

Appendix D. Repository Geosynthetics QC and QA Documentation

Construction for the repository liner was performed by Granite Construction's subcontractor D&E Construction under the supervision of ERRG. D&E Construction was subcontracted by Granite Construction to install the HDPE liner. SHA Consulting Engineers and Geologists, Inc. was retained by D&E Construction to provide CQA monitoring during installation of the HDPE liner.

CQA monitoring was performed in accordance with the technical specifications section 725.30 High Density Polyethylene Geomembrane. Continuous monitoring of the HDPE liner installation was performed by Ms. Sophie Lagacé, P.E. of SHA Consulting Engineers and Geologists, Inc. starting on August 10, 2010 continuing through August 13, 2010.

Prior to the placement of the geomembrane, the D&E installation supervisor inspected the subgrade surface for deficiencies. The subgrade surface was in acceptable condition at the time the HDPE liner was installed.

The HDPE liner was placed over the prepared subgrade layer using a four-wheel drive Grade-all type forklift with an extendable boom. The HDPE liner was positioned so that the seams ran parallel to the slope without having horizontal seams on the slope. The edges of the HDPE liner were secured with sandbags to prevent movement due to wind.

Seaming was performed using a fusion welder and an extrusion welding gun. QC of the HDPE welds was performed by D&E Construction's QC personnel and was supervised by Ms. Lagacé. Destructive seam tests were also performed by D&E Construction's QC personal.

QC notes from SHA Consulting Engineers and Geologists, Inc. and D&E Construction are attached.



Daily Field Report

Job No 510016

Page 1 of 1

Project Name Blue Ledge Mine CQA	Owner U.S. Forest Service	Daily Field Report Sequence No. 1	
General Location Of Work Siskiyou National Forest	Owner Representative Pete Jones, R.G., C.E.G.	Date Aug. 10, 2010	DAY OF WEEK Tuesday
General Contractor ERRG	Grading Contractor Granite Construction	Geomembrane Installer D&E Construction	
Type Of Work Geomembrane Installation	Grading Contractor, Superintendent, Or Foreman Tom McGinty	Installer Foreman Victor Casillas	
Source & Description Of Fill Material	Weather Overcast in AM, sunny after 1PM	Field Personnel Sophie Lagacé, P.E.	

Key Persons Contacted (Civil Engr, Architect, Developer, etc)

Tom McGinty (superintendent-Granite), Brian Wetzsteon (site superintendant-ERRG), Krissi Lindgren (engineer-Granite), Kim Jones (geologist-ERRG), Jessup Swaney (engineer-ERRG), Jack Kyle (H&S-NWFF Environmental)

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

Arrived at meeting spot and time at 10:30AM for 11AM meeting with D&E Construction site foreman, Victor Casillas. Met with Victor, watched unloading of 12 rolls of 60-mils textured HDPE geomembrane at the staging area near upper gate above Joe Bar community.

Met with various key site personnel (see above), walked the site. Field meeting (Jessup Swaney, Kim Jones, Tom McGinty, Victor Casillas, and Sophie Lagacé); ERRG's Jessup Swaney went over the specs for HDPE installation.

Watched D&E Construction crew set up, and deploy and weld the first four panels (panels #1-4 from roll 108152119) at the East slope. Took photos #1 through 16.

No problems encountered. Left site at 5PM.

Rolls delivered to site staging area:

- 108152119
- 108152120
- 108152121
- 108152122
- 108152123
- 108152124
- 108152125
- 108152126
- 108152129
- 108152130
- 108152131
- 108152132

Copy Given To: Larry Kamp, D&E Construction

Reported By: S. Lagacé



Daily Field Report

Job No 510016

Page 1 of 1

Project Name Blue Ledge Mine CQA		Owner U.S. Forest Service		Daily Field Report Sequence No. 2	
General Location Of Work Siskiyou National Forest		Owner Representative Pete Jones, R.G., C.E.G.		Date Aug. 11, 2010	DAY OF WEEK Wednesday
General Contractor ERRG		Grading Contractor Granite Construction		Geomembrane Installer D&E Construction	
Type Of Work Geomembrane Installation		Grading Contractor, Superintendent, Or Foreman Tom McGinty		Installer Foreman Victor Casillas	
Source & Description Of Fill Material		Weather Overcast in AM, sunny in PM		Field Personnel Sophie Lagacé, P.E.	
Key Persons Contacted (Civil Engr, Architect, Developer, etc) Pete Jones (project manager-USFS), Tom McGinty (superintendent-Granite), Brian Wetzsteon (site superintendent-ERRG), Jessup Swaney (engineer-ERRG), Jack Kyle (H&S-ERRG/NWFF Environmental)					
Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting					
<p>Arrived on site at 6:45AM. Observed D&E Construction crew deploy, weld, and air-pressure test panels along East and Northeast slopes from SE corner to NW corner. Panels #5 through 36 deployed, from rolls 108152120, 108152123, 108152125, 108152126, 108152131, and 108152132. Tie-in seam at SE corner was left open, to be done in the morning when weather is cooler.</p> <p>Took photos #17 through 42.</p> <p>No problems encountered. Left site at 5PM.</p>					
Copy Given To: Larry Kamp, D&E Construction			Reported By: Sophie Lagacé		



Daily Field Report

Job No 510016

Page 1 of 1

Project Name Blue Ledge Mine CQA	Owner U.S. Forest Service	Daily Field Report Sequence No. 3	
General Location Of Work Siskiyou National Forest	Owner Representative Pete Jones, R.G., C.E.G.	Date Aug. 12, 2010	DAY OF WEEK Thursday
General Contractor ERRG	Grading Contractor Granite Construction	Geomembrane Installer D&E Construction	
Type Of Work Geomembrane Installation	Grading Contractor, Superintendent, Or Foreman Tom McGinty	Installer Foreman Victor Casillas	
Source & Description Of Fill Material	Weather Sunny	Field Personnel Sophie Lagacé, P.E.	

Key Persons Contacted (Civil Engr, Architect, Developer, etc)
Pete Jones (project manager-USFS), Tom McGinty (superintendent-Granite), Brian Wetzsteon (site superintendent-ERRG), Jessup Swaney (engineer-ERRG), Kim Jones (geologist-ERRG), Jack Kyle (H&S-NWFF Environmental), Jonathan Williams (earthwork CQA- JBR Environmental), Sally (earthwork CQA- JBR Environmental)

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

Arrived on site at 6:30AM. Noted slight bridging in NE corner in colder morning conditions, mentioned to Victor Casillas.

Observed D&E Construction crew deploy, weld, and air-pressure test panels along South and West slopes from SE corner to NW corner and on the cell floor. Started with tie-in seam at SE corner. Panels #37 through 75 were deployed, from rolls 108152120, 108152121, 108152122, 108152124, 108152126, 108152130, and 108152132. Patches at seam junctions welded and vacuum-box-tested along South and East slopes.

Observed fitting and welding of the pipe connection at prefabricated sump, and installation and backfilling of the sump.

Discussed approach for placement of drainage layer with Victor Casillas, Pete Jones, Tom McGinty, Jessup Swaney, Kim Jones, and Jonathan Williams.

Discussed kinks and folds in liner with Pete Jones (USFS) and Kim Jones (ERRG) on the liner floor in areas where there was a lot of quad traffic carrying sandbags back and forth.

D&E Construction placed sandbags in NE corner during the warmest part of the day to prevent future bridging.

Took photos #43 through 49.

D&E Construction finished early, as remainder of the work needs to be done in cooler conditions. Tie-in seams at center of cell floor, SW corner near sump, and NW corner were left open, to be done in the morning.

No problems encountered. Left site at 4PM.

Copy Given To: Larry Kamp, D&E Construction

Reported By: Sophie Lagacé



Daily Field Report

Job No 510016

Page 1 of 1

Project Name Blue Ledge Mine CQA	Owner U.S. Forest Service	Daily Field Report Sequence No. 4	
General Location Of Work Siskiyou National Forest	Owner Representative Pete Jones, R.G., C.E.G.	Date Aug. 13, 2010	DAY OF WEEK Friday
General Contractor ERRG	Grading Contractor Granite Construction	Geomembrane Installer D&E Construction	
Type Of Work Geomembrane Installation	Grading Contractor, Superintendent, Or Foreman Tom McGinty	Installer Foreman Victor Casillas	
Source & Description Of Fill Material	Weather Sunny	Field Personnel Sophie Lagacé, P.E.	

Key Persons Contacted (Civil Engr, Architect, Developer, etc)
Tom McGinty (superintendent-Granite), Brian Wetzsteon (site superintendant-ERRG), Krissi Lindgren (engineer-Granite), Kim Jones (geologist-ERRG), Jack Kyle (H&S-NWFF Environmental)

Describe Equipment Used For Hauling, Spreading, Watering, Conditioning, & Compacting

Arrived on site at 6:30AM. Checked NE corner, sandbag placement seems to have prevented bridging. Observed fitting and welding of pipe boot around secondary containment at sump. Walked the floor area with Kim Jones and Victor Casillas, marked the locations where geomembrane ad been more markedly folded or kinked yesterday. D&E Construction placed beads of extrusion welding over those areas for protection. Observed D&E Construction crew weld tie-in seams at center of cell floor, SW corner near sump, and NW corner, perform air pressure testing on fusion welds, install all remaining patches at seam intersections and locations marked for repairs, and perform vacuum box testing on patches and extrusion welds. Obtained copies of D&E Construction quality control documentation. Took photos #50 through 68. No problems encountered. Left site at 9AM.

Copy Given To: **Larry Kamp, D&E Construction**

Reported By: **Sophie Lagacé**



TECHNICAL REPORT

Report To: Mr. Jim Dabkowski
URS Corporation
111 SW Columbia, Suite 1500
Portland, Oregon 97201

Date: 9/28/08

Lab No: 09-263

Project: Laboratory Testing – Blue Ledge Mine Repository

Project No.: 2004.1.1

Report of: Moisture density relationship and flexible wall permeability

Sample Identification

NTI determined the moisture density relationship and flexible wall permeability on one sample delivered to our laboratory on September 15, 2009 by a URS Corporation representative. Testing was performed in accordance with the standards indicated. Our laboratory test results are summarized on the following tables and attached page.

Laboratory Test Results

Flexible Wall Permeability – Sample Data (ASTM D5084)					
Mass (grams)	Length (inches)	Diameter (inches)	Area (inches)	Moisture Content (percent)	Dry Density (pcf)
264.7	1.254	2.836	6.317	12.1	113.6

Flexible Wall Permeability – Test Data (ASTM D5084)			
Sample Condition	Saturation at Time of Testing (percent)	Head (psi)	Hydraulic Gradient (in/in)
As received	99	1.0	22.08

Flexible Wall Permeability – Test Results (ASTM D5084)				
Test 1 k (cm/sec)	Test 2 k (cm/sec)	Test 3 k (cm/sec)	Test 4 k (cm/sec)	Average k (cm/sec)
7.03×10^{-5}	6.80×10^{-5}	7.18×10^{-5}	6.97×10^{-5}	7.00×10^{-5}

Copies: Addressee, (facsimile only)

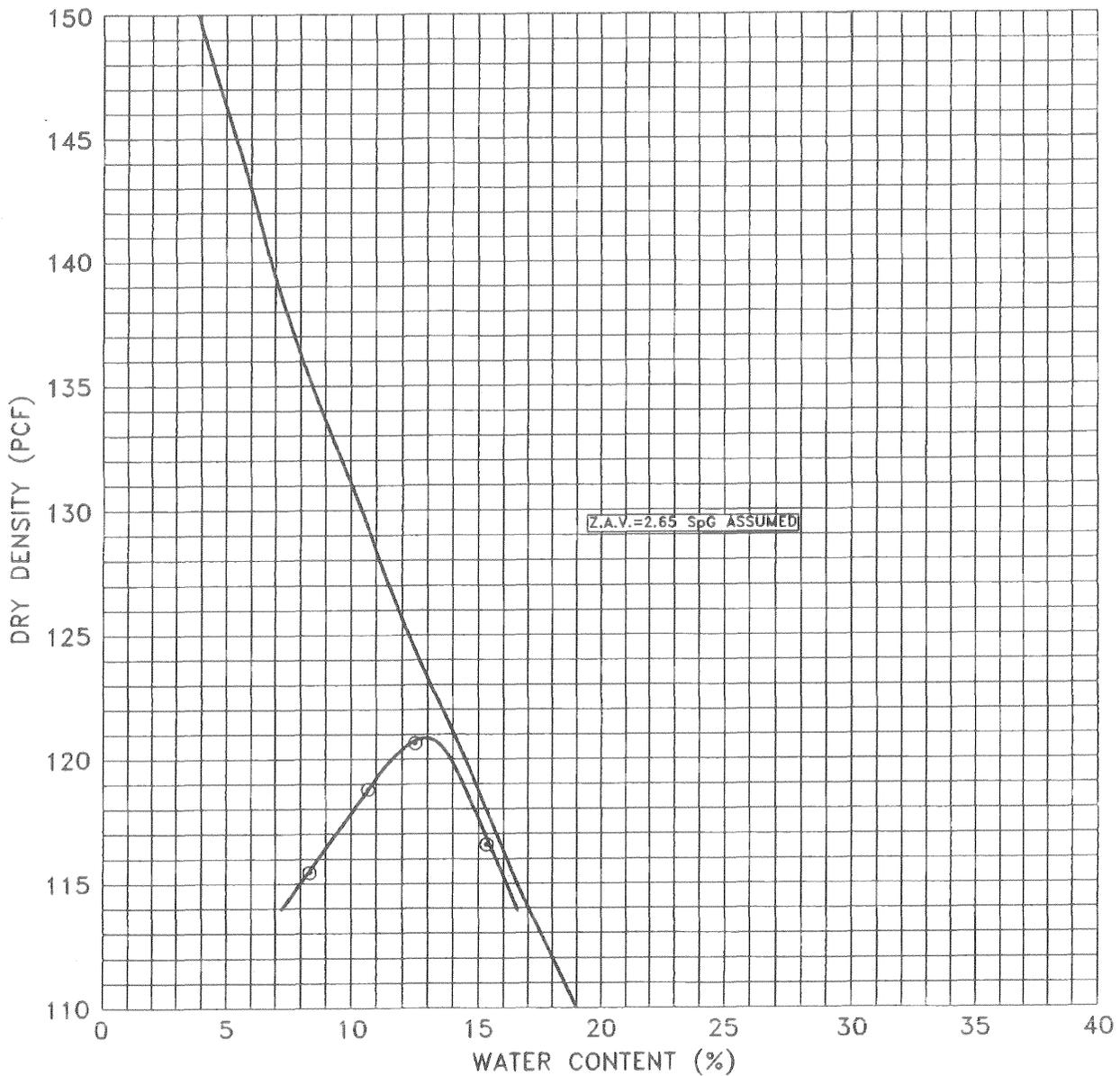
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SHEET 1 of 2

REVIEWED BY: Bridgett Adame *msf*

TECHNICAL REPORT

labtests\NWgi-fs\lab_reports\2009 Lab Reports\2004.1.1 URS Corporation\09-263 Proctor & Permeability.doc



SOIL TYPE	TEST METHOD	MAXIMUM DRY DENSITY (PCF)	OPTIMUM WATER CONTENT (%)	PERCENT OVERSIZE	CORRECTED MAXIMUM DRY DENSITY (PCF)	CORRECTED WATER CONTENT (%)
BROWN SILT WITH GRAVEL	ASTM D698C	121.0	13.0	7	123.0	12.5

DATE TESTED: 9/15/09

MAXIMUM DENSITY TEST RESULTS

PROJECT NO. 2004.1.1

URS CORPORATION
 BLUE LEDGE MINE REPOSITORY
 LABORATORY TESTING

LAB NO. 09-263

Effective Date: 5/12/03



8-5-10

CoA Date: 05/22/2010

REVIEWED & VERBALLY ACCEPTED BY PETE JONES

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC. 19103 GUNDLE ROAD WESTFIELD TX 77090 USA	CPC Delivery #: 88060132 PO #: 03-062399 Weight: 179800 LB Ship Date: 05/22/2010 Package: BULK Mode: Hopper Car Car #: NAHX610271 Seal No: 264243
Recipient: Phouangsavanh Fax:	

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8200538

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	12.6	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Production Date		05/17/2010	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at 800-231-1212

GSE Roll Allocation

Order 11111

Customer

Site

<i>Roll#</i>	<i>Resin Lot</i>	<i>Product Code</i>	<i>Description</i>	<i>Mfg. Date</i>	<i>Length</i>
108152119	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152120	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152121	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152122	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152123	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152124	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152125	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152126	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152129	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152130	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152131	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520
108152132	8200538	HDT-060AE-BBB-	HDT060AW00	6/12/2010	520



Lining Technology, Inc

Roll Test Data Report

Sales Order No. 11111 Project Number 205 Customer Name Project Location Product Name HDT-060AE-BBB-B-W0 Report Date 8/5/2010



Roll No.	ASTM D 5994		ASTM D638, Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 4218/1603	ASTM D 5596	GRI GM 12	
	Average	Minimum	TD Strength	MD Strength	TD Strength	MD Strength	TD Elongation	MD Elongation	TD Elongation	MD Elongation	TD Tear	MD Tear	Puncture	Density	Carbon Black	Carbon Black	Asperity Height	Asperity Height
	Thickness	Thickness	@ Yield	@ Yield	@ Break	@ Break	@ Yield	@ Yield	@ Break	@ Break	Resistance	Resistance	Resistance	(g/cc)	Content	Dispersion	Side A	Side B
	(mils)	(mils)	(psi)	(psi)	(psi)	(psi)	(%)	(%)	(%)	(%)	(lbs)	(lbs)	(lbs)		(%)	Views in Cat 1 - Cat 2	(mils)	(mils)
	every roll					every 4th				every 4th		every 4th	every 4th	every 4th	every 4th		every 2nd	
108152119	60	56	174	164	162	191	15	15	361	401	60	61	156	0.944	2.42	10	22	23
108152120	61	56	174	164	162	191	15	15	361	401	60	61	156	0.944	2.42	10	22	23
108152121	61	56	174	164	162	191	15	15	361	401	60	61	156	0.944	2.42	10	22	22
108152122	61	56	174	164	162	191	15	15	361	401	60	61	156	0.944	2.42	10	22	22
108152123	61	57	181	183	166	210	15	14	367	502	59	61	157	0.945	2.54	10	21	23
108152124	61	58	181	183	166	210	15	14	367	502	59	61	157	0.945	2.54	10	21	23
108152125	61	55	181	183	166	210	15	14	367	502	59	61	157	0.945	2.54	10	21	24
108152126	61	58	181	183	166	210	15	14	367	502	59	61	157	0.945	2.54	10	21	24
108152129	60	56	177	175	183	204	16	15	477	488	57	61	150	0.945	2.31	10	21	22
108152130	60	55	177	175	183	204	16	15	477	488	57	61	150	0.945	2.31	10	21	22
108152131	61	56	178	171	163	183	14	15	375	435	57	58	152	0.945	2.28	10	21	22
108152132	61	55	178	171	163	183	14	15	375	435	57	58	152	0.945	2.28	10	21	22

Laboratory Manager: Joan Allen

GSE-8.2.4-029 Rev -- 03/05

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19103 Gundle Road - Houston, Texas 77073

GSE

HDT - C60AE - BEB - B - WO

GSE HD 2S Textured 060 mil Avg

108152124

Weight (lbs.) **4050.0**

Area (SF) **11,700.0**

22.50



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Technology, Inc. are registered in the United States and other foreign countries.



WARNING

INSPECT SLINGS BEFORE LIFTING

DO NOT WALK UNDER LIFTED LOAD

LIFT ROLL ONLY BY SLINGS PROVIDED

DO NOT HANDLE WITH FORK-LIFTS

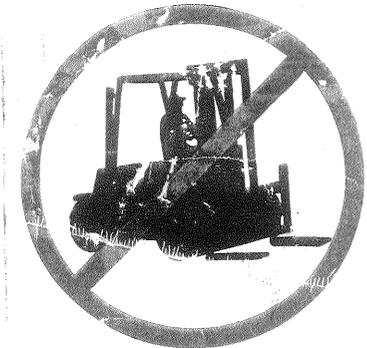
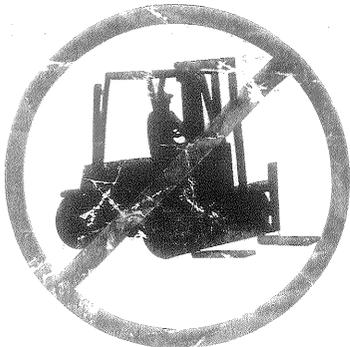
MATERIAL IS EASILY DAMAGED

HANDLE WITH EXTREME CARE

SHOULD YOU NEED ADDITIONAL HANDLING INFORMATION
CONTACT GSE @ 281-443-8564



108152122



GSE
SHIPPING

ACCEPTANCE _____

DATE _____

HDT-060AE-BBB

GSE HD 2S Textured 060 L

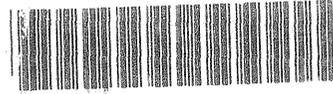
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Weight (lbs.) 4040

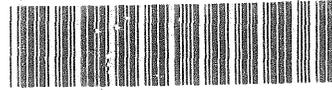
Area (SF) 11.7

22.50

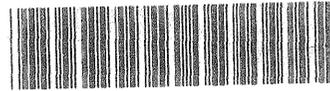
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108152119



108152123



108152124



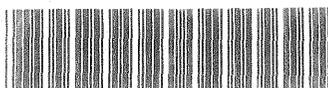
108152125



108152121



108152122



108152120

MADE IN USA



108152126

10-094 BLUE LEDGE MINZ REQUISARY LINER TAOS PLACED ON 8/11/2010



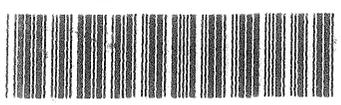
HDT-060AE-BBB-B-WO

GSE HD 2S Textured 060 mil Avg

108152131

Weight (lbs.)	4035.0
Area (SF)	11,700.0

22.50



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HDT-060AE-BBB-B-WO

GSE HD 2S Textured 060 mil Avg

108152123

Weight (lbs.)	4055.0
Area (SF)	11,700.0

22.50



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JATP

FORMA

2 CA

AGF

K-LI

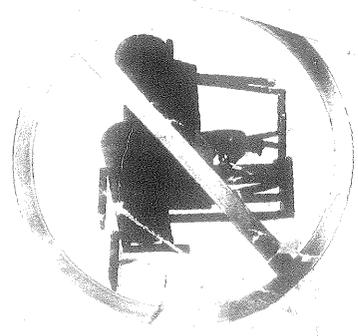
ROVIDI

D-LOAD

FTING



108152121



10-084 BLUE LEDGE MINE REPOSITORY LINER TAPS PLACED ON 8/11/2010

NG
DAD
DEED
IFT
D
E



108152125



HDT-060AE-BBB-B-WO

GSE HD 2S Textured 060 mil Avg

108152120

Weight (lbs.) 4065.0

Area (SF) 11,700.0

22.50



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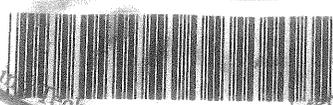
GSE HD 2S Textured 060 mil Avg

108152126

Weight (lbs.) 4055.0

Area (SF) 11,700.0

22.50



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2010-084 BLUE LEDGE MINE
REPOSITORY LINER TAGS PLACED
ON 8/11/2010

HDT-060AE

GSE HD 2S Textured 060

1081521

Weight (lbs.) 40.0

Area (SF) 11.0

22.50



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GSE

HDT-060AE-BBB-B-WO

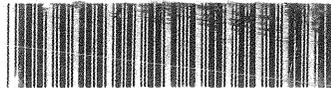
GSE HD 2S Textured 060 mil Avg

108152120

Weight (lbs.) 4065.0

Area (SF) 11,700.0

22.50



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GSE

HDT-060AE-BBB-B-WO

GSE HD 2S Textured 060 mil Avg

108152126

Weight (lbs.) 405

Area (SF) 11.0

22.50



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GSE

HDT-060AE-BBB-B-V

GSE HD 2S Textured 060 mil Avg

108152130

Weight (lbs.) 4040.0

Area (SF) 11,700.0

22.50



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GSE

HDT-060AE-BBB-B-WO

GSE HD 2S Textured 060 mil Avg

108152131

Weight (lbs.) 4035.0

Area (SF) 11,700.0

22.50



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GSE

HDT-060AE-BBB-B-WC

GSE HD 2S Textured 060 mil Avg

108152119

Weight (lbs.) 4050.0

Area (SF) 11,700.0

22.50



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BILL OF LADING

8026

2300 Barney St., Anderson, CA 96007
800-443-6322, FAX 530-365-0100

S O L D T O	Customer Acct. #		S H I P T O		
	D & E Construction			Granite Const.	
				Rd 1050 @ Elliot Creek Rd	
				At the Landing	
Customer P.O. Blue Ledge Mine		Job No. 10791	Ordered By: LAARY		
Date Ordered:		Date Wanted: 8-10-10	Sales Tax Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Resale No.	

Quantity Ordered	Quantity Shipped	Unit	Product Code	Description	Unit Price	Amount
	6	RL		GE180 15' x 300'		
	15	RL		GT160 15' x 300'		

Special Instructions:

Sold By: _____ Delivered By: _____ Received By: _____ Date: _____

Sophie Lagacé, P.E.

Environmental Engineer



Areas of Expertise

- Hazardous and solid waste containment applications
- Water quality
- Working closely with regulators
- Environmental permitting and documentation
- Working with Native American Tribes

Years of Experience: 23

Years at SHN: 2

Education

M.S., Environmental Systems (International Development Technology), Humboldt State University, Arcata, CA;

B.Eng., Civil Engineering (Project Management), Ecole Polytechnique de Montreal, Montreal, QC, Canada

Professional Registrations

Professional Engineer (California, Oregon, Washington, British Columbia, Quebec)

40-hr HAZWOPER certified

HAZWOPER Supervisor certified.

Professional Memberships

American Society of Civil Engineers (ASCE)

Engineers Without Borders (EWB)

Association of Women in Environmental Professions (AWEP)

Relevant Experience

Ms. Lagacé brings an extensive background and expertise in environmental engineering, planning, and science, and the proven ability to deliver complex and challenging projects on time and to high standard. She is skilled at working with multiple jurisdictions and stakeholders, including Native American tribes and federal, state, and local government agencies. Ms. Lagacé has been providing engineering analysis, design, permitting, construction, and monitoring services since 1987. Her strength lies in a systemic vision combining information from multiple sources to solve practical problems in environmental engineering, waste management, water quality, appropriate technologies, and data management.

Representative Projects

Co-Generation Power Plant Bottom Ash, Town of Scotia Company, LLC, Scotia, CA. Ms. Lagacé is the responsible engineer on the most recent Spill Prevention, Control, and Countermeasure plan as well as the Storm Water Pollution Prevention Plan for the wood-fired co-generation power plant. In addition, She is currently helping the owner obtain a Waste Discharge Requirement permit to reuse or recycle bottom ash from the plant boiler as fill material on site. The work includes characterizing the chemical and engineering properties of the ash, preparing a permit application, and making the case with the Regional Water Quality Control Board.

Tank Gulch Landfill, Town of Scotia Company, LLC, Scotia, CA. Ms. Lagacé provides assistance to the site owner for the environmental compliance program and long-term planning for the Tank Gulch fly ash and wood waste landfill. She also helped the owner find a specialized contractor to effect minor repairs in the landfill liner, and performed third-party inspection of the repair work.

Union Pacific Rails-to-Trails Conversion, Coeur d'Alene Basin, ID. Provided observation of field activities, including soil sampling and removal of ore concentrate spilled along the former railroad line near Plummer Junction and Chatcolet, as part of the CERCLA settlement work. The project, a cooperation between the Coeur d'Alene Tribe, Union Pacific Railroad, the Idaho Department of Environmental Quality and EPA, resulted in the cleanup of the rail corridor and the creation of a beautiful 73-miles hiking and biking trail extending from Mullan to Plummer, Idaho.

Moon Creek Mine Reclamation, U.S. Forest Service, Northern Idaho. Provided field observation for the installation of a geosynthetic clay liner for this project, which entails a hard rock mine, mill and tailings site, with historic mine development, an abandoned lead and zinc mill, tailings piles, ore dumps, and a stream. As part of the team that provided the USFS with design engineering, specifications, construction observation, and technical support for the reclamation, she was also responsible for selection of field equipment and procedures for soils testing.

Soil Vapor Barrier and Foundation Waterproofing, Hewlett-Packard, Palo Alto, California. On-site Quality Assurance Monitor for the installation of 50,000 ft² of sprayed-on "Liquid Boot" chloroprene modified asphaltic emulsion, along with geotextiles. Performed field sampling and testing of sprayed-on membrane intended to protect this new construction from contamination resulting from previous industrial activities on site.

Double-Lined Hazardous Waste Landfill, Cintec Environnement inc., Ville Lasalle, Québec. On-site Quality Control Manager for the installation and welding of 151,000 ft² of HDPE geomembrane, along with geotextiles, geogrids, and geonets. Performed field sampling and testing of geosynthetics.

Containment Dike for Hazardous Waste Landfill, Cintec Environnement inc., Ville Lasalle, Québec. On-site Quality Control Manager for the installation and welding of 30,000 ft² of HDPE geomembrane, along with geotextiles. Performed field sampling and testing of geosynthetics.

Stock Pond, ICI Explosives Inc., McMasterville, Québec. On-site Quality Control Manager for the installation and welding of 14,000 ft² of HDPE geomembrane, along with geotextiles. Performed field sampling and testing of geosynthetics.

Secondary Containment for Transformers, NB Power, Grand Manan, New-Brunswick, Canada. On-site Quality Control Manager for the installation and welding of 32,000 ft² of HDPE geomembrane, along with geotextiles. Performed field sampling and testing of geosynthetics.

Waste Stock Pile Cover, Métaux Timminco, Beauharnois, Québec. Prepared design reports, CQA Plan, construction specifications, and cost estimate for the closure system; on-site QC Manager for the installation and welding of 248,000 ft² of HDPE geomembrane. Performed field sampling and testing of geosynthetics.

Hazardous Waste Landfill Cell I-4 Cover, Stablex Canada, Blainville, Québec. Prepared design reports, CQA Plan, construction specifications, and cost estimate for the closure system; on-site QC Manager for the installation and welding of 280,000 ft² of HDPE geomembrane, along with geotextiles. Performed field sampling and testing of geosynthetics.

Stock Pad, PPG Canada inc., Beauharnois, Québec. On-site Quality Control Manager for the installation and welding of 22,000 ft² of HDPE geomembrane, along with geotextiles. Performed field sampling and testing of geosynthetics.

Double-Lined Maximum Security Landfill, PPG Canada inc., Beauharnois, Québec. Cell No. 9, Construction and Closure: Prepared design reports, CQA Plan, construction specifications, and cost estimate for the closure system; on-site QA Manager for the installation and welding of 640,000 ft² of HDPE geomembrane, along with geotextiles and clay liners for the double-lined cell and its subsequent closure system. Cell No. 10, Construction: Designed leachate collection system and prepared design reports, CQA Plan, construction specifications, and cost estimate for the closure system; on-site QA Manager for the installation and welding of 565,000 ft² of HDPE geomembrane, along with geotextiles, geonet and a clay liner. Performed field sampling and testing of geosynthetics.



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

14175 Ave. 344, Visalia, CA 93292

(559) 732-1601

FAX (559) 732-1603

TRIAL WELDS

Project Name: Blue ledge mine Removal Action

Date	Time	Machine #	Operator	Machine Temp	Speed / Preheat Temp	Peel				Shear	
						#FTB	#FTB	#FTB	#FTB	#FTB	#FTB
8-12-10	6:40	129	RP	850°	400	152	145	138	153	202	203
8-12-10	6:45	127	VD	850°	400	150	153	147	156	202	197
8-12-10	7:00	128	AC	850°	300	137	133	135	146	197	200
8-12-10	12:35	Extrusion 69	J.A	500°	400°	126	155	139	154	160	158
8-12-10	12:50	128	AC	850°	450	137	130	133	134	172	172
8-12-10	1:10	Extrusion 82	A.S	525°	380°	155	147	157	159	178	171

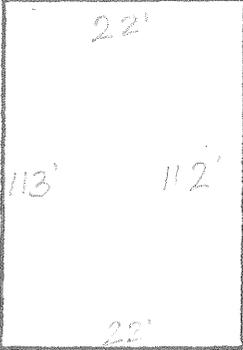
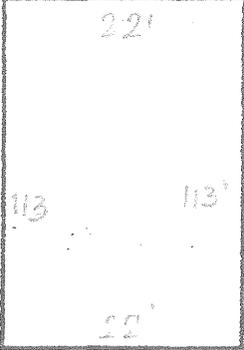
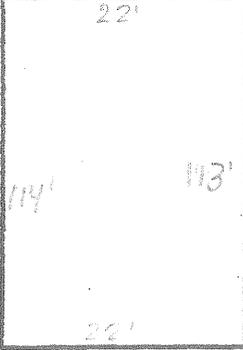
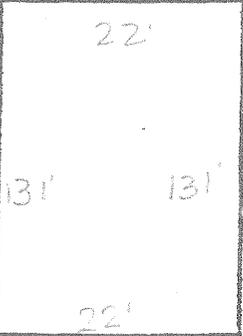
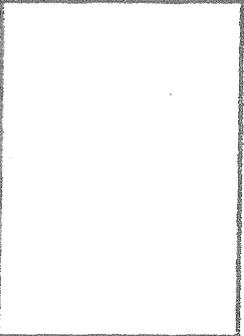
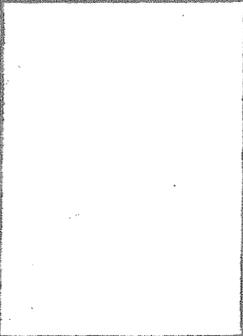
QC Technician: Leon Guerra

Deployment Date 8-10-10

D & E CONSTRUCTION, INC.

Project Name: _____ Job # _____ Supt: _____

Material: 60 mil Dlx Texture Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
1	2119	2	2119	3	2119
					
Initial SF		Initial SF		Initial SF	
Final SF <u>21475</u>		Final SF <u>2486</u>		Final SF <u>2497</u>	
Lineal Feet Trench <u>0</u>		Lineal Feet Trench <u>0</u>		Lineal Feet Trench <u>0</u>	
4	2119				
					
Initial SF		Initial SF		Initial SF	
Final SF <u>2282</u>		Final SF		Final SF	
Lineal Feet Trench <u>0</u>		Lineal Feet Trench		Lineal Feet Trench	
Panel #		Panel #		Total Initial SF This Page	
Roll #		Roll #		SF	
				Total Final SF This Page	
				SF	
				Anchor Trench	
				Total Linear feet trench <u>0</u> LF	
				X	
				Depth and width allowed in trench <u>0</u> LF	
				= Total SF in Trench <u>0</u> SF	
				Total Pay Area This Page	
				<u>10'3"</u> SF	
				Total Previous Pages	
				<u>0</u> SF	
Initial SF		Initial SF		Total Pay Area to Date	
Final SF		Final SF		<u>10'3"</u> SF	
Lineal Feet Trench		Lineal Feet Trench			



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

Project Name: _____
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: 60 mil. Dls. Teflon Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp
8-11-10	4-5	131'	7:10 am - 7:29 pm	V.D	127	850°	400	
8-11-10	5-6	131'	7:29 am - 7:43 pm	R.P	129	850°	400	
8-11-10	6-7	132'	7:41 am - 8:01 pm	V.D	127	850°	400	
8-11-10	7-8	132'	8:12 am - 8:37 pm	R.P	129	850°	400	
8-11-10	8-9	104'	8:21 am - 9:26 pm	V.D	127	250°	400	
8-11-10	9-10	76'	10:15 am - 10:29 pm	R.P	129	850°	400	
8-11-10	10-11	44'	10:41 am - 10:48 pm	R.P	129	850°	400	
8-11-10	12-8	32'	10:40 am - 10:45 pm	V.D	127	850°	400	
8-11-10	12-9	30'	10:45 am - 10:49 pm	V.D	127	850°	400	
8-11-10	12-10	30'	10:49 am - 10:54 pm	V.D	127	850°	400	
8-11-10	12-11	30'	10:54 am - 10:59 pm	V.D	127	850°	400	
8-11-10	12-13	130'	11:10 am - 11:34 pm	R.P	129	850°	400	
8-11-10	13-14	128'	11:12 am - 11:32 pm	V.D	127	850°	400	
8-11-10	14-15	126'	11:44 am - 12:04 pm	R.P	129	850	400	
8-11-10	15-16	122'	11:43 am - 12:01 pm	V.D	127	850	400	
8-11-10	16-17	116'	1:05 am - 1:25 pm	R.P	129	850°	450	
8-11-10	17-18	53'	1:04 am - 1:15 pm	V.D	127	850°	400	
8-11-10	18-19	53'	1:22 am - 1:30 pm	V.D	127	850°	400	
8-11-10	17-19	59'	1:30 am - 1:38 pm	V.D	127	850°	400	
8-11-10	19-20	89'	2:00 am - 2:17 pm	R.P	129	850°	450	
8-11-10	20-21	34'	2:43 am - 2:50 pm	R.P	129	850°	450	
8-11-10	21-22	26'	3:12 am - 3:18 pm	R.P	129	850°	450	

Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
		IN	Out		
8-11-10	AT	8:14	8:17	(P) F	
8-11-10	AT	8:15	8:20	(P) F	
8-11-10	AT	10:03	10:08	(P) F	
8-11-10	AT	10:04	10:07	(P) F	
8-11-10	AT	11:27	11:32	(P) F	
8-11-10	AT	11:25	11:30	(P) F	
8-11-10	AT	11:23	11:28	(P) F	
8-11-10	AT	11:33	11:38	(P) F	
8-11-10	AT	11:32	11:37	(P) F	
8-11-10	AT	11:24	11:29	(P) F	
8-11-10	AT	11:22	11:27	(P) F	
8-11-10	AT	1:18	1:23	(P) F	
8-11-10	AT	1:17	1:24	(P) F	
8-11-10	AT	1:20	1:25	(P) F	
8-11-10	AT	1:21	1:26	(P) F	
8-11-10	AT	1:45	1:50	(P) F	2 AIR Tests
8-11-10	AT	1:48	1:53	(P) F	
8-11-10	AT	1:46	1:51	(P) F	
8-11-10	AT	2:00	2:05	(P) F	
8-11-10	AT	2:09	2:10	(P) F	
8-11-10	AT	3:14	3:19	(P) F	
8-11-10	AT	3:15	3:20	(P) F	
8-11-10	AT	3:23	3:28	(P) F	

Total = 1808

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: LGK



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

Project Name: _____
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: 60 mil pls Texture Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-11-10	22-23	26'	2:53 am 3:00 pm	R.P	129	850°	450		8-11-10	AT	3:16	3:21	(P) F	
8-11-10	23-24	64'	2:19 am 2:29 pm	V.D	127	850°	400		8-11-10	AT	3:08	3:13	(P) F	
8-11-10	24-26	33'	1:55 am 2:00 pm	VD	127	850°	400		8-11-10	AT	3:10	3:15	(P) F	
8-11-10	24-25	36'	2:00 am 2:05 pm	VD	127	850°	400		8-11-10	AT	3:11	3:16	(P) F	
8-11-10	25-26	32'	1:47 am 1:54 pm	RP	129	850°	450		8-11-10	AT	3:10	3:15	(P) F	
8-11-10	26-27	52'	1:33 am 1:43 pm	RP	129	850°	450		8-11-10	AT	3:09	3:14	(P) F	
8-11-10	28-23	42'	3:18 am 3:23 pm	RP	129	850°	450		8-11-10	AT	3:26	3:31	(P) F	
8-11-10	28-29	106'	3:01 am 3:17 pm	VD	127	850°	400		8-12-10	AT	8:35	8:41	(P) F	
8-11-10	29-30	104'	3:24 am 3:40 pm	VD	127	850°	400		8-12-10	AT	8:37	8:42	(P) F	
8-11-10	30-31	90'	3:55 am 4:02 pm	RP	129	850°	450		8-12-10	AT	8:45	8:50	(P) F	
8-11-10	31-32	42'	3:59 am 4:07 pm	VD	127	850°	400		8-12-10	AT	8:50	8:55	(P) F	
8-11-10	33-34	21'	4:48 am 4:51 pm	VD	127	850°	400		8-12-10	AT	9:20	9:25	(P) F	
8-11-10	34-35	42'	3:40 am 4:45 pm	RP	129	850°	450		8-12-10	AT	8:42	8:50	(P) F	
8-11-10	25-36	64'	4:23 am 4:41 pm	VD	127	850°	400		8-12-10	AT	8:45	8:50	(P) F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	

Total = 754

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: LGV

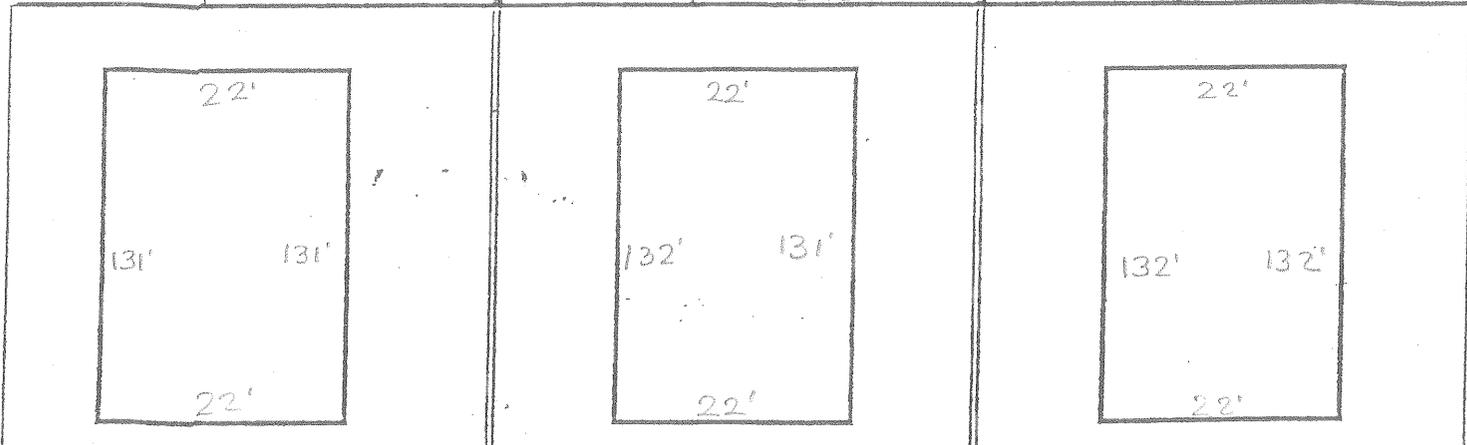
Deployment Date 8-11-10

D & E CONSTRUCTION, INC.

Project Name: _____ Job # _____ Supt: _____

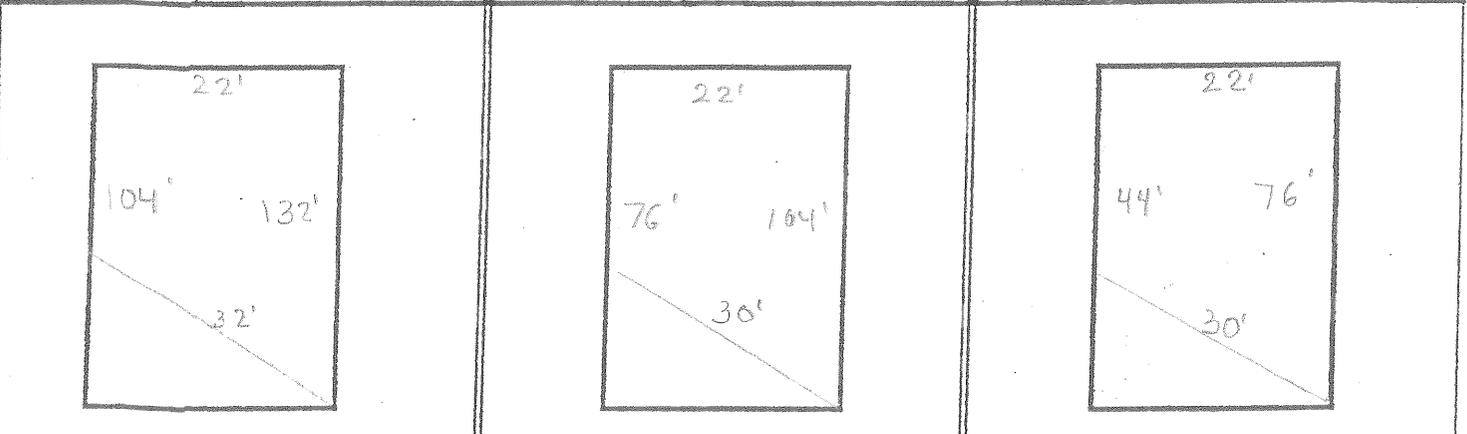
Material: 60mm/10k Texture Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel # 5 Roll # 2132 Panel # 6 Roll # 2132 Panel # 7 Roll # 2132



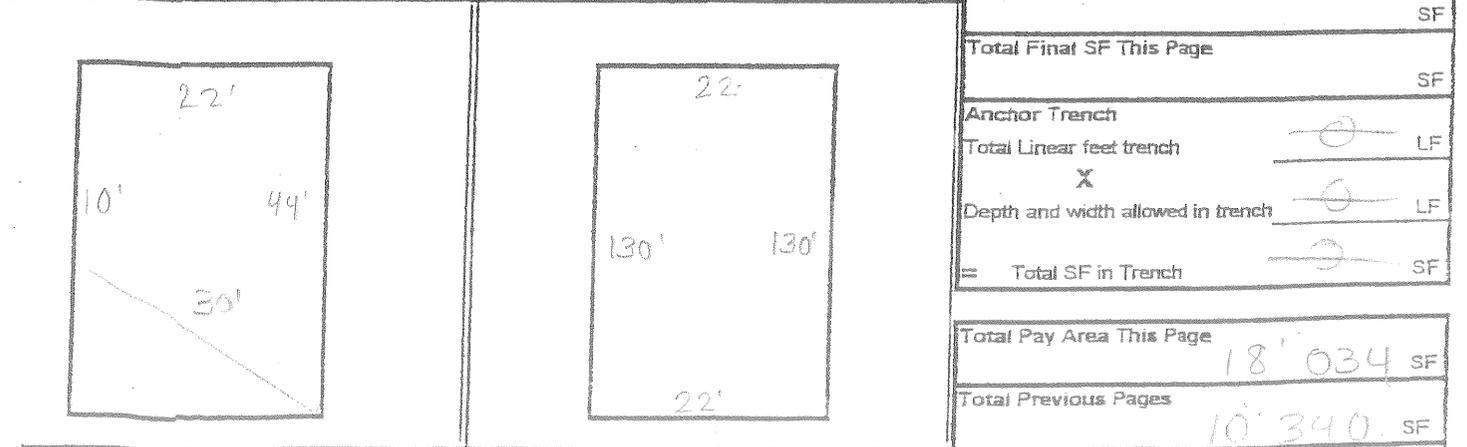
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>2882</u>	0	Final SF <u>2893</u>	0	Final SF <u>2909</u>	0

Panel # 8 Roll # 2120 Panel # 9 Roll # 2120 Panel # 10 Roll # 2126



Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>2596</u>	0	Final SF <u>1980</u>	0	Final SF <u>1320</u>	0

Panel # 11 Roll # 2126 Panel # 12 Roll # 2120



Total Initial SF This Page		SF
Total Final SF This Page		SF
Anchor Trench	0	LF
Total Linear feet trench	0	LF
X	0	LF
Depth and width allowed in trench	0	LF
Total SF in Trench	0	SF

Total Pay Area This Page	<u>18'034</u>	SF
Total Previous Pages	<u>10'340</u>	SF

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area to Date
Final SF <u>594</u>	0	Final SF <u>2860</u>	0	<u>28'374</u> SF

Deployment Date 08/1/10

D & E CONSTRUCTION, INC.

Project Name: _____ Job # _____ Supt: _____

Material: Concrete Trench Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Panel # <u>29</u>	Roll # <u>2123</u>	Panel # <u>30</u>	Roll # <u>2123</u>	Panel # <u>31</u>	Roll # <u>2123</u>
Initial SF _____	Lineal Feet Trench _____	Initial SF _____	Lineal Feet Trench _____	Initial SF _____	Lineal Feet Trench _____
Final SF <u>2310</u>	<u>0</u>	Final SF <u>2225</u>	<u>0</u>	Final SF <u>1452</u>	<u>0</u>
Panel # <u>32</u>	Roll # <u>2123</u>	Panel # <u>33</u>	Roll # <u>2123</u>	Panel # <u>34</u>	Roll # <u>2123</u>
Initial SF _____	Lineal Feet Trench _____	Initial SF _____	Lineal Feet Trench _____	Initial SF _____	Lineal Feet Trench _____
Final SF <u>441</u>	<u>0</u>	Final SF <u>242</u>	<u>0</u>	Final SF <u>704</u>	<u>0</u>
Panel # <u>35</u>	Roll # <u>2123</u>	Panel # <u>36</u>	Roll # <u>2123</u>	Total initial SF This Page _____ SF	
				Total Final SF This Page _____ SF	
Initial SF _____	Lineal Feet Trench _____	Initial SF _____	Lineal Feet Trench _____	Anchor Trench _____	
Final SF <u>1166</u>	<u>0</u>	Final SF <u>1583</u>	<u>0</u>	Total Linear feet trench _____ LF	
				X _____ LF	
				Depth and width allowed in trench _____ LF	
				= Total SF in Trench _____ SF	
				Total Pay Area This Page <u>10'223</u> SF	
				Total Previous Pages <u>53'340</u> SF	
				Total Pay Area to Date <u>63'563</u> SF	



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

4

Project Name: Blue Ledge Mine Removal Action
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: 60ml als Texaco Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-12-10	1-28	112'	7:14 am - 7:33 pm	V.D	127	850°	400		8-12-10	AT	8:36	8:41	(P) F	
8-12-10	19-24	23'	7:14 am - 7:20 pm	A.C	128	850°	300		8-12-10	AT	8:10	8:15	(P) F	Flow
8-12-10	30-36	16'	6:57 am - 7:00 pm	RP	129	850°	400		8-12-10	AT	8:43	8:48	(P) F	
8-12-10	31-35	30'	7:00 am - 7:07 pm	RP	129	850°	400		8-12-10	AT	8:45	8:50	(P) F	
8-12-10	31-34	22'	7:07 am - 7:11 pm	RP	129	850°	400		8-12-10	AT	8:50	8:55	(P) F	
8-12-10	32-34	11'	7:11 am - 7:13 pm	RP	129	850°	400		8-12-10	AT	8:50	8:55	(P) F	
8-12-10	32-33	30'	7:13 am - 7:18 pm	RP	129	850°	400		8-12-10	AT	9:20 9:21	9:23 9:26	(P) F	2 AIR TEST
8-12-10	36-37	74'	7:34 am - 7:48 pm	RP	129	850°	400		8-12-10	AT	10:01	10:06	(P) F	
8-12-10	37-38	72'	7:56 am - 8:10 pm	RP	129	850°	400		8-12-10	AT	9:55	10:00	(P) F	
8-12-10	38-39	68'	8:12 am - 8:29 pm	RP	127	850°	400		8-12-10	AT	9:38	9:43	(P) F	
8-12-10	39-40	66'	8:29 am - 8:40 pm	RP	129	850°	400		8-12-10	AT	9:31	9:36	(P) F	
8-12-10	40-51	64'	7:01 am - 9:15 pm	RP	129	850°	400		8-12-10	AT	9:30	9:35	(P) F	
8-12-10	41-42	139'	7:43 am - 8:06 pm	VD	127	850°	400		8-12-10	AT	10:06	10:11	(P) F	
8-12-10	41-43	93'	8:13 am - 8:28 pm	VD	127	850°	400		8-12-10	AT	10:10	10:15	(P) F	
8-12-10	42-43	22'	8:08 am - 8:11 pm	VD	127	850°	400		8-12-10	AT	10:10	10:15	(P) F	CR
8-12-10	42-44	145'	8:20 am - 8:43 pm	A.C	128	850°	300		8-12-10	AT	10:06	10:11	(P) F	
8-12-10	43-44	112'	8:43 am - 9:03 pm	A.C	128	850°	300		8-12-10	AT	10:25	10:30	P F	
8-12-10	44-45	105'	9:36 am - 9:47 pm	V.D	127	850°	400		8-12-10	AT	10:08	10:13	(P) F	
8-12-10	44-46	42'	9:47 am - 9:54 pm	V.D	127	850°	400		8-12-10	AT	10:20	10:25	(P) F	
8-12-10	44-47	75'	9:59 am - 10:06 pm	V.D	127	850°	400		8-12-10	AT	10:23	10:28	(P) F	
8-12-10	44-48	41'	10:06 am - 10:13 pm	V.D	127	850°	400		8-12-10	AT	10:32	10:37	(P) F	
8-12-10	44-49	23'	10:13 am - 10:17 pm	V.D	127	850°	400		8-12-10	AT	10:32	10:37	(P) F	
Total =														

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: EA



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D1

5

Project Name: Blue Ledge Mine Removal Action
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: GOMI Dlx Texture Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-12-10	41-7	21'	7:25 am - 7:38 pm	AC	128	850°	300		8-12-10	AT	8:11	8:16	Ⓟ F	Time
8-12-10	41-6	22'	7:38 am - 7:43 pm	AC	128	850°	300		8-12-10	AT	8:11	8:16	Ⓟ F	
8-12-10	41-5	22'	7:43 am - 7:46 pm	AC	128	850°	300		8-12-10	AT	8:12	8:17	Ⓟ F	
8-12-10	41-4	22'	7:46 am - 7:51 pm	AC	128	850°	300		8-12-10	AT	8:12	8:17	Ⓟ F	
8-12-10	41-3	22'	7:51 am - 7:55 pm	AC	128	850°	300		8-12-10	AT	8:13	8:18	Ⓟ F	
8-12-10	41-2	22'	7:55 am - 7:57 pm	AC	128	850°	300		8-12-10	AT	8:17	8:22	Ⓟ F	
8-12-10	41-1	22'	7:57 am - 8:00 pm	AC	128	850°	300		8-12-10	AT	8:19	8:24	Ⓟ F	
8-12-10	41-28	22'	8:00 am - 8:05 pm	AC	128	850°	300		8-12-10	AT	8:19	8:24	Ⓟ F	
8-12-10	41-29	22'	8:05 am - 8:08 pm	AC	128	850°	300		8-12-10	AT	8:36	8:41	Ⓟ F	
8-12-10	41-30	13	8:08 am - 8:10 pm	AC	128	850°	300		8-12-10	AT	8:37	8:42	Ⓟ F	
8-12-10	17-50	23'	9:23 am - 9:26 pm	AC	128	850°	300		8-12-10	AT	10:41	10:46	Ⓟ F	
8-12-10	16-50	17'	9:26 am - 9:29 pm	AC	128	850°	300		8-12-10	AT	10:41	10:46	Ⓟ F	
8-12-10	15-44	22'	9:30 am - 9:35 pm	AC	128	850°	300		8-12-10	AT	10:41	10:46	Ⓟ F	
8-12-10	14-44	7'	9:35 am - 9:37 pm	AC	128	850°	300		8-12-10	AT	10:49	10:54	Ⓟ F	
8-12-10	14-43	15	9:37 am - 9:46 pm	AC	128	850°	300		8-12-10	AT	10:49	10:54	Ⓟ F	
8-12-10	13-43	13	9:40 am - 9:43 pm	AC	128	850°	300		8-12-10	AT	10:49	10:54	Ⓟ F	
8-12-10	13-41	10'	9:43 am - 9:49 pm	AC	128	850°	300		8-12-10	AT	10:49	10:54	Ⓟ F	
8-12-10	12-41	20	9:45 am - 9:50 pm	AC	128	850°	300		8-12-10	AT	10:50	10:55	Ⓟ F	
			am pm										Ⓟ F	
			am pm										Ⓟ F	
			am pm										Ⓟ F	
			am pm										Ⓟ F	

Total =

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: EA



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

6

Project Name: Blue ledge Mine Removal Action
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Zem Gueng

Material: 60 mil p/s Texture Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-12-10	45-46	22'	9:06 am - 9:09 pm	V.D	127	850°	400		8-12-10	AT	10:20	10:25	Ⓟ F	CR
8-12-10	46-47	39'	8:41 am - 8:47 pm	V.D	127	850°	400		8-12-10	AT	10:21	10:26	Ⓟ F	CR
8-12-10	47-48	22'	9:14 am - 9:18 pm	V.D	127	850°	400		8-12-10	AT	10:32	10:37	Ⓟ F	CR
8-12-10	48-49	22'	9:19 am - 9:23 pm	V.D	127	850°	400		8-12-10	AT	10:32	10:37	Ⓟ F	CR
8-12-10	49-50	21'	9:17 am - 9:21 pm	AC	128	850°	300		8-12-10	AT	10:41	10:46	Ⓟ F	CR
8-12-10	40-45	12'	9:27 am - 9:30 pm	RP	129	850°	400		8-12-10	AT	9:31	9:36	Ⓟ F	Trem
8-12-10	39-45	10'	9:31 am - 9:33 pm	RP	129	850°	400		8-12-10	AT	9:31	9:36	Ⓟ F	Trem
8-12-10	39-44	12'	9:33 am - 9:36 pm	RP	129	850°	400		8-12-10	AT	9:38	9:43	Ⓟ F	Trem
8-12-10	38-44	11'	9:36 am - 9:39 pm	RP	129	850°	400		8-12-10	AT	9:38	9:43	Ⓟ F	Trem
8-12-10	38-42	11'	9:39 am - 9:42 pm	RP	129	850°	400		8-12-10	AT	9:55	10:00	Ⓟ F	Trem
8-12-10	37-42	12'	9:42 am - 9:45 pm	RP	129	850°	400		8-12-10	AT	9:55	10:00	Ⓟ F	Trem
8-12-10	37-41	10'	9:45 am - 9:48 pm	RP	129	850°	400		8-12-10	AT	9:55	10:00	Ⓟ F	Trem
8-12-10	36-41	13'	9:48 am - 9:51 pm	RP	129	850°	400		8-12-10	AT	10:01	10:06	Ⓟ F	Trem
8-12-10	52-53	17'	9:59 am - 10:04 pm	AC	128	850°	300		8-12-10	AT	11:21	11:26	Ⓟ F	
8-12-10	53-54	27'	9:52 am - 9:57 pm	RP	129	850°	400		8-12-10	AT	11:22	11:27	Ⓟ F	
8-12-10	55-56	38'	10:05 am - 10:13 pm	RP	129	850°	400		8-12-10	AT	11:17	11:22	Ⓟ F	
8-12-10	56-57	39'	10:12 am - 10:18 pm	AC	128	850°	300		8-12-10	AT	11:15	11:20	Ⓟ F	
8-12-10	57-58	40'	10:15 am - 10:21 pm	RP	129	850°	400		8-12-10	AT	11:14	11:19	Ⓟ F	
8-12-10	58-59	41'	10:25 am - 10:30 pm	AC	128	850°	300		8-12-10	AT	11:10	11:15	Ⓟ F	
8-12-10	59-60	41'	10:28 am - 10:34 pm	RP	129	850°	400		8-12-10	AT	11:05	11:10	Ⓟ F	
8-12-10	60-61	42'	10:35 am - 10:42 pm	AC	128	850°	300		8-12-10	AT	11:05	11:10	Ⓟ F	
8-12-10	61-62	43'	10:45 am - 10:55 pm	AC	128	850°	300		8-12-10	AT	11:05	11:10	Ⓟ F	
Total =														

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: GA



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

7

Project Name: Blue ledge Mine Renoval Action
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: 60ml/pls Texture Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-12-10	G2-63	43	10:36 am - 10:48 pm	RP	129	850°	400		8-12-10	AT	11:05	11:10	(P) F	
8-12-10	63-64	44'	10:50 am - 10:57 pm	RP	129	850°	400		8-12-10	AT	11:28	11:33	(P) F	
8-12-10	64-65	45'	10:58 am - 11:05 pm	AC	128	850°	300		8-12-10	AT	11:33	11:38	(P) F	
8-12-10	65-66	46	11:09 am - 11:16 pm	RP	129	850°	400		8-12-10	AT	11:34	11:39	(P) F	
8-12-10	66-67	47	11:14 am - 11:22 pm	AC	128	850°	300		8-12-10	AT	11:35	11:40	(P) F	
8-12-10	67-68	48	11:21 am - 11:29 pm	RP	129	850°	400		8-12-10	AT	11:36	11:41	(P) F	
8-12-10	68-70	24'	11:16 am - 11:19 pm	AC	128	850°	450		8-12-10	AT	1:27	1:32	(P) F	
8-12-10	68-71	25'	1:19 am - 1:24 pm	AC	128	850°	450		8-12-10	AT	1:27	1:32	(P) F	
8-12-10	70-71	22'	1:12 am - 1:15 pm	AC	128	850°	450		8-12-10	AT	1:25	1:30	(P) F	CR
8-12-10	70-72	26	1:25 am - 1:28 pm	AC	128	850°	450		8-12-10	AT	1:38	1:43	(P) F	
8-12-10	71-72	26	1:28 am - 1:31 pm	AC	128	850°	450		8-12-10	AT	1:33	1:38	(P) F	
8-12-10	72-73	20'	1:57 am - 2:00 pm	AC	128	850°	450		8-12-10	AT	2:02	2:07	(P) F	
8-12-10	74-27	38'	1:42 am - 1:48 pm	AC	128	850°	450		8-12-10	AT	1:49	1:54	(P) F	
8-12-10	74-75	15	1:49 am - 1:52 pm	AC	128	850°	450		8-12-10	AT	1:59	1:59	(P) F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
Total =													P F	

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: GA



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

8

Project Name: Blue ledge Mine Renaval Action
 Project Manager: _____
 Superintendent: Victor Casillas
 Reported By: Leon Guerra

Material: 40 mil Dls Texture Job#: _____
 Location: _____
 Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-12-10	69-55	22'	11:38 am - 11:42 pm	AC	128	850°	300		8-12-10	AT	11:45	11:50	Ⓟ F	Tricin
	69-56	22'	11:42 am - 11:45 pm	AC	128	850°	300			AT	11:46	11:51	Ⓟ F	
	69-57	22'	11:45 am - 11:47 pm	AC	128	850°	300			AT	11:50	11:55	Ⓟ F	
	69-58	22'	11:47 am - 11:51 pm	AC	128	850°	300			AT	11:53	11:58	Ⓟ F	
	69-59	22'	11:51 am - 11:54 pm	AC	128	850°	300			AT	11:57	12:02	Ⓟ F	
	69-60	22'	11:54 am - 11:57 pm	AC	128	850°	300			AT	12:40	12:45	Ⓟ F	
	69-61	22'	11:57 am - 12:01 pm	AC	128	850°	300			AT	12:40	12:45	Ⓟ F	
	69-62	22'	12:01 am - 12:05 pm	AC	128	850°	300			AT	12:40	12:45	Ⓟ F	
	69-63	22'	11:39 am - 11:42 pm	RP	129	850°	400			AT	12:40	12:45	Ⓟ F	
	69-64	22'	11:42 am - 11:46 pm	RP	129	850°	400			AT	12:50	12:55	Ⓟ F	
	69-65	22'	11:46 am - 11:50 pm	RP	129	850°	400			AT	12:50	12:55	Ⓟ F	
	69-66	22'	11:50 am - 11:54 pm	RP	129	850°	400			AT	12:51	12:56	Ⓟ F	
	69-67	22'	11:54 am - 11:58 pm	RP	129	850°	400			AT	12:52	12:57	Ⓟ F	
	69-68	22'	11:58 am - 12:02 pm	RP	129	850°	400			AT	12:57	1:02	Ⓟ F	
	69-70	22'	1:33 am - 1:35 pm	AC	128	850°	400			AT	1:40	1:45	Ⓟ F	
	69-72	22'	1:35 am - 1:39 pm	AC	128	850°	400			AT	1:44	1:49	Ⓟ F	
▽	69-73	8'	1:39 am - 1:40 pm	AC	128	850°	400		▽	AT	1:46	1:51	Ⓟ F	▽
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
			am pm										P F	
Total =														

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: EA

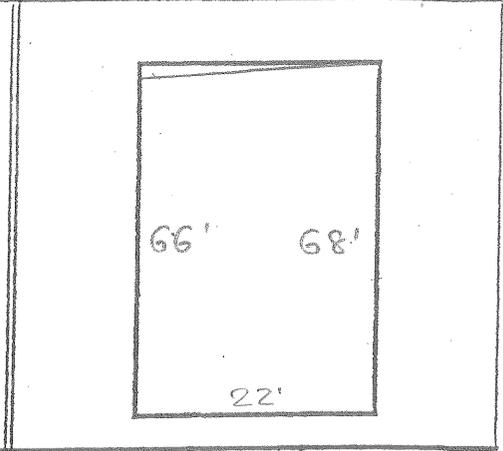
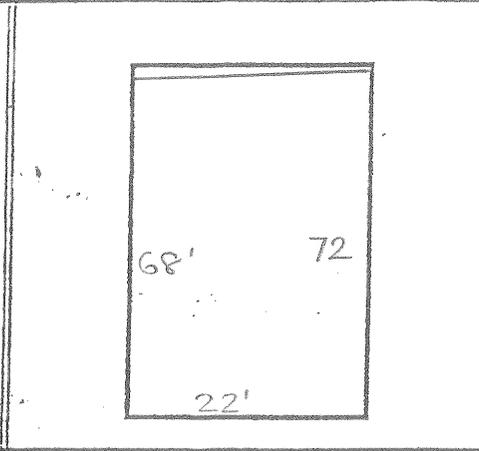
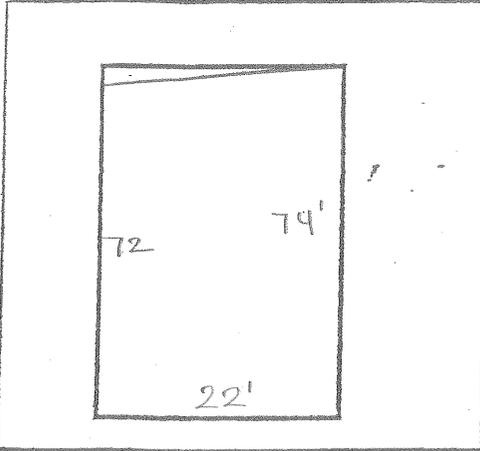
Deployment Date 8-12-10

D & E CONSTRUCTION, INC.

Project Name: Blue lodge mine Removal Action Job # _____ Supt: _____

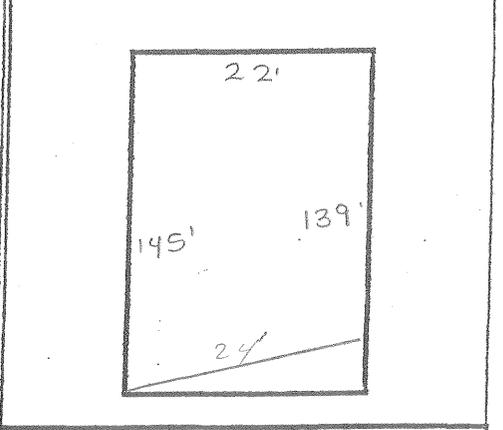
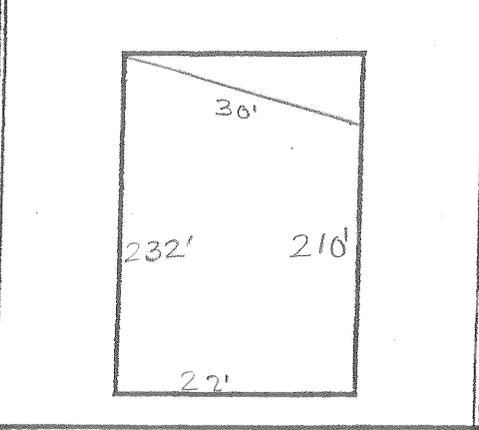
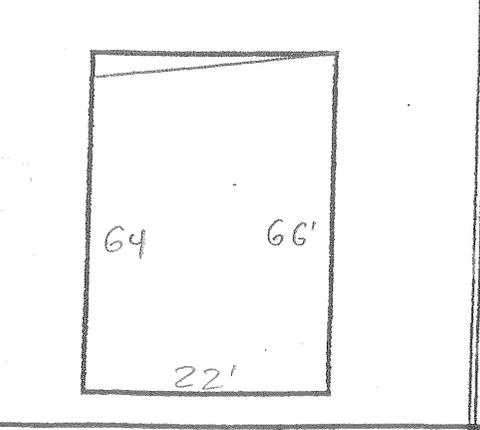
Material: 60 milols Texture Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel # 37 Roll # 2123 Panel # 38 Roll # 2123 Panel # 39 Roll # 2124



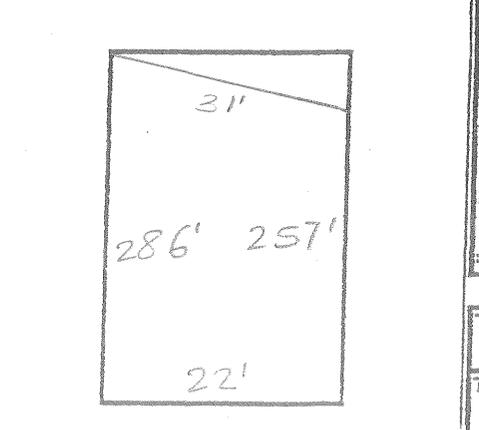
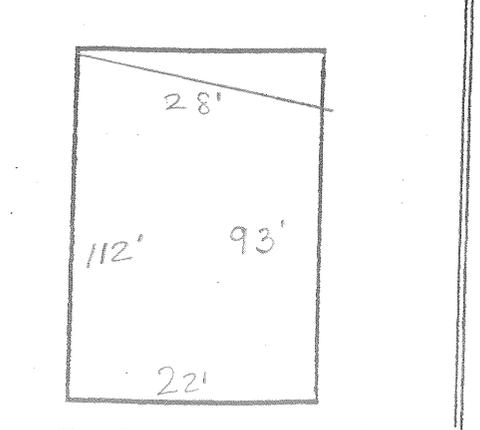
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>1606</u>	<u>0</u>	Final SF <u>1540</u>	<u>0</u>	Final SF <u>1474</u>	<u>0</u>

Panel # 40 Roll # 2124 Panel # 41 Roll # 2124 Panel # 42 Roll # 2124



Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>1430</u>	<u>0</u>	Final SF <u>4862</u>	<u>0</u>	Final SF <u>3124</u>	<u>0</u>

Panel # 43 Roll # 2122 Panel # 44 Roll # 2122



Total Initial SF This Page	SF
Total Final SF This Page	SF
Anchor Trench	
Total Linear feet trench	<u>0</u> LF
X	
Depth and width allowed in trench	<u>0</u> LF
= Total SF in Trench	<u>0</u> SF

Total Pay Area This Page 22'264 SF

Total Previous Pages 63'563 SF

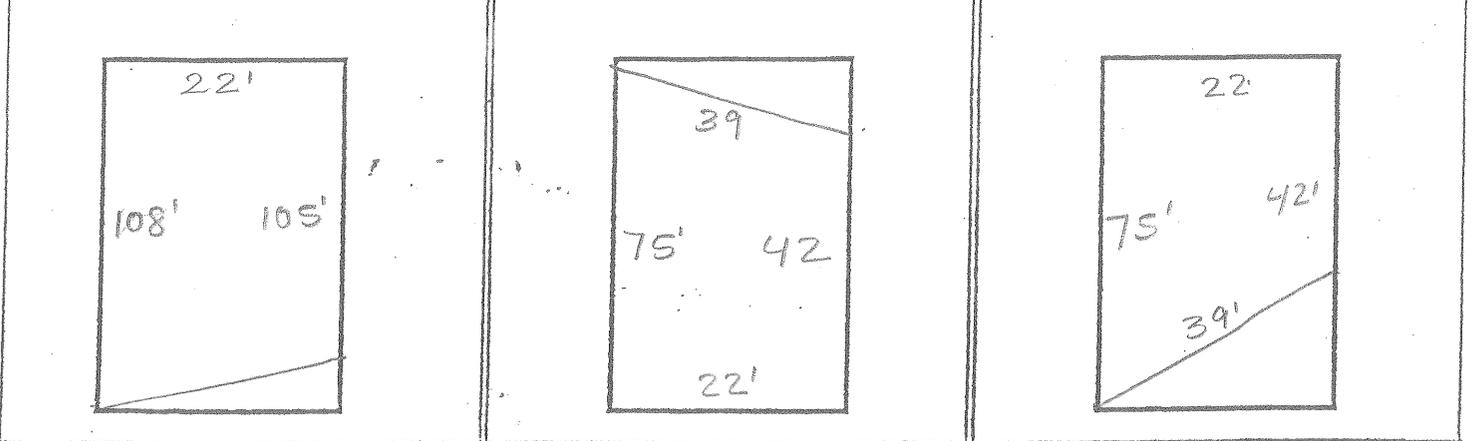
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area to Date
Final SF <u>2255</u>	<u>0</u>	Final SF <u>5973</u>	<u>0</u>	<u>85'827</u> SF

Deployment Date 8-12-10 **D & E CONSTRUCTION, INC.**

Project Name: Blue ledge mine Removal Activity Job # _____ Supt: _____

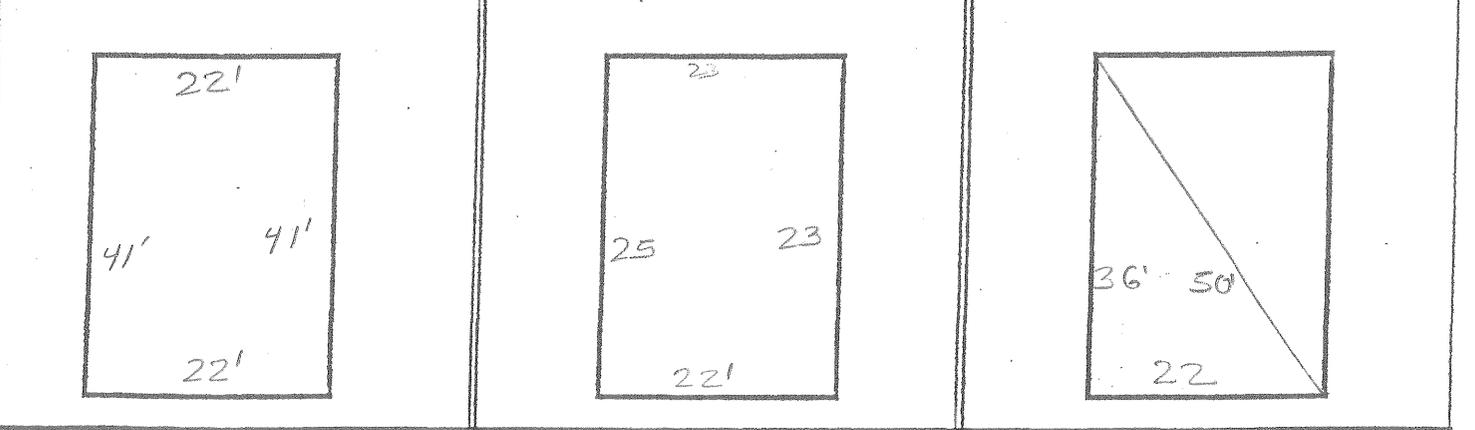
Material: 60 mil plastic Texture Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel # 45 Roll # 2122 Panel # 46 Roll # 2120 Panel # 47 Roll # 2120



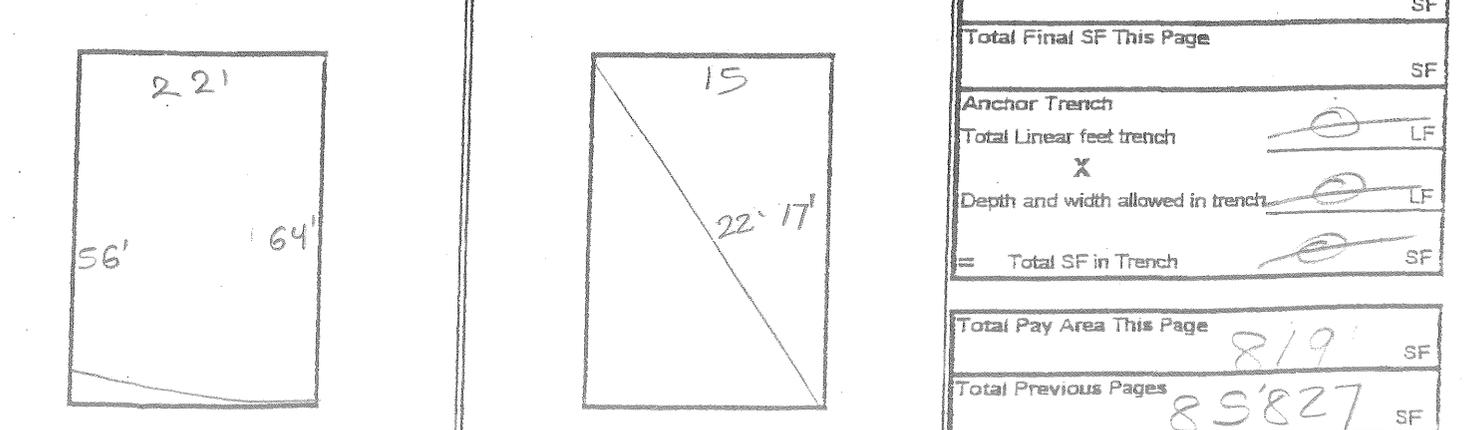
Initial SF	Linear Feet Trench	Initial SF	Linear Feet Trench	Initial SF	Linear Feet Trench
Final SF <u>2343</u>	<u>0</u>	Final SF <u>1287</u>	<u>0</u>	Final SF <u>1287</u>	<u>0</u>

Panel # 48 Roll # 2131 Panel # 49 Roll # 2119 Panel # 50 Roll # 2122



Initial SF	Linear Feet Trench	Initial SF	Linear Feet Trench	Initial SF	Linear Feet Trench
Final SF <u>902</u>	<u>0</u>	Final SF <u>528</u>	<u>0</u>	Final SF <u>396</u>	<u>0</u>

Panel # 51 Roll # 2125 Panel # 52 Roll # 2121



Total Initial SF This Page	SF
Total Final SF This Page	SF
Anchor Trench	
Total Linear feet trench	<u>0</u> LF
X	
Depth and width allowed in trench	<u>0</u> LF
= Total SF in Trench	<u>0</u> SF

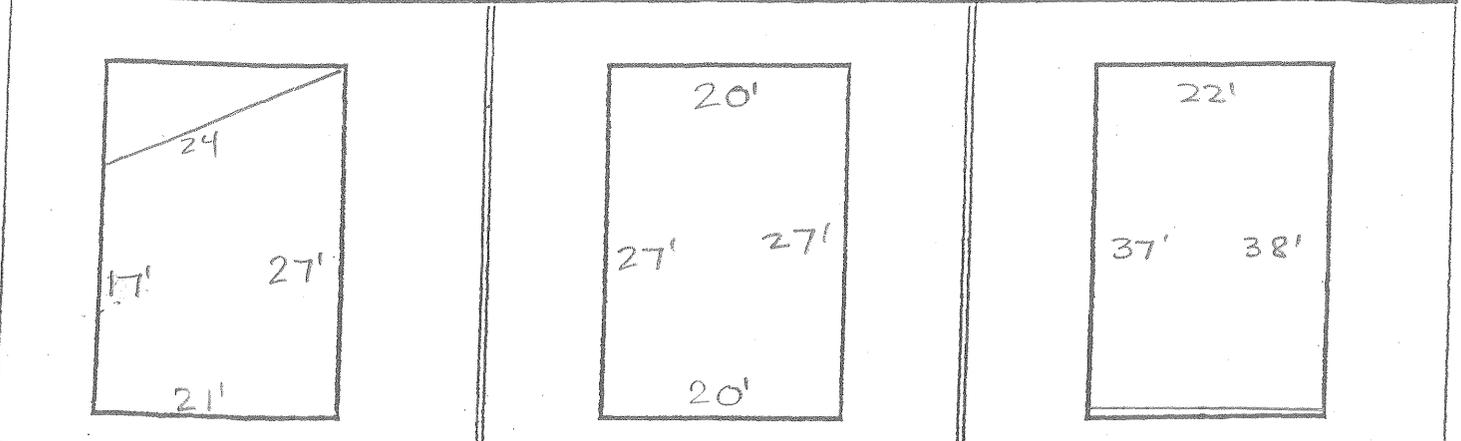
Initial SF	Linear Feet Trench	Initial SF	Linear Feet Trench	Total Pay Area This Page	SF
Final SF <u>1320</u>	<u>0</u>	Final SF <u>128</u>	<u>0</u>	<u>819</u>	SF
				Total Previous Pages	SF
				<u>85827</u>	SF
				Total Pay Area to Date	SF
				<u>94018</u>	SF

Deployment Date 8-12-16 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge mine Removal Action Job # _____ Supt: _____

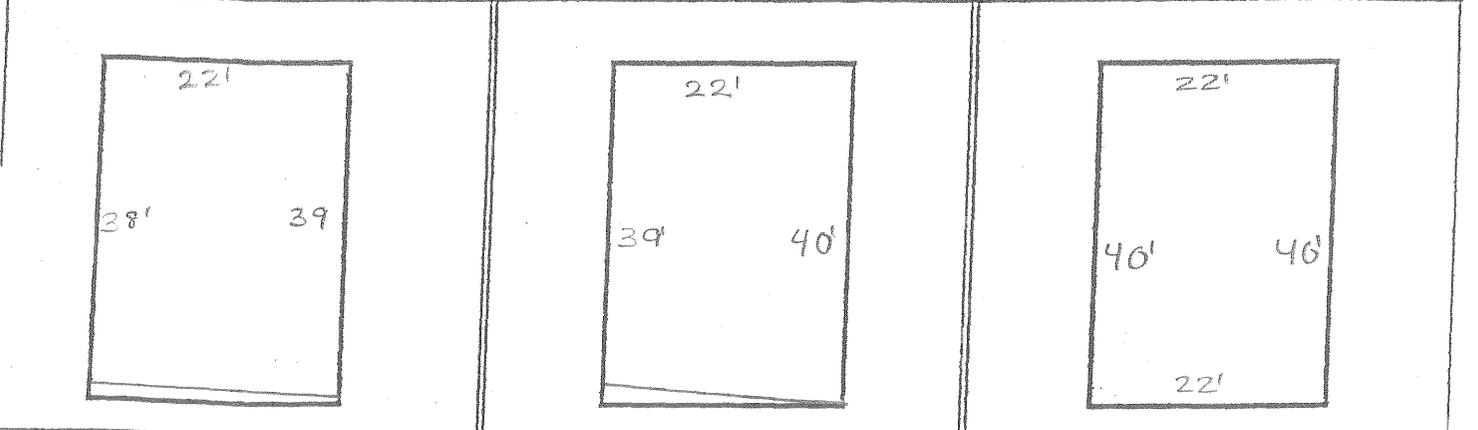
Material Quilts Texture Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel # 53 Roll # 2121 Panel # 54 Roll # 2121 Panel # 55 Roll # 2121



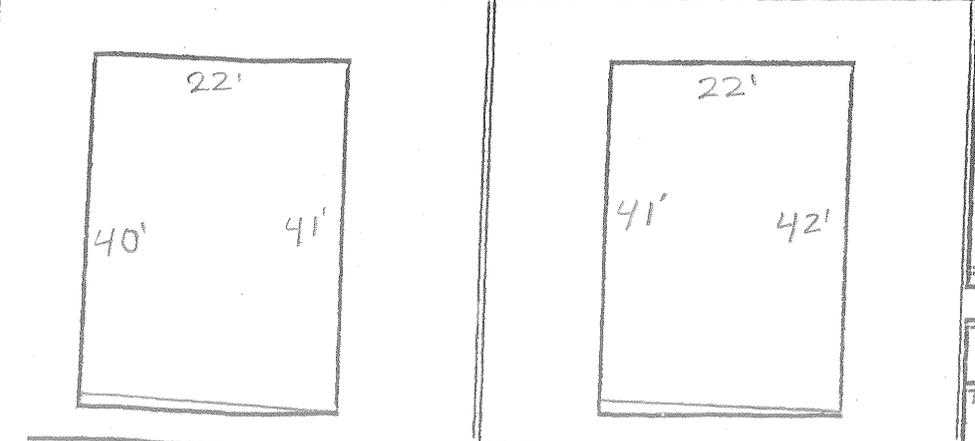
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>484</u>	<u>0</u>	Final SF <u>594</u>	<u>0</u>	Final SF <u>825</u>	<u>0</u>

Panel # 56 Roll # 2121 Panel # 57 Roll # 2121 Panel # 58 Roll # 2121



Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>847</u>	<u>0</u>	Final SF <u>869</u>	<u>0</u>	Final SF <u>880</u>	<u>0</u>

Panel # 59 Roll # 2121 Panel # 60 Roll # 2121



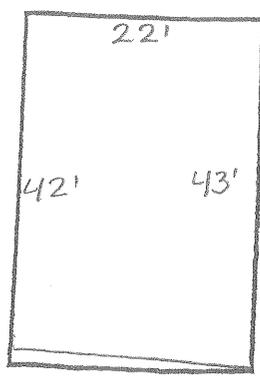
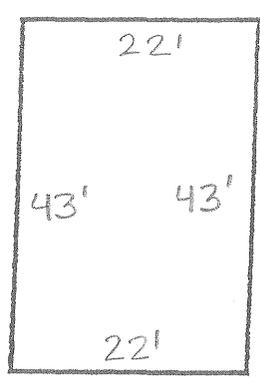
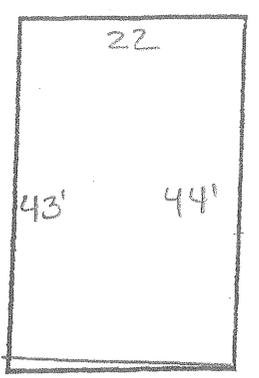
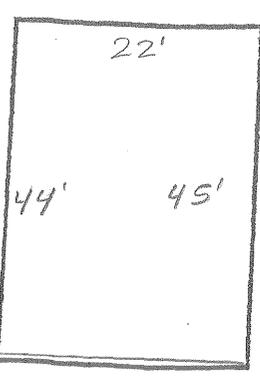
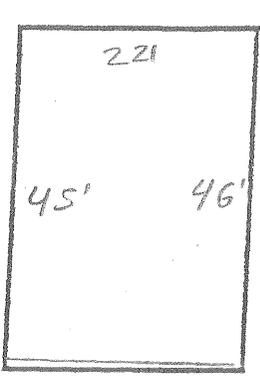
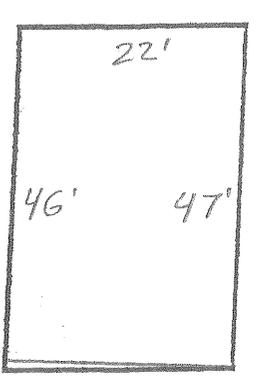
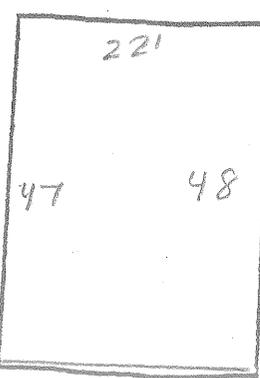
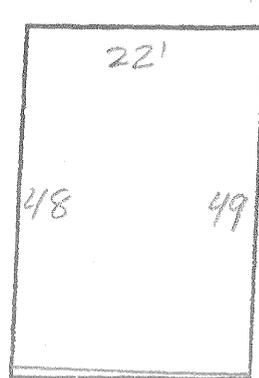
Total Initial SF This Page	SF
Total Final SF This Page	SF
Anchor Trench	
Total Linear feet trench	<u>0</u> LF
X	
Depth and width allowed in trench	<u>0</u> LF
= Total SF in Trench	<u>0</u> SF

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area This Page	SF
Final SF <u>891</u>	<u>0</u>	Final SF <u>913</u>	<u>0</u>	<u>6303</u>	
				Total Previous Pages	SF
				<u>94'018</u>	
				Total Pay Area to Date	SF
				<u>100'321</u>	

Deployment Date 8-2-10 **D & E CONSTRUCTION, INC.**

Project Name Blue ledge mine Renova Action Job # _____ Supt: _____

Material 60mil pls Tex Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #																										
Panel # <u>61</u>	Roll # <u>2121</u>	Panel # <u>62</u>	Roll # <u>2121</u>	Panel # <u>63</u>	Roll # <u>2121</u>																										
																															
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																										
Final SF <u>935</u>	<u>0</u>	Final SF <u>946</u>	<u>0</u>	Final SF <u>957</u>	<u>0</u>																										
Panel # <u>64</u>	Roll # <u>2121</u>	Panel # <u>65</u>	Roll # <u>2121</u>	Panel # <u>66</u>	Roll # <u>2130</u>																										
																															
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																										
Final SF <u>979</u>	<u>0</u>	Final SF <u>1001</u>	<u>0</u>	Final SF <u>1023</u>	<u>0</u>																										
Panel # <u>67</u>	Roll # <u>2130</u>	Panel # <u>68</u>	Roll # <u>2130</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>Total Initial SF This Page</td> <td style="text-align:right;">SF</td> </tr> <tr> <td>Total Final SF This Page</td> <td style="text-align:right;">SF</td> </tr> <tr> <td>Anchor Trench</td> <td></td> </tr> <tr> <td>Total Linear feet trench</td> <td style="text-align:right;"><u>0</u> LF</td> </tr> <tr> <td style="text-align:center;">X</td> <td></td> </tr> <tr> <td>Depth and width allowed in trench</td> <td style="text-align:right;"><u>0</u> LF</td> </tr> <tr> <td>Total SF in Trench</td> <td style="text-align:right;"><u>0</u> SF</td> </tr> <tr> <td colspan="2">Total Pay Area This Page</td> </tr> <tr> <td colspan="2" style="text-align:right;"><u>7'953</u> SF</td> </tr> <tr> <td colspan="2">Total Previous Pages</td> </tr> <tr> <td colspan="2" style="text-align:right;"><u>100'32</u> SF</td> </tr> <tr> <td colspan="2">Total Pay Area to Date</td> </tr> <tr> <td colspan="2" style="text-align:right;"><u>108274</u> SF</td> </tr> </table>		Total Initial SF This Page	SF	Total Final SF This Page	SF	Anchor Trench		Total Linear feet trench	<u>0</u> LF	X		Depth and width allowed in trench	<u>0</u> LF	Total SF in Trench	<u>0</u> SF	Total Pay Area This Page		<u>7'953</u> SF		Total Previous Pages		<u>100'32</u> SF		Total Pay Area to Date		<u>108274</u> SF	
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Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																												
Final SF <u>1045</u>	<u>0</u>	Final SF <u>1067</u>	<u>0</u>																												

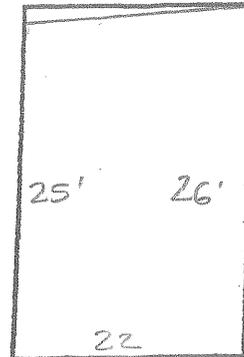
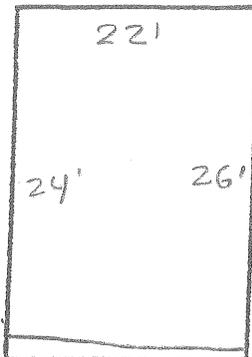
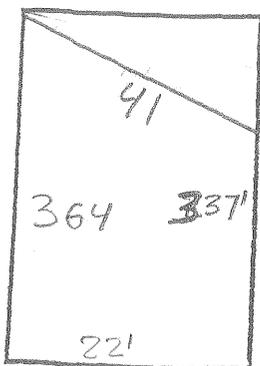
Deployment Date 8-12-10

D & E CONSTRUCTION, INC.

Project Name: Blue Ledge Mine Removal Action Job # _____ Supt: _____

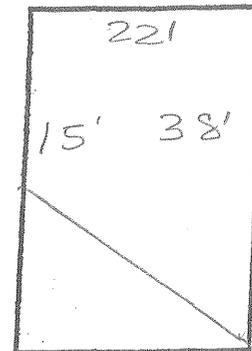
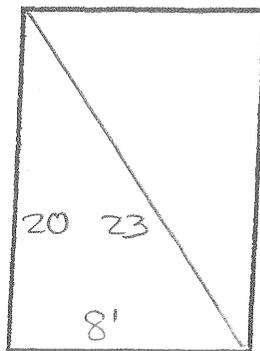
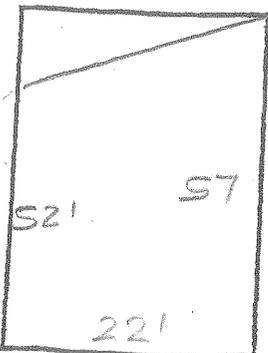
Material: 60mil Dlx Tex Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel # 69 Roll # 2130 Panel # 70 Roll # 2126 Panel # 71 Roll # 2120



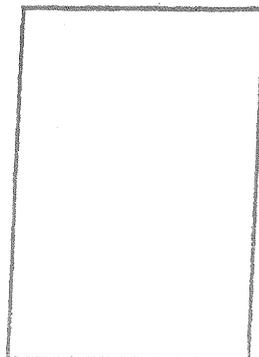
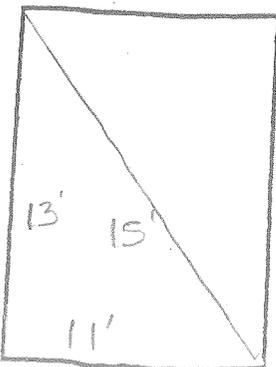
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>7711</u>	0	Final SF <u>550</u>	0	Final SF <u>561</u>	0

Panel # 72 Roll # 2132 Panel # 73 Roll # 2130 Panel # 74 Roll # 2132



Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>1199</u>	0	Final SF <u>80</u>	0	Final SF <u>583</u>	0

Panel # 75 Roll # 2132 Panel # _____ Roll # _____



Total Initial SF This Page	SF
Total Final SF This Page	SF
Anchor Trench	
Total Linear feet trench	0 LF
X	
Depth and width allowed in trench	0 LF
Total SF in Trench	0 SF

Total Pay Area This Page	<u>10'756</u> SF
Total Previous Pages	<u>108'274</u> SF
Total Pay Area to Date	<u>119'030</u> SF

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>72</u>	0	Final SF	



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

(9)

Project Name:
 Project Manager:
 Superintendent:
 Reported By:

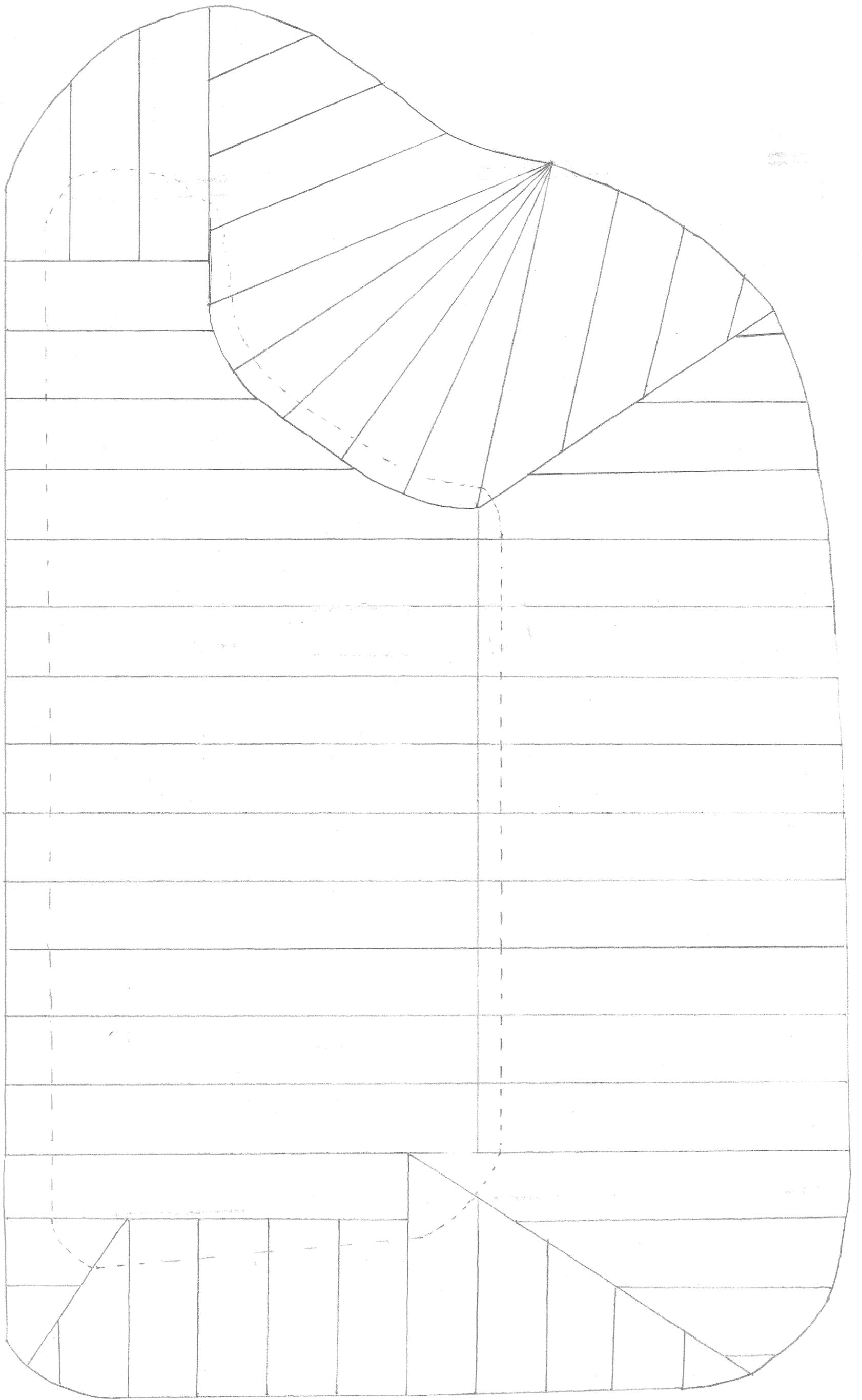
Blue ledge mine Removal Action
Victor Casillas
Leon Guerra

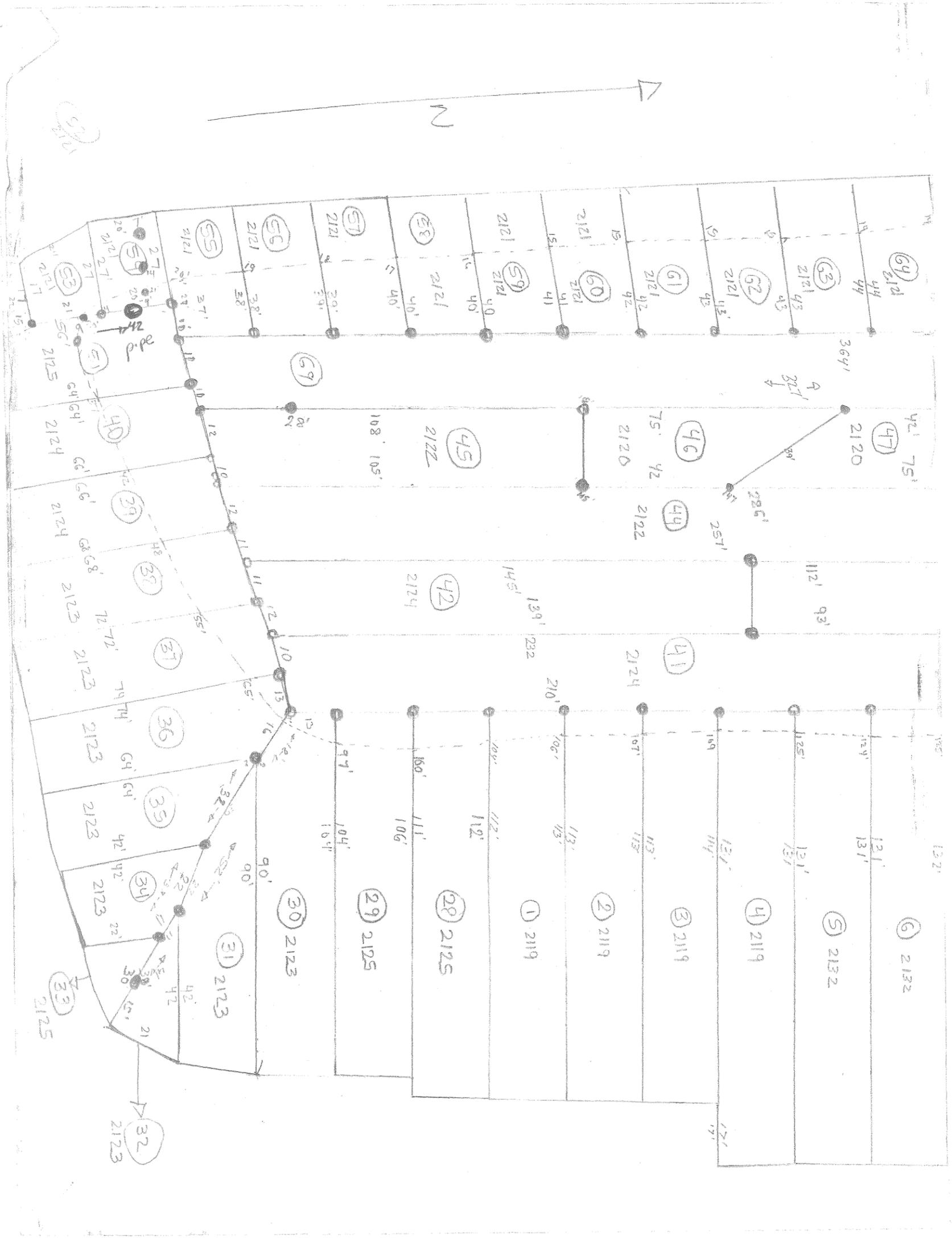
Material: 60mil Dls Texture Job#: _____
 Location: _____
 Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
8-13-10	40-69	10'	6:42 am 6:45 pm	AC	128	850°	300		8-13-10	AT	6:50	6:55	(P) F	Tie in
8-13-10	51-69	12'	6:45 am 6:49 pm	AC	128	850°	300		8-13-10	AT	6:50	6:55	(P) F	Tie in
8-13-10	51-55	11'	6:49 am 6:51 pm	AC	128	850°	300		8-13-10	AT	5:51	5:56	(P) F	Tie in
8-13-10	54-55	26'	6:51 am 6:57 pm	AC	128	850°	300		8-13-10	AT	6:58	7:03	(P) F	Tie in
8-13-10	51-54	15'	6:58 am 7:00 pm	AC	128	850°	300		8-13-10	AT	7:01	7:06	(P) F	Tie in
8-13-10	51-53	21'	7:02 am 7:06 pm	AC	128	850°	300		8-13-10	AT	7:08	7:13	(P) F	Tie in
8-13-10	51-52	15'	7:05 am 7:10 pm	AC	128	850°	300		8-13-10	AT	7:12	7:17	(P) F	Tie in
8-13-10	45-69	108'	7:13 am 7:35 pm	AC	128	850°	300		8-13-10	AT	7:35	7:40	(P) F	2 AIR TEST
8-13-10	46-69	75'	7:35 am 7:47 pm	AC	128	850°	300		8-13-10		7:35	7:40	(P) F	
8-13-10	47-69	42'	7:16 am 7:23 pm	RP	129	850°	400		8-13-10		7:49	7:54	(P) F	
8-13-10	48-69	41'	7:23 am 7:30 pm	RP	129	850°	400		8-13-10	AT	7:30	7:35	(P) F	
8-13-10	49-69	25'	6:45 am 6:49 pm	RP	129	850°	400		8-13-10	AT	7:33	7:38	(P) F	
8-13-10	50-69	36'	6:49 am 6:55 pm	RP	129	850°	400		8-13-10	AT	7:16	7:20	(P) F	
8-13-10	18-69	19'	6:55 am 6:58 pm	RP	129	850°	400		8-13-10	AT	7:16	7:21	(P) F	Tie in
8-13-10	19-69	23'	6:58 am 7:03 pm	RP	129	850°	400		8-13-10	AT	7:16	7:21	(P) F	Tie in
8-13-10	27-73	23'	7:03 am 7:06 pm	RP	129	850°	400		8-13-10	AT	7:16	7:21	(P) F	Tie in
8-13-10	72-74	26'	7:06 am 7:11 pm	RP	129	850°	400		8-13-10	AT	7:16	7:21	(P) F	Tie in
8-13-10	72-75	11'	7:11 am 7:14 pm	RP	129	850°	400		8-13-10	AT	7:17	7:22	(P) F	Tie in
			am pm										(P) F	
			am pm										(P) F	
			am pm										(P) F	
			am pm										(P) F	

Total =

Air Test: 40 psi for 5 minutes - 5 psi loss allowed. Tested By: EA







011076.00

**CONSTRUCTION QUALITY ASSURANCE REPORT
FOR THE REPOSITORY COVER
AT THE BLUE LEDGE MINE
SISKIYOU COUNTY, CALIFORNIA**

October 10, 2011

**Prepared for:
D&E Construction
14175 Avenue 344
Visalia, CA 93292**

Certification by Preparer

Blue Ledge Mine, Repository Cover

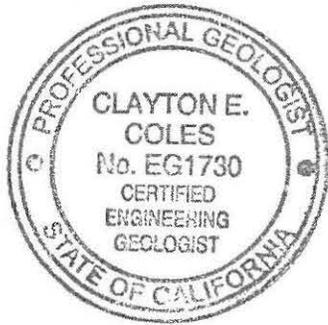
"As CQA Officer, I certify that I have reviewed and approved this document and all attachments. This document was prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted."

Clayton E. Coles

CQA Officer

10-14-11

Date



Text	Page
Introduction.....	1
CQA Monitoring.....	1
General.....	1
Approval of Materials.....	2
Visual Inspection	2
Destructive Seam Tests.....	3

Tables

1. LLDPE Geomembrane Factory Quality-Control Requirements.....	2
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Appendices

- A. Factory Conformance Test Data
- B. Destructive Test Results
- C. Daily Inspection Logs

INTRODUCTION

This report describes the construction quality assurance (CQA) activities for linear low density polyethylene (LLDPE) geosynthetic membrane for the repository cover for the Blue Ledge Mine. The Blue Ledge Mine site is located within the Rogue River – Siskiyou National Forest, in Siskiyou County, California.

Construction work for the repository cover subgrade was performed by Engineering/Remediation Resources Group, Inc.'s (ERRG) subcontractor Granite Construction (Granite). D&E Construction (D&E) was subcontracted by Granite to install the LLDPE geomembrane element of the repository cover. Lawrence and Associates (L&A) was retained by D&E to provide CQA monitoring during installation of the LLDPE geomembrane.

CQA MONITORING

General

CQA monitoring was performed in accordance with the technical specifications provided to L&A by D&E. Continuous CQA monitoring of the geomembrane installation¹ was performed by Mr. Kyle Jones of L&A on Thursday, September 15 through Friday, September 16, 2011. Mr. Clayton Coles (CEG # 1730) of L&A was CQA Officer and project manager. Daily inspection logs are presented in **Appendix A**.

Prior to placement of the geomembrane, the D&E installation supervisor inspected the subgrade surface for deficiencies. The subgrade surface was in an acceptable condition at the time the geomembrane was installed.

The geomembrane liner was placed over the prepared subgrade layer surface using a four-wheel drive construction-type forklift with an extendable boom. The geomembrane was laid out so that the seams ran down slope. Leading edges of the geomembrane were placed in the anchor trench. The anchor trenches were left open until seaming in that particular area was completed. In case of strong winds, sandbags were used as ballast to hold down the edges of rolls not yet seam-welded.

Seaming equipment consisted of a fusion (hot-wedge) welder and an extrusion-welding gun.

¹ Specification 02 56 13 Polyethylene Geomembrane Liner, Rev 0 07/25/11

Approval of Materials

Prior to the start of the fieldwork, samples of the LLDPE textured membrane production run were collected at the GSE factory in Texas. D&E retained Precision Geosynthetic Laboratories (PGL) of Anaheim, California to obtain samples from the factory and analyze them for the required performance characteristics. The results of these analyses are included in **Table 1**. The tests met or exceeded all of the required quality parameters shown in Table 2 of the geomembrane liner specification, and the material was approved. The factory conformance test data is attached in **Appendix A**.

Table 1
LLDPE Geomembrane Factory Quality-Control Requirements

Property	ASTM Test Method	# of Tests per sample	Units	Average	Range of Values	Min. Allowed Values
Thickness (core)	D5994	10	mils	61	61-62	51-54
Density	D1505	3	Grams/cm ³	0.9355	0.9355-0.9355	0.92
Tensile Dog Bone ¹	Machine Direction	5	Lbs/in.	233	197-250	90
	Transverse Direction	5		204	189-215	90
Tear Resistance	Machine Direction	10	Lbs	43	41-45	33
	Transverse Direction	10		44	42-46	33
Puncture Resistance	D4833	15	Lbs	125	120-130	66
Carbon Content	D1603	2	%	2.43	2.43-2.43	2.00
Carbon Black Dispersion	D5596	10	See Note ²	1	1	1 or 2 ³

- Notes: 1. Tensile strength at break
 2. Category rating per reference chart PCN: 12-455960-38.
 3. From Table 2 of technical specifications.

Visual Inspection

Before the start of each workday and after lunch breaks, the welders tested their welding equipment before seaming to gauge appropriate welding conditions. Shear and peel strength tests were conducted on a tensiometer with samples provided by each welder. The CQA Monitor observed the field strength tests and noted any problems with the tensiometer and/or the hot-wedge welding equipment. No problems with the tensiometer or the hot-wedge welding equipment were observed.

The CQA Monitor performed visual inspection on all double hot-wedge welding activities throughout the day, and was directed by the CQA Officer to pay special attention to dirty seams,

burn-throughs, bubbled welds, and excessive wrinkles. Visual inspection was also performed on non-destructive seam tests, which consisted of air pressurization of the double hot-wedge fusion welded seams. Air pressurization testing of a hot-wedge welded seam is considered acceptable if 30 to 27 psi is maintained for 5 minutes and the pressure drops within 30 seconds of depressurization. Each non-destructive seam test was witnessed and marked at the test location. All non-destructive seam tests passed.

Destructive Seam Tests

Samples were cut out of the installed seams in three locations as shown on the sketch in **Appendix B**. As shown in the destructive sample summary in **Appendix B**, the samples were field tested for peel and shear tensile strength in the field using a tensiometer. Table 4 of the technical specification required minimum peel strength of 72 and 75 ppi for extrusion and fusion methods respectively, and 90 ppi for shear strength for either method. All tests passed by a wide margin. No laboratory peel and shear tests were required for this project.

Repair patches were required of all destructive testing locations, 3-way intersections, tears, and damage from equipment on the LLDPE geomembrane. The procedure for applying a repair patch consisted of (1) cleaning and abrading LLDPE geomembrane surface before welding, (2) using a leister gun to bond the patch to the geomembrane panel, and (3) using an extrusion welder to cover the edges of the patch and bond it to the geomembrane panel. Verification of welds was performed by D&E and observed by the CQA Monitor. Testing of the extrusion welds consisted of vacuum box testing. After the welds cooled, soap was applied to the weld and a vacuum box with a viewing window was positioned over the welded seam, to pull a vacuum. The operator would visually look for air bubbles emanating from around the seams, which would indicate a leak. Each vacuum box test was witnessed and marked at the patch location. All vacuum tests passed.

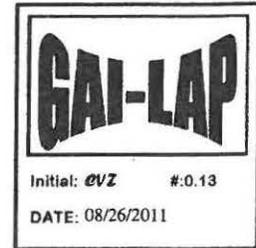
APPENDIX A
Factory Conformance Test Data



Precision Geosynthetic Laboratories International



Larry Kamp
D & E Construction
14175 Ave. 344
Visalia, CA 93292



Dear Mr. Kamp:

Thank you for consulting Precision Geosynthetic Laboratories International (PGLI) for your material testing needs.

Enclosed is the **final** laboratory report for the Conformance testing of two (2) 60mil LLDPE Textured Black/White Geomembrane samples.

PROJECT NAME: Blue Ledge Mine

REFERENCE PGL JOB NO.: G110990

DATE RECEIVED: August 24, 2011

DATE REPORTED: August 26, 2011

SAMPLES SENT BY: GSE, TX

SAMPLE IDENTIFICATIONS:

SAMPLE ID	PGLI CONTROL NUMBER
R#104158733 L#CBC810690	75901
R#104158741 L#CBC810690	75902

TESTS REQUIRED/PERFORMED:

TEST METHOD	DESCRIPTION
ASTM D5994	Thickness
ASTM D1505	Density
ASTM D6693 (Type IV)	Tensile Strength
ASTM D1603	Carbon Black Content
ASTM D5596	Carbon Black Dispersion
ASTM D1004	Tear Resistance
ASTM D4833	Puncture Resistance

TEST CONDITIONS: The samples were conditioned for a minimum of 24 hours in the laboratory at 22 ± 2°C (71.6 ± 3.6°F) and at 60 ± 10% relative humidity prior to test.

TEST RESULTS: The test results are summarized in Tables 1 and 2.

PRECISION GEOSYNTHETIC LABORATORIES INTERNATIONAL

Maria Espitia

Maria Espitia
Quality Assurance

Carmelo V. Zantua
Technical/Laboratory Director

It shall be noted that the samples tested are believed to be true representatives of the material produced under the designation herein stated. In addition, the attached laboratory tests results are considered indicative only of the quality of samples/specimens that were actually tested. The appropriate test methods hereby employed are based on the current and accepted industry practices. Precision Geosynthetic Laboratories neither accepts responsibility for nor makes claims to the intended final use and purpose of the material. The test data and all associated project information shall be held confidential and not to be reproduced and/or disclosed to other parties except in full and with prior written approval from pertinent entity duly authorized by the respective client or from the client itself. It is a policy of the company to keep physical records of each job for two (2) years commencing from the date of receipt of the samples and keep its corresponding electronic file for seven (7) years. **Retained conformance samples are disposed of after one (1) month.** On the other hand, should you need us to keep them at longer time, please advise us in writing.

TABLE 1.
MATERIAL PROPERTIES
CLIENT: D & E Construction
PROJECT: Blue Ledge Mine

Date Received: 8/24/2011

Date Reported: 8/26/2011

Client Sample ID: R#104158733 L#CBC810690

Material Description: 60mil LLDPE Textured Black/White Geomembrane

QC'd By: *Maria Espitia*

PGL Job No.: G110990

PGL Control No.: 75901

SPECIMENS

	1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max	Proj. Specs. Minimum
METHOD DESCRIPTION															
ASTM D5994 Thickness (mils)															
<i>Apparatus: Dead-weight dial micrometer with gauge points tapered at an angle of 60° +/- 2° to the horizontal with the tip rounded to a radius of 0.8+/-0.1 mm(0.031+/-0.004 in), with a specified force of 0.56+/-0.05 N (2+/-0.2 oz)</i>															
<i>Loading Time: 5 sec Specimen Size: 4" x 4"</i>															
	62	61	62	61	62	61	61	62	61	61	61	1	61	62	
ASTM D1505 Density (grams/ cm. ³)											0.9355	0.0000	0.9355	0.9355	0.9200
ASTM D6693 <u>Tensile Properties:</u>															
Type IV															
<i>Test Specimens: Type IV, Width of narrow section:0.25in, Length of narrow section:1.3in, Width Overall:0.75in, Length Overall: 4.5in Conditioning: Conducted test in standard laboratory atmosphere of 23+/-2° C (73.4+/-3.6° F), and 50+/-5% relative humidity. Rate of Separation: 2"/min</i>															
Tensile Strength at Break (lbs/ in.- width)															
MD	237	197	250	242	238						233	21	197	250	90
TD	196	212	215	210	189						204	11	189	215	
Elongation at Break (percent, %) Gauge Length = 2.0 in.															
MD	671	561	696	643	628						640	51	561	696	250
TD	555	581	591	603	541						574	25	541	603	
ASTM D1004 Tear Resistance (lbs)															
Die C															
<i>Machine: Tensile machine equipped with constant rate of extension and chart recorder.</i>															
MD	44	43	43	45	41	43	43	41	42	42	43	1	41	45	33
TD	45	46	45	45	43	42	45	46	42	43	44	2	42	46	
ASTM D4833 Puncture Resistance (lbs)															
<i>Specimens were tested as directed in Test Method D4833. They were clamped without tension between circular plates of a ring clamp attachment secured in the tensile machine. Test specimens were extended beyond the outer edges of the clamping plates.</i>															
	125	121	126	130	127	129	125	125	124	123	125	3	120	130	66
	128	129	125	121	120										
ASTM D1603 Carbon Black Content (percent, %)															
	2.43	2.43									2.43	0.00	2.43	2.43	2.00
ASTM D5596 Carbon Black Dispersion (category rating per reference chart PCN: 12-455960-38)															
	1	1	1	1	1	1	1	1	1	1	10 out of 10 in Category 1				9 of 10 in Category 1 or 2 1 in Category 3

By accepting the data and results presented on this report, the Client agrees to limit the liability of Precision Geosynthetic Laboratories from Client and all other parties for claims on issues, due to the use of this data, to the cost for the respective tests presented in this report; and the Client agrees to indemnify and hold harmless Precision Geosynthetic Laboratories from and against all liabilities in excess of the aforementioned limit.

MD - MACHINE DIRECTION
 TD - TRANSVERSE DIRECTION



TABLE 2.
MATERIAL PROPERTIES
CLIENT: D & E Construction
PROJECT: Blue Ledge Mine

Date Received: 8/24/2011
 Date Reported: 8/26/2011
 Client Sample ID: R#104158741 L#CBC810690
 Material Description: 60mil LLDPE Textured Black/White Geomembrane

QC'd By: *Maria Epstein*
 PGL Job No.: G110990
 PGL Control No.: 75902

SPECIMENS

		1	2	3	4	5	6	7	8	9	10	Avg.	Std. Dev.	Min	Max	Proj. Specs. Minimum	
METHOD	DESCRIPTION																
ASTM D5994	Thickness (mils) <i>Apparatus: Dead-weight dial micrometer with gauge points tapered at an angle of 60° +/- 2° to the horizontal with the tip rounded to a radius of 0.8+/-0.1 mm(0.031+/-0.004 in), with a specified force of 0.56+/-0.05 N (2+/-0.2 oz)</i> <i>Loading Time: 5 sec Specimen Size: 4" x 4"</i>	61	61	61	61	61	61	61	62	61	61	61	0	61	62		
ASTM D1505	Density (grams/ cm. ³) <i>0.9361 0.9361 0.9361</i>											0.9361	0.0000	0.9361	0.9361	0.9200	
ASTM D6693 Type IV	Tensile Properties: <i>Test Specimens: Type IV, Width of narrow section:0.25in, Length of narrow section:1.3in, Width Overall:0.75in, Length Overall: 4.5in Conditioning: Conducted test in standard laboratory atmosphere of 23+/-2° C (73.4+/-3.6° F), and 50+/-5% relative humidity. Rate of Separation: 2"/min</i>																
	Tensile Strength at Break (lbs/ in.- width)																
	MD	236	216	239	217	239						229	12	216	239	90	
	TD	200	204	208	212	208						206	5	200	212		
	Elongation at Break (percent, %)																
	MD	658	588	619	601	641	<i>Gauge Length = 2.0 in.</i>										250
	TD	570	530	595	634	597						585	38	530	634		
ASTM D1004 Die C	Tear Resistance (lbs) <i>Machine: Tensile machine equipped with constant rate of extension and chart recorder.</i>																
	MD	43	44	46	45	45	44	44	42	44	43	44	1	42	46	33	
	TD	42	42	43	44	42	43	44	42	44	43	43	1	42	44		
ASTM D4833	Puncture Resistance (lbs) <i>Specimens were tested as directed in Test Method D4833. They were clamped without tension between circular plates of a ring clamp attachment secured in the tensile machine. Test specimens were extended beyond the outer edges of the clamping plates.</i>																
		121	125	124	123	121	121	126	125	121	122	124	3	121	129	66	
		121	128	129	125	123											
ASTM D1603	Carbon Black Content (percent, %)																
		2.43	2.44									2.43	0.01	2.43	2.44	2.00	
ASTM D5596	Carbon Black Dispersion (category rating per reference chart PCN: 12-455960-38)																
		1	1	1	1	1	1	1	1	1	1	10 out of 10 in Category 1				9 of 10 in Category 1 or 2 1 In Category 3	

By accepting the data and results presented on this report, the Client agrees to limit the liability of Precision Geosynthetic Laboratories from Client and all other parties for claims on issues, due to the use of this data, to the cost for the respective tests presented in this report; and the Client agrees to indemnify and hold harmless Precision Geosynthetic Laboratories from and against all liabilities in excess of the aforementioned limit.

MD - MACHINE DIRECTION
 TD - TRANSVERSE DIRECTION



MANUFACTURING QA IN-PLAN SAMPLING/INSPECTION REPORT

Project Name: Blue Ledge Mine

TYPE OF MQA: LEVEL (2)

QA by: Maria Espitia

Material: 60mil LLDPE Textured Black/White

SAMPLING FREQUENCY: 1/100,000 sq.ft.

Manufacturer: GSE

Location: TX

No.	Roll #	Resin Lot #	Length (ft.)	Width (ft.)	Area (ft ²)	Date Manufactured	Sent by	Date Received	Reference Job No/ Control No
1	104158733	CBC810690	520	22.5	11700	5/28/2011	GSE	8/24/2011	G110990 C#75901
2	104158734	CBC810690	520	22.5	11700	5/28/2011			
3	104158735	CBC810690	520	22.5	11700	5/28/2011			
4	104158736	CBC810690	520	22.5	11700	5/28/2011			
5	104158737	CBC810690	520	22.5	11700	5/28/2011			
6	104158738	CBC810690	520	22.5	11700	5/28/2011			
7	104158739	CBC810690	520	22.5	11700	5/28/2011			
8	104158740	CBC810690	520	22.5	11700	5/28/2011			
9	104158741	CBC810690	520	22.5	11700	5/28/2011	GSE	8/24/2011	G110990 C#75902
10	104158742	CBC810690	520	22.5	11700	5/29/2011			
11	104158743	CBC810690	520	22.5	11700	5/29/2011			
					TOTAL ft² =	128,700			

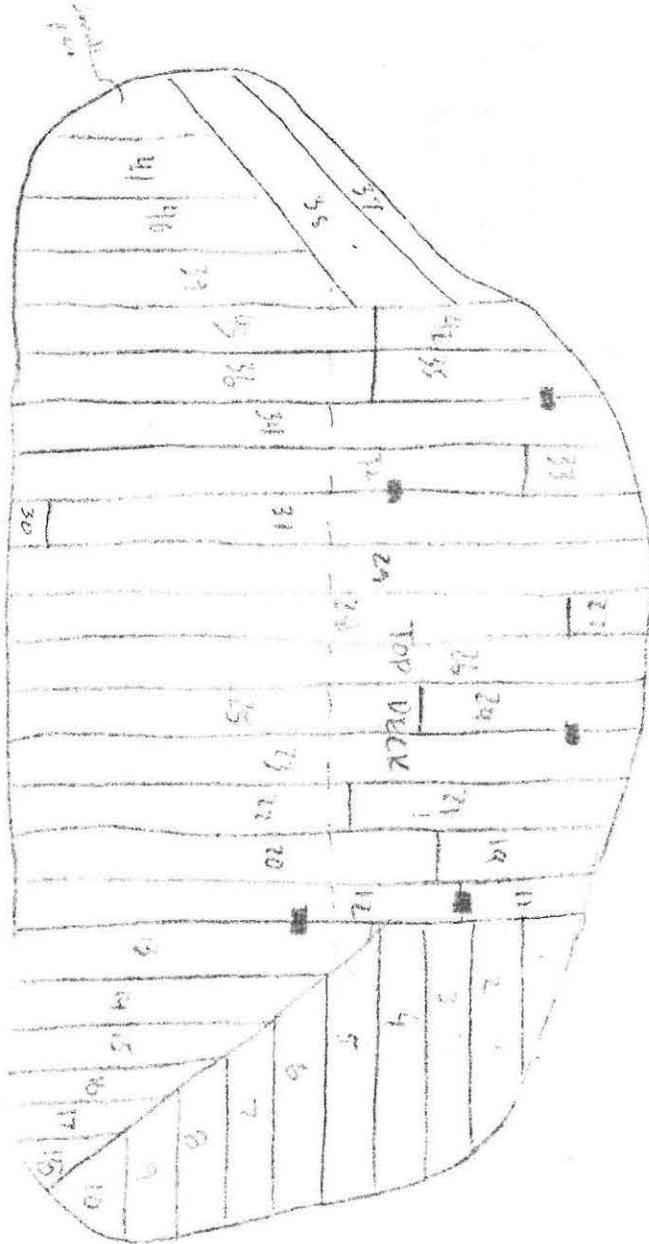
APPENDIX B
Destructive Test Results



LAWRENCE & ASSOCIATES
3590 Iron Ct.,
SHASTA LAKE, CA 96019
(530) 275-4800

SUBJECT Blue Ledge Mine
SHEET NO. _____ OF _____
CALCULATED BY KAJ DATE 9-15-11/9-16-11
CHECKED BY 1 DATE _____
SCALE No scale

■ - destination sample locations (approx.)
x - driving not in scale



APPENDIX C
Daily Inspection Logs

Daily Inspection Log
Blue Ledge Mine - Repository Cover

Date: 9-14-2011 Day of Week WEDNESDAY

Weather: CLEAR - SUNNY ≈ 75° F

Work Being Performed:

Top deck grading to achieve 3% (min.) slope. Site not ready
to begin liner installation.

D&E repairing existing exposed liner from previous season.

Subcontractors Present:

Granite Construction

D&E Construction

Equipment Utilized:

CAT 14G Grader

CAT Wheel Loader

CAT Smooth Drum Wheel Loader

Notes, Comments, Questions from Contractor:

The top deck was not graded to the minimum 3% slope per
ERRG. ERRG did not accept grading and directed Granite
to continue grading operation until a minimum slope of 3%
on the top deck is achieved.

D&E repaired existing exposed liner where directed by Granite
& ERRG. Exposed liner is part of the bottom of the waste cell
where left exposed as part of the anchor trench system.

Monitor: K. Jones CQA Manager: _____ Date Reviewed: _____

Page 1 of 1

Daily Inspection Log
Blue Ledge Mine - Repository Cover

Date: 9-15-2011 Day of Week Thursday

Weather: Foggy - Partly Cloudy (AM) - Partly Cloudy (PM) 60-75°F

Work Being Performed:

Installation of the geomembrane

Subcontractors Present:

Granite Const.

D+E Const.

Equipment Utilized:

Grande-all (telescopic forklift)

Honda 5500 Generators (x3)

Honda 4-Wheeler

Double Wedge Welder - (x3)

Notes, Comments, Questions from Contractor:

D+E placing 60 mil liner on prepared subgrade. Double-wedge weld samples tested onsite using tensiometer - all samples pass (peel & shear tests) per specification. All seams are double-wedge welded.

Liner covered with sandbags.

Monitor: K. Jones CQA Manager: _____ Date Reviewed: _____

Page 1 of 1

Daily Inspection Log
Blue Ledge Mine - Repository Cover

Date: 9-16-2011 Day of Week Friday

Weather: Partly Cloudy - 70°F

Work Being Performed:

Installation of geomembrane

Subcontractors Present:

Granite Const.

D&E Const.

Equipment Utilized:

Grade-all (telescopic forklift)

Honda 5500 generators (x3)

Honda 4-wheeler

Double-Wedge welder (x3)

Lister Heat Gun (x2)

Extrusion-Welder (x2)

Notes, Comments, Questions from Contractor:

Vacuum Pump

D&E placing 60 mil liner on prepared subgrade. Double-wedge weld samples tested on-site using tensiometer - all samples pass (peel & shear tests) per specification. All seams double wedge welded. Extrusion welds are tested with tensiometer - all samples pass (peel & shear tests) per specification. All patches are extrusion welded. All double-wedge weld seams pass air testing per specifications. All extrusion welds pass vacuum testing per specifications.

Liner covered with sandbags

Monitor: K. Jones CQA Manager: _____ Date Reviewed: _____

Page 1 of 1

trish

From: Oscar Ojeda [oojeda@reyesconstruction.com]
Sent: Tuesday, January 10, 2012 12:20 PM
To: 'trish'
Subject: RE: LAS PULGAS - WEEK ENDING 01/08/11

Yes, that is correct. Thank you.

Oscar Ojeda, P.E.
Reyes Construction, Inc.
619.414.2578 mobile

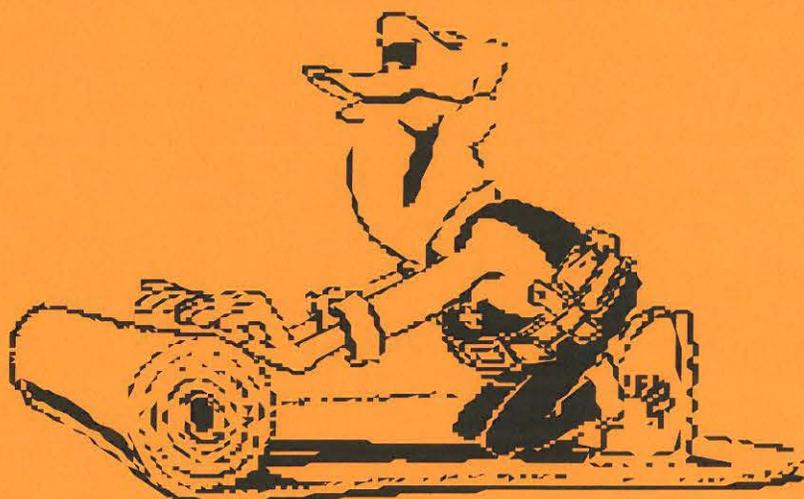
From: trish [mailto:trish@deconst.net]
Sent: Tuesday, January 10, 2012 9:05 AM
To: 'Oscar Ojeda'
Subject: LAS PULGAS - WEEK ENDING 01/08/11

Good Morning Mr. Ojeda,

I was wondering if we had your approval for the alternate work week last week to 10 hour shifts given that Tuesday, 01/03/12 was the first work day last week.

Trish Jorgensen, Controller
D & E CONSTRUCTION, INC.
Phone 559-732-1601
Fax 559-739-8015

BLUE LEDGE MINE CAP



D & E CONSTRUCTION, INC.
SEPTEMBER 2011

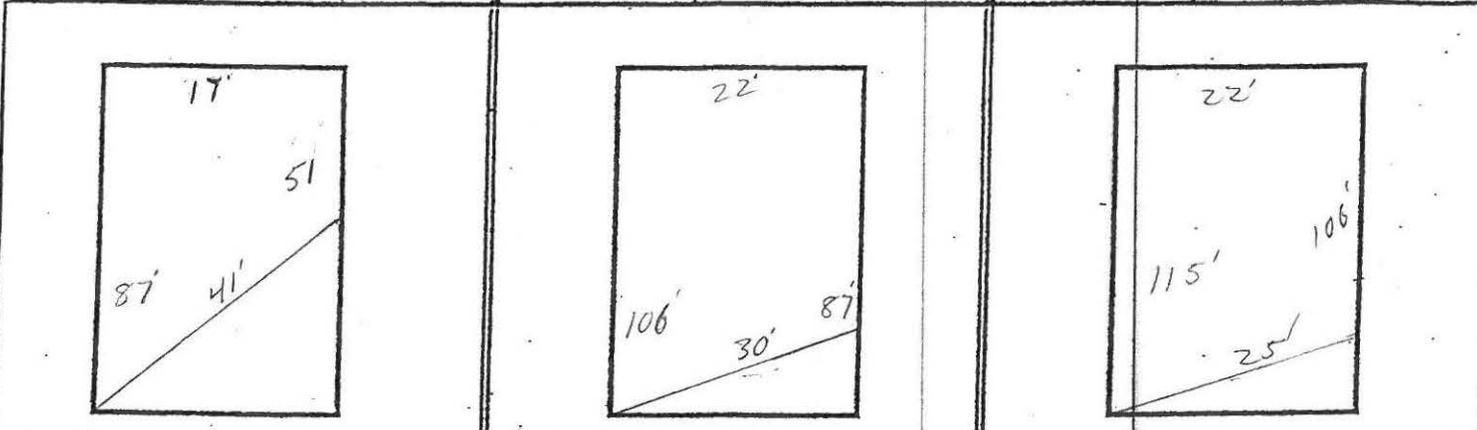
Panel Logs

Deployment Date 9-15-11 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge Mine Job # Supt:

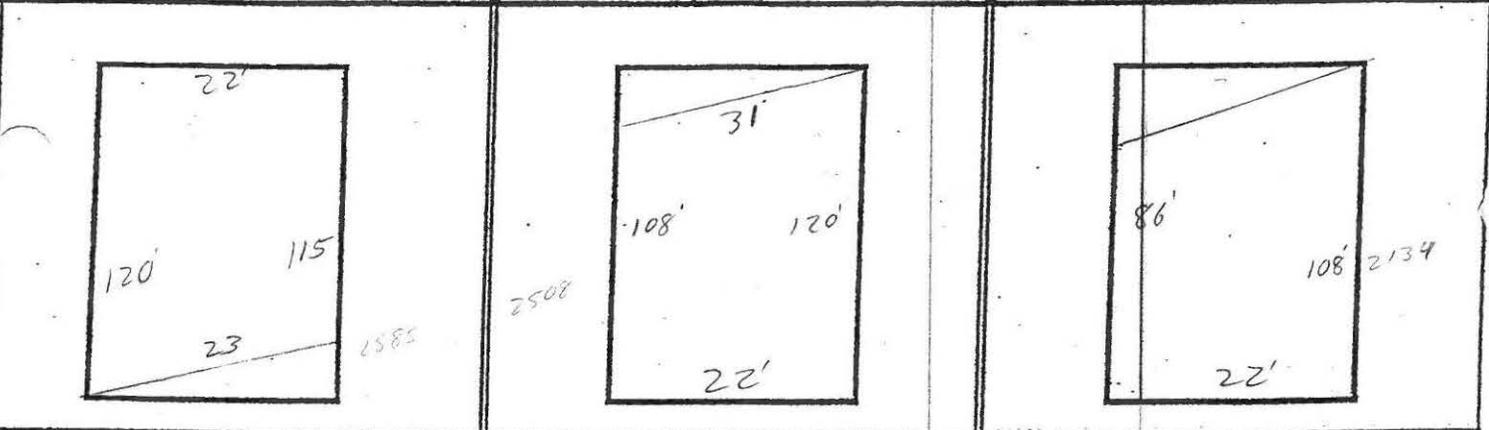
Material: 60 MIL. LLDPE Primary Secondary Pond # Cell # Pad # Other:

Panel # 1 Roll # 8741 Panel # 2 Roll # 8741 Panel # 3 Roll # 8741



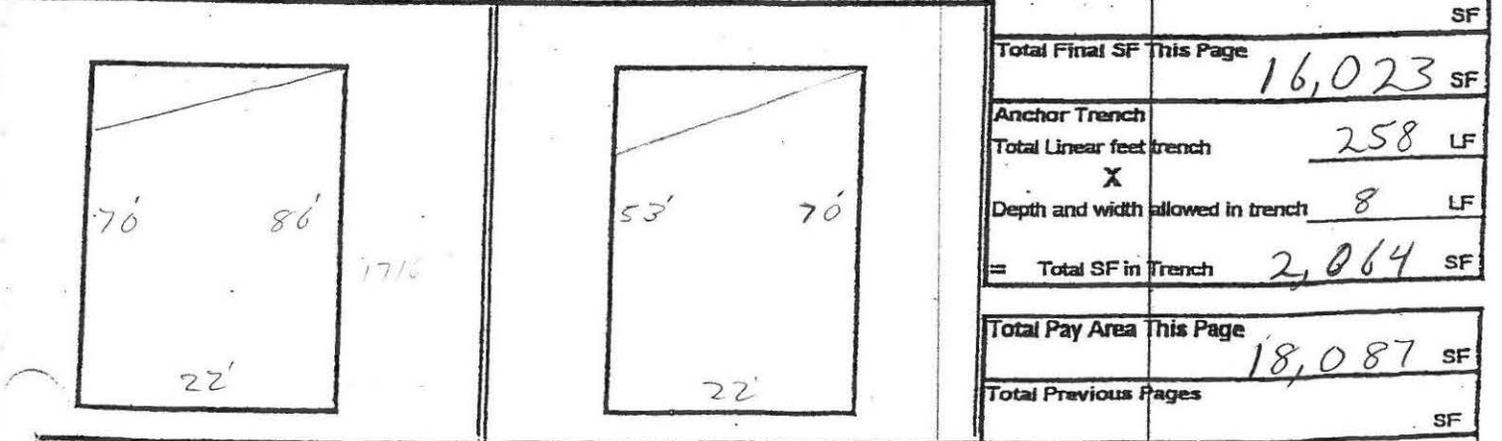
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>1173</u>	<u>92'</u>	Final SF <u>2123</u>	<u>30'</u>	Final SF <u>2431</u>	<u>25'</u>

Panel # 4 Roll # 8741 Panel # 5 Roll # 8739 Panel # 6 Roll # 8739



Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>2585</u>	<u>23</u>	Final SF <u>2508</u>	<u>22</u>	Final SF <u>2134</u>	<u>22</u>

Panel # 7 Roll # 8739 Panel # 8 Roll # 8739



Total Initial SF This Page	SF
Total Final SF This Page	<u>16,023</u> SF
Anchor Trench	
Total Linear feet trench	<u>258</u> LF
X	
Depth and width allowed in trench	<u>8</u> LF
= Total SF in Trench	<u>2,064</u> SF

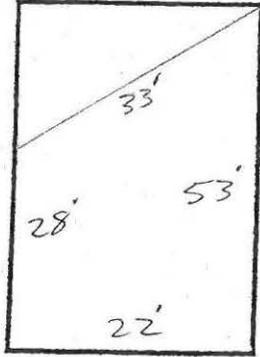
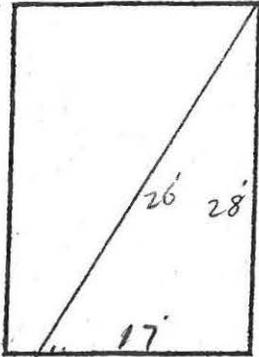
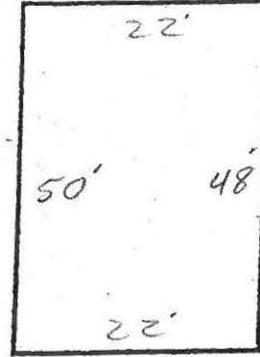
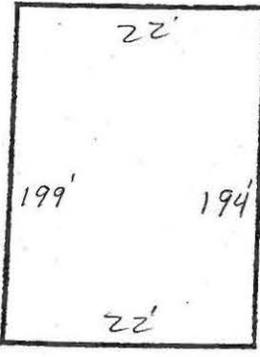
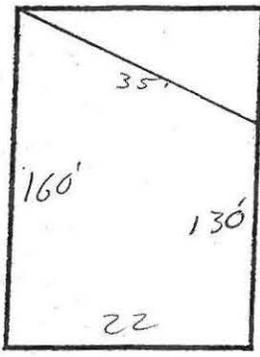
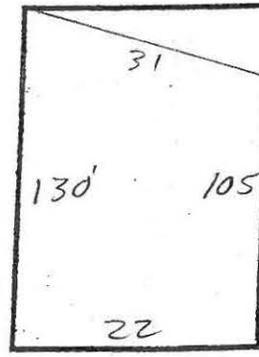
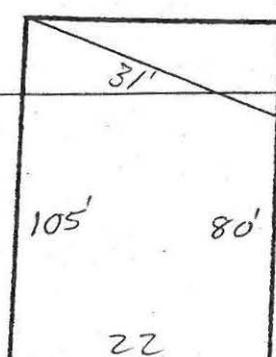
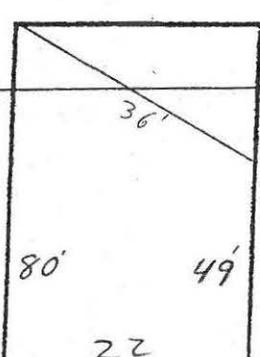
Total Pay Area This Page	<u>18,087</u> SF
Total Previous Pages	SF

SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area to Date
Final SF <u>1716</u>	<u>22</u>	Final SF <u>1353</u>	<u>22</u>	SF

Deployment Date 9-15-11 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge Mine Job # Supt:

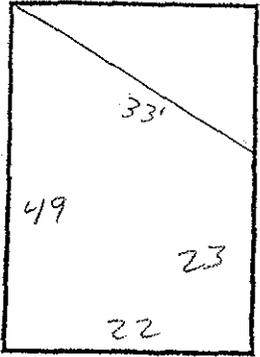
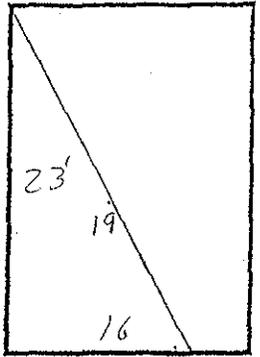
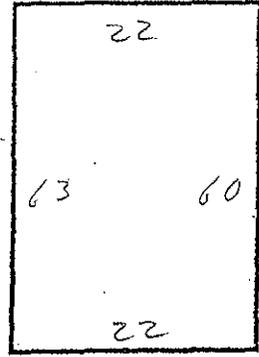
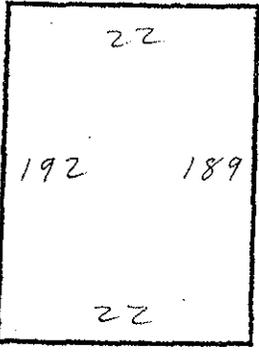
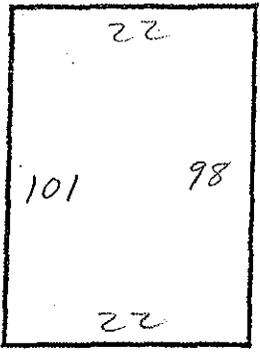
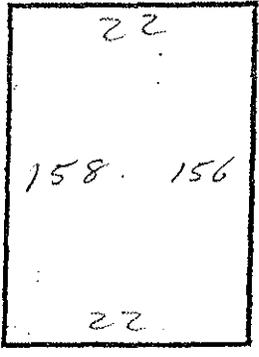
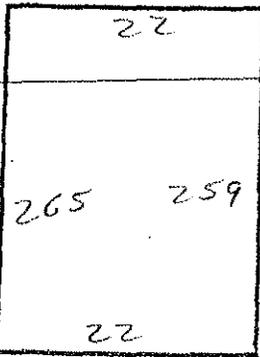
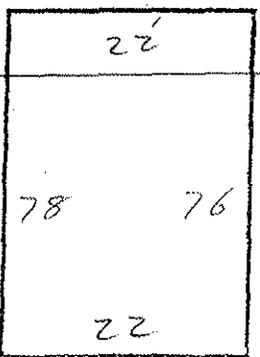
Material: Primary [] Secondary [] Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #																		
9	8739	10	8739	11	8739																		
																							
Initial SF		Initial SF		Initial SF																			
Final SF <u>891</u>		Final SF <u>229</u>		Final SF <u>1,078</u>																			
Lineal Feet Trench <u>22</u>		Lineal Feet Trench		Lineal Feet Trench <u>22</u>																			
12	8740	13	8740	14	8740																		
																							
Initial SF		Initial SF		Initial SF																			
Final SF <u>4,323</u>		Final SF <u>3190</u>		Final SF <u>2475</u>																			
Lineal Feet Trench		Lineal Feet Trench		Lineal Feet Trench																			
15	8737	16	8737	<table border="1"> <tr> <td>Total Initial SF This Page</td> <td>SF</td> </tr> <tr> <td>Total Final SF This Page</td> <td><u>15,869</u> SF</td> </tr> <tr> <td>Anchor Trench</td> <td></td> </tr> <tr> <td>Total Linear feet trench</td> <td><u>44'</u> LF</td> </tr> <tr> <td>X Depth and width allowed in trench</td> <td><u>8</u> LF</td> </tr> <tr> <td>= Total SF in Trench</td> <td><u>352</u> SF</td> </tr> <tr> <td>Total Pay Area This Page</td> <td><u>16,221</u> SF</td> </tr> <tr> <td>Total Previous Pages</td> <td><u>18,087</u> SF</td> </tr> <tr> <td>Total Pay Area to Date</td> <td><u>34,308</u> SF</td> </tr> </table>		Total Initial SF This Page	SF	Total Final SF This Page	<u>15,869</u> SF	Anchor Trench		Total Linear feet trench	<u>44'</u> LF	X Depth and width allowed in trench	<u>8</u> LF	= Total SF in Trench	<u>352</u> SF	Total Pay Area This Page	<u>16,221</u> SF	Total Previous Pages	<u>18,087</u> SF	Total Pay Area to Date	<u>34,308</u> SF
Total Initial SF This Page	SF																						
Total Final SF This Page	<u>15,869</u> SF																						
Anchor Trench																							
Total Linear feet trench	<u>44'</u> LF																						
X Depth and width allowed in trench	<u>8</u> LF																						
= Total SF in Trench	<u>352</u> SF																						
Total Pay Area This Page	<u>16,221</u> SF																						
Total Previous Pages	<u>18,087</u> SF																						
Total Pay Area to Date	<u>34,308</u> SF																						
																							
Initial SF		Initial SF																					
Final SF <u>2,035</u>		Final SF <u>1,419</u>																					
Lineal Feet Trench		Lineal Feet Trench																					

Deployment Date 9-15-11 **D & E CONSTRUCTION, INC.**

Project Name: Bla Lodge Mine Job # Supt:

Material: 60 MIL. LDP Primary [] Secondary [] Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #																				
Panel # 17	Roll # 8737	Panel # 18	Roll # 8737	Panel # 19	Roll # 8737																				
																									
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																				
Final SF <u>792</u>		Final SF <u>168</u>		Final SF <u>1353</u>	<u>22</u>																				
Panel # 20	Roll # 8737	Panel # 21	Roll # 8737	Panel # 22	Roll # 8738																				
																									
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																				
Final SF <u>4301</u>		Final SF <u>2189</u>	<u>22</u>	Final SF <u>3,454</u>																					
Panel # 23	Roll # 8738	Panel # 24	Roll # 8738	<table border="1"> <tr> <td>Total Initial SF This Page</td> <td>SF</td> </tr> <tr> <td>Total Final SF This Page</td> <td><u>19,825</u> SF</td> </tr> <tr> <td>Anchor Trench</td> <td></td> </tr> <tr> <td>Total Linear feet trench</td> <td><u>88'</u> LF</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td>Depth and width allowed in trench</td> <td><u>8</u> LF</td> </tr> <tr> <td>= Total SF in Trench</td> <td><u>7,04</u> SF</td> </tr> <tr> <td>Total Pay Area This Page</td> <td><u>20,529</u> SF</td> </tr> <tr> <td>Total Previous Pages</td> <td><u>34,308</u> SF</td> </tr> <tr> <td>Total Pay Area to Date</td> <td><u>54,837</u> SF</td> </tr> </table>		Total Initial SF This Page	SF	Total Final SF This Page	<u>19,825</u> SF	Anchor Trench		Total Linear feet trench	<u>88'</u> LF	X		Depth and width allowed in trench	<u>8</u> LF	= Total SF in Trench	<u>7,04</u> SF	Total Pay Area This Page	<u>20,529</u> SF	Total Previous Pages	<u>34,308</u> SF	Total Pay Area to Date	<u>54,837</u> SF
Total Initial SF This Page	SF																								
Total Final SF This Page	<u>19,825</u> SF																								
Anchor Trench																									
Total Linear feet trench	<u>88'</u> LF																								
X																									
Depth and width allowed in trench	<u>8</u> LF																								
= Total SF in Trench	<u>7,04</u> SF																								
Total Pay Area This Page	<u>20,529</u> SF																								
Total Previous Pages	<u>34,308</u> SF																								
Total Pay Area to Date	<u>54,837</u> SF																								
																									
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench																						
Final SF <u>5874</u>	<u>22</u>	Final SF <u>1694</u>	<u>22</u>																						

Deployment Date 9-15 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge Mine Job # Supt:

Material: 60MNL LDDP Primary [] Secondary [] Pond # Cell # Pad # Other:

Panel # <u>25</u>	Roll # <u>8733</u>	Panel # <u>26</u>	Roll # <u>8733</u>	Panel # <u>27</u>	Roll # <u>8733</u>

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>4,235</u>		Final SF <u>5,973</u>	<u>22</u>	Final SF <u>726</u>	<u>22</u>

Panel # <u>28</u>	Roll # <u>8742</u>	Panel # <u>29</u>	Roll # <u>2742</u>	Panel # <u>30</u>	Roll # <u>8743</u>

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>5324</u>		Final SF <u>5,753</u>	<u>22</u>	Final SF <u>242</u>	

Panel # <u>31</u>	Roll # <u>8743</u>	Panel # <u>32</u>	Roll # <u>8743</u>	Total Initial SF This Page	
				SF	
				Total Final SF This Page <u>33,055</u> SF	
				Anchor Trench	
				Total Linear feet trench	<u>88</u> LF
				X	
				Depth and width allowed in trench	<u>8</u> LF
				Total SF in Trench	<u>704</u> SF
				Total Pay Area This Page <u>33,759</u> SF	
				Total Previous Pages <u>54,837</u> SF	

Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area to Date
Final SF <u>5,929</u>	<u>22</u>	Final SF <u>4873</u>		<u>88,596</u> SF

Deployment Date 9-16-11 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge Mine Job # Supt:

Material: 60 Mill LLDP Primary [] Secondary [] Pond # Cell # Pad # Other:

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Panel # 33	Roll # 8734	Panel # 34	Roll # 8734	Panel # 35	Roll # 8734
Initial SF		Initial SF		Initial SF	
Final SF <u>924</u>		Final SF <u>5588</u>		Final SF <u>1705</u>	
Lineal Feet Trench <u>22</u>		Lineal Feet Trench <u>22</u>		Lineal Feet Trench <u>22</u>	
Panel # 36	Roll # 8736	Panel # 37	Roll # 8763	Panel # 38	Roll # 8736
Initial SF		Initial SF		Initial SF	
Final SF <u>3,498</u>		Final SF <u>664</u>		Final SF <u>2,068</u>	
Lineal Feet Trench <u>22</u>		Lineal Feet Trench <u>74</u>		Lineal Feet Trench <u>22</u>	
Panel # 39	Roll # 8736	Panel # 40	Roll # 8735	Total Initial SF This Page	
				SF	
Initial SF		Initial SF		Total Final SF This Page	
Final SF <u>2,475</u>		Final SF <u>1661</u>		18,583 SF 1791	
Lineal Feet Trench <u>22</u>		Lineal Feet Trench <u>22</u>		Anchor Trench	
				Total Linear feet trench <u>206</u> LF	
				X	
				Depth and width allowed in trench <u>8</u> LF	
				= Total SF in Trench <u>1648</u> SF	
				Total Pay Area This Page	
				<u>20,231</u> SF	
				Total Previous Pages	
				<u>88,595</u> SF	
				Total Pay Area to Date	
				<u>108,595</u> SF	

Deployment Date 9-16 **D & E CONSTRUCTION, INC.**

Project Name: Blue Ledge Mine Job # _____ Supt: _____

Material: 60 MIL HDPE Primary [] Secondary [] Pond # _____ Cell # _____ Pad # _____ Other: _____

Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Panel # <u>43</u>	Roll # <u>8735</u>	Panel # <u>42</u>	Roll # <u>8734</u>	Panel # <u>41</u>	Roll # <u>8735</u>
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF <u>3432</u>	<u>22</u>	Final SF <u>902</u>	<u>22</u>	Final SF <u>836</u>	<u>22</u>
Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF		Final SF		Final SF	
Panel #	Roll #	Panel #	Roll #	Panel #	Roll #
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench
Final SF		Final SF		Final SF	
Panel #	Roll #	Panel #	Roll #	Total Initial SF This Page _____ SF	
				Total Final SF This Page <u>5,170</u> SF	
Anchor Trench					
Total Linear feet trench <u>66</u> LF					
X					
Depth and width allowed in trench <u>8</u> LF					
= Total SF in Trench <u>528</u> SF					
Total Pay Area This Page <u>5698</u> SF					
Total Previous Pages <u>108,595</u> SF					
Initial SF	Lineal Feet Trench	Initial SF	Lineal Feet Trench	Total Pay Area to Date <u>114,524</u> SF	
Final SF		Final SF			

**Panel Seaming
Summary**



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

14175 Ave. 344, Visalia, CA 93292

(559) 732-1601

FAX (559) 732-1603

Panel Seaming Summary

Project Name:

Blue Ledge Mine

QC Inspector:

Seam Number	Date Seamed	Seam Length	Operator	Weld Type	Machine Number	Machine Temp. Speed	Start Time	Stop Time	Seam End Test	Comments
1-2	9-15-11	87'	V D		127	850/350	7:28	7:44		
2-3		108	A C		128	850/350	7:30	7:50		
3-4		115	V D		127	850/350	7:50	8:10		
4-5		120'	A C		128	850/350	7:57	8:17		
5-6		108	V D		127	850/350	8:15	8:35		
6-7		86'	A C		128	850/350	8:25	8:39		
7-8		70'	V D		127	850/350	8:42	8:56		
8-9		53	A C		128	850/350	8:45	8:53		
9-10		23'	A C		128	850/350	9:25	9:30		
1-11		17'	V D		127	850/350	9:52	9:55		
2-11		22'	V D		127	850/350	9:55	9:59		
3-11		10'	V D		127	850/350	9:59	10:00		
3-12		12'	V D		127	850/350	10:00	10:03		
4-12		22'	V D		127	850/350	10:03	10:06		
5-13	✓	35'	A C		128	850/350	11:18	11:23		
6-14		35'	A C		128	850/350	11:23	11:27		



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

14175 Ave. 344, Visalia, CA 93292

(559) 732-1601

FAX (559) 732-1603

Panel Seaming Summary

Project Name:

Blue Ledge Mine

QC Inspector:

Seam Number	Date Seamed	Seam Length	Operator	Weld Type	Machine Number	Machine Temp. Speed	Start Time	Stop Time	Seam End Test	Comments
7-15	9-15-11	35	A C		128	850°/350	11:27	11:30		
8-16		36'	A C		128	850°/350	11:30	11:34		
9-17		33'	A C		128	850°/350	11:34	11:37		
10-18		19'	A C		128	850°/350	11:37	11:39'		
11-12		22'	V D		127	850°/350	9:35	9:39		DS-8
12-13		160'	A C		128	850°/350	9:40	10:02		DS-7
13-14		130'	A C		128	850°/350	10:06	10:21		
14-15		105'	A C		128	850°/350	10:26	10:38		
15-16		80	A C		128	850°/350	10:40	10:55		
16-17		49	A C		128	850°/350	10:58	11:05		
17-18		23	A C		128	850°/350	11:08	11:11		
18-19		50	V D		127	850°/350	10:25	10:34		
19-12		10'	V D		127	850°/350	10:34	10:35		
19-20		22'	V D		127	850°/350	10:13	10:17		
12-20		18'	V D		127	850°/350	10:35	11:06		
19-21		63'	V D		127	850°/350	11:19	11:24		



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14175 Ave. 344, Visalia, CA 93292

(559) 732-1601

FAX (559) 732-1603

Panel Seaming Summary

Project Name:

Blue Ledge Mine

QC Inspector:

Seam Number	Date Seamed	Seam Length	Operator	Weld Type	Machine Number	Machine Temp. Speed	Start Time	Stop Time	Seam End Test	Comments
21-20	9-15-11	35'	V D	Fision	127	850°-350	11:29	11:34		
21-22		22'	J A		129	850/400	11:20	11:24		
20-22		156'	V D		127	850/350	11:34	12:02		
21-23		101'	J A		129	850/400	11:40	11:55		
? 22-23		158'	J A		129	850/400	11:55	12:20		
23-24		76'	A C		128	850/350	11:50	11:59		DB-3
23-25		191'	A C		128	850/350	1:03			
24-25		22'	J A		129	850/400	12:50	12:54		
24-26	✓	78'	J A		129	850/400	1:00	1:15		
25-26		193'	J A		129	850/350	1:15	1:40		
26-27	DS-	34'	V D		127	850/350	1:26	1:20		
26-28		22'	V D		127	850/350	1:14	1:17		
26-28		239'	V D		127	850/350	1:26	2:06		
27-29		32'	A C		128	850/350	1:50	1:56		
28-29	✓	233'	A C		128	850/350	1:56	2:30		
29-30		22'	V D		127	850/350	2:12	2:16		



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

14175 Ave. 344, Visalia, CA 93292

(559) 732-1601

FAX (559) 732-1603

Panel Seaming Summary

Project Name: Blue Ledge Mine

QC Inspector: _____

Seam Number	Date Seamed	Seam Length	Operator	Weld Type	Machine Number	Machine Temp. Speed	Start Time	Stop Time	Seam End Test	Comments
29-31	9-15-11	258'	J A		129	850°/400	1:55			
30-31		11'	J A		129	850°/400				
31-33		47'	V D		127	850°/350	2:38'	2:46		
31-32		221'	V D		127	850°/350	2:46	3:23		DS-2
32-33		22'	V D		127	850°/350	2:29	2:32		
32-34		222'	A C		128	850°/350	3:03	3:44		
33-34		37'	A C		128	850°/350	2:55	3:03		
34-35		94'	J A		129	850°/400	3:10	3:35		DS-2
36-34		156'	J A		129	850°/400	3:35	4:00		
35-42	9-16-11	61'	V D		129	850°/400	2:24	2:34		
36-43		162'	V D		129	850°/400	2:54			
42-37		14'	A C		128	850°/350	2:42	2:46		
42-48		5'	A C		128	850°/350	2:46	2:53		
37-38		92'	V D		129	850°/400	4:11	4:28		
43-38		16'	A C		128	850°/350	2:53	2:59		
37-43		130'	A C		128	850°/350	2:59	3:22		

**Seaming & Air
Pressure Test**



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

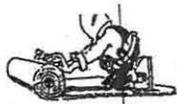
Project Name: Blue Ledge Mine
 Project Manager: _____
 Superintendent: _____
 Reported By: _____

Material: _____ Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
9-15-11	23-22		am pm						9-15	A.T	8:07	8:12	(P) F	
	21-22		am pm								8:08	8:11	(P) F	
	23-21		am pm								8:04	8:09	(P) F	
	22-20		am pm								7:57	8:03	(P) F	
	21-20		am pm								8:01	8:06	(P) F	
	21-19		am pm								8:10	8:15	(P) F	
	20-19		am pm								8:12	8:17	(P) F	
	19-11		am pm								8:22	8:27	(P) F	
	19-12		am pm								8:15	8:20	(P) F	
	20-12		am pm								8:16	8:21	(P) F	
	12-11		am pm								8:20	8:25	(P) F	
	11-1		am pm								8:30	8:35	(P) F	
	11-2		am pm								8:31	8:36	(P) F	
	11-3		am pm								8:37	8:42	(P) F	
	12-3		am pm								8:38	8:43	(P) F	
	12-4		am pm								8:40	8:45	(P) F	
	12-13		am pm								8:45	8:50	(P) F	
	13-5		am pm								8:43	8:48	(P) F	
	5-4		am pm								8:41	8:46	(P) F	
	4-3		am pm								8:39	8:44	(P) F	
	3-2		am pm								8:37	8:42	(P) F	
	2-1		am pm								8:36	8:41	(P) F	
Total =														

Air Test: _____ psi for _____ minutes- _____ psi loss allowed. Tested By: _____



D & E CONSTRUCTION, INC.

License #733203 General B, C61/D12

Project Name: Blue Ledge Mine
 Project Manager: _____
 Superintendent: _____
 Reported By: _____

Material: _____ Job#: _____
 Location: _____

Primary _____ Secondary _____ Other: _____

Weld Date	Seam No.	Seam Length	Time	Operator Name / ID#	Mach No.	Mach Temp	Mach Speed	Amb Temp	Test Date	Test Type	Time		Test Results	D. S. Number (NOTES)
											IN	Out		
	35-34		am pm						9-16-11	A.T.	7:04	7:09	(P) F	
	34-36		am pm								7:08	7:13	(P) F	
	35-36		am pm								7:06	7:11	(P) F	
	34-32		am pm								7:13	7:18	(P) F	
	32-33		am pm								7:12	7:17	(P) F	
	33-44		am pm								7:15	7:20	(P) F	
	33-31		am pm								7:14	7:19	(P) F	
	32-31		am pm								7:26	7:31	(P) F	
	31-29		am pm								7:27	7:32	(P) F	
	30-31		am pm								10:00	10:05	(P) F	
	30-29		am pm								10:03	10:08	(P) F	
	28-30		am pm								10:01	10:06	(P) F	
	28-29		am pm								7:50	7:55	(P) F	
	29-27		am pm								7:30	7:35	(P) F	
	28-27		am pm								7:31	7:36	(P) F	
	28-26		am pm								7:53	7:58	(P) F	
	26-27		am pm								7:51	7:56	(P) F	
	26-24		am pm								7:54	7:59	(P) F	
	26-25		am pm								7:55	8:00	(P) F	
	24-25		am pm								7:56	8:01	(P) F	
	24-23		am pm								8:03	8:08	(P) F	
	23-25		am pm								8:00	8:05	(P) F	
Total =														

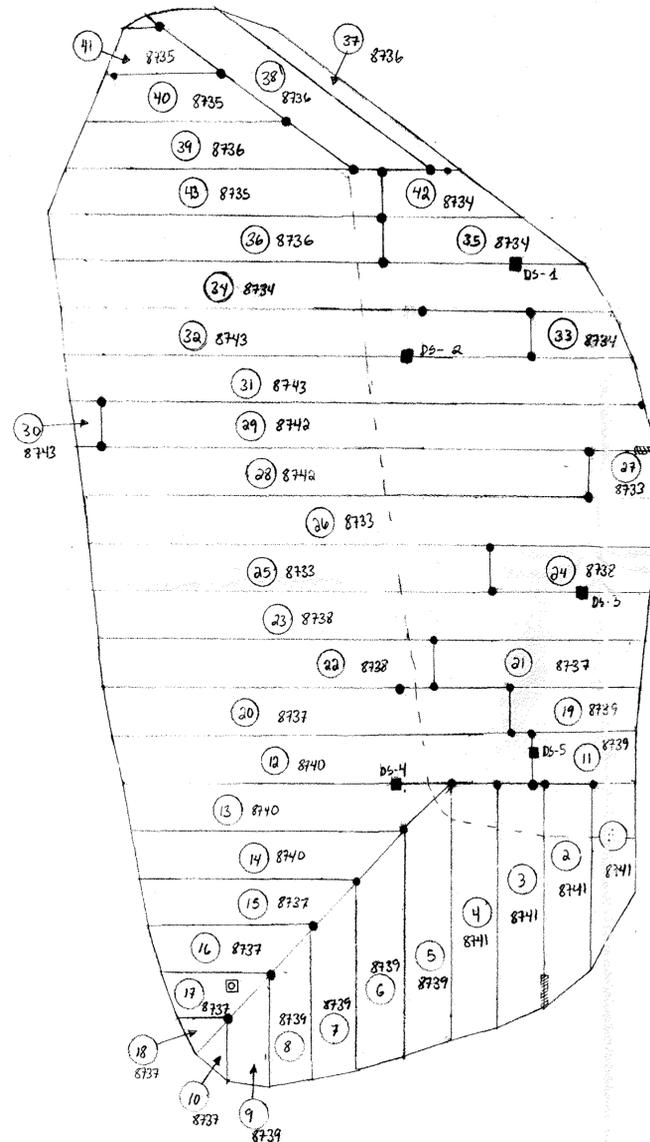
Air Test: _____ psi for _____ minutes- _____ psi loss allowed. Tested By: _____

**Destruct
Summary**

Panel Logs

As-Builts

BLUE LEDGE MINE

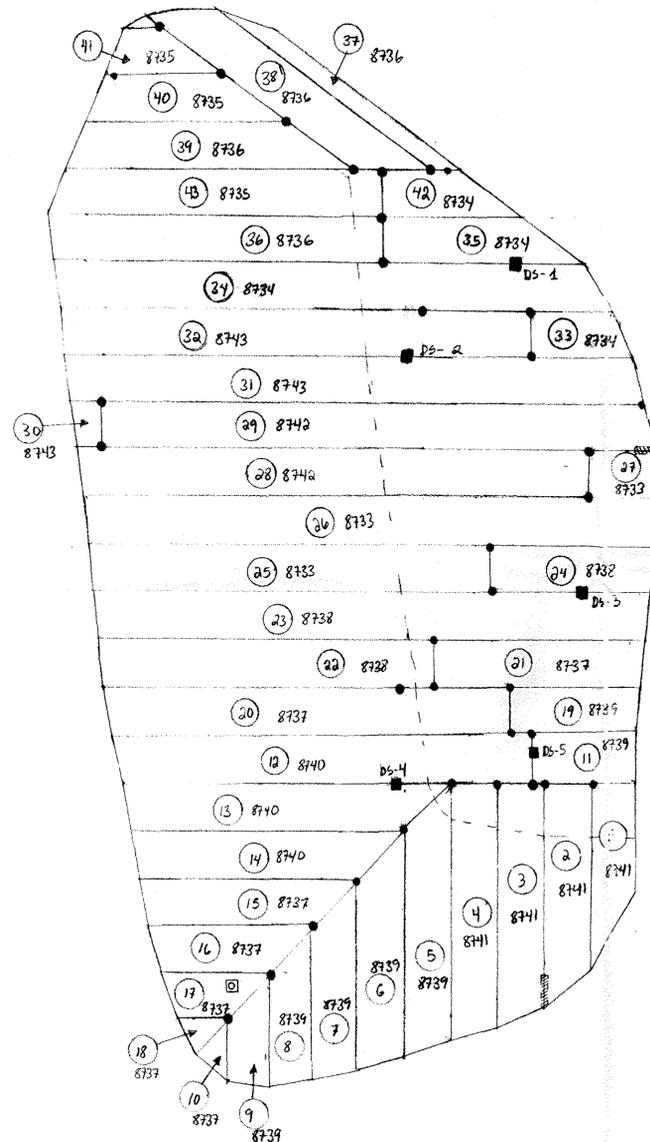


- PATCH
- DESTRUCTIVE
- CAP
- PIPE
- ⊙ PANEL
- 1-33 4-5 6-7-8 ROLL



LINER 60 mil		
SCALE: 1=40	APPROVED BY:	DRAWN BY: <i>LEWIS</i>
DATE: 10-2-11		REVISED
D&E CONSTRUCTION		
		DRAWING NUMBER

BLUE LEDGE MINE



- PATCH
- DESTRUCTIVE
- CAP
- PIPE
- ⊙ PANEL
- 1-33 4-5 6-7-8 ROLL



LINER 60 mil		APPROVED BY:	DRAWN BY: <i>LEWIS</i>
SCALE: 1-40	DATE: 10-2-11	REVISOR:	REVISION:
D&E CONSTRUCTION			DRAWING NUMBER:



**PRO RATA LIMITED MATERIAL WARRANTY
FOR GSE LINING TECHNOLOGY, LLC
(U.S.A.)**

Date:	<u>8/18/10</u>	Warranty No.:	<u>62341</u>
Purchaser Name:	<u>USDA Forest Service</u>	Project No.:	<u>62341</u>
Address:	<u>16400 Champion Way</u>	Effective Date:	<u>8/18/10</u>
City, State:	<u>Sandy, OR 97055</u>	Project Name:	<u>Blue Ledge Mine</u>
Product Type/Description:	<u>GSE Geomembrane Products</u>	Project Address:	<u>Sandy, OR</u>

GSE Lining Technology, LLC ("GSE") warrants each GSE product described above to be free from material manufacturing defects (as described by the contract's material specifications) and to be able to withstand normal weathering for a period of **five (5) years** from the date of sale. This limited warranty does not include damages or defects in the GSE product resulting from acts of God, casualty or catastrophe, including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" does not include, among other things, the exposure of GSE's product to harmful chemicals, abuse by machinery, equipment or people; improper site preparation or placement of cover materials; excessive pressures or stresses from any source. This warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson-Moss Warranty Act.

Should defects or premature loss of use within the scope of this warranty occur, GSE will, at its option, repair or replace the GSE product on a pro rata basis at the current price in such manner as to charge the Purchaser only for that portion of the warranted life which has elapsed since the purchase of the product. GSE shall have the right to inspect and determine the cause of the alleged defect in the product and to take appropriate steps to repair or replace the product if a defect exists that is covered under this warranty.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail or courier, to GSE Lining Technology, LLC, 19103 Gundle Road, Houston, TX 77073, with the words "Warranty Claim" clearly marked on the face of the envelope, within ten (10) days of Purchaser becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have rights under this warranty. GSE shall not be obligated to perform any inspection or obligated to perform any repair or replacement under this warranty until the area is made available free from all obstructions, water, dirt, sludge, residuals and liquids of any kind. If after inspection it is determined that there is no claim under this warranty, Purchaser shall reimburse GSE for its costs associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the product as GSE determines to have violated the warranty provided herein. GSE shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to: damages for loss of production, lost profits, personal injury or property damage. GSE shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser to GSE's product, unless GSE specifically authorized, in writing, said repairs, replacements, modifications or alterations in advance. GSE liability under this warranty shall in no event exceed the replacement cost of the product sold to the Purchaser for the particular installation in which it failed.

GSE neither assumes nor authorizes any person other than an officer of GSE to assume for it any other or additional liability in connection with the GSE product made on the basis of the Limited Warranty. GSE MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN HEREIN AND HEREBY DISCLAIMS ALL WARRANTIES, INCLUDING BOTH EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND BY ACCEPTING DELIVERY OF THE PRODUCT, PURCHASER WAIVES ALL OTHER POSSIBLE WARRANTIES. GSE'S WARRANTY BECOMES AN OBLIGATION OF GSE TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT.

This warranty is extended to the Purchaser and is non-transferable and non-assignable, i.e. there are no third-party beneficiaries to this warranty.

PWGeomembrane5 R01/15/10



NON-PRO RATA LIMITED MATERIAL WARRANTY
FOR GSE LINING TECHNOLOGY, LLC
(U.S.A.)

Date: 11/8/11 Warranty No.: 65251
Purchaser Name: U.S.D.A Forest Service Project No.: 65251
Address: 16400 Champion Way Effective Date: 8/24/11
City, State: Sandy, OR 97055 Project Name: Blue Ledge Mine
Product Type/Description: GSE Geotextile Products Project Address: Crescent City, CA

GSE Lining Technology, LLC. (GSE) warrants that the geotextile Product sold to Purchaser possessing the physical properties of GSE's specifications identified in Customer's Purchase Order (i) is free from manufacturing defects at the time the risk passes to the Purchaser, and (ii) if the geotextile is properly installed and covered within fifteen (15) days, it will not suffer significant deterioration due to typical atmospheric conditions or normal weather aging for a period of one (1) year from the date of sale.

Should GSE Product be determined to have manufacturing defects, GSE will, at its option, either repair or replace that portion of the Product that is nonconforming with GSE's specifications existing at the time of sale. Should premature loss of use occur, GSE will either repair or at its option replace the Product.

Purchaser shall give GSE written notice of the facts and circumstances of any warranty claim within thirty (30) days of becoming aware of said facts and circumstances. The notice shall be sent to GSE by certified mail, postage prepaid, return receipt requested, addressed to GSE Lining Technology, LLC, 19103 Gundle Road, Houston, TX 77073, with the words "Warranty Claim" clearly marked on the face of the envelope.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, Purchaser shall be entitled to the return of the purchase price for so much of the Product as GSE determines to have violated this warranty. GSE shall not be liable for any direct, indirect, special or consequential damages resulting from a breach of this warranty, including but not limited to, damages for loss of production, loss of profits, personal injury or property damage.

GSE neither assumes nor authorizes any person other than an officer of GSE to assume for it any other or additional liability in connection with the GSE product made on the basis of the Limited Warranty. GSE MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN HEREIN AND HEREBY DISCLAIMS ALL WARRANTIES, INCLUDING BOTH EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

This warranty is extended to the Purchaser and is non-transferable and non-assignable, i.e. there are no third-party beneficiaries to this warranty.

PWGeotextileIR01/15/10



**PRO RATA LIMITED MATERIAL WARRANTY
FOR GSE LINING TECHNOLOGY, LLC
(U.S.A.)**

Date:	<u>11/8/11</u>	Warranty No.:	<u>65251</u>
Purchaser Name:	<u>U.S.D.A Forest Service</u>	Project No.:	<u>65251</u>
Address:	<u>16400 Champion Way</u>	Effective Date:	<u>8/24/11</u>
City, State:	<u>Sandy, OR 97055</u>	Project Name:	<u>Blue Ledge Mine</u>
Product Type/Description:	<u>GSE Geomembrane Products</u>	Project Address:	<u>Crescent City, CA</u>

GSE Lining Technology, LLC ("GSE") warrants each GSE product described above to be free from material manufacturing defects (as described by the contract's material specifications) and to be able to withstand normal weathering for a period of **five (5) years** from the date of sale. This limited warranty does not include damages or defects in the GSE product resulting from acts of God, casualty or catastrophe, including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" does not include, among other things, the exposure of GSE's product to harmful chemicals, abuse by machinery, equipment or people; improper site preparation or placement of cover materials; excessive pressures or stresses from any source. This warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson-Moss Warranty Act.

Should defects or premature loss of use within the scope of this warranty occur, GSE will, at its option, repair or replace the GSE product on a pro rata basis at the current price in such manner as to charge the Purchaser only for that portion of the warranted life which has elapsed since the purchase of the product. GSE shall have the right to inspect and determine the cause of the alleged defect in the product and to take appropriate steps to repair or replace the product if a defect exists that is covered under this warranty.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail or courier, to GSE Lining Technology, LLC, 19103 Gundle Road, Houston, TX 77073, with the words "Warranty Claim" clearly marked on the face of the envelope, within ten (10) days of Purchaser becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have rights under this warranty. GSE shall not be obligated to perform any inspection or obligated to perform any repair or replacement under this warranty until the area is made available free from all obstructions, water, dirt, sludge, residuals and liquids of any kind. If after inspection it is determined that there is no claim under this warranty, Purchaser shall reimburse GSE for its costs associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the product as GSE determines to have violated the warranty provided herein. GSE shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to: damages for loss of production, lost profits, personal injury or property damage. GSE shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser to GSE's product, unless GSE specifically authorized, in writing, said repairs, replacements, modifications or alterations in advance. GSE liability under this warranty shall in no event exceed the replacement cost of the product sold to the Purchaser for the particular installation in which it failed.

GSE neither assumes nor authorizes any person other than an officer of GSE to assume for it any other or additional liability in connection with the GSE product made on the basis of the Limited Warranty. **GSE MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN HEREIN AND HEREBY DISCLAIMS ALL WARRANTIES, INCLUDING BOTH EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND BY ACCEPTING DELIVERY OF THE PRODUCT, PURCHASER WAIVES ALL OTHER POSSIBLE WARRANTIES. GSE'S WARRANTY BECOMES AN OBLIGATION OF GSE TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT.**

This warranty is extended to the Purchaser and is non-transferable and non-assignable, i.e. there are no third-party beneficiaries to this warranty.

PWGeomembrane5 R01/15/10



**NON-PRO RATA LIMITED MATERIAL WARRANTY
FOR GSE LINING TECHNOLOGY, LLC
(U.S.A.)**

Date:	<u>11/8/11</u>	Warranty No.:	<u>65251</u>
Purchaser Name:	<u>U.S.D.A Forest Service</u>	Project No.:	<u>65251</u>
Address:	<u>16400 Champion Way</u>	Effective Date:	<u>8/24/11</u>
City, State:	<u>Sandy, OR 97055</u>	Project Name:	<u>Blue Ledge Mine</u>
Product Type/Description:	<u>GSE Geocomposite Products</u>	Project Address:	<u>Crescent City, CA</u>

GSE Lining Technology, LLC. ("GSE") warrants the geonet component of each GSE product described above to be free from material manufacturing defects (as described by the contract's material specifications) and to be able to withstand normal weathering for a period of **one (1) year** from the date of sale. This limited warranty does not include damages or defects in the GSE product resulting from acts of God, casualty or catastrophe, including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" does not include, among other things, the exposure of GSE's product to harmful chemicals, abuse by machinery, equipment or people; improper site preparation or placement of cover materials; excessive pressures or stresses from any source. This warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson-Moss Warranty Act.

Should defects or premature loss of use within the scope of this warranty occur, GSE will, at its option, repair or replace the GSE product. GSE shall have the right to inspect and determine the cause of the alleged defect in the product and to take appropriate steps to repair or replace the product if a defect exists that is covered under this warranty. GSE warrants the geotextile portion of this product for a period of one year from the date of sale.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail or courier, to GSE Lining Technology, LLC, 19103 Gundle Road, Houston, TX 77073, with the words "Warranty Claim" clearly marked on the face of the envelope, within ten (10) days of Purchaser becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have rights under this warranty. GSE shall not be obligated to perform any inspection or obligated to perform any repair or replacement under this warranty until the area is made available free from all obstructions, water, dirt, sludge, residuals and liquids of any kind. If after inspection it is determined that there is no claim under this warranty, Purchaser shall reimburse GSE for its costs associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the product as GSE determines to have violated the warranty provided herein. GSE shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to: damages for loss of production, lost profits, personal injury or property damage. GSE shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser to GSE's product, unless GSE specifically authorized, in writing, said repairs, replacements, modifications or alterations in advance. GSE liability under this warranty shall in no event exceed the replacement cost of the product sold to the Purchaser for the particular installation in which it failed.

GSE neither assumes nor authorizes any person other than an officer of GSE to assume for it any other or additional liability in connection with the GSE product made on the basis of the Limited Warranty. **GSE MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN HEREIN AND HEREBY DISCLAIMS ALL WARRANTIES, INCLUDING BOTH EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND BY ACCEPTING DELIVERY OF THE PRODUCT, PURCHASER WAIVES ALL OTHER POSSIBLE WARRANTIES. GSE's WARRANTY BECOMES AN OBLIGATION OF GSE TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT.**

This warranty is extended to the Purchaser and is non-transferable and non-assignable, i.e. there are no third-party beneficiaries to this warranty.

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