1R - 398

REPORTS

DATE:

2002

1RP-398
ORIGINAL WORKPLAN & AMENDMENTS SUPPORTING DOCUMENTATION

Plains All American
April 2002

E.O.T.T. ENERGY PIPELINE

PRODUCT RECOVERY
AND
GROUND WATER REMEDIATION PLAN
TO SUPPORT APPROVAL OF THE
NEW MEXICO
OIL CONSERVATION DIVISION
DISCHARGE PLAN

FOR THE

LIVINGSTON RIDGE TO HUGH – G.P. SIMS
Ref.# 2001-11005

SW¼ of SE¼ Sec3, T21S, R37E,
~4 miles north of Eunice
Lea County, New Mexico

April 2002

Prepared by

Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, New Mexico 88231
Tele 505•394•3481 FAX 505•394•2601

PROJECT TAKEN OVER BY ETGL

IR-398

Table of Contents

1.0 INTRODUCTION

In December of 2001, Environmental Plus, Inc. (EPI), on behalf of E.O.T.T. Energy Corp. (EOTT) submitted a Stage 1 and Stage 2 Abatement Plan to the New Mexico Oil Conservation Division (NMOCD) for the investigation and remediation of the above-referenced project. The plan served as the "Work Plan Supplement" as referenced in the "General Work Plan for Remediation of EOTT Pipeline Spills, Leaks, and Releases in New Mexico" approved by the New Mexico Oil Conservation Division (NMOCD) on August 1, 2000.

This plan supplements the information initially provided in the Stage 1 and Stage 2 Abatement Plan but contains more detail regarding product recovery and ground water remediation methodologies. This information will support approval by the NMOCD of the "Discharge Plan."

2.0 OBJECTIVE

The objective of this plan is to first extract all recoverable crude oil from beneath the site. Secondly, this plan proposes to conserve the ground water resource underlying the site by removing and remediating the contaminated ground water to acceptable levels of the constituents of concern (CoCs), i.e., Benzene, Toluene, Ethyl Benzene, and meta, para, and ortho Xylene. After confirming attenuation to below the ground water remediation standards by laboratory analysis, the remediated water will be reintroduced into the aquifer immediately up gradient of the site.

3.0 BACKGROUND

The site is owned by G.P. Sims and located ~4 miles north of Eunice, Lea County, New Mexico in SE¼ Sec3, T21S, R37E at latitude 32°30'12"N and longitude 103°08'55"W. The EOTT site reference identification number is "2001-11005." The crude oil leak was discovered, repaired, and reported on June 22, 2001 and estimated to be approximately 6 barrels with 0 barrels recovered. Visibly contaminated soil down to the ~14 feet below ground surface ('bgs) was excavated and stock piled on plastic adjacent to the excavation. Because of excavation safety issues involved in deepening the excavation, a trailer mounted hollow stem auger drill rig was used to install a temporary monitor well in the bottom of the excavation. Approximately 4' of crude oil was observed to be present in the well bore and probably represents less than 6" on the surface of the ground water underlying the site. EOTT immediately notified the Hobbs and Santa Fe offices of the NMOCD and the land owner of the ground water impact and began development of the Stage 1 and Stage 2 Abatement Plans consistent with NMOCD Rule 19, "Prevention and Abatement of Water Pollution." On June 27, 2001, two down gradient water wells used by the Key Energy Services Water Station located less than 1000 feet from the site were sampled and analyzed for the constituents of concern and were found to be unimpacted.

4.0 FLUID RECOVERY

It is proposed to begin fluid extraction using an "eductor" type system. A description of the methodology is included below along with a typical deployment diagram and is consistent with the current site application. This will be a total fluids recovery system that will be managed initially for product recovery by raising and lowering the down hole tubing to minimize ground water recovery.

What advantages does it offer?

Works for total fluids recovery and soil vapor extraction

Costs less to install, operate, and maintain

Is easily designed, constructed, and operated with a single pump drive to multiple extraction wells

Has no moving parts (stationary eductors at wellhead or inside the wells)

Performs well in both low and high yield aquifers

Simple and reliable

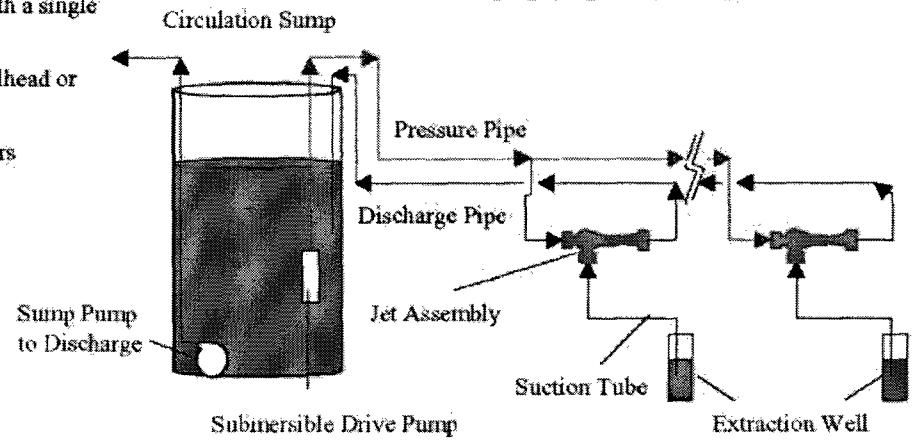
Self-priming

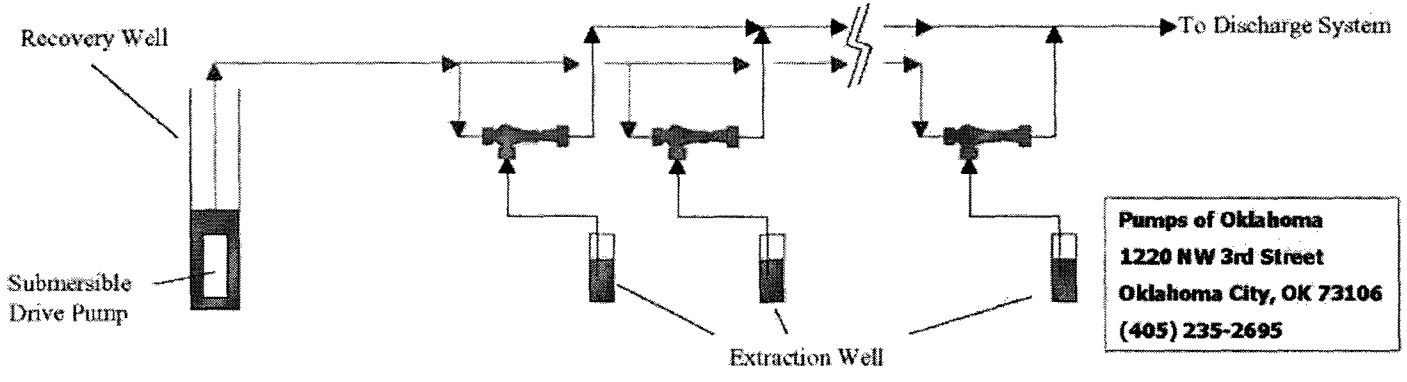
Corrosion and erosion resistant

Non-electrical

Effective for shallow or deep water levels

Typical Eductor Installation Schematics



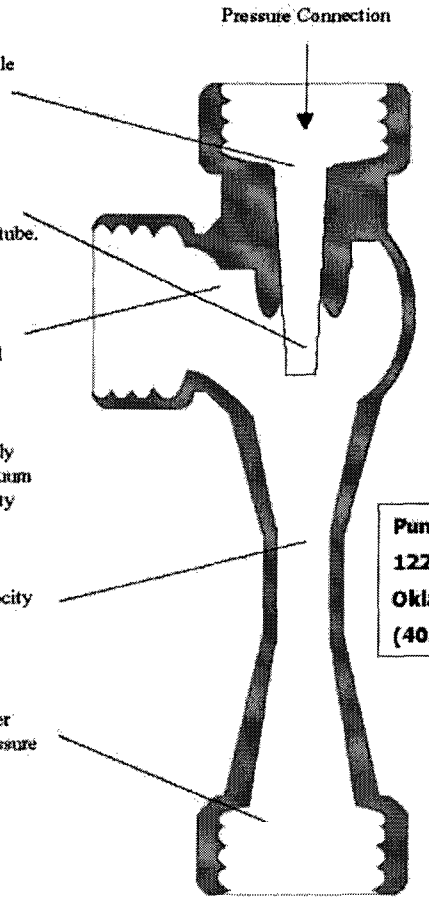


Pumps of Oklahoma
1220 NW 3rd Street
Oklahoma City, OK 73106
(405) 235-2695

The Jet Eductor System:

What is it, and how does it work ?

The jet pump recovery system uses old, proven technology (eductors) in a completely different application-environmental remediation. Eductors are the mainstay of the jet system and have been used in the water well and other industries for decades. Now we are finding them extremely useful in the environmental industry for recovery of total fluids and/or soil vapor extraction. The jet pump system works by pumping pressurized fluid through nozzles in the eductors, creating a partial vacuum on the suction side of the eductors. Liquid or vapor is then pulled up from recovery wells into suction tubes that are attached to the suction side of each eductor. The recovered liquid (or vapor) is entrained by the pressurized fluid, and the mixture is discharged through the eductor to discharge piping. One drive pump can provide pressurized liquid to several eductors at multiple wells. It's that simple.



1. Fluid under pressure enters nozzle and velocity increases as passage narrows.

2. Pressure is fully converted to maximum velocity as water leaves nozzle tip, discharging into venturi tube.

3. Partial vacuum created in upper chamber. Velocity of the stream entering the tube entrains additional water.

4. Recovered liquid/vapor constantly flows into eductor to fill partial vacuum continuously created by high velocity stream.

5. Tapered venturi tube allows velocity of jet stream and well mixture to be gradually reconverted to pressure.

6. At greatly reduced velocity, water continues out of eductor, losing pressure as it approaches discharge piping.

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Oklahoma City, OK 73106
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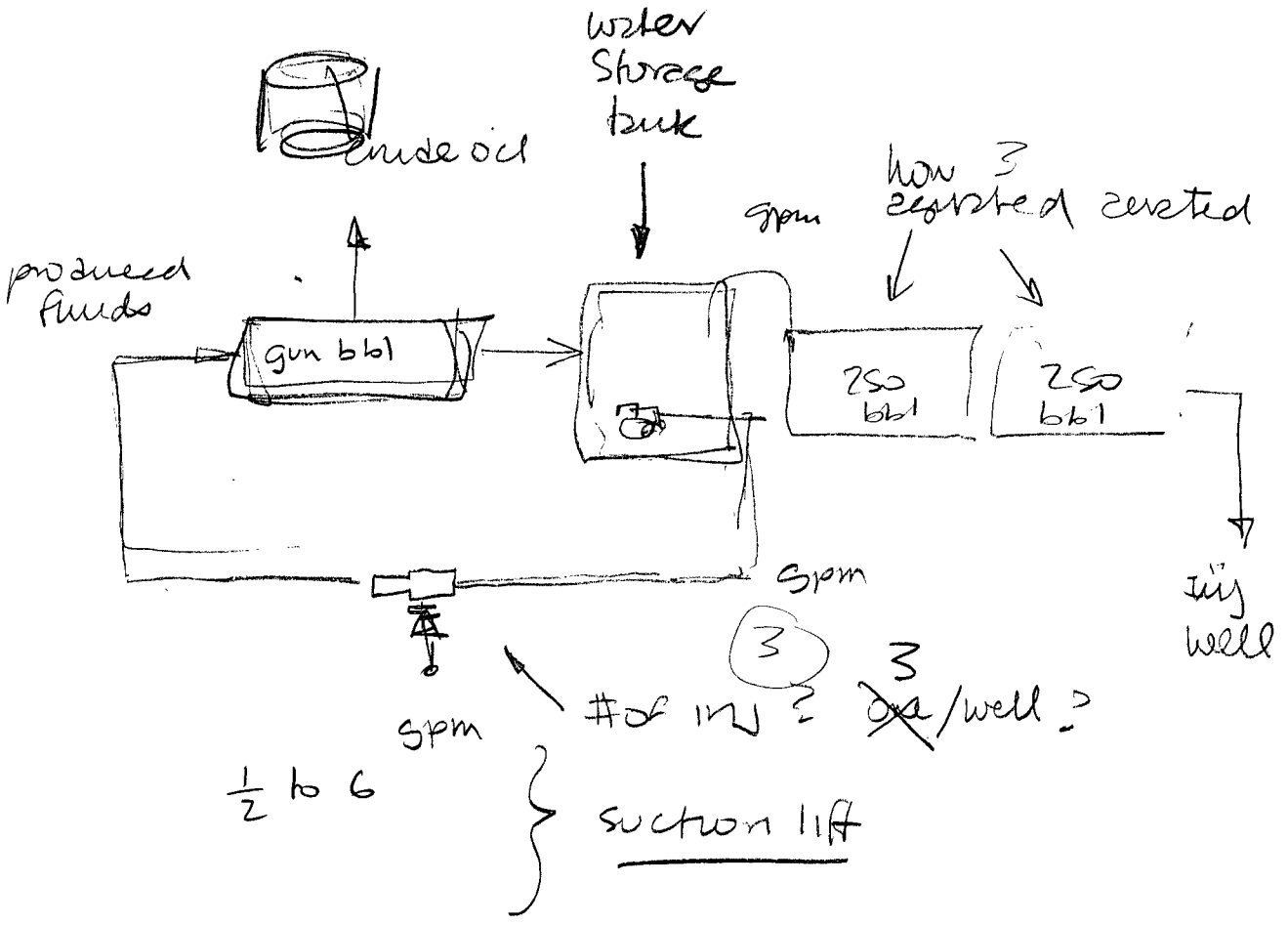
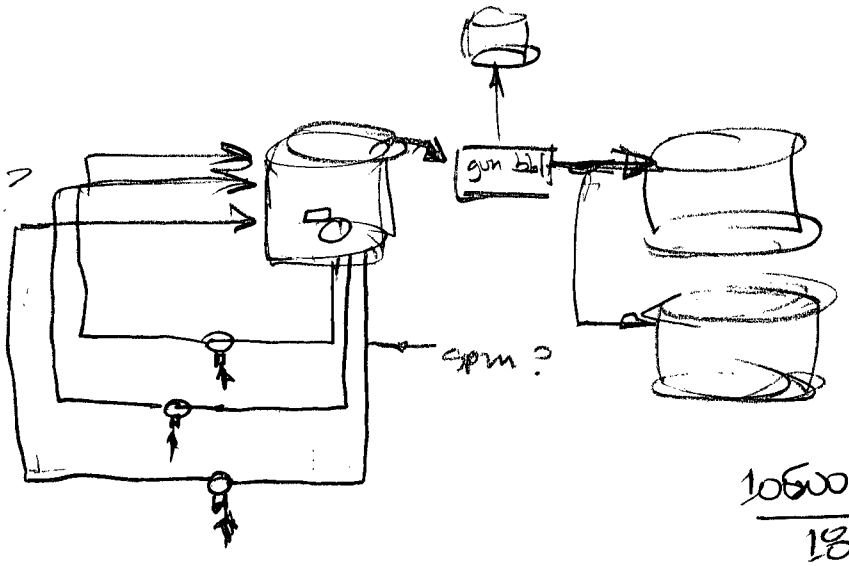




mek

18 gpm
1.5 spm

min

250 bbl $\frac{42 gal}{bbl}$ = 10500 gal

$\frac{10500 gal}{18 gpm}$ = 600 min = 10 hrs

5.0 FLUID MANAGEMENT AND REMEDIATION

An "oil/water" separation vessel, commonly refer to as a "gun barrel" will receive all produced fluid. The crude oil will separate and overflow into a bulk storage tank and hauled when necessary. The crude oil will be reintroduced into the pipeline system with accurate production and disposition records maintained daily. The produced water will gravitate from the "gun barrel" to the water storage tank. The eductor system water pump will circulate water from the bottom of the tank through the eductors and return to the "gun barrel." Excess produced water will over flow from the constant level water storage/eductor supply tank into a screened open topped 250 barrel fiberglass tank. This water will be agitated and aerated to promote attenuation of the CoCs. A second 250 barrel fiberglass tank will be set to be used as a polishing tank that will also agitate and aerate the water. To achieve the ground water remediation goals, activated charcoal may be used to further reduce CoC concentrations. When field surveys indicate achievement of the remedial goals, samples will be collected for laboratory confirmation. Once confirmed to be acceptable and approved by the NMOCD, the water will be reintroduced into the aquifer through a well installed immediately up gradient of the site. Reintroducing the oxygenated and remediated ground water will promote "in-situ" bio-attenuation and, if down gradient extraction and up gradient injection flow rates can be maintained, plume migration will be halted and controlled. The process will continue until all recoverable crude oil has been recovered and the ground water is monitored to be clean.

5.1 ANTICIPATED FLOW CHARACTERISTICS

It is proposed to recover fluid from the 2" PVC cased wells, one located near the center of the site and on located approximately 150' down gradient and south. Anticipated flow rates will modulate between 5 gallon to 6 gallons per minute depending on the crude oil to water ratio, crude oil laminar thickness and aquifer draw down. A reduced flow rate will be used initially to minimize over production of ground water and maximize crude oil production. Flow meters and system controls will be installed to monitor operational flow.

5.2 GROUND WATER CHEMISTRY

Analysis of up gradient ground water shows the Total Dissolved Solids (TDS) to be 5,290 mg/L and the Chloride to be 2,400 mg/L. Up gradient CoC results were <1 µg/L. Analysis of the Southeast Monitor Well shows the TDS concentration to be 2,400 mg/L and the Chloride to be 899 mg/L. Benzene, Ethyl Benzene, Toluene and Xylenes were detected at 16.1 µg/L, 9.28 µg/L, <1 µg/L, and 8.75 µg/L, respectively. See attached analytical reports. If scaling becomes a problem at the reintroduction point, NMOCD approved buffering chemicals will be used to control the scaling. These data indicate up gradient TDS and Chloride contamination entering the site from a non-EOTT source.

6.0 CONTINGENCY AND MAINTENANCE PLAN

The system will be protected with overflow shut down devices to preclude releases of crude oil or contaminated ground water. Daily inspections by field personnel will identify, document, and repair any leaks that may occur. All personnel coming on site must be trained in H_2S safety and have the appropriate personal protective equipment, as well as, a calibrated personal H_2S monitor. The facility will have appropriate signage and windsock.

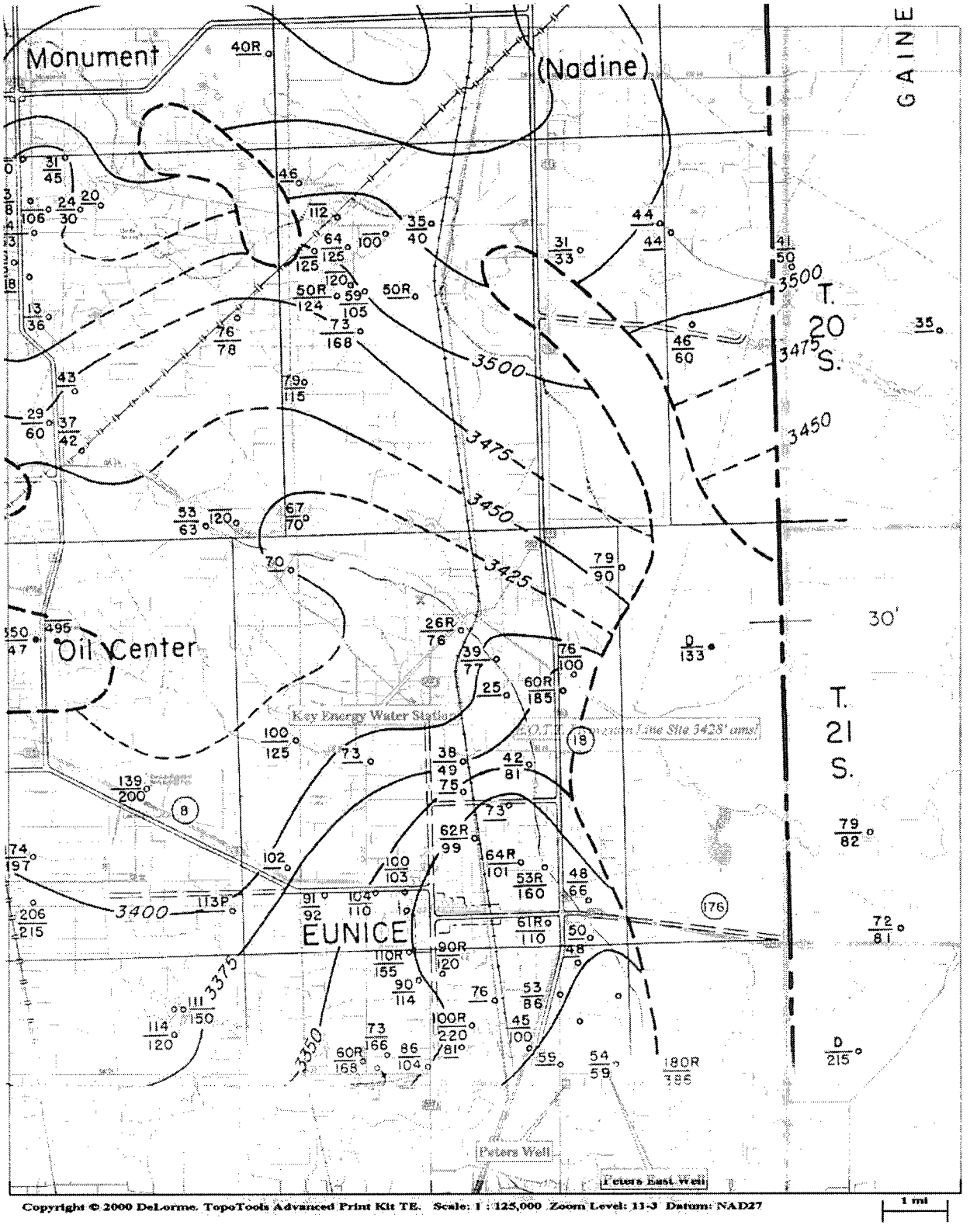
7.0 CLOSURE

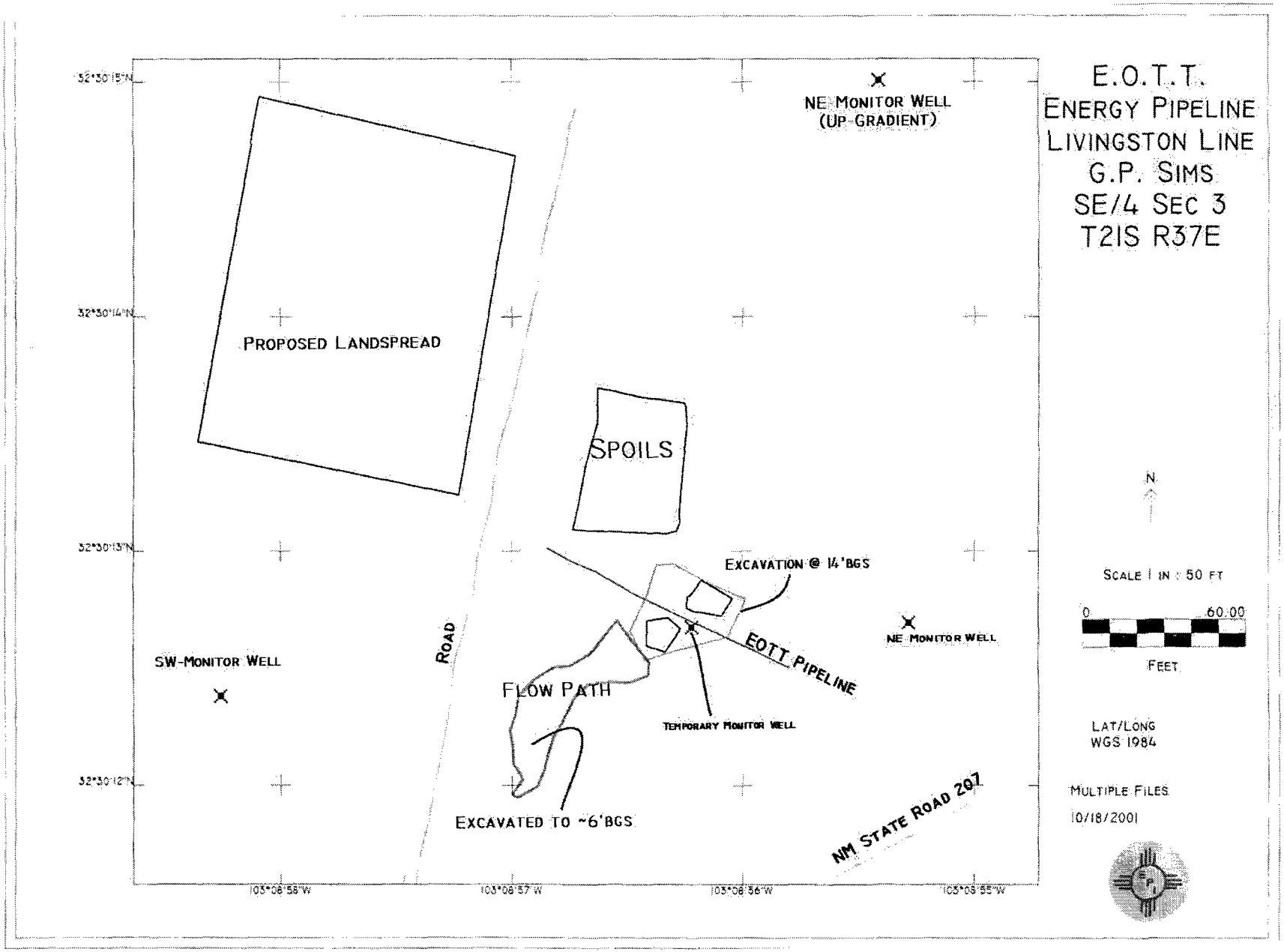
Upon demonstration through analysis and spatial characterization of the ground water and soil source terms that all recoverable crude oil has been recovered and the ground water and soil have

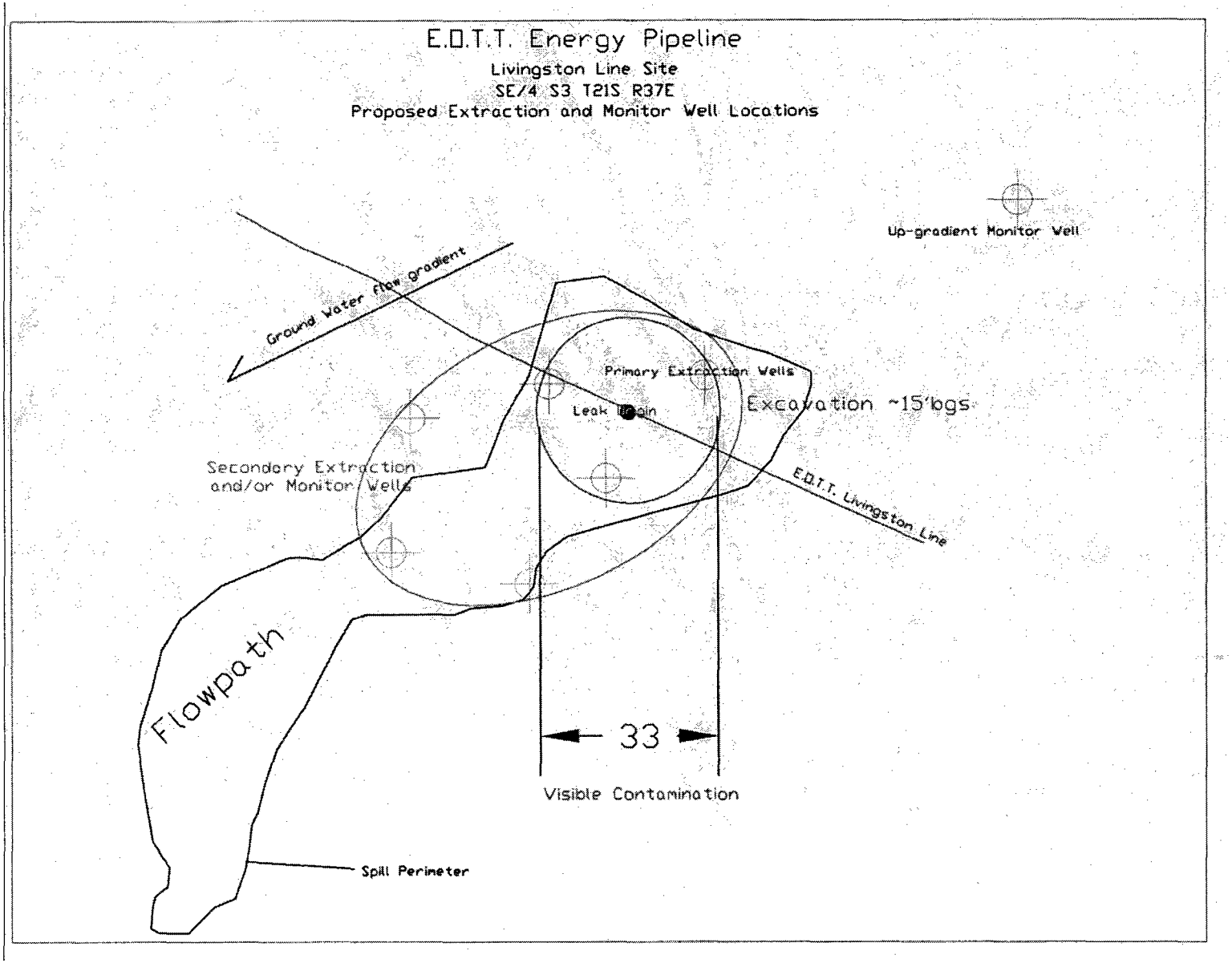
been remediated to acceptable levels, a request for closure will be submitted to the NMOCD for consideration. With approval of closure the site will then be decommissioned and restored.

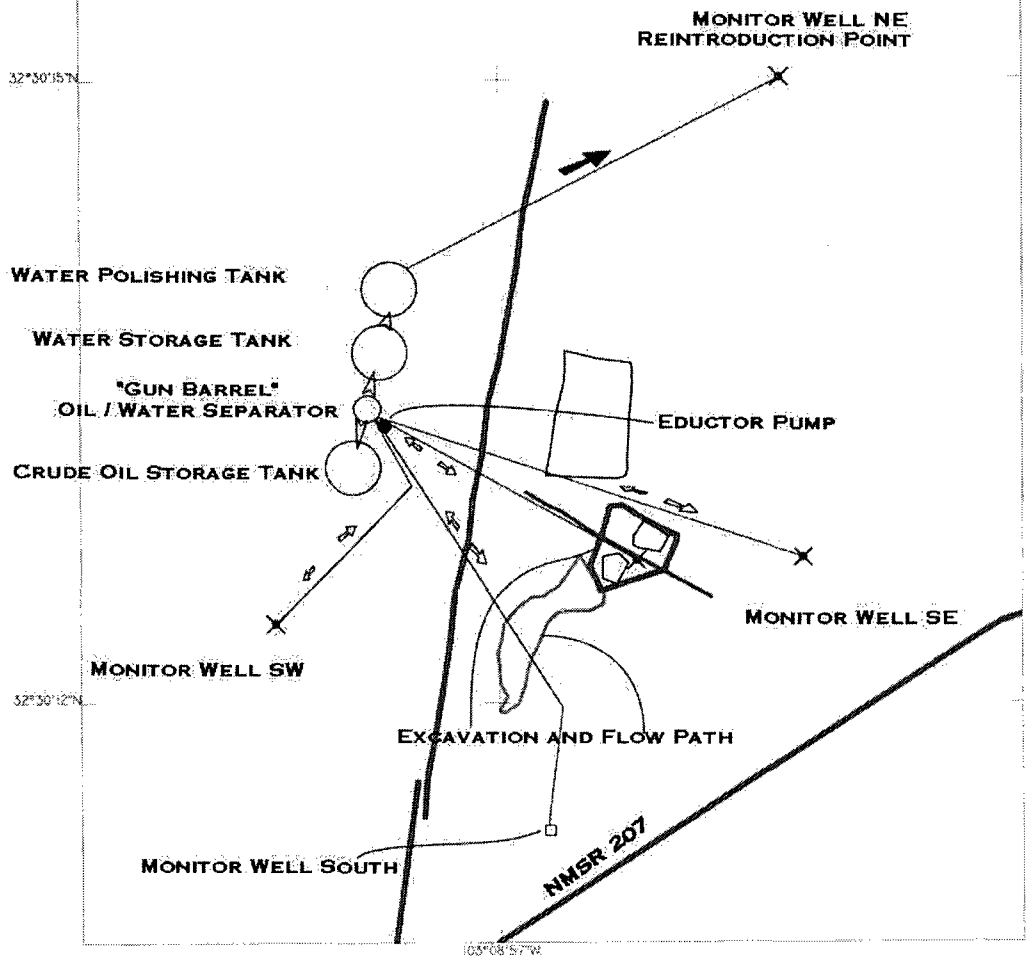
Attachment I: Figures

Figure 1 – Topographical Map of the EOTT Livingston Line Remediation Site
With ground elevation gradient




E.O.T.T.
ENERGY PIPELINE
LIVINGSTON LINE
G.P. SIMS
SE/4 SEC 3
T21S R37E
NE MONITOR WELL
(UP-GRADIENT)
PROPOSED LANDSPREAD
SPOILS
EXCAVATION @ 14'BGS
EOTT PIPELINE
NE MONITOR WELL
SW-MONITOR WELL
ROAD
FLOW PATH
TEMPORARY MONITOR WELL
EXCAVATED TO ~6'BGS
NM STATE ROAD 207
32°30'15"N
32°30'14"N
32°30'13"N
32°30'12"N
103°08'58"W
103°08'57"W
103°08'56"W
103°08'55"W
N
SCALE 1 IN = 50 FT
0
60.00
FEET
LAT/LONG
WGS 1984
MULTIPLE FILES
10/18/2001


E.O.T.T. Energy Pipeline
Livingston Line Site
SE/4 S3 T21S R37E
Proposed Extraction and Monitor Well Locations
Up-gradient Monitor Well
Ground Water flow gradient
Primary Extraction Wells
Leak Origin
Excavation ~15'bgs
Secondary Extraction
and/or Monitor Wells
E.O.T.T. Livingston Line
Flowpath
33
Visible Contamination
Spill Perimeter



E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE G.P. SIMS
FACILITY DESCRIPTION

LAT/LONG
WGS 1984

SCALE 1:1,000

N

0 125.0

FEET

MULTIPLE FILES

4/25/2002

Attachment II: Analytical Reports

ANALYSYS Inc.
4221 Freidrich Lane, Suite 190, Austin, TX 78744 &
2209 N. Padre Island Dr., Corpus Christi, TX 78408
(512) 444-5896 • FAX (512) 447-4766

Client: Environmental Plus, Inc.
Attn: Pat McCasland
Address: 1324 M St Po Box
Eunice NM 88231
Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 125074 **Report Date:** 01/31/02
Project ID: Livingston GP Sims 2001-11005
Sample Name: WELGPS12402NEMW
Sample Matrix: water
Date Received: 01/25/2002 **Time:** 10:58
Date Sampled: 01/24/2002 **Time:** 10:02

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Volatile organics-8260b/BTEX	---		---		01/30/02	8260b	---	---	---	---	---
Benzene	<1	µg/L	1	<1	01/30/02	8260b	---	1	96.1	104.7	99.2
Ethylbenzene	<1	µg/L	1	<1	01/30/02	8260b	---	0.9	100.8	104.9	99.6
m,p-Xylenes	<1	µg/L	1	<1	01/30/02	8260b	---	0.6	109.5	113.3	100.3
o-Xylene	<1	µg/L	1	<1	01/30/02	8260b	---	0.6	102.8	106.3	89.4
Toluene	<1	µg/L	1	<1	01/30/02	8260b	J	10.1	107.1	117.3	118.2

This analytical report is respectfully submitted by AnalySys, Inc. The enclosed results have been carefully reviewed and, to the best of my knowledge, the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program.

Respectfully Submitted,
Richard Laster
Richard Laster

1. Quality assurance data is for the sample batch which included this sample. 2. Precision (PREC) is the absolute value of the relative percent (%) difference between duplicate measurements. 3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample. 4. Calibration Verification (CCV) and Laboratory Control Sample (LCS) results are expressed as the percent (%) recovery of analyte from a known standard or matrix. 5. Reporting Quantitation Limits (RQL), typically at or above the Practical Quantitation Limit (PQL) of the analytical method. 6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits adjusted for any required dilutions. 7. Data Qualifiers are J = analyte potentially present between the PQL and the MDL. B =Analyte detected in associated method blank(s). S1 =MS and/or MSD recovery exceed advisory limits. S2 =Post digestion spike (PDS) recovery exceeds advisory limit. S3 =MS and/or MSD and PDS recoveries exceed advisory limits. P =Precision higher than advisory limit. M =Matrix interference.

Page#: 1 **Report Date:** 01/31/02

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Client: Environmental Plus, Inc.
Attn: Pat McCasland
Address: 1324 M.St Po Box
Eunice NM 88231
Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 125073 **Report Date:** 01/31/02
Project ID: Livingston GP Sims 2001-11005
Sample Name: WELGPS12402NEMW
Sample Matrix: water
Date Received: 01/25/2002 **Time:** 10:58
Date Sampled: 01/24/2002 **Time:** 10:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Total dissolved solids	5290	mg/L	1	<1	01/28/02	160.1	---	6.07	-NA-	-NA-	-NA-
Chloride	2400	mg/L	25	<25	01/28/02	325.2&9251	---	1.35	98.7	108.01	96.84

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Attn: Pat McCasland
Address: 1324 M.St Po Box
Eunice NM 88231

Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 125075 **Report Date:** 01/31/02
Project ID: Livingston GP Sims 2001-11005
Sample Name: WELGPS12402SEW
Sample Matrix: water
Date Received: 01/25/2002 **Time:** 10:58
Date Sampled: 01/24/2002 **Time:** 10:20

REPORT OF ANALYSIS **QUALITY ASSURANCE DATA[1]**

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Total dissolved solids	2400	mg/L	1	<1	01/28/02	160.1	---	6.07	-NA-	-NA-	-NA-
Chloride	899	mg/L	5	<5	01/28/02	325.2&9251	---	1.35	98.7	108.01	96.84

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Page#: 1 **Report Date:** 01/31/02

Attachment V: Site Information and Metrics Form

Site Information and Metrics

SITE: Livingston Line 4"	Assigned Site Reference #: 2001-11005
Company: EOTT Energy Pipeline	
Company Street Address:5805 E. Highway 80, Midland, Texas 79701	
Company Mailing Address: P.O. Box 1660	
Company City, State, Zip: Midland, Texas 79702	
Company Representative: Frank Hernandez	
Company Representative Telephone: 915.556.0190	
Company Telephone: 915.684.3451 Fax: 915.687.2713	
Fluid volume released (bbls) = 6 bbls with 0 bbls recovered	
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)	
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural	
Leak, Spill, or Pit (LSP) Name: Livingston Line 4"	
Source of contamination: Pipeline Leak	
Land Owner, i.e., BLM, ST, Fee, Other: G.P. Sims	
LSP Dimensions: affected area = 150' X 15'	
LSP Area = 2400 ft^2	
Location of Reference Point (RP):	
Location distance and direction from RP:	
Latitude: 32° 30' 12N	
Longitude: 103°08'55"W	
Elevation above mean sea level: ~ 3,432 amsl	
Feet from South Section Line	
Feet from West Section Line	
Location- Unit or ¼¼ = SE¼	
Location- Section = 3	
Location- Township = 21S	
Location- Range = 37E	
Surface water body within 1000 ' radius of site: None	
Domestic or Commercial water wells within 1000' radius of site: Key Energy Water Station	
Agricultural water wells within 1000' radius of site: None	
Public water supply wells within 1000' radius of site: None	
Depth from land surface to ground water (DG): ~35' bgs	
Depth of contamination (DC): The lower most contamination >100 mg/Kg occurs ground water interface	
Depth to ground water (DG – DC = DtGW) 0.0' bgs	

1. Ground Water	2. Wellhead Protection Area	3. Distance to Surfac
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 po*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 po*
Ground water Score = 20	*Wellhead Protection Area Score= 20*	*Surface Water Score= 0*
Site Rank (1+2+3) = 20+20+0 = 40 points		

Total Site Ranking Score and Acceptable Concentrations

ANALYSYS Inc.
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Address: 1324 M.St Po Box
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Phone: (505) 394-3481 **FAX:** (505) 394-2601

Report#/Lab ID#: 125076 **Report Date:** 01/31/02
Project ID: Livingston GP Sims 2001-11005
Sample Name: WELGPS12402SEW
Sample Matrix: water
Date Received: 01/25/2002 **Time:** 10:58
Date Sampled: 01/24/2002 **Time:** 10:23

REPORT OF ANALYSIS **QUALITY ASSURANCE DATA[1]**

Parameter	Result	Units	RQL[5]	Blank	Date	Method[6]	Data Qual[7]	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Volatile organics-8260b/BTEX	---		---		01/30/02	8260b	---	---	---	---	---
Benzene	16.1	µg/L	1	<1	01/30/02	8260b	---	1	96.1	104.7	99.2
Ethylbenzene	9.28	µg/L	1	<1	01/30/02	8260b	---	0.9	100.8	104.9	99.6
m,p-Xylenes	6.94	µg/L	1	<1	01/30/02	8260b	---	0.6	109.5	113.3	100.3
o-Xylene	1.81	µg/L	1	<1	01/30/02	8260b	---	0.6	102.8	106.3	89.4
Toluene	<1	µg/L	1	<1	01/30/02	8260b	J	10.1	107.1	117.3	118.2

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Page#: 1 **Report Date:** 01/31/02

Attachment III: Site Photographs


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE
6/26/

Attachment IV: Quality Assurance Plan

1.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Plan (QAP) will ensure the quality and usability of information and c used to support a successful site investigation and subsequent environmental management d

1.1.1 Data Quality Objectives

For analytical information derived from samples, the following quality controls will be docur and verified. If data is within the specifications it will be deemed quantitative and acceptable in making environmental management decisions.

- Laboratory data must have extraction recovery for TPH, BTEX and general chemist parameters ≤30.0%. Or a "%Extraction Accuracy " between 70 and 130%.
- Laboratory data must have <30% Relative Percent Difference or a "%Instrument Ac between 70 and 130%.
- Field headspace analyses must be supported with instrument calibration data and cali gas certification.

1.1.2 Methodology

Collecting representative site samples and information requires that the sampling and observ processes and procedures be implemented within strict bounds. These control procedures v further ensure the quality of site data and information and are consistent with the EOTT sta operating procedures as referenced in the NMOCD approved "General Work Plan for Rem of EOTT Pipeline Spills, Leaks, and Releases in New Mexico." Likewise, personnel will imp standard environmental and occupational safety protocols.

1.1.2.1 Borehole Drilling, Lithologic Sampling, Logging, and Abandonment

Boreholes will be located strategically to best determine vertical and horizontal extent of contamination in the vadose zone and ground water. Borelogs will be developed for each bo noting site lithology. Likewise, laboratory samples may be collected to determine more detai lithologic characteristics, i.e., porosity, transmissivity, etc. Each borehole not developed into permanent monitor well will be plugged with Sodium Bentonite in accordance with the NM(guidelines.

1.1.2.1.1 General Drilling Procedures

The investigation will use the Environmental Plus, Inc. drill rig with hollow stem auger and ' wall probe" method of discrete sampling.

1.1.2.1.3 Monitor and Pollution Abatement Well Installation

Boreholes exhibiting contamination from the surface to ground water will be abandoned. Tl advanced down gradient of the site for the purpose of plume delineation and found to be unimpacted will be completed and developed as monitor wells. Some boreholes may be tem abandoned, i.e., covered but not plugged, for future development as pollution abatement we New Mexico State Engineers Office will be notified in writing of all pollution abatement wel installations. All monitor and pollution abatement wells will be installed and developed in accordance with the NMOCD guidelines.

1.1.2.1.4 Ground Water Sampling

Ground water will be sampled within 24 hours of well development using a new and certifial one-liter weighted baler. The water will be immediately decanted into the appropriate contai and prepared for ascension to the laboratory.

1.1.2.1.5 Borehole Abandonment

The boreholes will be filled with a mixture of distilled water and Sodium Bentonite and a wo marker denoting the borehole number driven into the center of each backfilled hole.

1.1.2.2 Sample Handling

Soil and water samples will be collected and prepared in accordance with accepted ASTM an SW846 methods.

1.1.2.3 Sampling protocols

1. Decontaminate sampling equipment and area with Alconox distilled water afte sample.
2. Prepare samples and refrigerate as soon as practicable.

Duplicates or blanks may be submitted to the laboratory to establish reproducibility and ider laboratory contamination, respectively.

1.1.2.4 Sample Containers

Laboratory and field analyses of soil and water require specific containers and are listed in th below.

	TPH	BTEX	VOC Headspace	Metals	PAH	Gener: Chemis
Soil	4 oz. Jars with Teflon	4 oz. Jars with Teflon seal	1-gallon Ziplock®			

1.1.2.5 Sample Custody

All analytical request forms will be completed and signatured by EPI as sampler. EPI perso will ascension the samples to the AnalySys, Inc. sample-receiving personnel under chain-of-c signature.

1.1.2.6 Quality Control Samples

Quality control samples will be analyzed to ensure data quality.

1.1.2.6.1 Field Blank

A field blank for soil or water is not deemed necessary.

1.1.2.6.2 Equipment Blank

None will be collected.

1.1.2.6.3 Field Duplicate or Co-located Samples

For water and soil samples, one duplicate or co-located sample will be collected for analysis 10^{th} sample.

1.1.2.6.4 Trip Blank

A laboratory prepared trip blank will accompany each water sample batch.

1.1.2.7 Field Measurements

The VOC Headspace concentration for each soil sample will be measured. The instrument be the Ultra-Rae PID manufactured by Rae Systems. The calibration gas will be 100.0 ppm isobutylene standard from Scott Specialty Gases, Freemont, Colorado.

1.1.2.7.1 Equipment Calibration and Quality Control

The PID will be calibrated at least 3 times daily and checked with the calibration gas hourly. check with the calibration gas indicates the instrument reading is 10 ppm too high or low it v calibrated. Variation in the daytime ambient temperature will cause the variation.

1.1.2.7.2 Equipment Maintenance and Decontamination

All sampling and survey equipment will be routinely decontaminated between samples. Nitr gloves will be worn and changed with each sampling iteration.

1.1.2.7.3 Ground Water Level Measurements

Ground water levels will be taken with an accurate water level meter at each borehole where water is encountered and may require the use of an interface meter. Levels will be recorded below ground surface" to the nearest ".1 ft."

The analytical suite for water samples will include:

- TPH (EPA method 8015B)
- BTEX (EPA method 8021B)
- Total Dissolved Solids (EPA method 150.1)
- PAH (EPA method 8270)

1.1.2.9 Sample Identification

Sample identification numbers will be designated as follows;

Site: EOTT LL	Geoprobe	Borehole #	Interval bgs	Qualification: Cutting/Probe Sat
ELL	GP	1	20'	C or P

Example: ELLGP1-20C

1.1.2.10 Data Evaluation

All data will be reviewed based on the Data Quality Objectives in section 3.8.1.

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES

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ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

November 6, 2001

Mr. William Olson
New Mexico Oil Conservation Division
P.O. Box 6429
1220 S. Saint Francis Drive
Santa Fe, New Mexico 88505

Subject: EOTT Energy Pipeline, Livingston Ridge to Hugh – P. Sims Stage 1 & 2 Abatement Plan

Dear Mr. Olson,

Environmental Plus, Inc. (EPI) of Eunice, New Mexico, on behalf of E.O.T.T. Energy Pipeline, submits for your consideration and approval the enclosed E.O.T.T. Work Plan Supplement titled, "E.O.T.T. Energy Pipeline Stage 1 & 2 Abatement Plan for the Livingston Ridge to Hugh – P. Sims Ref.# 2001-11005," October 2001. The enclosed two copies follow the electronic submission of November 5, 2001. I look forward to your response.

All official communication should be addressed to:

Mailing Address
Mr. Frank Hernandez
E.O.T.T. Energy Pipeline
P.O. Box 1660
Midland, Texas 79703

Physical Address
Mr. Frank Hernandez
E.O.T.T. Energy Pipeline
5805 East Highway 80
Midland, Texas 79701

If there are any questions please call Mr. Ben Miller or myself at the office or at 505.390.0288 and 505.390.7864, respectively.

Sincerely,

Pat McCasland
EPI Technical Services Manager

cc: Mr. Cutty Cunningham, ENRON, w/enclosure
Mr. Frank Hernandez, ETS w/enclosure
Mr. Pat Sims, w/enclosure
Mr. Paul Sheeley, NMOCD Hobbs office, w/enclosure
Ben Miller, EPI Vice President and General Manager
Sherry Miller, EPI President
file

Project taken over by EPGT
IR-398

ENVIRONMENTAL PLUS, INC.

P.O. BOX 1558 ••• 2100 AVENUE O ••• EUNICE, NEW MEXICO 88231
TELEPHONE 505•394•3481 FAX 505•394•2601

E.O.T.T. ENERGY PIPELINE

STAGE 1 AND STAGE 2 ABATEMENT PLAN

FOR THE

LIVINGSTON RIDGE TO HUGH - P. SIMS
Ref.# 2001-11005

SE¼ Sec3, T21S, R37E,
~4 miles north of Eunice
Lea County, New Mexico

RECEIVED
NOV 0 9 2001
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

October 2001

Prepared by

Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, New Mexico 88231
Tele 505•394•3481 FAX 505•394•2601

Table of Contents

1.0 INTRODUCTION

Environmental Plus, Inc. (EPI) hereby submits a Stage 1 and Stage 2 Abatement Plan to E.O.T.T. Energy Corp. (EOTT) for investigation and remediation of the above-referenced project. This plan will serve as a "Work Plan Supplement" as referenced in the draft "General Work Plan for Remediation of EOTT Pipeline Spills, Leaks, and Releases in New Mexico" approved by the New Mexico Oil Conservation Division (NMOCD) on August 1, 2000.

2.0 "RESPONSIBLE PERSON"

The "Responsible Person" for the Stage 1 and Stage 2 Abatement Plans is:

Mr. Frank Hernandez
District Environmental Supervisor
Enron Transportation Services, E.O.T.T. Energy Pipeline
5805 E. Highway 80, Midland, Texas 79701
P.O. Box 1660, Midland, Texas 79702

1R-398

3.0 STAGE 1 ABATEMENT PLAN

The initial form C-141 submitted to the NMOCD by EOTT reported that approximately 6 barrels of crude oil was released with 0 barrels recovered. Remediation activities to date have included excavation and disposal of a small portion of the contaminated soil in an NMOCD approved landfarm. Based on visual observation and field headspace Volatile Organic Constituents (VOC) surveys, the soil in the immediate area of the release origin is highly contaminated with crude oil in excess of the NMOCD remediation guideline thresholds for Total Petroleum Hydrocarbon (TPH) and Benzene, Toluene, Ethyl Benzene, and m, o, & p Xylenes (BTEX). Non-aqueous phase hydrocarbon was observed on the surface of the ground water at approximately 30'bgs in excess of 20 NMAC 6.2.3103, i.e., "Non-aqueous phase liquid shall not be present floating atop or immersed within ground water, as can be reasonably measured." The NMOCD offices in Santa Fe and Hobbs, New Mexico were notified of the impact on June 22, 2001. As of July 18, 2001, the ground water at the site had not been sampled but will be part of the Stage 1 process. This proposal identifies Stage 1 Abatement Plan objectives consistent with Rule 19 of the NMOCD regulations that will be used to develop the remediation strategies required for the Stage 2 Abatement Plan. The Stage 1 and Stage 2 Abatement Plans are being submitted together to facilitate coincident development of investigatory boreholes into monitor well or pollution abatement/extraction/fluid or vapor recovery well locations as the investigation progresses.

3.1 BACKGROUND

The site is owned by G.P. Sims and located ~4 miles north of Eunice, Lea County, New Mexico in SE¼ Sec3, T21S, R37E at latitude 32°30'12"N and longitude 103°08'55"W. The EOTT site reference identification number is "2001-11005." The crude oil leak was discovered, repaired, and reported on June 22, 2001 and estimated to be approximately 6 barrels with 0 barrels recovered. Visibly contaminated soil down to the ~14 feet below ground surface ('bgs) was excavated and stock piled on plastic adjacent to the excavation. Because of excavation safety issues involved in deepening the excavation, a trailer mounted hollow stem auger drill rig was used to install a temporary monitor well in the bottom of the excavation. Approximately 4' of crude oil was observed to be present in the well bore and probably represents less than 6" on the surface of the ground water underlying the site. EOTT immediately notified the Hobbs and Santa Fe offices of the NMOCD and the land owner of the ground water impact and began development of the Stage 1

and Stage 2 Abatement Plans consistent with NMOCD Rule 19, "Prevention and Abatement of Water Pollution." On June 27, 2001, two down gradient water wells used by the Key Energy Services Water Station located less than 1000 feet from the site were sampled and analyzed for the constituents of concern and were found to be unimpacted.

3.2 Initial Spill Mitigation

To facilitate site access and allow for site delineation, the decision was made to remove the contaminated stock piled soil to an NMOCD approved and permitted land farm facility and backfill with clean soil. Approximately 148 yd^3 of soil was hauled to the Environmental Plus, Inc. (EPI) land farm ~3 miles south of Eunice, New Mexico before the land owner representative asked that disposal be halted until the NMOCD had approved the remediation plan. With the volume of crude in the well bore and the proximity to the surface, it seemed credible that a vacuum truck would be able to recover some of the product. Subsequently, a vacuum truck was contracted to pull fluid from the well bore. The process was abandoned after 8 hours; approximately 15 barrels of water and 2 barrels of oil had been recovered and disposed in an NMOCD permitted facility.

3.3 Stage 1 Abatement Plan Objectives as per New Mexico Oil Conservation Division Regulation 19.E(3)

This plan, when implemented, will provide adequate information to characterize the hydrocarbon impact, i.e., horizontal and vertical extents, of the vadose zone and ground water and identify site-specific geologic and hydrologic metrics for this site. The Quality Assurance Plan included as Attachment III will guide implementation of critical methodologies and ensure credibility and usability of all data and information. The primary objective of this investigation is to collect adequate information to bound the vertical and horizontal extent of crude oil contamination in the vadose zone and the areal distribution in the ground water underlying the site. The focus and scope are as follows;

- Designate "responsible person" relative to plan submittal
- Describe and map site, provide historical information including previous investigations
- Characterize Site:
  1. Define Geology and Hydrogeology, i.e., Hydraulic Conductivity, Transmissivity, and Storativity
  2. Determine vertical and horizontal extent and magnitude of vadose-zone and ground water contamination.
     a) Collect discrete soil samples with a sample probe from depths as necessary below ground surface (bgs) to determine vertical extent of hydrocarbon contamination.
     b) Screen all samples using a Photoionization Detector (PID) and record results.
     c) Analyze all samples for Total Petroleum Hydrocarbon (TPH^{8015m}), i.e., Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) using EPA method 8015M and Benzene, Toluene, Ethyl Benzene, and m, o, & p Xylenes (BTEX) using EPA method 8020.
     d) Samples may be collected from the interval exhibiting the highest TPH^{8015m} concentrations for synthetic precipitate leaching procedure (SPLP) analyses for TPH^{8015m} and BTEX.
  3. Determine rate and direction of contaminant migration.
  4. Provide inventory of water wells inside and within one (1) mile form the perimeter of the three-dimensional body where the standards are exceeded.
  5. Provide location and number of wells actually or potentially affected by the pollution.
  6. Define surface-water hydrology.

7. Determine seasonal stream flow characteristics.
8. Determine ground water/surface water relationships.
9. Determine the vertical and horizontal extent and magnitude of contamination and impacts to surface water and stream sediments.

- Establish Monitoring Program
  1. Sampling station locations
  2. Sampling frequencies

- Establish a Quality Assurance Plan consistent with 20 NMAC 6.3107.B and 20 NMAC 6.1 for all work pursuant to this abatement plan.
- Submit a schedule of Stage 1 abatement plan activities, i.e., submission of quarterly progress reports and the detailed final site investigation report.

3.3.1 Project Organization and Responsibility

Environmental Plus, Inc., Eunice, New Mexico (EPI) will conduct the field investigation with EOTT personnel providing operational support and coordination. AnalySys, Inc. of Austin, Texas will perform the laboratory analyses and provide analytical reports.

3.3.2 Project Safety

Hazards that will be encountered at this site include the following;

- Moving equipment
- Buried pipelines
- Rotary Equipment
- Highway ingress/egress
- Excavation
- Potential Hydrogen Sulfide Gas

Prior to drilling or excavation, NEW MEXICO ONE CALL will be notified of activities, which will then provide a list of Companies they will notify and a ONE CALL confirmation number. Employees and subcontractors will be required to confirm current training in these hazards. Standard personal protective equipment will include;

- Personal H_2S Monitor
- Hard-hat
- Steel Toed Boots/Shoes and gloves

3.3.3 Site Description

The leak site is ~4 miles north of Eunice, New Mexico and ~150' north of New Mexico State Road 207 on the north slope of the Monument Draw. An abandoned "Carbon Black Plant" is located ~.1 mile due north and is the source of the blackened surface in the area. An open area to the west is the proposed landfarm site. The surface of the site remains darkened with the elemental carbon black that was released continuously from the "Carbon Black Plant" during operations until closure in the 1960s.

3.3.3.1 Historical Use

The area has been used historically for livestock grazing and access to oil and gas production facilities.

3.3.3.2 Legal Description

The property is owned by G.P.Sims and located in the SE¼ of Section 3, T21S, R37E, in Lea County, New Mexico. The latitude is 32° 30' 12"N and longitude 103° 08' 55"W.

3.3.3.3 Photographic documentation

Photographs are provided in Attachment II.

3.3.3.4 Ecological Description

The area is typical of the Lower Great Plains Biome consisting primarily of Honey Mesquite (Prosopis glandulosa) along with typical desert grasses and weeds. Netleaf Hackberry trees occur in the isolated parts of the drainage. Mammals represented include Orrd's and Merriam's Kangaroo Rat, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, and the Mule Deer. Reptiles, Amphibians, and Birds are numerous and typical of area. A survey of Listed, Threatened, or Endangered species was not conducted. The site is situated on the north slope of the Monument Draw with the surface trending south into the drainage.

3.3.4 Environmental Media Characterization

Chemical parameters of the soil and ground water will be characterized consistent with the New Mexico Oil Conservation Division (NMOCD) guidelines published in the following documents as applicable;

- Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)
- Unlined Surface Impoundment Closure Guidelines (February 1993)

Normally acceptable thresholds for contaminants of concern (CoC), i.e., TPH and BTEX are determined based on the following;

- Depth to Ground water, i.e., distance from the lower most acceptable concentration to the ground water.
- Wellhead Protection Area, i.e., distance from fresh water supply wells.
- Distance to Surface Water Body, i.e., horizontal distance to down gradient surface water bodies.

However, site specific risk based thresholds will be developed.

3.3.4.1 Area Ground Water Levels

According to The United States Geological Survey (USGS) Ground-Water Report 6, "Geology and Ground-Water Conditions in Southern Lea County, New Mexico," A. Nicholson and A Clebsch, 1961, and the New Mexico State Engineers Office, the uppermost aquifer occurs in the area between 13.01' and 66.89' bgs. The site water level was measured to be ~36'bgs.

3.3.4.2 Water Well Inventory

The New Mexico State Engineers Office in Roswell, New Mexico has the following wells recorded for section 3 and adjacent sections 4, 9, & 10 in T21S R37E.

Township	Range	Section	Measurement Date	Water Level Feet bgs
21S	37E	3	1996	22.24
21S	37E	3	1991	26.52
21S	37E	3	1959	23
21S	37E	4	1991	23.61
21S	37E	4	1970	63.7
21S	37E	4	1991	24.17
21S	37E	9	1968	61.49
21S	37E	9	1970	69.41
21S	37E	9	1996	58.14
21S	37E	9	1970	61.03
21S	37E	10	1991	24.87
21S	37E	10	1981	24.43
21S	37E	11	1955	36.23
21S	37E	11	1976	21.07

3.3.4.3 Water Wells Actually or Potentially Affected by the Pollution

A reconnaissance survey of the down gradient Key Energy Water Station Wells shows that the wells are not impacted.

3.3.4.4 Aquifer Recharge

Monument Draw is a surficial west to east drainage conducting storm event precipitation to the southeast. The soil boring advanced at the site during the preliminary investigation identified the soil matrix above the saturated zone to be composed of a fairly homogeneous matrix of highly porous fractured rock and fine grained sands. This characteristic, along with the relatively shallow occurrence of ground water in the area, suggests that the upper most unconfined aquifer is recharged from the surface.

3.3.4.5 Depth to Ground Water Calculation

The NMOCD requires the site be ranked to determine which soil TPH threshold will apply and defines depth to ground water as, "the vertical distance from the lowermost contaminants to the seasonal high water elevation of the ground water." The uppermost occurrence of ground water is at ~36'bgs. The lower most contamination occurs at the interface of the vadose zone and the water table. The calculated NMOCD depth to ground water is essentially 0.0' bgs.

3.3.4.6 Ground Water Gradient

According to the USGS (Nicholson & Clebsch), the upper most aquifer occurs as Quaternary alluvium and Ogallala formations with the flow gradient to the south, perpendicular to the Monument Draw Drainage. The spill area is located on the north edge of the southeastwardly trended drainage.

3.3.4.7 Wellhead Protection Area

The Key Energy wells are within 1000' due south of the site. A windmill well owned by Bob McCasland is located ~2200' southeast of the leak origin.

3.3.4.8 Distance to Nearest Surface Water Body

None present.

3.3.4.9 Seasonal Stream Flow Characteristics

There are no streams located at the site, however, during rain events the site drains southeastward down the valley/draw.

3.3.5 Delineation of Nature, Extent, and Magnitude of Contamination (19NMAC15.A.19.E(3)(b)(i), (ii))

Vertical and horizontal extents of crude oil contamination in the flow path area of the spill have been excavated and stockpiled. Surveillance data from the sidewalls indicates contamination persists at some locations and will be excavated. The column of soil immediately below the leak origin has been excavated to ~14'bgs and delineated to the saturated zone. The unexcavated contaminated soil in the column consists of approximately 260 yd^3 of contaminated soil.

3.3.5.1 Highly Contaminated/Saturated Soils

The soil boring at the leak origin identified free product at the interface of the non-saturated vadose zone and the saturated zone.

3.3.5.2 Unsaturated Contaminated Soils

The soil in the spoils pile is contaminated above the NMOCD guideline thresholds for the COCs but is unsaturated.

3.3.5.3 Ground Water Contamination

The ground water at this site is impacted.

3.3.5.4 Other Relevant Media Contamination

The water wells down gradient of the site have been sampled and analyzed. Currently they remain unimpacted.

3.3.5.5 Background (Up-gradient) Sample Results

A near surface background soil sample has been collected up gradient of the site and analyzed according to the analytical suite proposed for soil. Similarly, three perimeter monitor wells have been installed up-gradient and transverse-gradient of the site to determine background concentrations of COCs and afford accurate determination of the local ground water gradient.

3.3.6 Identification of Remedial Action Levels

Remedial goals for soil in this area are the most stringent due to the proximity of the water wells and the shallow occurrence of ground water.

3.3.6.1 Site Ranking

The area has the following score and site ranking;

Depth to Groundwater / <50' = 20
Wellhead Protection Area / <200' = 20
Distance to Surface Water Body / >200' = 0
Site Ranking = 40

3.3.6.2 Remedial Action Levels

The typical remedial action objectives for soil at this site without the installation of a migration barrier according to the NMOCD guidelines would be as follows.

- TPH – 100 mg/Kg
- BTEX – 50 mg/Kg
- Benzene – 10 mg/Kg

The New Mexico Water Quality Control Commission (WQCC) ground water Maximum Contaminant Levels for the CoCs will apply to site ground water.

3.3.7 Proposed Borehole Sampling Locations

The majority of the contaminated soil has been removed from the subsurface. Additional boreholes will be primarily to identify and bound the CoC ground water impact.

3.3.8 Monitoring Program (19NMAC15.A.19.E(3)(c)

The Monitoring Program will be a part of the Stage 2 Abatement Plan. The monitor wells installed at the site will be sampled at least monthly for TPH and BTEX. Product and water extracted/recovered volumes will be routinely logged and reported along with disposition information. Vapor Recovery wells will likewise be monitored on at least a monthly basis. Data will be summarized into quarterly reports documenting progress and status and submitted to the NMOCD Environmental Bureau Santa Fe and Hobbs offices.

3.3.9 Schedule for Stage 1 Abatement Plan Implementation

The initial response to the leak resulted in removal of approximately 80% of the crude oil contaminated soil. Stage 1 Abatement Plan will be implemented immediately upon NMOCD approval. All subsurface investigation and monitor well installations should be completed within a 30-day start to finish timeframe. Finalized laboratory data reports should be available within 30 days and the Final Site Investigation Report issued within 30 days.

4.0 Stage 2 Abatement Plan

The objective of the Stage 2 Abatement Plan will be to abate soil and ground water contamination to acceptable levels as delineated and identified during the Stage 1 Abatement Plan. The information collected to date provides information sufficient to select an abatement strategy and develop a plan for the site.

4.1 Soil Remediation Strategy

The soil source term is composed of excavated and stock piled contaminated soil and unexcavated contaminated soil. The strategy will couple disposal and or on site land farming and risk exposure assessment and in-situ natural attenuation (bioremediation) and Vapor Extraction/Oxygen Induction.

4.1.1 Excavated Soil Remediation

Crude oil contaminated soil at the leak origin and in the "flowpath" has been excavated and stockpiled. The soil will either be disposed of in an NMOCD approved facility or, if authorized by the NMOCD and with agreement from the landowner, a land farm cell will be constructed approximately 200' west of the leak origin. If approved and constructed the landfarm area will cover

approximately 22,500 ft^2, will be managed in accordance with the NMOCD guidance, and receive up to 2500 yd^3 of soil.

4.1.2 Unexcavated Soil Remediation

A compacted clay barrier will isolate the unexcavated soil >15'bgs and eliminate the vertical transport mechanism. The soil will be remediated by Vapor Extraction/Oxygen Induction.

4.1.2.1 Unexcavated Soil: Risk Exposure Assessment and Monitoring

Visibly contaminated soil remains in the bottom of the excavation immediately below the leak origin and is approximately 20' in diameter. If the soil column is contaminated for the full diameter down to the ground water interface, ~260 yd^3 remains unexcavated. Due to excavation hazards, it is proposed to utilize a conservative risk exposure assessment to demonstrate that the remaining source term will not continue to impact the ground water. Preliminary simulations using the American Petroleum Institute (API) "VADSAT" vadose zone transport computer modeling software indicate that an impermeable engineered barrier will eliminate the vadose zone hydrocarbon source migration potential. It is therefore proposed, that a 10' laterally oversized 4-foot thick clay barrier be installed over the affected area at the 14'bgs interval and compacted to 95% of the Proctor density. This will eliminate infiltration of storm water and downward migration of the residual hydrocarbon into the groundwater. This barrier will also increase the efficiency of the vapor extraction or sparging processes. The CoC source terms beneath the barrier will be fully characterized.

4.1.2.2 Unexcavated Soil Remediation: Vapor Extraction/Oxygen Induction

A ring of at least 6 – 2" air induction wells with 5' screened intervals will be installed around the perimeter of the contaminated soil column at staggered vertical intervals within the contaminated zone beneath the barrier. A single extraction well with a 10' screen will be installed central to the column and ring. Multiple extraction wells may be considered. The diameter of the system will be approximately 35'. The Volatile Organic Constituents (VOC) vapor extracted will initially be monitored daily with a calibrated photoionization detector to ensure that the system is efficient and working properly. Monitoring will be terminated and the system decommissioned after remediation has been achieved. System design will be submitted for approval to the NMOCD before installation. The NMOCD will likewise establish the acceptable VOC vapor concentration threshold, <100 ppm is suggested. A New Mexico Air Quality Bureau (NMAQB) Discharge Permit for the VOC emissions should not be required but will be verified with the NMAQB.

4.1.3 Ground Water Remediation

The free phase hydrocarbon will be removed via extraction wells and the contaminated ground water will be disposed of or remediated and reintroduced to the subsurface. The number and locations of the extraction/recovery wells will be determined after the Stage 1 Abatement Plan Final Site Investigation Report is considered. The system flow will be designed to reverse the down gradient migration of the contamination plume by pumping a sufficient volume of fluid to the surface. Recovered crude oil will be reintroduced into the pipeline system or disposed of at an approved NMOCD facility. The contaminated ground water will be remediated using two methodologies, i.e., ground water sparging and batch remediation. Prior to withdrawal of ground water the appropriate water rights will be obtained from the New Mexico State Engineers Office. The remediated water when deemed acceptable will be considered for use agriculturally or by the oil and gas industry. Disposal in an approved NMOCD facility is also an alternative.

4.1.3.1 Ground Water Sparging

This technology installs air injection wells, screened in the saturated zone of the subsurface. The injected oxygen promotes natural attenuation that can be monitored. This method will also aerate the contaminated smear and vadose zones and promote attenuation.

4.1.3.2 Ground Water Batch Remediation

This process requires the water pumped to the surface be managed in closed vessels or in a netted lined pit. This method promotes attenuation by volatilization and bio attenuation. When attenuated to less than the WQCC standards the water will be reintroduced into the aquifer or declared acceptable for other uses.

4.1.4 Site Surface Restoration

During the spring of the year the surface will be reseeded with grasses native to the area, i.e., blue gramma and black gramma.

4.1.5 Abatement and Monitoring Schedule

Initial sampling of the monitor wells will be monthly with quarterly monitoring reports submitted to the NMOCD Environmental Bureau offices in Hobbs and Santa Fe, New Mexico. Abatement of the ground water will cease after receipt of 4 consecutive quarters of monitoring well data below regulatory limits. At that time the monitor wells will be abandoned. Extraction of the non-aqueous phase hydrocarbon will cease after 4 consecutive quarters of no observable sheen on the produced water surface.

4.1.6 Public Notification

Prior to issuance of the Public Notice, the following individuals and entities will be notified in writing of the Stage 1 and Stage 2 Abatement Plans.

- Surface owners of record with one (1) mile of the perimeter of the affected area.
- The Lea County Commission
- Individuals or organizations requesting notification.
- The New Mexico Trustee for Natural Resources and other affected agencies.
- All others as directed by the Director of the New Mexico Energy Minerals and Natural Resources Department.

Within fifteen days after receiving notice from the NMOCD that the Stage 1 Abatement Plan or the Stage 2 Abatement Plan are administratively complete, E.O.T.T. Energy Pipeline will issue public notice in newspapers with county and state wide circulation's, i.e., Hobbs Daily News Sun, Lovington Leader, and Albuquerque Journal.

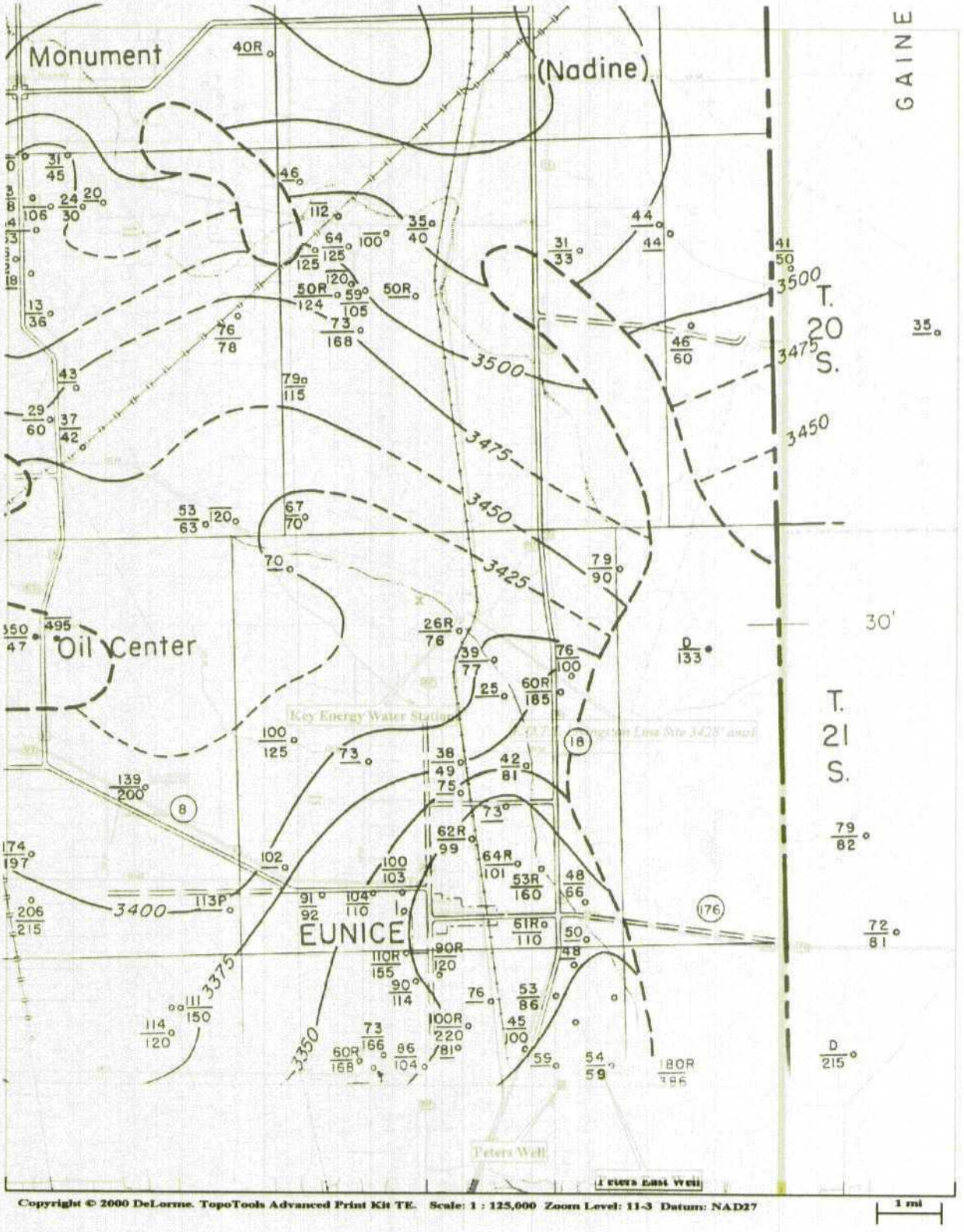
The Public Notice will be developed to include:

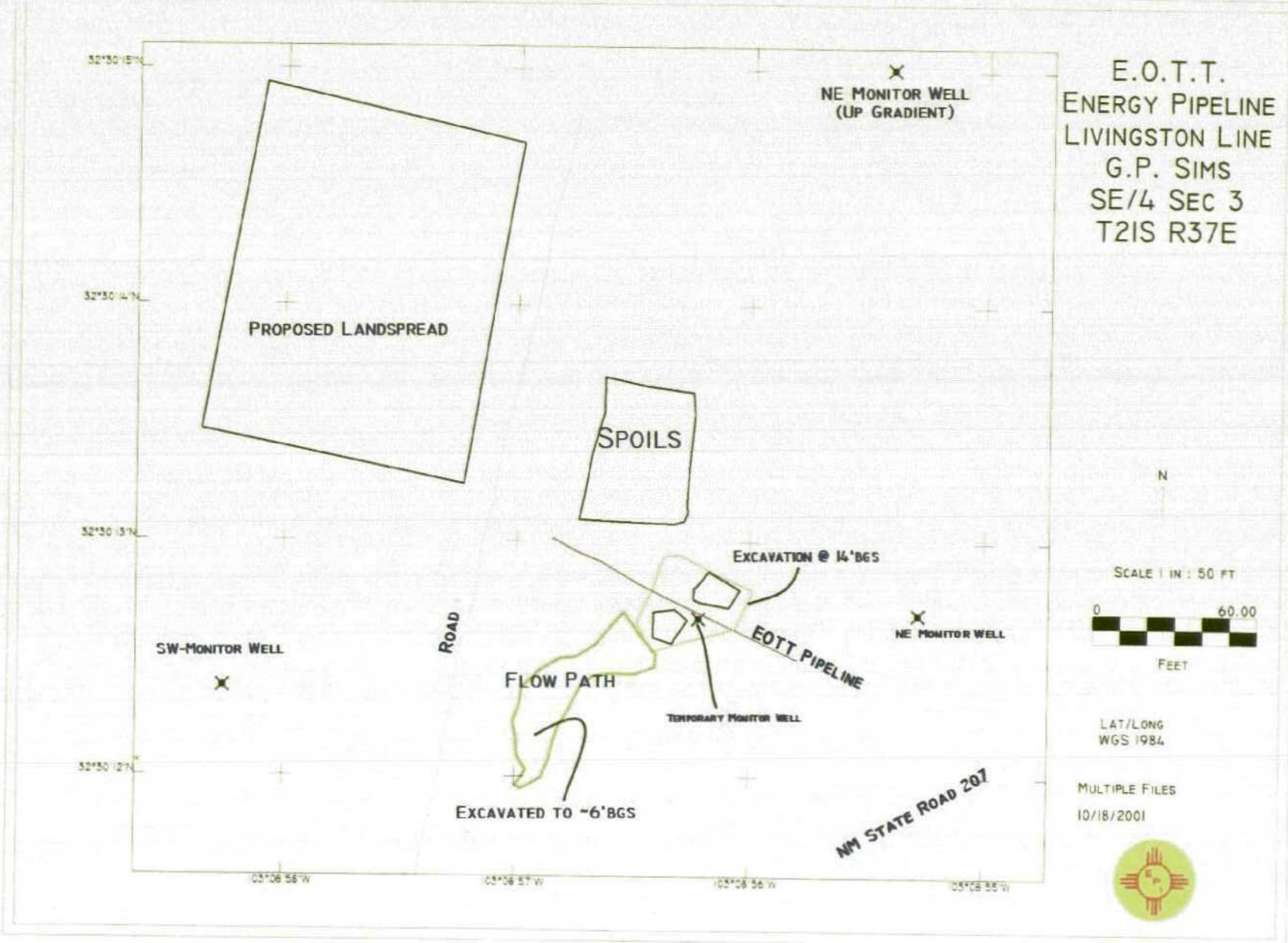
- Name and address of the responsible person
- Location of the proposed abatement
- Descriptions of the source extent, release volume, and affected environmental media.
- Description of the Stage 1 and Stage 2 Abatement Plans
- Description of the procedure required by the Director before making a final determination.
- State that the abatement plan can be viewed at the Division office in Hobbs or electronically from a Division maintained site.

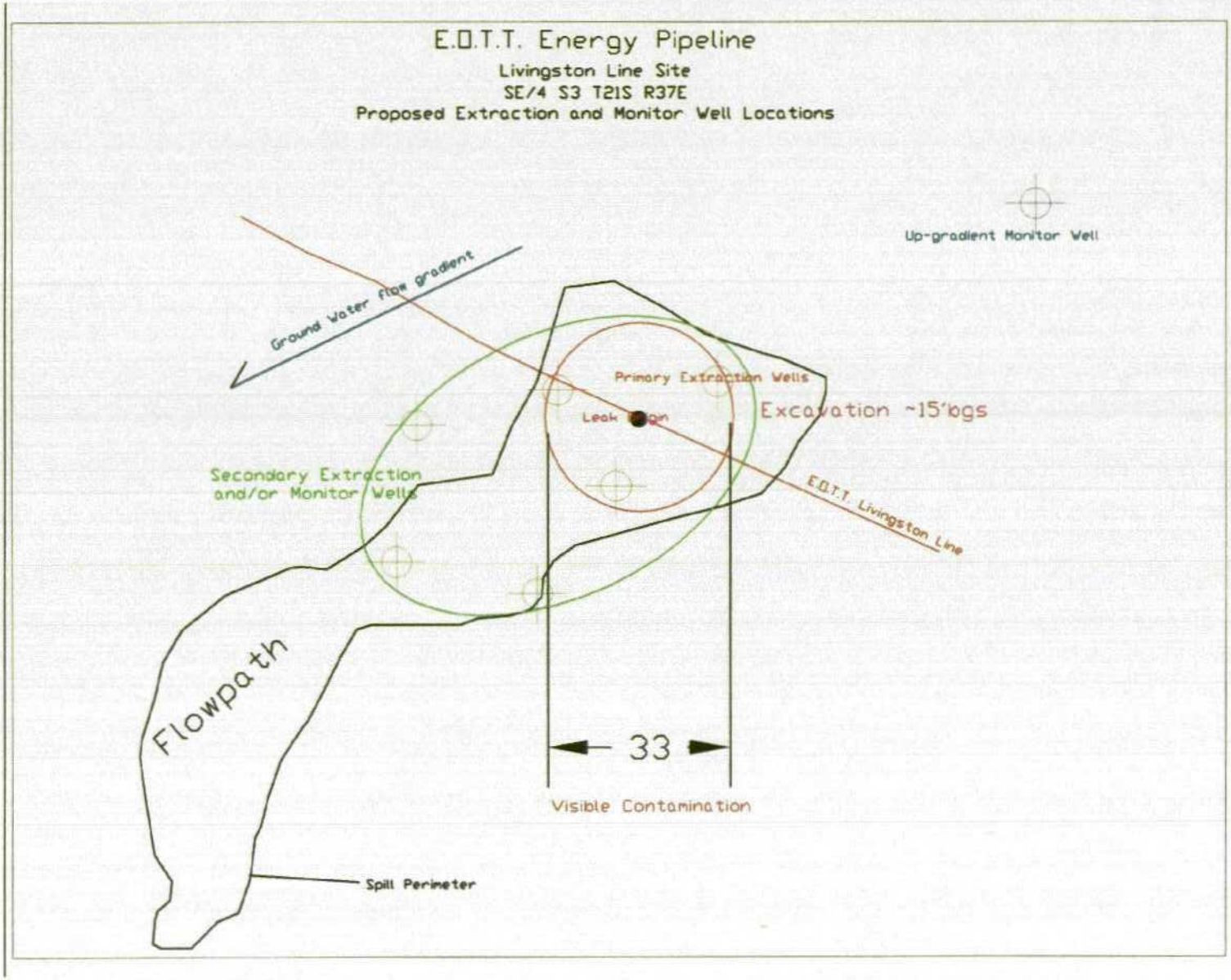
- State that the Director will consider the following comments and requests if received within 30 days after publication of the public notice.
    a) Written comments on the abatement plan
    b) For a Stage 2 abatement plan, written requests for a public hearing that includes reasons why a hearing should be held.
    c) Address and telephone number at which interested persons may obtain further information.

Attachment I: Figures

Figure 1 – Topographical Map of the EOTT Livingston Line Remediation Site
With ground elevation gradient




E.O.T.T.
ENERGY PIPELINE
LIVINGSTON LINE
G.P. SIMS
SE/4 SEC 3
T21S R37E
NE MONITOR WELL
(UP GRADIENT)
PROPOSED LANDSPREAD
SPOILS
EXCAVATION @ 14'BGS
ROAD
SW-MONITOR WELL
NE MONITOR WELL
EOTT PIPELINE
FLOW PATH
TEMPORARY MONITOR WELL
EXCAVATED TO ~6'BGS
NM STATE ROAD 207
N
SCALE 1 IN : 50 FT
0
60.00
FEET
LAT/LONG
WGS 1984
MULTIPLE FILES
10/18/2001


E.O.T.T. Energy Pipeline
Livingston Line Site
SE/4 S3 T21S R37E
Proposed Extraction and Monitor Well Locations
Up-gradient Monitor Well
Ground Water flow gradient
Primary Extraction Wells
Excavation ~15'bgs
Secondary Extraction
and/or Monitor Wells
E.O.T.T. Livingston Line
Flowpath
33
Visible Contamination
Spill Perimeter

Attachment II: Site Photographs


E.O.T.T. Energy Pipeline
Livingston Line Leak
June 5, 2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE LEAK
JUNE 5, 2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE LEAK
JUNE 5, 2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE LEAK
JUNE 5, 2001

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

May 31, 2002

Mr. Frank Hernandez
Enron Transportation Services
5805 East Highway 80
Midland, Texas 79701

RE: LIVINGSTON RIDGE TO HUGH -- G. P. SIMS #2001-11005

Dear Mr. Hernandez:

The New Mexico Oil Conservation Division (OCD) has reviewed Environmental Plus, Inc.'s (EPI) April 2002 "PRODUCT RECOVERY AND GROUND WATER REMEDIATION PLAN TO SUPPORT APPROVAL OF THE NEW MEXICO OIL CONSERVATION DIVISION DISCHAPRGE PLAN" submitted on your behalf. This document contains information regarding the recovery, treatment, and operation and maintenance operations for contaminated ground water in the SW ¼ of the SE ¼ of Sec 3 of T21S, R37E, Lea County, New Mexico.

OCD has reviewed this information and requires additional information before the DP application can be deemed complete. I have spoken to your consultant about some of these items on the telephone.

1) Quality of Discharge
   a) BTEX influent and effluent concentrations must be addressed.
   b) PAH and benzo(a)pyrene influent and effluent concentrations must be addressed.

2) Flow Characteristics and Location of Discharge
   a) Please give me an estimate of the nature of the discharge in terms of days per week and weeks per year and so forth. For example, once the lab results have shown that your 250 bbl tank contents meet the WQCC standards, how long will it take to reinject the water into the ground?
   b) Also, at what depths do you intend to reinject the treated water?

3) With regard to the three or four recovery wells.
   a) What is the maximum suction lift of your eductors?
   b) What size bore hole will your eductors be able to operate in, in case they have to be lowered into bore holes?
   c) What is the size, power, and discharge of the pump circulating water to eductors?
   d) What type of flow meters and system controls will you use to monitor operational flows? Especially, how will you measure how much oil and ground water comes up to the eductors?

[Hernandez, Livingston Ridge 4" Sims, 5/31/02]

4) What are the construction materials and sizes of the oil storage and water storage tanks?

5) What is the size and capacity of the gun-barrel oil/water separation device?

6) For your two aeration tanks, what aeration devices will you use and what are their specifications?

7) Schematic diagrams for process flow, with sizes, flow rates, and other details shown.

8) Operational Plan needs more detail. For example, assume it takes two days to fill a 250 bbl tank. You aerate tank contents while the tank is filling up. Let it aerate for two more days. Sample it on day #4 with a three-day turn-around-time. It takes another two days to reinject the contents into the ground. Filling the tanks only takes place with an operator in attendance.

9) Monitoring of effluent should be discussed and include at least BTEX and TDS and sample type (grab vs composite) and location (tank contents, pump, line, or well-head.)

10) Contingency plans should address secondary containment under the tanks. Flooding and run-on and run-off control should also be addressed.

11) Quarterly reports should be discussed to describe your proposed routine reporting of quantities and qualities of discharges, quantities of oil recovered, and results of monitoring well testing.

Please continue to check your wells for PSH and remove it as you encounter it. Keep records of recovered oil and water.

Please provide our Hobbs District Office with copies of correspondence.

If you have any questions, please contact me at 505-476-3493.

Sincerely,

Randolph Bayliss, P.E.
Hydrologist
Environmental Bureau

cc: Chris Williams
Larry Johnson

PAT SIMS

POST OFFICE BOX 1046 • EUNICE, NEW MEXICO 88231 • PHONE AREA CODE 505 394-3357

TO MR. KEN MARSH

P. O. BOX 388

HOBBS, NM 88241

SUBJECT PROPERTY OF ALINE SIMS, INDIVIDUALLY & AS PERSONAL REP. OF G.P. SIMS

DATE 6-12-01

MESSAGE

TO WHOM IT MAY CONCERN:

THIS LETTER AUTHORIZES MR. KEN MARSH TO ACT AS MY REPRESENTATIVE IN NEGOTIATIONS CONCERNING ENVIRONMENTAL CONTROL, SPECIFICALLY AT THE NORTH CONTINENTAL CARBON PLANT.

Aline Sims

REPLY

DATE

Reference your "Livingston Ridge Project"

You asked about how to proceed if you were to apply for a Discharge Plan (DP.)

A DP would be required if you propose to recover ground water, treat it, and discharge it back onto or into the ground. You have discussed this option in your "STAGE 1 AND STAGE 2 ABATEMENT PLAN FOR THE LIVINGSTON RIDGE TO HUGH – P. SIMS Ref # 2001-11005" dated October 2001.

The information required for a DP or an AP is similar. With either case, you need to submit some additional information. For general guidance, see the attached

- NMED "Ground Water Discharge Permit Application" and
- OCD "Guidelines for the Preparation of Discharge Plans . . ."

When reading through the NMED application, be sure to recall that OCD has the authority to issue those permits.

Not all of the above referenced material is pertinent to your application. I've listed the important information for your project below.

1) Information regarding the discharge of treated ground water, such as
   a) quantity: peak and average flow rates, methods for measuring flow;
   b) quality, before and after treatment: TDS and BTEX;
   c) flow characteristics: hours per day, days per week, month per year; and
   d) locations and depths of the proposed discharges.

Size of gun barrel

2) More specific information regarding the treatment, such as
   a) types of treatment units proposed;
   b) volumetric capacity or area of treatment units;

For example, you've proposed batch remediation for treatment. We ask that you specify the number and volumes of the holding tanks and aeration rates, in cubic feet per minute. Batch treatment processes are often designed in parallel trains, so that one train can be receiving and treating water while the other train is awaiting test results or discharging. Aeration alone often takes quite a while to treat hydrocarbons, and many operators design activated carbon units to polish off the residual.

3) Information on monitoring of both treatment process and ground water, such as
   a) locations and depths of the proposed monitoring wells;
   b) locations of effluent sampling sites;
   c) frequency and type of monitoring for both effluent and ground water.

4) Information regarding operation and maintenance of treatment processes, such as
   a) procedures for making sure the effluent meets standards prior to discharging it back to into the ground;
   b) inspection schedules, to make sure aeration equipment is operating;
   c)

5) Background quality of ground water, in terms of TDS, must be addressed. If you do not have site test results, then information from the nearest well or general information about the aquifer can suffice.

Call to Pat McC 4/26/02

- Eductor: what flows for a) suction and b) venturi (high pressure); what suction lift
- Makes more sense for gunbarrel to handle overflow from recirculating loop, esp if entrained w vapor
- One eductor per well = 3 eductors
- How agitated and aerated? Use floating aerator as in lagoon STP, lawn sprinkler
- Needs to haul out the last 10 feet (from 30' bgs to 40' bgs) of oily soil
- How to handle oily GW? Use oliophilic separator, leave water in the hole, do not pump and treat w/o DP

Call to Pat McC 5/22/02

- Recovered 120 gallons from wells using Grundofs, about 20% oil
- Eductors can suck up 25 feet, install downhole


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE
6/12/2001


6/12/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE EXCAVATION AND
TEMPORARY MONITOR WELL
6/26/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE EXCAVATION AND
TEMPORARY MONITOR WELL
6/26/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE (LOOKING SOUTHEAST)
EXCAVATION BOTTOM
7/20/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE
6/26/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE
6/26/2001


E.O.T.T. ENERGY PIPELINE
LIVINGSTON LINE
STOCK PILED SOIL
6/26/2001

Attachment III: Quality Assurance Plan

1.0 QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Plan (QAP) will ensure the quality and usability of information and data used to support a successful site investigation and subsequent environmental management decisions.

1.1.1 Data Quality Objectives

For analytical information derived from samples, the following quality controls will be documented and verified. If data is within the specifications it will be deemed quantitative and acceptable for use in making environmental management decisions.

- Laboratory data must have extraction recovery for TPH, BTEX and general chemistry parameters ≤30.0%. Or a "%Extraction Accuracy " between 70 and 130%.
- Laboratory data must have <30% Relative Percent Difference or a "%Instrument Accuracy" between 70 and 130%.
- Field headspace analyses must be supported with instrument calibration data and calibration gas certification.

1.1.2 Methodology

Collecting representative site samples and information requires that the sampling and observational processes and procedures be implemented within strict bounds. These control procedures will further ensure the quality of site data and information and are consistent with the EOTT standard operating procedures as referenced in the NMOCD approved "General Work Plan for Remediation of EOTT Pipeline Spills, Leaks, and Releases in New Mexico." Likewise, personnel will implement standard environmental and occupational safety protocols.

1.1.2.1 Borehole Drilling, Lithologic Sampling, Logging, and Abandonment

Boreholes will be located strategically to best determine vertical and horizontal extent of contamination in the vadose zone and ground water. Borelogs will be developed for each boring noting site lithology. Likewise, laboratory samples may be collected to determine more detailed lithologic characteristics, i.e., porosity, transmissivity, etc. Each borehole not developed into a permanent monitor well will be plugged with Sodium Bentonite in accordance with the NMOCD guidelines.

1.1.2.1.1 General Drilling Procedures

The investigation will use the Environmental Plus, Inc. drill rig with hollow stem auger and "thin-wall probe" method of discrete sampling.

1.1.2.1.2 Soil Sampling and Logging

Upon advancing to the desired sampling interval the probe will be extended through the end of the hollow stem auger and pushed into the soil matrix to collect the sample. As the 1.5" X 48" stainless steel probe with a vinyl sampling sleeve is detached from the sampling bar, it will be immediately placed on the rack and logged. A 4 oz. sample will then be decanted into the sample jar for refrigeration and preparation with the remainder (~1 Kg) placed in a 1 gallon Ziplock bag, warmed to ambient ~ 70-80 °F and VOC Headspace concentration measured and recorded. All pertinent information will be recorded on the field borelog data sheet.

1.1.2.1.3 Monitor and Pollution Abatement Well Installation

Boreholes exhibiting contamination from the surface to ground water will be abandoned. Those advanced down gradient of the site for the purpose of plume delineation and found to be unimpacted will be completed and developed as monitor wells. Some boreholes may be temporarily abandoned, i.e., covered but not plugged, for future development as pollution abatement wells. The New Mexico State Engineers Office will be notified in writing of all pollution abatement well installations. All monitor and pollution abatement wells will be installed and developed in accordance with the NMOCD guidelines.

1.1.2.1.4 Ground Water Sampling

Ground water will be sampled within 24 hours of well development using a new and certifiably clean one-liter weighted baler. The water will be immediately decanted into the appropriate containers and prepared for ascension to the laboratory.

1.1.2.1.5 Borehole Abandonment

The boreholes will be filled with a mixture of distilled water and Sodium Bentonite and a wooden marker denoting the borehole number driven into the center of each backfilled hole.

1.1.2.2 Sample Handling

Soil and water samples will be collected and prepared in accordance with accepted ASTM and EPA SW846 methods.

1.1.2.3 Sampling protocols

1. Decontaminate sampling equipment and area with Alconox distilled water after each sample.
2. Prepare samples and refrigerate as soon as practicable.

Duplicates or blanks may be submitted to the laboratory to establish reproducibility and identify laboratory contamination, respectively.

1.1.2.4 Sample Containers

Laboratory and field analyses of soil and water require specific containers and are listed in the matrix below.

	TPH	BTEX	VOC Headspace	Metals	PAH	General Chemistry
Soil	4 oz. Jars with Teflon seal	4 oz. Jars with Teflon seal	1-gallon Ziplock® bags			
Water	1 liter amber glass w/HCL	2-40 ml VOA vials w/ HCL		16 oz. Plastic w/ 1ml HNO_3	1 liter Amber Glass	1 liter Plastic

1.1.2.5 Sample Custody

All analytical request forms will be completed and signatured by EPI as sampler. EPI personnel will ascension the samples to the AnalySys, Inc. sample-receiving personnel under chain-of-custody signature.

1.1.2.6 Quality Control Samples

Quality control samples will be analyzed to ensure data quality.

1.1.2.6.1 Field Blank

A field blank for soil or water is not deemed necessary.

1.1.2.6.2 Equipment Blank

None will be collected.

1.1.2.6.3 Field Duplicate or Co-located Samples

For water and soil samples, one duplicate or co-located sample will be collected for analysis every 10^{th} sample.

1.1.2.6.4 Trip Blank

A laboratory prepared trip blank will accompany each water sample batch.

1.1.2.7 Field Measurements

The VOC Headspace concentration for each soil sample will be measured. The instrument used will be the Ultra-Rae PID manufactured by Rae Systems. The calibration gas will be 100.0 ppm isobutylene standard from Scott Specialty Gases, Freemont, Colorado.

1.1.2.7.1 Equipment Calibration and Quality Control

The PID will be calibrated at least 3 times daily and checked with the calibration gas hourly. When a check with the calibration gas indicates the instrument reading is 10 ppm too high or low it will be calibrated. Variation in the daytime ambient temperature will cause the variation.

1.1.2.7.2 Equipment Maintenance and Decontamination

All sampling and survey equipment will be routinely decontaminated between samples. Nitrile gloves will be worn and changed with each sampling iteration.

1.1.2.7.3 Ground Water Level Measurements

Ground water levels will be taken with an accurate water level meter at each borehole where ground water is encountered and may require the use of an interface meter. Levels will be recorded as "feet below ground surface" to the nearest ".1 ft."

1.1.2.8 Analyses

Soil and ground water will be analyzed in accordance with the following EPA Methods.

The analytical suite for soil samples will include;

- TPH (EPA method 8015M)
- BTEX (EPA method 8020 or equivalent)
- SPLP for selected samples

The analytical suite for water samples will include:

- TPH (EPA method 8015B)
- BTEX (EPA method 8021B)

- Total Dissolved Solids (EPA method 150.1)
- PAH (EPA method 8270)

1.1.2.9 Sample Identification

Sample identification numbers will be designated as follows;

Site: EOTT LL	Geoprobe	Borehole #	Interval bgs	Qualification: Cutting/Probe Sample
ELL	GP	1	20'	C or P

Example: ELLGP1-20C

1.1.2.10 Data Evaluation

All data will be reviewed based on the Data Quality Objectives in section 3.8.1.

Attachment IV: Site Information and Metrics Form

Site Information and Metrics

SITE: Livingston Line 4"	Assigned Site Reference #: 2001-11005
Company: EOTT Energy Pipeline	
Company Street Address:5805 E. Highway 80, Midland, Texas 79701	
Company Mailing Address: P.O. Box 1660	
Company City, State, Zip: Midland, Texas 79702	
Company Representative: Frank Hernandez	
Company Representative Telephone: 915.556.0190	
Company Telephone: 915.684.3451 Fax: 915.687.2713	
Fluid volume released (bbls) = 6 bbls with 0 bbls recovered	
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)	
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)	
Leak, Spill, or Pit (LSP) Name: Livingston Line 4"	
Source of contamination: Pipeline Leak	
Land Owner, i.e., BLM, ST, Fee, Other: G.P. Sims	
LSP Dimensions: affected area = 150' X 15'	
LSP Area = 2400 ft^2	
Location of Reference Point (RP):	
Location distance and direction from RP:	
Latitude: 32° 30' 12N	
Longitude: 103°08'55"W	
Elevation above mean sea level: ~ 3,432 amsl	
Feet from South Section Line	
Feet from West Section Line	
Location- Unit or ¼¼ = SE¼	
Location- Section = 3	
Location- Township = 21S	
Location- Range = 37E	
Surface water body within 1000 ' radius of site: None	
Domestic or Commercial water wells within 1000' radius of site: Key Energy Water Station	
Agricultural water wells within 1000' radius of site: None	
Public water supply wells within 1000' radius of site: None	
Depth from land surface to ground water (DG): ~35' bgs	
Depth of contamination (DC): The lower most contamination >100 mg/Kg occurs ground water interface	
Depth to ground water (DG – DC = DtGW) 0.0' bgs	

1. Ground Water	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*
Ground water Score = 20	*Wellhead Protection Area Score= 20*	*Surface Water Score= 0*
Site Rank (1+2+3) = 20+20+0 = 40 points		

Total Site Ranking Score and Acceptable Concentrations

Parameter	**>19**	10-19	0-9
Benzene[1]	**10 ppm**	10 ppm	10 ppm
BTEX[1]	**50 ppm**	50 ppm	50 ppm
TPH	**100 ppm**	1000 ppm	5000 ppm

[1]100 ppm field VOC headspace measurement may be substituted for lab analysis

APPENDIX