SCS ENGINEERS

Certification of

Construction Completion Report
Southeast County Landfill Capacity Expansion
Section 7 Construction

Volume 3 of 3

Prepared for:

Hillsborough County Solid Waste Management Department
P.O. Box 1110
Tampa, Florida 33601

Prepared by:

SCS Engineers
3012 U.S. Highway 301 North
Suite 700
Tampa, Florida 33619
(813) 621-0080

October 21, 2003
File No. 09200020.34

Table of Contents

List of Attachments

Volume 1 of 3

A Geotechnical Test Reports

Volume 2 of 3

B Liner As-Built Drawings
C Daily Construction Quality Assurance Field Reports
D Record Drawings
E Manufacturer Geosynthetic Quality Control Test Reports
F Geosynthetic Conformance Test Reports
G Subbase Acceptance Forms

Volume 3 of 3

H Geomembrane Panel Placement Logs
I Geomembrane Seaming Logs
J Geomembrane Trial Weld Logs
K Geomembrane Non-Destructive Test Logs
L Geomembrane Repair Logs
M Geomembrane Destructive Test Logs
N Electrical Liner Survey
O Photographs

ATTACHMENT H

GEOMEMBRANE PANEL PLACEMENT LOGS

SCS ENGINEERS

Secondary Liner

GEOMEMBRANE PLACEMENT LOG

SHEET 1 Secondary of

PROJECT TITLE Section I Capacity Expansion

PROJECT NO. 09200020.32

DATE 9-10-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
SP1	R-3038	32	22.5	60T	E-W	0845	9-10-02 cool N. end to South on E. slope
SP2	R-3038	32	22.5	60T	E-W	0850	9-10
SP3	R-3038	32	22.5	60T	E-W	0855	9-10 warm clear
SP4	R-3038	30	22.5	60T	E-W	0900	9-10
SP5	R-3038	30	22.5	60T	E-W	0905	9-10
SP6	R-3038	31	22.5	60T	E-W	0910	9-10 hot clear
SP7	R-3038	32	22.5	60T	E-W	0915	9-10
SP8	R-3038	32	22.5	60T	E-W	0920	9-10
SP9	R-3038	32	22.5	60T	E-W	0925	9-10
SP10	R-3038	32	22.5	60T	E-W	0930	9-10
SP11	R-3038	32	22.5	60T	E-W	0935	9-10
SP12	R-3038	33	22.5	60T	E-W	0940	9-10
SP13	R-3038	33	22.5	60T	E-W	0945	9-10
SP14	R-3036	33	22.5	60T	E-W	0950	9-10
SP15	R-3036	33	22.5	60T	E-W	0953	9-10
SP16	R-3036	34	22.5	60T	E-W	1000	9-10
SP17	R-3036	34	22.5	60T	E-W	1003	9-10
SP18	R-3036	35	22.5	60T	E-W	1008	9-10
SP19	R-3036	35	22.5	60T	E-W	1011	9-10
SP20	R-3036	36	22.5	60T	E-W	1015	910 hot clear
		653					

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 2 SECONDARY LINER of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/10/02 to 9-14-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	DATE	WEATHER/CONDITIONS/COMMENTS
21	R-3036	36	22.5	60 T	EAST TO WEST	10:20	9/10/02	HOT / CLR SKYS
22	R-3036	37	22.5	60 T	E TO W	10:24	9/10/02	HOT / CLR SKYS
23	R-3036	37	22.5	60 T	E TO W	10:28	9/10/02	HOT / CLR SKYS
24	R-3036	37	22.5	60 T	E TO W	10:35	9/10/02	HOT / CLR SKYS
25	R-3035	37	22.5	60 T	E TO W	10:38	9/10/02	HOT / CLR SKYS
26	R-3035	36	22.5	60 T	E TO W	10:41	9/10/02	HOT / CLR SKYS
27	R-3035	39	22.5	60 T	E TO W	10:45	9/10/02	HOT / CLR SKYS
28	R-3035	41	22.5	60 T	E TO W	10:51	9/10/02	HOT / CLR SKYS
29	R-3035	38	22.5	60 T	E TO W	10:53	9/10/02	HOT / CLR SKYS 22.5
30	R-3035	38	22.5	60 T	E TO W	10:59	9/10/02	HOT / CLR SKYS 22.5
31	R-2972	495	22.5	60 S	BOTTOM	1:15	9/10/02	HOT / OVERCAST
32	R-2972	94	22.5	60 S	BOTTOM	1:25	9/10/02	HOT / OVERCAST
33	R-2974	515	22.5	60 S	BOTTOM	1:45	9/10/02	HOT / OVERCAST
34	R-2974	98	22.5	60 S	BOTTOM	2:30	9/10/02	OVERCAST
35	R-2976	442	22.5	60 S	BOTTOM	2:00	9/10/02	OVERCAST
36	R-2976	75	22.5	60 S	BOTTOM	2:10	9/10/02	OVERCAST
37	R-2967	368	22.5	60 S	BOTTOM	2:20	9/10/02	OVERCAST
38	R-2967	234	22.5	60 S	S-N	1515	9-10-02	OVERCAST
39	R-2979	187	22.5	60 S	S-N	1520	9-10-02	OVERCAST
40	R-2980	499	22.5	60 S	N-S	0750	9-14-02	OVERCAST

3383

PRINT NAME: Dennis G. DuPont / DAVID WHALEN

SIGNATURE: Dennis G. DuPont / David Whalen

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 3 Secondary Liner of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-14-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	DATE	WEATHER/CONDITIONS/COMMENTS
41	R 2080	23	22.5	60S	S-N	0805	9-14	
42	R 2971	520	22.5	60S	N-S	0815	9-14	
43	R 2951	520	22.5	60S	N-S	0820	9-14	
44	R 2969	515	22.5	60S	N-S	0825	9-14	
45	R 2968	516	22.5	60S	N-S	0830	9-14	
46	R 2973	516	22.5	60S	N-S	0840	9-14	
47	R 2979	50	17.0	60S	S-N	1440	9-10	17 50
48	R 2979	172	22.5	60S	S-N	0850	9-14	
49	R 2979	146	22.5	60S	S-N	0900	9-14	
50	R 2947	221	22.5	60S	S-N	0920	9-14	
51	R 2947	224	22.5	60S	S-N	0940	9-14	
52	R 2947	51	22.5	60S	S-N	1000	9-14	
53	R 2975	168	22.5	60S	S-N	1015	9-14	
54	R 2975	219	22.5	60S	S-N	1030	9-14	
55	R 3039	37	22.5	60T	E-W	1045	9-14	
56	R 3039	31	22.5	60T	E-W	1055	9-14	
57	R 3039	34	22.5	60T	E-W	1105	9-14	
58	R 3039	36	22.5	60T	E-W	1115	9-14	
59	R 3039	32	22.5	60T	E-W	1125	9-14	22.5
60	R 3039	32	22.5	60T	S-N	1140	9-14	

4123

PRINT NAME: Dennis G. DuPont / DAVID WHALEN

SIGNATURE: Dennis G. DuPont / David Whalen

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 4 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
P-61	R 3039	31	22.5	60T	S-N	1150	9-14 [ ] 22.5
P-62	R 3039	36	22.5	60T	S-N	1310	9-14
P-63	R 3039	38	22.5	60T	S-N	1325	9-14 [ ] 22.5
P-64	R 3039	42	22.5	60T	S-N	1340	9-14
P-65	R 3039	42	22.5	60T	S-N	1350	9-14
P-66	R 3039	43	22.5	60T	S-N	1400	9-14
P-67	R 3035	44	22.5	60T	S-N	1420	9-14
P-68	R 3035	44	22.5	60T	S-N	1430	9-14
P-69	R 3035	45	22.5	60T	S-N	1445	9-14
P-70	R 3035	45	22.5	60T	S-N	1455	9-14
P-71	R 3035	45	22.5	60T	S-N	1510	9-14 465
P-72	R 2982	511	22.5	60S	N-S	0730	9-16 swale panel
P-73	R 3002	514	22.5	60S	N-S	0745	9-16
P-74	R 2938	508	22.5	60S	N-S	0800	9-16
P-75	R 3003	505	22.5	60S	N-S	0830	9-16
P-76	R 2927	520	22.5	60S	N-S	0900	9-16
P-77	R 2952	513	22.5	60S	N-S	1010	9-16
P-78	R 2934	452	22.5	60S	N-S	1100	9-16
P-79	R 2970	509	22.5	60S	N-S	1130	9-16
P-80	R 2948	504	22.5	60S	N-S	1200	9-16 4536

5001

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 5 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-17-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
P-81	R-2939	219	22.5	60S	S-N	0730	9-17
P-82	R-2939	214	22.5	60S	S-N	0745	9-17
P-83	R-2939	79	22.5	60S	S-N	0805	9-17
P-84	R-2941	133	22.5	60S	S-N	0820	~~9-19~~ 9-17
P-85	R-2941	209	22.5	60S	S-N	0830	9-17
P-86	R-2941	179	22.5	60S	S-N	0845	9-17
P-87	R-2935	15	22.5	60S	S-N	0900	9-17
P-88	R-2935	196	22.5	60S	S-N	0915	9-17
P-89	R-2935	240	22.5	60S	S-N	0925	9-17
P-90	R-2926	189	22.5	60S	S-N	0935	9-17
P-91	R-2926	89	22.5	60S	S-N	0945	9-17
P-92	R-3040	44		60T	S-N	1000	9-17 8 44 15 506 FT²
P-93	R-3040	47	22.5	60T	S-N	1010	9-17
P-94	R-3040	48	22.5	60T	S-N	1025	9-17
P-95	R-3040	50	22.5	60T	S-N	1035	9-17
P-96	R-3040	52	22.5	60T	S-N	1045	9-17
P-97	R-3040	53	22.5	60T	S-N	1055	9-17
P-98	R-3040	53	22.5	60T	S-N	1105	9-17
P-99	R-3040	53	22.5	60T	S-N	1115	9-17
P-100	R-3040	54	22.5	60T	S-N	1125	9-17

~~2216~~
(2172)(22.5)
+ 506 FT²

PAGE TOTAL = 49,376 FT²

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 6 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-17-02 to 9-30-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
P101	R-3040	55	22.5	60T	S-N	1135	9-17
P102	R-2926	10	22.5	60S	S-N	1145	9-17 65
P103	R-2991	502	22.5	60S	N-S	0715	9-18
P104	R-2945	603	22.5	60S	N-S	0755	9-18
P105	R-2965	518	22.5	60S	N-S	0810	9-18
P-106	R-2928	513	22.5	60S	N-S	0820	9-18
P-107	R-2977	191	22.5	60S	~~N~~ S-N	0840	9-18
P-108	R-2977	89	22.5	60S	S-N	0845	9-18
P-109	R-2977	170	22.5	60S	S-N	0900	9-18
P-110	R-2977	54	22.5	60S	S-N	0915	9-18
P-111	R-2926	100	22.5	60S	S-N	0930	9-18
P-112	R-3041	55	22.5	60T	S-N	0945	9-18
P-113	R-3041	56	22.5	60T	S-N	0955	9-18
P-114	R-3041	56	22.5	60T	S-N	1005	9-18
P-115	R-3041	73	22.5	60T	S-N	1015	9-18 2980 on 18
116	R-3013	519	22.5	60S	N-S	0800	9-30
117	R-2958	519	22.5	60S	N-S	0820	9-30
118	R-2962	520	22.5	60S	N-S	0835	9-30
119	R-2954	150	22.5	60S	N-S	0850	9-30
120	R-2954	145	22.5	60S	N-S	1010	9-30

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 7 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-30-02 to 10-3-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
121	R-2954	141	22.5	60S	N-S	1030	9-30
122	R-~~3021~~ 2964	532	22.5	60S	N-S	0800	10-2
123	R-3021	515	22.5	60S	N-S	0815	10-2
124	R-2931	122	22.5	60S	N-S	0830	10-2
125	R-2931	135	22.5	60S	N-S	0840	10-2
126	R-3016	91	22.5	60S	W-E	0730	10-3
127	R-3016	93	22.5	60S	W-E	0740	10-3
128	R-3016	95	22.5	60S	W-E	0750	10-3
129	R-3016	97	22.5	60S	W-E	0800	10-3
130	R-3016	99	22.5	60S	W-E	0810	10-3
131	R-3005	101	22.5	60S	W-E	0815	10-3
132	R-3005	103	22.5	60S	W-E	0825	10-3
133	R-3005	105	22.5	60S	W-E	0835	10-3
134	R-3005	107	22.5	60S	W-E	0845	10-3
135	R-3005	109	22.5	60S	W-E	0855	10-3
136	R-3017	111	22.5	60S	W-E	0910	10-3
137	R-3017	112	22.5	60S	W-E	0920	10-3
138	R-3017	113	22.5	60S	W-E	0935	10-3
139	R-3017	114	22.5	60S	W-E	0950	10-3
140	R-3008	115	22.5	60S	W-E	1010	10-3

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 8 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.37
DATE 10-3-02 to 10-4-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
141	R-3008	116	22.5	60 S	W-E	1025	10-3
142	R-3008	117	22.5	60S	W-E	1040	10-3
143	R-3008	118	22.5	60S	W-E	1055	10-3
144	R-3014	119	22.5	60S	W-E	1115	10-3
145	R-3014	120	22.5	60S	W-E	1130	10-3
146	R-3014	121	22.5	60S	W-E	1145	10-3
147	R-3014	122	22.5	60S	W-E	1200	10-3
148	R-2997	123	22.5	60S	W-E	1315	10-3
149	R-2997	124	22.5	60S	W-E	1330	10-3
150	R-2997	125	22.5	60S	W-E	1345	10-3
151	R-3012	519	22.5	60S	S-N	1410	10-3
152	R-3019	519	22.5	60S	S-N	1440	10-3
153	R-2931	122	22.5	60S	S-N	1500	10-3
154	R-2997	96	22.5	60S	S-N	1515	10-3
155	R-2931	22	22.5	60S	S-N	1530	10-3
156	R-3032	74	22.5	60T	S-N	0800	10-4
157	R-3032	75	22.5	60T	S-N	0815	10-4
158	R-3032	76	22.5	60T	S-N	0830	10-4
159	R-3032	77	22.5	60T	S-N	0845	10-4
160	R-3032	78	22.5	60T	S-N	0900	10-4

PRINT NAME: Dennis G. Dulont

SIGNATURE: Dennis G. Dulont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 9- Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-4-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
161	R-3032	79	22.5	60T	S-N	0915	10-4
162	R-3029	80	22.5	60T	S-N	0935	10-4
163	R-3029	90	22.5	60T	S-N	0950	10-4
164	R-3029	40	22.5	60T	S-N	1010	10-4
165	R-3029	30	22.5	60T	S-N	1025	10-4
166	R-2937	105	22.5	60S	W-E	1040	10-4
167	R-2937	105	22.5	60S	W-E	1100	10-4
168	R-2937	105	22.5	60S	W-E	1115	10-4
169	R-2937	40	22.5	60S	W-E	1130	10-4
170	R-2937	38	22.5	60S	S-N	1145	10-4
171	R-2937	40	13	60S	S-N	1200	10-4
172	R-3029	2	2	60T	S-N	1205	10-4 anchor
173	R-3017	16	22.5	60S	~~E-W~~ W-E	0905	10-3
174	R-3004	60	20	60S	E-W	1315	10-4
175	R-3004	61	19	60S	E-W	1330	10-4
176	R-3004	61	18	60S	E-W	1350	10-4
177	R-3004	35	22	60S	N-S	1400	10-4
178	R-3004	13	5	60S	N-S	1410	10-4
179	R-3004	50	19	60S	N-S	1425	10-4
180	R-3004	50	18	60S	N-S	1445	10-4

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 10 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-4-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
181	R-3004	50	14	60 S	N-S	1505	10-4 50/50 14
182	R-3004	50	18	60 S	N-S	1525	10-4 50/40 18
183	R-3004	44	18	60 S	W-E	1545	10-4 44/40 18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 1 PRIMARY LINER of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/24/02 to 9-25-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME		WEATHER/CONDITIONS/COMMENTS
1P	R-3041	26	18	60 T	E-W		9/24	OVERCAST BREEZY
2P	R-3041	26	22.5	60 T	E-W		9/24	
3P	R-3041	26	22.5	60 T	E-W		9/24	
4P	R-3041	26	22.5	60 T	E-W		9/24	
5P	R-3041	26	22.5	60 T	E-W		9/24	
6P	R-3041	26	22.5	60 T	E-W		9/24	
7P	R-3033	26	22.5	60 T	EW		9/24	
8P	R-3033	26	22.5	60 T	E-W		9/24	
9P	R-3033	26	22.5	60 T	E-W		9/24	
10P	R-3033	26	22.5	60 T	E-W		9/24	
11P	R-3033	26	22.5	60 T	EW		9/24	
12P	R-3033	26	22.5	60 T	E-W		9/24	
13P	R-3033	26	22.5	60 T	E-W		9/25	
14P	R-3033	26	22.5	60 T	E-W		9/25	
15P	R-3033	30	22.5	60 T	E-W		9/25	
16P	R-3033	30	22.5	60 T	E-W		9/25	
17P	R-3033	30	22.5	60 T	E-W		9/25	
18P	R-3033	30	22.5	60 T	E-W		9/25	
19P	R-3033	30	22.5	60 T	E-W		9/25	
20P	R-3028	30	22.5	60 T	E-W		9/25	OVERCAST BREEZY

PRINT NAME: Dennis G. DuPont DAVID W. HALEN

SIGNATURE: Dennis G. DuPont David W. Halen

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 2 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/25/02 to

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	DATE	WEATHER/CONDITIONS/COMMENTS
21P	R-3028	30	22.5	60 T	E-W		9/25	OVERCAST BREEZY
22P	R-3028	30	22.5	60 T	E-W		9/25	
23P	R-3028	30	22.5	60 T	E-W		9/25	
24P	R-3028	30	22.5	60 T	E-W		9/25	
25P	R-3028	30	22.5	60 T	E-W		9/25	
26P	R-3028	35	22.5	60 T	E-W		9/25	
27P	R-3028	35	22.5	60 T	E-W		9/25	
28P	R-3028	35	22.5	60 T	E-W		9/25	
29P	R-3028	33	17	60 T	E-W		9/25	17 33 32
30P	R-3028	36	22.5	60 T	E-W		9/25	
31P	R-3028	36	22.5	60 T	E-W		9/25	36 22.5 32
32P	R-3034	33	22.5	60 T	E-W		9/25	
33P	R-3028	33	16	60 T	S-N		9/25	16 33 32
34P	R-3034	34	22.5	60 T	S-N		9/25	
35P	R-3034	36	18	60 T	S-N		9/25	18 34 36 3
36P	R-3034	37	22.5	60 T	S-N		9/25	
37P	R-3034	37	22.5	60 T	S-N		9/25	
38P	R-3037A	48	22.5	60 T	S-N		9/25	48 38
39P	R-3037A	30	14 ~~22.5~~	60 T	S-N		9/25	30 28
40P	R-2956	355	22.5	60 S	S-N		9/25	OVERCAST BREEZY

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 3 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-25-02 to 9-27-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
41P	R-2956	61	19	60S	S-N		9-25 60 61 19
42P	R 2956	145	22.5	60S	S-N		9-25 145 22.5
43P	R-2929	216	22.5	60S	S-N		9-25
44P	R-2993	35	10	60S	S-N		9-25 33 35 10
45P	R-2993	424	22.5	60S	S-N		9-25
46P	R-2956	44	9	60S	S-N		9-25 44 9
47P	R-2950	492	22.5	60S	S-N	0845	9-27
48P	R-2950	90	~~22.5~~ 16.0	60S	S-N	0855	9-27 16 90 92
49P	R-2940	480	22.5	60S	S-N	0905	9-27
50P	R-2957	520	22.5	60S	S-N	0920	9-27
51P	R-2990	517	22.5	60S	S-N	0935	9-27
52P	R-2943	515	22.5	60S	S-N	0945	9-27
53P	R-2942	514	22.5	60S	S-N	0959	9-27
54P	R-2989	517	22.5	60S	N-S	1015	9-27
55P	R-2959	516	22.5	60S	N-S	1035	9-27
56P	R-2959	128	22.5	60S	N-S	1050	9-27 22 128
57P	R-2966	206	22.5	60S	N-S	1110	9-27 56 20 132
58P	R-2966	214	22.5	60S	N-S	1135	9-27
59P	R-2930	216	22.5	60S	N-S	1145	9/27
60P	R-2930	217	22.5	60S	N-S	1155	9/27

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 4 PRIMARY of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-27-02 To 10-1-02

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	DATE	WEATHER/CONDITIONS/COMMENTS
61P	R-3001	211	22.5	60 S	N-S	1310	9/27	
62	R-2978	513	22.5	60 S	N-S	1325	9/27	
63	R-2932	455	22.5	60 S	N-S	1335	9/28	
64	R-2936	454	22.5	60 S	N-S		9/28	
65	R-2988	516	22.5	60 S	N-S		9/28	
66	R-2987	518	22.5	60 S	N-S		9/28	
67	R-2994	520	22.5	60 S	N-S		9/28	
68	R-2961	520	22.5	60 S	N-S		9/28	
69	R-2946	520	22.5	60 S	N-S		9/28	
70	R-3001	~~57~~211	22.5	60 S	N-S		9/28	
71	R-3001	94	22.5	60 S	N-S		9/28	
72	R-3023	168	22.5	60 S	N-S		9/28	
73	R-3023	263	22.5	60 S	N-S		9/28	
74	R-3024	195	22.5	60 S	N-S		9/28	
75	R-3024	188	22.5	60 S	N-S		9/28	
76	R-3024	110	22.5	60 S	N-S		9/28	
77	R-3023	74	22.5	60 S	N-S		9/28	
78	R-2949	180	22.5	60 S	N-S		9/28	
79	R-2949	175	22.5	60 S	N-S		9/28	
80	R 2955	515	22.5	60 S	N-S	0800	10-1	

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 5 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
81	R-3006	515	22.5	60S	N-S	0815	10-1
82	R-3022	515	22.5	60S	N-S	0835	10-1
83	R-3015	509	22.5	60S	N-S	0850	10-1
84	R-2949	119	22.5	60S	N-S	0905	10-1
85	R-3020	170	22.5	60S	N-S	0920	10-1
86	R-3020	168	22.5	60S	N-S	0935	10-1
87	R-2954	52	22.5	60S	N-S	0950	10-1
88	R-3020	160	22.5	60S	N-S	1005	10-1
89	R-3009	517	22.5	60S	N-S	0735	10-12
90	R-2999	513	22.5	60S	N-S	0750	10-12
91	R-2960	516	22.5	60S	N-S	0810	10-12
92	R-2998	510	22.5	60S	N-S	0830	10-12
93	R-3007	512	22.5	60S	N-S	0845	10-12
94	R-3018	513	22.5	60S	N-S	0905	10-12
95	R-2996	509	22.5	60S	N-S	0920	10-12
96	R-2995	516	22.5	60S	N-S	0940	10-12
97	R-2979	157	22.5	60S	N-S	0955	10-12
98	R-2929	67	22.5	60S	N-S	1005	10-12
99	R-2983	49	22.5	60S	N-S	1015	10-12
100	R-2983	207	22.5	60S	N-S	1030	10-12

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 6 primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.37
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
101	R-2931	20	22.5	60S	N-S	1040	10-12
102	R-3004	152	22.5	60S	N-S	1055	10-12
103	R-3004	44	22.5	60S	N-S	1105	10-12
104	R-2981	102	22.5	60S	N-S	1120	10-12
105	R-2981	142	22.5	60S	N-S	1130	10-12
106	R-2981	137	22.5	60S	N-S	1140	10-12
107	R-2981	115	22.5	60S	N-S	1150	10-12
108	R-2963	92	22.5	60S	W-E	0720	10-15
109	R-2963	92	22.5	60S	W-E	0730	10-15
110	R-2963	93	22.5	60S	W-E	0740	10-15
111	R-2963	95	22.5	60S	W-E	0750	10-15
112	R-2963	96	22.5	60S	W-E	0800	10-15
113	R-2986	98	22.5	60S	W-E	0810	10-15
114	R-2986	100	22.5	60S	W-E	0820	10-15
115	R-2986	101	22.5	60S	W-E	0830	10-15
116	R-2986	103	22.5	60S	W-E	0840	10-15
117	R-2986	93	22.5	60S	W-E	0850	10-15
118	R-3008	11	22.5	60S	W-E	0900	10-15 short panel
119	R-2944	105	22.5	60S	W-E	0910	10-15
120	R-2944	100	22.5	60S	W-E	0920	10-15

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 7 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020132
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
121	R-2944	108	22.5	60S	W-E	0930	10-15
122	R-2944	110	22.5	60S	W-E	0940	10-15
123	R-2944	112	22.5	60S	W-E	0950	10-15
124	R-2953	113	22.5	60S	W-E	1000	10-15
125	R-2953	115	22.5	60S	W-E	1010	10-15
126	R-2953	116	22.5	60S	W-E	1020	10-15
127	R-2953	117	22.5	60S	W-E	1030	10-15
128	R-2953	120	22.5	60S	W-E	1040	10-15 short panel
129	R-2933	99	22.5	60S	W-E	1050	10-15
130	R-2933	121	22.5	60S	W-E	1100	10-15
131	R-2933	103	22.5	60S	W-E	1115	10-15
132	R-2953	19	22.5	60S	W-E	1130	10-15 short panel
133	R-2933	123	22.5	60S	W-E	1140	10-15
134	R-2996	124	22.5	60S	W-E	1150	10-15
135	R-2996	125	22.5	60S	W-E	1200	10-15
136	R-2996	91	22.5	60S	W-E	0800	10-16
137	R-3017	42	10	60S	N-S	0810	10-16
138	R-2996	38	22.5	60S	N-S	0820	10-16
139	R-2296	43	22.5	60S	N-S	0835	10-16
140	R-2996	39	22.5	60S	N-S	0850	10-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 8 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
141	R-3017	27	10	60S	N-S	0905	10-16 [redacted] 10
142	R-7259	50	22.5	60T	S-N	0740	10-17
143	R-7259	50	22.5	60T	S-N	0750	10-17
144	R-7259	54	22.5	60T	S-N	0800	10-17
145	R-7259	54	22.5	60T	S-N	0810	10-17
146	R-7259	55	22.5	60T	S-N	0820	10-17
147	R-7259	55	22.5	60T	S-N	0830	10-17
148	R-7259	56	22.5	60T	S-N	0840	10-17
149	R-7259	56	22.5	60T	S-N	0850	10-17
150	R-3034	57	22.5	60T	S-N	0900	10-17
151	R-3034	57	22.5	60T	S-N	0910	10-17
152	R-3034	57	22.5	60T	S-N	0920	10-17
153	R-3034	58	22.5	60T	S-N	0930	10-17
154	R-3027	59	22.5	60T	S-N	0940	10-17
155	R-3027	59	22.5	60T	S-N	0950	10-17
156	R-3027	59	22.5	60T	S-N	1000	10-17
157	R-3027	62	22.5	60T	S-N	1010	10-17
158	R-3027	63	22.5	60T	S-N	1020	10-17
159	R-3027	64	22.5	60T	S-N	1030	10-17
160	R-3027	65	22.5	60T	S-N	1045	10-17

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 9 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICKNESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
161	R-3027	65	22.5	60T	S-N	1055	10-17
162	R-3031	4	22.5	60T	S-N	1110	10-17
163	R-3031	66	22.5	60T	S-N	1120	10-17
164	R-3031	67	22.5	60T	S-N	1130	10-17
165	R-3031	68	22.5	60T	S-N	1140	10-17
166	R-3031	70	22.5	60T	S-N	1155	10-17
167	R-3031	70	22.5	60T	S-N	1310	10-17
168	R-3031	71	22.5	60T	S-N	1320	10-17
169	R-3031	71	22.5	60T	S-N	1330	10-17
170	R-3037	70	22.5	60T	S-N	1345	10-17
171	R-3037	87	22.5	60T	S-N	1355	10-17
172	R-3037	93	22.5	60T	S-N	1405	10-17
173	R-3037	43	22.5	60T	S-N	1420	22.5 30 43 10-17
174	R-3037	22	22.5	60T	S-N	1430	22.5 33 22 10-17
175	R-3010	19	15	60S	W-E	1445	10-17 15 22 19
176	R-3010	91	22.5	60S	W-E	1500	10-17 33 39 56 91
177	R-3010	92	22.5	60S	W-E	1510	10-17
178	R-3010	92	22.5	60S	W-E	1505	10-17
179	R-3010	20	15	60S	W-E	1520	10-17 15 22 30
180	R-3010	10	10	60S	W-E	1530	10-17 10 14 10

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 10 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020132
DATE

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS
181	R-3010	33	22.5	60S	S-N	1535	10-17 33 22.5 70 32
182	R-3010	41	22.5	60S	S-N	1540	~~9540~~ 10-17

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 1 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020132
DATE 1-21-03 To 1-23-03

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS	sqft
RFN-2	1906344	26.5	22.5	80	N-S	1420	1-21-03 (RFN-1 to be installed later)	596
RFN-3	1906344	26.5	22.5	80	N-S	1425	1-21-03	585
RFN-4	1906344	~~26~~ 27.5	22.5	80	N-S	1430	1-21-03	596
RFN-5	1906344	~~28~~ 30	22.5	80	N-S	1435	1-21-03	647
RFN-6	1906344	~~34~~ 35	22.5	80	N-S	1440	1-21-03	726
RFN-7	1906344	34.5	22.5	80	N-S	1445	1-21-03 > pipe	771
RFN 8	1906344	34	22.5	80	N-S	0800	1-23-03	754
RFN9	1906344	33	22.5/17.5	80	N-S	0810	1-23-03 22.5 X 17.5	640
RFN 10	1906334	31	22.5	80	N-S	0815	1-23-03 > seperation	675
RFN 11	1906334	34.5	22.5	80	N-S	0820	1-23-03	714
RFN12	1906334	35	22.5	80	N-S	0825	1-23-03	782
RFN13	1906334	35.5	22.5	80	N-S	0830	1-23-03	793
RFN14	1906334	39	22.5	80	N-S	0835	1-23-03	838
RFN15	1906334	42	22.5	80	N-S	0840	1-23-03	911
RFN16	1906334	43.5	22.5	80	N-S	0845	1-23-03 S 16/17 - N Center 16 - pipe	962
RFN17	1906335	43.5	22.5	80	N-S	0855	1-23-03	956
RFN18	1906335	41.5	22.5	80	N-S	0900	1-23-03	928
RFN19	1906335	39	22.5	80	N-S	0905	1-23-03	878
RFN20	1906335	41	22.5	80	N-S	0910	1-23-03	900
RFN21	1906335	43	22.5	80	N-S	0915	1-23-03	945

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 2 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 1-23-03 To 1-25-03

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS	
RFN22	1906335	46	22.5	80	N-S	0920	1-23-03	1001
RFN23	1906331	47.5	22.5	80	N-S	0930	1-23	1052
RFN24	1906331	49	22.5	80	N-S	0935	1-23	1086
RFN25	1906331	51	22.5	80	N-S	0940	1-23	1125
RFN26	1906331	51	22.5	80	N-S	0950	1-23 pipe	1136
RFN27	1906331	50	22.5	80	N-S	1000	1-23	1074
RFN28	1906331	45.5	22.5	80	N-S	1010	1-23	984
RFN29	1906331	42	22.5	80	N-S	1020	1-23 W berm	945
RFI 1	1906330	33	22.5	80	E-W	0915	1-25	747
RFI 2	1906330	33	22.5	80	E-W	0920	1-25	737
RFI 3	1906330	33	22.5	80	E-W	0925	1-25	737
RFI 4	1906330	32.5	22.5	80	E-W	0930	1-25	731
RFI 5	1906330	32.5	22.5	80	E-W	0935	1-25	726
RFI 6	1906330	33.5	22.5	80	E-W	0940	1-25	742
RFI 7	1906329	34	22.5	80	E-W	0950	1-25	759
RFI 8	1906329	34	22.5	80	E-W	0955	1-25	759
RFI 9	1906329	33.5	22.5	80	E-W	1000	1-25	754
RFI 10	1906329	33.5	22.5	80	E-W	1005	1-25	742
RFI 11	1906329	34	22.5	80	E-W	1010	1-25	748
RFI 12	1906329	34	22.5	80	E-W	1015	1-25	759

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE PLACEMENT LOG

SHEET 3 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 1-25-03 to 1-25-03

PANEL NO.	ROLL NO.	LENGTH	WIDTH	THICK-NESS	ORIENTATION	TIME	WEATHER/CONDITIONS/COMMENTS	
RFI13	1906329	33.5	22.5	80	E-W	1020	1-25	748
RFI14	1906329	33	22.5	80	E-W	1025	1-25	742
RFI15	1906343	33	22.5	80	E-W	1040	1-25	742
RFI16	1906343	33	22.5	80	EW	1045	1-25	742
RFI17	1906343	33	22.5	80	E-W	1050	1-25	726
RFI18	1906343	32	22.5	80	E-W	1055	1-25	714
RFI19	1906343	33	22.5	80	E-W	1100	1-25	731
RFI20	1906343	33	22.5	80	E-W	1105	1-25	742
RFI21	1906343	33	22.5	80	E-W	1110	1-25	742
RFI22	1906343	33	22.5	80	E-W	1115	1-25	737
RFI23	1906341	32.5	22.5	80	E-W	1120	1-25	731
RFI24	1906341	33	22.5	80	E-W	1130	1-25	737
RFI25	1906341	33.5	22.5	80	E-W	1310	1-25	748
RFI26	1906341	33.5	22.5	80	E-W	1315	1-25	731
RFI27	1906341	31.5	22.5	80	E-W	1320	1-25	703
RFI28	1906341	31.5	22.5	80	E-W	1325	1-25	703
RFI29	1906341	31.5	22.5	80	EW	1330	1-25	703
RFI30	1906341	31	22.5	80	E-W	1335	1-25	698
RFI31	1906341	31	22.5	80	E-W	1340	1-25	698
RFN1	1906341	29.5	22.5	80	N-S	1500	1-28	

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

JOB NO: 509488
JOB NAME: HANDEX
CLIENT:
BILL TO:

GSE®
GSE Lining Technology, Inc.

19103 Gundle Road
Houston, Texas 77073-3598
800-435-2008
281-443-8564
Fax: 281-875-6010

CERTIFICATE OF ACCEPTANCE

JOB DESCR: CELL
100% COMPLETE OF TOTAL JOB:

MATERIAL	ESTIMATED SQ. FEET	FINAL QUANTITY / DESCRIPTION
80MIL RAIN FLAP		INSTALL 47312 SF / EXTRUSION WELD 2,820 LF
PRIMARY TO SEC WELD		671 LF EXTRUSION WELD
8" BOOTS		9
6" BOOTS		1
RAIN COVER		140,000 SF
REPAIR WRINKLES (COMPOSITE)		620 LF
COMPOSITE		20,546 SF
		NOTE RAIN COVER MUST BE ANCHORED ON TOP + BOTTOM BY HANDEX

I, the undersigned, duly authorized representative of: _____
do hereby take over and accept the work described above from the date hereof and confirm that to the best of my knowledge the work has been completed in accordance with specifications and the terms and conditions of the contract.

Name	Signature	Title	Date

Certificate accepted by GSE Lining Technology, Inc. Representative.

Name	Signature	Title	Date
JOSEPH COLETTO	Joseph Coletto	Supt.	

ATTACHMENT I

GEOMEMBRANE SEAMING LOGS

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET	1 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/10/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
1 - 2	32	R.G.	107	F	4.5	9:15	78	800	Cool
2 - 3	32	R.G.	107	F	4.5	9:30	80	800	Warm
3 - 4	32	R.G.	107	F	4.5	9:45	82	800	Warm
4 - 5	30	R.G.	107	F	4.5	10:00	82	800	Hot
5 - 6	30	E.G.	190	F	4.0	9:22	80	800	Warm
6 - 7	31	E.G.	190	F	4.0	9:35	82	800	Hot/Clear Sky
7 - 8	32	E.G.	190	F	4.0	9:55	83	800	Hot/Overcast
8 - 9	32	E.G.	190	F	4.0	10:15	86	800	Hot/Overcast
9 - 10	32	E.G.	190	F	4.0	10:30	88	800	Hot
10 - 11	32	E.G.	190	F	4.0	10:53	88	800	Hot
11 – 12	32	E.G.	190	F	4.0	11:10	88	800	Hot
12 – 13	33	E.G.	190	F	4.0	11:24	88	800	Hot
13 – 14	33	E.G.	190	F	4.0	11:45	88	800	Hot
14 – 15	33	R.G.	107	F	4.5	11:00	88	800	Hot
15 – 16	33	R.G.	107	F	4.5	11:15	88	800	Hot
16 – 17	34	R.G.	107	F	4.5	11:28	88	800	Hot
17 – 18	34	R.G.	107	F	4.5	11:45	88	800	Hot
18 – 19	35	E.G.	190	F	4.0	1:45	88	800	Hot/Overcast
19 – 20	35	E.G.	190	F	4.0	2:04	88	800	Hot/Overcast
Page Total			617 ft.						
Cumulative Total			617 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 2 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/10/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
20 - 21	36	E.G.	190	F	4.0	2:30	88	800	Hot/Overcast
21 – 22	36	E.G.	190	F	4.0	2:47	88	800	Hot/Overcast
22 – 23	37	E.G.	190	F	4.0	3:05	85	800	Breezy/Overcast/East Slope
23 – 24	37	E.G.	190	F	4.0	3:25	83	800	Breezy/Overcast
24 – 25	37	E.G.	190	F	4.0	3:45	82	800	Light Rain
25 – 26	37	E.G.	190	F	4.0	4:14	82	800	
26 – 27	36	E.G.	190	F	4.0	4:40	82	800	Light Rain
31 – 32	94	R.G.	107	F	4.5	2:20	88	800	Hot/Overcast/Bottom East
31 - 33	421	R.G.	107	F	4.5	2:35	88	800	Hot/Overcast
32 – 33	22.5	R.G.	107	F	4.5	2:15	88	800	Hot/Overcast/Butt Seam
32 – 35	22	R.G.	107	F	4.5	4:05	88	800	Warm/Light Rain
33 – 35	420	R.G.	107	F	4.5	4:10	88	800	Warm/ Light to Heavy Rain
33 - 34	90	R.G.	107	F	4.5	3:20	83	800	
47 – 38	17	W.B.	1669	F	4.5	3:56	86	800	Butt Seam
37 – 35	294	W.B.	1669	F	4.5	4:15	83	800	
Page Total			1636.5 ft.						
Cumulative Total			2253.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET	3 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/14/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
27 – 28	39	E.G.	190	F	4.0	8:45	80	800	Windy/Overcast
28 – 29	41	E.G.	190	F	4.0	9:05	80	800	Windy/Overcast
29 – 30	38	E.G.	190	F	4.0	9:22	82	800	Windy/Overcast
35 – 36	75	W.B.	1669	F	4.5	8:15	80	800	Windy
36 – 37	22.5	W.B.	1669	F	4.5	3:46	82	800	Overcast/Butt Seam
31 – 34	22.5	R.G.	107	F	4.5	3:20	82	800	Overcast/Butt Seam
30 – 55	37	E.G.	190	F	4.0	1:30	83	800	
55 – 56	29	E.G.	190	F	4.0	1:45	83	800	
56 – 57	31	E.G.	190	F	4.0	1:56	83	800	
57 – 58	34	E.G.	190	F	4.0	2:10	83	800	
58 – 59	36	E.G.	190	F	4.0	2:25	83	800	
41 – 43	82	R.G.	1669	F	4.5	1:39	82	800	
59 – 60	32	E.G.	190	F	4.0	2:40	83	800	
60 – 61	31	E.G.	190	F	4.0	3:00	83	800	
61 – 62	31	E.G.	190	F	4.0	3:20	83	800	
62 – 63	36	E.G.	190	F	4.0	3:35	83	800	
63 – 64	38	E.G.	190	F	4.0	3:50	83	800	
64 – 65	42	E.G.	190	F	4.0	4:10	83	800	
Page Total			697 ft.						
Cumulative Total			2947.5 ft.						

PRINT NAME: Dennis G DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	4 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/14/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
65 – 66	41	E.G.	190	F	4.0	4:30	83	800	
66 – 67	43	E.G.	190	F	4.0	4:45	83	800	
37 – 38	234	W.B.	1669	F	4.5	11:00	80	800	
37 – 47	50	W.B.	1669	F	4.5	11:00	80	800	
38 – 39	187	E.G.	190	F	4.0	8:00	78	800	
40 – 31	64	R.G.	107	F	4.5	4:48	83	800	
34 – 48	98	R.G.	107	F	4.5	4:18	83	800	
31 – 48	72	R.G.	107	F	4.5	4:38	83	800	
48 – 49	135	R.G.	107	F	4.5	10:55	83	840	
42 – 48	37	R.G.	107	F	4.5	11:15	83	840	
42 - 40	487	R.G.	107	F	4.5	11:20	83	840	
42 – 49	22.5	R.G.	107	F	4.5	10:50	83	840	Butt Seam
41 – 42	22.5	W.B.	1669	F	4.5	1:30	86	800	Butt Seam
49 – 50	146	W.B.	1669	F	4.5	3:09	86	800	
42 – 50	84	W.B.	1669	F	4.5	2:49	86	800	
43 – 50	22.5	R.G.	107	F	4.5	2:10	86	840	
42 – 43	438	W.B.	1669	F	4.5	1:52	86	800	
50 – 51	221	R.G.	107	F	4.5	2:25	86	840	
51 – 44	22.5	R.G.	107	F	4.5	2:16	86	840	Butt Seam
Page Total			2427 ft.						
Cumulative Total			5374.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	5 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/14/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
43 – 44	520	R.G.	107	F	4.5	2:58	86	840	
51 – 53	159	W.B.	1306	F	4.5	9:06	80	800	
44 – 45	513	W.B.	1669	F	4.5	3:50	86	800	
45 – 51	20	W.B.	1669	F	4.5	4:50	86	800	
45 – 52	22.5	W.B.	1669	F	4.5	3:40	85	800	Butt Seam
48 – 40	23	R.G.	107	F	4.5	1:51	86	800	
52 – 53	22.5	W.B.	1306	F	4.5	8:55	78	800	Butt Seam
53 – 54	160	W.B.	1306	F	4.5	4:46	86	800	
Page Total			1440 ft.						
Cumulative Total			6814.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	6 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/15/03

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
67 – 68	44	E.G.	190	F	4.0	4:35	85	800	Windy
68 – 69	45	E.G.	190	F	4.0	5:10	85	800	Windy
69 – 70	45	R.G.	107	F	4.0	3:36	85	840	Windy
70 – 71	45	R.G.	107	F	4.0	3:55	85	840	Wind Damage
40 – 31	262	W.B.	1306	F	4.5	10:00	79	800	Pulled out of Seam/Rain
31 – 40	97	R.G.	107	F	4.5	5:05	85	840	Completed Welding Seam
51 – 52	51	W.B.	1306	F	4.5	8:57	78	800	
45 – 46	516	W.B.	1306	F	4.5	3:01	85	800	
46 – 54	22.5	W.B.	1306	F	4.5	4:30	86	800	Butt Seam
52 – 54	51	W.B.	1306	F	4.5	4:39	86	800	
Page Total			1178.5 ft.						
Cumulative Total			7993 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	7 of 26 Secondary Tie-In
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/15/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
1 – 41	22	R.P.	227	E					Extrusion Weld S to T Tie-In
2 – 41	22	R.P.	227	E					
3 – 41	22	R.P.	227	E					
4 – 41	4	R.P.	227	E					
4 – 40	16	R.P.	227	E					
5 – 40	22	R.P.	227	E					
6 – 40	22	R.P.	227	E					
7 – 40	22	R.P.	227	E					
8 – 31	22	R.P.	227	E					
9 – 31	22	R.P.	227	E					
10 – 31	22	R.P.	227	E					
11 – 32	22	R.P.	227	E					
12 – 32	22	R.P.	227	E					
13 - 32	22	R.P.	227	E					
14 – 32	4	R.P.	227	E					
14 – 35	18	R.P.	227	E					
15 – 35	22	R.P.	227	E					
16 – 35	22	R.P.	227	E					
17 – 35	22	R.P.	227	E					
18 – 36	22	R.P.	227	E					
Page Total			394 ft.						
Cumulative Total			8387 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	8 of 26 Secondary Tie-In
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/15/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
19 – 36	22	R.P.	227	E					
20 – 36	22	R.P.	227	E					Extrusion Weld S to T Tie-In
21 – 47	22	R.P.	227	E					Ext
22 – 47	22	R.P.	227	E					Ext
23 – 38	22	R.P.	227	E					Ext
24 – 39	22	R.P.	227	E					Ext
25 – 39	22	A.R.	2006	E					Ext
26 – 39	22	A.R.	2006	E					Ext
27 – 39	22	A.R.	2006	E					Ext
28 – 39	22	A.R.	2006	E					Ext
29 – 39	5	A.R.	2006	E					Ext
30 – 39	7	A.R.	2006	E					Ext
55 – 39	22	A.R.	2006	E					Ext
56 – 39	22	R.P.	227	E					Ext
57 – 39	22	R.P.	227	E					Ext
58 – 38	22	R.P.	227	E					Ext
59 – 38	8	R.P.	227	E					Ext
60 – 38	10	R.P.	227	E					Ext
62 – 35	16	R.P.	227	E					Ext
Page Total			354 ft.						
Cumulative Total			8741 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	9 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/16/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
46 – 72	509	R.G.	107	F	4.0	1:30	86	800	
72 – 73	511	W.B.	1306	F	4.0	9:38	78	800	
73 – 74	508	E.G.	190	F	4.0	9:45	80	800	
74 – 75	502	W.B.	1306	F	4.5	1:25	86	800	
75 – 76	501	W.B.	1306	F	4.5	11:02	85	800	
76 – 77	513	E.G.	190	F	4.0	11:40	85	800	
77 – 78	452	E.G.	190	F	4.0	1:40	87	800	
78 – 79	447	W.B.	1306	F	4.5	2:55	88	800	
79 – 80	504	W.B.	1306	F	4.5	4:15	88	800	
Page Total			4447 ft.						
Cumulative Total			13188 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	10 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
54 – 81	220	W.B.	1306	F	4.5	4:00	88	800	
72 – 81	22.5	W.B.	1306	F	4.5	8:21	77	800	Butt
73 – 82	22.5	W.B.	1306	F	4.5	8:16	77	800	Butt
74 – 83	22.5	W.B.	1306	F	4.5	8:05	77	800	Butt
75 – 85	22.5	W.B.	1306	F	4.5	8:27	77	800	Butt
76 – 86	22.5	W.B.	1306	F	4.5	8:34	77	800	Butt
86 – 87	22.5	R.G.	107	F	4.0	9:10	78	840	Butt
77 – 88	22.5	W.B.	1306	F	4.5	8:41	78	800	Butt
78 – 102	22.5	W.B.	1306	F	4.5	1:18	86	800	Butt
89 – 102	22.5	E.G.	190	F	4.0	10:20	80	800	Butt
79 – 89	51	W.B.	1306	F	4.5	10:30	80	800	
79 – 102	10	W.B.	1306	F	4.5	2:35	80	800	
77 – 89	51	R.G.	107	F	4.0	2:36	88	800	
77 – 102	9	R.G.	107	F	4.0	10:40	81	800	
79 – 90	22.5	W.B.	1306	F	4.5	2:19	88	800	Butt
80 – 91	22.5	W.B.	1306	F	4.5	2:15	88	800	Butt
81 – 82	214	E.G.	190	F	4.0	7:57	78	800	
82 – 83	79	R.G.	107	F	4.0	8:25	80	840	
83 – 84	22.5	E.G.	190	F	4.0	8:55	82	800	Butt
Page Total			904 ft.						
Cumulative Total			14092 ft.						

PRINT NAME: Dennis G DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	11 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
82 – 84	133	R.G.	107	F	4.0	8:40	80	840	
83 – 85	76	E.G.	190	F	4.0	8:55	80	800	
84 – 85	137	E.G.	190	F	4.0	9:20	81	800	
76 – 85	20	R.G.	107	F	4.0	9:10	81	840	
86 – 85	178	R.G.	107	F	4.0	9:25	81	840	
87 – 85	14	R.G.	107	F	4.0	9:20	80	840	
87 – 88	15	E.G.	190	F	4.0	9:45	82	800	
86 – 88	179	E.G.	190	F	4.0	9:50	82	800	
88 – 89	200	R.G.	107	F	4.0	1:06	86	840	
89 – 90	188	W.B.	1306	F	4.5	2:44	88	800	
90 – 91	189	W.B.	1306	F	4.5	1:23	87	800	
71 – 92	44	W.B.	1306	F	4.5	3:18	89	800	
92 – 93	44	W.B.	1306	F	4.5	3:12	89	800	
93 – 94	47	W.B.	1306	F	4.5	9:30	79	800	
94 – 95	48	W.B.	1306	F	4.5	9:43	79	800	
95 – 96	50	W.B.	1306	F	4.5	10:00	80	800	
96 – 97	52	W.B.	1306	F	4.5	10:09	81	800	
97 – 98	53	W.B.	1306	F	4.5	10:16	82	800	
98 – 99	51	W.B.	1306	F	4.5	11:01	83	800	
Page Total			1718 ft.						
Cumulative Total			15810 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	12 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg F.)	WEATHER/CONDITIONS/COMMENTS
99 – 100	53	W.B.	1306	F	4.5	11:19	83	800	
100 - 101	54	W.B.	1306	F	4.5	11:45	84	800	
Page Total			107 ft.						
Cumulative Total			15917 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN JEERS

GEOMEMBRANE SEAMING LOG

SHEET 13 of 26 Secondary Tie-In
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
63 – 35	3	R.P.	227	E					Ext
64 – 33	16	R.P.	227	E					Ext
65 – 33	6	R.P.	227	E					Ext
34 – 65	16	R.P.	227	E					Butt Seam Tie-In S to T
34 – 66	6	R.P.	227	E					Ext
48 – 66	12	R.P.	227	E					Ext
48 – 67	10	R.P.	227	E					Ext
49 – 67	11	R.P.	227	E					Ext
49 – 68	7	R.P.	227	E					Ext
50 – 68	15	R.P.	227	E					Ext
50 – 69	7	R.P.	227	E					Ext
51 – 69	15	R.P.	227	E					Ext
51 – 70	8	R.P.	227	E					Ext
53 – 70	14	R.P.	227	E					Ext
53 – 71	8	R.P.	227	E					Ext
54 – 71	14	R.P.	227	E					Ext
54 – 92	8	R.P.	227	E					Short panel to square up edge
60 – 37	7	R.P.	227	E		3:40			
61 – 37	8	R.P.	227	E		3:35			
62 – 37	15	R.P.	227	E		3:29			
Page Total			206 ft.						
Cumulative Total			16123 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	14 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
84 – 95	22.5	W.B.	1306	F	4.5	4:57	88	800	Butt – South Tie-In
85 – 96	22.5	W.B.	1306	F	4.5	4:53	88	800	Butt – South Tie-In
87 – 97	22.5	W.B.	1306	F	4.5	4:49	88	800	Butt – South Tie-In
88 – 98	22.5	W.B.	1306	F	4.5	4:43	88	800	Butt – South Tie-In
89 – 99	22.5	W.B.	1306	F	4.5	4:39	88	800	Butt – South Tie-In
81 – 93	22.5	W.B.	1306	F	4.5	5:07	88	800	Butt Seam
82 – 94	22.5	W.B.	1306	F	4.5	5:02	88	800	Butt - South Tie-In
Page Total			157.5 ft.						
Cumulative Total			16280.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET 15 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/18/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
103 – 80	501	W.B.	1306	F	4.5	1:20	87	800	
103 – 104	499	W.B.	1306	F	4.5	8:15	78	800	
104 – 105	518	E.G.	190	F	4.0	8:25	78	800	
105 – 106	513	W.B.	1306	F	4.5	10:18	77	800	
91 – 107	189	W.B.	1306	F	4.5	2:40	88	800	
107 – 104	105	R.G.	107	F	4.0	9:30	78	840	
107 – 108	88	R.G.	107	F	4.0	9:50	78	840	
104 – 109	75	E.G.	190	F	4.0	9:40	78	800	
108 – 109	89	E.G.	190	F	4.0	9:56	78	800	
109 – 111	100	W.B.	1306	F	4.5	10:00	79	800	
109 – 110	22.5	W.B.	1306	F	4.5	9:59	79	800	Butt Seam
109 – 115	16	R.G.	107	F	4.0	1:25	86	840	
101 – 112	55	R.G.	107	F	4.0	10:35	80	840	
112 – 113	55	R.G.	107	F	4.0	11:00	82	840	
113 – 114	56	R.G.	107	F	4.0	11:18	82	840	
114 – 115	56	R.G.	107	F	4.0	1:10	86	840	
103 – 107	22.5	R.G.	107	F	4.0	10:10	78	840	Butt
104 – 108	22.5	E.G.	190	F	4.0	9:40	78	800	Butt
105 – 109	22.5	R.G.	107	F	4.0	9:15	78	840	Butt
Page Total			3005 ft.						
Cumulative Total			19285.5						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET	16 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/17/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
106 – 110	22.5	W.B.	1306	F	4.5	9:46	78	800	Butt
116 – 110	100	E.G.	1669	F	4.5	11:33	80	800	
110 – 111	22.5	W.B.	1306	F	4.5	9:51	78	800	Butt
Page Total			145 ft.						
Cumulative Total			19430.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET	17 of 26 Secondary Tie-In
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/18/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
90 – 100	22.5	W.B.	1306	F	4.5	4:34	88	800	Butt Seam – Tie-in S to T
91 – 101	22.5	W.B.	1306	F	4.5	4:30	88	800	
107 – 112	22.5	R.G.	107	F	4.0	11:40	84	840	
108 – 113	22.5	R.G.	107	F	4.0	11:45	84	840	
109 – 114	22.5	R.G.	107	F	4.0	11:50	84	840	
111 – 115	22.5	R.G.	107	F	4.0	1:35	84	840	Tie-In S to T
Page Total			135 ft.						
Cumulative Total			19565.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET 18 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/30/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
106 – 119	150	E.G.	1669	F	4.5	10:10	78	800	
111 – 116	53	E.G.	1669	F	4.5	11:10	79	800	
119 – 120	145	H.T.	1681	F	4.5	10:15	78	800	
110 – 116	53	E.G.	1669	F	4.5	11:33	79	800	
120 – 121	141	H.T.	1681	F	4.5	1:25	85	800	
106 – 116	518	E.G.	1669	F	4.5	10:33	80	800	
116 – 117	519	H.T.	1681	F	4.5	10:35	80	800	
117 – 118	519	H.T.	1681	F	4.5	1:45	85	800	
116 – 119	22.5	E.G.	1669	F	4.5	10:00	78	800	Butt
117 – 120	22.5	H.T.	1681	F	4.5	10:50	80	800	Butt
118 – 121	22.5	H.T.	1681	F	4.5	1:40	85	800	Butt
Page Total			2165.5 ft.						
Cumulative Total			21731 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET 19 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/2/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
121 – 124	122	E.G.	1669	F	4.5	9:40	83	800	
118 – 122	520	E.G.	1669	F	4.5	9:50	84	800	
121 – 122	11	E.G.	1669	F	4.5	9:45	83	800	
122 – 124	22.5	E.G.	1669	F	4.5	9:24	83	800	
122 – 123	515	E.G.	1669	F	4.5	11:50	84	800	
122 – 125	18	E.G.	1669	F	4.5	11:45	84	800	
124 – 125	117	E.G.	1669	F	4.5	11:25	84	800	
123 – 125	22.5	E.G.	1669	F	4.5	11:15	84	800	
Page Total			1348 ft.						
Cumulative Total			23079 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET 20 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/3/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
126 – 127	93	E.G.	1669	F	4.5	8:43	84	800	1st Smooth Panel on Temp Berm
127 – 128	94	E.G.	1669	F	4.5	9:05	80	800	Temp Berm
128 – 129	95	E.G.	1669	F	4.5	9:33	80	800	
129 – 130	95	E.G.	1669	F	4.5	10:00	82	800	
130 – 131	96	E.G.	1669	F	4.5	10:25	82	800	
131 – 132	97	E.G.	1669	F	4.5	10:50	83	800	
132 – 133	99	E.G.	1669	F	4.5	11:15	84	800	
133 – 134	101	E.G.	1669	F	4.5	11:38	84	800	
134 – 135	85	E.G.	1669	F	4.5	1:20	88	800	
135 – 136	87	E.G.	1669	F	4.5	1:45	88	800	
136 – 137	105	E.G.	1669	F	4.5	2:10	88	800	
137 – 138	106	E.G.	1669	F	4.5	2:36	88	800	
138 – 139	107	E.G.	1669	F	4.5	3:00	88	800	
139 – 140	109	E.G.	1669	F	4.5	3:27	88	800	
140 – 141	110	E.G.	1669	F	4.5	3:48	88	800	
141 – 142	111	E.G.	1669	F	4.5	4:10	88	800	
142 – 143	113	E.G.	1669	F	4.5	4:34	88	800	
143 – 144	116	E.G.	1669	F	4.5	5:00	88	800	
144 – 145	118	E.G.	1669	F	4.5	5:22	88	800	
Page Total			1937 ft.						
Cumulative Total			25016 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EN NEERS

GEOMEMBRANE SEAMING LOG

SHEET 21 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/3/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
145 – 146	119	E.G.	1669	F	4.5	5:45	86	800	
146 – 147	120	E.G.	1669	F	4.5	6:10	86	800	Temp Berm
147 – 148	122	E.G.	1669	F	4.5	6:36	86	800	Temp Berm
148 – 149	123	G.Q.	190	F	4.0	6:45	86	800	Temp Berm
149 – 150	124	R.G.	107	F	4.0	6:50	86	800	Temp Berm
151 – 123	519	R.G.	107	F	4.0	4:00	88	800	
151 – 152	519	G.Q.	107	F	4.0	6:00	88	800	
151 – 125	8	R.G.	107	F	4.0	5:20	88	800	
153 – 125	122	R.G.	107	F	4.0	5:25	88	800	
151 – 153	22.5	G.Q.	190	F	4.0	4:00	88	800	
152 – 154	22.5	G.Q.	190	F	4.0	5:20	88	800	
154 – 155	22.5	G.Q.	190	F	4.0	5:30	88	800	
153 – 155	22	G.Q.	190	F	4.0	5:40	88	800	
153 – 154	96	G.Q.	190	F	4.0	5:45	88	800	
173 – 134	18	E.G.	1669	F	4.5	1:30	88	800	
173 – 136	18	E.G.	1669	F	4.5	1:55	88	800	
Page Total			1997.5 ft.						
Cumulative Total			27013.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 22 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/4/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
150 – 166	104	E.G.	1669	F	4.5	1:45	90	800	Temp Berm
166 – 167	105	E.G.	1669	F	4.5	2:15	90	800	Temp Berm
167 – 168	105	E.G.	1669	F	4.5	2:50	90	800	Temp Berm
168 – 169	40	E.G.	1669	F	4.5	3:20	90	800	Temp Berm
168 – 171	13	E.G.	1669	F	4.5	3:51	90	800	Temp Berm
168 – 170	30	E.G.	1669	F	4.5	3:58	90	800	Temp Berm
169 – 170	17	E.G.	1669	F	4.5	4:03	90	800	Temp Berm
170 – 171	38	E.G.	1669	F	4.5	3:29	90	800	
154 – 126	22.5	R.G.	107	F	4.0	9:40	82	800	Temp Berm, Tie-In
154 – 127	22.5	R.G.	107	F	4.0	9:45	82	800	Temp Berm, Tie-In
154 – 128	22.5	R.G.	107	F	4.0	9:50	82	800	Temp Berm, Tie-In
152 – 128	22.5	R.G.	107	F	4.0	9:52	82	800	Temp Berm, Tie-In
152 – 129	22.5	R.G.	107	F	4.0	9:55	82	800	Temp Berm, Tie-In
152 – 130	22.5	R.G.	107	F	4.0	10:00	83	800	Temp Berm, Tie-In
152 – 131	22.5	R.G.	107	F	4.0	10:05	83	800	Temp Berm, Tie-In
152 – 132	22.5	R.G.	107	F	4.0	10:10	83	800	Temp Berm, Tie-In
152 – 133	22.5	R.G.	107	F	4.0	10:12	84	800	Temp Berm, Tie-In
152 – 134	22.5	R.G.	107	F	4.0	10:17	84	800	Temp Berm, Tie-In
152 – 173	22.5	R.G.	107	F	4.0	10:20	84	800	Temp Berm, Tie-In
Page Total			699.5 ft.						
Cumulative Total			27713 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 23 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/4/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
135 – 173	22.5	E.G.	1669	F	4.5	11:57	89	800	Temp Berm, Tie-In
152 – 136	22.5	R.G.	107	F	4.0	10:23	84	800	Temp Berm, Tie-In
152 – 137	22.5	R.G.	107	F	4.0	10:25	85	800	Temp Berm, Tie-In
152 – 138	22.5	R.G.	107	F	4.0	10:27	85	800	Temp Berm, Tie-In
152 – 139	22.5	R.G.	107	F	4.0	10:30	86	800	Temp Berm, Tie-In
152 – 140	22.5	R.G.	107	F	4.0	10:33	81	800	Temp Berm, Tie-In
152 – 141	22.5	R.G.	107	F	4.0	10:38	87	800	Temp Berm, Tie-In
152 – 142	22.5	R.G.	107	F	4.0	10:42	87	800	Temp Berm, Tie-In
152 – 143	22.5	R.G.	107	F	4.0	10:46	88	800	Temp Berm, Tie-In
152 – 144	22.5	R.G.	107	F	4.0	10:50	88	800	Temp Berm, Tie-In
152 – 145	22.5	R.G.	107	F	4.0	10:54	88	800	Temp Berm, Tie-In
152 – 146	22.5	R.G.	107	F	4.0	10:58	88	800	Temp Berm, Tie-In
152 – 147	22.5	R.G.	107	F	4.0	11:03	88	800	Temp Berm, Tie-In
152 – 148	22.5	R.G.	107	F	4.0	11:05	88	800	Temp Berm, Tie-In
152 – 149	22.5	R.G.	107	F	4.0	11:08	88	800	Temp Berm, Tie-In
152 – 150	22.5	R.G.	107	F	4.0	11:12	88	800	Temp Berm, Tie-In
154 – 174	22.5	G.Q.	190	F	4.5	5:25	90	800	Temp Berm, Tie-In
154 – 175	22.5	G.Q.	190	F	4.5	5:40	90	800	Temp Berm, Tie-In
155 – 176	22.5	G.Q.	190	F	4.5	5:45	90	800	Temp Berm, Tie-In
Page Total			427.5 ft.						
Cumulative Total			28140.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 24 of 26 Secondary Liner
PROJECT TITL. Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/4/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
150 – 163	22.5	R.G.	107	F	4.0	5:45	90	800	Butt at Sump
163 – 166	22.5	R.G.	107	F	4.0	3:55	90	800	Butt Seam at Sump
163 – 167	22.5	R.G.	107	F	4.0	4:02	90	800	Butt Seam at Sump
164 – 168	20	R.G.	107	F	4.0	3:15	90	800	Southwest Corner
168 – 165	4	R.G.	107	F	4.0	3:32	90	800	Southwest Corner
165 – 169	30	R.G.	107	F	4.0	3:33	90	800	Southwest Corner
164 – 165	22	R.G.	107	F	4.0	2:30	90	800	Southwest Corner
163 – 164	40	R.G.	107	F	4.0	2:00	90	800	Southwest Corner
162 – 163	80	R.G.	107	F	4.0	1:45	90	800	Southwest Corner – Sump Panel
161 – 162	80	R.G.	107	F	4.0	1:30	90	800	SW Corner – Panel runs through Sump
160 – 161	79	E.G.	1669	F	4.5	11:57	89	800	
159 – 160	78	E.G.	1669	F	4.5	11:40	86	800	
158 – 159	76	E.G.	1669	F	4.5	11:20	85	800	
157 – 158	75	E.G.	1669	F	4.5	11:00	84	800	
156 – 157	73	E.G.	1669	F	4.5	10:38	83	800	
156 – 115	70	R.G.	107	F	4.0	6:00	90	800	
152 – 163	15	R.G.	107	F	4.0	2:05	90	800	
152 – 162	22.5	R.G.	107	F	4.0	5:32	90	800	
151 – 161	22.5	R.G.	107	F	4.0	5:20	90	800	
Page Total			854.5 ft.						
Cumulative Total			28995 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 25 of 26 Secondary Liner
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/4/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
156 – 116	22.5	R.G.	107	F	4.0	5:00	90	800	
157 – 117	22.5	R.G.	107	F	4.0	5:03	90	800	
158 – 118	22.5	R.G.	107	F	4.0	5:08	90	800	
159 – 122	22.5	R.G.	107	F	4.0	5:11	90	800	
160 – 123	22.5	R.G.	107	F	4.0	5:15	90	800	
174 – 126	50	G.Q.	190	F	4.5	2:50	90	800	
174 – 175	60	G.Q.	190	F	4.5	3:00	90	800	
175 – 176	61	G.Q.	190	F	4.5	3:15	90	800	
176 – 177	35	G.Q.	190	F	4.5	3:30	90	800	
177 – 178	13	G.Q.	190	F	4.5	3:40	90	800	
178 – 179	10	G.Q.	190	F	4.5	3:50	90	800	
177 – 179	10	G.Q.	190	F	4.5	3:53	90	800	
176 - 179	20	G.Q.	190	F	4.5	3:54	90	800	
152 – 163	10	R.G.	107	F	4.0	2:00	90	800	
179 – 180	50	G.Q.	190	F	4.5	4:10	90	800	Pie Pieces – End of Temp Berm
180 – 181	50	G.Q.	190	F	4.5	4:20	90	800	Pie Pieces – End of Temp Berm
181 – 182	50	G.Q.	190	F	4.5	4:35	90	800	Pie Pieces – End of Temp Berm
182 – 183	40	G.Q.	190	F	4.5	4:45	90	800	Pie Pieces – End of Temp Berm
183 – 126	44	G.Q.	190	F	4.5	4:55	90	800	Pie Pieces – End of Temp Berm
Page Total			615.5 ft.						
Cumulative Total			29610.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E NEERS

GEOMEMBRANE SEAMING LOG

SHEET	26 of 26 Secondary Liner
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/4/02

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
165 – 172	2	R.G.	107	F	4.0	5:00	90	800	Small Pie in Anchor Trench
Page Total			2 ft.						
Cumulative Total			29612.5 ft.						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E INEERS

GEOMEMBRANE SEAMING LOG

SHEET 1 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/24/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
1-2	26	EG	190	F	4.0	1:45	82	800	Overcast/Breezy
2-3	26	EG	190	F	4.0	1:58	82	800	"
3-4	26	EG	190	F	4.0	2:10	82	800	"
4-5	26	EG	190	F	4.0	2:24	82	800	"
5-6	26	EG	190	F	4.0	2:33	82	800	"
6-7	26	WB	1306	F	4.5	2:16	82	800	"
7-8	26	WB	1306	F	4.5	2:21	82	800	"
8-9	26	WB	1306	F	4.5	2:26	82	800	"
9-10	26	WB	1306	F	4.5	2:31	82	800	"
10-11	26	WB	1306	F	4.5	2:37	82	800	"
11-12	26	EG	190	F	4.0	2:45	78	800	"
Page Total			**286 ft.**						
Cumulative Total			**286 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET 2 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/25/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
12-13	26	RG	190	F	4.0	8:00	78	800	Overcast/Breezy
13-14	26	RG	190	F	4.0	8:10	78	800	"
14-15	26	RG	190	F	4.0	8:20	78	800	"
15-16	30	WB	1306	F	4.5	7:59	78	800	"
16-17	30	WB	1306	F	4.5	8:05	78	800	"
17-18	30	WB	1306	F	4.5	8:12	78	800	"
18-19	30	EG	1669	F	4.5	8:10	78	800	"
19-20	30	EG	1669	F	4.5	8:25	78	800	"
20-21	30	EG	1669	F	4.5	8:25	78	800	"
21-22	30	EG	1669	F	4.5	8:45	78	800	"
22-23	30	EG	1669	F	4.5	9:00	79	800	"
23-24	30	EG	1669	F	4.5	9:15	79	800	"
24-25	30	WB	1306	F	4.5	8:17	79	800	"
25-26	30	WB	1306	F	4.5	8:23	79	800	"
26-27	35	WB	1306	F	4.5	8:29	79	800	"
27-28	35	RG	190	F	4.0	9:10	79	800	"
28-29	33	RG	190	F	4.0	9:25	79	800	"
29-30	32	RG	190	F	4.0	9:43	79	800	"
30-31	36	EG	1669	F	4.5	9:33	80	800	"
Page Total			**579 ft.**						
Cumulative Total			**865 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E. .NEERS

GEOMEMBRANE SEAMING LOG

SHEET	3 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/25/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
31-32	32	EG	1669	F	4.5	9:45	80	800	Overcast/Breezy
32-33	33	EG	1669	F	4.5	9:55	80	800	"
33-34	32	EG	1669	F	4.5	10:10	80	800	"
34-35	34	EG	1669	F	4.5	10:29	80	800	"
35-36	36	EG	1669	F	4.5	10:44	81	800	"
36-37	37	EG	1669	F	4.5	10:59	82	800	"
37-38	16	EG	1669	F	4.5	11:49	82	800	"
38-39	18	EG	1669	F	4.5	11:14	82	800	"
40-43	216	EG	1669	F	4.5	1:25	84	800	"
40-41	61	EG	1669	F	4.5	1:25	84	800	"
41-43	20	RG	190	F	4.0	1:25	84	800	"
42-43	145	EG	1669	F	4.5	2:07	84	800	"
43-44	35	EG	1669	F	4.5	1:25	84	800	"
42-44	17	RG	190	F	4.0	2:10	84	800	"
40-45	355	EG	1669	F	4.5	2:50	84	800	"
42-31	21	RG	190	F	4.0	3:52	84	800	"
42-32	22	RG	190	F	4.0	3:57	84	800	"
42-33	2	RG	190	F	4.0	4:01	84	800	"
Page Total			**1132 ft**						
Cumulative Total			**1997 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET	4 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/25/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
45-15	22.5	RG	190	F	4.0	2:35	84	800	Overcast/Breezy
45-16	22.5	RG	190	F	4.0	2:40	84	800	"
45-17	22.5	RG	190	F	4.0	2:45	84	800	"
40-18	22.5	RG	190	F	4.0	2:50	84	800	"
40-19	22.5	RG	190	F	4.0	2:35	84	800	"
26-44	6	RG	190	F	4.0	3:30	84	800	"
40-20	22.5	RG	190	F	4.0	3:00	84	800	"
41-21	22.5	RG	190	F	4.0	3:05	84	800	"
41-22	22.5	RG	190	F	4.0	3:10	84	800	"
41-23	22.5	RG	190	F	4.0	3:15	84	800	"
44-24	14	RG	190	F	4.0	3:20	83	800	"
44-25	22.5	RG	190	F	4.0	3:25	84	800	"
42-26	15	RG	190	F	4.0	3:30	84	800	"
42-27	17	RG	190	F	4.0	3:35	84	800	"
28-46	19	RG	190	F	4.0	3:40	84	800	"
43-37	8	RG	190	F	4.0	4:13	84	800	"
43-35	4	RG	190	F	4.0	4:07	84	800	"
Page Total			**308 ft.**						
Cumulative Total			**2,305 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	5 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/25/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
40-37	13	RG	190	F	4.0	4:15	84	800	
26-44	6	RG	190	F	4.0	3:30	84	800	
29-46	4	RG	190	F	4.0	3:45	84	800	Overcast/Breezy
30-46	24	RG	190	F	4.0	3:46	84	800	
46-42	40	EG	1669	F	4.5	2:35	84	800	Overcast/Breezy
Page Total			**87 ft.**						
Cumulative Total			**2,392 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	6 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/27/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
45-47	424	EG	1669	F	4.5	9:20	82	800	
47-48	9	WB	1306	F	4.5	10:20	82	800	
47-49	481	WB	1306	F	4.5	8:50	80	800	
48-49	22.5	WB	1306	F	4.5	8:39	80	800	
48-56	48	EG	1669	F	4.5	2:55	85	800	
50-56	22.5	EG	1669	F	4.5	4:23	85	800	
56-57	133	EG	1669	F	4.5	3:10	85	800	
48-50	35	RP	1681	F	4.5	10:35	80	800	
49-50	480	RP	1681	F	4.5	10:42	81	800	
50-51	520	EG	1669	F	4.5	10:27	82	800	
51-52	511	WB	1306	F	4.5	10:49	82	800	
52-53	512	EG	1669	F	4.5	11:45	84	800	
53-54	515	RP	1681	F	4.5	2:45	85	800	
54-55	514	WB	1306	F	4.5	1:25	85	800	
57-51	22.5	EG	1669	F	4.5	4:15	85	800	
52-58	22.5	WB	1306	F	4.5	3:49	85	800	
53-59	22.5	RP	1681	F	4.5	1:45	85	800	
54-60	22.5	RP	1681	F	4.5	2:07	85	800	
Page Total			**4,317 ft.**						
Cumulative Total			**6,709 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS El NEERS

GEOMEMBRANE SEAMING LOG

SHEET	7 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/27/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
55-61	22.5	WB	1306	F	4.5	2:55	85	800	
57-58	206	E.G.	1669	F	4.5	3:34	85	800	
58-59	216	WB	1306	F	4.5	4:00	85	800	
59-60	213	RP	1681	F	4.5	2:20	85	800	
60-61	211	WB	1306	F	4.5	3:10	85	800	
55-62	516	EG	1669	F	4.5	8:50	80	800	
Page Total			**1,385 ft.**						
Cumulative Total			**8,094 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	8 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/28/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
61-70	211	EG	1669	F	4.5	12:27	88	800	
62-71	58	RP	1681	F	4.5	12:48	88	800	
71-70	35	RP	1681	F	4.5	1:00	90	800	
70-72	168	RP	1681	F	4.5	1:00	90	800	
72-73	163	WB	1306	F	4.5	1:01	90	800	
73-74	195	RP	1681	F	4.5	1:49	90	800	
74-75	188	EG	1669	F	4.5	1:15	90	800	
75-77	74	WB	1306	F	4.5	1:25	90	800	
71-73	94	WB	1306	F	4.5	1:01	90	800	
73-65	62	RP	1681	F	4.5	1:40	90	800	
75-76	110	WB	1306	F	4.5	1:35	90	800	
76-78	110	EG	1669	F	4.5	1:55	90	800	
77-78	70	EG	1669	F	4.5	14:10	90	800	
78-79	175	WB	1306	F	4.5	2:10	90	800	
70-62	22.5	RP	1681	F	4.5	12:30	90	800	
71-72	22.5	RP	1681	F	4.5	12:35	90	800	
63-71	22.5	WB	1306	F	4.5	12:54	90	800	
64-73	22.5	WB	1306	F	4.5	12:47	90	800	
65-74	22.5	RP	1681	F	4.5	2:42	90	800	
Page Total			**1,826 ft.**						
Cumulative Total			**9,920 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET	9 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/28/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
66-75	22.5	RP	1681	F	4.5	2:39	90	800	
67-76	22.5	RP	1681	F	4.5	2:34	90	800	
68-78	22.5	RP	1681	F	4.5	2:35	90	800	
69-79	22.5	RP	1681	F	4.5	2:30	90	800	
76-77	22.5	EG	1669	F	4.5	1:45	90	800	
62-63	455	WB	1306	F	4.5	8:56	80	800	
63-64	448	RP	1681	F	4.5	10:05	84	800	
64-65	454	EG	1669	F	4.5	10:05	84	800	
65-66	518	WB	1306	F	4.5	10:30	84	800	
66-67	518	EG	1669	F	4.5	11:06	85	800	
67-68	520	RP	1681	F	4.5	11:20	85	800	
68-69	520	WB	1306	F	4.5	11:35	86	800	
Page Total			**3,546 ft.**						
Cumulative Total			**13,466 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	10 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/1/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
79-87	52	HT	1681	F	4.5	2:45	88	800	
79-84	68	HT	1681	F	4.5	2:55	88	800	
69-84	12	HT	1681	F	4.5	3:30	88	800	
69-80	515	EG	1669	F	4.5	8:37	82	800	
80-84	22.5	EG	1681	F	4.5	4:05	88	800	Butt
84-87	22.5	EG	1669	F	4.5	11:20	85	800	Butt
87-85	49	HT	1681	F	4.5	1:50	87	800	
84-85	122	HT	1681	F	4.5	2:05	88	800	
81-85	22.5	HT	1681	F	4.5	3:55	88	800	
80-81	515	HT	1681	F	4.5	8:44	83	800	
85-86	168	HT	1681	F	4.5	2:37	88	800	
86-88	160	HT	1681	F	4.5	1:35	88	800	
82-86	22.5	HT	1681	F	4.5	3:23	88	800	
82-83	509	HT	1681	F	4.5	10:15	83	800	
83-88	22.5	HT	1681	F	4.5	11:42	85	800	
81-82	515	EG	1669	F	4.5	9:55	84	800	
Page Total			**2,798 ft.**						
Cumulative Total			**16,264 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E INEERS

GEOMEMBRANE SEAMING LOG

SHEET 11 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/2/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
58-Ext	30	GQ	1306	F	4.5	10:00	82	800	
57-Ext	60	GQ	1306	F	4.5	10:05	82	800	
56-Ext	60	GQ	1306	F	4.5	10:10	82	800	
48-Ext	60	GQ	1306	F	4.5	10:18	82	800	
47-Ext	60	GQ	1306	F	4.5	10:28	83	800	
45-Ext	40	GQ	1306	F	4.5	11:31	88	800	
40-Ext	60	GQ	1306	F	4.5	11:40	88	800	
43-Ext	50	GQ	1306	F	4.5	11:50	88	800	
94-95	508	EG	1681	F	4.5	12:28	86	800	
95-106	22.5	EG	1681	F	4.5	2:40	88	800	
94-105	22.5	EG	1681	F	4.5	2:45	88	800	
93-104	22.5	EG	1681	F	4.5	2:50	88	800	
92-102	22.5	EG	1681	F	4.5	2:55	88	800	
102-104	102	HT	190	F	4.0	1:33	88	800	
102-103	44	HT	190	F	4.0	1:50	88	800	
103-104	22.5	HT	190	F	4.0	1:25	88	800	
104-105	101	HT	190	F	4.0	2:00	88	800	
Page Total			**1,288 ft.**						
Cumulative Total			**17,552 ft.**						

Ext-= Textured Liner Extension

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	12 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/2/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
103-105	41	HT	190	F	4.0	2:17	88	800	
105-106	137	EG	1681	F	4.5	1:53	88	800	
106-107	115	HT	190	F	4.0	2:30	88	800	
106-96	19	WB	1306	F	4.0	2:43	88	800	
95-96	500	WB	1306	F	4.5	1:35	88	800	
96-107	22.5	EG	1681	F	4.5	2:30	88	800	
Page Total			**835 ft.**						
Cumulative Total			**18,387 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET 13 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/12/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
88-97	157	WB	1306	F	4.5	11:10	81	800	
83-89	517	WB	1306	F	4.5	10:00	80	800	
89-97	22.5	WB	1306	F	4.5	11:05	81	800	
97-99	49	WB	1306	F	4.5	12:00	85	800	
97-98	66	WB	1306	F	4.5	12:08	85	800	
98-99	22.5	WB	1306	F	4.5	11:53	85	800	
97-90	40	WB	1306	F	4.5	2:16	88	800	
90-98	22.5	WB	1306	F	4.5	11:40	84	800	
89-90	513	EG	1681	F	4.5	8:27	79	800	
90-100	45	HT	190	F	4.0	12:20	85	800	
98-100	67	HT	190	F	4.0	12:30	86	800	
99-100	25	HT	190	F	4.0	12:45	86	800	
99-101	20	HT	190	F	4.0	12:55	86	800	
100-101	152	HT	190	F	4.0	12:50	86	800	
91-100	22.5	EG	1681	F	4.5	2:55	89	800	
90-91	492	WB	1306	F	4.5	8:29	79	800	
100-102	136	HT	190	F	4.0	2:00	88	800	
101-102	16	HT	190	F	4.0	1:15	87	800	
91-92	497	EG	1681	F	4.5	9:45	80	800	
Page Total			**2,882 ft.**						
Cumulative Total			**21,269 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	14 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/12/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
92-93	500	EG	1681	F	4.5	11:15	81	800	
93-94	502	WB	1306	F	4.5	12:30	85	800	
Page Total			**1,002 ft.**						
Cumulative Total			**22,271 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E NEERS

GEOMEMBRANE SEAMING LOG

SHEET 15 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/15/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
108-109	89	WB	1306	F	4.5	8:20	77	800	West Temp Berm
109-110	90	WB	1306	F	4.5	8:31	77	800	West Temp Berm
110-111	92	WB	1306	F	4.5	8:42	77	800	West Temp Berm
111-112	93	EG	1681	F	4.5	8:24	77	800	West Temp Berm
112-113	95	EG	1681	F	4.5	8:43	77	800	West Temp Berm
113-114	96	EG	1681	F	4.5	9:05	78	800	West Temp Berm
114-115	98	EG	1681	F	4.5	9:26	79	800	West Temp Berm
115-116	99	HT	1669	F	4.0	9:07	77	800	West Temp Berm
116-117	90	HT	1669	F	4.0	9:40	79	800	West Temp Berm
117-119	91	WB	1306	F	4.5	9:18	78	800	West Temp Berm
116-118	11	HT	1669	F	4.0	9:47	79	800	West Temp Berm
118-119	11	WB	1306	F	4.5	9:25	79	800	West Temp Berm
119-120	103	WB	1306	F	4.5	9:32	79	800	West Temp Berm
120-121	104	WB	1306	F	4.5	10:00	80	800	West Temp Berm
121-122	105	HT	1669	F	4.0	9:55	80	800	West Temp Berm
122-123	108	HT	1669	F	4.0	10:05	80	800	West Temp Berm
123-124	109	EG	1681	F	4.5	10:25	82	800	West Temp Berm
124-125	110	HT	1669	F	4.0	10:30	83	800	West Temp Berm
125-126	112	EG	1681	F	4.5	10:48	84	800	
Page Total			**1,706 ft.**						
Cumulative Total			**23,977 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET 16 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/15/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
126-127	113	HT	1669	F	4.0	10:59	85	800	
127-128	19	WB	1306	F	4.5	11:17	85	800	
127-129	95	WB	1306	F	4.5	11:07	85	800	
128-129	22.5	WB	1306	F	4.5	10:30	83	800	
128-130	19	EG	1681	F	4.5	11:40	86	800	
129-130	97	EG	1681	F	4.5	11:32	86	800	
130-131	99	EG	1681	F	4.5	11:57	87	800	
130-132	19	EG	1681	F	4.5	12:05	87	800	
131-132	22.5	HT	1669	F	4.0	11:25	86	800	
131-133	101	HT	1669	F	4.0	11:35	86	800	
132-133	19	HT	1669	F	4.0	11:45	87	800	
133-134	121	WB	1306	F	4.5	12:30	88	800	
134-135	121	HT	1669	F	4.0	12:30	88	800	
117-118	22.5	WB	1306	F	4.5	9:10	78	800	
Page Total			**891 ft.**						
Cumulative Total			**24,868 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	17 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/16/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
107-108	22.5	EG	1681	F	4.5	11:17	80	800	
107-136	22.5	EG	1681	F	4.5	11:20	80	800	
107-137	39	EG	1681	F	4.5	11;23	80	800	
108-136	89	WB	1306	F	4.0	9:30	77	800	
136-137	10	HT	1306	F	4.0	10:25	77	800	
136-138	22.5	HT	1306	F	4.0	10:25	77	800	
136-139	26	HT	1306	F	4.0	10:35	77	800	
136-140	30	HT	1306	F	4.0	10:20	77	800	
136-141	10	HT	1306	F	4.0	10:15	77	800	
137-138	37	HT	1306	F	4.0	8:50	76	800	
96-135	22.5	EG	1681	F	4.5	9:10	74	800	
96-134	22.5	EG	1681	F	4.5	10:13	75	800	
96-133	22.5	EG	1681	F	4.5	10:16	75	800	
96-132	22.5	EG	1681	F	4.5	10:19	75	800	
96-130	22.5	EG	1681	F	4.5	10:22	75	800	
96-128	22.5	EG	1681	F	4.5	10:25	75	800	
96-127	22.5	EG	1681	F	4.5	10:28	75	800	
96-126	22.5	EG	1681	F	4.5	10:31	76	800	
Page Total			**489 ft.**						
Cumulative Total			**25,357 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E. .NEERS

GEOMEMBRANE SEAMING LOG

SHEET	18 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/16/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
96-125	22.5	EG	1681	F	4.5	10:34	76	800	
96-124	22.5	EG	1681	F	4.5	10:37	76	800	
96-123	22.5	EG	1681	F	4.5	10:40	76	800	
96-122	22.5	EG	1681	F	4.5	10:43	76	800	
96-121	22.5	EG	1681	F	4.5	10:49	77	800	
96-120	22.5	EG	1681	F	4.5	10:49	77	800	
96-119	22.5	EG	1681	F	4.5	10:51	78	800	
96-118	22.5	EG	1681	F	4.5	10:54	78	800	
96-116	22.5	EG	1681	F	4.5	10:57	78	800	
96-115	22.5	EG	1681	F	4.5	10:59	78	800	
96-114	22.5	EG	1681	F	4.5	11:00	79	800	
96-113	22.5	EG	1681	F	4.5	11:02	79	800	
96-112	22.5	EG	1681	F	4.5	11:05	80	800	
96-111	22.5	EG	1681	F	4.5	11:08	80	800	
96-110	22.5	EG	1681	F	4.5	11:11	80	800	
107-110	22.5	EG	1681	F	4.5	11:13	80	800	
107-109	22.5	EG	1681	F	4.5	11:14	80	800	
138-139	33	HT	1306	F	4.0	8:37	77	800	
139-140	47	HT	1306	F	4.0	9:00	77	800	
Page Total			**463 ft.**						
Cumulative Total			**25,820 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E INEERS

GEOMEMBRANE SEAMING LOG

SHEET	19 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/16/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
140-141	24	HT	1306	F	4.0	10:05	77	800	
Page Total			**24 ft.**						
Cumulative Total			**25,844 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E INEERS

GEOMEMBRANE SEAMING LOG

SHEET	20 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/17/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
142-143	50	EG	1681	F	4.5	9:00	70	800	
38-142	17	WB	1669	F	4.5	9:00	70	800	
143-144	53	EG	1681	F	4.5	9:12	70	800	
144-145	54	HT	1306	F	4.0	8:34	70	800	
145-146	54	HT	1306	F	4.0	9:02	70	800	
146-147	55	HT	1306	F	4.0	9:14	71	800	
147-148	55	HT	1306	F	4.0	9:25	72	800	
148-149	56	EG	1681	F	4.5	9:30	72	800	
149-150	56	EG	1681	F	4.5	9:45	72	800	
150-151	57	EG	1681	F	4.5	10:00	72	800	
151-152	57	EG	1681	F	4.5	10:15	73	800	
152-153	57	EG	1681	F	4.5	10:30	74	800	
153-154	58	EG	1681	F	4.5	10:49	75	800	
154-155	59	HT	1306	F	4.0	10:05	72	800	
155-156	59	HT	1306	F	4.0	10:20	73	800	
156-157	59	HT	1306	F	4.0	10:35	74	800	
157-158	62	HT	1306	F	4.0	10:55	75	800	
158-159	63	HT	1306	F	4.0	11:10	76	800	
159-160	64	HT	1306	F	4.0	11:25	76	800	
Page Total			**2,291 ft.**						
Cumulative Total			**28,135 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E INEERS

GEOMEMBRANE SEAMING LOG

SHEET	21 Primary	of 24
PROJECT TITLE	Section I Capacity Expansion	
PROJECT NO.	09200020.32	
DATE	10/17/03	

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
160-161	65	HT	1306	F	4.0	11:48		800	
161-162	22.5	EG	1681	F	4.5	9:08		800	
162-160	4	HT	1306	F	4.0	11:45		800	
163-161	61	EG	1681	F	4.5	11:23		800	
162-163	4	EG	1681	F	4.5	11:20		800	
163-164	70	EG	1681	F	4.5	11:40		800	
164-165	67	EG	1681	F	4.5	11:56		800	
165-166	68	EG	1681	F	4.5	1:12		800	
166-167	70	WB	1669	F	4.5	11:15		800	
167-168	70	WB	1669	F	4.5	11:00		800	
168-169	71	WB	1669	F	4.5	10:50		800	
169-170	70	HT	1306	F	4.0	1:47		800	
170-171	74	EG	1681	F	4.5	1:50		800	
171-172	93	HT	1306	F	4.0	3:25		800	Sump
172-173	43	EG	1681	F	4.5	1440		800	
173-174	30	HT	1306	F	4.0	3:05		800	
174-175	18	EG	1681	F	4.5	4:28		800	
175-176	18	EG	1681	F	4.5	4:15		800	
176-177	92	EG	1681	F	4.5	3:34		800	
Page Total			**1,011 ft.**						
Cumulative Total			**29,146 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	22 Primary of 24
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/17/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
177-178	106	HT	1306	F	4.0	3:25		800	
135-178	110	EC	1681	F	4.5	3:00		800	
181-182	34	EG	1681	F	4.5	4:05		800	
176-181	33	HT	1306	F	4.0	4:20		800	
179-180	14	HT	1306	F	4.0	4:21		800	
180-181	11	HT	1306	F	4.0	3:55		800	
177-182	14	HT	1306	F	4.0	4:12		800	
176-182	9	HT	1306	F	4.0	4:25		800	
37-38	37	WB	1669	F	4.5	4:45		800	
38-142	20	WB	1669	F	4.5	4:32		800	
38-39	28	WB	1669	F	4.5	4:32		800	
39-142	30	WB	1669	F	4.5	4:25		800	
172-178	22.5	EG	1681	F	4.5	2:40		800	
172-177	22.5	EG	1681	F	4.5	2:40		800	
175-179	15	HT	1306	F	4.0	3:47		800	
179-181	8	HT	1306	F	4.0	4:20		800	
Page Total			**514 ft.**						
Cumulative Total			**29,660 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS El .NEERS

GEOMEMBRANE SEAMING LOG

SHEET 23 Primary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/18/03

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
94-169	22.5	WB	1669	F	3.0	8:35		800	
143-47	22	WB	1669	F	3.0	10:15		800	
144-49	22.5	WB	1669	F	3.0	10:11		800	
145-50	22.5	WB	1669	F	3.0	10:07		800	
146-51	22.5	WB	1669	F	3.0	10:03		800	
147-52	22	WB	1669	F	3.0	9:59		800	
148-53	22	WB	1669	F	3.0	9:56		800	
149-54	22	WB	1669	F	3.0	9:53		800	
150-55	22	WB	1669	F	3.0	9:49		800	
151-62	22.5	WB	1669	F	3.0	9:46		800	
152-63	22.5	WB	1669	F	3.0	9:43		800	
153-64	22	WB	1669	F	3.0	9:40		800	
154-65	22	WB	1669	F	3.0	9:26		800	
155-66	22.5	WB	1669	F	3.0	9:21		800	
156-67	22.5	WB	1669	F	3.0	9:16		800	
157-68	15	WB	1669	F	3.0	9:13		800	
Page Total			**349 ft.**						
Cumulative Total			**30,009 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE SEAMING LOG

SHEET	24 Primary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/18/03		

SEAM NO.	LENGTH OR SIZE (ft)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	WEATHER/CONDITIONS/COMMENTS
158-69	22	WB	1669	F	3.0	9:09		800	
159-80	15	WB	1669	F	3.0	9:06		800	
160-81	21	WB	1669	F	3.0	9:02		800	
162-82	21	WB	1669	F	3.0	8:58		800	
163-83	22	WB	1669	F	3.0	8:54		800	
164-89	22	WB	1669	F	3.0	8:51		800	
165-90	22	WB	1669	F	3.0	8:47		800	
166-91	22.5	WB	1669	F	3.0	8:44		800	
167-92	22	WB	1669	F	3.0	8:41		800	
168-93	22	WB	1669	F	3.0	8:38		800	
169-94	21	WB	1669	F	3.0	8:35		800	
170-95	20	AR	0227	E	N/A	2:05		800	
171-95	13	AR	0227	E	N/A	1:45		800	
171-96	20	AR	0227	E	N/A	10:40		800	
172-135	22	AR	0227	E	N/A	10:17		800	
173-176	18	EG	1681	F	4.5	4:44		800	
174-176	10	EG	1681	F	4.5	4:46		800	
Page Total			**336 ft.**						
Cumulative Total			**30,345 ft.**						

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E NEERS

GEOMEMBRANE SEAMING LOG

SHEET	1 of 4 Be
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	1/20/03 – 1/23/03

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	DATE	WEATHER/CONDITIONS/COMMENTS
W to E	110	D.P.	2762	E		15:00	70	230	1/20/03	Primary to Secondary @ Anchor Trench
E to W	110	W.F.	2006	E		15:00	70	250	1/20/03	Primary to Secondary @ Anchor Trench
W to E	455	D.P.	2762	E		8:30	50	280	1/21/03	Primary to Secondary W. of Separation Berm @ Anchor Trench
N2/N3	26.5	D.P.	2968	F	6		70	425	1/21/03	
N3/N4	25.5	D.P.	2968	F	6		70	425	1/21/03	DT-2
N4/N5	27.5	D.P.	2968	F	6		70	425	1/21/03	
N5N/6	30	D.P.	2968	F	6		70	425	1/21/03	
N6/N7	34.5	D.P.	2968	F	6		70	425	1/21/03	Mid 7-Pipe
N2-N6/	110	D.P.	2762	E			70	280	1/21/03	
N2-N6/	110	D.P.	2006	E			70	250	1/22/03	
N7/N8	34	D.P.	2968	F	6	8:23	60	425	1/23/03	DT-4
N8/N9	33	D.P.	2968	F	6	8:35	60	425	1/23/03	
N9/N10	31	D.P.	2968	F	6	15:45	60	425	1/23/03	
N10/N11	29	D.P.	2968	F	6	9:10	30	425	1/23/03	10, 11, Separation
N11/N12	34.5	D.P.	2968	F	6	15:35	60	425	1/23/03	
N12/N13	35	D.P.	2968	F	6	15:20	60	425	1/23/03	
N13/N14	35.5	D.P.	2968	F	6	9:20	60	425	1/23/03	
N14/N15	39	D.P.	2968	F	6	9:30	60	425	1/23/03	
N15/N16	42	D.P.	2968	F	6	9:40	60	425	1/23/03	
Page Total			**1,352 ft.**							
Cumulative Total			**1,352 ft.**							

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS EI NEERS

GEOMEMBRANE SEAMING LOG

SHEET 2 of 4 Bet

PROJECT TITLE: Section I Capacity Expansion

PROJECT NO.: 09200020.32

DATE: 1/23/03 – 1/25/03

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	DATE	WEATHER/CONDITIONS/COMMENTS
N16/N17	43.5	D.P.	2968	F	6	9:50	60	425	1/23/03	
N17/N18	41.5	D.P.	2968	F	6	10:05	60	425	1/23/03	
N18/N19	39	D.P.	2968	F	6	10:15	60	425	1/23/03	
N19/N20	39	D.P.	2968	F	6	10:25	60	425	1/23/03	
N20/N21	41	D.P.	2968	F	6	10:35	60	425	1/23/03	
N21/N22	43	D.P.	2968	F	6	10:50	60	425	1/23/03	
N22/N23	46	D.P.	2968	F	6	11:10	60	425	1/23/03	
N23/N24	47.5	D.P.	2968	F	6	11:30	60	425	1/23/03	
N24/N25	49	D.P.	2968	F	6	13:30	60	425	1/23/03	
N25/N26	51	D.P.	2968	F	6	13:50	60	425	1/23/03	
N26/N27	50	D.P.	2968	F	6	14:00	60	425	1/23/03	
N27/N28	45.5	D.P.	2968	F	6	14:15	60	425	1/23/03	
N28/N29	42	D.P.	2968	F	6	14:40	60	425	1/23/03	DT-5
N7-N10/ N. Primary	110	D.P.	2762	E		All Day	50-60	270	1/24/03	
N7-N10/ S. Primary	110	P.	2006	E		All Day	50-60	250	1/24/03	
N11-N29/ N. Primary	427.5	D.P.	2762	E		All Day	40-50	270	1/24/03	
N11-N29/ S. Primary	427.5	P.	2006	E		All Day	40-50	250	1/24/03	
RFI1/RFI2	33	D.P.	2373	F	6	9:55	40	425	1/25/03	DT-6
I2/23	32.5	B.S.	2968	F	6	9:50	40	425	1/25/03	
Page Total			**1,718.5 ft.**							
Cumulative Total			**3,070.5 ft.**							

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E. .NEERS

GEOMEMBRANE SEAMING LOG

SHEET 3 of 4 Be

PROJECT TITLE Section I Capacity Expansion

PROJECT NO. 09200020.32

DATE 1/25/03

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	DATE	WEATHER/CONDITIONS/COMMENTS
I3/I4	33	D.P.	2373	F	6	10:05	40	425	1/25/03	
I4/I5	32	B.S.	2968	F	6	10:15	40	425	1/25/03	
I5/I6	32.5	D.P.	2373	F	6	10:15	40	425	1/25/03	
I6/I7	33.5	B.S.	2968	F	6	10:23	40	425	1/25/03	
I7/I8	34	B.S.	2968	F	6	10:34	40	425	1/25/03	
I8/I9	33.5	D.P.	2373	F	6	10:25	40	425	1/25/03	
I9/I10	33.5	B.S.	2968	F	6	10:44	40	425	1/25/03	
I10/I11	32.5	B.S.	2968	F	6	10:54	40	425	1/25/03	
I11/I12	34	D.P.	2373	F	6	10:38	40	425	1/25/03	
I12/I13	33.5	D.P.	2373	F	6	10:48	40	425	1/25/03	
I13/I14	33	D.P.	2373	F	6	10:58	50	425	1/25/03	
I14/I15	33	B.S.	2968	F	6	11:06	50	425	1/25/03	
I15/I16	33	B.S.	2968	F	6	11:14	50	425	1/25/03	
I16/I17	33	B.S.	2968	F	6	11:21	50	425	1/25/03	
I17/I18	31.5	D.P.	2373	F	6	11:10	50	425	1/25/03	
I18/I19	32	D.P.	2373	F	6	11:20	50	425	1/25/03	
I19/I20	33	B.S.	2968	F	6	11:29	50	425	1/25/03	
I20/I21	33	D.P.	2373	F	6	11:37	50	425	1/25/03	
I21/I22	33	D.P.	2373	F	6	13:15	60	425	1/25/03	
Page Total			**626.5 ft.**							
Cumulative Total			**3,697 ft.**							

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS El NEERS

GEOMEMBRANE SEAMING LOG

SHEET 4 of 4 Bei
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 1/25/03 – 1/28/03

SEAM NO.	LENGTH OR SIZE (ft.)	TECH. ID	MACH. NO.	WELD TYPE	SPEED SET	TIME	AIR TEMP (deg. F)	MACH. TEMP (deg. F)	DATE	WEATHER/CONDITIONS/COMMENTS
I22/I23	32.5	B.S.	2968	F	6	13:17	60	425	1/25/03	
I23/I24	32.5	B.S.	2968	F	6	13:25	60	425	1/25/03	
I24/I25	33	D.P.	2373	F	6	13:25	60	425	1/25/03	
I25/I26	33.5	B.S.	2968	F	6	1333	60	425	1/25/03	
I26/I27	31.5	B.S.	2968	F	6	13:44	65	425	1/25/03	
I27/I28	31	B.S.	2968	F	6	13:54	65	425	1/25/03	
I28/I29	31.5	D.P.	2373	F	6	13:50	65	425	1/25/03	
I29/I30	31	D.P.	2373	F	6	14:00	65	425	1/25/03	DT-9
Primary IBE/I1-I31	700	Phou	2006	E		All Day	65	250	1/27/03	
Primary IBW/I1-I31	675	D.P.	2762	E		All Day	65	260	1/27/03	
I30/I31	31	D.P.	2762	E		11:00	65	260	1/28/03	
RFN 29/ W. Primary	15	Phou	2006	E		10:00	60	250	1/28/03	
RFN 1/ E. Slope	29.5	Phou	2006	E		15:00	65	250	1/28/03	
Page Total					**1,707 ft.**					
Cumulative Total					**5,404 ft.**					

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

ATTACHMENT J

GEOMEMBRANE TRIAL WELD LOGS

SCS ENGINEERS

TRIAL WELD LOG Extrusion

SHEET 1 Secondary + Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-14-02 To 10-7-02

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS BARREL TEMP.	EXTRUSION WELDS PREHEAT TEMP.	FUSION WELDS WEDGE TEMP	FUSION WELDS WEDGE SPEED	PEEL 88					SHEAR 120				P/F	
9-14	1605	RP	227	95	250	250			123	130	126	124	99	146	149	155	157/145	P	60ST
9-15	0805	RP	227	85	250				135	126	125	121	125	152	143	139	150/152	P	60ST
9-15	0800	CP	2006	85	250				121	126	131	123	131	144	141	149	150/146	P	60SS
9-15	1315	RP	227	95	250				105	96	125	101	135	148	146	145	144/146	P	60ST
9-15	1320	AR	2006	95	250				143	147	145	141	145	138	138	143	141/155	P	60ST
9-16	0840	HT	2006	85	250				135	139	136	112	135	161	162	161	160/161	P	60SS
9-17	1120	RP	227	95	250				129	132	117	140	137	132	135	142	154/155	P	60ST
9-17	1310	AR	2006	95	250				137	127	125	106	125	142	136	138	145/140	P	60SS
9-18	1305	AR	2006	95	250				118	124	122	130	131	135	128	128	128/139	P	60SS
9-19	0750	RP	227	85	250				109	115	107	108	106	151	153	151	154/156	P	60SS
9-26	0945	AR	2022	85	250				95	99	97	104	103	137	138	134	142/120	P	60ST
9-26	1000	HT	2003	85	250				129	129	118	125	120	132	143	146	146/142	P	60ST
9-26	1340	HT	2003	90	250				120	126	120	125	123	122	121	135	137/136	P	60SS
9-30	1340	AR	2022	90	250				105	111	120	114	117	132	133	132	124/131	P	60SS
10/1	8:55	HT	2003	90	250				127	115	111	114	118	151	152	147	149/148	P	60S
10/1	1:00	AR	2022	90	250				117	130	130	131	129	145	149	146	151/148	P	60S
10-2	1330	LL	2006	95	250				133	137	133	144	137	145	140	139	141/144	P	60TT
10-2	1610	GQ	2003	95	250				133	137	136	142	143	161	160	159	157/160	P	60TT
10-5	0850	AR	2022	80	250				119	131	137	133	125	159	160	156	159/149	P	60ST
10-5	0832	RP	227	80	250				124	126	108	118	130	138	131	132	136/126	P	60SS
10-5	1310	HT	2003	90	250				140	134	133	134	135	141	140	140	141/140	P	60ST
10-5	1332	RP	227	90	250				135	143	138	139	135	159	161	157	158/158	P	60SS
10-7	0825	RP	227	80	250				140	128	136	144	125	158	152	157	150/155	P	60SS

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

begin Tensiometer PT512
last Cal. 1-14-02 next 11-9-02

SCS ENGINEERS

TRIAL WELD LOG Extrusion

SHEET 2. Secondary + Primary Rain Flap of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-7-02 To 1-24-03

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS		FUSION WELDS		PEEL					SHEAR				P/F	
					BARREL TEMP.	PREHEAT TEMP.	WEDGE TEMP	WEDGE SPEED											
10-7	1320	RP	227	90	250				139	142	117	139	140	144	148	146	147/144	P	6055
10-8	0745	RP	227	80	250				118	116	116	122	117	138	134	131	134/127	P	6055
10-8	1300	RP	227	90	250				116	113	111	113	114	131	128	128	130/124	P	6055
10-9	0735	RP	227	80	250				141	143	148	149	151	120	131	116	122/116	P	6055
10-9	1305	RP	227	90	250				104	112	106	99	100	129	132	128	136/138	P	6055
10-14	1000	HT	227	80	250				112	110	124	114	114	155	149	151	158/156	P	6055
10-14	1155	GQ	2003	85	250				109	127	128	110	130	148	143	148	146/148	P	6055
10-14	1315	HT	227	90	250				116	110	121	110	107	140	139	141	145/140	P	6055
10-15	1125	HT	227	80	250				90	90	122	122	94	163	163	165	163/161	P	6055
10-18	0830	AR	227	75	250				111	110	125	134	138/141	168	182	167	171/169	P	6057
10-18	1320	AR	227	85	250				105	115	111	130	138/143	164	166	156	155/165	P	6057
10-19	0750	AR	227	75	250				101	105	121	113	102	161	159	163	149/150	P	6057
10-19	1340	AR	227	85	250				120	123	105	107	116	161	154	147	149/162	P	6057
10-21	0755	AR	227	80	250				104	105	125	117	119	157	159	163	158/155	P	6055
1-20	1410	DP	2762	70	230				131	160	151	154	151	159	160	152	151/151	P	6055
1-20	1440	WF	2006	70	250				143	151	132	136	141	158	155	157	160/158	P	6055
1-21	0800	DP	2762	70	280				127	151	148	162	144	183	190	191	189/184	P	6055
1-22	0730	DP	2006	60	250				152	121	145	141	140	232	225	224	228/224	P	80556
1-22	1330	DP	2006	70	250				149	154	136	140	128	218	208	221	203/217	P	8055
1-23	1330	DP	~~2006~~	60	250				133	141	136	140	132	200	206	203	206/201	P	80556
1-24	0830	DP	2762	40	270				133	137	142	141	133	212	211	214	210/211	P	60580
1-24	0830	Phone	2006	40	250				142	141	146	137	140	208	210	213	212/209	P	60580
1-24	1320	DP	2762	50	270				194	201	151	185	181	268	268	275	275/255	P	80580

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

TRIAL WELD LOG *Extrusion*

SHEET *3 berms* of

PROJECT TITLE *Section I Capacity Expansion*

PROJECT NO. *09200020.32*

DATE *1-24-03 to 1-28-03*

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS		FUSION WELDS		PEEL					SHEAR				P/F	
					BARREL TEMP.	PREHEAT TEMP.	WEDGE TEMP	WEDGE SPEED											
-24	~~0835~~ 1330	Phou	2006	40	250				134	147	163	149	143	186	187	191	17a/186	P	BOSHOS
-24	0740	DP	2762	50	260				191	160	181	161	175	226	229	226	226/226	P	BOSBO.
-24	0745	Phou	2006	50	250				163	165	172	171	156	197	216	220	225/213	P	BOSBL
-27	1330	DP	2762	60	260				166	163	170	161	173	211	216	213	217/220	P	
-27	1330	Phou	2006	60	250				159	160	158	163	161	200	198	202	206/200	P	
-28	0730	Phou	2006	60	250				164	171	168	161	173	216	213	210	218/211	P	
-28	0730	DP	2762	60	260				152	156	188	188	152	245	240	240	244/247	P	
-28	1320	DP	2762	70	260				168	163	177	170	166	223	221	231	227/228	P	
-28	1325	Phou	2006	70	250				158	168	160	163	170	229	231	233	224/231	P	

PRINT NAME: *Dennis G. DuPont*

SIGNATURE: *Dennis G. DuPont*

SCS ENGINEERS

TRIAL WELD LOG Fusion

SHEET 1 ~~Geodesy~~ Secondary of

PROJECT TITLE Section I Capacity Expansion

PROJECT NO. 09200020.32

DATE 9-10-02 to 9-17-02

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS BARREL TEMP.	EXTRUSION WELDS PREHEAT TEMP.	FUSION WELDS WEDGE TEMP	FUSION WELDS WEDGE SPEED	PEEL 88					SHEAR 120				P/F	
9-10	0850	EG	190	85			800	4.0	128/122	109/112	108/118			133	136	131		P	6055
9-10	0830	RG	107	85			800	4.0	102/136	135/123	123/111			157	152	152		P	6055
9-10	1333	EG	190	90			800	4.0	121/126	123/115	125/119			126	131	127		P	6055
9-10	1320	RG	107	90			800	4.0	119/123	128/129	133/123			142	142	131		P	6055
9-10	1530	WB	1669	95			800	4.5	129/109	122/127	117/111	121/108	119/128	130	125	128	126/134	P	6055
9-14	0750	WB	1669	85			800	4.5	132/130	131/121	140/140	130/110	134/141	170	160	161	164/156	P	6055
9-14	0810	EG	190	85			800	4.0	113/125	142/141	132/127	132/129	134/130	156	155	153	150/174	P	6055
9-14	0800	RG	107	85			~~800~~ 840	4.5	119/125	125/110	138/134	135/142	134/120	153	167	152	152/163	P	6055
9-14	1316	RG	107	90			840	4.5	119/96	118/90	122/96	116/92	119/88	144	139	140	147/144	P	6055
9-14	1320	WB	1669	90			800	4.5	124/129	120/117	129/125	110/98	126/126	143	136	139	144/136	P	6055
9-14	1322	EG	190	90			800	4.0	127/119	113/123	120/123	107/118	117/112	154	157	157	154/154	P	6055
9-14	1500	EG	190	95			800	4.0	124/125	121/135	136/123	120/126	125/128	159	164	176	160/177	P	6057
	~~0800~~	~~RRCP~~																	
9-15	0845	WB	1306	85			800	4.5	115/114	101/121	107/101	108/107	108/121	156	138	146	161/144	P	6055
9-15	1945	WB	1306	95			800	4.5	109/126	126/110	117/132	104/135	111/139	151	157	158	145/153	P	6055
9-15	1622	EG	190	95			800	4.0	110/118	123/103	138/138	115/109	129/106	165	168	168	166/166	P	6055
9-16	0800	EG	190	85			800	4.0	107/114	111/104	100/107	115/101	114/113	156	146	136	154/143	P	6055
9-16	0800	RG	107	85			840	4.0	117/107	117/120	115/114	103/115	123/118	172	170	172	171/	P	6055
9-16	0925	WB	1306	88			800	4.5	124/124	93/115	114/112	111/104	108/103	142	143	143	141/146	P	6055
9-16	1310	WB	1306	95			800	4.5	105/92	110/101	109/107	112/99	97/88	144	134	134	126/142	P	6055
9-16	1315	RG	107	95			840	4.0	122/113	125/123	118/121	125/126	124/126	129	135	133	131/132	P	6055
9-16	1320	EG	190	95			800	4.0	115/94	115/113	111/102	105/116	113/113	125	124	129	132/139	P	6055
9-17	0740	WB	1306	85			800	4.5	102/116	112/111	122/103	115/111	127/121	153	155	151	155/155	P	6055

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

TRIAL WELD LOG *Fusion*

SHEET *2 Secondary + Primary* of
PROJECT TITLE *Section I Capacity Expansion*
PROJECT NO. *09200020.32*
DATE *9-17-02*

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS BARREL TEMP.	EXTRUSION WELDS PREHEAT TEMP.	FUSION WELDS WEDGE TEMP	FUSION WELDS WEDGE SPEED	PEEL 88							SHEAR 120				P/F	
7-17	0805	RG	107	85			840	4.0	107/119	131/126	127/128	131/131	129/132			146	151	149	153/150	P	6055
7-17	0745	EG	190	85			800	4.0	122/115	125/124	133/123	128/118	126/127			153	157	155	156/153	P	6055
7-18	0805	EG	190	85			800	4.0	126/133	131/126	138/130	137/133	136/120			175	170	169	168/172	P	6055
7-17	1310	WB	1306	95			800	4.5	120/127	115/109	115/106	113/119	100/128			149	132	158	153/124	P	6055
7-18	0800	WB	1306	85			800	4.5	120/111	122/110	117/114	118/116	111/115			153	156	159	147/149	P	6055
7-18	0905	RG	107	86			840	4.0	116/111	114/118	127/106	125/118	120/126			149	153	156	150/148	P	6055
7-18	1310	RG	107	95			840	4.0	107/115	109/116	110/119	116/123	120/116			156	160	158	157/156	P	6055
7-24	1335	EG	107	90			800	4.0	122/135	136/136	120/118	126/127	129/129			141	149	152	145/148	P	6055
7-24	1400	WB	1306	90			800	4.5	132/114	124/126	117/102	110/121	126/124			150	149	151	156/150	P	6055
7-25	0750	WB	1306	80			800	4.5	111/125	109/122	125/106	109/126	119/121			153	152	149	150/148	P	6055
7-25	0800	EG	1669	80			800	4.5	125/128	135/134	126/137	131/135	128/129			145	147	149	145/147	P	6055
9-25	0750	RG	190	80			800	4.0	125/124	128/129	106/122	127/130	121/121			167	155	138	140/159	P	6055
9-25	1205	EG	1669	90			800	4.5	108/117	127/118	124/114	117/110	114/111			131	130	143	132/130	P	6055
9-25	1426	RG	190	90			800	4.0	119/136	124/118	115/125	124/132	109/136			147	147	145	149/147	P	6055
9-27	0830	EG	1669	85			800	4.5	137/132	132/128	139/125	137/129	139/124			182	179	177	178/177	P	6055
9-27	1012	RP	1681	90			800	4.5	114/131	123/137	127/121	127/121	115/122			153	155	148	150/144	P	6055
9-27	0800	WB	1306	85			800	4.5	114/123	121/115	120/120	105/120	110/122			149	151	141	140/143	P	6055
9-27	1365	WB	1306	90			800	4.5	101/109	106/110	102/103	95/109	101/100			154	143	145	149/150	P	6055
9-27	1315	EG	1669	90			800	4.5	127/121	126/129	103/118	120/119	112/110			139	136	149	142/142	P	6055
9-27	1320	RP	1681	90			800	4.5	115/116	106/110	116/127	102/103	113/127			144	162	138	140/143	P	6055
9-28	0805	EG	1669	85			800	4.5	125/131	129/125	136/130	137/130	129/126			153	146	149	155/145	P	6055
9-28	0730	WB	1306	85			800	4.5	109/114	103/107	109/111	120/119	112/121			146	149	147	143/146	P	6055
9-28	1000	RP	1681	90			800	4.5	127/126	137/136	129/129	127/116	137/117			164	162	162	163/162	P	6055

PRINT NAME: *Dennis G. DuPont*

SIGNATURE: *Dennis G. DuPont*

SCS ENGINEERS

TRIAL WELD LOG *Fusion*

SHEET 3 ~~Prim~~ Secondary + Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-30-02 To 10-15-02

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS BARREL TEMP.	EXTRUSION WELDS PREHEAT TEMP.	FUSION WELDS WEDGE TEMP	FUSION WELDS WEDGE SPEED	PEEL					SHEAR				P/F	
9-30	0860	HT	1681	85			800	4.5	120/115	120/119	117/122			145	142	139		P	6055
9-30	0925	EG	1669	85			800	4.5	114/119	118/119	115/115			145	139	140		P	6055
9-30	1320	HT	1681	90			800	4.5	112/116	115/111	119/124	115/120	116/115	142	140	142	140/137	P	6055
10-1	0810	EG	1669	85			800	4.5	114/119	117/119	123/120	131/121	124/119	150	153	146	144/155	P	6055
10-1	0815	HT	1681	85			800	4.5	123/119	113/119	119/117	117/117	120/113	127	129	130	153/132	P	6055
10/2	8:15	EG	1669	82			800	4.5	124/125	114/124	131/117	123/117	128/119	142	137	145	150/149	P	6055
10-2	8:25	GQ	1306	82			800	4.5	110/108	105/102	101/107	102/103	111/101	138	146	139	148/147	P	6055
10-2	1380	GQ	1306	95			800	4.5	96/103	106/101	96/101	105/100	97/91	136	133	141	132/129	P	6055
10-2	1420	RG	190	85			800	4.0	112/110	114/108	124/114	117/114	116/114	154	152	150	148/149	P	6055T
10-3	0800	EG	1669	80			800	4.5	123/107	111/99	118/118	111/113	120/110	136	149	147	150/147	P	6055
10-3	1310	EG	1669	90			800	4.5	117/111	108/115	122/118	115/113	116/108	141	145	140	149/151	P	6055
10-3	1600	RG	107	90			800	4.0	111/101	109/115	115/113	126/133	114/120	145	148	149	148/145	P	6055
10-3	1710	GQ	190	90			800	4.0	125/123	122/131	111/116	111/112	118/122	140	144	151	139/150	P	6055
10-4	0813	RG	107	80			800	4.0	117/121	121/125	131/129	128/128	130/108	152	149	150	148/151	P	6055
10-4	1025	EG	1669	85			800	4.5	120/124	123/112	128/114	118/128	117/118	153	150	149	147/151	P	6055
10-4	1340	RG	107	90			800	4.0	118/121	120/116	119/116	116/119	115/121	155	149	150	157/149	P	6055
10-4	1342	EG	1669	90			800	4.5	115/117	115/124	125/113	117/115	119/111	134	140	141	135/136	P	6055
10-4	1346	RG	107	90			800	4.0	103/124	114/119	116/117	124/115	117/111	135	149	150	148/149	P	6055T
10-4	1445	GQ	190	90			800	4.0	117/118	119/123	126/128	123/124	124/122	145	150	149	157/149	P	6055
10-12	0800	WB	1306	80			800	4.5	128/130	125/125	133/131	127/135	127/129	163	153	152	153/151	P	6055
10-12	0820	EG	1681	80			800	4.5	131/141	138/137	133/135	130/143	134/153	146	149	160	148/155	P	6055
10-12	1215	HT	190	85			800	4.0	126/126	127/123	116/132	117/116	117/110	165	161	163	165/163	P	6055
10-15	0800	EG	1681	80			800	4.5	128/135	133/128	134/132	123/126	130/133	152	149	150	148/152	P	6055

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

TRIAL WELD LOG Fusion

SHEET 4 of

PROJECT TITLE Section I Capacity Expansion

PROJECT NO. 09200020.32

DATE 10-15-02 To 1-25-03

	TIME	TECH I.D.	MACH. I.D.	AMB. TEMP	EXTRUSION WELDS BARREL TEMP.	EXTRUSION WELDS PREHEAT TEMP.	FUSION WELDS WEDGE TEMP	FUSION WELDS WEDGE SPEED	PEEL					SHEAR				P/F	
10-15	0810	WB	1306	80			800	4.5	129/138	144/135	128/128	124/137	135/126	159	148	149	153/151	P	6055
10-15	0835	HT	1669	80			800	4.0	116/105	116/115	127/136	127/110	119/105	164	150	149	151/157	P	6055
10-16	0838	HT	1306	80			800	4.0	129/108	119/118	126/121	136/113	123/135	155	149	146	151/150	P	6055
10-16	0850	EG	1681	80			800	4.5	131/130	137/137	125/144	134/137	128/129	167	164	158	162/156	P	6055
10-17	0805	EG	1681	75			800	4.5	128/133	134/134	128/134	135/136	142/142	150	149	152	148/155	P	6055
10-17	0808	HT	1306	75			800	4.0	129/128	129/135	138/138	132/130	129/128	175	164	163	155/153	P	6055
10-17	1040	WB	1669	80			800	4.5	119/115	129/135	126/127	131/132	135/138	172	168	155	169/152	P	6055
10-17	1320	HT	1306	85			800	4.0	95/111	117/107	125/119	120/105	119/119	162	160	159	161/148	P	6055
10-17	1340	EG	1681	85			800	4.5	131/119	125/128	134/135	135/124	131/131	158	155	154	156/157	P	6055
~~10-18~~	~~0820~~	~~AR~~	~~0227~~	~~75~~															
10-18	0750	WB	1669	75			800	3.0	148/149	145/152	149/138	146/146	143/140	190	149	158	148/156	P	6057
10-18	0855	HT	1306	75			800	2.5	129/135	137/127	111/132	122/127	118/136	172	170	175	170/173	P	6057
1-21	1510	DP	2968	70			425	6.0	178/153	140/162	181/140	178/150	145/171	207	204	208	210/220	P	8055
1-23	0815	~~DP~~ Phou	2968	60			425	6.0	166/185	170/181	164/185	177/132	188/175	242	235	239	240/239	P	8055
1-23	1325	DP	2968	60			425	6.0	175/169	172/171	153/165	171/159	172/153	225	224	226	226/226	P	8055
1-25	0835	~~DP~~	2373	40			425	6.0	175/171	177/172	172/173	180/192	169/174	225	233	236	234/227	P	8055B
1-25	0840	BS	2968	40			425	6.0	178/178	178/175	175/190	178/178	179/175	235	237	230	232/265	P	8055B
1-25	1330	DP	2373	60			425	6.0	188/174	186/173	186/173	183/169	183/173	227	228	231	229/230	P	8058B
1-25	1330	BS	2968	60			425	6.0	182/166	167/181	183/163	165/184	165/177	233	217	224	218/216	P	8058B

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

ATTACHMENT K

GEOMEMBRANE NON-DESTRUCTIVE TEST LOGS

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 1 secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-14-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P1-P2	92672	30	30	0	0809	0805	5	P		9-14
P2-P3	92672	30	30	0	0803	0808	5	P		9-14
P3-P4	92672	30	30	0	0809	0814	5	P		9-14
P4-P5	92672	30	30	0	0825	0830	5	P		9-14
P5-P6	92672	30	29	1	0827	0832	5	P		9-14
P-6-P7	92672	30	29	1	0828	0833	5	P		9-14
P7-P8	92672	30	30	0	0831	0836	5	P		9-14
P8-P9	92672	30	30	0	0833	0838	5	P		9-14
P9-P10	92672	30	30	0	0904	0909	5	P		9-14
P10-P11	92672	30	30	0	0905	0910	5	P		9-14
P11-P12	92672	30	30	0	0909	0914	5	P		9-14
P12-P13	92672	30	30	0	0912	0917	5	P		9-14
P-13-P14	92672	30	27	3	0916	0921	5	P		9-14
P14-P15	92672	30	30	0	0918	0923	5	P		9-14
P15-P16	92672	30	30	0	1132	1137	5	P		9-14
P16-P17	92672	30	29	1	1134	1139	5	P		9-14
P17-P18	92672	30	30	0	1146	1151	5	P		9-14
P18-P19	92672	30	30	0	1308	1313	5	P		9-14
P19-P20	92672	30	30	0	1310	1315	5	P		9-14
P32-P33	92672	30	30	0	0935	0940	5	P		9-14
~~P17-P18~~	~~92672~~									9-14 section Fail-cap
P20-P21	92672	30	30	0	1312	1317	5	P		9-14
P36-P37	92672	30	27	3	1320	1325	5	P		9-14
P35-P36	92672	30	28	2	1322	1327	5	P		9-14

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 2 secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-14-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P35-P36	92672	30	27	3	1321	1326	5	P		9-14
P21-P22	92672	30	30	0	1329	1334	5	P		9-14
P22-P23	92672	30	30	0	1331	1336	5	P		9-14
P38-P47	92672	30	28	2	1341	1346	5	P		9-14
P37-P47	92672	30	30	0	1342	1347	5	P		9-14
P23-P24	92672	30	29	1	1345	1350	5	P		9-14
P24-P25	92672	30	30	0	1349	1354	5	P		9-14
P25-P26	92672	30	30	0	1355	1400	5	P		9-14
P26-P27	92672	30	29	1	1354	1359	5	P		9-14
P27-P28	92672	30	30	0	1404	1409	5	P		9-14
P28-P29	92672	30	30	0	1407	1412	5	P		9-14
P29-P30	92672	30	30	0	1409	1414	5	P		9-14
P29-P30	92672	30	30	0	1410	1415	5	P		9-14
P30-P55	92672	30	30	0	1429	1434	5	P		9-14
P55-P56	92672	30	30	0	1430	1435	5	P		9-14
P56-P57	92672	30	30	0	1432	1437	5	P		9-14
P57-P58	92672	30	30	0	1440	1445	5	P		9-14
P38-P39	92672	30	30	0	1441	1446	5	P		9-14
P58-P59	92672	30	28	2	1451	1456	5	P		9-14
P59-P60	92672	30	30	0	1500	1505	5	P		9-14
P60-P61	92672	30	30	0	1533	1538	5	P		9-14
P-61-P62	92672	30	29	1	1534	1539	5	P		9-14
P37-P35	92672	30	28	2	1503	1508	5	P		9-14

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 3 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-14-02 To 9-15-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P62-P63	92672	30	27	3	1555	1600	5	P		9-14
P33-P35	92672	30	30	0	1513	1518	5	P		9-14
P31-P34	92672	30	29	1	1604	1609	5	P		9-14
P31-P33	92672	30	30	0	1603	1608	5	P		9-14
P33-P34	92672	30	30	0	1606	1611	5	P		9-14
P33-P35	92672	30	30	0	1521	1526	5	P		9-14
P37-P38	92672	30	27	3	1609	1614	5	P		9-14
P31-P32	92672	30	29	1	0945	0950	5	P		9-14
P63-P64	92672	30	30	0	1629	1634	5	P		9-14
P64-P65	92672	30	30	0	1632	1637	5	P		9-14
P65-P66	92672	30	30	0	1644	1649	5	P		9-14
P45-P52	92672	30	30	0	0910	0915	5	P		9-15
P45-P51	92672	30	28	2	0900	0905	5	P		9-15
P51-P52	92672	30	27	3	0945	0950	5	P		9-15
P44-P45	92672	30	28	2	0901	0906	5	P		9-15
P44-P51	92672	30	30	0	0857	0902	5	P		9-15
P43-P44	92672	30	30	0	0851	0856	5	P		9-15
P43-P50	92672	30	30	0	0853	0858	5	P		9-15
P43-P50	92672	30	29	1	0854	0859	5	P		9-15
P42-P43	92672	30	30	0	0825	0830	5	P		9-15
P41-P42	92672	30	28	2	0738	0743	5	P		9-15
P41-P43	92672	30	30	0	0744	0749	5	P		9-15
P41-P43	92672	30	30	0	0746	0751	5	P		9-15
P52-P53	92672	30	28	2	1055	1100	5	P		9-15
P51-P53	92672	30	27	3	1058	1103	5	P		9-15

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 4 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-15-07

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P43-P44	92672	30	30	0	0832	0837	5	P		9-15
P40-P42	92672	30	28	2	1040	1045	5	P		9-15
P40-P42	92672	30	30	0	1035	1040	5	P		9-15
P42-P48	92672	30	28	2	1023	1028	5	P		9-15
P40-P48	92672	30	28	2	1028	1033	5	P		9-15
P31-P48	92672	30	28	2	1030	1035	5	P		9-15
P31-P40	92672	30	30	0	1031	1036	5	P		9-15
P31-P40	92672	30	29	1	1128	1133	5	P		9-15
P31-P40	92672	30	28	2	1127	1132	5	P		9-15
P31-P40	92672	30	29	1	1313	1318	5	P		9-15
P48-P49	92672	30	30	0	1000	1005	5	P		9-15
P47-P49	92672	30	30	0	1005	1010	5	P		9-15
P66-P67	92672	30	30	0	1142	1147	5	P		9-15
P49-P50	92672	30	28	2	0958	1003	5	~~F~~P		9-15
P47-P50	92672	30	30	0	1010	1015	5	P		9-15
1- 41	R.P.								P	9-15
2- 41	R.P								P	9-15
3- 41	R.P								P	9-15
4- 41	R.P.								P	9-15
4- 40	R.P.								P	9-15
5- 40	R.P.								P	9-15
6- 40	R.P.								P	9-15
7- 40	R.P.								P	9-15
P51-P53	92672	30	28	2	1100	1105		P	~~P~~	9-15

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 5 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-15-07

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
7 - 31	R. P.								P	9-15
8 - 31	R. P.								P	9-15
9 - 31	R P								P	9-15
10 - 31	R. P.								P	9-15
11 - 31	R. P.								P	9-15
11 - 32	R. P.								P	9-15
12 - 32	R. P.								P	9-15
13 - 32	R. P.								P	9-15
14 32	R. P.								P	9-15
14 - 35	R. P.								P	9-15
15 - 35	R. P.								P	9-15
16 - 35	R. P.								P	9-15
17 - 35	R. P.								P	9-15
17 - 36	R. P.								P	9-15
18 - 36	R. P.								P	9-15
19 - 36	R. P.								P	9-15
20 - 36	R. P.								P	9-15
21 - 47	R. P.								P	9-15
22 - 47	R. P.								P	9-15
23 - 47	R. P.								P	9-15
23 - 38	R. P.								P	9-15
24 - 38	R. P.								P	9-15
24 - 39	R. P.								P	9-15

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 6 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9-15-02 to 9-17-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
25-39	A.R.								P	9-15
26-39	A R								P	9-16
27-39	A.R.								P	9-16
28-39	A.R.								P	9-16
29-39	A.R.								P	9-16
30-39	A R.								P	9-16
55-39	A R.								P	9-16
56-39	A.R.								P	9-16
57-39	A.R.								P	9-16
58-38	AR								P	9-16
59-38	AR								P	9-16
P68-P68	92672	30	30	0	0813	0818	5	P		9-16
P68-P69	92672	30	30	0	0814	0819	5	P		9-16
P54-P53	92672	30	30	0	0729	0734	5	P		9-16
P52-P54	92672	30	30	0	0730	0735	5	P		9-16
P46-P54	92672	30	30	0	0739	0744	5	P		9-16
P46-P54	92672	30	29	1	0742	0747	5	P		9-16
P45-P46	92672	30	30	0	0751	0756	5	P		9-16
P46-P72	92672	30	28	2	1509	1514	5	P		9-16
P72-P81	92672	30	27	3	0902	0907	5	P		9-17
P81-P82	92672	30	30	0	0902	0907	5	P		9-17
P73-P82	92672	30	28	2	0903	0908	5	P		9-17
P72-P73	92672	30	30	0	1140	1145	5	P		9-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 7 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-16-02 To 9-17-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P73-P74	92672	30	30	0	1144	1149	5	P		9-16
P79-P83	92672	30	28	2	0905	0910	5	P		9-17
P82-P83	92672	30	30	0	0907	0912	5	P		9-17
~~P82-P84~~	~~92672~~	~~30~~	~~30~~	~~0~~	~~0907~~	~~0912~~	~~5~~	~~P~~		~~9-17~~
P83-P84	92672	30	28	2	0914	0919	5	P		9-17
P84-P85	92672	30	28	2	1012	1017	5	P		9-17
P83-P85	92672	30	30	0	0920	0925	5	P		9-17
P75-P85	92672	30	28	2	0909	0914	5	P		9-17
P74-P75	92672	30	30	0	1515	1520	5	P		9-16
P75-P76	92672	30	27	3	1520	1525	5	P		9-16
P76-P77	92672	30	30	0	1535	1540	5	P		9-16
P77-P78	92672	30	30	0	1533	1538	5	P		9-16
P78-P79	92672	30	30	0	1605	1610	5	P		9-16
P79-P80	92672	30	29	1	0728	0733	5	P		9-17
P79-P80	92672	30	30	0	0739	0744	5	P		9-17
P84-P85	92672	30	28	2	1012	1017	5	P		9-17
P85-P87	92672	30	30	0	1014	1019	5	P		9-17
P85-P86	92672	30	30	0	1053	1058	5	P		9-17
P86-P87	92672	30	30	0	1015	1020	5	P		9-17
P76-P85	92672	30	30	0	0959	1004	5	P		9-17
P76-P86	92672	30	28	2	0940	0945	5	P		9-17
P77-P88	92672	30	28	2	0942	0947	5	P		9-17
P77-P89	92672	30	30	0	1405	1410	5	P		9-17

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 8 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-17-02 to 9-18-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P77-P102	92672	30	27	3	1402	1407	5	P		9-17
P89-P102	92672	30	30	0	1357	1402	5	P		9-17
P78-P102	92672	30	30	0	1403	1408	5	P		9-17
P79-P90	92672	30	27	3	1417	1422	5	P		9-17
P80-P91	92672	30	28	2	1421	1426	5	P		9-17
P-90-P91	92672	30	28	2	1426	1431	5	P		9-17
P93-P94	92672	30	27	3	1154	1159	5	P		9-17
P94-P95	92672	30	28	2	1153	1158	5	P		9-17
P95-P96	92672	30	29	1	1150	1155	5	P		9-17
P96-P97	92672	30	30	0	1145	1150	5	P		9-17
P97-P98	92672	30	30	0	1135	1140	5	P		9-17
P98-P99	92672	30	28	2	1325	1330	5	P		9-17
P98-P99	92672	30	29	1	1334	1339	5	P		9-17
P99-P100	92672	30	27	3	1329	1334	5	P		9-17
P100-P101	92672	30	30	0	1330	1335	5	P		9-17
P103-P104	92672	30	30	0	1004	1009	5	P		9-18
P103-P107	92672	30	30	0	1015	1020	5	P		9-18
P104-P108	92672	30	30	0	1046	1051	5	P		9-18
P107-P108	92672	30	29	1	1026	1031	5	P		9-18
P108-P109	92672	30	30	0	1052	1057	5	P		9-18
P109-P110	92672	30	30	0	1038	1043	5	P		9-18
P82-P84	92672	30	27	3	0912	0917	5	P		9-18
P79-P89	92672	30	30	0	0938	0943	5	P		9-18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 9 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-18-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
P79-P102	92672	30	30	0	0937	0942	5	P		9-18-
P89-P90	92672	30	29	1	0939	0944	5	P		9-18
P71-P92	92672	30	28	2	1110	1115	5	P		9-18
P92-P93	92672	30	27	3	1118	1123	5	P		9-18
P81-P93	92672	30	28	2	0921	0926	5	P		9-18
P82-P94	92672	30	29	1	0920	0925	5	P		9-18
P84-P95	92672	30	30	0	0907	0912	5	P		9-18
P85-P96	92672	30	29	1	0905	0910	5	P		9-18
P87-P97	92672	30	30	0	0904	0909	5	P		9-18
P88-P98	92672	30	28	2	0903	0908	5	P		9-18
P89-P99	92672	30	30	0	0902	0907	5	P		9-18
P90-P100	92672	30	29	1	0900	0905	5	P		9-18
P91-P101	92672	30	30	0	0900	0905	5	P		9-18
P101-P112	92672	30	28	2	1355	1400	5	P		9-18
P107-P112	92672	30	30	0	1355	1400	5	P		9-18
P112-P113	92672	30	30	0	1357	1402	5	P		9-18
P108-P113	92672	30	27	3	1357	1402	5	P		9-18
P113-P114	92672	30	30	0	1402	1407	5	P		9-18
P109-P114	92672	30	29	1	1400	1405	5	P		9-18
P109-P115	92672	30	28	2	1414	1419	5	P		9-18
P114-P115	92672	30	30	0	1410	1415	5	P		9-18
P110-P115	92672	30	30	0	1415	1420	5	P		9-18
P86-P103	92672	30	28	2	1459	1504	5	P		9-18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 10 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 9-30-02 To 10-3-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
110-116	GQ	30	29	1	1143	1148	5	P		9-30
116-117	GQ	30	30	0	1150	1155	5	P		9-30
111-116	GQ	30	27	3	1136	1141	5	P		9-30
106-116	GQ	30	27	3	1124	1129	5	P		9-30
106-119	GQ	30	28	2	1055	1100	5	P		9-30
116-119	GQ	30	30	0	1102	1107	5	P		9-30
119-120	GQ	30	29	1	1105	1110	5	P		9-30
117-120	GQ	30	28	2	1105	1110	5	P		9-30
117-118	GQ	30	28	2	0724	0729	5	P		10-1
117-118	GQ	30	30	0	0729	0734	5	P		10-1
117-118	GQ	30	30	0	0732	0737	5	P		10-1
117-118	GQ	30	30	0	0749	0754	5	P		10-1
118-121	GQ	30	30	0	0749	0754	5	P		10-1
120-121	GQ	30	30	0	0748	0753	5	P		10-1
121-124	GQ	30	30	0	0750	0755	5	P		10-3
122-124	GQ	30	28	2	0743	0748	5	P		10-3
121-122	GQ	30	29	1	0742	0747	5	P		10-3
124-125	GQ	30	27	3	0748	0753	5	P		10-3
122-125	GQ	30	30	0	0744	0749	5	P		10-3
123-125	GQ	30	30	0	0745	0750	5	P		10-3
123-125	GQ	30	29	1	0749	0752	5	P		10-3
122-123	GQ	30	30	0	0756	0801	5	P		10-3
118-122	GQ	30	29	1	1553	1558	5	P		10-3

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 11 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 10-3-02 To 10-5-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
122-123	GQ	30	30	0	1550	1555	5	P		10-3
125-153	GQ	30	30	0	0817	0822	5	P		10-4
125-151	GQ	30	30	0	0819	0824	5	P		10-4
123-151	GQ	30	30	0	0850	0855	5	P		10-4
151-152	GQ	30	30	0	0845	0850	5	P		10-4
151-152	GQ	30	28	2	0835	0840	5	P		10-4
151-152	GQ	30	30	0	0834	0839	5	P		10-4
151-152	GQ	30	30	0	0735	0740	5	P		10-4
151-153	GQ	30	29	1	0732	0737	5	P		10-4
152-154	GQ	30	28	2	0746	0751	5	P		10-4
153-154	GQ	30	30	0	0805	0810	5	P		10-4
153-155	GQ	30	30	0	0805	0810	5	P		10-4
154-155	GQ	30	30	~~8050~~	0805	0810	5	P		10-4
126-154	GQ	30	30	0	1018	1023	5	P		10-4
115-156	GQ	30	28	2	0720	0725	5	P		10-5
116-156	GQ	30	30	0	0814	0819	5	P		10-5
156-157	GQ	30	30	0	0717	0722	5	P		10-5
117-157	GQ	30	30	0	0718	0723	5	P		10-5
157-158	GQ	30	28	2	0724	0729	5	P		10-5
118-158	GQ	30	27	3	0724	0729	5	P		10-5
158-159	GQ	30	29	1	0825	0830	5	P		10-5
122-159	GQ	30	29	1	0825	0830	5	P		10-5
159-160	GQ	30	30	0	0826	0831	5	P		10-5

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 12 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-5-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
123-160	GQ	30	30	0	0840	0845	5	P		10-5
160-161	GQ	30	30	0	0850	0855	5	P		10-5
151-161	GQ	30	28	2	0852	0857	5	P		10-5
161-162	GQ	30	30	0	0855	0900	5	P		10-5
152-162	GQ	30	29	1	0910	0915	5	P		10-5
162-163	GQ	30	30	0	0857	0902	5	P		10-5
152-163	GQ	30	30	0	0920	0925	5	P		10-5
150-152	GQ	30	30	0	0928	0933	5	P		10-5
150-163	GQ	30	28	2	0930	0935	5	P		10-5
163-166	GQ	30	30	0	0931	0936	5	P		10-5
163-166	GQ	30	30	0	0940	0945	5	P		10-5
163-167	GQ	30	30	0	0942	0947	5	P		10-5
163-164	GQ	30	27	3	0947	0952	5	P		10-5
164-168	GQ	30	30	0	0954	0959	5	P		10-5
164-165	GQ	30	30	0	1002	1007	5	P		10-5
165-168	GQ	30	30	0	1108	1113	5	P		10-5
165-169	GQ	30	28	2	1108	1113	5	P		10-5
168-169	GQ	30	27	3	1108	1113	5	P		10-5
169-170	GQ	30	28	2	1130	1135	5	P		10-5
168-170	GQ	30	30	0	1120	1125	5	P		10-5
170-171	GQ	30	28	2	1125	1130	5	P		10-5
168-171	GQ	30	28	2	1124	1129	5	P		10-5
149-150	GQ	30	28	2	1136	1141	5	P		10-5

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 13 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-5-02 to 10-7-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
148-149	GQ	30	30	0	1143	1148	5	P		10-5
148-149	GQ	30	30	0	1139	1144	5	P		10-5
149-150	GQ	30	30	0	0838	0843	5	P		10-5
167-168	GQ	30	28	2	1101	1106	5	P		10-5
166-167	GQ	30	30	0	1055	1100	5	P		10-5
150-166	GQ	30	28	2	1056	1101	5	P		10-5
149-150	GQ	30	30	0	0932	0937	5	P		10-5
147-148	GQ	30	28	2	1317	1322	5	P		10-5
146-147	GQ	30	30	0	1320	1325	5	P		10-5
145-146	GQ	30	28	2	1355	1400	5	P		10-5
144-145	GQ	30	27	3	1359	1404	5	P		10-5
143-144	GQ	30	30	0	1358	1403	5	P		10-5
142-143	GQ	30	28	2	1423	1428	5	P		10-5
141-142	GQ	30	28	2	1425	1430	5	P		10-5
140-141	GQ	30	28	2	1427	1432	5	P		10-5
139-140	GQ	30	29	1	1512	1517	5	P		10-5
138-139	GQ	30	27	3	1522	1527	5	P		10-5
137-138	GQ	30	28	2	1532	1537	5	P		10-5
136-137	GQ	30	28	2	1540	1545	5	P		10-5
141-142	GQ	30	28	2	2:25	2:30	5	P		10-5
135-136	GQ	30	30	0	0825	0830	5	P		10-7
134-135	GQ	30	30	0	0825	0830	5	P		10-7
133-134	GQ	30	30	0	0824	0829	5	P		10-7

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

141-142

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 14 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10-5-02 TO 10-7-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
133-134	GQ	30	29	1	0835	0840	5	P		10-7
152-166	GQ	30	30	0	0920	0925	5	P		10-5
150-152	GQ	30	30	0	0928	0933	5	P		10-5
149-152	GQ	30	29	1	1315	1320	5	P		10-5
148-152	GQ	30	29	1	1315	1320	5	P		10-5
147-152	GQ	30	30	0	1317	1322	5	P		10-5
146-152	GQ	30	28	2	1355	1400	5	P		10-5
145-152	GQ	30	30	0	1355	1400	5	P		10-5
144-152	GQ	30	28	2	1359	1404	5	P		10-5
142-152	GQ	30	30	0	1423	1428	5	P		10-5
143-152	GQ	30	30	0	1019	1024	5	P		10-7
141-152	GQ	30	29	1	1425	1430	5	P		10-5
140-152	GQ	30	30	0	1428	1433	5	P		10-5
139-152	GQ	30	30	0	1519	1524	5	P		10-5
138-152	GQ	30	28	2	1525	1530	5	P		10-5
137-152	GQ	30	29	1	1540	1545	5	P		10-5
136-152	GQ	30	28	2	1545	1550	5	P		10-5
136-173	GQ	30	28	2	0735	0800	5	P		10-7
152-173	GQ	30	30	0	0755	0800	5	P		10-7
135-173	GQ	30	28	2	0809	0814	5	P		10-7
134-173	GQ	30	29	1	0805	0810	5	P		10-7
134-152	GQ	30	30	0	0805	0810	5	P		10-7
133-134	GQ	30	30	0	0824	0829	5	P		10-7

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

143-152
141-142 West side pg. 13

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 15 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 10-7-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
133-152	GQ	30	30	0	0856	0901	5	P		10-7
132-133	GQ	30	29	1	0823	0828	5	P		10-7
132-152	GQ	30	28	2	0858	0903	5	P		10-7
131-132	GQ	30	30	0	0822	0827	5	P		10-7
131-152	GQ	30	30	0	0858	0903	5	P		10-7
130-131	GQ	30	30	0	0821	0826	5	P		10-7
130-152	GQ	30	30	0	0859	0904	5	P		10-7
129-130	GQ	30	30	0	0934	0939	5	P		10-7
129-152	GQ	30	29	1	0859	0904	5	P		10-7
128-129	GQ	30	30	0	0942	0947	5	P		10-7
128-152	GQ	30	28	2	0859	0904	5	P		10-7
128-154	GQ	30	30	0	1005	1010	5	P		10-7
127-128	GQ	30	27	3	0943	0948	5	P		10-7
127-154	GQ	30	28	2	1005	1010	5	P		10-7
126-127	GQ	30	30	0	0943	0948	5	P		10-7
126-174	GQ	30	30	0	0944	0949	5	P		10-7
154-174	GQ	30	30	0	1000	1005	5	P		10-7
174-175	GQ	30	30	0	0949	0954	5	P		10-7
154-175	GQ	30	29	1	1002	1007	5	P		10-7
175-176	GQ	30	30	0	1003	1008	5	P		10-7
155-176	GQ	30	30	0	1003	1008	5	P		10-7
176-177	GQ	30	30	0	1055	1100	5	P		10-7
177-178	GQ	30	30	0	1102	1107	5	P		10-7

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 16 Secondary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 10-7-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
176-179	GQ	30	30	0	1055	1100	5	P		10-7
177-179	GQ	30	30	0	1055	1100	5	P		10-7
178-179	GQ	30	30	0	1103	1108	5	P		10-7
179-180	GQ	30	30	0	1122	1127	5	P		10-7
180-181	GQ	30	30	0	1130	1135	5	P		10-7
181-182	GQ	30	30	0	1132	1137	5	P		10-7
182-183	GQ	30	30	0	1132	1137	5	P		10-7
183-126	GQ	30	30	0	1133	1138	5	P		10-7

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 1- Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	DATE	COMMENTS
1P-2P	GQ			0	8:11					9/25	
2P-3P	GQ	30	30	0	8:11	8:16	5	P		9-25	
3P-4P	GQ	30	30	0	8:15	8:20	5	P		9-25	
4P-5P	GQ	30	30	0	8:18	8:23	5	P		9-25	
5P-6P	GQ	30	30	0	8:22	8:27	5	P		9-25	
6P-7P	GQ	30	29	1	9:00	9:05	5	P		9-25	
7P-8P	GQ	30	28	2	9:03	9:08	5	P		9-25	
8P-9P	GQ	30	29	1	9:04	9:09	5	P		9-25	
9P-10P	GQ	30	28	2	9:07	9:12	5	P		9-25	
10P-11P	GQ	30	29	1	9:14	9:19	5	P		9-25	
11P-12P	GQ	30	29	1	9:37	9:42	5	P		9-25	
12P-13P	GQ	30	30	0	9:41	9:46	5	P		9-25	
13P-14P	GQ	30	28	2	9:42	9:47	5	P		9-25	
14P-15P	GQ	30	27	3	10:10	10:15	5	P		9-25	
15P-16P	GQ	30	28	2	10:11	10:16	5	P		9-25	
16P-17P	GQ	30	30	0	10:12	10:17	5	P		9-25	
17P-18P	GQ	30	28	2	10:15	10:20	5	P		9-25	
18P-19P	GQ	30	29	1	10:16	10:21	5	P		9-25	
19P-20P	GQ	30	27	3	10:25	10:30	5	P		9-25	
20P-21P	GQ	30	28	2	10:25	10:30	5	P		9-25	
21P-22P	GQ	30	30	0	10:21	10:26	5	P		9-25	
22P-23P	GQ	30	29	1	10:30	10:30	5	P		9-25	
23P-24P	GQ	30	30	0	11:05	11:10	5	P		9-25	

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 2 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	DATE	COMMENTS
24P-25P	GQ	30	28	2	11:04	11:09	5	P		9/25	
25P-26P	GQ	30	28	2	11:06	11:11	5	P		9-25	
26P-27P	GQ	30	28	2	11:07	11:12	5	P		9-25	
27P-28P	GQ	30	30	0	11:12	11:17	5	P		9-25	
28P-29P	GQ	30	30	0	11:17	11:22	5	P		9-25	
29P-30P	GQ	30	30	0	11:18	11:23	5	P		9-25	
30P-31P	GQ	30	30	0	11:19	11:24	5	P		9-25	
31P-32P	GQ	30	28	2	11:25	11:30	5	P		9-25	
32P-33P	GQ	30	29	1	11:29	11:34	5	P		9-25	
33P-34P	GQ	30	30	0	1:40	1:45	5	P		9-25	
34P-35P	GQ	30	29	1	1:42	1:47	5	P		9-25	
35P-36P	GQ	30	29	1	1:44	1:49	5	P		9-25	
36P-37P	GQ	30	29	1	1:50	1:55	5	P		9-25	
37P-38P	GQ	30	28	2	1:54	1:59	5	P		9-25	
38P-39P	GQ	30	28	2	1:53	1:58	5	P		9-25	
37P-39P	GQ	30	27	3	1:51	1:56	5	P		9/25	
40P-45P	GQ	30	30	0	0730	0735	5	P		9-26	
39P-40P	GQ	30	30	0	0740	0745	5	P		9-26	
37P-40P	GQ	30	29	1	0741	0746	5	P		9-26	
37P-43P	GQ	30	30	0	0753	0758	5	P		9-26	
36P-43P	GQ	30	30	0	0756	0801	5	P		9-26	
34P-42P	GQ	30	30	0	0805	0810	5	P		9-26	
32P-42P	GQ	30	30	0	0807	0812	5	P		9-26	

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 3 primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
31P-42P	GQ	30	29	1	1558	1605	5	P		9-25
42P-46P	GQ	30	30	0	1443	1448	5	P		9-25
30P-46P	GQ	30	27	3	1555	1600	5	P		9-25
28P-46P	GQ	30	30	0	1553	1558	5	P		9-25
27P-42P	GQ	30	29	1	1552	1557	5	P		9-25
26P-42P	GQ	30	27	3	1539	1544	5	P		9-25
42P-44P	GQ	30	30	0	1428	1433	5	P		9-25
42P-43P	GQ	30	30	0	1430	1435	5	P		9-25
43P-44P	GQ	30	29	1	1433	1438	5	P		9-25
26P-44P	GQ	30	30	0	1536	1541	5	P		9-25
25P-44P	GQ	30	29	1	1536	1541	5	P		9-25
41P-43P	GQ	30	28	2	1408	1413	5	P		9-25
40P-43P	GQ	30	29	1	1408	1413	5	P		9-25
40P-41P	GQ	30	30	0	1409	1414	5	P		9-25
23P-41P	GQ	30	30	0	1525	1530	5	P		9-25
22P-41P	GQ	30	28	2	1521	1526	5	P		9-25
21P-41P	GQ	30	29	1	1516	1521	5	P		9-25
20P-40P	GQ	30	28	2	1511	1516	5	P		9-25
19P-40P	GQ	30	29	1	1510	1515	5	P		9-25
18P-40P	GQ	30	27	3	1504	1509	5	P		9-25
17P-45P	GQ	30	29	1	1502	1507	5	P		9-25
16P-45P	GQ	30	30	0	1500	1505	5	P		9-25
15P-45P	GQ	30	30	0	1500	1505	5	P		9-25

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 4 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
45P-47P	GQ	30	29	1	1447	1452	5	P		9-27
47P-49P	GQ	30	30	0	1441	1446	5	P		9-27
47P-49P	GQ	30	30	0	1440	1445	5	P		9-27
47P-48P	GQ	30	27	3	1440	1445	5	P		9-27
48P-49P	GQ	30	28	2	1438	1443	5	P		9-27
48P-56P	GQ	30	28	2	1505	1510	5	P		9-27
48P-50P	GQ	30	28	2	1435	1440	5	P		9-27
49P-50P	GQ	30	29	1	1437	1442	5	P		9-27
50P-51P	GQ	30	29	1	1452	1457	5	P		9-27
50P-51P	GQ	30	30	0	1453	1458	5	P		9-27
50P-56P	GQ	30	29	1	0943	0948	5	P		9-28
56P-57P	GQ	30	30	0	0940	0945	5	P		9-28
51P-57P	GQ	30	28	2	0932	0937	5	P		9-28
57P-58P	GQ	30	28	2	0948	0953	5	P		9-28
51P-52P	GQ	30	30	0	1553	1558	5	P		9-27
P52P-58P	GQ	30	27	3	1555	1600	5	P		9-27
51P-52P	GQ	30	28	2	0730	0735	5	P		9-30
52P-59P	GQ	30	30	0	1320	1325	5	P		9-30
53P-59P	GQ	30	28	2	1556	1601	5	P		9-27
52P-53P	GQ	30	30	0	1317	1322	5	P		9-30
53P-54P	GQ	30	30	0	1629	1634	5	P		9-27
54P-60P	GQ	30	30	0	1612	1617	5	P		9-27
54P-60P	GQ	30	29	1	1600	1605	5	P		9-27

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 5 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
60P-61P	GQ	30	30	0	1027	1032	5	P		9-30
55P-61P	GQ	30	28	2	1614	1621	5	P		9-27
55P-61P	GQ	30	28	2	1618	1623	5	P		9-27
54P-55P	GQ	30	30	0	1616	1621	5	P		9-27
55P-62P	GQ	30	27	3	1004	1009	5	P		9-30
62P-63P	GQ	30	30	0	0955	1000	5	P		9-30
62P-71P	GQ	30	30	0	1007	1012	5	P		9-30
62P-70P	GQ	30	30	0	1007	1012	5	P		9-30
P61P-70P	GQ	30	30	0	1005	1010	5	P		9-30
70P-72P	GQ	30	30	0	1028	1033	5	P		9-30
71P-72P	GQ	30	28	2	1028	1033	5	P		9-30
70P-71P	GQ	30	30	0	1008	1013	5	P		9-30
63P-71P	GQ	30	29	1	0948	0953	5	P		9-30
72P-73P	GQ	30	30	0	1031	1036	5	P		9-30
71P-73P	GQ	30	30	0	0950	0955	5	P		9-30
63P-64P	GQ	30	30	0	0947	0952	5	P		9-30
64P-73P	GQ	30	30	0	0945	0950	5	P		9-30
64P-65P	GQ	30	30	0	0945	0950	5	P		9-30
65P-73P	GQ	30	29	1	0942	0947	5	P		9-30
73P-74P	GQ	30	30	0	0943	0948	5	P		9-30
74P-75P	GQ	30	30	0	0922	0927	5	P		9-30
66P-75P	GQ	30	27	3	0917	0922	5	P		9-30
65P-66P	GQ	30	28	2	0923	0928	5	P		9-30

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 6 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
66P-67P	GQ	30	30	0	0735	0740	5	P		9-30
66P-67P	GQ	30	30	0	0917	0922	5	P		9-30
75P-76P	GQ	30	30	0	0918	0923	5	P		9-30
75P-77P	GQ	30	30	0	1041	1046	5	P		9-30
76P-77P	GQ	30	29	1	1041	1046	5	P		9-30
77P-78P	GQ	30	30	0	1043	1048	5	P		9-30
76P-78P	GQ	30	29	1	0907	0912	5	P		9-30
68P-78P	GQ	30	28	2	0904	0909	5	P		9-30
67P-68P	GQ	30	30	0	0750	0755	5	P		9-30
67P-68P	GQ	30	30	0	0742	0747	5	P		9-30
68P-69P	GQ	30	30	0	0908	0913	5	P		9-30
69P-79P	GQ	30	27	3	0910	0915	5	P		9-30
78P-79P	GQ	30	30	0	0908	0913	5	P		9-30
79P-84P	GQ	30	29	1	1605	1610	5	P		10-1
79P-87P	GQ	30	30	0	1610	1615	5	P		10-1
84P-87P	GQ	30	28	2	1610	1615	5	P		10-1
85P-87P	GQ	30	28	2	1612	1617	5	P		10-1
80P-84P	GQ	30	28	2	1603	1608	5	P		10-1
69P-80P	GQ	30	30	0	1109	1114	5	P		10-1
69P-80P	GQ	30	28	2	1106	1111	5	P		10-1
69P-80P	GQ	30	28	2	1110	1115	5	P		10-1
69P-80P	GQ	30	30	0	1117	1122	5	P		10-1
80P-81P	GQ	30	30	0	1128	1133	5	P		10-1

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 7 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
84P-85P	GQ	30	29	1	1555	1600	5	P		10-1
85P-86P	GQ	30	29	1	1550	1555	5	P		10-1
81P-85P	GQ	30	29	1	1546	1551	5	P		10-1
81P-82P	GQ	30	30	0	1132	1137	5	P		10-1
82P-83P	GQ	30	30	0	1135	1140	5	P		10-1
83P-88P	GQ	30	27	3	1150	1155	5	P		10-1
86P-88P	GQ	30	27	3	1548	1553	5	P		10-1
44P-R-26	GQ	30	30	0	0710	0715	5	P		10-5
43P-R-24	GQ	30	30	0	0720	0725	5	P		10-5
41P-R-24	GQ	30	28	2	0720	0725	5	P		10-5
41P-R-23	GQ	30	29	1	0722	0727	5	P		10-5
40P-R-21	GQ	30	28	2	0725	0730	5	P		10-5
45P-R-18	GQ	30	29	1	0727	0732	5	P		10-5
45P-R-15	GQ	30	30	0	0734	0739	5	P		10-5
47P-R-15	GQ	30	30	0	0736	0741	5	P		10-5
48P-R-12	GQ	30	29	1	0738	0743	5	P		10-5
56P-R-8	GQ	30	28	2	0740	0745	5	P		10-5
57P-R-5	GQ	30	29	1	0742	0747	5	P		10-5
57P-R-4	GQ	30	30	0	0746	0751	5	P		10-5
58P-R-1	GQ	30	30	0	0750	0755	5	P		10-5
R-1	DK								P	10-5
R 2	DK								P	10-5
R 3	DK								P	10-5

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 8 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
R-4	DK							/	P	10-5 Repairs at panel extention
5	DK								P	10-5
6	DK								P	10-5
7	DK								P	10-5
8	DK								P	10-5
9	DK								P	10-5
10	DK								P	10-5
11	DK								P	10-5
12	DK								P	10-5
13	DK								P	10-5
14	DK								P	10-5
15	DK								P	10-5
16	DK								P	10-5
17	DK								P	10-5
18	DK								P	10-5
40 P-R-37	GQ	30	30	0	1022	1027	5	P		10-5
43-R-37	GQ	30	30	0	1023	1028	5	P		10-5
R-37-R-37	GQ	30	30	0	1020	1025	5	P		10-5
R-36-R-36	GQ	30	30	0	1025	1030	5	P		10-5
43-R-36	GQ	30	30	0	1026	1031	5	P		10-5
42-R-34	GQ	30	30	0	1031	1036	5	P		10-5
R-33-R-32	GQ	30	30	0	1042	1047	5	P		10-5
42-R-32	GQ	30	30	0	1033	1038	5	P		10-5

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 8.9 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
42-R-30	GQ	30	27	3	1036	1041	5	P		10-5 repairs at Panel extention
R 19	DK								P	10-5
R 20	DK								P	10-5
R 21	DK								P	10-5
R 22	DK								P	10-5
R 23	DK								P	10-5
R 24	DK								P	10-5
R 25	DK								P	10-5
41-R-23	GQ	30	30	0	1336	1341	5	P		10-5
R 26	DK								P	10-5
~~R 27~~	~~DK~~									
R 28	DK								P	10-7
R 29	DK								P	10-7
R 30	DK								P	10-7
R 31	DK								P	10-7
R 32	DK								P	10-7
R 33	DK								P	10-7
R 34	DK								P	10-7
R 35	DK								P	10-7
R 36	DK								P	10-7
R 37	DK								P	10-7
106-107	GQ	30	30	0	0930	0935	5	P		10-14
96-106	GQ	30	28	2	0905	0910	5	P		10-14

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 10 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
~~106-107~~	~~GQ~~	~~0933~~	~~0938~~	~~5~~						
106-107	GQ	30	30	0	0933	0938	5	P		10-14
106-107	GQ	30	30	0	0949	0954	5	P		10-14
106-107	GQ	30	27	3	0947	0952	5	P		10-14
95-96	GQ	30	29	1	0925	0930	5	P		10-14
95-96	GQ	30	30	0	0918	0923	5	P		10-14
95-96	GQ	30	30	0	0914	0919	5	P		10-14
95-96	GQ	30	30	0	0830	0835	5	P		10-14
94-95	GQ	30	30	0	0834	0839	5	P		10-14
94-95	GQ	30	30	0	1003	1008	5	P		10-14
95-105	GQ	30	27	3	0905	0910	5	P		10-14
105-106	GQ	30	28	2	0904	0909	5	P		10-14
103-105	GQ	30	30	0	1019	1024	5	P		10-14
103-104	GQ	30	30	0	1019	1024	5	P		10-14
104-105	GQ	30	30	0	1008	1013	5	P		10-14
93-94	GQ	30	30	0	1007	1012	5	P		10-14
93-94	GQ	30	30	0	0827	0832	5	P		10-14
93-94	GQ	30	29	1	0829	0834	5	P		10-14
92-93	GQ	30	30	0	0820	0825	5	P		10-14
92-93	GQ	30	30	0	0847	0852	5	P		10-14
94-105	GQ	30	30	0	0904	0909	5	P		10-14
93-104	GQ	30	27	3	0847	0852	5	P		10-14
102-104	GQ	30	30	0	0847	0852	5	P		10-14

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 11 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
92-102	GQ	30	30	0	0847	0852	5	P		10-14
102-103	GQ	30	28	2	1023	1028	5	P		10-14
101-102	GQ	30	28	2	1111	1116	5	P		10-14
100-101	GQ	30	30	0	1108	1113	5	P		10-14
100-102	GQ	30	28	2	1029	1034	5	P		10-14
91-100	GQ	30	30	0	1032	1037	5	P		10-14
91-92	GQ	30	30	0	0822	0827	5	P		10-14
90-91	GQ	30	30	0	0755	0800	5	P		10-14
90-100	GQ	30	30	0	1033	1038	5	P		10-14
98-100	GQ	30	30	0	1100	1105	5	P		10-14
90-98	GQ	30	30	0	1058	1103	5	P		10-14
99-100	GQ	30	29	1	1106	1111	5	P		10-14
98-99	GQ	30	30	0	1102	1107	5	P		10-14
99-101	GQ	30	30	0	1108	1113	5	P		10-14
97-99	GQ	30	28	2	1102	1107	5	P		10-14
97-98	GQ	30	30	0	1058	1103	5	P		10-14
96-97	GQ	30	29	1	1045	1050	5	P		10-14
89-97	GQ	30	29	1	1034	1039	5	P		10-14
89-90	GQ	30	29	1	0754	0759	5	P		10-14
83-89	GQ	30	27	3	0752	0757	5	P		10-14
83-89	GQ	30	28	2	1046	1051	5	P		10-14
88-97	GQ	30	30	0	1050	1055	5	P		10-14
96-135	GQ	30	30	0	0933	0938	5	P		10-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 12 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
96-134	GQ	30	30	0	0945	0950	5	P		10-16
134-135	GQ	30	29	1	0956	1001	5	P		10-16
133-134	GQ	30	28	2	0958	1003	5	P		10-16
133-96	GQ	30	30	0	0958	1003	5	P		10-16
131-133	GQ	30	30	0	1019	1024	5	P		10-16
131-132	GQ	30	30	0	1019	1024	5	P		10-16
132-133	GQ	30	27	3	1015	1020	5	P		10-16
96-132	GQ	30	28	2	1022	1027	5	P		10-16
130-132	GQ	30	30	0	1022	1027	5	P		10-16
130-131	GQ	30	28	2	1022	1027	5	P		10-16
96-130	GQ	30	30	0	1038	1043	5	P		10-16
128-130	GQ	30	28	2	1038	1043	5	P		10-16
129-130	GQ	30	28	2	1040	1045	5	P		10-16
128-129	GQ	30	29	1	1040	1045	5	P		10-16
96-128	GQ	30	28	2	1101	1106	5	P		10-16
127-128	GQ	30	29	1	1101	1106	5	P		10-16
127-129	GQ	30	28	2	1106	1111	5	P		10-16
96-127	GQ	30	27	3	1101	1106	5	P		10-16
126-127	GQ	30	28	2	1109	1114	5	P		10-16
96-126	GQ	30	29	1	1125	1130	5	P		10-16
125-126	GQ	30	30	0	1125	1130	5	P		10-16
96-125	GQ	30	30	0	1125	1130	5	P		10-16
124-125	GQ	30	30	0	1128	1133	5	P		10-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 13 primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 10-16-02

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
96-124	GQ	30	30	0	1128	1133	5	P		10-16
123-124	GQ	30	29	1	1130	1135	5	P		10-16
96-123	GQ	30	28	2	1145	1150	5	P		10-16
122-123	GQ	30	30	0	1145	1150	5	P		10-16
96-122	GQ	30	29	1	1144	1149	5	P		10-16
121-122	GQ	30	30	0	1147	1152	5	P		10-16
96-121	GQ	30	30	0	1147	1152	5	P		10-16
120-121	GQ	30	30	0	1149	1154	5	P		10-16
96-120	GQ	30	30	0	1310	1315	5	P		10-16
96-120	GQ	30	30	0	1309	1314	5	P		10-16
119-120	GQ	30	28	2	1327	1332	5	P		10-16
96-119	GQ	30	30	0	1327	1332	5	P		10-16
118-119	GQ	30	29	1	1329	1334	5	P		10-16
96-118	GQ	30	28	2	1329	1334	5	P		10-16
117-119	GQ	30	28	2	1332	1337	5	P		10-16
117-119	GQ	30	28	2	1334	1339	5	P		10-16
117-118	GQ	30	30	0	1342	1347	5	P		10-16
116-117	GQ	30	30	0	1335	1340	5	P		10-16
116-118	GQ	30	30	0	1342	1347	5	P		10-16
96-116	GQ	30	30	0	1427	1432	5	P		10-16
115-116	GQ	30	30	0	1427	1432	5	P		10-16
~~114~~ 96-115	GQ	30	28	2	1427	1432	5	P		10-16
114-115	GQ	30	29	1	1430	1435	5	P		10-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 14 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
96-114	GQ	30	28	2	1430	1435	5	P		10-16
113-114	GQ	30	28	2	1432	1437	5	P		10-16
96-113	GQ	30	29	1	1448	1453	5	P		10-16
112-113	GQ	30	28	2	1448	1453	5	P		10-16
96-112	GQ	30	27	3	1448	1453	5	P		10-16
111-112	GQ	30	28	2	1452	1457	5	P		10-16
96-111	GQ	30	30	0	1452	1457	5	P		10-16
110-111	GQ	30	30	0	1455	1500	5	P		10-16
96-110	GQ	30	29	1	1511	1516	5	P		10-16
107-110	GQ	30	28	2	1511	1516	5	P		10-16
109-110	GQ	30	28	2	1516	1521	5	P		10-16
107-109	GQ	30	27	3	1516	1521	5	P		10-16
108-109	GQ	30	28	2	1524	1529	5	P		10-16
107-108	GQ	30	30	0	1546	1551	5	P		10-16
108-136	GQ	30	30	0	1546	1551	5	P		10-16
107-136	GQ	30	29	1	1546	1551	5	P		10-16
107-137	GQ	30	28	2	1550	1555	5	P		10-16
136-137	GQ	30	29	1	1550	1555	5	P		10-16
137-138	GQ	30	30	0	1551	1556	5	P		10-16
137-138	GQ	30	28	2	1602	1607	5	P		10-16
136-138	GQ	30	30	0	1604	1609	5	P		10-16
138-139	GQ	30	28	2	1605	1610	5	P		10-16
136-139	GQ	30	30	0	1605	1610	5	P		10-16

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 15 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
139-140	GQ	30	28	2	1610	1615	5	P		10-16
139-140	GQ	30	30	0	1610	1615	5	P		10-16
140-141	GQ	30	28	2	1620	1625	5	P		10-16
140-136	GQ	30	29	1	1620	1625	5	P		10-16
136-141	GQ	30	30	0	1620	1625	5	P		10-16
108-109	GQ	30	30	0	1540	1545	5	P		10-16
142-143	GQ	30	30	0	1055	1100	5	P		10-17
143-144	GQ	30	29	1	1055	1100	5	P		10-17
144-145	GQ	30	28	2	1057	1102	5	P		10-17
145-146	GQ	30	28	2	1058	1103	5	P		10-17
146-147	GQ	30	30	0	1100	1105	5	P		10-17
147-148	GQ	30	30	0	1105	1110	5	P		10-17
148-149	GQ	30	30	0	1106	1111	5	P		10-17
149-150	GQ	30	28	2	1108	1113	5	P		10-17
150-151	GQ	30	30	0	1109	1114	5	P		10-17
151-152	GQ	30	27	3	1110	1115	5	P		10-17
152-153	GQ	30	30	0	1125	1130	5	P		10-17
153-154	GQ	30	30	0	1127	1132	5	P		10-17
154-155	GQ	30	28	2	1128	1133	5	P		10-17
155-156	GQ	30	30	0	1133	1138	5	P		10-17
156-157	GQ	30	30	0	1134	1139	5	P		10-17
157-158	GQ	30	28	2	1313	1318	5	P		10-17
158-159	GQ	30	30	0	1314	1319	5	P		10-17

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 16 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
159-160	GQ	30	29	1	1315	1320	5	P		10-17
160-161	GQ	30	28	2	1318	1323	5	P		10-17
161-162	GQ	30	28	2	1319	1324	5	P		10-17
161-163	GQ	30	29	1	1319	1324	5	P		10-17
162-163	GQ	30	30	0	1319	1324	5	P		10-17
163-164	GQ	30	29	1	1332	1337	5	P		10-17
164-165	GQ	30	30	0	1346	1351	5	P		10-17
165-166	GQ	30	28	2	1348	1353	5	P		10-17
166-167	GQ	30	28	2	1355	1400	5	P		10-17
167-168	GQ	30	29	1	1353	1358	5	P		10-17
168-169	GQ	30	28	2	1354	1359	5	P		10-17
169-170	GQ	30	28	2	1411	1416	5	P		10-17
170-171	GQ	30	30	0	1413	1418	5	P		10-17
171-172	GQ	30	30	0	0803	0808	5	P		10-18
172-178	GQ	30	30	0	0808	0813	5	P		10-18
177-178	GQ	30	30	0	0906	0911	5	P		10-18
172-177	GQ	30	28	2	0808	0813	5	P		10-18
172-173	GQ	30	30	0	0810	0815	5	P		10-18
173-176	GQ	30	30	0	0815	0820	5	P		10-18
176-177	GQ	30	30	0	0900	0905	5	P		10-18
173-174	GQ	30	29	1	0817	0822	5	P		10-18
174-176	GQ	30	30	0	0817	0822	5	P		10-18
174-175	GQ	30	28	2	0820	0825	5	P		10-18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 17 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
175-176	GQ	30	30	0	0826	0831	5	P		10-18
174-175	GQ	30	30	0	0830	0835	5	P		10-18
175-179	GQ	30	30	0	0832	0837	5	P		10-18
179-180	GQ	30	28	2	0916	0921	5	P		10-18
180-181	GQ	30	29	1	0916	0921	5	P		10-18
179-181	GQ	30	30	0	0916	0921	5	P		10-18
181-182	GQ	30	30	0	0856	0901	5	P		10-18
176-181	GQ	30	30	0	0856	0901	5	P		10-18
177-182	GQ	30	30	0	0850	0855	5	P		10-18
176-179	GQ	30	30	0	0925	0930	5	P		10-18
173-174	GQ	30	30	0	0829	0834	5	P		10-18
161-163	GQ	30	30	0	1325	1330	5	P		10-17
94-169	GQ	30	30	0	0945	0950	5	P		10-18
93-168	GQ	30	28	2	0945	0950	5	P		10-18
92-167	GQ	30	29	1	0947	0952	5	P		10-18
91-166	GQ	30	28	2	0947	0952	5	P		10-18
90-165	GQ	30	30	0	0953	0958	5	P		10-18
89-164	GQ	30	30	0	0955	1000	5	P		10-18
83-163	GQ	30	29	1	1010	1015	5	P		10-18
82-162	GQ	30	30	0	1010	1015	5	P		10-18
81-160	GQ	30	28	2	1012	1017	5	P		10-18
80-159	GQ	30	30	0	1012	1017	5	P		10-18
69-158	GQ	30	30	0	1016	1021	5	P		10-18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 18-Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
68-157	GQ	30	29	1	1029	1034	5	P		10-18
67-156	GQ	30	30	0	1029	1034	5	P		10-18
67-156	GQ	30	29	1	1036	1041	5	P		10-18
66-155	GQ	30	30	0	1039	1044	5	P		10-18
66-155	GQ	30	28	2	1040	1045	5	P		10-18
65-154	GQ	30	30	0	1040	1045	5	P		10-18
64-153	GQ	30	30	0	1058	1103	5	P		10-18
63-152	GQ	30	29	1	1058	1103	5	P		10-18
62-151	GQ	30	30	0	1105	1110	5	P		10-18
55-150	GQ	30	28	2	1105	1110	5	P		10-18
55-150	GQ	30	30	0	1110	1115	5	P		10-18
54-149	GQ	30	30	0	1110	1115	5	P		10-18
54-149	GQ	30	30	0	1129	1134	5	P		10-18
53-148	GQ	30	29	1	1129	1134	5	P		10-18
52-147	GQ	30	30	0	1130	1135	5	P		10-18
51-146	GQ	30	29	1	1130	1135	5	P		10-18
51-146	GQ	30	30	0	1142	1147	5	P		10-18
50-145	GQ	30	30	0	1142	1147	5	P		10-18
49-144	GQ	30	30	0	1151	1156	5	P		10-18
47-143	GQ	30	30	0	1151	1156	5	P		10-18
45-142	GQ	30	30	0	1153	1158	5	P		10-18
~~45-142~~	~~GQ~~	~~30~~	~~28~~	~~2~~	~~1320~~	~~1325~~	~~5~~	~~P~~		~~10-18~~
45-38	GQ	30	28	2	1320	1325	5	P		10-18

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 19 Primary of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
38-40	GQ	30	29	1	1323	1328	5	P		10-18
96-171	DK								P	10-19
135-172	DK								P	10-19

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 1 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 1-21-03 To 1-24-03

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
Primary to Secondary	MA								P	~~1-22~~ 1-21 EXTRUDED
N2/N3	JS	30	30	0	0805	0810	5	P		1-22
N3/N4	JS	30	30	0	0816	0821	5	P		1-22
N4/N5	JS	30	30	0	0828	0833	5	P		1-22
N5/N6	JS	30	30	0	0836	0841	5	P		1-22
Primary Wrinkle	~~JS~~ MA								P	1-23 WRINKLE REPAIR, 12'
N6/N7	JS	30	30	0	0852	0857	5	P		1-23
N7/N8	JS	30	30	0	1500	1505	5	P		1-23
N8/N9	JS	30	30	0	1508	1513	5	P		1-23
N9/N10	JS	30	30	0	1518	1523	5	P		1-23
N10/N11	JS	30	30	0	1525	1530	5	P		1-23
N11/N12	JS	30	30	0	1532	1537	5	P		1-23
N12/N13	JS	30	30	0	1540	1545	5	P		1-23
N13/N14	JS	30	30	0	1548	1553	5	P		1-23
N14/N15	JS	30	30	0	1600	1605	5	P		1-23
N15/N16	JS	30	30	0	1618	1623	5	P		1-23 DUPLICATE
N16/N17	JS	30	30	0	~~1609~~ ~~1614~~		5	P		1-24
N17/N18	JS	30	30	0	0815 0828	0820 0833	5	P		1-24
N18/N19	JS	30	30	0	0836	0841	5	P		1-24
N19/N20	JS	30	30	0	0843	0848	5	P		1-24
N20/N21	JS	30	30	0	0855	0900	5	P		1-24
N21/N22	JS	30	30	0	0915	0920	5	P		1-24
N22/N23	JS	30	30	0	0925	0930	5	P		1-24
N15/N16	JS	30	30	0	1609	1614	5	P		1-23

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 2 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020, 32
DATE 1-24-03 to 1-27-03

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
N23/N24	JS	30	30	0	0937	0942	5	P		1-24
N24/N25	JS	30	30	0	0945	0950	5	P		1-24
N25/N26	JS	30	30	0	0955	1000	5	P		1-24
N26/N27	JS	30	30	0	1010	1015	5	P		1-24
N27/N28	JS	30	30	0	1021	1026	5	P		1-24
N28/N29	JS	30	30	0	1032	1037	5	P		1-24
N2-N7/primary S	MA								P	1-23
N2-N7/primary N	MA								P	1-23
N8-N29/primary S	MA								P	1-24
N8-N29/primary N	MA								P	1-25
I29/I30	JS	30	30	0	0902	0907	5	P		1-27
I28/I29	JS	30	30	0	0909	0914	5	P		1-27
I27/I28	JS	30	29	1	0916	0921	5	P		1-27
I26/I27	JS	30	30	0	0923	0928	5	P		1-27
I25/I26	JS	30	30	0	0930	0935	5	P		1-27
I24/I25	JS	30	30	0	0937	0942	5	P		1-27
I23/I24	JS	30	30	0	0944	0949	5	P		1-27
I22/I23	JS	30	30	0	0951	0956	5	P		1-27
I21/I22	JS	30	30	0	0958	1003	5	P		1-27
I20/I21	JS	30	29	1	1005	1010	5	P		1-27
I19/I20	JS	30	30	0	1012	1017	5	P		1-27
I18/I19	JS	30	30	0	1019	1024	5	P		1-27
I17/I18	JS	30	28	2	1025	1030	5	P		1-27

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

NON-DESTRUCTIVE TEST LOG

SHEET 3 berms of
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 1-27-03 To 1-28-03

SEAM NO.	TECH I.D.	AIR TEST PRESSURE (psi) START	END	DROP	TIME START	END	DURATION	P/F	VACUUM BOX P/F	COMMENTS
I16/I17	JS	30	30	0	1037	1042	5	P		1-27
I15/I16	JS	20	30	0	1045	1050	5	P		1-27
I14/I15	JS	30	30	0	1058	1103	5	P		1-27
I13/I14	JS	30	30	0	1105	1110	5	P		1-27
I12/I13	JS	30	30	0	1112	1117	5	P		1-27
I11/I12	JS	30	30	0	1119	1124	5	P		1-27
I10/I11	JS	30	30	0	1133	1138	5	P		1-27
I9/I10	JS	30	30	0	1305	1310	5	P		1-27
I8/I9	JS	30	30	0	1312	1317	5	P		1-27
I7/I8	JS	30	30	0	1320	1325	5	P		1-27
I6/I7	JS	30	30	0	1327	1332	5	P		1-27
I5/I6	JS	30	30	0	1334	1339	5	P		1-27
I4/I5	JS	30	30	0	1341	1346	5	P		1-27
I3/I4	JS	30	30	0	1353	1358	5	P		1-27
I2/I3	JS	30	30	0	1400	1405	5	P		1-27
I1/I2	JS	30	30	0	1407	1412	5	P		1-27
I1-I31/primary W	JS								P	1-28
I1-I31/primary E	JS								P	1-28
N1/primary	JS								P	1-28
I31/berm	JS								P	1-28

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

ATTACHMENT L

GEOMEMBRANE REPAIR LOGS

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 1 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/15/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-15	1	1-2-41		T		R.P.	227	9-16	92672	
9-15	2	2-3-41		T	2'	R.P.	227	9-16	92672	
9-15	3	3-4-41		T		R.P.	227	9-16	92672	
9-15	4	3-4-40-41-42		T		R.P.	227	9-16	92672	
9-15	5	4-5-40		T		R.P.	227	9-16	92672	
9-15	6	5-6-40		T		R.P.	227	9-16	92672	
9-15	7	6-7-40		T		R.P.	227	9-16	92672	
9-15	8	7-31-40		T		R.P.	227	9-16	92672	
9-15	9	7-8-31		T		R.P.	227	9-16	92672	
9-15	10	8-9-31		T		R.P.	227	9-16	92672	
9-15	11	9-10-31		T		R.P.	227	9-16	92672	
9-15	12	10-32-31		T	1'	R.P.	227	9-16	92672	
9-15	13	10-11-32		T	2'	R.P.	227	9-16	92672	
9-15	14	11-12-32		T		R.P.	227	9-16	92672	
9-15	15	12-13-32		T		R.P.	227	9-16	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	2 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/15/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-15	16	13-14-32-35		T		R.P.	227	9-16	92672	
9-15	17	14-32-35		T		R.P.	227	9-16	92672	
9-15	18	14-15-35		T		R.P.	227	9-16	92672	
9-15	19	15-16-35		T		R.P.	227	9-16	92672	
9-15	20	16-17-35		T		R.P.	227	9-16	92672	
9-15	21	17-35-36		T	3'	R.P.	227	9-16	92672	
9-15	22	17-18-36		T	2'	R.P.	227	9-16	92672	
9-15	23	18-19-36		T		R.P.	227	9-16	92672	
9-15	24	19-36		T	6'	R.P.	227	9-16	92672	6' patch
9-15	25	19-20-36		T		R.P.	227	9-16	92672	
9-15	26	20-21-36-47		T	4'	R.P.	227	9-16	92672	
9-15	27	22-23-47		T		R.P.	227	9-16	92672	
9-15	27A	21-22-47		T	2'	R.P.	227	9-16	92672	
9-15	28	23-38-47		T	4'	R.P.	227	9-16	92672	
9-15	29	23-24-38-39		T	4'	R.P.	227	9-16	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 3 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/15/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-15	30	24-38-39		T	4'	R.P.	227	9-16	92672	
9-15	31	24-25-39		T	2'	AR	2006	9-16	92672	
9-15	32	25-26-39		T	2'	AR	2006	9-16	92672	
9-15	33	26-27-39		T	2'	AR	2006	9-16	92672	
9-15	34	27-28-39		T		AR	2006	9-16	92672	
9-15	35	28-29-39		Ext.	10'x4'	AR	2006	9-16	92672	
9-15	36	29-30-39		T		AR	2006	9-16	92672	
9-15	37	30-55-39		T		AR	2006	9-16	92672	
9-15	38	55-56-39		T	2'	AR	2006	9-16	92672	
9-15	39	56-57-39		T		AR	2006	9-16	92672	
9-15	41	58-59-38		T		RP	227	9-16	92672	
9-15	42	59-60-38		T		RP	227	9-16	92672	
9-15	43	37-38-60		Ext	8'x7'	RP	227	9-16	92672	8' triangle patch
9-15	84	41-42-40		T	3'	RP	227	9-15	92672	
9-15	85	41-42-43		T	3'	RP	227	9-16	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	4 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/15/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-15	86	32-35-33		PTC	2'	AR	2006	9-15	92672	
9-15	124	39-56		DS	5'	AR	2006	9-16	92672	DT-24
9-15	162	43-41		BO	4'	RP	227	9-16	92672	
9-15	163	43-44		BO	3'	RP	227	9-16	92672	3' patch
9-15	164	43-44		BO	2'	RP	227	9-16	92672	2' patch
9-15	168	33-35		Si	Extrusion and patches	RP	227	9-16	92672	16' Ext Weld w/2' patches

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	5 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/16/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-16	77	1-2		BO	2'	RP	227	9-16	92672	
9-16	101	16-17		DS	5'	RP	227	9-17	92672	DT #1
9-16	102	56-57		DS	5'	RP	227	9-17	92672	DT #2
9-16	103	37-38		DS	5'	RP	227	9-17	92672	DT #3
9-16	104	33-35		DS	5'	RP	227	9-17	92672	DT #4
9-16	105	31-33		DS	5'	RP	227	9-17	92672	DT #5
9-16	106	31-40		DS	5'	RP	227	9-17	92672	DT #6
9-16	107	40-42		DS	5'	RP	227	9-17	92672	DT #7
9-16	111	38-39		DS	5'	RP	227	9-17	92672	DT #11

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 6 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 9/17/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-17	44	60-61-37		T	4'	RP	227	9-17	92672	
9-17	45	61-62-37		T		RP	227	9-17	92672	
9-17	46	35-62-63-64		EXT	16'x6'	RP	227	9-17	92672	16' triangle patch
9-17	47	64-65-33		T		RP	227	9-17	92672	
9-17	48	33-34-65		T		RP	227	9-17	92672	
9-17	49	65-66-34		T		RP	227	9-17	92672	
9-17	50	34-48-66		T		RP	227	9-17	92672	
9-17	51	66-67-48		T	2'	RP	227	9-17	92672	
9-17	52	48-49-67		T		RP	227	9-17	92672	
9-17	53	67-68-49		T		RP	227	9-17	92672	
9-17	54	49-50-68		T	2'	RP	227	9-17	92672	
9-17	55	68-69-50		T	2'	RP	227	9-17	92672	
9-17	56	50-51-69		T		RP	227	9-17	92672	
9-17	57	69-70-51		T		RP	227	9-17	92672	
9-17	58	51-53-70		T		RP	227	9-17	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	7 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/17/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-17	59	70-71-53		T	2'	RP	227	9-17	92672	
9-17	60	53-54-71		T		RP	227	9-17	92672	
9-17	61	71-92-54		T		RP	227	9-17	92672	
9-17	78	15		B	1'	RP	227	9-17	92672	Bead
9-17	79	17-18		PTC	12'X1'	AR	2006	9-17	92672	12' Cap
9-17	80	23-24		PTC	2'	AR	2006	9-17	92672	2' patch
9-17	81	23-24		PTC	1'	AR	2006	9-17	92672	1' patch
9-17	82	25		FD	1'	AR	2006	9-17	92672	1' patch
9-17	87	32-33-35		T	2'	AR	2006	9-17	92672	
9-17	88	32-33-31		T	2'	AR	2006	9-17	92672	
9-17	89	35-36		PTC	2'	AR	2006	9-17	92672	
9-17	90	35-36-37		T	2'	AR	2006	9-17	92672	
9-17	91	36-37-47		T	4'	AR	2006	9-17	92672	
9-17	92	37-38-47		T	2'	AR	2006	9-17	92672	
9-17	93	31-34-33		T	5'	AR	2006	9-19	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	8 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/17/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-17	94	31-34-48		T	2'	AR	2006	9-17	92672	
9-17	99	42-43-50		T	3'	AR	2006	9-17	92672	
9-17	100	43-44-50-51		T	4'	AR	2006	9-17	92672	
9-17	108	42-43		DS	5'	RP	227	9-17	92672	DT #8
9-17	109	44-45		DS	5'	RP	227	9-17	92672	DT #9
9-17	112	43-44		DS	5'	RP	227	9-17	92672	DT #12
9-17	113	34-48		DS	5'	AR	2006	9-17	92672	DT #13
9-17	125	16-35		DS	5'	AR	2006	9-17	92672	DT #25
9-17	126	68-69		DS	5'	RP	227	9-17	92672	DT #26
9-17	138	44-45-51		T	3'	AR	2006	9-17	92672	
9-17	139	43-50		BO	2'	AR	2006	9-17	92672	
9-17	140	51-52-45		BO	3'	AR	2006	9-17	92672	
9-17	141	45-46-52-54		T	3'	AR	2006	9-17	92672	
9-17	142	46-54		BO	5'	AR	2006	9-17	92672	
9-17	165	31-40		BO	3'	AR	2006	9-18	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	9 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/17/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-17	166	31-40		BO	3'	AR	2006	9-18	92672	
9-17	167	31-40		BO	3'	AR	2006	9-18	92672	
9-17	171	52-53-51		T	2'	AR	2006	9-18	92672	
9-17	172	52-53-54		T	2'	AR	2006	9-18	92672	
9-17	179	50-51		BO	2'	RP	227	9-18	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	10 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/18/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-18	40	57-58-38-39		Ext.	20'x20'	RP	227	9-18	92672	
9-18	62	92-93-54-81		T	2'	RP	227	9-18	92672	
9-18	63	93-94-81-82		T	2'	RP	227	9-18	92672	
9-18	64	94-95-82-84		T	2'	RP	227	9-18	92672	
9-18	65	95-84		PTC	2'	RP	227	9-18	92672	
9-18	66	95-96-84-85		T	2'	RP	227	9-18	92672	
9-18	67	96-97-85-87		T	2'	RP	227	9-18	92672	
9-18	68	97-98-87-88		T	2'	RP	227	9-18	92672	
9-18	69	98-99-88-89		T	5'	RP	227	9-18	92672	5' patch
9-18	70	99-100-89-90		T	2'	RP	227	9-18	92672	
9-18	71	90-91-100-101		T	3'	RP	227	9-18	92672	
9-18	72	91-107-101-112		T	3'	RP	227	9-18	92672	
9-18	73	107-108-112-113		T	3'	RP	227	9-18	92672	
9-18	95	40-48-31		T	2'	AR	2006	9-18	92672	
9-18	96	40-42-48		T	2'	AR	2006	9-18	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	11 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/18/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-18	97	48-49-42		T	3'	AR	2006	9-18	92672	
9-18	98	49-50-42		T	3'	AR	2006	9-18	92672	
9-19	110	45-46		DS	5'	AR	2006	9-18	92672	DT #10
9-18	114	53-54		DS	5'	AR	2006	9-18	92672	DT #14
9-18	115	46-72		DS	5'	AR	2006	9-18	92672	DT #15
9-18	116	72-73		DS	5'	AR	2006	9-18	92672	DT #16
9-18	117	73-74		DS	5'	AR	2006	9-18	92672	DT #17
9-18	118	74-75		DS	5'	AR	2006	9-18	92672	DT #18
9-18	119	75-76		DS	5'	AR	2006	9-18	92672	DT #19
9-18	120	76-77		DS	5'	AR	2006	9-18	92672	DT #20
9-18	121	77-78		DS	5'	AR	2006	9-18	92672	DT #21
9-18	122	78-79		DS	5'	AR	2006	9-18	92672	DT #22
9-18	123	79-80		DS	5'	AR	2006	9-18	92672	DT #23
9-18	127	81-82		DS	5'	RP	227	9-18	92672	DT #27
9-18	128	84-85		DS	5'	RP	227	9-18	92672	DT #28

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	12 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/18/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-18	129	86-88		DS	5'	RP	227	9-18	92672	DT-29
9-18	130	89-90		DS	5'	RP	227	9-18	92672	DT #30
9-18	131	99-100		DS	5'	RP	227	9-18	92672	DT #31
9-18	132	91-107		DS	5'	RP	227	9-18	92672	DT #32
9-18	143	72-81-54		T	6'	AR	2006	9-18	92672	
9-18	144	81-82-73-72		T	5'	AR	2006	9-19	92672	
9-18	145	73-74-82-83		T	4'	AR	2006	9-19	92672	
9-18	146	74-75-83-85		T	5'	AR	2006	9-19	92672	
9-18	147	75-76-85		T		RP	227	9-19	92672	13' ext. weld patched at ends
9-18	148	85-86-76		T	2'	RP	227	9-19	92672	
9-18	149	76-77-86-88		T	6'	RP	227	9-19	92672	
9-18	150	88-89-77		T	2'	Rp	227	9-19	92672	
9-18	151	89-102-77		T	2'	Ar	2006	9-19	92672	
9-18	152	79-89-102		T	2'	Ar	2006	9-19	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	13 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/18/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-18	153	78-102-77		T	5'	AR	2006	9-19	92672	
9-18	154	78-102-79		T	3'	AR	2006	9-19	92672	
9-18	155	79-90-89		T	3'	RP	227	9-19	92672	
9-18	156	79-90-80-91		T	2'	RP	227	9-19	92672	
9-18	169	72		Clamp Damage	2'	AR	2006	9-19	92672	
9-18	170	75-76		BO	4'	AR	2006	9-18	92672	
9-18	173	83-84-82		T	2'	AR	2006	9-19	92672	
9-18	174	83-84-85		T	2'	AR	2006	9-19	92672	
9-18	177	74		EE	1'	AR	2006	9-19	92672	Small patch
9-18	178	76-77		BO	3'	AR	2006	9-19	92672	
9-18	180	54-81		BO	2'	RP	227	9-18	92672	
9-18	181	85-86-87		T	2'	RP	227	9-18	92672	
9-18	182	86-88-87		T	2'	RP	227	9-18	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	14 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/19/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-19	74	108-109-113-114		T	2'	RP	227	9-19	92672	
9-19	75	114-115-109		T	3'	RP	227	9-19	92672	
9-19	76	109-111-115		T	4'	RP	227	9-19	92672	
9-19	83	98-99		PTC	4'	RP	227	9-19	92672	
9-19	133	108-109		DS	5'	RP	227	9-19	92672	DT #33
9-19	134	80-103		DS	5'	RP	227	9-19	92672	DT#34
9-19	135	103-104		DS	5'	RP	227	9-19	92672	DT #35
9-19	136	104-105		DS	5'	RP	227	9-19	92672	DT #36
9-19	137	105-106		DS	5'	RP	227	9-19	92672	DT #37
9-19	157	80-103-91-107		T	3'	RP	227	9-19	92672	
9-19	158	103-107-104		BO & T	Extrusion and Patches	RP	227	9-19	92672	9' ext weld & 4' & 2' patches
9-19	159	105-109-104		T	3'	RP	227	9-19	92672	
9-19	160	105-109-106-110		T	3'	RP	227	9-19	92672	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	15 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	9/19/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9-19	161	110-111-109		T	3'	RP	227	9-19	92672	
9-19	175	104-108-107		T	2'	RP	227	9-19	92672	
9-19	176	104-108-109		T	2'	RP	227	9-19	92672	
9-19	183	105-106		DS	5'	RP	227	9-20	DK	DT #37
9-19	184	105-106-109-111		T	3'	RP	227	9-20	DK	
9-19	186	109-110-116		T	4'	RP	227	9-20	DK	
9-19	188	106-110-116		T	2'	RP	227	9-20	DK	
9-19	189	110-111-116		T	2'	RP	227	9-20	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 16 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/5/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-5	190	111-116-115-156		T	4'	RP	227	10-9	DK	
10-5	191	115-156		DS	5'	RP	227	10-9	DK	DT #54
10-5	194	116	South end	SO	2'	RP	227	10-9	DK	Clamp tear nr. 116-156
10-5	195	116	South end	SO	2'	RP	227	10-9	DK	Clamp tear nr. 116-156
10-5	196	116-117-156-157		T	3'	RP	227	10-7	DK	
10-5	201	117-118-157-158		T	3'	RP	227	10-7	DK	
10-5	207	118-122-158-159		T	3'	RP	227	10-7	DK	
10-5	212	122-123-159-160		T	2'	RP	227	10-9	DK	
10-5	217	160-161-123-151		T	2'	RP	227	10-9	DK	
10-5	223	161-162-151-152		IO	20'	RP	227	10-9	DK	
10-5	248	146-147-152		T	3'	RP	227	10-9	DK	
10-5	249	147-148-152		DT	5'	RP	227	10-9	DK	DT #52
10-5	250	148-149-152		T	3'	RP	227	10-9	DK	
10-5	251	149-150-152		T	3'	RP	227	10-9	DK	
10-5	252	150-163-152		T	4'	RP	227	10-9	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	17 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/5/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-5	253	163-152-162		T	6'	RP	227	10-9	DK	
10-5	254	163-164-168-167		T	3'	RP	227	10-9	DK	
10-5	255	167-163		WC	10'	RP	227	10-9	DK	Sump Repair
10-5	256	163-167		BO	3'	RP	227	10-9	DK	
10-5	257	166-167-163		WC	14'	RP	227	10-9	DK	Sump Repair
10-5	258	163-166		DT	5'	RP	227	10-9	DK	DT #53
10-5	259	150-166-163		T	4'	RP	227	10-9	DK	
10-5	260	164-165-168		T	4'	RP	227	10-9	DK	
10-5	261	168-169-165		T	3'	RP	227	10-9	DK	
10-5	262	165-169-172		T	4'	RP	227	10-9	DK	
10-5	263	168-169-170		T	2'	RP	227	10-9	DK	
10-5	264	170-171-168		T	4'	RP	227	10-9	DK	
10-5	265	167-168		T	4'	RP	227	10-9	DK	@ anchor trench
10-5	266	149-150		BO	4'	RP	227	10-9	DK	
10-5	267	149-150		BO	4'	RP	227	10-9	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	18 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/5/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-5	268	148-149		BO	3'	RP	227	10-9	DK	
10-5	269	148-149		BO	4'	RP	227	10-9	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	19 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/7/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-7	192	116-119-106		DS,T	14'	RP	227	10-7	DK	DT #38 & 39
10-7	193	116-117-119-120		DS,T	10'	RP	227	10-7	DK	DT #40
10-7	197	117-118-120-121		DS,T	14'	RP	227	10-7	DK	DT #41 & 42
10-7	198	117-118		BO	4'	RP	227	10-7	DK	
10-7	199	117-118		BO	5'	RP	227	10-7	DK	
10-7	202	121-122-124		T	2'	RP	227	10-7	DK	
10-7	203	121-122-118		T	2'	RP	227	10-7	DK	
10-7	204	118-122		BO	3'	RP	227	10-7	DK	
10-7	205	118-122		BO	4'	RP	227	10-7	DK	
10-7	208	124-125-122		T	2'	RP	227	10-7	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	20 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/8/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-8	209	122-123-125		T	2'	RP	227	10-9	DK	
10-8	213	123 nr. 125		EE	1' or 2'	RP	227	10-9	DK	Multiple patches
10-8	214	123-125-151		T	2'	RP	227	10-9	DK	
10-8	215	151-153-125		T	2'	RP	227	10-9	DK	
10-8	218	154-155-153		T	2'	RP	227	10-8	DK	
10-8	219	153-154-151-152		T	2'	RP	227	10-8	DK	
10-8	220	151-152	North End	BO	2'	RP	227	10-8	DK	
10-8	221	151-152	North End	BO	3'	RP	227	10-8	DK	
10-8	222	152-153		DT	5'	RP	227	10-9	DK	DT #49
10-8	224	154-155-175-176		T	2'	RP	227	10-8	DK	
10-8	225	174-175-154		T	3'	RP	227	10-8	DK	
10-8	226	126-127-154		DT	5'	RP	227	10-8	DK	DT #45
10-8	227	127-128-154		T	2'	RP	227	10-8	DK	
10-8	228	152-154-128		T	3'	RP	227	10-8	DK	
10-8	229	128-129-152		T	2'	RP	227	10-8	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	21 Secondary	of	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/8/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-8	230	129-130-152		T	2'	RP	227	10-8	DK	
10-8	231	130-131-152		T	2'	RP	227	10-8	DK	
10-8	232	131-132-152		DT	5'	RP	227	10-8	DK	DT #46
10-8	233	132-133-152		T	3'	RP	227	10-8	DK	
10-8	234	133-134-152		T	3'	RP	227	10-8	DK	
10-8	271	133-134		BO	3'	RP	227	10-8	DK	
10-8	272	174 TO 183		Multi T	8'	RP	227	10-8	DK	Pie To 126
10-8	273	176-179		BO	15'	RP	227	10-8	DK	@ Pie
10-8	274	174-154-126		T	8'	RP	227	10-8	DK	
10-8	275	175-176		DT	5'	RP	227	10-8	DK	DT #55
10-8	276	176-177-179		T	2'	RP	227	10-8	DK	
10-8	277	177-178-179		T	2'	RP	227	10-8	DK	
10-8	280	123-125		T	3'	RP	227	10-8	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 22 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/9/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-9	200	117-118		BO	3'	RP	227	10-9	DK	
10-9	206	118-122		DS	5'	RP	227	10-9	DK	DT #43
10-9	210	122-123		DS	5'	RP	227	10-9	DK	DT #44
10-9	211	122-123		BO	3'	RP	227	10-9	DK	
10-9	216	123-151		DS	5'	RP	227	10-9	DK	
10-9	235	134-135-173		T	2'	RP	227	10-9	DK	
10-9	236	135-136-173		T	2'	RP	227	10-9	DK	
10-9	237	136-137-152		DT	5'	RP	227	10-9	DK	DT #47
10-9	238	137-138-152		T	2'	RP	227	10-9	DK	
10-9	239	138-152		DT	5'	RP	227	10-9	DK	DT #48
10-9	240	138-139-152		T	2'	RP	227	10-9	DK	
10-9	241	139-140-152		T	5'	RP	227	10-9	DK	
10-9	242	140-141-152		T	2'	RP	227	10-9	DK	
10-9	243	141-142-152		DT	5'	RP	227	10-9	DK	DT #51
10-9	244	142-143-152		T	2'	RP	227	10-9	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	23 Secondary	**of**	24
PROJECT TITLE	Section I Capacity Expansion		
PROJECT NO.	09200020.32		
DATE	10/9/02		

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-9	245	143-144-152		T	2'	RP	227	10-9	DK	
10-9	246	144-145-152		T	2'	RP	227	10-9	DK	
10-9	247	145-146-152		T	2'	RP	227	10-9	DK	
10-9	270	147-148		BO	2'	RP	227	10-9	DK	
10-9	278	134-152-173		T	2'	RP	227	10-9	DK	
10-9	279	152-136-173		T	2'	RP	227	10-9	DK	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 24 Secondary of 24
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 10/12/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10-12	281	66	Center	EE	4'	RP	227	10-12	DK	During rock installation of leak

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	1 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/26/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/26	16	17-18-45-40		DT	5'	A.R.	2022	10/5	D.K.	DT-3
9/26	17	17-18		DT	5'	A.R.	2022	10/5	D.K.	DT-1
9/26	18	18-19-ext		T	2'	A.R.	2022	10/5	D.K.	
9/26	20	19-20-ext		T	2'	A.R.	2022	10/5	D.K.	
9/26	21	20-21-40-41		T	5'	A.R.	2022	10/5	D.K.	
9/26	22	21-22-41		T	4'	A.R.	2022	10/5	D.K.	
9/26	23	24-25-43		Ext	38'	H.T.	2003	10/5	D.K.	
9/26	27	25-26-ext		T	2'	H.T.	2003	10/5	D.K.	
9/26	28	42-44-43		T	3'	H.T.	2003	10/5	D.K.	
9/26	29	42-44-26		T	2'	H.T.	2003	10/5	D.K.	
9/26	30	26-27-42		T	3'	H.T.	2003	10/5	D.K.	
9/26	31	27-28-42		T	10'	H.T.	2003	10/5	D.K.	
9/26	32	28-42-ext		BO	3'	H.T.	2003	10/5	D.K	
9/26	33	28-29-30-46		T	4'	H.T.	2003	10/5	D.K.	
9/26	38	32-33-42		T	3'	H.T.	2003	10/5	D.K.	
9/26	39	34-35-42		T	7'	H.T.	2003	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS E NEERS

GEOMEMBRANE REPAIR LOG

SHEET	2 Of 24 Prim
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/26/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/26	40	35-36		DT	5'	H.T.	2003	10/5	D.K.	DT-2
9/26	41	36-37-43		T	3'	H.T.	2003	10/5	D.K.	
9/26	42	40-43-37		T	2'	H.T.	2003	10/5	D.K.	
9/26	43	37-38		BO	2'	H.T.	2003	10/5	D.K.	
9/26	44	37-38-40		T	3'	H.T.	2003	10/5	D.K.	
9/26	45	37-38		BO	2'	H.T.	2003	10/5	D.K.	
9/26	161	41-43-40		T	3'	A.R.	2022	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	4 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	9/30/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
9/30	310	47-49		BO	6'	A.R.	2022	10/5	D.K.	
9/30	311	59 nr. 53		D	2'	A.R.	2022	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	5 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/1/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/1	181	62-71-70		DT	13'	A.R.	2022	10-5	D.K.	DT-16
10/1	182	71-72-70		T	3'	A.R.	2022	10/5	D.K.	
10/1	183	63-71-62		T	5'	A.R.	2022	10/5	D.K.	
10/1	184	62	Center	EE	3'	A.R.	2022	10/5	D.K.	
10/1	185	71-72-73		T	3'	A.R.	2022	10/5	D.K.	
10/1	186	63	Center	D	2'	A.R.	2022	10/5	D.K.	
10/1	187	63-64-71-73		DT	13'	A.R.	2022	10/5	D.K.	DT-17
10/1	188	65-74-73		DT	11'	A.R.	2022	10/5	D.K.	DT-23
10/1	189	74	Nr. Center	D	1'	A.R.	2022	10/5	D.K.	
10/1	190	74	Nr. Center	D	2'	A.R.	2022	10/5	D.K.	
10/1	191	74	Nr. Center	D	2'	A.R.	2022	10/5	D.K.	
10/1	192	65-74-74	Nr. Center	D	2'	A.R.	2022	10/5	D.K.	
10/1	193	65	Nr. Center	D	3'	A.R.	2022	10/5	D.K.	
10/1	194	64-73-65		DT	16'	A.R.	2022	10/5	D.K.	DT-18
10/1	195	65-66-74-75		DT	7'	A.R.	2022	10/5	D.K.	DT-19
10/1	196	76-77-75		T	2'	A.R.	2022	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	6 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/1/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/1	197	66-67-75-76		DT	14'	A.R.	2022	10/5	D.K.	DT-20
10/1	198	66-67		BO	4'	A.R.	2022	10/5	D.K.	
10/1	199	76-77-78		T	3'	A.R.	2022	10-5	D.K.	
10/1	200	67-68-76-78		DT	9'	A.R.	2022	10/5	D.K.	DT-21
10/1	201	67-68		BO	5'	A.R.	2022	10/5	D.K.	
10/1	202	68-69-78-79		DT	12'	A.R.	2022	10/5	D.K.	DT-22 & DT-25
10/1	203	84-87-79		T	2'	H.T.	2003	10/14	D.K.	
10/1	204	69-79		BO	2'	H.T.	2003	10/14	D.K.	
10/1	205	69-80-79-84		T	8'	A.R.	2022	10/14	D.K.	
10/1	206	69-80		DT	8'	A.R.	2022	10/14	D.K.	DT-26
10/1	207	69-80		BO	4'	A.R.	2022	10/14	D.K.	
10/1	208	69-80		BO	5'	A.R.	2022	10/14	D.K.	
10/1	209	69-80		BO	4'	A.R.	2022	10/14	D.K.	
10/1	210	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	211	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	212	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	7 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/1/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/1	213	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	214	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	215	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	216	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	217	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	218	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	219	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	220	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	221	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	222	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	223	80 nr. 84		EE	2'	A.R.	2022	10/14	D.K.	
10/1	224	84-87-85		T	3'	H.T.	2003	10/14	D.K.	
10/1	225	80-81-84-85		T	4'	A.R.	2022	10/14	D.K.	
10/1	226	80-81		DT	5'	A.R.	2022	10/14	D.K.	DT-27
10/1	227	85	Center	D	2'	A.R.	2022	10/14	D.K.	
10/1	228	81	Center	D	2'	A.R.	2022	10/14	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	8 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/1/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/1	229	81	Center	D	2'	A.R.	2022	10/1	D.K.	
10/1	230	81	Center	D	2'	A.R.	2022	10/1	D.K.	
10/1	231	81	Center	D	2'	A.R.	2022	10/1	D.K.	
10/1	232	81	Center	D	2'	A.R.	2022	10/1	D.K.	
10/1	233	81-82-85-86		T	2'	H.T.	2003	10/1	D.K.	
10/1	234	82 nr. 81		D	2'	H.T.	2003	10/1	D.K.	
10/1	235	82nr. 81		D	2'	H.T.	2003	10/1	D.K.	
10/1	312	73 nr. 65		D	2'	A.R.	2022	10/1	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	9 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/2/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/2	1	1-2-3-4		EXT	80'x11'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	2	5-6-7-8		EXT	90'x11'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	3	9-10-11-12		EXT	90'x11'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	4	13-14-15-16		EXT	90'x11'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	5	17-18-19-20		EXT	90'x5'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	6	21-22-23-24		EXT	90'x5'	L.L.	2006	10/5	D.K.	Textured Extension
10/2	7	25-26		EXT	45'x5'	L.L.	2006	10/5	D.K.	Textured Extension

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	10 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/5/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/5	8	56-57-Ext		T	3'	A.R.	2022	10/5	D.K.	
10/5	9	48-56-Ext		T	3'	A.R.	2022	10/5	D.K.	
10/5	10	47-48-Ext		T	3'	A.R.	2022	10/5	D.K.	
10/5	11	14-15-Ext		T	2'	A.R.	2022	10/5	D.K.	
10/5	12	45-47-Ext		T	3'	A.R.	2022	10/5	D.K.	
10/5	13	15-16-Ext		T	2'	A.R.	2022	10/5	D.K.	
10/5	14	16-Ext		DT	5'	A.R.	2022	10/5	D.K.	DT-32
10/5	15	45-Ext		DT	5'	A.R.	2022	10/5	D.K.	DT-33
10/5	15A	16-17-Ext		T		A.R.	2022	10/5	D.K.	
10/5	19	40-45-Ext		T	2'	H.T.	9130	10/5	D.K.	
10/5	19A	22-23-Ext		T		A.R.	2022	10/5	D.K.	
10/5	19B	23-24-Ext		T		A.R.	2022	10/5	D.K.	
10/5	24	41-Ext		BO	2'	H.T.	2003	10/5	D.K.	
10/5	25	41-43-40		T	2'	H.T.	2003	10/5	D.K.	
10/5	26	43-44-Ext		T	2'	H.T.	2003	10/5	D.K.	
10/5	34	30-31-42		T	4'	H.T.	2003	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	11 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/5/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/5	35	31-42-Ext		BO	3'	H.T.	2003	10/5	D.K.	
10/5	36	31-32-42		T	5'	H.T.	2003	10/5	D.K.	
10/5	37	32	Center	EE	2'	H.T.	2003	10/5	D.K.	
10/5	46	28-29-30-31		EXT	90'x8'	H.T.	2003	10/5	D.K.	
10/5	47	32-33-34-35		EXT	55'x8'	H.T.	2003	10/5	D.K.	
10/5	48	36-37-38		EXT	55'x8'	H.T.	2003	10/5	D.K.	
10/5	160	40-41-Ext		T	2'	H.T.	2003	10/5	D.K.	
10/5	162	48-49-47		T	3'	A.R.	2022	10/5	D.K.	
10/5	168	57-58-Ext		T	2'	A.R.	2022	10/5	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	12	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/14/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/14	236	82-83-86-88		T	3'	H.T.	227	10/14	D.K.	
10/14	237	82-83		DT	5'	H.T.	227	10/14	D.K.	DT-30
10/14	238	83-88		DT	5'	H.T.	227	10/14	D.K.	DT-31
10/14	239	83-88		BO	2'	H.T.	227	10/14	D.K.	
10/14	240	88-97		BO	3'	H.T.	227	10/14	D.K.	
10/14	241	83-88-97		T	2'	H.T.	227	10/14	D.K.	
10/14	242	83-89-88-97		DT	15'	H.T.	227	10/14	D.K.	DT-34 & DT-35
10/14	243	83-89		BO	1'	G.Q.	2003	10/14	D.K.	
10/14	244	83-89		BO	2'	G.Q.	2003	10/14	D.K.	
10/14	245	83-89		BO	3'	G.Q.	2003	10/14	D.K.	
10/14	246	97nr. 83		D	2'	H.T.	227	10/14	D.K.	
10/14	247	98-99-97		T	2'	H.T.	227	10/14	D.K.	
10/14	248	90-98-97		T	2'	H.T.	227	10/15	D.K.	
10/14	249	89-97-90		DT	12'	H.T.	227	10/15	D.K.	DT-36
10/14	250	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	251	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	13	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/14/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/14	252	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	253	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	254	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	255	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	256	89 nr. 164		EE	2'	G.Q.	2003	10/15	D.K.	
10/14	257	89 nr. 164		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	258	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	259	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	260	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	261	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	262	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	263	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	264	90 nr. 165		EE	1'	G.Q.	2003	10/15	D.K.	
10/14	265	100-101-99		T	2'	H.T.	227	10/14	D.K.	
10/14	266	98-99-100		T	2'	H.T.	227	10/14	D.K.	
10/14	267	90-98-100		DT	7'	H.T.	227	10/14	D.K.	DT-38

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	14 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/14/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/14	268	91-100-90		DT	8'	H.T.	227	10/14	D.K.	DT-37
10/14	269	100-101-102		T	2'	H.T.	227	10/14	D.K.	
10/14	270	91-92-100-102		DT	8'	H.T.	227	10/14	D.K.	DT-39
10/14	271	102-103	@ anchor trench	BO	3'	H.T.	227	10/14	D.K.	
10/14	272	103-104-102		T	2'	H.T.	227	10/14	D.K.	
10/14	273	92-93-102-104		DT	15'	H.T.	227	10/14	D.K.	DT-40 & DT-41
10/14	274	92-93		BO	5'	G.Q.	2003	10/15	D.K.	
10/14	275	91 nr. 166		D	1'	G.Q.	2003	10/15	D.K.	
10/14	276	92 nr. 167		D	1'	G.Q.	2003	10/15	D.K.	
10/14	277	92 nr. 167		D	1'	G.Q.	2003	10/15	D.K.	
10/14	278	92 nr. 167		D	1'	G.Q.	2003	10/15	D.K.	
10/14	279	92 nr. 167		D	1'	G.Q.	2003	10/15	D.K.	
10/14	280	103-105	@ anchor trench	BO	2'	H.T.	227	10/14	D.K.	
10/14	281	103-104-105		T	2'	H.T.	227	10/14	D.K.	
10/14	282	93-94-104-105		DT	10'	H.T.	227	10/14	D.K.	DT-42
10/14	283	93-94		BO	3'	G.Q.	2003	10/15	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	15 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/14/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/14	284	105-106	anchor trench	BO	2'	H.T.	227	10/14	D.K.	
10/14	285	94-95-105-106		DT	10'	H.T.	227	10/14	D.K.	DT-43
10/14	286	106-107	anchor trench	BO	3'	H.T.	227	10/14	D.K.	
10/14	287	106-107		BO	3'	H.T.	227	10/14	D.K.	
10/14	288	106-107		BO	2'	H.T.	227	10/14	D.K.	
10/14	289	106-107		BO	4'	H.T.	227	10/14	D.K.	
10/14	290	96-107-106		DT	13'	H.T.	227	10/14	D.K.	DT-44 & DT-45
10/14	391	95-106-96		T	2'	H.T.	227	10/14	D.K.	
10/14	292	95-96		BO	3'	G.Q.	2003	10/15	D.K.	
10/14	293	96 nr. 125	Center	D	2'	G.Q.	2003	10/15	D.K.	
10/14	294	95-96		BO	5'	G.Q.	2003	10/15	D.K.	
10/14	295	95-96		WC	3'	G.Q.	2003	10/15	D.K.	
10/14	296	95 nr. 96		WC	5'	G.Q.	2003	10/15	D.K.	
10/14	297	95 nr. 96		WC	2'	G.Q.	2003	10/15	D.K.	
10/14	298	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	
10/14	299	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	16 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/14/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/14	300	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	
10/14	301	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	
10/14	302	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	
10/14	303	95 nr. 170		D	1'	G.Q.	2003	10/15	D.K.	
10/14	304	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	305	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	306	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	307	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	308	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	309	96 nr. 107		D	2'	H.T.	227	10/14	D.K.	
10/14	313	97-99		BO	2'	H.T.	227	10/14	D.K.	
10/14	314	104 nr. 93		D	2'	H.T.	227	10/14	D.K.	
10/14	315	104 nr. 93		D	2'	H.T.	227	10/14	D.K.	
10/14	316	104 nr. 93		D	2'	H.T.	227	10/14	D.K.	
10/14	317	104 nr. 93		D	2'	H.T.	227	10/14	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	17	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/16/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/16	88	134-135-96		T	3'	A.T.	227	10/21	D.K.	
10/16	109	133-134-96		T	2'	H.T.	227	10/21	D.K.	
10/16	110	132-133-196		T	9'	H.T.	227	10/21	D.K.	
10/16	111	131-132-133		T	2'	H.T.	227	10/21	D.K.	
10/16	112	131-132-130		T	2'	H.T.	227	10/21	D.K.	
10/16	113	130-132-96		T	2'	H.T.	227	10/21	D.K.	
10/16	114	128-130-96		T	2'	H.T.	227	10/21	D.K.	
10/16	115	128-129-130		T	2'	H.T.	227	10/21	D.K.	
10/16	116	128-129-127		T	2'	H.T.	227	10/21	D.K.	
10/16	117	128-127-96		DT	5'	H.T.	227	10/21	D.K.	DT-50
10/16	118	126-127-96		T	2'	H.T.	227	10/21	D.K.	
10/16	119	125-126-96		T	2'	H.T.	227	10/21	D.K.	
10/16	120	124-125-96		T	2'	H.T.	227	10/21	D.K.	
10/16	121	123-124-96		DT	5'	H.T.	227	10/21	D.K.	DT-49
10/16	122	122-123-96		T	2'	H.T.	227	10/21	D.K.	
10/16	123	121-122-96		T	2'	H.T.	227	10/21	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	18	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/16/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/16	124	120-121-96		T	2'	H.T.	227	10/21	D.K.	
10/16	125	96-120		BO	4'	H.T.	227	10/21	D.K.	
10/16	126	119-120-96		T	2'	H.T.	227	10/21	D.K.	
10/16	127	118-119-96		DT	5'	H.T.	227	10/21	D.K.	DT-48
10/16	128	117-118-119		T	2'	H.T.	227	10/21	D.K.	
10/16	129	117-118-116		T	2'	H.T.	227	10/21	D.K.	
10/16	130	116-118-96		T	2'	H.T.	227	10/21	D.K.	
10/16	131	115-116-96		T	2'	H.T.	227	10/21	D.K.	
10/16	132	115 nr. 96		EE	2'	H.T.	227	10/21	D.K.	
10/16	133	115 nr. 96		EE	2'	H.T.	227	10/21	D.K.	
10/16	134	115 nr. 96		EE	2'	H.T.	227	10/21	D.K.	
10/16	135	114-115-96		T	2'	H.T.	227	10/21	D.K.	
10/16	136	113-114-96		T	2'	H.T.	227	10/21	D.K.	
10/16	137	113 nr. 96			2'	H.T.	227	10/21	D.K.	
10/16	138	113 nr. 96			3'	H.T.	227	10/21	D.K.	
10/16	139	113 nr. 96			2'	H.T.	227	10/21	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	19	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/16/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/16	140	113 nr. 96			2'	H.T.	227	10/21	D.K.	
10/16	141	113 nr. 96			2'	H.T.	227	10/21	D.K.	
10/16	142	113 nr. 96			2'	H.T.	227	10/21	D.K.	
10/16	143	113 nr. 96			2'	H.T.	227	10/21	D.K.	
10/16	144	112-113-96		DT	5'	H.T.	227	10/21	D.K.	DT-47
10/16	145	111-112-96		T	2'	H.T.	227	10/21	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	20	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/18/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/18	76	161-162-163		T	2'	A.R.	227	10/19	D.K.	
10/18	77	162-163-82-83		T	5'	A.R.	227	10/19	D.K.	
10/18	78	163-164-83-89		T	4'	A.R.	227	10/19	D.K.	
10/18	79	164-165-89-90		T	5'	A.R.	227	10/19	D.K.	
10/18	80	165-166-90-91		T	5'	A.R.	227	10/19	D.K.	
10/18	81	91-166		BO	2'	A.R.	227	10/19	D.K.	
10/18	82	166-167-91-92		DT	5'	A.R.	227	10/19	D.K.	DT-55
10/18	83	92-167		BO	2'	A.R.	227	10/19	D.K.	
10/18	84	167-168-92-93		T	5'	A.R.	227	10/19	D.K.	
10/18	85	168-169-93-94		T	5'	A.R.	227	10/19	D.K.	
10/18	86	169-170-94-95		T	6'	A.R.	227	10/21	D.K.	
10/18	87	170-95-171		EXT	12'x2'	A.R.	227	10/21	D.K.	
10/18	89	95-96-171		T		A.R.	227	10/21	D.K.	
10/18	90	171-172-96-135		DT	5'	A.R.	227	10/21	D.K.	DT-51
10/18	91	135-178-172		T	2'	A.R.	227	10/21	D.K.	
10/18	92	178-172	Center	WC	3'	A.R.	227	10/21	D.K.	Sump Repair

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	21	Of	24	Primary
PROJECT TITLE	Section I Capacity Expansion			
PROJECT NO.	09200020.32			
DATE	10/18/02			

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/18	93	172	Center	WC	5' bead	A.R.	227	10/21	D.K.	Sump Repair
10/18	94	172	Center	WC	2'	A.R.	227	10/21	D.K.	Sump Repair
10/18	95	177-178-172		T	2'	A.R.	227	10/21	D.K.	
10/18	96	173-177-172-176		T	12'	A.R.	227	10/21	D.K.	
10/18	97	173-174-176		T	2'	A.R.	227	10/21	D.K.	
10/18	98	173-174		BO	5'	A.R.	227	10/21	D.K.	
10/18	99	174-175-176		T	2'	A.R.	227	10/21	D.K.	
10/18	100	174-175		BO	3'	A.R.	227	10/21	D.K.	
10/18	101	174-175		BO	2'	A.R.	227	10/21	D.K.	
10/18	102	174-175	Anchor	BO	2'	A.R.	227	10/21	D.K.	
10/18	103	175-179-176		DT	5'x7'	A.R.	227	10/21	D.K.	DT-56
10/18	104	180-181-179		T	2'	A.R.	227	10/21	D.K.	
10/18	105	176-179-181		T	2'	A.R.	227	10/21	D.K.	
10/18	106	181-182-176		T	2'	A.R.	227	10/21	D.K.	
10/18	107	176-182-177		T	3'	A.R.	227	10/21	D.K.	
10/18	108	176	W. side	EE	1'	A.R.	227	10/21	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	22 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/19/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/19	49	38-39-142		T	2'	A.R.	227	10/19	D.K.	
10/19	50	38-142-40-45		T	20'x2'	A.R.	227	10/19	D.K.	
10/19	51	142-143-45-47		T	3'	A.R.	227	10/19	D.K.	
10/19	52	143-144-47-49		T	3'	A.R.	227	10/19	D.K.	
10/19	53	144-145-49-50		T	3'	A.R.	227	10/19	D.K.	
10/19	54	145-146-50-51		T	3'	A.R.	227	10/19	D.K.	
10/19	55	51-146	Center	BO	3'	A.R.	227	10/19	D.K.	
10/19	56	146-147-51-52		T	3'	A.R.	227	10/19	D.K.	
10/19	57	147-148-52-53		DT	5'	A.R.	227	10/19	D.K.	DT-52
10/19	58	148-149-53-54		T	2'	A.R.	227	10/19	D.K.	
10/19	59	149-54		BO	3'	A.R.	227	10/19	D.K.	
10/19	60	149-150-54-55		T	2'	A.R.	227	10/19	D.K.	
10/19	61	55-150	Center	BO	2'	A.R.	227	10/19	D.K.	
10/19	62	150-55-62		T	2'	A.R.	227	10/19	D.K.	
10/19	62A	150-151-62			2'	A.R.	227	10/19	D.K.	
10/19	63	151-152-62-63		T	2'	A.R.	227	10/19	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	23 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/19/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/19	64	152-153-63-64		T	3'	A.R.	227	10/19	D.K.	
10/19	65	153-154-64-65		DT	5'	A.R.	227	10/19	D.K.	DT-53
10/19	66	154-155-65-66		T	3'	A.R.	227	10/19	D.K.	
10/19	67	66-155		BO	2'	A.R.	227	10/19	D.K.	
10/19	68	155-156-66-67		T	3'	A.R.	227	10/19	D.K.	
10/19	69	67-156		BO	2'	A.R.	227	10/19	D.K.	
10/19	70	156-157-67-68		T	3'	A.R.	227	10/19	D.K.	
10/19	71	157-158-68-69		T	4'	A.R.	227	10/19	D.K.	
10/19	72	158-159-69-80		T	8'	A.R.	227	10/19	D.K.	
10/19	73	159-160-80-81		DT	5'	A.R.	227	10/19	D.K.	DT-54
10/19	74	161-162-160		T	2'	A.R.	227	10/19	D.K.	
10/19	75	160-162-81-82		T	4'	A.R.	227	10/19	D.K.	
10/19	146	110-111-96		T	2'	A.R.	227	10/21	D.K.	
10/19	147	110-111	anchor trench	BO	2'	A.R.	227	10/21	D.K.	
10/19	148	96-107-110		T	2'	A.R.	227	10/21	D.K.	
10/19	149	109-110-107		T	2'	A.R.	227	10/21	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	24 Of 24 Primary
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	10/19/02

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
10/19	150	109-110		BO	2'	A.R.	227	10/21	D.K.	
10/19	151	108-109-107		T	2'	A.R.	227	10/21	D.K.	
10/19	152	136-108-107		T	7'	A.R.	227	10/21	D.K.	DT-46
10/19	153	136-137-107		T	2'	A.R.	227	10/21	D.K.	
10/19	154	137-138		BO	3'	A.R.	227	10/21	D.K.	
10/19	155	137-138-136		T	2'	A.R.	227	10/21	D.K.	
10/19	156	138-139-136		T	3'	A.R.	227	10/21	D.K.	
10/19	157	139-140		BO	3'	A.R.	227	10/21	D.K.	
10/19	158	139-140-136		T	5'	A.R.	227	10/21	D.K.	
10/19	159	140-141-136		T	2'	A.R.	227	10/21	D.K.	
10/19	170	51-52		BO	3'	A.R.	227	10/19	D.K.	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET 1 of 2 Berms
PROJECT TITLE Section I Capacity Expansion
PROJECT NO. 09200020.32
DATE 1/23/03 – 1/28/03

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
1/23	P1	Near. RFN 5	At Berm	WR	E	DP	2006	1/23	JS	12' (+/-) Wrinkle Repair
1/23	RN2	N3/Primary S/N3	Near. N2/N3	DR	2x5	DP	2006	1/23	MA	DT1N
1/23	RN3	N3/N4/ Center		DR	2x5	DP	2006	1/23	MA	DT2N
1/23	RN4	N6/Primary N/N6	Near N5/N6	DS	2x5	DP	2006	1/23	MA	DT3N
1/24	RN5	N10/N11/Primary	Toe N	T	3x3	DP	2762	1/25	MA	
1/24	RN6	N15/N16	Center	BO	2'	DP	2762	1/25	MA	
1/24	RN7	N16/N17	Toe S	BS	3'	Phou	2762	1/24	MA	Pipe Boot
1/24	RN8	N20/N21	Center	PTC	1'	DP	2762	1/24	MA	
1/24	RN9	N24/N25	Toe N	T	2'	Phou	2006	1/25	MA	
1/24	RN10	N25/N26	Toe N	BS	3'	Phou	2006	1/25	MA	Pipe Boot
1/24	RN11	N26	Center Toe S	BS	3'	Phou	2006	1/25	MA	Pipe Boot
1/28	RN1	Center S/N7	Pipe	BS	3'	DP	2762	1/28	JS	Pipe Boot
1/28	RN12	N29/Ext	West Side	Ext	3'x15'	Phou	2006	1/28	JS	
1/28	RN13	N17/N16/Primary	North	BS	4'	Phou	2006	1/28	JS	
1/28	RN14	N7/Primary	Center	BS	4'	Phou	2006	1/28	JS	

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

GEOMEMBRANE REPAIR LOG

SHEET	2 of 2 Berms
PROJECT TITLE	Section I Capacity Expansion
PROJECT NO.	09200020.32
DATE	1/28/03

DATE REPAIRED	REPAIR NO.	SEAM /PANEL ID	LOCATION	DEFECT CODE	SIZE OF REPAIR	TECH ID	MACHINE NO.	DATE TESTED	TESTED BY	COMMENTS
1/28	RN15	N1/N. Primary	6" Pipe	BS	3'	Phou	2006	1/28	JS	Pipe Boot
1/28	RN16	N1/S. Primary	6" Pipe	BS	3'	Phou	2006	1/28	JS	Pipe Boot
1/28	RN17	I31/E. Primary	Header	BS	4'	DP	2762	1/28	JS	Pipe Boot
1/28	RN18	I31/W. Primary	Header	BS	4'	DP	2762	1/28	JS	Pipe Boot

DEFECT CODES:

AD	-ANIMAL RELATED DAMAGE	DS	-DESTRUCTIVE SAMPLE	IO	-INSUFFICIENT OVERLAP	SS	-START/STOP
B	-UNDISPERSED RESIN BEAD	EE	-EARTHWK EQUIP DAMAGE	LB	-LEISTER BURN	SSI	-SOIL SURFACE IRREGULARITY
BO	-BURN OUT	EXT	-EXTENSION	MOT	-MACHINE OFF TRACK	T	-MULTIPLE PANEL INTERSECTION
BS	-BOOT SKIRT	FB	-FUSION WELDER BURN	N	-NODULE	VL	-VACUUM TEST LEAK
C	-COUPON	FD	-FACTORY DAMAGE	PTC	-PRESSURE TEST CUT	WC	-WRINKLE CUT
CO	-CHANGE OF OVERLAP	FM	-FISH MOUTH	SI	-SUBGRADE IRREGULARITY	WR	-WRINKLE
CR	-CREASE	FS	-FAILED SEAM	SL	-SLAG ON TEXTURED SHEET	WS	-WELDER RESTART
D	-INSTALLATION DAMAGE	HT	-HEAT TACK BURN	SO	-SHARP OBJECT		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

ATTACHMENT M

GEOMEMBRANE DESTRUCTIVE TEST LOGS

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 1 SECONDARY LINER of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 9-15-02 To 9-17-02

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT 1	P16-P17	107	Fusion	9-10-02	9-15-02	P	P		
DT 2	P56-P57	190	Fusion	9-14-02	9-15-02	P	P		
DT 3	P37-P38	1669	Fusion	9-14-02	9-15-02	P	P		
DT 4	P33-P35	107	Fusion	9-10-02	9-15-02	P	P		
DT 5	P31-P33	107	Fusion	9-10-02	9-15-02	P	P		
DT 6	P40-P31	107	Fusion	9-15-02	9-15-02	P	P		
DT 7	P42-P40	107	Fusion	9-14-02	9-15-02	P	P		
DT 8	P43-P42	1669	Fusion	9-14-02	9-15-02	P	P		
DT 9	P44-P45	1669	Fusion	9-14-02	9-15-02	P	P		
DT 10	P45-P46	1306	Fusion	9-15-02	9-16-02	P	P		
DT-11	P38-P39	190	Fusion	9-14-02	9-15-02	P	P		
DT-12	P43-P44	107	Fusion	9-14-02	9-15-02	P	P		
DT-13	P34-P48	107	Fusion	9-14-02	9-15-02	P	P		
DT-14	P53-P54	1306	Fusion	9-15-02	9-16-02	P	P		
DT-15	P46-P72	107	Fusion	9-16-02	9-17-02	P	P		
DT-16	P72-P73	1306	Fusion	9-16-02	9-17-02	P	P		
DT-17	P73-P74	190	Fusion	9-16-02	9-17-02	P	P		
DT-18	P74-P75	1306	Fusion	9-16-02	9-17-02	P	P		
DT-19	P75-P76	1306	Fusion	9-16-02	9-17-02	P	P		
DT-20	P76-P77	190	Fusion	9-16-02	9-17-02	P	P		
DT-21	P77-P78	190	Fusion	9-16-02	9-17-02	P	P		
DT-22	P78-P79	1306	Fusion	9-16-02	9-17-02	P	P		
DT-23	P79-P80	1306	Fusion	9-16-02	9-17-02	P	P		

PRINT NAME: Dennis G. DuPont / DAVID WHALEN

SIGNATURE: Dennis G. DuPont / David Whalen

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 2 Secondary of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 9-17-02 To 10-2-02

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT-24	39-56	2002	E	9-15-02	9-17-02	P	P		
DT 25	16 35	227	E	9-15-02	9-17-02	P	P		
DT-26	68-69	190	F	9-15-02	9-18-02	P	P		
DT-27	81-82	214	F	9-17-02	9-18-02	P	P		
DT-28	84-85	1306	F	9-17-02	9-18-02	P	P		
DT-29	86-88	190	F	9-17-02	9-18-02	P	P		
DT-30	89-90	1306	F	9-17-02	9-18-02	P	P		
DT-31	99-100	1306	F	9-17-02	9-19-02	P	P		
DT-32	91-107	1306	F	9-18-02	9-19-02	P	P		
DT-33	108-109	190	F	9-18-02	9-19-02	P	P		
DT-34	80-103	1306	F	9-18-02	9-19-02	P	P		
DT-35	103-104	1306	F	9-18-02	9-19-02	P	P		
DT-36	104-105	190	F	9-18-02	9-19-02	P	P		
DT-37	105-106	1306	F	9-18-02	9-19-02	P	P		
DT-38S	106-116S	1669	F	9-30-02	10-1-02	P	P		
DT-39S	106-119S	1669	F	9-30-02	10-1-02	P	P		
DT-40S	116-117S	1681	F	9-30-02	10-1-02	P	P		
DT 41S	117-118S	1681	F	9-30-02	10-1-02	P	P		
DT-42S	120-121S	1681	F	9-30-02	10-1-02	P	P		
DT-43S	118-122S	1669	F	10-2-02	10-2-02	P	P		
DT-44S	122-123S	1669	F	10-2-02	10-2-02	P	P		
~~DT-45S~~	~~16-patch~~			~~10-2-02~~	~~10-3-02~~	~~P~~			
~~DT-46S~~	~~45 patch~~			~~10-2-02~~	~~10-3-02~~	~~P~~			

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 3 Secondary of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 10-4-02 To 10-5-02

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT45S	126-127S	1669	F	10-3-02	10-4-02	P	P		
DT46S	131-132S	1669	F	10-3-02	10-4-02	P	P		
DT47S	136-137S	1669	F	10-3-02	10-4-02	P	P		
DT48S	138-152S	107	F	10-4-02	10-5-02	P	P		
DT49S	151-152S	107	F	10-3-02	10-5-02	P	P		
DT50S	123-151S	107	F	10-3-02	10-5-02	P	P		
DT51S	141-142S	1669	F	10-3-02	10-5-02	P	P		
DT52S	147-148S	1669	F	10-3-02	10-5-02	P	P		
DT53S	163-166S	107	F	10-4-02	10-5-02	P	P		
DT54S	115-156S	107	F	10-4-02	10-5-02	P	P		
DT55S	175-176S	190	F	10-4-02	10-5-02	P	P		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 1 Primary of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 9-26-02 To 9-30-02

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT1P	17P-18P	1306	F	9/25	9-26-02	P	P		Marked as 38P
DT2P	35P-36P	1669	F	9/25	9-26-02	P	P		" DT39P
DT3P	40P-45P	1669	F	9/25	9-26-02	P	P		" DT40P
DT4P	24P-44P	190	F	9/25	9-26-02	P	P		" DT41P
DT5P	47P-49P	1306	F	9/27	9-28-02	P	P		
DT6P	49P-50P	1681	F	9/27	9-28-02	P	P		
DT7P	50P-51P	1669	F	9/27	9-28-02	P	P		
DT8P	51P-52P	1306	F	9/27	9-28-02	P	P		
DT9P	52P-53P	1669	F	9/27	9-28-02	P	P		
DT10P	53P-54P	1681	F	9/27	9-28-02	P	P		
DT11P	54P-55P	1306	F	9/27	9-28-02	P	P		
DT12P	58P-59P	1306	F	9/27	9-28-02	P	P		
DT13P	60P-61P	1306	F	9/27	9-28-02	P	P		
	~~61P-70P~~	~~1681~~		~~9/28~~					
DT14P	70P-71P	1681	F	9/28	9-30-02	P	P		
DT15P	55P-62P	1669	F	9/27	9-30-02	P	P		
DT16P	62P-71P	1681	F	9/28	9-30-02	P	P		
DT17P	63P-64P	1681	F	9/28	9-30-02	P	P		
DT18P	64P-65P	1669	F	9/28	9-30-02	P	P		
DT19P	65P-66P	1306	F	9/28	9-30-02	P	P		
DT20P	66P-67P	1669	F	9/28	9-30-02	P	P		
DT21P	67P-68P	1681	F	9/28	9-30-02	P	P		
DT22P	68P-69P	1306	F	9/28	9-30-02	P	P		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 2 Primary of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 9-30-02 To 10-14-02

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT23P	73P-74P	1681	F	9-28-02	9-30-02	P	P		
DT24P	75P-76P	1306	F	9-28-02	9-30-02	P	P		
DT25P	78P-79P	1306	F	9-28-02	9-30-02	P	P		
DT26P	69P-80P	1669	F	10-1-02	10-2-02	P	P		
DT27P	80P-81P	1681	F	10-1-02	10-2-02	P	P		
DT28P	84P-85P	1681	F	10-1-02	10-2-02	P	P		
DT29P	81P-82P	1669	F	10-1-02	10-2-02	P	P		
DT30P	82P-83P	1681	F	10-1-02	10-2-02	P	P		
DT31P	83-88P	1681	F	10-1-02	10-2-02	P	P		
DT32P	16-patch P	1306	F	10-2-02	10-3-02	P	P		
DT33P	45-patch P	2022	E	10-5-02	10-5-02	P	P		
DT34P	83-89P	1306	F	10-12-02	10-14-02	P	P		
DT35P	88-97P	1306	F	10-12-02	10-14-02	P	P		
DT36P	89-90P	1681	F	10-12-02	10-14-02	P	P		
DT37P	90-91P	1306	F	10-12-02	10-14-02	P	P		
DT38P	98-100P	190	F	10-12-02	10-14-02	P	P		
DT39P	91-92P	1681	F	10-12-02	10-14-02	P	P		
DT40P	92-93P	1681	F	10-12-02	10-14-02	P	P		
DT41P	102-104P	190	F	10-12-02	10-14-02	P	P		
DT42P	93-94P	1306	F	10-12-02	10-14-02	P	P		
DT43P	94-95P	1681	F	10-12-02	10-14-02	P	P		
DT44P	96-106P	1306	F	10-12-02	10-14-02	P	P		
DT45P	106-107P	190	F	10-12-02	10-14-02	P	P		

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

SCS ENGINEERS

DESTRUCTIVE TEST LOG

SHEET: 3 Primary + berms of
PROJECT TITLE: Section I Capacity Expansion
PROJECT NO: 09200020.32
DATE: 10-16-02 To 1-27-03

SAMPLE NO.	SEAM I.D.	MACHINE NO.	WELD TYPE	DATE SEAMED	DATE SAMPLED	TEST STATUS PASS/FAIL INSTALLER	SCS	ARCH	COMMENTS
DT46P	108-136P	1306	F	10-16-02	10-16-02	P	P		
DT47P	96-112P	1681	F	10-16-02	10-16-02	P	P		
DT48P	118-119P	1306	F	10-15-02	10-16-02	P	P		
DT49P	96-123	1681	F	10-16-02	10-16-02	P	P		
DT50P	127-128P	1306	F	10-15-02	10-16-02	P	P		
DT51P	96-135P	1681	F	10-16-02	10-16-02	P	P		
DT52P	147-148P	1306	F	10-17-02	10-17-02	P	P		
DT53P	153-154P	1681	F	10-17-02	10-17-02	P	P		
DT54P	159-160P	1306	F	10-17-02	10-17-02	P	P		
DT55P	166-167P	1669	F	10-17-02	10-17-02	P	P		
DT56P	175-179P	1306	F	10-17-02	10-17-02	P	P		
DT1N	RFN-3/berms	2762	E	1-20-03	1-22-03	P	P		60S To 80S
DT2N	RFN-3/RFN-4	2968	F	1-21-03	1-22-03	P	P		80S To 80S
DT3N	RFN6/berm N	2006	E	1-20-03	1-22-03	P	P		60S To 80S
DT4N	N7/N-28	2968	F	1-23-03	1-27-03	P	P		80S To 80S
DT5N	N28/N29	2968	F	1-23-03	1-27-03	P	P		
DT6I	I1/I2	2373	F	1-25-03	1-27-03	P	P		
DT7I	I29/I30	2373	F	1-25-03	1-27-03	P	P		
~~DT8I~~	~~I~~								

PRINT NAME: Dennis G. DuPont

SIGNATURE: Dennis G. DuPont

DT 1-14 P

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

September 17, 2002

RECEIVED
SEP 20 2002
SCS ENGINEERS

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-26-02
Date Received:	09-17-02
Material(s) Tested:	14 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	155	<10	SE	FTB	NR	189	> 50	FTB	NR
	2A	145	<10	SE	FTB					
	3A	166	<10	SE	FTB		181	> 50	FTB	
	4A	142	<10	SE	FTB					
	5A	143	<10	SE	FTB		182	> 50	FTB	
DT-1	**MEAN:**	**150**								
	1B	145	<10	SE	FTB		181	> 50	FTB	
	2B	149	<10	SE	FTB					
	3B	146	<10	SE	FTB		186	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	138	<10	SE	FTB					
	MEAN:	**144**				**MEAN:**	**184**			
	1A	139	<10	SE	FTB	NR	186	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	138	<10	SE	FTB		178	> 50	FTB	
	4A	133	<10	SE	FTB					
	5A	138	<10	SE	FTB		179	> 50	FTB	
DT-2	**MEAN:**	**137**								
	1B	154	<10	SE	FTB		180	> 50	FTB	
	2B	141	<10	SE	FTB					
	3B	148	<10	SE	FTB		183	> 50	FTB	
	4B	158	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**149**				**MEAN:**	**181**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-3	1A	142	<10	SE	FTB	NR	185	> 50	FTB	NR
	2A	133	<10	SE	FTB					
	3A	136	<10	SE	FTB		178	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	140	<10	SE	FTB		178	> 50	FTB	
	MEAN:	**136**								
	1B	147	<10	SE	FTB		179	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	133	<10	SE	FTB		185	> 50	FTB	
	4B	132	<10	SE	FTB					
	5B	146	<10	SE	FTB					
	MEAN:	**139**				**MEAN:**	**181**			
DT-4	1A	132	<10	SE	FTB	NR	187	> 50	FTB	NR
	2A	132	<10	SE	FTB					
	3A	139	<10	SE	FTB		179	> 50	FTB	
	4A	132	<10	SE	FTB					
	5A	137	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**134**								
	1B	136	<10	SE	FTB		182	> 50	FTB	
	2B	143	<10	SE	FTB					
	3B	145	<10	SE	FTB		185	> 50	FTB	
	4B	144	<10	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**183**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	135	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	140	<10	SE	FTB					
	3A	131	<10	SE	FTB		176	> 50	FTB	
	4A	135	<10	SE	FTB					
	5A	138	<10	SE	FTB		178	> 50	FTB	
DT-5	**MEAN:**	**136**								
	1B	137	<10	SE	FTB		178	> 50	FTB	
	2B	136	<10	SE	FTB					
	3B	128	<10	SE	FTB		180	> 50	FTB	
	4B	133	<10	SE	FTB					
	5B	129	<10	SE	FTB					
	MEAN:	**133**				**MEAN:**	**179**			
	1A	129	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	131	<10	SE	FTB					
	3A	125	<10	SE	FTB		179	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	137	<10	SE	FTB		178	> 50	FTB	
DT-6	**MEAN:**	**130**								
	1B	100	<10	SE	FTB		181	> 50	FTB	
	2B	114	<10	SE	FTB					
	3B	100	<10	SE	FTB		186	> 50	FTB	
	4B	106	<10	SE	FTB					
	5B	112	<10	SE	FTB					
	MEAN:	**106**				**MEAN:**	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	136	<10	SE	FTB	NR	187	> 50	FTB	NR
	2A	137	<10	SE	FTB					
	3A	138	<10	SE	FTB		180	> 50	FTB	
	4A	142	<10	SE	FTB					
	5A	134	<10	SE	FTB		183	> 50	FTB	
DT-7	**MEAN:**	**137**								
	1B	123	<10	SE	FTB		181	> 50	FTB	
	2B	123	<10	SE	FTB					
	3B	123	<10	SE	FTB		184	> 50	FTB	
	4B	122	<10	SE	FTB					
	5B	151	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**183**			
	1A	123	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	151	<10	SE	FTB					
	3A	146	<10	SE	FTB		173	> 50	FTB	
	4A	121	<10	SE	FTB					
	5A	127	<10	SE	FTB		175	> 50	FTB	
DT-8	**MEAN:**	**134**								
	1B	152	<10	SE	FTB		176	> 50	FTB	
	2B	147	<10	SE	FTB					
	3B	136	<10	SE	FTB		181	> 50	FTB	
	4B	145	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**144**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	136	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	131	<10	SE	FTB					
	3A	141	<10	SE	FTB		177	> 50	FTB	
	4A	150	<10	SE	FTB					
	5A	144	<10	SE	FTB		178	> 50	FTB	
DT-9	**MEAN:**	**140**								
	1B	139	<10	SE	FTB		177	> 50	FTB	
	2B	122	<10	SE	FTB					
	3B	132	<10	SE	FTB		180	> 50	FTB	
	4B	127	<10	SE	FTB					
	5B	141	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**179**			
	1A	107	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	121	<10	SE	FTB					
	3A	110	<10	SE	FTB		176	> 50	FTB	
	4A	107	<10	SE	FTB					
	5A	109	<10	SE	FTB		175	> 50	FTB	
DT-10	**MEAN:**	**111**								
	1B	140	<10	SE	FTB		179	> 50	FTB	
	2B	109	<10	SE	FTB					
	3B	119	<10	SE	FTB		178	> 50	FTB	
	4B	118	<10	SE	FTB					
	5B	118	<10	SE	FTB					
	MEAN:	**121**				**MEAN:**	**178**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-11	1A	127	<10	SE	FTB	NR	186	> 50	FTB	NR
	2A	127	<10	SE	FTB					
	3A	134	<10	SE	FTB		179	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	123	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**128**								
	1B	136	<10	SE	FTB		181	> 50	FTB	
	2B	137	<10	SE	FTB					
	3B	140	<10	SE	FTB		183	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	140	<10	SE	FTB					
	MEAN:	**139**				**MEAN:**	**182**			
DT-12	1A	132	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	135	<10	SE	FTB					
	3A	145	<10	SE	FTB		178	> 50	FTB	
	4A	142	<10	SE	FTB					
	5A	148	<10	SE	FTB		176	> 50	FTB	
	MEAN:	**140**								
	1B	134	<10	SE	FTB		177	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	129	<10	SE	FTB		179	> 50	FTB	
	4B	132	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**131**				**MEAN:**	**179**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-26-02
DATE TESTED: 17-Sep-02

ASTM D 6392/4437
ANALYST: MPP / CK
REPORT DATE: 17-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	143	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	127	<10	SE	FTB					
	3A	138	<10	SE	FTB		179	> 50	FTB	
	4A	129	<10	SE	FTB					
	5A	132	<10	SE	FTB		174	> 50	FTB	
DT-13	**MEAN:**	**134**								
	1B	146	<10	SE	FTB		176	> 50	FTB	
	2B	143	<10	SE	FTB					
	3B	144	<10	SE	FTB		174	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	147	<10	SE	FTB					
	MEAN:	**145**				**MEAN:**	**177**			
	1A	107	<10	SE	FTB	NR	188	> 50	FTB	NR
	2A	107	<10	SE	FTB					
	3A	105	<10	SE	FTB		179	> 50	FTB	
	4A	111	<10	SE	FTB					
	5A	113	<10	SE	FTB		180	> 50	FTB	
DT-14	**MEAN:**	**109**								
	1B	130	<10	SE	FTB		182	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	134	<10	SE	FTB		184	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	128	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**183**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 24,25 P

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

September 18, 2002

RECEIVED
SEP 23 2002
SCS ENGINEERS

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-28-02
Date Received:	09-18-02
Material(s) Tested:	2 single track extrusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 18-Sep-02

MATERIAL: HDPE
SEAM TYPE: SINGLE TRACK EXTRUSION WELD
TRI LOG #: E2176-28-02
DATE TESTED: 18-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 18-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1	98	<10	SE	FTB	NR	177	> 50	FTB	NR
	2	135	<10	SE	FTB					
	3	114	<10	SE	FTB		168	> 50	FTB	
	4	129	<10	SE	FTB					
	5	154	<10	SE	FTB		168	> 50	FTB	
DT-24	**MEAN:**	**126**								
							172	> 50	FTB	
							171	> 50	FTB	
						MEAN:	**171**			
	1	106	<10	SE	FTB	NR	168	> 50	FTB	NR
	2	126	<10	SE	FTB					
	3	122	<10	SE	FTB		168	> 50	FTB	
	4	119	<10	SE	FTB					
	5	119	<10	SE	FTB		168	> 50	FTB	
DT-25	**MEAN:**	**118**								
							168	> 50	FTB	
							171	> 50	FTB	
						MEAN:	**169**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 15-23
26-37
P

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

September 20, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-32-01
Date Received:	09-20-02
Material(s) Tested:	20 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Janet A Nel for MCH

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at damp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	*Adhesion failure resulting in delamination in the plane of the* bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-15	1A	140	<10	SE	FTB	NR	179	> 50	FTB	NR
	2A	136	<10	SE	FTB					
	3A	146	<10	SE	FTB		176	> 50	FTB	
	4A	151	<10	SE	FTB					
	5A	140	<10	SE	FTB		177	> 50	FTB	
	MEAN:	**143**								
	1B	125	<10	SE	FTB		181	> 50	FTB	
	2B	124	<10	SE	FTB					
	3B	127	<10	SE	FTB		178	> 50	FTB	
	4B	128	<10	SE	FTB					
	5B	136	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**178**			
DT-16	1A	128	<10	SE	FTB	NR	190	> 50	FTB	NR
	2A	122	<10	SE	FTB					
	3A	111	<10	SE	FTB		183	> 50	FTB	
	4A	112	<10	SE	FTB					
	5A	119	<10	SE	FTB		182	> 50	FTB	
	MEAN:	**118**								
	1B	132	<10	SE	FTB		182	> 50	FTB	
	2B	130	<10	SE	FTB					
	3B	124	<10	SE	FTB		186	> 50	FTB	
	4B	127	<10	SE	FTB					
	5B	126	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**185**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	142	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	139	<10	SE	FTB					
	3A	133	<10	SE	FTB		175	> 50	FTB	
	4A	133	<10	SE	FTB					
	5A	133	<10	SE	FTB		177	> 50	FTB	
DT-17	**MEAN:**	**136**								
	1B	121	<10	SE	FTB		177	> 50	FTB	
	2B	112	<10	SE	FTB					
	3B	112	<10	SE	FTB		181	> 50	FTB	
	4B	115	<10	SE	FTB					
	5B	108	<10	SE	FTB					
	MEAN:	**114**				**MEAN:**	**178**			
	1A	140	<10	SE	FTB	NR	187	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	135	<10	SE	FTB		178	> 50	FTB	
	4A	137	<10	SE	FTB					
	5A	150	<10	SE	FTB		178	> 50	FTB	
DT-18	**MEAN:**	**140**								
	1B	110	<10	SE	FTB		179	> 50	FTB	
	2B	113	<10	SE	FTB					
	3B	107	<10	SE	FTB		185	> 50	FTB	
	4B	106	<10	SE	FTB					
	5B	109	<10	SE	FTB					
	MEAN:	**109**				**MEAN:**	**181**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	125	<10	SE	FTB	NR	183	> 50	FTB	NR
	2A	123	<10	SE	FTB					
	3A	123	<10	SE	FTB		176	> 50	FTB	
	4A	131	<10	SE	FTB					
	5A	121	<10	SE	FTB		176	> 50	FTB	
DT-19	**MEAN:**	**125**								
	1B	138	<10	SE	FTB		177	> 50	FTB	
	2B	124	<10	SE	FTB					
	3B	124	<10	SE	FTB		182	> 50	FTB	
	4B	131	<10	SE	FTB					
	5B	121	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**179**			
	1A	142	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	130	<10	SE	FTB					
	3A	151	<10	SE	FTB		183	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	141	<10	SE	FTB		176	> 50	FTB	
DT-20	**MEAN:**	**141**								
	1B	142	<10	SE	FTB		178	> 50	FTB	
	2B	135	<10	SE	FTB					
	3B	140	<10	SE	FTB		178	> 50	FTB	
	4B	132	<10	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN:	**136**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	142	<10	SE	FTB	NR	186	> 50	FTB	NR
	2A	150	<10	SE	FTB					
	3A	139	<10	SE	FTB		182	> 50	FTB	
	4A	145	<10	SE	FTB					
	5A	146	<10	SE	FTB		175	> 50	FTB	
DT-21	**MEAN:**	**144**								
	1B	155	<10	SE	FTB		177	> 50	FTB	
	2B	146	<10	SE	FTB					
	3B	138	<10	SE	FTB		175	> 50	FTB	
	4B	153	<10	SE	FTB					
	5B	146	<10	SE	FTB					
	MEAN:	**148**				**MEAN:**	**179**			
	1A	122	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	116	<10	SE	FTB					
	3A	115	<10	SE	FTB		182	> 50	FTB	
	4A	151	<10	SE	FTB					
	5A	126	<10	SE	FTB		179	> 50	FTB	
DT-22	**MEAN:**	**126**								
	1B	125	<10	SE	FTB		188	> 50	FTB	
	2B	120	<10	SE	FTB					
	3B	119	<10	SE	FTB		188	> 50	FTB	
	4B	128	<10	SE	FTB					
	5B	117	<10	SE	FTB					
	MEAN:	**122**				**MEAN:**	**183**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	138	<10	SE	FTB	NR	191	> 50	FTB	NR
	2A	151	<10	SE	FTB					
	3A	137	<10	SE	FTB		181	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	144	<10	SE	FTB		182	> 50	FTB	
DT-23	**MEAN:**	**143**								
	1B	137	<10	SE	FTB		182	> 50	FTB	
	2B	146	<10	SE	FTB					
	3B	139	<10	SE	FTB		189	> 50	FTB	
	4B	143	<10	SE	FTB					
	5B	144	<10	SE	FTB					
	MEAN:	**142**				**MEAN:**	**185**			
	1A	143	<10	SE	FTB	NR	191	> 50	FTB	NR
	2A	145	<10	SE	FTB					
	3A	144	<10	SE	FTB		182	> 50	FTB	
	4A	151	<10	SE	FTB					
	5A	140	<10	SE	FTB		182	> 50	FTB	
DT-26	**MEAN:**	**145**								
	1B	132	<10	SE	FTB		182	> 50	FTB	
	2B	132	<10	SE	FTB					
	3B	128	<10	SE	FTB		192	> 50	FTB	
	4B	131	<10	SE	FTB					
	5B	136	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**186**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-27	1A	151	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	147	<10	SE	FTB					
	3A	130	<10	SE	FTB		177	> 50	FTB	
	4A	130	<10	SE	FTB					
	5A	162	<10	SE	FTB		177	> 50	FTB	
	MEAN:	**144**								
	1B	128	<10	SE	FTB		187	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	135	<10	SE	FTB		187	> 50	FTB	
	4B	124	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**181**			
DT-28	1A	139	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	149	<10	SE	FTB					
	3A	148	<10	SE	FTB		179	> 50	FTB	
	4A	154	<10	SE	FTB					
	5A	166	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**151**								
	1B	144	<10	SE	FTB		191	> 50	FTB	
	2B	147	<10	SE	FTB					
	3B	132	<10	SE	FTB		192	> 50	FTB	
	4B	133	<10	SE	FTB					
	5B	139	<10	SE	FTB					
	MEAN:	**139**				**MEAN:**	**184**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	137	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	152	<10	SE	FTB					
	3A	138	<10	SE	FTB		177	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	156	<10	SE	FTB		177	> 50	FTB	
DT-29	**MEAN:**	**145**								
	1B	130	<10	SE	FTB		188	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	128	<10	SE	FTB		186	> 50	FTB	
	4B	135	<10	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN:	**133**				**MEAN:**	**181**			
	1A	118	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	119	<10	SE	FTB		176	> 50	FTB	
	4A	120	<10	SE	FTB					
	5A	130	<10	SE	FTB		184	> 50	FTB	
DT-30	**MEAN:**	**125**								
	1B	117	<10	SE	FTB		187	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	105	<10	SE	FTB		184	> 50	FTB	
	4B	97	<10	SE	FTB					
	5B	116	<10	SE	FTB					
	MEAN:	**115**				**MEAN:**	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	152	<10	SE	FTB	NR	184	> 50	FTB	NR
	2A	159	<10	SE	FTB					
	3A	169	<10	SE	FTB		188	> 50	FTB	
	4A	144	<10	SE	FTB					
	5A	160	<10	SE	FTB		182	> 50	FTB	
DT-31	**MEAN:**	**157**								
	1B	105	<10	SE	FTB		185	> 50	FTB	
	2B	102	<10	SE	FTB					
	3B	114	<10	SE	FTB		179	> 50	FTB	
	4B	101	<10	SE	FTB					
	5B	112	<10	SE	FTB					
	MEAN:	**107**				**MEAN:**	**184**			
	1A	130	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	133	<10	SE	FTB		180	> 50	FTB	
	4A	126	<10	SE	FTB					
	5A	127	<10	SE	FTB		189	> 50	FTB	
DT-32	**MEAN:**	**131**								
	1B	112	<10	SE	FTB		184	> 50	FTB	
	2B	125	<10	SE	FTB					
	3B	111	<10	SE	FTB		189	> 50	FTB	
	4B	107	<10	SE	FTB					
	5B	106	<10	SE	FTB					
	MEAN:	**112**				**MEAN:**	**185**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-33	1A	136	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	137	<10	SE	FTB					
	3A	154	<10	SE	FTB		177	> 50	FTB	
	4A	146	<10	SE	FTB					
	5A	136	<10	SE	FTB		177	> 50	FTB	
	MEAN:	**142**								
	1B	141	<10	SE	FTB		186	> 50	FTB	
	2B	134	<10	SE	FTB					
	3B	145	<10	SE	FTB		187	> 50	FTB	
	4B	141	<10	SE	FTB					
	5B	136	<10	SE	FTB					
	MEAN:	**139**				**MEAN:**	**181**			
DT-34	1A	122	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	114	<10	SE	FTB					
	3A	117	<10	SE	FTB		172	> 50	FTB	
	4A	114	<10	SE	FTB					
	5A	120	<10	SE	FTB		185	> 50	FTB	
	MEAN:	**117**								
	1B	149	<10	SE	FTB		178	> 50	FTB	
	2B	135	<10	SE	FTB					
	3B	131	<10	SE	FTB		184	> 50	FTB	
	4B	145	<10	SE	FTB					
	5B	148	<10	SE	FTB					
	MEAN:	**142**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	130	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	135	<10	SE	FTB					
	3A	140	<10	SE	FTB		178	> 50	FTB	
	4A	135	<10	SE	FTB					
	5A	138	<10	SE	FTB		178	> 50	FTB	
DT-35	**MEAN:**	**136**								
	1B	155	<10	SE	FTB		183	> 50	FTB	
	2B	130	<10	SE	FTB					
	3B	120	<10	SE	FTB		184	> 50	FTB	
	4B	118	<10	SE	FTB					
	5B	125	<10	SE	FTB					
	MEAN:	**130**				**MEAN:**	**180**			
	1A	128	<10	SE	FTB	NR	186	> 50	FTB	NR
	2A	124	<10	SE	FTB					
	3A	134	<10	SE	FTB		180	> 50	FTB	
	4A	155	<10	SE	FTB					
	5A	145	<10	SE	FTB		180	> 50	FTB	
DT-36	**MEAN:**	**137**								
	1B	142	<10	SE	FTB		182	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	132	<10	SE	FTB		186	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**135**				**MEAN:**	**183**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 20-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-32-01
DATE TESTED: 20-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 20-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	117	<10	SE	FTB	NR	183	> 50	FTB	NR
	2A	103	<10	SE	FTB					
	3A	110	<10	SE	FTB		180	> 50	FTB	
	4A	120	<10	SE	FTB					
	5A	133	<10	SE	FTB		181	> 50	FTB	
DT-37	**MEAN:**	**117**								
	1B	153	<10	SE	FTB		190	> 50	FTB	
	2B	136	<10	SE	FTB					
	3B	147	<10	SE	FTB		190	> 50	FTB	
	4B	159	<10	SE	FTB					
	5B	156	<10	SE	FTB					
	MEAN:	**150**				**MEAN:**	**185**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 1P - 4P P

PRIMARY

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

September 26, 2002

RECEIVED
OCT - 1 2002
SCS ENGINEERS

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-41-10
Date Received:	09-26-02
Material(s) Tested:	4 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Janett A Nel for MCH

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 27-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-41-10
DATE TESTED: 27-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 27-Sep-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	132	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	135	<10	SE	FTB					
	3A	135	<10	SE	FTB		181	> 50	FTB	
	4A	134	<10	SE	FTB					
1P	5A	141	<10	SE	FTB		181	> 50	FTB	
DT-~~38P~~	**MEAN:**	**135**								
	1B	151	<10	SE	FTB		188	> 50	FTB	
	2B	148	<10	SE	FTB					
	3B	142	<10	SE	FTB		189	> 50	FTB	
	4B	162	<10	SE	FTB					
	5B	158	<10	SE	FTB					
	MEAN:	**152**				**MEAN:**	**184**			
	1A	159	<10	SE	FTB	NR	190	> 50	FTB	NR
	2A	161	<10	SE	FTB					
	3A	154	<10	SE	FTB		180	> 50	FTB	
	4A	148	<10	SE	FTB					
2P	5A	149	<10	SE	FTB		181	> 50	FTB	
DT-~~39P~~	**MEAN:**	**154**								
	1B	150	<10	SE	FTB		182	> 50	FTB	
	2B	162	<10	SE	FTB					
	3B	152	<10	SE	FTB		186	> 50	FTB	
	4B	157	<10	SE	FTB					
	5B	160	<10	SE	FTB					
	MEAN:	**156**				**MEAN:**	**184**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 27-Sep-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-41-10
DATE TESTED: 27-Sep-02

ASTM D 6392/4437
ANALYST: DC / CK
REPORT DATE: 27-Sep-02

SAMPLE NUMBER	SPECIMEN NUMBER	PEEL EVALUATION					SHEAR EVALUATION			
		MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	136	<10	SE	FTB	NR	185	> 50	FTB	NR
	2A	128	<10	SE	FTB					
	3A	135	<10	SE	FTB		175	> 50	FTB	
	4A	133	<10	SE	FTB					
3P	5A	151	<10	SE	FTB		176	> 50	FTB	
DT-~~40P~~	**MEAN:**	**137**								
	1B	153	<10	SE	FTB		179	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	138	<10	SE	FTB		177	> 50	FTB	
	4B	128	<10	SE	FTB					
	5B	128	<10	SE	FTB					
	MEAN:	**135**				**MEAN:**	**178**			
	1A	155	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	153	<10	SE	FTB					
	3A	131	<10	SE	FTB		164	> 50	FTB	
	4A	128	<10	SE	FTB					
4P	5A	155	<10	SE	FTB		169	> 50	FTB	
DT-~~41B~~	**MEAN:**	**144**								
	1B	145	<10	SE	FTB		168	> 50	FTB	
	2B	152	<10	SE	FTB					
	3B	146	<10	SE	FTB		174	> 50	FTB	
	4B	143	<10	SE	FTB					
	5B	150	<10	SE	FTB					
	MEAN:	**147**				**MEAN:**	**171**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

DT 38S-40S
5P-15P
17P-25P
32P, 33P P. SCV

October 4, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-49-08
Date Received:	10-04-02
Material(s) Tested:	25 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	149	<10	SE	FTB	NR	172	> 50	FTB	NR
	2A	136	<10	SE	FTB					
	3A	135	<10	SE	FTB		171	> 50	FTB	
	4A	141	<10	SE	FTB					
	5A	144	<10	SE	FTB		172	> 50	FTB	
DT-38S	**MEAN:**	**141**								
	1B	130	<10	SE	FTB		172	> 50	FTB	
	2B	133	<10	SE	FTB					
	3B	133	<10	SE	FTB		172	> 50	FTB	
	4B	119	<10	SE	FTB					
	5B	131	<10	SE	FTB					
	MEAN:	**129**				**MEAN:**	**172**			
	1A	141	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	144	<10	SE	FTB					
	3A	139	<10	SE	FTB		178	> 50	FTB	
	4A	139	<10	SE	FTB					
	5A	136	<10	SE	FTB		178	> 50	FTB	
DT-39S	**MEAN:**	**140**								
	1B	120	<10	SE	FTB		178	> 50	FTB	
	2B	118	<10	SE	FTB					
	3B	116	<10	SE	FTB		179	> 50	FTB	
	4B	117	<10	SE	FTB					
	5B	116	<10	SE	FTB					
	MEAN:	**117**				**MEAN:**	**178**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	145	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	136	<10	SE	FTB					
	3A	136	<10	SE	FTB		174	> 50	FTB	
	4A	140	<10	SE	FTB					
	5A	135	<10	SE	FTB		175	> 50	FTB	
DT-40S	**MEAN:**	**138**								
	1B	137	<10	SE	FTB		180	> 50	FTB	
	2B	150	<10	SE	FTB					
	3B	157	<10	SE	FTB		180	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	135	<10	SE	FTB					
	MEAN:	**145**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	120	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	119	<10	SE	FTB					
	3A	125	<10	SE	FTB		179	> 50	FTB	
	4A	120	<10	SE	FTB					
	5A	126	<10	SE	FTB		180	> 50	FTB	
DT-5P	**MEAN:**	**122**								
	1B	122	<10	SE	FTB		177	> 50	FTB	
	2B	125	<10	SE	FTB					
	3B	122	<10	SE	FTB		180	> 50	FTB	
	4B	126	<10	SE	FTB					
	5B	121	<10	SE	FTB					
	MEAN:	**123**				**MEAN:**	**179**			
	1A	134	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	143	<10	SE	FTB		181	> 50	FTB	
	4A	140	<10	SE	FTB					
	5A	144	<10	SE	FTB		178	> 50	FTB	
DT-6P	**MEAN:**	**140**								
	1B	126	<10	SE	FTB		182	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	124	<10	SE	FTB		180	> 50	FTB	
	4B	127	<10	SE	FTB					
	5B	122	<10	SE	FTB					
	MEAN:	**126**				**MEAN:**	**181**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-7P	1A	128	<10	SE	FTB	NR	175	> 50	FTB	NR
	2A	127	<10	SE	FTB					
	3A	140	<10	SE	FTB		178	> 50	FTB	
	4A	129	<10	SE	FTB					
	5A	131	<10	SE	FTB		178	> 50	FTB	
	MEAN:	**131**								
	1B	128	<10	SE	FTB		181	> 50	FTB	
	2B	129	<10	SE	FTB					
	3B	137	<10	SE	FTB		183	> 50	FTB	
	4B	134	<10	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**179**			
DT-8P	1A	144	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	143	<10	SE	FTB					
	3A	137	<10	SE	FTB		182	> 50	FTB	
	4A	144	<10	SE	FTB					
	5A	147	<10	SE	FTB		183	> 50	FTB	
	MEAN:	**143**								
	1B	113	<10	SE	FTB		186	> 50	FTB	
	2B	115	<10	SE	FTB					
	3B	118	<10	SE	FTB		186	> 50	FTB	
	4B	116	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**118**				**MEAN:**	**184**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	137	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	142	<10	SE	FTB					
	3A	139	<10	SE	FTB		178	> 50	FTB	
	4A	141	<10	SE	FTB					
	5A	129	<10	SE	FTB		180	> 50	FTB	
DT-9P	**MEAN:**	**138**								
	1B	140	<10	SE	FTB		179	> 50	FTB	
	2B	136	<10	SE	FTB					
	3B	144	<10	SE	FTB		181	> 50	FTB	
	4B	137	<10	SE	FTB					
	5B	131	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**179**			
	1A	131	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	129	<10	SE	FTB					
	3A	127	<10	SE	FTB		179	> 50	FTB	
	4A	132	<10	SE	FTB					
	5A	126	<10	SE	FTB		182	> 50	FTB	
DT-10P	**MEAN:**	**129**								
	1B	125	<10	SE	FTB		183	> 50	FTB	
	2B	136	<10	SE	FTB					
	3B	147	<10	SE	FTB		179	> 50	FTB	
	4B	143	<10	SE	FTB					
	5B	148	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-11P	1A	122	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	121	<10	SE	FTB					
	3A	121	<10	SE	FTB		177	> 50	FTB	
	4A	117	<10	SE	FTB					
	5A	140	<10	SE	FTB		178	> 50	FTB	
	MEAN:	**124**								
	1B	149	<10	SE	FTB		182	> 50	FTB	
	2B	145	<10	SE	FTB					
	3B	155	<10	SE	FTB		183	> 50	FTB	
	4B	152	<10	SE	FTB					
	5B	154	<10	SE	FTB					
	MEAN:	**151**				**MEAN:**	**180**			
DT-12P	1A	129	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	124	<10	SE	FTB					
	3A	128	<10	SE	FTB		178	> 50	FTB	
	4A	130	<10	SE	FTB					
	5A	130	<10	SE	FTB		174	> 50	FTB	
	MEAN:	**128**								
	1B	102	<10	SE	FTB		180	> 50	FTB	
	2B	110	<10	SE	FTB					
	3B	108	<10	SE	FTB		177	> 50	FTB	
	4B	107	<10	SE	FTB					
	5B	106	<10	SE	FTB					
	MEAN:	**107**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-13P	1A	117	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	119	<10	SE	FTB					
	3A	114	<10	SE	FTB		175	> 50	FTB	
	4A	120	<10	SE	FTB					
	5A	115	<10	SE	FTB		175	> 50	FTB	
	MEAN:	**117**								
	1B	146	<10	SE	FTB		178	> 50	FTB	
	2B	147	<10	SE	FTB					
	3B	153	<10	SE	FTB		174	> 50	FTB	
	4B	149	<10	SE	FTB					
	5B	147	<10	SE	FTB					
	MEAN:	**148**				**MEAN:**	**176**			
DT-14P	1A	136	<10	SE	FTB	NR	175	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	139	<10	SE	FTB		175	> 50	FTB	
	4A	144	<10	SE	FTB					
	5A	148	<10	SE	FTB		176	> 50	FTB	
	MEAN:	**142**								
	1B	139	<10	SE	FTB		179	> 50	FTB	
	2B	236	<10	SE	FTB					
	3B	142	<10	SE	FTB		173	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**160**				**MEAN:**	**176**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-15P	1A	132	<10	SE	FTB	NR	179	> 50	FTB	NR
	2A	129	<10	SE	FTB					
	3A	125	<10	SE	FTB		179	> 50	FTB	
	4A	135	<10	SE	FTB					
	5A	134	<10	SE	FTB		179	> 50	FTB	
	MEAN:	**131**								
	1B	146	<10	SE	FTB		182	> 50	FTB	
	2B	137	<10	SE	FTB					
	3B	143	<10	SE	FTB		180	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	131	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**180**			
DT-17P	1A	131	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	128	<10	SE	FTB					
	3A	137	<10	SE	FTB		182	> 50	FTB	
	4A	138	<10	SE	FTB					
	5A	136	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**134**								
	1B	146	<10	SE	FTB		179	> 50	FTB	
	2B	142	<10	SE	FTB					
	3B	141	<10	SE	FTB		180	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	147	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-18P	1A	156	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	143	<10	SE	FTB					
	3A	149	<10	SE	FTB		177	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	153	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**149**								
	1B	142	<10	SE	FTB		179	> 50	FTB	
	2B	135	<10	SE	FTB					
	3B	133	<10	SE	FTB		182	> 50	FTB	
	4B	138	<10	SE	FTB					
	5B	135	<10	SE	FTB					
	MEAN:	**137**				**MEAN:**	**179**			
DT-19P	1A	135	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	128	<10	SE	FTB					
	3A	126	<10	SE	FTB		177	> 50	FTB	
	4A	121	<10	SE	FTB					
	5A	138	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**130**								
	1B	114	<10	SE	FTB		179	> 50	FTB	
	2B	110	<10	SE	FTB					
	3B	134	<10	SE	FTB		176	> 50	FTB	
	4B	111	<10	SE	FTB					
	5B	124	<10	SE	FTB					
	MEAN:	**119**				**MEAN:**	**178**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	139	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	144	<10	SE	FTB					
	3A	137	<10	SE	FTB		177	> 50	FTB	
	4A	142	<10	SE	FTB					
	5A	132	<10	SE	FTB		177	> 50	FTB	
DT-20P	**MEAN:**	**139**								
	1B	141	<10	SE	FTB		177	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	135	<10	SE	FTB		177	> 50	FTB	
	4B	137	<10	SE	FTB					
	5B	134	<10	SE	FTB					
	MEAN:	**137**				**MEAN:**	**177**			
	1A	135	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	132	<10	SE	FTB					
	3A	134	<10	SE	FTB		178	> 50	FTB	
	4A	126	<10	SE	FTB					
	5A	128	<10	SE	FTB		177	> 50	FTB	
DT-21P	**MEAN:**	**131**								
	1B	127	<10	SE	FTB		177	> 50	FTB	
	2B	136	<10	SE	FTB					
	3B	135	<10	SE	FTB		175	> 50	FTB	
	4B	131	<10	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-22P	1A	119	<10	SE	FTB	NR	175	> 50	FTB	NR
	2A	120	<10	SE	FTB					
	3A	106	<10	SE	FTB		177	> 50	FTB	
	4A	114	<10	SE	FTB					
	5A	115	<10	SE	FTB		176	> 50	FTB	
	MEAN:	**115**								
	1B	123	<10	SE	FTB		179	> 50	FTB	
	2B	122	<10	SE	FTB					
	3B	117	<10	SE	FTB		170	> 50	FTB	
	4B	117	<10	SE	FTB					
	5B	123	<10	SE	FTB					
	MEAN:	**120**				**MEAN:**	**175**			
DT-23P	1A	130	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	133	<10	SE	FTB					
	3A	142	<10	SE	FTB		174	> 50	FTB	
	4A	133	<10	SE	FTB					
	5A	140	<10	SE	FTB		175	> 50	FTB	
	MEAN:	**136**								
	1B	135	<10	SE	FTB		179	> 50	FTB	
	2B	141	<10	SE	FTB					
	3B	122	<10	SE	FTB		175	> 50	FTB	
	4B	134	<10	SE	FTB					
	5B	141	<10	SE	FTB					
	MEAN:	**135**				**MEAN:**	**176**			

NR: *Not Requested*

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-24P	1A	109	<10	SE	FTB	NR	168	> 50	FTB	NR
	2A	109	<10	SE	FTB					
	3A	106	<10	SE	FTB		167	> 50	FTB	
	4A	104	<10	SE	FTB					
	5A	119	<10	SE	FTB		170	> 50	FTB	
	MEAN:	**109**								
	1B	149	<10	SE	FTB		169	> 50	FTB	
	2B	164	<10	SE	FTB					
	3B	166	<10	SE	FTB		170	> 50	FTB	
	4B	147	<10	SE	FTB					
	5B	159	<10	SE	FTB					
	MEAN:	**157**				**MEAN:**	**169**			
DT-25P	1A	121	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	125	<10	SE	FTB					
	3A	124	<10	SE	FTB		172	> 50	FTB	
	4A	126	<10	SE	FTB					
	5A	127	<10	SE	FTB		180	> 50	FTB	
	MEAN:	**125**								
	1B	122	<10	SE	FTB		177	> 50	FTB	
	2B	117	<10	SE	FTB					
	3B	123	<10	SE	FTB		176	> 50	FTB	
	4B	114	<10	SE	FTB					
	5B	124	<10	SE	FTB					
	MEAN:	**120**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: SINGLE EXTRUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1	149	<10	SE	FTB	NR	179	> 50	FTB	NR
	2	161	<10	SE	FTB					
	3	146	<10	SE	FTB		179	> 50	FTB	
	4	170	<10	SE	FTB					
	5	158	<10	SE	FTB		154	> 50	FTB	
DT-32P	**MEAN:**	**157**								
							172	> 50	FTB	
							172	> 50	FTB	
						MEAN:	**171**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 04-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-49-08
DATE TESTED: 04-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 04-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	132	<10	SE	FTB	NR	170	> 50	FTB	NR
	2A	132	<10	SE	FTB					
	3A	125	<10	SE	FTB		168	> 50	FTB	
	4A	140	<10	SE	FTB					
	5A	135	<10	SE	FTB		168	> 50	FTB	
DT-33P	**MEAN:**	**133**								
	1B	113	<10	SE	FTB		169	> 50	FTB	
	2B	111	<10	SE	FTB					
	3B	123	<10	SE	FTB		168	> 50	FTB	
	4B	108	<10	SE	FTB					
	5B	115	<10	SE	FTB					
	MEAN:	**114**				**MEAN:**	**169**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

1 · P
.5,425 | PSCV

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

October 8, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-52-09
Date Received:	10-08-02
Material(s) Tested:	3 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter
Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 08-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-52-09
DATE TESTED: 08-Oct-02

ASTM D 6392/4437
ANALYST: DC
REPORT DATE: 08-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-16P	1A	143	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	147	<10	SE	FTB					
	3A	148	<10	SE	FTB		182	> 50	FTB	
	4A	147	<10	SE	FTB					
	5A	144	<10	SE	FTB		178	> 50	FTB	
	MEAN:	**146**								
	1B	121	<10	SE	FTB		180	> 50	FTB	
	2B	148	<10	SE	FTB					
	3B	138	<10	SE	FTB		178	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**137**				**MEAN:**	**180**			
DT-41S	1A	146	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	130	<10	SE	FTB		183	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	119	<10	SE	FTB		183	> 50	FTB	
	MEAN:	**133**								
	1B	159	<10	SE	FTB		181	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	130	<10	SE	FTB		177	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	144	<10	SE	FTB					
	MEAN:	**142**				**MEAN:**	**181**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 08-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-52-09
DATE TESTED: 08-Oct-02

ASTM D 6392/4437
ANALYST: DC
REPORT DATE: 08-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-42S	1A	150	<10	SE	FTB	NR	185	> 50	FTB	NR
	2A	144	<10	SE	FTB					
	3A	144	<10	SE	FTB		181	> 50	FTB	
	4A	157	<10	SE	FTB					
	5A	147	<10	SE	FTB		183	> 50	FTB	
	MEAN:	**148**								
	1B	131	<10	SE	FTB		182	> 50	FTB	
	2B	134	<10	SE	FTB					
	3B	150	<10	SE	FTB		179	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	136	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

26F 1P
43S 55S
P.
SCV

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

October 10, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-56-07
Date Received:	10-10-02
Material(s) Tested:	19 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter
Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	137	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	131	<10	SE	FTB					
	3A	142	<10	SE	FTB		172	> 50	FTB	
	4A	124	<10	SE	FTB					
	5A	137	<10	SE	FTB		177	> 50	FTB	
DT-26P	**MEAN:**	**134**								
	1B	131	<10	SE	FTB		176	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	145	<10	SE	FTB		183	> 50	FTB	
	4B	132	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**178**			
	1A	136	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	142	<10	SE	FTB					
	3A	134	<10	SE	FTB		180	> 50	FTB	
	4A	133	<10	SE	FTB					
	5A	132	<10	SE	FTB		177	> 50	FTB	
DT-27P	**MEAN:**	**135**								
	1B	132	<10	SE	FTB		183	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	138	<10	SE	FTB		181	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	143	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	138	<10	SE	FTB	NR	170	> 50	FTB	NR
	2A	150	<10	SE	FTB					
	3A	151	<10	SE	FTB		172	> 50	FTB	
	4A	146	<10	SE	FTB					
	5A	134	<10	SE	FTB		174	> 50	FTB	
DT-28P	**MEAN:**	**144**								
	1B	136	<10	SE	FTB		170	> 50	FTB	
	2B	133	<10	SE	FTB					
	3B	132	<10	SE	FTB		169	> 50	FTB	
	4B	131	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**171**			
	1A	139	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	136	<10	SE	FTB					
	3A	132	<10	SE	FTB		179	> 50	FTB	
	4A	135	<10	SE	FTB					
	5A	133	<10	SE	FTB		178	> 50	FTB	
DT-29P	**MEAN:**	**135**								
	1B	145	<10	SE	FTB		181	> 50	FTB	
	2B	127	<10	SE	FTB					
	3B	139	<10	SE	FTB		181	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	131	<10	SE	FTB					
	MEAN:	**137**				**MEAN:**	**179**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. *TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.*

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-30P	1A	144	<10	SE	FTB	NR	174	> 50	FTB	NR
	2A	144	<10	SE	FTB					
	3A	144	<10	SE	FTB		173	> 50	FTB	
	4A	145	<10	SE	FTB					
	5A	150	<10	SE	FTB		175	> 50	FTB	
	MEAN:	**145**								
	1B	134	<10	SE	FTB		178	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	137	<10	SE	FTB		173	> 50	FTB	
	4B	138	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**175**			
DT-31P	1A	150	<10	SE	FTB	NR	160	> 50	FTB	NR
	2A	145	<10	SE	FTB					
	3A	144	<10	SE	FTB		157	> 50	FTB	
	4A	147	<10	SE	FTB					
	5A	147	<10	SE	FTB		156	> 50	FTB	
	MEAN:	**147**								
	1B	154	<10	SE	FTB		160	> 50	FTB	
	2B	154	<10	SE	FTB					
	3B	154	<10	SE	FTB		161	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	151	<10	SE	FTB					
	MEAN:	**151**				**MEAN:**	**159**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	153	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	128	<10	SE	FTB					
	3A	134	<10	SE	FTB		178	> 50	FTB	
	4A	136	<10	SE	FTB					
	5A	131	<10	SE	FTB		181	> 50	FTB	
DT-43S	**MEAN:**	**136**								
	1B	129	<10	SE	FTB		186	> 50	FTB	
	2B	139	<10	SE	FTB					
	3B	127	<10	SE	FTB		181	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	130	<10	SE	FTB					
	MEAN:	**133**				**MEAN:**	**181**			
	1A	129	<10	SE	FTB	NR	186	> 50	FTB	NR
	2A	143	<10	SE	FTB					
	3A	133	<10	SE	FTB		183	> 50	FTB	
	4A	141	<10	SE	FTB					
	5A	133	<10	SE	FTB		180	> 50	FTB	
DT-44S	**MEAN:**	**136**								
	1B	136	<10	SE	FTB		180	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	140	<10	SE	FTB		182	> 50	FTB	
	4B	134	<10	SE	FTB					
	5B	134	<10	SE	FTB					
	MEAN:	**136**				**MEAN:**	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	149	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	147	<10	SE	FTB					
	3A	153	<10	SE	FTB		176	> 50	FTB	
	4A	147	<10	SE	FTB					
	5A	145	<10	SE	FTB		176	> 50	FTB	
DT-45S	**MEAN:**	**148**								
	1B	127	<10	SE	FTB		180	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	138	<10	SE	FTB		180	> 50	FTB	
	4B	148	<10	SE	FTB					
	5B	135	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**178**			
	1A	132	<10	SE	FTB	NR	177	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	137	<10	SE	FTB		176	> 50	FTB	
	4A	131	<10	SE	FTB					
	5A	132	<10	SE	FTB		183	> 50	FTB	
DT-46S	**MEAN:**	**134**								
	1B	138	<10	SE	FTB		181	> 50	FTB	
	2B	150	<10	SE	FTB					
	3B	146	<10	SE	FTB		175	> 50	FTB	
	4B	138	<10	SE	FTB					
	5B	145	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**178**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-47S	1A	137	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	130	<10	SE	FTB		178	> 50	FTB	
	4A	133	<10	SE	FTB					
	5A	134	<10	SE	FTB		177	> 50	FTB	
	MEAN:	**134**								
	1B	140	<10	SE	FTB		181	> 50	FTB	
	2B	142	<10	SE	FTB					
	3B	137	<10	SE	FTB		181	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	154	<10	SE	FTB					
	MEAN:	**144**				**MEAN:**	**179**			
DT-48S	1A	141	<10	SE	FTB	NR	174	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	141	<10	SE	FTB		172	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	138	<10	SE	FTB		176	> 50	FTB	
	MEAN:	**141**								
	1B	146	<10	SE	FTB		171	> 50	FTB	
	2B	138	<10	SE	FTB					
	3B	138	<10	SE	FTB		169	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	138	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**172**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	153	<10	SE	FTB	NR	170	> 50	FTB	NR
	2A	157	<10	SE	FTB					
	3A	149	<10	SE	FTB		173	> 50	FTB	
	4A	163	<10	SE	FTB					
	5A	156	<10	SE	FTB		174	> 50	FTB	
DT-49S	**MEAN:**	**156**								
	1B	135	<10	SE	FTB		176	> 50	FTB	
	2B	125	<10	SE	FTB					
	3B	128	<10	SE	FTB		173	> 50	FTB	
	4B	136	<10	SE	FTB					
	5B	132	<10	SE	FTB					
	MEAN:	**131**				**MEAN:**	**173**			
	1A	132	<10	SE	FTB	NR	168	> 50	FTB	NR
	2A	133	<10	SE	FTB					
	3A	134	<10	SE	FTB		171	> 50	FTB	
	4A	140	<10	SE	FTB					
	5A	133	<10	SE	FTB		171	> 50	FTB	
DT-50S	**MEAN:**	**134**								
	1B	138	<10	SE	FTB		174	> 50	FTB	
	2B	142	<10	SE	FTB					
	3B	136	<10	SE	FTB		178	> 50	FTB	
	4B	144	<10	SE	FTB					
	5B	142	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**172**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	142	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	137	<10	SE	FTB					
	3A	139	<10	SE	FTB		178	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	133	<10	SE	FTB		180	> 50	FTB	
DT-51S	**MEAN:**	**139**								
	1B	134	<10	SE	FTB		183	> 50	FTB	
	2B	128	<10	SE	FTB					
	3B	133	<10	SE	FTB		182	> 50	FTB	
	4B	140	<10	SE	FTB					
	5B	127	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**181**			
	1A	134	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	126	<10	SE	FTB					
	3A	127	<10	SE	FTB		179	> 50	FTB	
	4A	130	<10	SE	FTB					
	5A	133	<10	SE	FTB		177	> 50	FTB	
DT-52S	**MEAN:**	**130**								
	1B	145	<10	SE	FTB		180	> 50	FTB	
	2B	146	<10	SE	FTB					
	3B	141	<10	SE	FTB		177	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	144	<10	SE	FTB					
	MEAN:	**144**				**MEAN:**	**179**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-53S	1A	123	<10	SE	FTB	NR	165	> 50	FTB	NR
	2A	110	<10	SE	FTB					
	3A	111	<10	SE	FTB		168	> 50	FTB	
	4A	106	<10	SE	FTB					
	5A	117	<10	SE	FTB		169	> 50	FTB	
	MEAN:	**113**								
	1B	135	<10	SE	FTB		168	> 50	FTB	
	2B	132	<10	SE	FTB					
	3B	139	<10	SE	FTB		172	> 50	FTB	
	4B	134	<10	SE	FTB					
	5B	129	<10	SE	FTB					
	MEAN:	**134**				**MEAN:**	**168**			
DT-54S	1A	154	<10	SE	FTB	NR	183	> 50	FTB	NR
	2A	156	<10	SE	FTB					
	3A	150	<10	SE	FTB		187	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	152	<10	SE	FTB		187	> 50	FTB	
	MEAN:	**151**								
	1B	138	<10	SE	FTB		181	> 50	FTB	
	2B	132	<10	SE	FTB					
	3B	136	<10	SE	FTB		187	> 50	FTB	
	4B	152	<10	SE	FTB					
	5B	126	<10	SE	FTB					
	MEAN:	**137**				**MEAN:**	**185**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 10-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-56-07
DATE TESTED: 10-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 10-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	138	<10	SE	FTB	NR	168	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	142	<10	SE	FTB		167	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	141	<10	SE	FTB		167	> 50	FTB	
DT-55S	**MEAN:**	**141**								
	1B	118	<10	SE	FTB		169	> 50	FTB	
	2B	116	<10	SE	FTB					
	3B	113	<10	SE	FTB		164	> 50	FTB	
	4B	116	<10	SE	FTB					
	5B	123	<10	SE	FTB					
	MEAN:	**117**				**MEAN:**	**167**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 3U^ -45P P SCV

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

October 15, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-61-04
Date Received:	10-15-02
Material(s) Tested:	12 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	145	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	137	<10	SE	FTB					
	3A	139	<10	SE	FTB		176	> 50	FTB	
	4A	144	<10	SE	FTB					
	5A	153	<10	SE	FTB		180	> 50	FTB	
DT-34P	**MEAN:**	**144**								
	1B	129	<10	SE	FTB		181	> 50	FTB	
	2B	132	<10	SE	FTB					
	3B	125	<10	SE	FTB		179	> 50	FTB	
	4B	126	<10	SE	FTB					
	5B	125	<10	SE	FTB					
	MEAN:	**127**				**MEAN:**	**178**			
	1A	134	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	129	<10	SE	FTB					
	3A	133	<10	SE	FTB		177	> 50	FTB	
	4A	131	<10	SE	FTB					
	5A	131	<10	SE	FTB		177	> 50	FTB	
DT-35P	**MEAN:**	**132**								
	1B	140	<10	SE	FTB		176	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	137	<10	SE	FTB		177	> 50	FTB	
	4B	136	<10	SE	FTB					
	5B	139	<10	SE	FTB					
	MEAN:	**138**				**MEAN:**	**177**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	133	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	132	<10	SE	FTB					
	3A	130	<10	SE	FTB		179	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	131	<10	SE	FTB		181	> 50	FTB	
DT-36P	**MEAN:**	**131**								
	1B	137	<10	SE	FTB		182	> 50	FTB	
	2B	131	<10	SE	FTB					
	3B	131	<10	SE	FTB		182	> 50	FTB	
	4B	133	<10	SE	FTB					
	5B	134	<10	SE	FTB					
	MEAN:	**133**				**MEAN:**	**181**			
	1A	122	<10	SE	FTB	NR	179	> 50	FTB	NR
	2A	128	<10	SE	FTB					
	3A	124	<10	SE	FTB		176	> 50	FTB	
	4A	125	<10	SE	FTB					
	5A	129	<10	SE	FTB		177	> 50	FTB	
DT-37P	**MEAN:**	**126**								
	1B	129	<10	SE	FTB		180	> 50	FTB	
	2B	130	<10	SE	FTB					
	3B	125	<10	SE	FTB		176	> 50	FTB	
	4B	128	<10	SE	FTB					
	5B	129	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**178**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. *TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.* TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	135	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	135	<10	SE	FTB					
	3A	112	<10	SE	FTB		182	> 50	FTB	
	4A	115	<10	SE	FTB					
	5A	116	<10	SE	FTB		185	> 50	FTB	
DT-38P	**MEAN:**	**123**								
	1B	141	<10	SE	FTB		184	> 50	FTB	
	2B	134	<10	SE	FTB					
	3B	129	<10	SE	FTB		182	> 50	FTB	
	4B	132	<10	SE	FTB					
	5B	143	<10	SE	FTB					
	MEAN:	**136**				**MEAN:**	**183**			
	1A	148	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	150	<10	SE	FTB					
	3A	150	<10	SE	FTB		182	> 50	FTB	
	4A	145	<10	SE	FTB					
	5A	151	<10	SE	FTB		182	> 50	FTB	
DT-39P	**MEAN:**	**149**								
	1B	131	<10	SE	FTB		179	> 50	FTB	
	2B	134	<10	SE	FTB					
	3B	136	<10	SE	FTB		178	> 50	FTB	
	4B	134	<10	SE	FTB					
	5B	138	<10	SE	FTB					
	MEAN:	**135**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-40P	1A	145	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	141	<10	SE	FTB		176	> 50	FTB	
	4A	141	<10	SE	FTB					
	5A	139	<10	SE	FTB		177	> 50	FTB	
	MEAN:	**141**								
	1B	144	<10	SE	FTB		179	> 50	FTB	
	2B	135	<10	SE	FTB					
	3B	141	<10	SE	FTB		179	> 50	FTB	
	4B	141	<10	SE	FTB					
	5B	140	<10	SE	FTB					
	MEAN:	**140**				**MEAN:**	**177**			
DT-41P	1A	130	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	150	<10	SE	FTB					
	3A	136	<10	SE	FTB		187	> 50	FTB	
	4A	148	<10	SE	FTB					
	5A	152	<10	SE	FTB		183	> 50	FTB	
	MEAN:	**143**								
	1B	125	<10	SE	FTB		187	> 50	FTB	
	2B	123	<10	SE	FTB					
	3B	131	<10	SE	FTB		185	> 50	FTB	
	4B	119	<10	SE	FTB					
	5B	120	<10	SE	FTB					
	MEAN:	**124**				**MEAN:**	**185**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-42P	1A	148	<10	SE	FTB	NR	174	> 50	FTB	NR
	2A	142	<10	SE	FTB					
	3A	137	<10	SE	FTB		172	> 50	FTB	
	4A	138	<10	SE	FTB					
	5A	140	<10	SE	FTB		175	> 50	FTB	
	MEAN:	**141**								
	1B	133	<10	SE	FTB		175	> 50	FTB	
	2B	127	<10	SE	FTB					
	3B	127	<10	SE	FTB		176	> 50	FTB	
	4B	125	<10	SE	FTB					
	5B	127	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**174**			
DT-43P	1A	143	<10	SE	FTB	NR	171	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	143	<10	SE	FTB		172	> 50	FTB	
	4A	143	<10	SE	FTB					
	5A	139	<10	SE	FTB		174	> 50	FTB	
	MEAN:	**142**								
	1B	151	<10	SE	FTB		177	> 50	FTB	
	2B	145	<10	SE	FTB					
	3B	144	<10	SE	FTB		174	> 50	FTB	
	4B	147	<10	SE	FTB					
	5B	149	<10	SE	FTB					
	MEAN:	**147**				**MEAN:**	**174**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 15-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-61-04
DATE TESTED: 15-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 15-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	144	<10	SE	FTB	NR	187	> 50	FTB	NR
	2A	111	<10	SE	FTB					
	3A	140	<10	SE	FTB		185	> 50	FTB	
	4A	140	<10	SE	FTB					
	5A	123	<10	SE	FTB		187	> 50	FTB	
DT-44P	**MEAN:**	**132**								
	1B	141	<10	SE	FTB		186	> 50	FTB	
	2B	144	<10	SE	FTB					
	3B	140	<10	SE	FTB		186	> 50	FTB	
	4B	142	<10	SE	FTB					
	5B	146	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**186**			
	1A	127	<10	SE	FTB	NR	176	> 50	FTB	NR
	2A	137	<10	SE	FTB					
	3A	134	<10	SE	FTB		178	> 50	FTB	
	4A	132	<10	SE	FTB					
	5A	134	<10	SE	FTB		179	> 50	FTB	
DT-45P	**MEAN:**	**133**								
	1B	124	<10	SE	FTB		183	> 50	FTB	
	2B	120	<10	SE	FTB					
	3B	122	<10	SE	FTB		182	> 50	FTB	
	4B	121	<10	SE	FTB					
	5B	165	<10	SE	FTB					
	MEAN:	**130**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply *to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.* TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 46P-49P
SCR

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

October 17, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-65-05
Date Received:	10-17-02
Material(s) Tested:	4 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-65-05
DATE TESTED: 17-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 17-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	136	<10	SE	FTB	NR	180	> 50	FTB	NR
	2A	139	<10	SE	FTB					
	3A	137	<10	SE	FTB		178	> 50	FTB	
	4A	138	<10	SE	FTB					
	5A	141	<10	SE	FTB		180	> 50	FTB	
DT-46P	**MEAN:**	**138**								
	1B	110	<10	SE	FTB		179	> 50	FTB	
	2B	105	<10	SE	FTB					
	3B	111	<10	SE	FTB		178	> 50	FTB	
	4B	110	<10	SE	FTB					
	5B	99	<10	SE	FTB					
	MEAN:	**107**				**MEAN:**	**179**			
	1A	145	<10	SE	FTB	NR	154	> 50	FTB	NR
	2A	118	<10	SE	FTB					
	3A	126	<10	SE	FTB		162	> 50	FTB	
	4A	116	<10	SE	FTB					
	5A	123	<10	SE	FTB		169	> 50	FTB	
DT-47P	**MEAN:**	**126**								
	1B	143	<10	SE	FTB		170	> 50	FTB	
	2B	140	<10	SE	FTB					
	3B	139	<10	SE	FTB		168	> 50	FTB	
	4B	148	<10	SE	FTB					
	5B	145	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**165**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 17-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-65-05
DATE TESTED: 17-Oct-02

ASTM D 6392/4437
ANALYST: DC / MPP
REPORT DATE: 17-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	136	<10	SE	FTB	NR	183	> 50	FTB	NR
	2A	133	<10	SE	FTB					
	3A	146	<10	SE	FTB		182	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	132	<10	SE	FTB		181	> 50	FTB	
DT-48P	**MEAN:**	**135**								
	1B	150	<10	SE	FTB		177	> 50	FTB	
	2B	143	<10	SE	FTB					
	3B	145	<10	SE	FTB		181	> 50	FTB	
	4B	146	<10	SE	FTB					
	5B	146	<10	SE	FTB					
	MEAN:	**146**				**MEAN:**	**181**			
	1A	123	<10	SE	FTB	NR	161	> 50	FTB	NR
	2A	124	<10	SE	FTB					
	3A	125	<10	SE	FTB		163	> 50	FTB	
	4A	124	<10	SE	FTB					
	5A	123	<10	SE	FTB		163	> 50	FTB	
DT-49P	**MEAN:**	**124**								
	1B	141	<10	SE	FTB		159	> 50	FTB	
	2B	141	<10	SE	FTB					
	3B	139	<10	SE	FTB		164	> 50	FTB	
	4B	129	<10	SE	FTB					
	5B	131	<10	SE	FTB					
	MEAN:	**136**				**MEAN:**	**162**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

DT 5021 5621 P

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

October 21, 2002

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

fax: 813-623-6757
fax: 813-642-9026 (attn: Dennis DuPont)

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2176-68-05
Date Received:	10-21-02
Material(s) Tested:	7 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between *the fillet and the bottom sheet (applicable to peel only).*
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 21-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-68-05
DATE TESTED: 21-Oct-02

ASTM D 6392/4437
ANALYST: DC / CR
REPORT DATE: 21-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	144	<10	SE	FTB	NR	187	> 50	FTB	NR
	2A	140	<10	SE	FTB					
	3A	146	<10	SE	FTB		180	> 50	FTB	
	4A	151	<10	SE	FTB					
	5A	134	<10	SE	FTB		177	> 50	FTB	
DT-50P	**MEAN:**	**143**								
	1B	128	<10	SE	FTB		182	> 50	FTB	
	2B	132	<10	SE	FTB					
	3B	129	<10	SE	FTB		180	> 50	FTB	
	4B	130	<10	SE	FTB					
	5B	123	<10	SE	FTB					
	MEAN:	**128**				**MEAN:**	**181**			
	1A	140	<10	SE	FTB	NR	182	> 50	FTB	NR
	2A	129	<10	SE	FTB					
	3A	125	<10	SE	FTB		184	> 50	FTB	
	4A	127	<10	SE	FTB					
	5A	127	<10	SE	FTB		182	> 50	FTB	
DT-51P	**MEAN:**	**130**								
	1B	148	<10	SE	FTB		181	> 50	FTB	
	2B	148	<10	SE	FTB					
	3B	138	<10	SE	FTB		181	> 50	FTB	
	4B	141	<10	SE	FTB					
	5B	147	<10	SE	FTB					
	MEAN:	**144**				**MEAN:**	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 21-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-68-05
DATE TESTED: 21-Oct-02

ASTM D 6392/4437
ANALYST: DC / CR
REPORT DATE: 21-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	141	<10	SE	FTB	NR	197	> 50	FTB	NR
	2A	138	<10	SE	FTB					
	3A	138	<10	SE	FTB		201	> 50	FTB	
	4A	138	<10	SE	FTB					
	5A	133	<10	SE	FTB		198	> 50	FTB	
DT-52P	**MEAN:**	**138**								
	1B	150	<10	SE	FTB		199	> 50	FTB	
	2B	144	<10	SE	FTB					
	3B	148	<10	SE	FTB		195	> 50	FTB	
	4B	130	<10	SE	FTB					
	5B	143	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**198**			
	1A	153	<10	SE	FTB	NR	178	> 50	FTB	NR
	2A	139	<10	SE	FTB					
	3A	143	<10	SE	FTB		181	> 50	FTB	
	4A	165	<10	SE	FTB					
	5A	144	<10	SE	FTB		184	> 50	FTB	
DT-53P	**MEAN:**	**149**								
	1B	142	<10	SE	FTB		182	> 50	FTB	
	2B	143	<10	SE	FTB					
	3B	143	<10	SE	FTB		176	> 50	FTB	
	4B	143	<10	SE	FTB					
	5B	144	<10	SE	FTB					
	MEAN:	**143**				**MEAN:**	**180**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 21-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-68-05
DATE TESTED: 21-Oct-02

ASTM D 6392/4437
ANALYST: DC / CR
REPORT DATE: 21-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-54P	1A	144	<10	SE	FTB	NR	174	> 50	FTB	NR
	2A	141	<10	SE	FTB					
	3A	137	<10	SE	FTB		175	> 50	FTB	
	4A	145	<10	SE	FTB					
	5A	141	<10	SE	FTB		178	> 50	FTB	
	MEAN:	**142**								
	1B	136	<10	SE	FTB		173	> 50	FTB	
	2B	126	<10	SE	FTB					
	3B	128	<10	SE	FTB		178	> 50	FTB	
	4B	130	<10	SE	FTB					
	5B	138	<10	SE	FTB					
	MEAN:	**132**				**MEAN:**	**176**			
DT-55P	1A	147	<10	SE	FTB	NR	181	> 50	FTB	NR
	2A	140	<10	SE	FTB					
	3A	144	<10	SE	FTB		181	> 50	FTB	
	4A	142	<10	SE	FTB					
	5A	140	<10	SE	FTB		181	> 50	FTB	
	MEAN:	**143**								
	1B	156	<10	SE	FTB		184	> 50	FTB	
	2B	142	<10	SE	FTB					
	3B	152	<10	SE	FTB		190	> 50	FTB	
	4B	148	<10	SE	FTB					
	5B	145	<10	SE	FTB					
	MEAN:	**149**				**MEAN:**	**183**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY
DATE REC'D: 21-Oct-02

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2176-68-05
DATE TESTED: 21-Oct-02

ASTM D 6392/4437
ANALYST: DC / CR
REPORT DATE: 21-Oct-02

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	125	<10	SE	FTB	NR	167	> 50	FTB	NR
	2A	123	<10	SE	FTB					
	3A	124	<10	SE	FTB		161	> 50	FTB	
	4A	128	<10	SE	FTB					
	5A	128	<10	SE	FTB		164	> 50	FTB	
DT-56P	**MEAN:**	**126**								
	1B	118	<10	SE	FTB		166	> 50	FTB	
	2B	119	<10	SE	FTB					
	3B	117	<10	SE	FTB		161	> 50	FTB	
	4B	116	<10	SE	FTB					
	5B	122	<10	SE	FTB					
	MEAN:	**118**				**MEAN:**	**164**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

NORTH & INTERIOR BERMS

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

January 23, 2003

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

email: scarpenter@scsengineers.com
email: ddupont@scsengineers.com

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2177-24-05
Date Received:	01-23-03
Material(s) Tested:	1 heat fusion weld seam 2 single track extrusion weld seams
Test(s) Requested:	*Peel & Shear Strength* (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: SINGLE TRACK EXTRUSION
TRI LOG #: E2177-24-05

ASTM D 6392/4437
ANALYST: GH

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1	119	<10	SE	FTB	NR	183	> 50	FTB	NR
	2	93	100	AD	NON-FTB					
	3	101	100	AD	NON-FTB		180	> 50	FTB	
	4	119	<10	SE	FTB					
	5	116	<10	SE	FTB		186	> 50	FTB	
DT-1N	**MEAN:**	**110**								
							188	> 50	FTB	
							182	> 50	FTB	
						MEAN:	**184**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-24-05

ASTM D 6392/4437
ANALYST: GH

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	186	<10	SE	FTB	NR	233	> 50	FTB	NR
	2A	174	<10	SE	FTB					
	3A	167	<10	SE	FTB		231	> 50	FTB	
	4A	180	<10	SE	FTB					
	5A	165	<10	SE	FTB		234	> 50	FTB	
DT-2N	**MEAN:**	**174**								
	1B	166	<10	SE	FTB		236	> 50	FTB	
	2B	169	<10	SE	FTB					
	3B	160	<10	SE	FTB		228	> 50	FTB	
	4B	165	<10	SE	FTB					
	5B	165	<10	SE	FTB					
	MEAN:	**165**				**MEAN:**	**232**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-24-05

ASTM D 6392/4437
ANALYST: GH

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1	133	<10	SE	FTB	NR	186	> 50	FTB	NR
	2	139	<10	SE	FTB					
	3	137	<10	SE	FTB		173	> 50	FTB	
	4	142	<10	SE	FTB					
	5	137	<10	SE	FTB		185	> 50	FTB	
DT-3N	**MEAN:**	**138**								
							182	> 50	FTB	
							183	> 50	FTB	
						MEAN:	**182**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

NORTH &
INTERIOR BERMS

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

January 29, 2003

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampa, FL 33619

email: scarpenter@scsengineers.com
email: ddupont@scsengineers.com

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2177-27-05
Date Received:	01-29-03
Material(s) Tested:	4 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-27-06

ASTM D 6392/4437
ANALYST: GH / KM

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-4N	1A	186	<10	SE	FTB	NR	221	> 50	FTB	NR
	2A	189	<10	SE	FTB					
	3A	185	<10	SE	FTB		227	> 50	FTB	
	4A	185	<10	SE	FTB					
	5A	184	<10	SE	FTB		225	> 50	FTB	
	MEAN:	**186**								
	1B	165	<10	SE	FTB		222	> 50	FTB	
	2B	181	<10	SE	FTB					
	3B	188	<10	SE	FTB		223	> 50	FTB	
	4B	193	<10	SE	FTB					
	5B	166	<10	SE	FTB					
	MEAN:	**179**				**MEAN:**	**224**			
DT-5N	1A	162	<10	SE	FTB	NR	221	> 50	FTB	NR
	2A	187	<10	SE	FTB					
	3A	171	<10	SE	FTB		221	> 50	FTB	
	4A	178	<10	SE	FTB					
	5A	176	<10	SE	FTB		227	> 50	FTB	
	MEAN:	**175**								
	1B	159	<10	SE	FTB		222	> 50	FTB	
	2B	161	<10	SE	FTB					
	3B	161	<10	SE	FTB		224	> 50	FTB	
	4B	185	<10	SE	FTB					
	5B	162	<10	SE	FTB					
	MEAN:	**166**				**MEAN:**	**223**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-27-06

ASTM D 6392/4437
ANALYST: GH / KM

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
DT-6I	1A	171	<10	SE	FTB	NR	230	> 50	FTB	NR
	2A	172	<10	SE	FTB					
	3A	177	<10	SE	FTB		233	> 50	FTB	
	4A	161	<10	SE	FTB					
	5A	159	<10	SE	FTB		232	> 50	FTB	
	MEAN:	**168**								
	1B	178	<10	SE	FTB		226	> 50	FTB	
	2B	183	<10	SE	FTB					
	3B	174	<10	SE	FTB		231	> 50	FTB	
	4B	165	<10	SE	FTB					
	5B	174	<10	SE	FTB					
	MEAN:	**175**				**MEAN:**	**230**			
DT-7I	1A	178	<10	SE	FTB	NR	229	> 50	FTB	NR
	2A	177	<10	SE	FTB					
	3A	175	<10	SE	FTB		236	> 50	FTB	
	4A	172	<10	SE	FTB					
	5A	182	<10	SE	FTB		234	> 50	FTB	
	MEAN:	**177**								
	1B	164	<10	SE	FTB		229	> 50	FTB	
	2B	158	<10	SE	FTB					
	3B	177	<10	SE	FTB		228	> 50	FTB	
	4B	182	<10	SE	FTB					
	5B	159	<10	SE	FTB					
	MEAN:	**168**				**MEAN:**	**231**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

NORTH & INTERIOR BERMS

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

January 29, 2003

Mail To:
Ms. Sheila Carpenter
SCS Engineers
3012 U.S. Highway North 301
Suite 700
Tampla, FL 33619

email: scarpenter@scsengineers.com
email: ddupont@scsengineers.com

Dear Ms. Carpenter:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	Southeast Hillsborough County
TRI Job Reference Number:	2177-27-05
Date Received:	01-29-03
Material(s) Tested:	4 heat fusion weld seams
Test(s) Requested:	Peel & Shear Strength (ASTM D 6392)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division

SEAMS RESULTS ATTACHED

SEAM TEST REPORT LEGEND

Seam Failure Modes (as per NSF 54, Appendix A)

FTB:	Film Tearing Bond
BLF:	Brittle Liner Failure
NON FTB:	Non Film Tearing Bond

Locus/Break Codes: Dielectric/Solvent Welds

CL:	Break in sheeting at clamp edge.
BRK:	Break in sheeting.
SE:	Break at seam edge.
AD-BRK:	Break in sheeting after some adhesion failure between sheets.
AD:	Failure in adhesion between sheets.
SIP:	Separation in plane.

Locus/Break Codes: Fillet Weld Seams

AD1:	Failure in adhesion. Specimens delaminate under bead and break through the extruded material in outer region.
AD2:	Failure in adhesion.
AD-WL:	Break through fillet weld.
SE:	Break at seam edge.
AD-BRK:	Break in bottom sheeting after some adhesion failure between the fillet and the bottom sheet (applicable to peel only).
HT:	Break at the edge of the hot tack for specimens which could not be delaminated in the hot tack.

Locus/Break Codes: Fabric Reinforced Liner

AD:	Adhesion failure resulting in delamination in the plane of the bond.
DEL:	Delamination in the plane of the scrim (peel only).
AD-DEL:	Delamination in the plane of the scrim after some delamination in the plane of the bond (peel only).
BRK:	Break in sheet through both the fabric and the piles of the polymer.
FP:	Fabric pullout. Pullout of threads parallel to the direction of test followed by break in polymeric sheeting.
SIP:	Separation in plane.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-27-06

ASTM D 6392/4437
ANALYST: GH / KM

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	186	<10	SE	FTB	NR	221	> 50	FTB	NR
	2A	189	<10	SE	FTB					
	3A	185	<10	SE	FTB		227	> 50	FTB	
	4A	185	<10	SE	FTB					
	5A	184	<10	SE	FTB		225	> 50	FTB	
DT-4N	**MEAN:**	**186**								
	1B	165	<10	SE	FTB		222	> 50	FTB	
	2B	181	<10	SE	FTB					
	3B	188	<10	SE	FTB		223	> 50	FTB	
	4B	193	<10	SE	FTB					
	5B	166	<10	SE	FTB					
	MEAN:	**179**				**MEAN:**	**224**			
	1A	162	<10	SE	FTB	NR	221	> 50	FTB	NR
	2A	187	<10	SE	FTB					
	3A	171	<10	SE	FTB		221	> 50	FTB	
	4A	178	<10	SE	FTB					
	5A	176	<10	SE	FTB		227	> 50	FTB	
DT-5N	**MEAN:**	**175**								
	1B	159	<10	SE	FTB		222	> 50	FTB	
	2B	161	<10	SE	FTB					
	3B	161	<10	SE	FTB		224	> 50	FTB	
	4B	185	<10	SE	FTB					
	5B	12	<10	SE	FTB					
	MEAN:	**136**				**MEAN:**	**223**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

QUALITY ASSURANCE TESTING
GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: SCS ENGINEERS
CONTACT: MS. SHEILA CARPENTER
PROJECT: SOUTH EAST HILLSBOROUGH COUNTY

MATERIAL: HDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2177-27-06

ASTM D 6392/4437
ANALYST: GH / KM

		PEEL EVALUATION					SHEAR EVALUATION			
SAMPLE NUMBER	SPECIMEN NUMBER	MAXIMUM TENSION (lb/in)	PEEL INCURSION (%)	LOCUS OF FAILURE	NSF 54 FAILURE MODE	PROJ. SPEC. (lb/in)	MAXIMUM TENSION (lb/in)	ELONG. @ BREAK (%)	NSF 54 FAILURE MODE	PROJECT SPEC. (lb/in)
	1A	171	<10	SE	FTB	NR	230	> 50	FTB	NR
	2A	172	<10	SE	FTB					
	3A	177	<10	SE	FTB		233	> 50	FTB	
	4A	161	<10	SE	FTB					
	5A	159	<10	SE	FTB		232	> 50	FTB	
DT-6I	**MEAN:**	**168**								
	1B	178	<10	SE	FTB		226	> 50	FTB	
	2B	183	<10	SE	FTB					
	3B	174	<10	SE	FTB		231	> 50	FTB	
	4B	165	<10	SE	FTB					
	5B	174	<10	SE	FTB					
	MEAN:	**175**				**MEAN:**	**230**			
	1A	178	<10	SE	FTB	NR	229	> 50	FTB	NR
	2A	177	<10	SE	FTB					
	3A	175	<10	SE	FTB		236	> 50	FTB	
	4A	172	<10	SE	FTB					
	5A	182	<10	SE	FTB		234	> 50	FTB	
DT-7I	**MEAN:**	**177**								
	1B	164	<10	SE	FTB		229	> 50	FTB	
	2B	158	<10	SE	FTB					
	3B	177	<10	SE	FTB		228	> 50	FTB	
	4B	182	<10	SE	FTB					
	5B	159	<10	SE	FTB					
	MEAN:	**168**				**MEAN:**	**231**			

NR: Not Requested

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

ATTACHMENT N

ELECTRICAL LINER SURVEY

I-CORP INTERNATIONAL, Inc.

6072 North Ocean Boulevard
Ocean Ridge, FL 33435-5210 USA
Phone: ++1-561-369-0795
Fax: +1-561-369-0895
icorp@geosynthetic.com
www.geosynthetic.com

REPORT

LEAK LOCATION SURVEY OF LINER IN SECTION 7 AT THE SOUTHEAST COUNTY LANDFILL HILLSBOROUGH COUNTY, FL

Prepared for

Handex Construction Services
Grapevine, TX

Prepared by

Ian D. Peggs
I-CORP INTERNATIONAL, Inc
Ocean Ridge, FL, USA

7 April 2003

SHOP DRAWING REVIEW

REVIEW IS ONLY FOR GENERAL COMPLIANCE WITH DESIGN CONCEPT

- [x] NO EXCEPTIONS TAKEN
- [ ] MAKE CORRECTIONS NOTED
- [ ] AMEND - RESUBMIT
- [ ] REJECTED - RESUBMIT

-SCS ENGINEERS - TAMPA-

DATE 7/24/03 BY Gary R.

LEAK LOCATION SURVEY OF LINER IN SECTION 7
AT THE SOUTHEAST COUNTY LANDFILL, HILLSBOROUGH COUNTY, FL

INTRODUCTION

This report has been prepared for Mr. Brian Ehrler of Handex Construction Services, Grapevine, TX, by Dr. Ian D. Peggs of I-CORP INTERNATIONAL Inc (I-CORP), Ocean Ridge, FL. On 15 March 2003, Mr Ehrler requested that I-CORP perform an electric leak location survey on the primary geomembrane of the double liner in the two cells of new Section 7 at the Southeast Hillsborough Co. Landfill near Balm, FL.

METHODOLOGY

The electrical survey technique is based on the assumption that the geomembrane is an electrical insulator. An electric potential is applied between the conductive medium on top of the liner (water) and a conductive medium below the liner (water in the leakage collection layer between the primary and secondary geomembrane). Current will only flow through leaks in the primary liner. A survey probe is then passed through the water on top of the geomembrane to measure the potential gradient between the probe's electrodes. The gradient is fairly uniform in most places, but at a hole through which the current is flowing it is relatively high. Such unique points are found.

An analogy would be measuring the gradient on the surface of the water and at a whirlpool where the water (current) is flowing through a leak. Away from the leak the gradient is fairly constant. As the leading electrode approaches the center of the whirlpool the gradient increases and is a maximum when the leading electrode is directly over the hole. When the electrodes are astride the hole there is no gradient. And when the trailing electrode is directly over the hole the gradient is again a maximum but of the opposite sign to the previous maximum. Thus a characteristic rising signal followed by a decrease to a minimum then returning to the constant background level is indicative of a leak.

Where there is no water above the primary liner a different survey probe is used to measure the potential gradients on the surface of the sand on an orthogonal grid pattern. Again, characteristic peak readings found in real time, or in a post-survey isopotential contour map, are indicative of a leak.

SURVEY AND OBSERVATIONS

The survey was performed by Dr. Peggs on 18 to 21 March and 4 April, 2003.

Since the geonet between the two geomembranes is a non-conductor the space between the geomembranes had been backfilled with water to provide a conductive medium from any hole to the current return electrode. The current return electrode was placed down the southeast clean-out pipe into the water between the liners. The current injection electrode was placed in the ballast water on top of the primary liner. Where there was water on top of the sand a wading survey was performed.

A calibration cell containing a 1 mm diameter artificial leak was immersed in the ponding water and used to calibrate the equipment. This calibration hole could be detected from a distance

of about 10 ft. The survey across the cell was then done on east/west parallel traverses with a north/south spacing of 5 ft.

Exposed sand was surveyed on an orthogonal grid spacing of 10 ft, after calibration showed that a simulated 0.5 in. slit in the liner could be detected from a distance of about 20 ft.

The survey in the west cell was completed across the full width to 520 ft north. and in the east cell to 310 feet north. Metal in the primary leachate pipe valve in the southwest corner of the east cell decreased the sensitivity of the survey within about 5 feet of the valve. Four leak indications were found at the locations listed in Table 1 and as shown schematically in Appendix A. Location 3 provided the strongest signal, Location 1 the next strongest, Location 2 the next strongest but quite weak signal, and Location 4 the weakest. Location 4 was considered to be a marginal signal (a very small hole, less than 1 mm in diameter, if indeed the signal was not just due to some local variation in the sand, such as a lump of clay) when found during the wading survey. However, it was not indicated during the exposed sand survey. The flag was, therefore, almost removed, but was left in place so that the area could still be investigated.

TABLE 1 Coordinates of Leak Indications

Number	Coordinates
1	35 N, under floating rain cover
2	80 N, 366 W *
3	Under floating rain cover, 245E *
4	292N, 71 E * (from base of center berm)

* East/West distances measured from 0 N marking on top of dividing berm.

Both indications 1 and 3 were from leaks under the rain cover that was floating at the toes of the slopes. Therefore, an exact location for the hole in the primary liner could not be defined. In each case, the signal was identified above a seam in the rain cover. Obviously the rain cover is also an insulator so the leak appeared to be at the seam of the rain cover. At Location 1, water could be seen welling up just outside the floating rain cover, providing evidence of a significant leak. The water was flowing upwards through the leak due to the higher pressure of water being pumped into the leak detection layer.

Clearly the surveys in both cells would only be effective in those areas where there was water between the two liners.

Leak indications 1, 2 and 3 were clearly marked on the slope rain cover. Leak indication 4 was marked with a flag and on the side of the center berm.

When a leak at Location 1 could not be found visually I-CORP was recalled to perform a water lance survey on the exposed area. In this technique positively charged water is directed on to the surface of the liner. When this water penetrates a leak to contact the negatively charged subgrade, current flows through the water stream and is recorded between two electrodes in the water lance.

With the sump pumped dry, water was directed down the sideslopes of the sump that were accessible. No leak was indicated. A survey on the exposed geomembrane surface identified a small pinhole leak through the T-weld on the edge of a patch about 5 ft south of the #1 marker. A larger suspect signal was found at the north edge of the exposed area, through the geocomposite. More liner was exposed until the peak signal could be identified. The

geocomposite was removed and an approximately 0.10 in. hole was found at another T-seam on the edge of a patch. This location was approximately 5 ft north of the #1 marker. The small error in location was caused by a combination of the rain cover, the two leaks being close together, and the geometry of the toe of the slope and corner of the sump.

For general information, Table 2 shows that a hole 2.5 mm (0.10 in.) in diameter under a hydrostatic head of 1 ft. can generate a leak flow rate of over 100 gpd.

Table 2. Giroud Table 6

Calculated Leakage Rates due to Pinholes and Holes in a Geomembrane

		Water depth on top of the geomembrane, h_w				
	Defect diameter	*0·003 m (0·01 ft)*	*0·03 m (0·1 ft)*	*0·3 m (1 ft)*	*3 m (10 ft)*	*30 m (100 ft)*
Pinholes	0·1 mm (0·004 in)	0·006 (0·0015)	0·06 (0·015)	0·6 (0·15)	6 (1·5)	60 (15)
	0·3 mm (0·012 in)	0·5 (0·1)	5 (1)	50 (13)	500 (130)	5 000 (1 300)
Holes[a]	2 mm (0·08 in)	40 (10)	130 (30)	400 (100)	1 300 (300)	4 000 (1 000)
	11·3 mm (0·445 in)	1 300 (300)	4 000 (1 000)	13 000 (3 000)	40 000 (10 000)	130 000 (30 000)

Values of leakage rate in liters/day (gallons/day)

CONCLUSIONS

Comprehensive wading and sand-covered liner surveys in both east and west cells initially found four leak indications. Numbers 1 and 3 were strong indications of significant leaks, while number 4 was marginal. Leak indication #1 was found to be a leak at a T-seam on a patch. Leak indication #2 was thought to be caused by equipment tracks, and leak indication #4 appeared not to be caused by a leak.

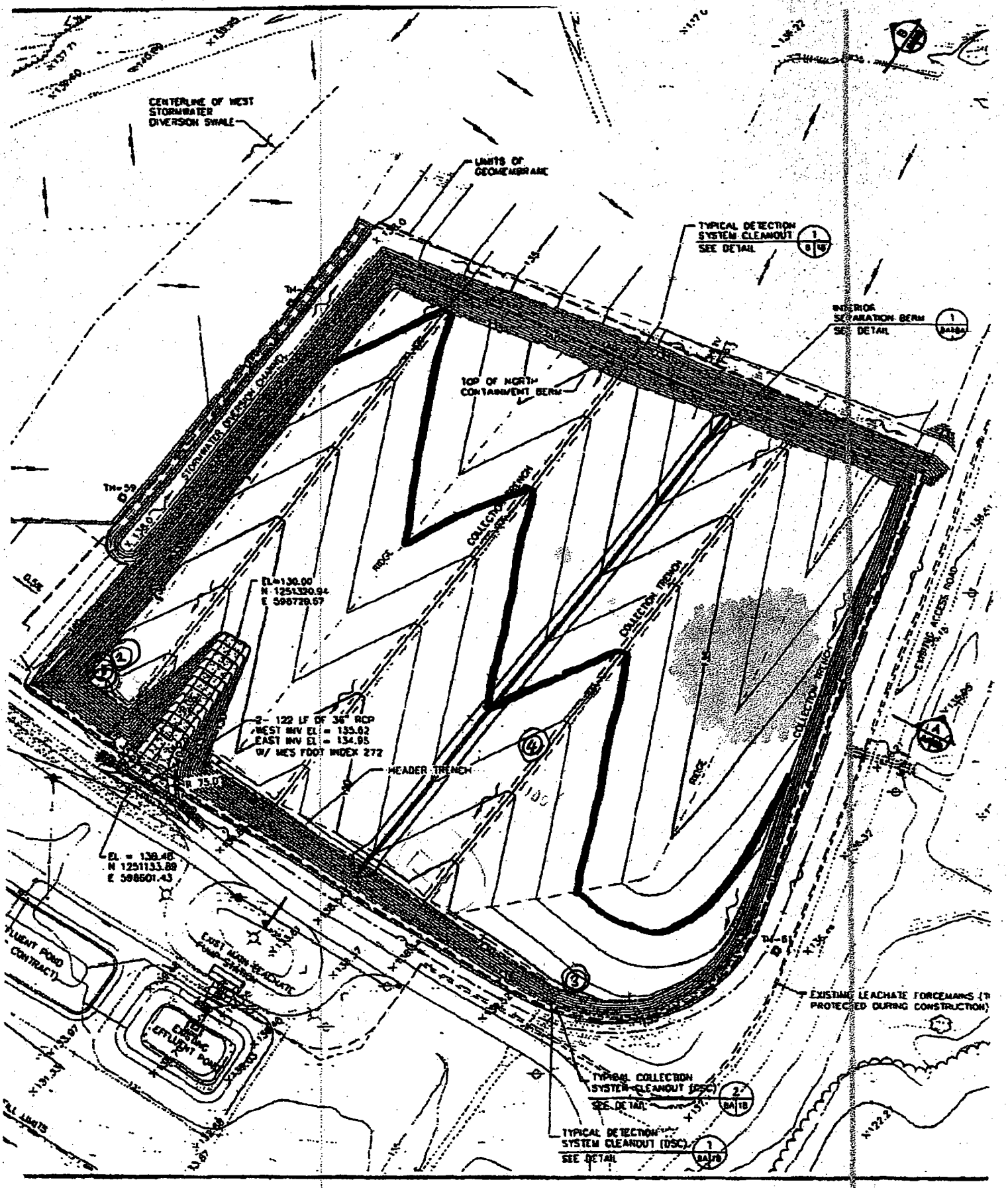
All the leaks found were repaired by GSE Lining Systems.

* * *

APPENDIX A

Schematic of Leak Indications

Best Available Copy



ATTACHMENT O

PHOTOGRAPHS

Hillsborough County
SCLF Section I Capacity Expansion
File No. 09200020.32
December 13, 2001
HCWestExca.jpg
Excavation along Western limits – SW corner looking N

Hillsborough County
SCLF Section I Capacity Expansion
File No. 09200020.32
HCWetExca2.jpg
December 13, 2001
Excavation along western limits looking West

SELF, Section 1 Capacity Expansion
Burcaw performing typical density test using drive sleve method.
December 2001

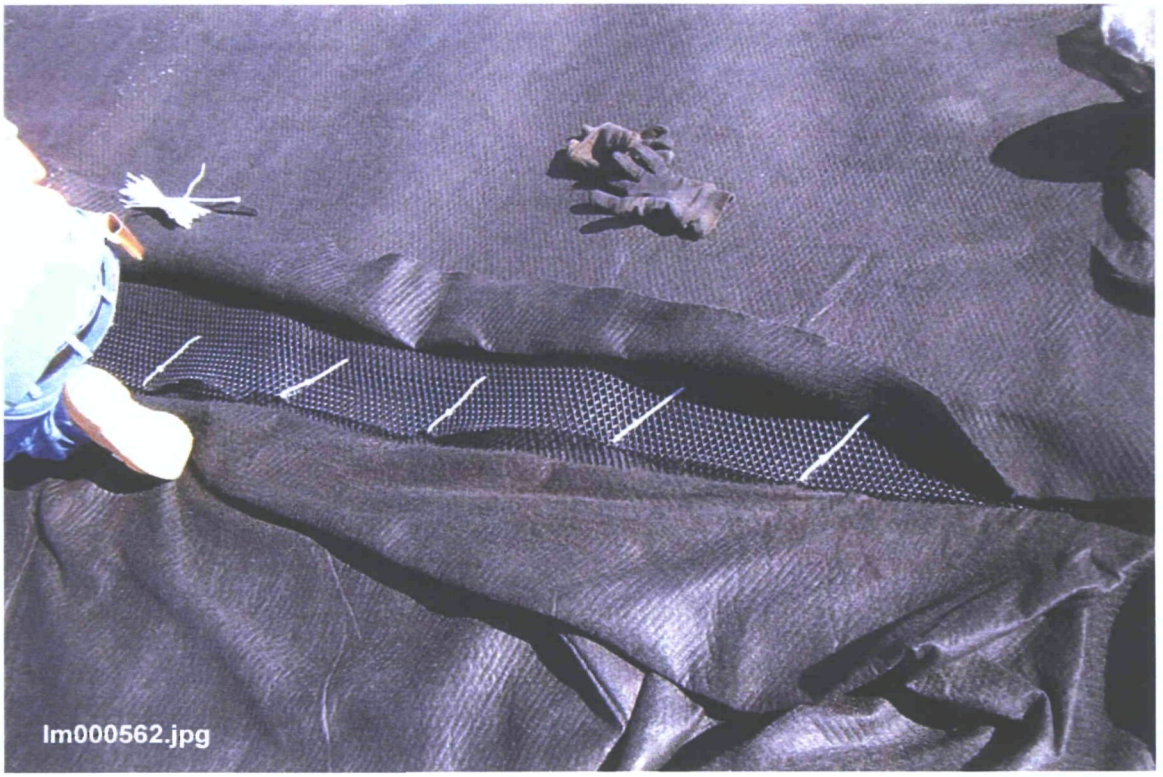
SELF, Section 1 Capacity Expansion
March 11, 2002
File No. 09200020.32
View: NW corner looking S.
Backfill progress along western limits of excavation.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
July 24, 2002
Completed backfill.

SCLF, Section 7 Expansion
File No. 09200020.32
August 22, 2002
Grading and compacting 6" subbase facing West.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 6, 2002
Clay subbase thickness from bottom of stake.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 19, 2002
Placing secondary liner and detailing



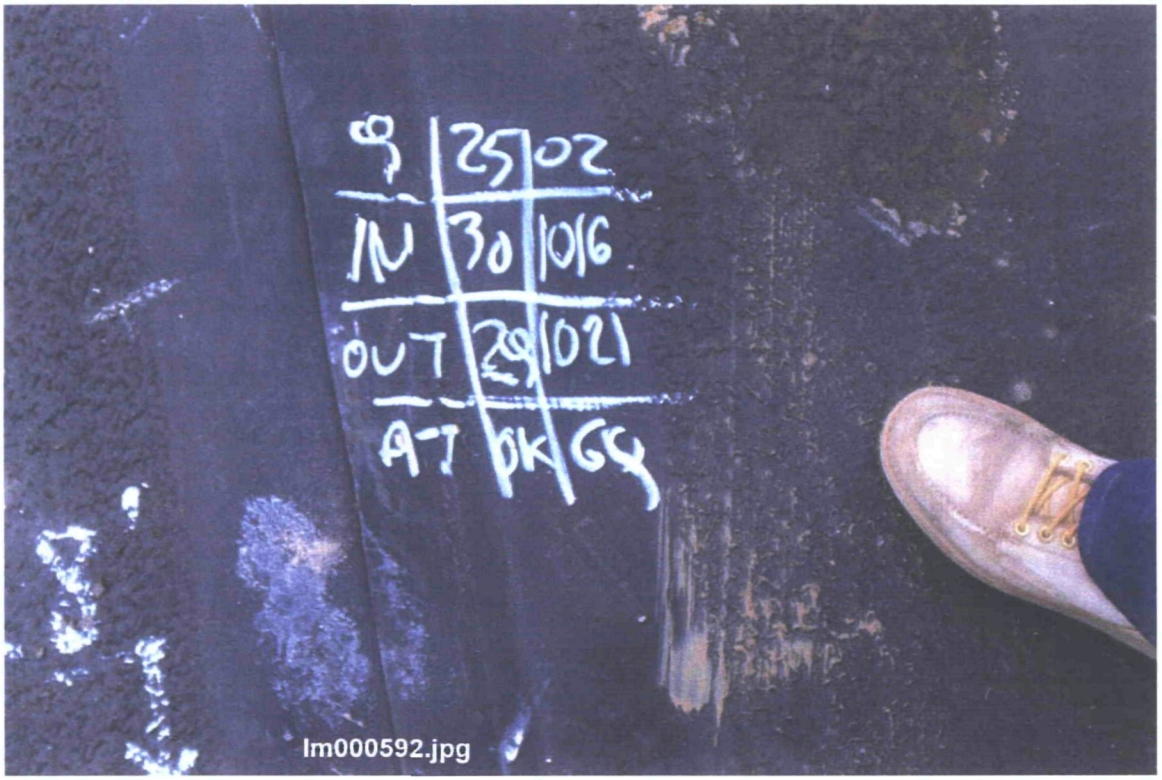
SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 19, 2002
Typical end seam connection of geocomposite.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 19, 2002
Secondary geocomposite being placed and detailed.

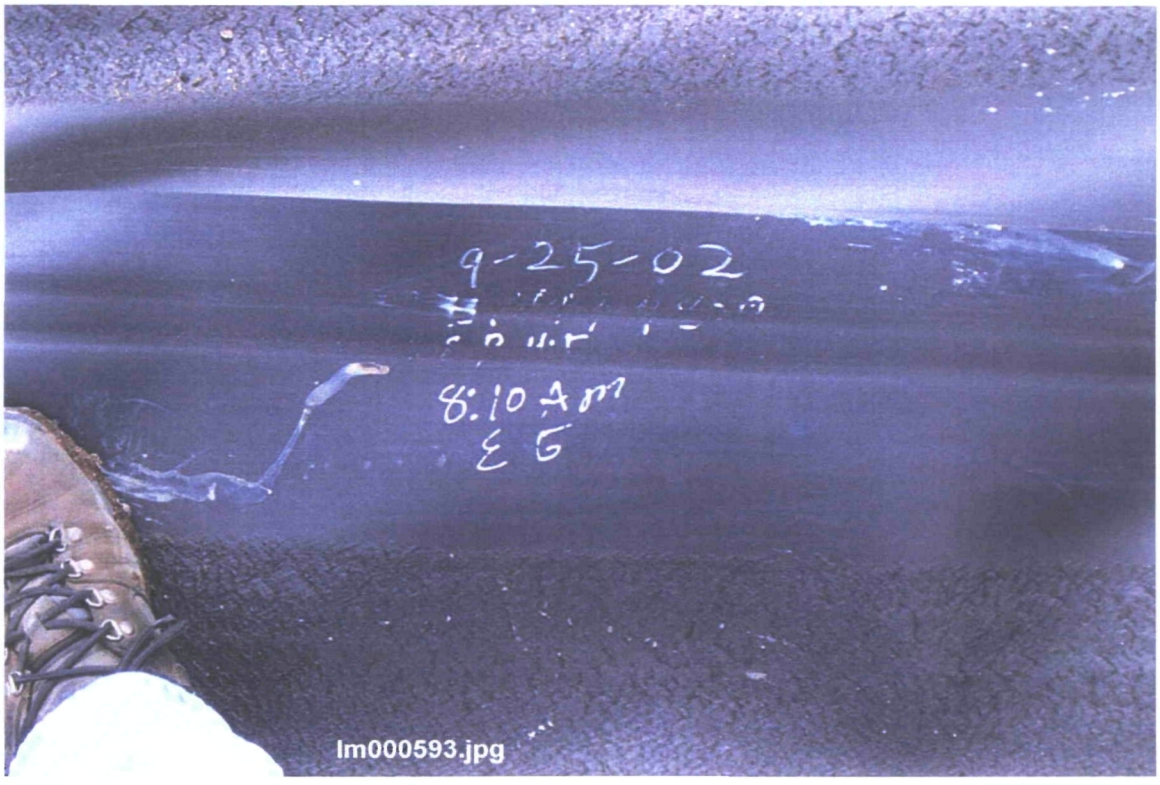
SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 19, 2002
Typical repair being extrusion welded.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 20, 2002
Typical sewing of geocomposite seam.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 25, 2002
Primary liner on secondary geocomposite.



SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 25, 2002
Typical air test data.



SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 25, 2002
Typical seam weld data

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
September 27, 2002
Typical anchor trench on south side.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 8, 2002
Primary geocomposite

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 8, 2002
West side anchor trench with survey or surveying edge of liner.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
October 4, 2002
Typical fusion welder making seam.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 11, 2002
Facing West, showing lazer level and excavator installing leak detection pipe.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 17, 2002
Placing protective cover sand on liner system, the men are using padded flat blade shovels to prevent wrinkles from forming.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 21, 2002
Placing protective cover sand on a hot day using an excavator to minimize wrinkles.

SCLF, Section 7 Capacity Expansion
File No. 09200020.32
October 25, 2002
Rock placed over typical leachate collection pipe.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
November 1, 2002
Typical clean out from wye at header pipe.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
November 4, 2002
18–inch riser being fitted into place for leachate collection system at bottom of sump.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
November 9, 2002
Leachate collection riser with access tubes for surveyors after gravel placement.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
January 22, 2003
Facing East, typical liner installed on north isolation berm.

Hillsborough County
SCLF, Section 7 Capacity Expansion
File No. 09200020.33
January 23, 2003
Looking southwest, extruded weld for wrinkle in liner at Northeast corner of cell near north isolation berm.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
January 28, 2003
Typical boot through the separation berm for the leachate collection header.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
February 20, 2003
Facing North – East side of cell perimeter ditch after sod installed.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
IM001117.jpg
May 14, 2003
typical placement of 12–inch tire chips protective layer.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
TireAerial.jpg
May 16, 2003
Looking NW, completed tire chips layer and sideslope tarp.

SCLF, Section 7 Capacity Expansion
File No. 09200020.33
October 8, 2003
P0002174.jpg
Looking north, sump pump station