVE 16 Aug 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 15/Nov/99 day/mo/yr — CQA REPRESENTATIVE 17 Aug 1999 day/mo/yr

COPY TO:

000605

LCS 6in Carrier

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / DeBRA

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr Stab, 3 hr. Test

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ OTHER: ☐

TARGET PRESSURE: 120 PSI TEST DURATION: 3 hr. GAUGE NO.: SN 0A351 PI RE-4 Cal. Date 2 Dec. 98 GAUGE LOCATION: MH 3

TEST LOCATION: Manhole 3, LCS, 6in TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Pressure Start	16 Aug	0900	122	N/A	DLE
2	Static		0930	120	-2	DLE
3			1000	118	-4	DLE
4			1030	117	-5	DLE
5			1100	114	-8	DLE
6			1130	113	-9	DLE
7			1200	11-3	-9 Test Done	DLE
8	Repressure *	16 Aug	1300	122 *		DLE

* Bled off, makeup water 16 oz.

PASS: ☒

FAIL: ☐

VISUAL MONITORING: 16/8/99 — CONTRACTOR'S REPRESENTATIVE — day/mo/yr; 16 Aug. 1999 — CQA REPRESENTATIVE — day/mo/yr

FINAL APPROVAL: 15/Nov/99 — CONTRACTOR'S REPRESENTATIVE — day/mo/yr; 17 Aug 1999 — CQA REPRESENTATIVE — day/mo/yr

COPY TO:

000606

LCS 10 inch Containment

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / DeBra

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: Above Ground 1 hr, Pressure Variable

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 15 psi TEST DURATION: 1 hr. GAUGE NO.: SN 00-437-PI CAL. DATE 12-21-98 GAUGE LOCATION: MH 3

TEST LOCATION: Manhole 3, 10 inch pipe, LCS TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	1 hr. Stab.	18 Aug	0915	17.9	Ø	DLE
2			1000	18.0	.1	
3			1015	17.7	.3	
4			1030	17.0	.7	
5			1045	16.5	.5	
6			1100	16.1	.4	
7			1115	15.8	.3	
8			1130	15.5	.3	
9			1145	15.4	.1	
10			1200	15.2	.2	
11			1230	14.8	.4	
12			1300	14.6	.2	
13			1315	14.6	0	
14			1330	14.6	0	
15			1345	14.6	0	
16		18 Aug	1400	14.6	0	

PASS: ☐

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE — Aug 18, 1999 (day/mo/yr) — CQA REPRESENTATIVE — 18 Aug. 1999 (day/mo/yr)

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE — 15/Nov/99 (day/mo/yr) — CQA REPRESENTATIVE — 19 Aug 1999 (day/mo/yr)

COPY TO:

000607

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wire Const. / DeBra

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: Above Ground 1 hr., Pressure Variable

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 15 PSI TEST DURATION: 1. hr. GAUGE NO.: SN 00-937-PI GAUGE LOCATION: MH Cal. Date 12-24-98

TEST LOCATION: Manhole 3, 10 inch Pipe, LCS TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
17	Refill	18 Aug	1405	15.4	0 *	DLE
18	Static	↓	1415	15.2	.2	DLE
19	↓	↓	1430	15.2	0	DLE
20	↓	18 Aug	1506	15.2	0	DLE

* make up water, 3 gal

PASS: ☐

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 18 Aug 99 day/mo/yr — CQA REPRESENTATIVE 18 Aug 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 15/Nov/99 day/mo/yr — CQA REPRESENTATIVE 19 Aug 1999 day/mo/yr

COPY TO:

000608

LCSR 6in, CARRIER

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GO0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / DeBra

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr. Stab. 3 hr. Test

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ OTHER: ☐

TARGET PRESSURE: 120 PSI TEST DURATION: 3 hr. GAUGE NO.: SN 00-0A 438-PI CAL. Date 21 Dec 98 GAUGE LOCATION: MH 3

TEST LOCATION: Manhole 3, LCSR, 6in TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Start of 1 hr.	18 Aug	1300	122 PSI	Ø	D&E
2	↓	18 Aug	1315	110 PSI	12	D&E
3		18 Aug	1415	110 PSI	0	D&E
4	Test stopped Due To Venting Mistake, Start again					
1	Start of 1 hr.	19 Aug	0700	110	Ø	D&E
2		19 Aug	0800	110	Ø	D&E
3	Repressure	19 Aug	0830	122	Repressure	D&E
4	static	19	0930	121	1	D&E
5	↓	19	1000	121	Ø	D&E
6		19	1030	121	Ø	D&E
7		19	1100	120	1	D&E
8		19	1130	122	Repressure	D&E
9	Repressure *	19 Aug	1345			
	* Bled off 10 oz. of water					

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 19 Aug 99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; [signature] 19 Aug. 1999 — CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 15/Nov/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr; [signature] 20 Aug 1999 — CQA REPRESENTATIVE day/mo/yr

COPY TO:

000609

LCSR 10 inch containment

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

-- 2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / De BRA

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: Above Ground, 1 hr. pressure Variable

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 17 TEST DURATION: 1 hr GAUGE NO.: SN 00-0A353-PE Cal. Date 12-8-98 GAUGE LOCATION: MH3

TEST LOCATION: Manhole 3, 10 inch Pipe, LCSR TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Stab 1 hr	20 Aug	0700	13.5	0	DLE
2	" "		0730	13.5	0	DLE
3	" "		0800	13.5	0	DLE
4	added water To Repressure		0815	17.0	0	DLE
5	Test		0845	17.0	0	DLE
6	Test	20 Aug	0915	17.0	0	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 20 Aug 99 day/mo/yr CQA REPRESENTATIVE 20 Aug. 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 15/Nov/99 day/mo/yr CQA REPRESENTATIVE 23 Aug 1999 day/mo/yr

COPY TO:

000010

LDS 6 inch carrier

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / De Bas

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr Stab, 3 hr Test

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☒ OTHER: ☐

TARGET PRESSURE: TEST DURATION: GAUGE NO.: SN 00-UA351-PI CAL. Date 2-Dec-98 GAUGE LOCATION: MH3

TEST LOCATION: Manhole 3, LDS 6 inch TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☐ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Stab.	20 Aug	0845	100		DLE
2	"		0915	100	Ø	DLE
3	"		0945	100	Ø	DLE
4	Start of 3 hr		1015	124	start	DLE
5			1045	122	-2	DLE
6			1100	122	-2	DLE
7			1130	121	-3	DLE
8			1230	119	-5	DLE
9		20 Aug	1315	117	-7	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 20 Aug 1999 day/mo/yr — CQA REPRESENTATIVE 20 Aug 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 15/Nov/99 day/mo/yr — CQA REPRESENTATIVE 20 Aug 1999 day/mo/yr

COPY TO:

000611

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const.

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: 1 hr Stabilization 3 hr Test

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☒ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 18 psi TEST DURATION: 1 hr. Stab 3 hr test GAUGE NO.: SN 00 OA 353 PI GAUGE LOCATION: MH3 Cal. Date 12 8-98

TEST LOCATION: MH3 SO To MH3 NTh 8 in TO

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Fill	8-20-99	1415	18.0	Fill N/A	DLE
2	Static	20 Aug 99	1445	17.5	Drain air and stabilize N/A	DLE
3	Stabilize	↓	1500	17.0	Ø	DLE
4	Stabilize	↓	1530	17.0	Ø	DLE
5	Test	↓	1600	17.0	Ø	DLE
6	↓	↓	1645	17.0	Ø	DLE
7	↓	↓	1715	17.0	Ø	DLE
8	↓	↓	1745	17.0	Ø	DLE
9	↓	↓	1800	17.0	Ø	DLE
10	↓	↓	1830	17.0	Ø	DLE
11	Test	20 Aug 99	1900	17.0	Ø	DLE

PASS: ☒

FAIL: ☐

VISUAL MONITORING: [signature] 20 Aug 99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr

[signature] 20/Aug/1999 — CQA REPRESENTATIVE day/mo/yr

FINAL APPROVAL: [signature] 15/Nov/99 — CONTRACTOR'S REPRESENTATIVE day/mo/yr

[signature] 23 Aug 99 — CQA REPRESENTATIVE day/mo/yr

000612

COPY TO:

Cross Connection Containment

LDS 10 inch containment

GEOSYNTEC CONSULTANTS

FLUOR DANIEL FERNALD

PRESSURE TEST LOG

--2740

PROJECT: ON-SITE DISPOSAL FACILITY (OSDF)

LOCATION: FERNALD, OHIO PROJECT NO.: GQ0409 TASK NO.: 4.1

DESCRIPTION: Phase II YEAR: 1999

CONTRACTOR: Lee Supply / Wise Const. / DeBra

TEST DESCRIPTION: HYDROSTATIC: ☒ PNEUMATIC (ATTACH WRITTEN AUTHORIZATION): ☐

PASS/FAIL CRITERION: Above Ground 1 hr, Pressure Variable

MATERIAL DESCRIPTION: FORCEMAIN: ☐ CONTAINMENT: ☐ CARRIER ☐ OTHER: ☐

TARGET PRESSURE: 15.0 TEST DURATION: 1 hr GAUGE NO.: SN 00-OA 437 PI CAL. DATE 12-21-98 GAUGE LOCATION: MH3

TEST LOCATION: Manhole 3, 10 inch LDS Pipe TO Cell III Penetration Box

FOR CONTAINMENT PIPE TESTING, CARRIER PIPE PRESSURIZED FIRST: ☒ YES ☐ NO

READING NO.	STABILIZATION TEST PERIOD	DATE (day/mo)	TIME	READING	CHANGE IN READING	QA ID
1	Stab 1 hr	20 Aug	1445	15.0	Ø	DLE
2			1500	15.0	Ø	DLE
3			1515	15.0	Ø	DLE
4			1530	15.0	Ø	DLE
5	Stab 1 hr/Test		1545	15.0	Ø	DLE
6			1600	15.0	Ø	DLE
7	Test		1615	14.8	.2 pumped up to 15 *	DLE
8		20 Aug	1645	15.0		DLE

403. make up WATER

PASS: ☒

FAIL: ☐

VISUAL MONITORING: CONTRACTOR'S REPRESENTATIVE 20 Aug 99 day/mo/yr — CQA REPRESENTATIVE 20 Aug. 1999 day/mo/yr

FINAL APPROVAL: CONTRACTOR'S REPRESENTATIVE 15/Nov/99 day/mo/yr — CQA REPRESENTATIVE 23 Aug 1999 day/mo/yr

COPY TO:

000613

CONTRACTOR TEST REPORTS

LINER PENETRATION BOXES
PRESSURE TEST RECORD

-- 2740

TEST RECORD NO.: LPB-PET-001 DATE: August 27, 1999

LINE SERVICE NO.: LCS Liner Penetration Box	LINE MEDIUM: Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Air pressure tested the LCS Liner Penetration Box installed within OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 08/27/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/26/99 --- 4:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5007	CALIBRATION DUE DATE: 06/08/00
TEST START TIME: 8:07 AM	TEST GAUGE READING: 11.3 PSI
TEST FINISH TIME: 8:37 AM	TEST GAUGE READING: 11.3 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		8/27/99
CQC CONSULT.:	X		8/27/99
FDF QA/QC:	X		8/27/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: DATE: 08/27/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
To: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick

Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:50 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

-- 2740

TEST RECORD NO.: LPB-PET-002 DATE: August 27, 1999

LINE SERVICE NO.: Red. LCS Liner Penetration Box	LINE MEDIUM: Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Air pressure tested the Red. LCS Liner Penetration Box installed within OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 08/27/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/26/99 --- 4:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5007	CALIBRATION DUE DATE: 06/08/00
TEST START TIME: 8:48 AM	TEST GAUGE READING: 11.7 PSI
TEST FINISH TIME: 9:18 AM	TEST GAUGE READING: 11.7 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		8/27/99
CQC CONSULT.:	X		8/27/99
FDF QA/QC:	X		8/27/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: DATE: 08/27/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
To: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick
Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:5 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

-- 2740

TEST RECORD NO.: LPB-PET-003 DATE: August 31, 1999

LINE SERVICE NO.: LDS Liner Penetration Box	LINE MEDIUM: Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Manufacturer's test of the repairs made to the LDS liner penetration box prior to placement into OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: N/A

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 08/31/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/28/99 --- 3:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 4:00 PM	TEST GAUGE READING: 11.0 PSI
TEST FINISH TIME: 4:30 PM	TEST GAUGE READING: 11.0 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		8/31/99
CQC CONSULT.:	X		8/31/99
FDF QA/QC:	X		8/31/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 08/31/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
TO: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick
Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:50 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

-- 2740

TEST RECORD NO.: LPB-PET-003B DATE: September 2, 1999

LINE SERVICE NO.: LDS Liner Penetration Box	LINE MEDIUM: Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Test of the LDS liner penetration box following re-installation into OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/02/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/02/99 --- 12:30 PM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 1:30 PM	TEST GAUGE READING: 11.3 PSI
TEST FINISH TIME: 2:06 PM	TEST GAUGE READING: 11.3 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/2/99
CQC CONSULT.:	X		9/2/99
FDF QA/QC:	X		9/2/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/02/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
To: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick
Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:50 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

TEST RECORD NO.: PET-004 DATE: September 3, 1999

LINE SERVICE NO.: LDS 6-in. dia. Carrier Pipe	LINE MEDIUM: Carrier Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 120 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Water

REFERENCE DRAWINGS/TEST BOUNDARIES:

Hydrostatic test for 6-in. dia. LDS pipe from the LDS liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 08/31/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/2/99 --- 3:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5004	CALIBRATION DUE DATE: 06/07/00
TEST START TIME: 1:30 PM	TEST GAUGE READING: 122 PSI
TEST FINISH TIME: 4:30 PM	TEST GAUGE READING: 114 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/3/99
CQC CONSULT.:	X		9/3/99
FDF QA/QC:	X		9/3/99

REMARKS/COMMENTS:

The pipe was pressurized to 130 psi and allowed to stabilize to 108 psi. A one hour period of time elapsed with no drop in pressure. The pipe was re-pressurized to 120 psi and a 3-hr. period started at 1:30 p.m. as recorded above. The volume of water required to re-pressurize the pipe to 120 psi was measured and approved by GeoSyntec.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/03/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

LINER PENETRATION BOXES
PRESSURE TEST RECORD

--2740

TEST RECORD NO.: PET-004A DATE: September 7, 1999

LINE SERVICE NO.: LCS 10-in. dia. HDPE Pipe	LINE MEDIUM: Containment Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 15 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Air pressure test of 10-in. dia. LCS Containment Pipe from the liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Embedment fill and compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/07/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/7/99 --- 10:30 AM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 3:45 PM	TEST GAUGE READING: 15.0 PSI
TEST FINISH TIME: 4:45 PM	TEST GAUGE READING: 15.0 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/7/99
CQC CONSULT.:	X		9/7/99
FDF QA/QC:	X		9/7/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/07/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO Environmental Technologies

000624

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
To: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick

Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:50 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

-- 2740

TEST RECORD NO.: PET-005 DATE: September 8, 1999

LINE SERVICE NO.: LDS 10-in. dia. HDPE Pipe	LINE MEDIUM: Containment Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 15 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Air pressure test of 10-in. dia. LDS Containment Pipe from the liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Embedment fill and compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/08/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/8/99 --- 10:30 AM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 12:50 PM	TEST GAUGE READING: 14.8 PSI
TEST FINISH TIME: 1:50 PM	TEST GAUGE READING: 14.8 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/8/99
CQC CONSULT.:	X		9/8/99
FDF QA/QC:	X		9/8/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/08/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

Author: Bill Zebick at FNST-02
Date: 10/13/99 2:34 PM
Normal
TO: Renee Erisman at FNST-06
CC: Mike Godber at FNST-04, Uday Kumthekar, Bill Zebick, Gregg Johnson
Subject:

2740

---------- Message Contents

Dear Kwasi,

DCN number 20102-092 (HDPE Pipe and Fitting Pressure Testing) allows the Subcontractor to test the LCS piping with air if approved in writing by the Construction Manager. The contractor was given verbal approval to proceed with pneumatic testing sections of HDPE pipe for Cell III because these sections could not be tested with water. For specific pipe sections in Cell III this letter documents the Subcontractor was given approval by the undersigned to use air testing as an alternative to hydrostatic testing.

Thanks
Bill Zebick

Bill Zebick

RECEIVED
OCT 13 1999
KBT @ 2:50 pm

LINER PENETRATION BOXES
PRESSURE TEST RECORD

TEST RECORD NO.: PET-006 DATE: September 8, 1999

LINE SERVICE NO.: Red. LCS 10-in. dia. HDPE Pipe	LINE MEDIUM: Containment Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 15 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Air pressure test of 10-in. dia. Red. LCS Containment Pipe from the liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: Embedment fill and compacted clay

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/08/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/8/99 --- 10:30 AM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 11:10 AM	TEST GAUGE READING: 15.4 PSI
TEST FINISH TIME: 12:10 PM	TEST GAUGE READING: 15.4 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/8/99
CQC CONSULT.:	X		9/8/99
FDF QA/QC:	X		9/8/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: DATE: 09/08/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

LINER PENETRATION BOXES
PRESSURE TEST RECORD

2740

TEST RECORD NO.: LPB-PET-008 DATE: September 20, 1999

LINE SERVICE NO.: Red. LCS Liner Penetration Box	LINE MEDIUM: Primary Layer Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Test of the Primary Layer Red. LCS liner penetration box following installation into OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: #78 stone

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/20/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/20/99 --- 8:30 AM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 10:15 AM	TEST GAUGE READING: 11.4 PSI
TEST FINISH TIME: 10:45 AM	TEST GAUGE READING: 11.4 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/20/99
CQC CONSULT.:	X		9/20/99
FDF QA/QC:	X		9/20/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/20/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

LINER PENETRATION BOXES
PRESSURE TEST RECORD

TEST RECORD NO.: LPB-PET-007 DATE: September 20, 1999

LINE SERVICE NO.: LCS Liner Penetration Box	LINE MEDIUM: Primary Layer Penetration Box
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 10.8 PSI
SPECIFICATION CODE: Tech. Spec. Section 13005	TEST MEDIUM: Air

REFERENCE DRAWINGS/TEST BOUNDARIES:

Test of the Primary Layer LCS liner penetration box following installation into OSDF Cell 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: #78 stone

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/20/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/20/99 --- 8:30 AM
TEST GAUGE IDENT.: Certification Number: 99-5212	CALIBRATION DUE DATE: 08/30/00
TEST START TIME: 9:05 AM	TEST GAUGE READING: 11.2 PSI
TEST FINISH TIME: 9:35 AM	TEST GAUGE READING: 11.2 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/20/99
CQC CONSULT.:	X		9/20/99
FDF QA/QC:	X		9/20/99

REMARKS/COMMENTS:

None.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/20/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

HDPE PIPING
PRESSURE TEST RECORD

TEST RECORD NO.: PET-010 DATE: September 22, 1999

LINE SERVICE NO.: LCS 6-in. dia. Carrier Pipe	LINE MEDIUM: Carrier Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 120 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Water

REFERENCE DRAWINGS/TEST BOUNDARIES:

Hydrostatic test for 6-in. dia. LCS pipe from the LCS liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: N/A at time of test

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/22/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/21/99 --- 4:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5004	CALIBRATION DUE DATE: 06/07/00
TEST START TIME: 11:45 AM	TEST GAUGE READING: 120 PSI
TEST FINISH TIME: 12:45 AM	TEST GAUGE READING: 121 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/21/99
CQC CONSULT.:	X		9/21/99
FDF QA/QC:	X		9/21/99

REMARKS/COMMENTS:

An initial pressure of 120 psi was recorded at the start of the testing period. During the test period, a drop in pressure to 118 psi was recorded. At the end of the test period, 7-oz. of water was recorded to return the test pressure to 121 psi. Per DCN-20102-092, this is an acceptable loss, therefore the test passed.

REVIEWED/TESTED BY: 10/15/99 FOR RKK SCHAINBAUM DATE: 09/22/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies

HDPE PIPING
PRESSURE TEST RECORD

TEST RECORD NO.: PET-009 DATE: September 21, 1999

LINE SERVICE NO.: Red. LCS 6-in. dia. Carrier Pipe	LINE MEDIUM: Carrier Pipe
MAX. OPERATING PRESSURE: Gravity	TEST PRESSURE: 120 PSI
SPECIFICATION CODE: Tech. Spec. Section 02605	TEST MEDIUM: Water

REFERENCE DRAWINGS/TEST BOUNDARIES:

Hydrostatic test for 6-in. dia. Red. LCS pipe from the Red. LCS liner penetration box back to Manhole No. 3.

HDPE PIPE INSTALLED: N/A

BACKFILL CONDITIONS: N/A at time of test

ALL REQUIRED GAUGES INSTALLED/ISOLATED: Yes CONFIRMATION: Yes DATE: 09/21/99

CQC NOTIFIED: Yes --- GeoSyntec	DATE/TIME: 09/20/99 --- 4:00 PM
TEST GAUGE IDENT.: Certification Number: 99-5004	CALIBRATION DUE DATE: 06/07/00
TEST START TIME: 1:50 PM	TEST GAUGE READING: 121 PSI
TEST FINISH TIME: 2:50 PM	TEST GAUGE READING: 121 PSI

TEST VERIFICATION	ACCEPT	REJECT	DATE
CONTRACTOR:	X		9/21/99
CQC CONSULT.:	X		9/21/99
FDF QA/QC:	X		9/21/99

REMARKS/COMMENTS:

An initial pressure of 121 psi was recorded at the start of the testing period. During the test period, a drop in pressure to 116 psi was recorded. At the end of the test period, 12-oz. of water was recorded to return the test pressure to 121 psi. Per DCN-20102-092, this is an acceptable loss, therefore the test passed.

REVIEWED/TESTED BY: J. Richard Schairbaum DATE: 09/21/99

J. Richard Schairbaum, Quality Assurance Manager

PETRO environmental technologies