1R - 401

REPORTS

DATE:

8/2002

DUKE C-LINE 50602

SITE CHARACTERIZATION AND CLOSURE PROPOSAL FOR SOIL SUPPORTED BY VADSAT RISK ASSESSMENT

UL-O SW¼ of the SE¼, Section 31, T20S, R37E
Latitude 32°31'29.689"N - Longitude 103°17'11.654"W
~3 miles northwest of Oil Center
Lea County, New Mexico

AUGUST 2002

PREPARED BY

ENVIRONMENTAL PLUS, INC.
EUNICE, NEW MEXICO

Duke Energy Field Services

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1.0 SUMMARY

Duke Energy Field Services contracted Environmental Plus, Inc. (EPI) of Eunice, New Mexico to delineate the extent of pipeline fluid contamination and remediate the C-Line 50602 site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993). The initial form C-141 submitted to the NMOCD by DUKE reported 70 barrels (bbls) of pipeline fluid released with a recovery of 50 bbls. The C-Line is part of the DUKE gas gathering system and as such is exempt from the EPA Resource Conservation and Recovery Act 40 CFR (RCRA) Subtitle C hazardous waste characterization requirements. The ground water depth at the site is 93 feet below ground surface ('bgs) and is based on water level measurements of a temporary monitor well installed adjacent to the leak origin. An abandoned windmill well bore at a similar elevation approximately 1,075 feet to the southeast was measured to have a water level of 114'bgs. Site ranking thresholds for the "Constituents of Concern" (CoCs) are:

Soil from the surface to 43'bgs

- 1000 mg/Kg = Total Petroleum Hydrocarbon EPA method 8015m (TPH^{8015m})
- 10 mg/Kg = Benzene
- 50 mg/Kg = BTEX (mass sum of Benzene, Toluene, Ethyl Benzene, and m, o, & p Xylenes)
- 250 mg/Kg = Chloride

Soil from 43'bgs to 93'bgs

- 100 mg/Kg = Total Petroleum Hydrocarbon EPA method 8015m (TPH^{8015m})
- 10 mg/Kg = Benzene
- 50 mg/Kg = BTEX (mass sum of Benzene, Toluene, Ethyl Benzene, and m, o, & p Xylenes)
- 250 mg/Kg = Chloride

All soil contaminated above these thresholds down to 18'bgs has been excavated and remediated to acceptable CoC levels. A total contaminated soil volume of approximately 3,868 cubic yards (yd^3) of soil was removed with approximately 2,707 yd^3 disposed of in the New Mexico Oil Conservation Division (NMOCD) approved and permitted South Monument Solid Waste Management Facility #NM-01-0032 with the remainder, approximately 1,161 yd^3 blended with clean soil and mechanical aerated by shredding.

The release occurred in the 8" steel C-Line which is the west most pipeline in a 3 line gallery. The center line was inactive while the east most 20" steel line was in use. The decision was made, after excavating the west leak origin to approximately 16'bgs, to advance and sample a soil boring (BH1 also referred to as CBH) beneath the origin to determine the vertical extent. Volatile Organic (VOC) headspace data collected with a calibrated Photoionization Detector (PID) indicated the vertical extent at this location to be 51'bgs. VOC headspace data from the west sidewall were all <100 ppm and deemed acceptable. In an effort to establish the eastward horizontal extent of contamination, a second borehole (BH2 also referred to as EBH) was advanced and sampled approximately 26 feet east of the leak origin and 9 feet east of the 20" line. Samples were collected at 5' intervals and VOC headspace analyzed down to 90'bgs. The 5'bgs and 80'bgs samples were <100 ppm VOC with all others down to the saturated zone >100 ppm VOC with the highest reading of 1,246 ppm occurring in the 45'bgs sample. The borings were advanced with a hollow stem auger and "AW" rod and samples collected discretely using a decontaminated soil probe with a clean vinyl sampling sleeve. A temporary monitoring well was installed in BH2 to verify ground water impact. After development, product was measured at 89.5'bgs with ground water at 92.8'bgs, i.e., 3.3 feet

of product. Total depth of the well is 94.4'bgs. Duke immediately notified the Hobbs and Santa Fe offices of the NMOCD of the ground water impact. It was concluded, based on information from BH2, that a historical leak had occurred at the site. Subsequently, the three lines were shut-in and looped around the site and the pipe removed to accommodate safe removal of contaminated soil. An area of approximately 6,475 square feet (ft^2) was excavated down to 18'bgs and the horizontal impact delineated.

The hydrocarbon source term at this site is an extremely volatile and odorous condensate with a specific gravity of 0.6944. Because of the volatility of the soil samples and the high ambient temperatures during sampling, sample quality was compromised, i.e., laboratory results showed only nominal CoC concentrations above the instrument detection limits for samples with VOC headspace concentrations >1000 ppm. For this reason site delineation relies primarily on field VOC headspace analyses.

A conservatively estimated, 3,489 cubic yards (yd^3) remains in the subsurface and is represented by a column approximately 22' in diameter and 75' long. It is proposed to isolate the remaining source term with an impermeable barrier constructed of dense compactable red clay with a minimum permeability of $1x10^{-5}$ cm/sec. The barrier will extend 8 to 10 feet beyond the column perimeter at the 18'bgs interval and be at least 1 foot thick. The barrier will be installed in 6-inch lifts and compacted and tested to verify compaction to at least 95% of its' Proctor density. Installation at the 18'bgs interval can be done safely and will serve to protect the engineered barrier from erosion and human intrusion. To support this alternative, a conservative risk/exposure assessment was conducted using the VADSAT Version 3.0, A Monte Carlo Model for Assessing the Effects of Soil Contamination on Groundwater Quality, developed by: Environmental Systems and Technologies Inc., Blacksburg, Virginia for the American Petroleum Institute in 1995. The analytical information collected and the viable and supportive VADSAT risk/exposure assessment supports approval of this closure proposal addressing soil contamination at the Duke C-Line 50602 site. Following implementation of this proposal a thorough ground water investigation will be proposed and implemented. Based on the information collected during the ground water investigation, a viable ground water remediation plan will proposed and implemented.

2.0 Site Description

The property is owned by State of New Mexico and located ~7 miles south of Monument, Lea County, New Mexico. Duke secured Right of Entry Permit #669. The DUKE site is known as the "C-Line 50602." An abandon tank battery and pit feature are located approximately 200 feet northeast of the site.

2.1 Historical Use

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

2.2 Legal Description

The legal description of the site is Unit Letter - O SW¼ of the SE¼ Section 31, T20S, R37E at latitude 32°31'29.689"N and longitude 103°17'11.654"W. Site elevation is ~3,540 feet above mean sea level.

2.3 Photographic documentation

Photographs are provided in Attachment II.

2.4 Ecological Description

The area is typical of the Upper Chihuahuan Desert Biome consisting primarily of hummocky sand dunes interspersed with Honey Mesquite (Prosopis glandulosa), Harvard Shinoak (Querqus harvardii), and typical desert grasses. Mammals represented include Orrd's and Merriam's Kangaroo Rat, Deer Mouse, White

Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, Pronghorn Antelope, 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 surface trends to the southeast.

3.0 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)

Acceptable thresholds for contaminants of concern (CoCs), 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 may be developed.

3.1 Area Ground Water Levels

The locally measured water levels are consistent with those on record with the New Mexico State Engineers Office and occurs at 93 'bgs. An abandoned windmill well 1,075 feet southeast of the site has a measured water level of 114'bgs.

3.2 Depth to Ground Water Calculation

The NMOCD requires the site be ranked to determine which soil TPH^{8015m}, Benzene, and BTEX thresholds 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 ~93.0'bgs. The lower most contamination occurs conservatively at 93'bgs. The calculated NMOCD depth to ground water is essentially 0.0' bgs.

3.3 Ground Water Gradient

The ground water dip/gradient is generally to the southeast according the USGS Ground Water Report #6, Nicholson and Clebsch, 1961.

3.4 Wellhead Protection Area

There are no water wells within 200 horizontal feet of the site.

3.5 Distance to Nearest Surface Water Body

None present.

3.6 Identification of Remedial Action Levels

Remedial goals for soil in this area are determined in accordance with NMOCD Guidelines. The NMOCD depth to ground water is calculated to be 0.0'bgs.

3.6.1 Site Ranking

The area has the following score and site ranking;

NMOCD Depth to Groundwater / 50 to 99' = 10 (20 for soils within 50 feet)
Wellhead Protection Area / >200' = 0
Distance to Surface Water Body / >200' = 0
Site Ranking = 10 (20)

3.6.2 Remedial Action Levels

The remedial action objectives for soil at this site according to the NMOCD guidelines are as follows.

Total Site Ranking Score and Acceptable Concentrations			
Parameter	**>19 (43' to 93'bgs)**	**10-19 (surface to 43'bgs)**	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			

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

- TPH – no standard
- Benzene – 0.01 mg/L
- Toluene – 0.75 mg/L
- Ethyl Benzene – 0.75 mg/L
- m, p, o-Xylene – 0.62 mg/L
- Chloride – 250 mg/L

4.0 SITE DELINEATION

The release occurred in the 8" steel C-Line which is the west most pipeline in a 3 line gallery. The center line was inactive while the east most 20" steel line was in use. Initially, delineation strategy was to sample the excavation, however, at 16'bgs it was decided to advance and sample a borehole immediately beneath the leak origin and east of the 20" line to determine horizontal impact.

4.1 LEAK ORIGIN EXCAVATION

The decision was made, after excavating the west leak origin to approximately 16'bgs, to advance and sample a soil boring (BH1 also referred to as CBH) beneath the origin to determine the vertical extent. Volatile Organic (VOC) headspace data collected with a calibrated Photoionization Detector (PID) indicated the vertical extent at this location to be 51'bgs. VOC headspace data from the west sidewall were all <100 ppm and deemed acceptable. In an effort to establish the eastward horizontal extent of contamination, a second borehole (BH2 also referred to as EBH) was advanced and sampled approximately 26 feet east of the leak origin and 9 feet east of the 20" line. Samples were collected at 5' intervals and VOC headspace analyzed down to 90'bgs. The 5'bgs and 80'bgs samples were <100 ppm VOC with all others down to the saturated zone were >100 ppm VOC with the highest reading of 1,246 ppm occurring in the 45'bgs sample. The borings were advanced with a hollow stem auger and "AW" rod and samples collected discretely using a decontaminated soil probe with a clean vinyl sampling sleeve. A temporary monitoring well was installed in BH2 to verify ground water impact. After development, product was measured at 89.5'bgs with ground water at 92.8'bgs, i.e., 3.3 feet of product. Total depth of

the well is 94.4'bgs. Duke immediately notified the Hobbs and Santa Fe offices of the NMOCD of the ground water impact. It was concluded, based on information from BH2, that a historical leak had occurred at the site. Subsequently, the three lines were shut-in and looped around the site and the pipe removed to accommodate safe removal of contaminated soil. An area of approximately 6,475 square feet (ft^2) was excavated down to 18'bgs and the horizontal impact delineated. The borehole sampling and excavation maps are included in Attachment I. Excavation sidewall and bottom samples were collected on June 10, 2002. The VOC headspace data and laboratory reports are included in Attachment IV along with charts and summaries.

The hydrocarbon source term at this site is an extremely volatile and odorous condensate with a specific gravity of 0.6944. Because of the volatility of the soil samples and the high ambient temperatures during sampling, sample quality was compromised, i.e., laboratory results showed only nominal CoC concentrations above the instrument detection limits for samples with VOC headspace concentrations >1000 ppm. For this reason site delineation relies primarily on VOC headspace analyses.

4.2 Excavation Sidewalls and Bottom

On June 10, 2002, excavation sidewall and bottom 5-point composite samples were collected. Laboratory analysis of the North, South, East, and West sidewall samples were all below the instrument detection limits for BTEX and only nominal detection for TPH^{8015m}. A VOC headspace survey of grab samples from the excavation bottom indicates that the top of the contaminated soil is approximately 20' in diameter and centered around BH2. Chloride analysis of selected samples were all <250 mg/Kg. All analytical results are summarized with the original laboratory reports in Attachment IV.

5.0 Soil Remediation

The excavated soil was processed through a shredder to mechanically aerate and promote volatilization of the hydrocarbons. To verify effectiveness, on June 4, 2002, grab samples of the excavated soil and the processed soil were collected and sent to the lab for analysis. The analytical results indicate that the process reduced the TPH^{8015m} concentration in the soil from 897 mg/Kg to <10.0 mg/Kg but more importantly reduced the BTEX from an unacceptable 85.940 mg/Kg to an acceptable 0.485 mg/Kg.

6.0 Ground Water Remediation

Ground water is known to be impacted at the site, to what extent will be determined during implementation of a ground water investigation plan to be submitted to the NMOCD for review and consensus. A ground water remediation plan will be developed based on the investigation information and implemented upon approval by the NMOCD.

7.0 Closure Proposal for Site Soil

Approximately 3,489 cubic yards (yd^3) of contaminated soil remains in the subsurface and is represented conservatively by a vertical column/pipe approximately 22' in diameter and 75' long. It is proposed to isolate the remaining source term with an impermeable barrier constructed of dense compactable red clay with a minimum permeability of $1x10^{-5}$ cm/sec. The barrier will extend 8 feet beyond the column perimeter at the 18'bgs interval and be at least 1 foot thick. The barrier will be installed in 6-inch lifts and compacted and tested to verify that it has been compacted to at least 95% of its' Proctor density. Installation at the 18'bgs interval can be done safely and will serve to protect the engineered barrier from erosion and human intrusion for a term sufficient to allow natural attenuation of the CoCs to acceptable levels. After the barrier is installed and tested to be acceptable, the excavation will be backfilled with the remediated soil. Prior to being placed in the excavation, a Headspace Volatile Organic Constituent (VOC)

analyses will be conducted on a composite sample from each 100 cubic yard batch. Acceptable Headspace VOC readings will be 100 ppm or less. To support this alternative, a conservative risk/exposure assessment was conducted using the VADSAT Version 3.0, A Monte Carlo Model for Assessing the Effects of Soil Contamination on Groundwater Quality, developed by: Environmental Systems and Technologies Inc., Blacksburg, Virginia for the American Petroleum Institute in 1995. The analytical information collected and the viable and supportive VADSAT risk/exposure assessment supports approval of this closure proposal addressing residual soil contamination at the Duke C-Line 50602 site.

8.0 RISK/EXPOSURE ASSESSMENT

To support and justify the closure proposal in Section 7.0, a conservative risk/exposure assessment was conducted using the VADSAT Version 3.0, A Monte Carlo Model for Assessing the Effects of Soil Contamination on Groundwater Quality, developed by: Environmental Systems and Technologies Inc., Blacksburg, Virginia for the American Petroleum Institute in 1995.

8.1 CONTAMINATED SOIL DISTRIBUTION

It was determined that the contaminated soil column was approximately 22 feet in diameter at the 18'bgs interval, i.e., bottom of the excavation and extends to 93'bgs, the interface between the vadose and saturated zones, and represents approximately 3,489 yd^3.

8.2 ENGINEERED BARRIER

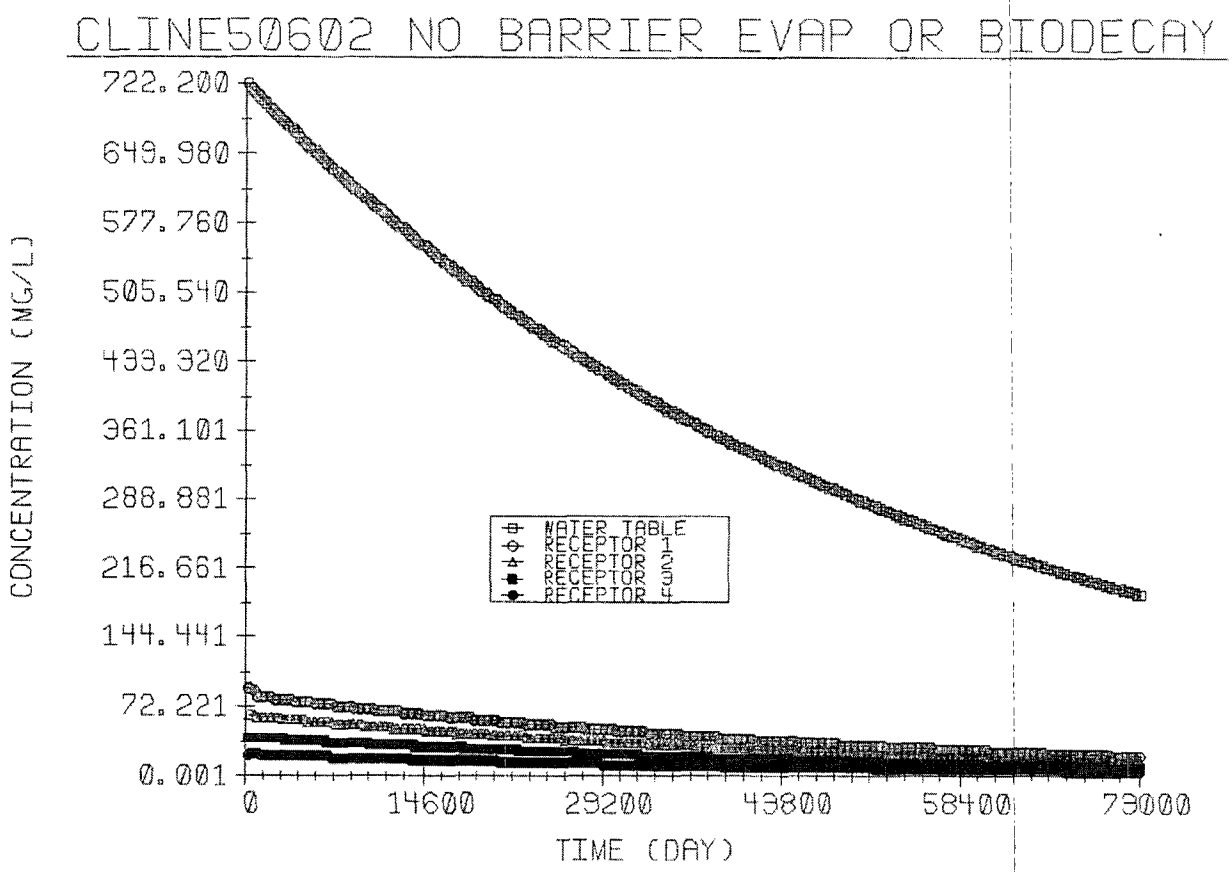
The proposed compacted clastic clay barrier will extend at least 8 feet beyond the contaminated soil perimeter in the bottom of the excavation and be at least 12" thick following compaction and be installed in two 6-inch layers. The oversized barrier will obviate transverse migration of the hydrocarbon source term. The clay will have a minimum permeability of $1x10^{-5}$ cm/sec. Acceptable compaction must be greater than 95.0% of its Proctor Density. The barrier will be installed from the 17-18'bgs interval and will be sufficiently isolated to ensure that the barrier will not be eroded or penetrated inadvertently by human activity. A conservative ground water risk/exposure assessment was conducted to demonstrate the effectiveness of the clay barrier in preventing future ground water impact by isolating the remaining hydrocarbon source term and interrupting the vertical migration pathway. Refer to diagram in Attachment I.

8.3 CONSERVATIVE MODEL INPUTS

The Monte Carlo probabilistic method was not used to simulate transport and subsequent ground water impact/exposure; rather, simulations were conducted deterministically. Input parameters/variables are included as Attachment V. The most conservative hydrogeologic parameters, i.e., sand and gravel lithology that favors source term transport, were used in the simulations. Likewise, the "net infiltration" rate for the area was inputted at +0.001 m/day, even though, in the area it is a negative value, i.e., evaporation exceeds precipitation. Also, Benzene, being the most mobile of the BTEX compounds, i.e., Benzene, Toluene, Ethyl Benzene, Xylenes was inputted as the chemical species at a value equal to the mass sum of the BTEX compounds. This approach also serves to make the simulations more conservative. Below are the outcome charts for the different scenarios using a Benzene source term of 1,246 mg/Kg, the highest VOC headspace concentration, assumed to be BTEX, delineated on site. Model "receptors" for Benzene impact from the remaining contaminated soil column were selected to be the ground water interface and 1, 2, and 3 meters into the ground water.

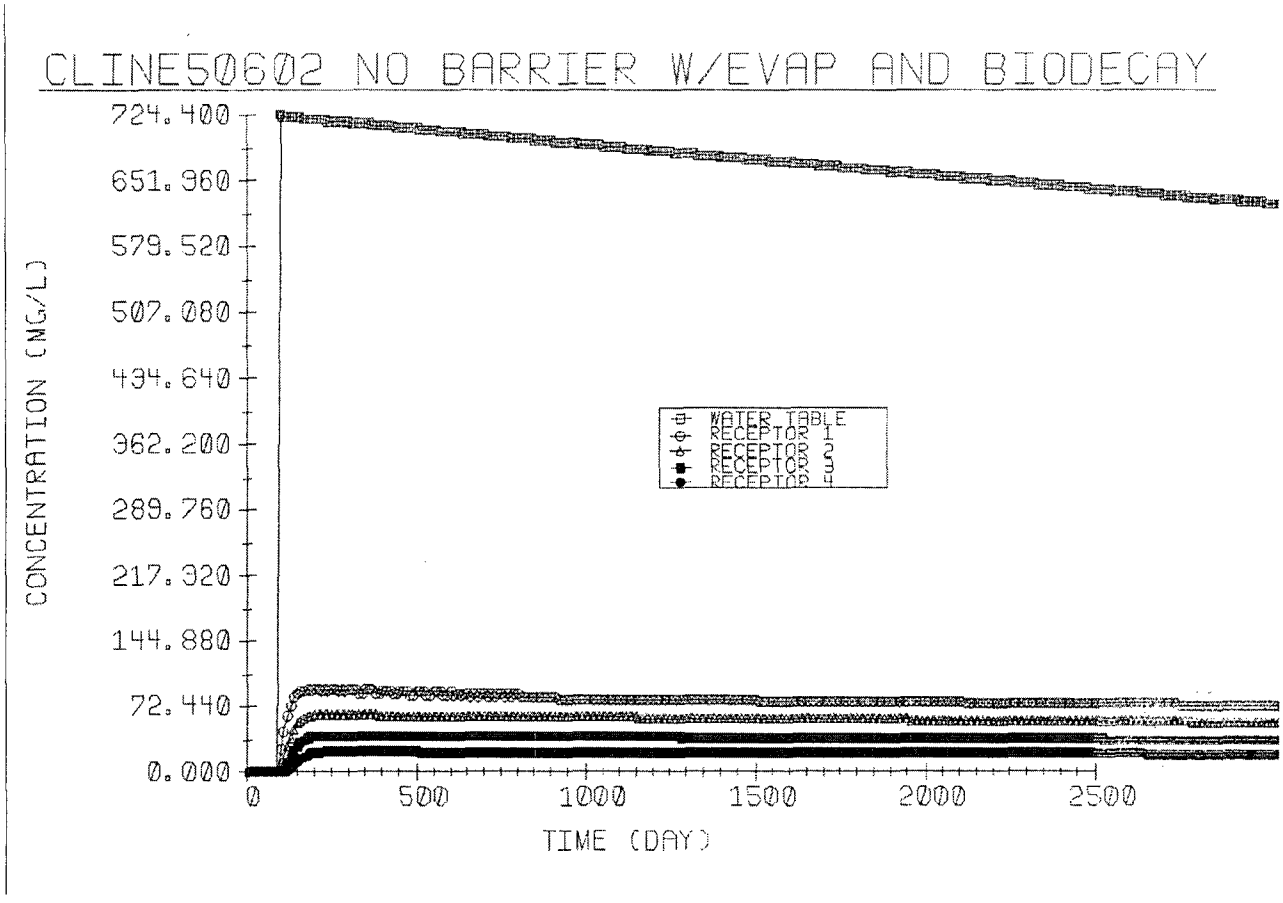
8.4 Simulation I: No Barrier, Evaporation, or Biodecay

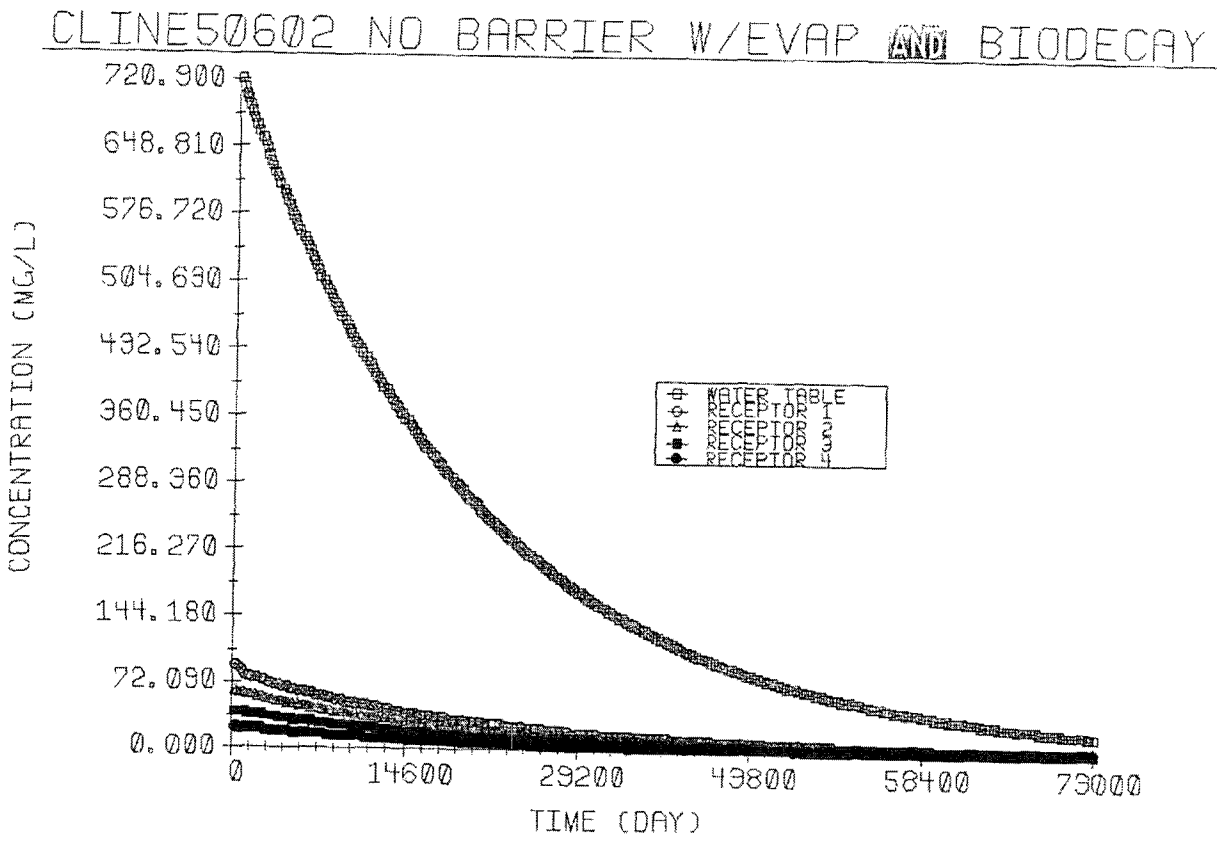
This simulation is provided to show the models' ability to show impact and is the most conservative but unrealistic, not allowing for natural attenuation of the source term through evaporation or biodecay. The charts below illustrate that ground water will be impacted within about 150 days at a maximum level of 722.200 mg/L within approximately 150 days and not disperse to acceptable levels in 200 years. This model illustration also suggests that contamination decreases exponentially from the ground water surface vertically to 3 meters into the saturated zone.



8.5 Simulation II: No Barrier with Evaporation and Biodecay

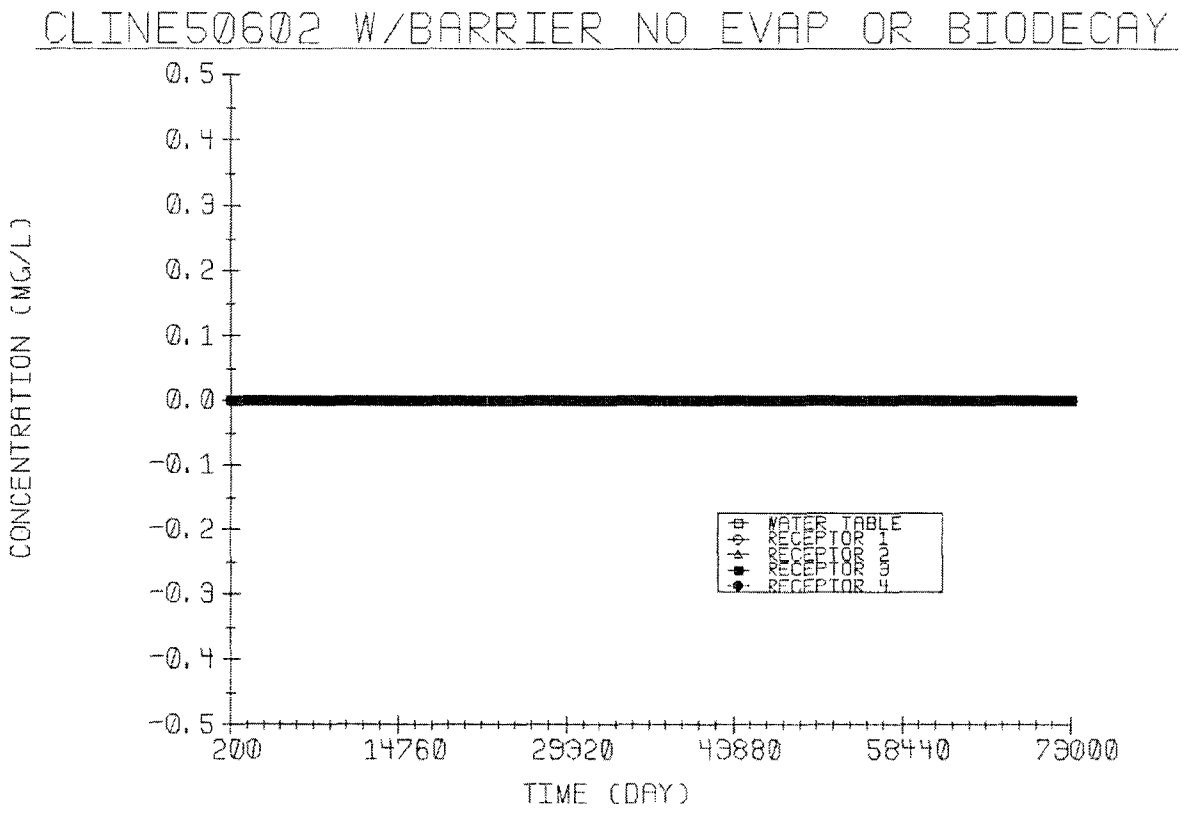
This simulation does not install an engineered barrier but does allow for natural attenuation through evaporation and biodecay of the source term and illustrates the gradual natural attenuation of the source term. The ground water will be impacted by Benzene at 724.400 mg/L in approximately 150 days but will however attenuate to acceptable levels in approximately 200 years. The first illustration is for the first 7 years and the second extends the model output through 200 years. Again, an exponential decrease in Benzene impact is observed at points beneath the surface of the saturated zone.




CLINE50602 NO BARRIER W/EVAP AND BIODECAY
CONCENTRATION (MG/L)
720.900
648.810
576.720
504.630
432.540
360.450
288.360
216.270
144.180
72.090
0.000
0
14600
29200
43800
58400
73000
TIME (DAY)
WATER TABLE
RECEPTOR 1
RECEPTOR 2
RECEPTOR 3
RECEPTOR 4

8.6 Simulation III: With Engineered Clay Barrier with no Evaporation or Biodecay

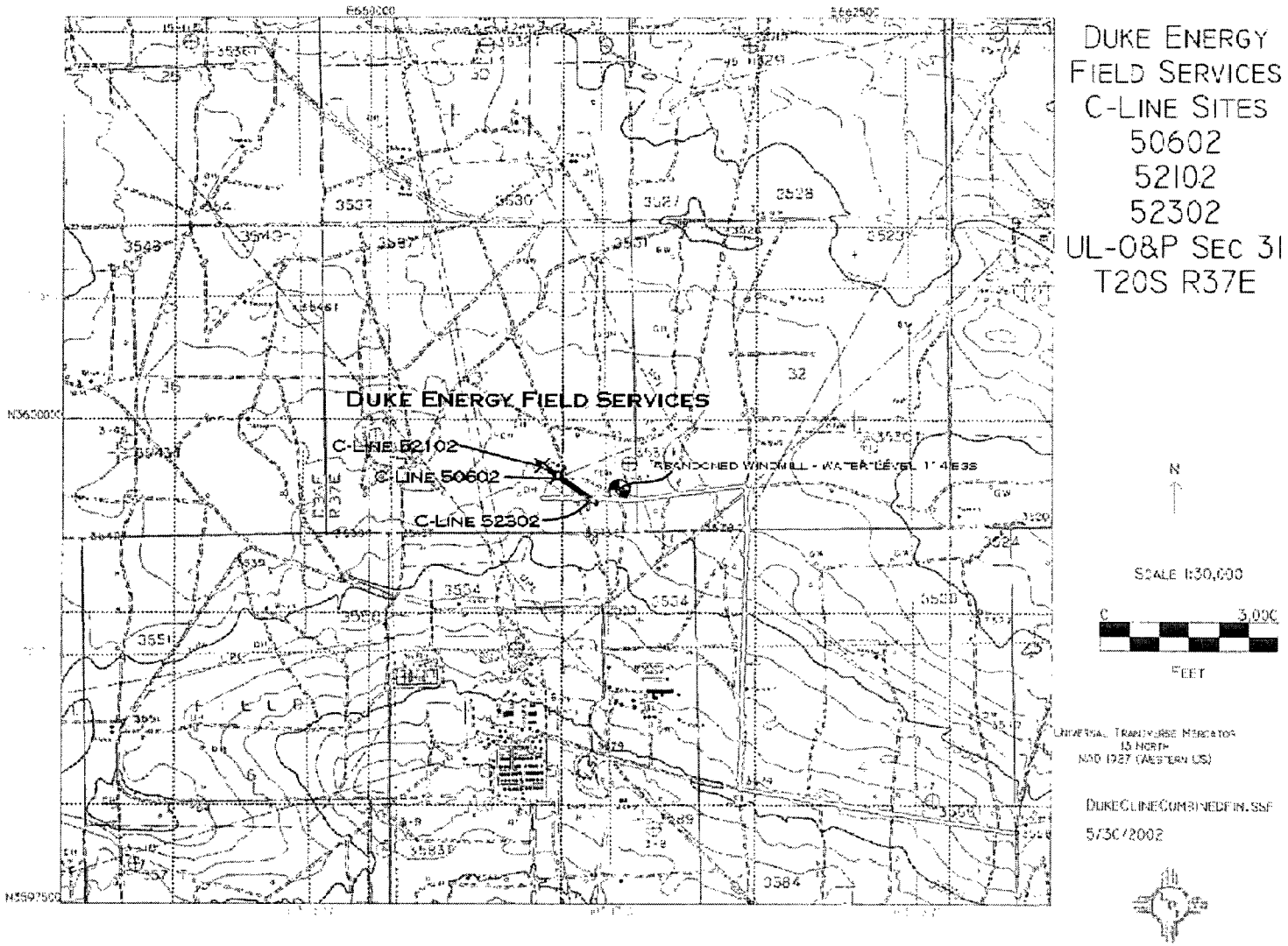
This simulation illustrates that, even with the conservative input parameters and not allowing for natural attenuation through evaporation and biodecay that the barrier will be effective in eliminating the vertical transport mechanism and adequately isolate the remaining source term.



9.0 Conclusion

The computer simulations illustrate that the installation of an engineered barrier will adequately protect ground water from future impacts by permanently interrupting the vertical transport mechanism and serve to isolate the hydrocarbon source term from the environment for a duration sufficient to allow natural attenuation to below acceptable CoC thresholds.

Attachment I: Figures and Maps


DUKE ENERGY FIELD SERVICES
C-LINE 52102
C-LINE 50602
C-LINE 52302
ABANDONED WINDMILL - WATER LEVEL 17.41 FEET
DUKE ENERGY FIELD SERVICES
C-LINE SITES
50602
52102
52302
UL-O&P SEC 31
T20S R37E
N
SCALE 1:30,000
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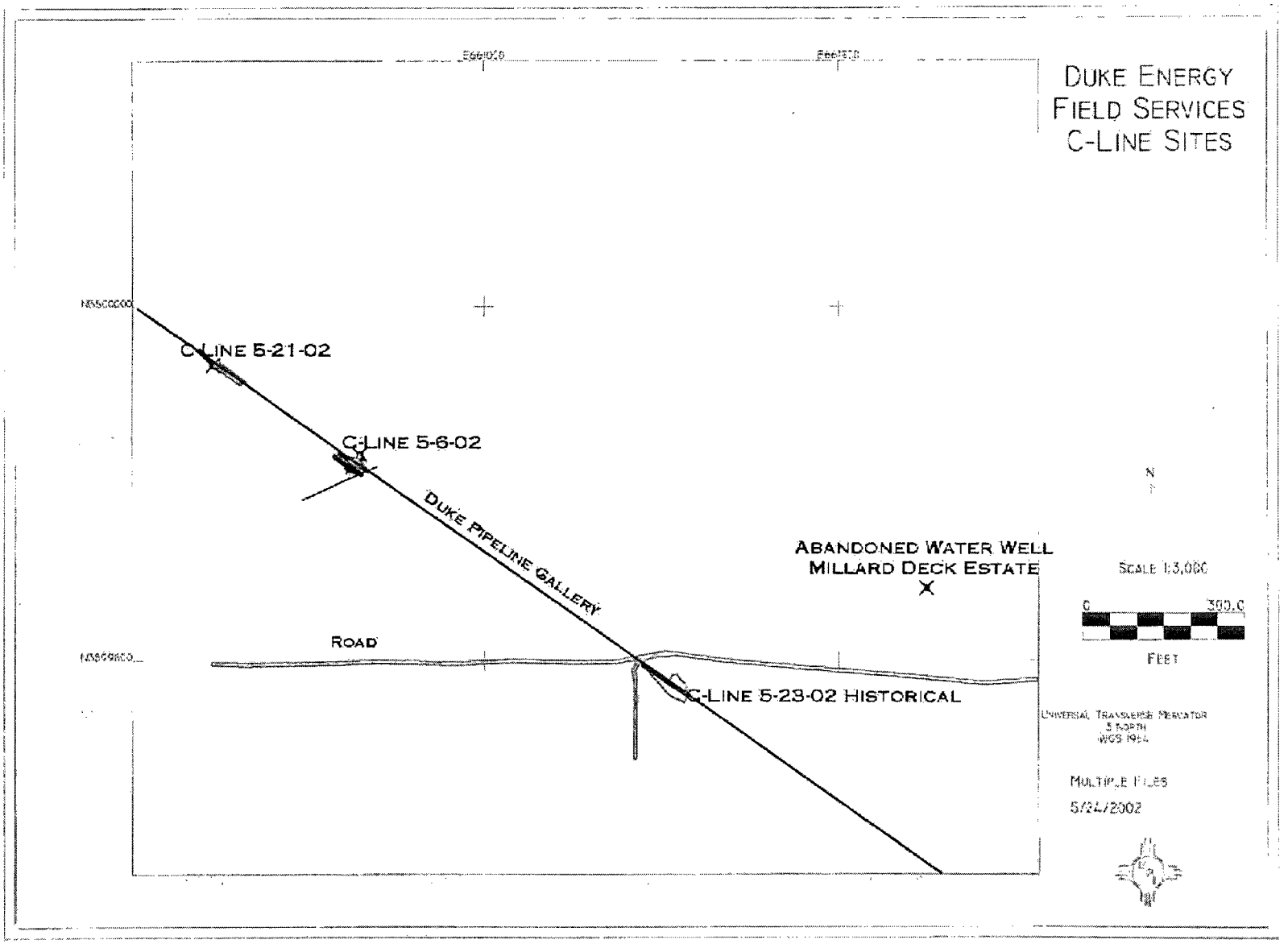
NAD 1927 (WESTERN US)
DUKECLINECOMBINEDFIN.SSF
5/30/2002


DUKE ENERGY
FIELD SERVICES
C-LINE SITES
C-LINE 5-21-02
C-LINE 5-6-02
DUKE PIPELINE GALLERY
ABANDONED WATER WELL
MILLARD DECK ESTATE
ROAD
C-LINE 5-23-02 HISTORICAL
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FEET
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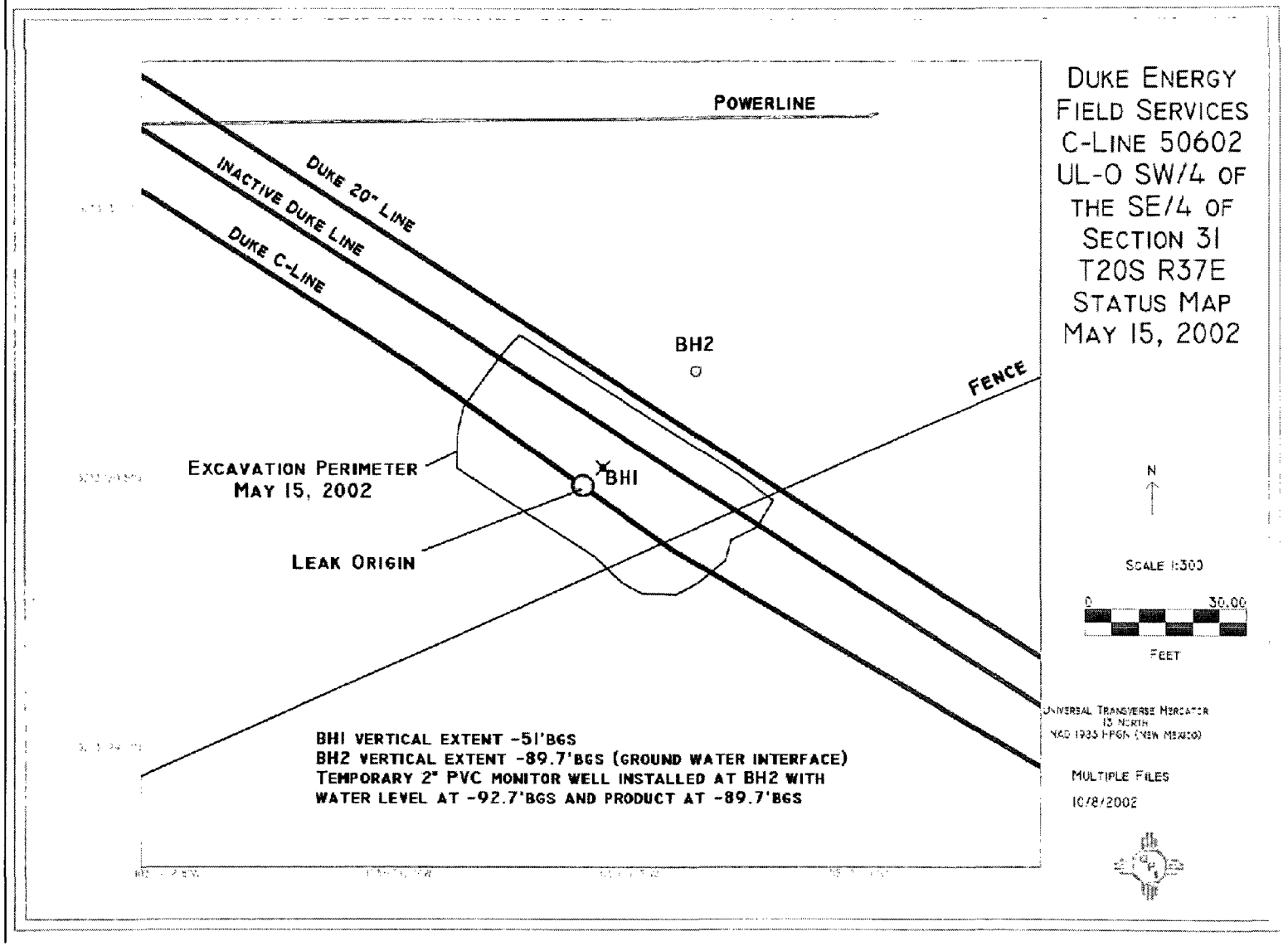
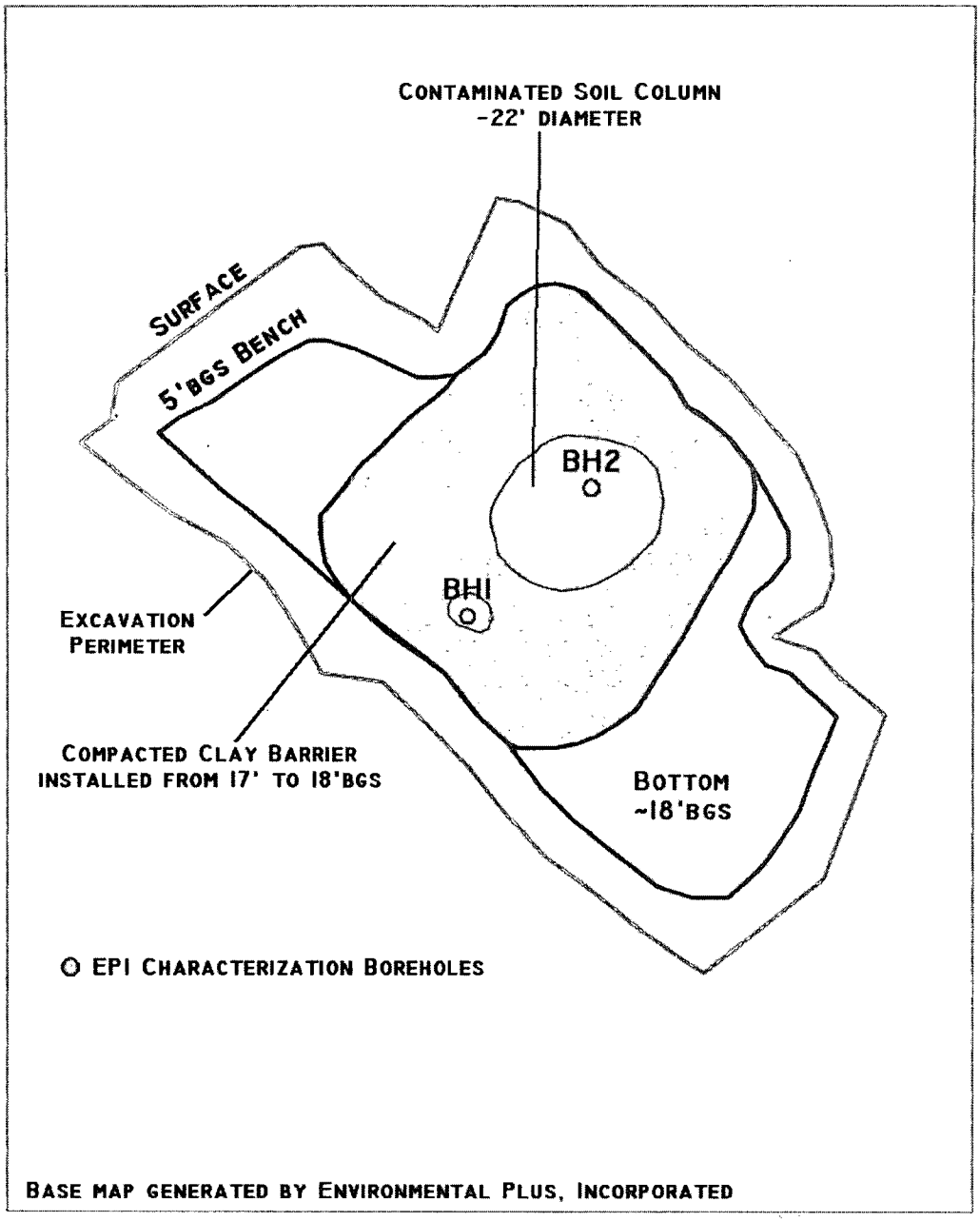
5 NORTH
WGS 1984
MULTIPLE FILES
5/22/2002


POWERLINE
DUKE 20" LINE
INACTIVE DUKE LINE
DUKE C-LINE
BH2
FENCE
EXCAVATION PERIMETER
MAY 15, 2002
BH1
LEAK ORIGIN
BH1 VERTICAL EXTENT -51'BGS
BH2 VERTICAL EXTENT -89.7'BGS (GROUND WATER INTERFACE)
TEMPORARY 2" PVC MONITOR WELL INSTALLED AT BH2 WITH
WATER LEVEL AT -92.7'BGS AND PRODUCT AT -89.7'BGS
DUKE ENERGY
FIELD SERVICES
C-LINE 50602
UL-O SW/4 OF
THE SE/4 OF
SECTION 31
T20S R37E
STATUS MAP
MAY 15, 2002
N
SCALE 1:300
0
30.00
FEET
UNIVERSAL TRANSVERSE MERCATOR
13 NORTH
NAD 1983 FFGN (NEW MEXICO)
MULTIPLE FILES
10/8/2002



DUKE ENERGY FIELD SERVICES
C-LINE 50602 EXCAVATION/BOREHOLE MAP
SW/4 OF THE SE/4 UL-O SECTION 31 T20S R37E

UNIVERSAL TRANSVERSE MERCATOR
13 NORTH
NAD 1983 HPGN (NEW MEXICO)

N

SCALE 1:300

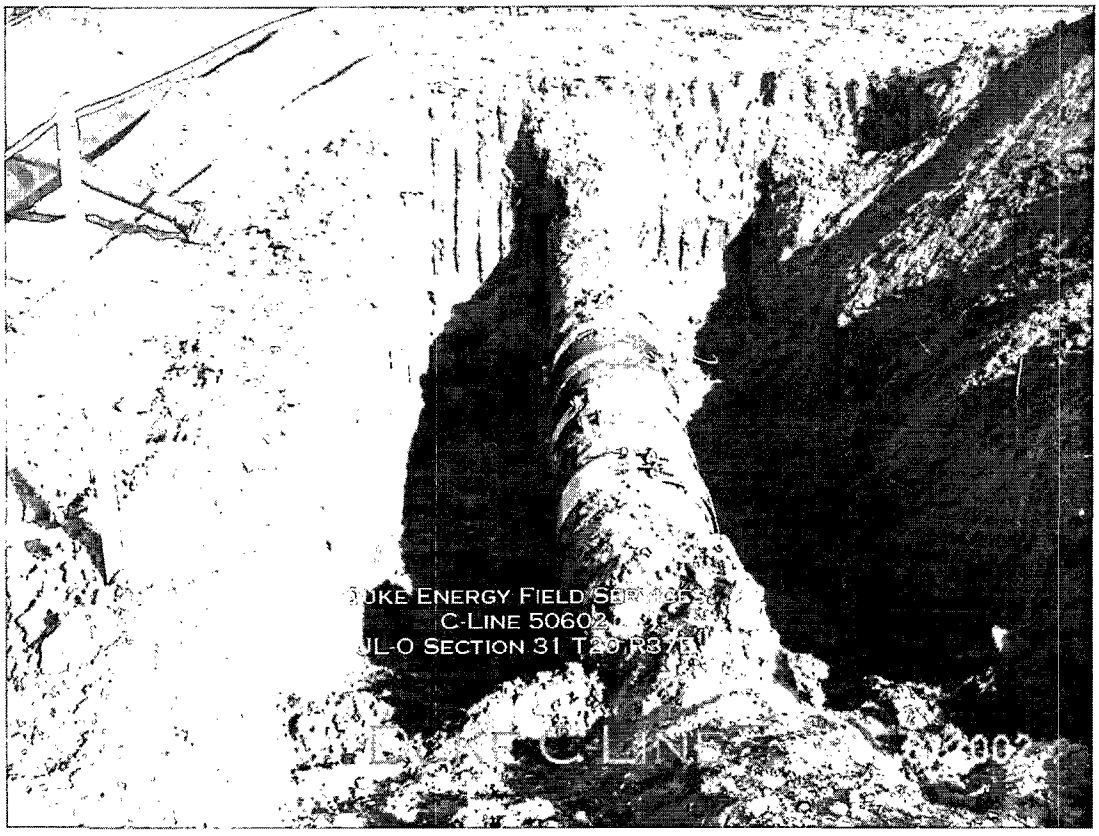
0 35.00

FEET

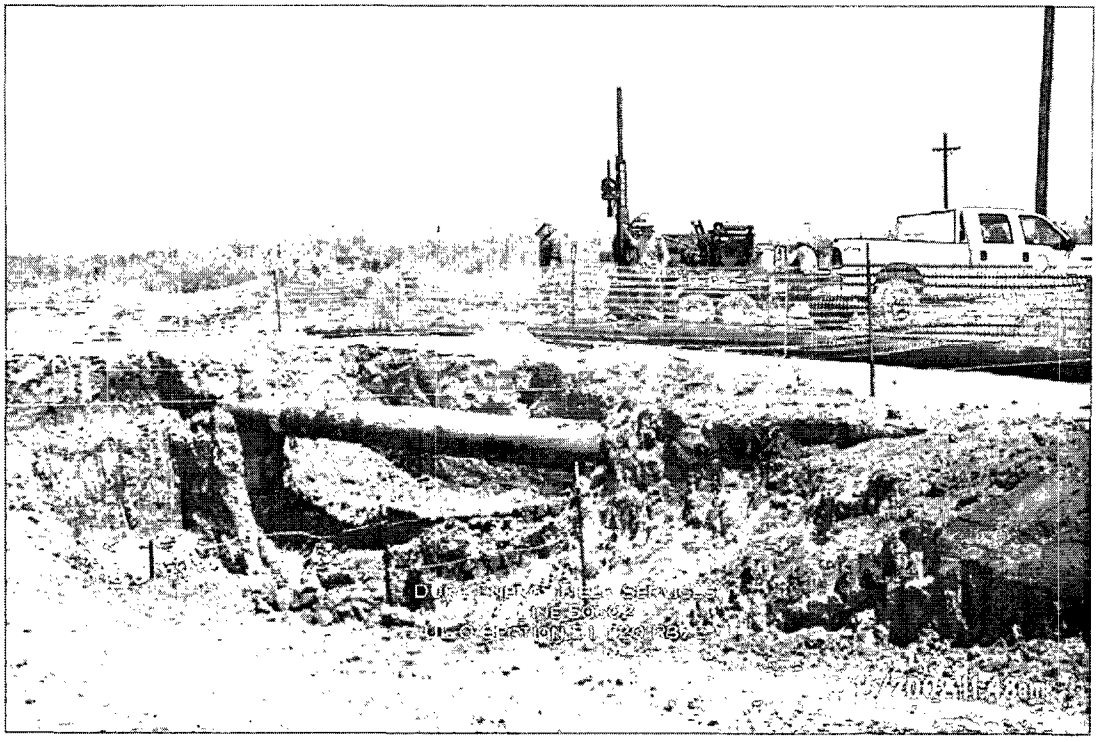
MULTIPLE FILES

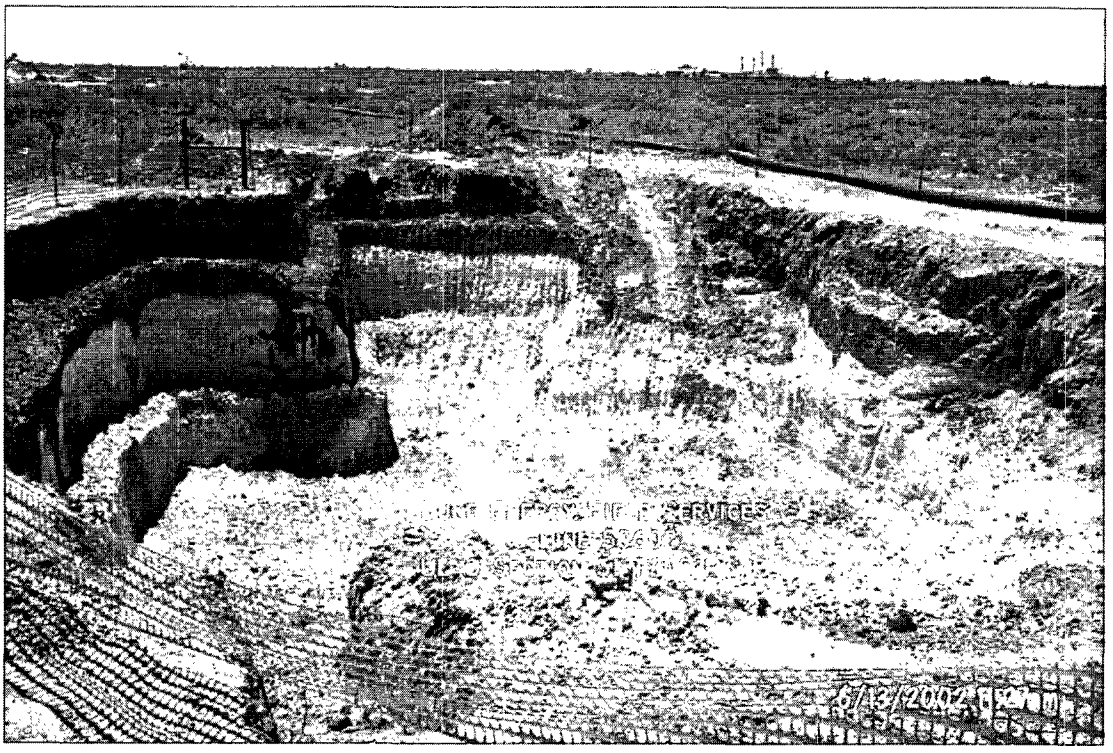
10/8/2002

Attachment II: Site Photographs


C-LINE 50602


8 2002





Attachment III: Site Information and Metrics Form and Initial C-141

Duke Energy Field Services Site Information and Metrics	Incident Date and NMOCD Notified? May 6, 2002 NMOCD notified immediately
SITE: C-Line5602	Assigned Site Reference #:
Company: Duke Energy Field Services	
Street Address: 11525 West Carlsbad Highway	
Mailing Address: 11525 West Carlsbad Highway	
City, State, Zip: Hobbs, NM 88240	
Representative: Paul Mulkey/Stan Shaver/Ronnie Gilchrest	
Representative Telephone: 505.397.5716 / 505.397.5561	
Telephone:	
Fluid volume released (bbls): 70	Recovered (bbls): 50
>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: C-Line5602	
Source of contamination: Natural Gas Gathering Line	
Land Owner, i.e., BLM, ST, Fee, Other: State of New Mexico leased by M. Deck Estate	
LSP Dimensions ~25' x 11'	
LSP Area: 181 ft^2	
Location of Reference Point (RP)	
Location distance and direction from RP	
Latitude: 32° 31' 29.689"N	
Longitude: 103° 17' 11.654"W	
Elevation above mean sea level: 3540'amsl	
Feet from South Section Line	
Feet from West Section Line	
Location- Unit or ¼¼: SW¼ of the SE ¼	Unit Letter: O
Location- Section: 31	
Location- Township: 20S	
Location- Range: 37E	
Surface water body within 1000 ' radius of site: None	
Surface water body within 1000 ' radius of site:	
Domestic water wells within 1000' radius of site: None	
Domestic water wells within 1000' radius of site:	
Agricultural water wells within 1000' radius of site: None	
Agricultural water wells within 1000' radius of site:	
Public water supply wells within 1000' radius of site: None	
Public water supply wells within 1000' radius of site:	
Depth from land surface to ground water (DG) ~68.5'bgs Original Estimate. Measured to be 93'bgs	
Depth of contamination (DC) –	
Depth to ground water (DG – DC = DtGW) - 0.0	

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 = 10	*Wellhead Protection Area Score= 0*	*Surface Water Score= 0*
Site Rank (1+2+3) = 10		

Total Site Ranking Score and Acceptable Concentrations

Parameter	>19 (43' to 93'bgs)	10-19 (surface to 43'bgs)	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

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company **Duke Energy Field Services**	Contact **Paul Mulkey**
Address 11525 West Carlsbad Hwy, Hobbs, NM 88240	Telephone No. 505.397.5716
Facility Name C-Line 50602	Facility Type Natural Gas Pipeline

Surface Owner State of New Mexico	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County: Lea Lat. 32° 31' 29.689" N Lon. 103° 17' 11.654"W
O	31	20S	37E					

NATURE OF RELEASE

Type of Release Crude oil and produced water	Volume of Release 70 barrels	Volume Recovered 50 barrels
Source of Release 20" Steel pipeline	Date and Hour of Occurrence 5-6-02 @ 8:00 AM	Date and Hour of Discovery 5-6-02 @ 8:00 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Sylvia Dickie	
By Whom? Paul Mulkey	Date and Hour 5-6-02 10:00AM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*
NA

Describe Cause of Problem and Remedial Action Taken.*
Corroded pipe. Line repair clamps installed.

Describe Area Affected and Cleanup Action Taken.*
Area = 181 ft² (25' x 11') Ground water occurs at ~68.5 feet below ground surface. The site rank is 10 points. Contaminated soil above the site remedial goals will be excavated and disposed. Remedial Goals: TPH 8015m = 1000 mg/Kg, Benzene = 10 mg/Kg, and the sum of Benzene, Ethyl Benzene, Toluene, and Xylenes = 50 mg/Kg.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: original signed by Paul Mulkey	OIL CONSERVATION DIVISION	
Printed Name: Paul Mulkey	Approved by District Supervisor:	
Title: Maintenance Construction Supervisor	Approval Date:	Expiration Date:
Date: Phone: 505.397.5716	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary

Attachment IV: Analytical Summary and Reports

Duke Energy Field Services C-Line 50602
Soil Delineation Data Summary

Sample Location	Sampling Interval (FT. BGS[1])	SAMPLE ID#	Sample Date	Lithology	HEADSPACE VOC[2] (ppm)	GRO[3] mg/Kg	DRO[4] mg/Kg	TPH[5] (8015M.) mg/Kg	BTEX mg/Kg	Benzene mg/Kg	Toluene mg/Kg	Ehtyl Benzene mg/Kg	Total Xylenes mg/Kg	Chloride mg/Kg
BH1	26	SDCL51302CBH-26	5/13/2002	FINE RED TO BROWN SAND	108	*10*	*21.2*	*31.2*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	96
BH1	31	SDCL51302CBH-31	5/13/2002	FINE BROWN SAND AND STAINED CALICHE	540	na	na	na	na	na	na	na	na	na
BH1	36	SDCL51302CBH-36	5/13/2002	FINE BROWN SAND	870	na	na	na	na	na	na	na	na	na
BH1	41	SDCL51302CBH-41	5/13/2002	FINE BROWN SAND	455	na	na	na	na	na	na	na	na	na
BH1	46	SDCL51302CBH-46	5/13/2002	FINE BROWN SAND	47.4	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	80
BH1	51	SDCL51302CBH-51	5/13/2002	FINE GRAY SAND	7.9	*10*	*10*	*20*	0.558	0.011	0.160	0.108	0.279	80
BH2	5	SDCL51302EBH-5	5/13/2002	FINE BROWN SAND	1.5	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	48
BH2	10	SDCL51302EBH-10	5/13/2002	FINE BROWN SAND	230	na	na	na	na	na	na	na	na	na
BH2	15	SDCL51302EBH-15	5/13/2002	FINE BROWN SAND	885	na	na	na	na	na	na	na	na	na
BH2	20	SDCL51302EBH-20	5/13/2002	FINE BROWN SAND	525	na	na	na	na	na	na	na	na	na
BH2	25	SDCL51302EBH-25	5/13/2002	FINE BROWN SAND	715	na	na	na	na	na	na	na	na	na
BH2	30	SDCL51302EBH-30	5/13/2002	FINE BROWN SAND	966	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	112
BH2	35	SDCL51402EBH-35	5/14/2002	FINE BROWN SAND	954	na	na	na	na	na	na	na	na	na
BH2	40	SDCL51402EBH-40	5/14/2002	FINE BROWN SAND AND STAINED CALICHE	735	na	na	na	na	na	na	na	na	na
BH2	45	SDCL51402EBH-45	5/14/2002	FINE BROWN SAND	1246	na	na	na	na	na	na	na	na	na
BH2	50	SDCL51402EBH-50	5/14/2002	EXTRA FINE TAN SAND	651	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	**48**
BH2	55	SDCL51402EBH-55	5/14/2002	EXTRA FINE TAN SAND	866	na	na	na	na	na	na	na	na	na
BH2	60	SDCL51402EBH-60	5/14/2002	EXTRA FINE TAN SAND	1063	na	na	na	na	na	na	na	na	na
BH2	65	SDCL51402EBH-65	5/14/2002	EXTRA FINE TAN SAND	470	na	na	na	na	na	na	na	na	na
BH2	70	SDCL51402EBH-70	5/14/2002	EXTRA FINE TAN SAND	386	na	na	na	na	na	na	na	na	na
BH2	75	SDCL51402EBH-75	5/14/2002	EXTRA FINE TAN SAND	368	na	na	na	na	na	na	na	na	na
BH2	80	SDCL51402EBH-80	5/14/2002	EXTRA FINE TAN SAND	341	na	na	na	na	na	na	na	na	na
BH2	80 PROBE	SDCL51502EBH-80P	5/15/2002	EXTRA FINE GRAY SAND	48.3	*10*	*10*	*20*	0.254	0.008	0.033	0.053	0.160	64
BH2	85	SDCL51502EBH-85	5/15/2002	EXTRA FINE GRAY TO BROWN SAND	735	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	80
BH2	90	SDCL51502EBH-90	5/15/2002	WET EXTRA FINE BROWN SAND	453	na	na	na	na	na	na	na	na	na
SPOILS PILE	-	SDCL60402SP	6/4/2002	SAND	657	794	103	897	**85.940**	3.540	31.400	13.400	37.600	na
SHREDDED SPOILS	-	SDCL60402SS	6/4/2002	SAND	493	*10*	*10*	*20*	0.485	*0.005*	0.076	0.084	0.320	na
NORTH SIDEWALL	5 POINT COMPOSITE	SDEFS61002NSW	6/10/2002	SAND AND CALICHE	0.4	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	80
SOUTH SIDEWALL	5 POINT COMPOSITE	SDEFS61002SSW	6/10/2002	SAND AND CALICHE	7.5	*10*	58	*68*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	112
EAST SIDEWALL	5 POINT COMPOSITE	SDEFS61002ESW	6/10/2002	SAND AND CALICHE	0.3	*10*	*10*	*20*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	96
WEST SIDEWALL	5 POINT COMPOSITE	SDEFS61002WSW	6/10/2002	SAND AND CALICHE	0.2	*10*	*16.9*	*26.9*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	96
BOTTOM HOLE	5 POINT COMPOSITE	SDEFS61002BH	6/10/2002	SAND AND CALICHE	7	*10*	*27.3*	*37.3*	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*	96

[1]bgs – below ground surface

[2]VOC–Volatile Organic Contaminants/Constituents

[3]GRO-Gasoline Range Organics (C_6-C_{10})

[4]DRO-Diesel Range Organics (>C_{10}-C_{28})

[5]TPH(8015 Mod.)-Total Petroleum Hydrocarbon = GRO+DRO.

Laboratory analyses were performed by Cardinal Laboratories of Hobbs New Mexico

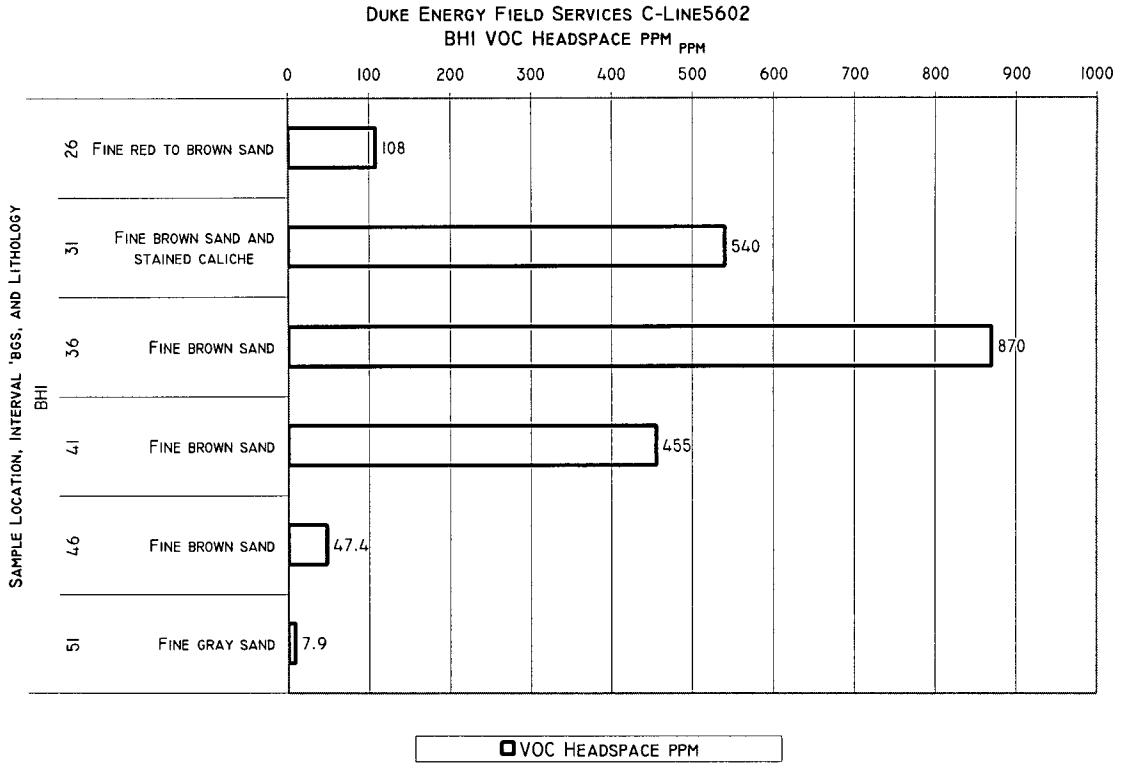
[6]Bolded values are in excess of the New Mexico Oil Conservation Division guideline threshold for the parameter

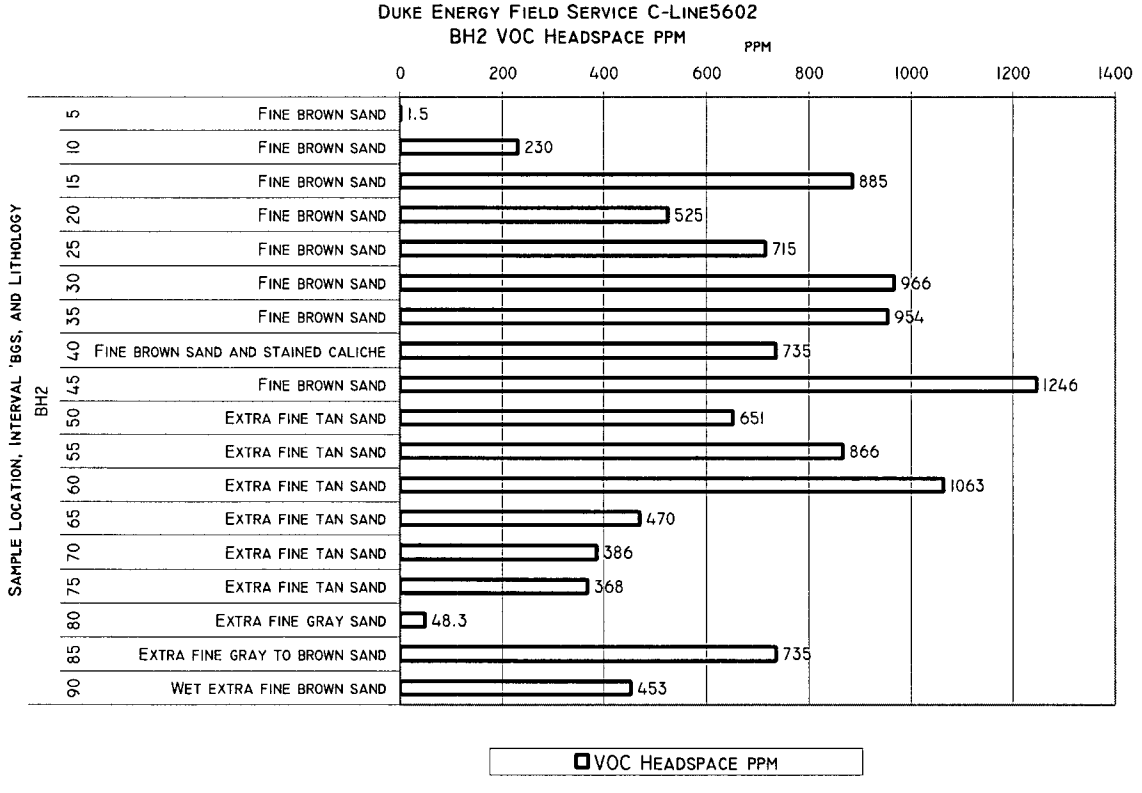
[7]Italicized values are < the instrument detection limit.

[8]na - Not Analyzed

[9]Total Petroleum Hydrocarbon Method 418.1

Reported detection limits are considered "de minimus" values and are included in the GRO/DRO and BTEX summations.


DUKE ENERGY FIELD SERVICES C-LINE5602
BH1 VOC HEADSPACE PPM
PPM
0
100
200
300
400
500
600
700
800
900
1000
SAMPLE LOCATION, INTERVAL 'BGS, AND LITHOLOGY
BH1
26 FINE RED TO BROWN SAND 108
31 FINE BROWN SAND AND STAINED CALICHE 540
36 FINE BROWN SAND 870
41 FINE BROWN SAND 455
46 FINE BROWN SAND 47.4
51 FINE GRAY SAND 7.9
VOC HEADSPACE PPM


DUKE ENERGY FIELD SERVICE C-LINE5602
BH2 VOC HEADSPACE PPM
PPM
0
200
400
600
800
1000
1200
1400
SAMPLE LOCATION, INTERVAL 'BGS, AND LITHOLOGY
BH2
5 FINE BROWN SAND 1.5
10 FINE BROWN SAND 230
15 FINE BROWN SAND 885
20 FINE BROWN SAND 525
25 FINE BROWN SAND 715
30 FINE BROWN SAND 966
35 FINE BROWN SAND 954
40 FINE BROWN SAND AND STAINED CALICHE 735
45 FINE BROWN SAND 1246
50 EXTRA FINE TAN SAND 651
55 EXTRA FINE TAN SAND 866
60 EXTRA FINE TAN SAND 1063
65 EXTRA FINE TAN SAND 470
70 EXTRA FINE TAN SAND 386
75 EXTRA FINE TAN SAND 368
80 EXTRA FINE GRAY SAND 48.3
85 EXTRA FINE GRAY TO BROWN SAND 735
90 WET EXTRA FINE BROWN SAND 453
VOC HEADSPACE PPM

Attachment V: Risk/Exposure Assessment Input Data

VADSAT Version 3.0
A Monte Carlo Model for Assessing the Effects of Soil
Contamination on Groundwater Quality
Developed by:
Environmental Systems and Technologies Inc.
Blacksburg, Virginia
Tel: 703-552-0685, Fax: 703-951-5307
For
The American Petroleum Institute
1995

PROJECT TITLE: Duke CLine50602

SOURCE AND CHEMICAL DATA ****

FKSWM, MEAN WASTE ZONE SAT. CONDUC. (m/day)	=	0.00000
SDFKSW, STD.DEV. OF WASTE ZONE SAT. CONDUC.	=	0.00000
DEPTHM, MEAN THICKNESS OF WASTE ZONE (m)	=	21.00000
DEPSTD, STD.DEV. OF THICKNESS OF WASTE ZONE	=	0.00000
AREAM, MEAN WASTE ZONE AREA (m^2)	=	29.17200
STDA, STD.DEV. OF WASTE ZONE AREA	=	0.00000
RLWM, MEAN L/W RATIO (-)	=	1.00000
STDRLW, STD.DEV. OF L/W RATIO	=	0.00000
CVRTHM, MEAN VALUE OF COVER THICKNESS (m)	=	3.00000
CVRTHS, STD.DEV. OF COVER THICKNESS	=	0.00000
KOCM, MEAN ORG. CARBON PARTITION COEF (cm^3/g)	=	83.20000
STDKOC, STD.DEV. OF ORG.CARBON PARTITION COEF	=	0.00000
FMOLM, MEAN INIT.VOL.FRAC. OF CONTAMINANT(-)	=	0.31624
FMOLSTD, STD.DEV. OF VOL.FRAC. OF CONTAMINANT	=	0.00000
CMFM, MASS OF CONTAMINANT PER MASS OF WASTE(mg/kg)	=	1246.00000
CMFSD, STD.DEV. OF MASS CONTAMINANT PER MASS WASTE	=	0.00000
HCCONM, HYDCARBON MASS FRAC. IN WASTE (mg/kg)	=	3940.00000
HCCONS, STD OF HYDCARBON MASS FRAC. IN WASTE	=	0.00000

CHEMICAL SPECIES		benzene
MOLW, MOLECULAR WT. OF CONTAMINANT (g/mole)	=	78.10000
AVERMW, AVG. MOL. WT. OF OILY WASTE (g/mole)	=	100.00000
RHO, DENSITY OF CONTAMINANT (g/cm^3)	=	0.87600
RHOG, AVERAGE DENSITY OF HYDROCARBON (g/cm^3)	=	0.90000
SOL, AQUEOUS SOLUB. OF CONTAMINANT (g/m^3)	=	1790.00000

```
     HENRYC, HENRY'S CONSTANT (-)                 =      0.23000

     DIFFA, DIFFUSION COEF. IN FREE AIR (m^2/day) =      0.77000

     HYDROGEOLOGICAL PROPERTIES
     --------------------------

     ** UNSATURATED ZONE INPUT PARAMETERS **
     GAMMAM, MEAN UNSAT ZONE DECAY COEF (1/day)  =      0.00001
     STDGAM, STD.DEV. OF UNSAT ZONE DECAY COEF   =      0.00000

     UNFOCM, MEAN UNSAT ZONE ORGANIC CARBON FRACTION (-) =      0.00650
     UNFOCS, STD.DEV. OF UNSAT ZONE ORGANIC CARBON FRAC. =      0.00000

     FKSW, MEAN SAT. CONDUCTIVITY (m/day)        =      7.12800
     STDFKS, STD.DEV. OF SAT. CONDUCTIVITY       =        0.000

     DISTM, MEAN DEPTH TO GROUNDWATER (m)        =      0.03000
     STDDST, STD.DEV. OF DEPTH TO GROUNDWATER    =      0.00000

     UNPORM, MEAN VADOSE ZONE POROSITY (-)       =      0.43000
     SUNPOR, STD.DEV. OF VADOSE ZONE POROSITY    =      0.00000

     PARNM, MEAN VALUE OF VG PARAMETER N (-)     =      2.68000
     SDPARN, STD.DEV. OF VG PARAMETER N          =      0.00000

     RESWCM, MEAN RESIDUAL WATER CONTENT (-)     =      0.04500
     RESWCS, STD.DEV. OF RESIDUAL WATER CONTENT  =      0.00000

ALFINM = 0, UNSAT DISPERSIVITY CALCULATED INTERNALLY
     ** SATURATED ZONE INPUT PARAMETERS **

     LAMBW, MEAN SAT. ZONE DECAY COEFF. (1/day)   =      0.00010
     SLAMB, STD.DEV. OF SAT. ZONE DECAY COEFF.    =      0.00000

     PORM, MEAN SAT. ZONE POROSITY (-)            =      0.20000
     STDPOR, STD.DEV. OF SAT. ZONE POROSITY       =      0.00000

     FOCM, MEAN SAT. ZONE ORG. CARBON FRAC. (-)   =      0.00048
     STDFOC, STD.DEV. SAT. ZONE ORG. CARBON FRAC.=      0.00000

     ALRLTM, MEAN DISPERS, RATIO LONG/TRANSV. (-) =      1.00000
     SALRLT, STD.DEV. OF DISP. RATIO LONG/TRANSV. =      0.00000

     ALRTVM, MEAN DISPERS. RATIO TRANSV/VERT. (-) =      1.00000
     SALRTV, STD.DEV. OF DISP. RATIO TRANSV/VERT. =      0.00000

     CONDS, SAT. HYDRAULIC COND. (m/day)          =      1.03000
     SCONDS, STD.DEV. OF SAT HYDRAULIC COND.      =      0.00000

     GRADS, HYDRAULIC GRADIENT (m/m)              =      0.02700
     SGRADS, STD.DEV. OF HYDRAULIC GRADIENT       =      0.00000

     HMEAN, MEAN AQUIFER THICKNESS (m)            =     23.40000
     STDH, STD.DEV. OF AQUIFER THICKNESS          =      0.00000
```

QINM, MEAN INFILTRATION RATE (m/day) = 0.00100
QINSTD, STD.DEV. OF INFILTRATION RATE = 0.00000

LOCATION OF RECEPTORS:

	X (M)	Y (M)	Z (M)
RECEPTOR(1)	0.0	0.0	0.0
RECEPTOR(2)	1.0	1.0	0.0
RECEPTOR(3)	2.0	2.0	0.0
RECEPTOR(4)	3.0	3.0	0.0

May 8, 2002

Mr. Paul Sheeley
New Mexico Oil Conservation Division
1625 North French
Hobbs, New Mexico 88240

Subject: Duke Energy Field Services C-Line5602 Initial C-141 and Remediation Plan

Dear Mr. Sheeley,

Environmental Plus, Inc. (EPI), on behalf of Mr. Paul Mulkey, Duke Energy Field Services, submits the attached New Mexico Oil Conservation Division form C-141 for the above referenced leak site located on land owned by the State of New Mexico in the SW¼ of the SE¼ (Unit Letter O), Section 31, Township 20 South, and Range 37 East at latitude 32°31'29.689"N and longitude 103°17'11.654"W, approximately 3 miles northwest of Oil Center, Lea County, New Mexico. A New Mexico State Land Office "Right of Entry" permit has been applied for to accommodate potential off right of way surface damage and use. According to information provided by the New Mexico Office of the State Engineer (NMOSE) and the New Mexico Tech geo-information system, water levels for area water wells range from 79.07 feet below ground surface ('bgs) to the north and 36.73'bgs to the south with ground water beneath the site estimated to be 68.5'bgs assuming a consistent gradient. There are no water wells recorded to be located within 1000' horizontal feet of the site. The plan is to excavate and delineate the contamination down to acceptable levels of Chloride, Benzene, Toluene, Ethyl Benzene, and Xylenes (BTEX) and Total Petroleum Hydrocarbon EPA method 8015m (TPH^{8015m}), i.e., Benzene 10, BTEX 50, TPH^{8015m} 1000 mg/Kg. The RCRA exempt contaminated soil will be disposed of in the Environmental Plus, Inc. Landfarm south of Eunice, New Mexico. The excavation will be backfilled with clean soil. Documentation will be submitted confirming achievement of the NMOCD thresholds.

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 or Mr. Paul Mulkey at 505.397.5716.

All official communication should be addressed to:

Mr. Paul Mulkey
Duke Energy Field Services
11525 West Carlsbad Highway
Hobbs, New Mexico 88240

Sincerely,

Pat McCasland
EPI Technical Services Manager

cc: Paul Mulkey, Duke, w/enclosure
Ben Miller, EPI Vice President and General Manager
Sherry Miller, EPI President
file

ENVIRONMENTAL PLUS, INC.

Duke Energy Field Services Site Information and Metrics	**Incident Date and NMOCD Notified?** May 6, 2002 NMOCD notified immediately
SITE: C-Line5602	Assigned Site Reference #:
Company: Duke Energy Field Services	
Street Address: 11525 West Carlsbad Highway	
Mailing Address: 11525 West Carlsbad Highway	
City, State, Zip: Hobbs, NM 88240	
Representative: Paul Mulkey/Stan Shaver/Ronnie Gilchrest	
Representative Telephone: 505.397.5716 / 505.397.5561	
Telephone:	
Fluid volume released (bbls): 70	Recovered (bbls): 50
>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: C-Line5602	
Source of contamination: Natural Gas Gathering Line	
Land Owner, i.e., BLM, ST, Fee, Other: State of New Mexico leased by M. Deck Estate	
LSP Dimensions ~25' x 11'	
LSP Area: 181 ft^2	
Location of Reference Point (RP)	
Location distance and direction from RP	
Latitude: 32° 31' 29.689"N	
Longitude: 103° 17' 11.654"W	
Elevation above mean sea level: 3540'amsl	
Feet from South Section Line	
Feet from West Section Line	
Location- Unit or ¼¼: SW¼ of the SE ¼	Unit Letter: O
Location- Section: 31	
Location- Township: 20S	
Location- Range: 37E	
Surface water body within 1000 ' radius of site: None	
Surface water body within 1000 ' radius of site:	
Domestic water wells within 1000' radius of site: None	
Domestic water wells within 1000' radius of site:	
Agricultural water wells within 1000' radius of site: None	
Agricultural water wells within 1000' radius of site:	
Public water supply wells within 1000' radius of site: None	
Public water supply wells within 1000' radius of site:	
Depth from land surface to ground water (DG) ~68.5'bgs	
Depth of contamination (DC) –	
Depth to ground water (DG – DC = DtGW) -	

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 = 10	*Wellhead Protection Area Score= 0*	*Surface Water Score= 0*
Site Rank (1+2+3) = 10		

Total Site Ranking Score and Acceptable Concentrations

Parameter	>19 (18.5' to 68.5'bgs)	**10-19 (surface to 18.5'bgs)**	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

District I
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State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Contact
Duke Energy Field Services	**Paul Mulkey**
Address 11525 West Carlsbad Hwy, Hobbs, NM 88240	Telephone No. 505.397.5716
Facility Name TT #1 Line	Facility Type Natural Gas Pipeline

Surface Owner	Mineral Owner	Lease No.
State of New Mexico		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County: Lea Lat. 32° 31' 29.689" N Lon. 103° 17' 11.654"W
O	20	20S	37E					

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Crude oil and produced water	70 barrels	50 barrels
Source of Release 20" Steel pipeline	Date and Hour of Occurrence 5-6-02 @ 8:00 AM	Date and Hour of Discovery 5-6-02 @ 8:00 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Sylvia Dickie	
By Whom? Paul Mulkey	Date and Hour 5-6-02 10:00AM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.*
NA

Describe Cause of Problem and Remedial Action Taken.*
Corroded pipe. Line repair clamps installed.

Describe Area Affected and Cleanup Action Taken.*
Area = 181 ft^2 (25' x 11') Ground water occurs at ~68.5 feet below ground surface. The site rank is 10 points. Contaminated soil above the site remedial goals will be excavated and disposed. Remedial Goals: TPH 8015m = 1000 mg/Kg, Benzene = 10 mg/Kg, and the sum of Benzene, Ethyl Benzene, Toluene, and Xylenes = 50 mg/Kg.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	**OIL CONSERVATION DIVISION**	
Printed Name: Paul Mulkey	Approved by District Supervisor:	
Title: Maintenance Construction Supervisor	Approval Date:	Expiration Date:
Date: Phone: 505.397.5716	Conditions of Approval:	Attached ☐

* Attach Additional Sheets If Necessary

2100 Avenue O
P.O. Box 1558
Eunice, New Mexico 88231
TEL: 505.394.3481
FAX: 505.394.2601

ENVIRONMENTAL PLUS, INC.

Fax

Micro-Blaze

To:	Debbie Padilla NMSLO-Easements	**From:**	Pat McCasland
Fax:	505.827.5711	**Pages:**	
Phone:	505.827.5729	**Date:**	2/16/2004
Re:	Right of entry request	**CC:**	Becky Moore, Duke, 915.620.4162

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Comments:

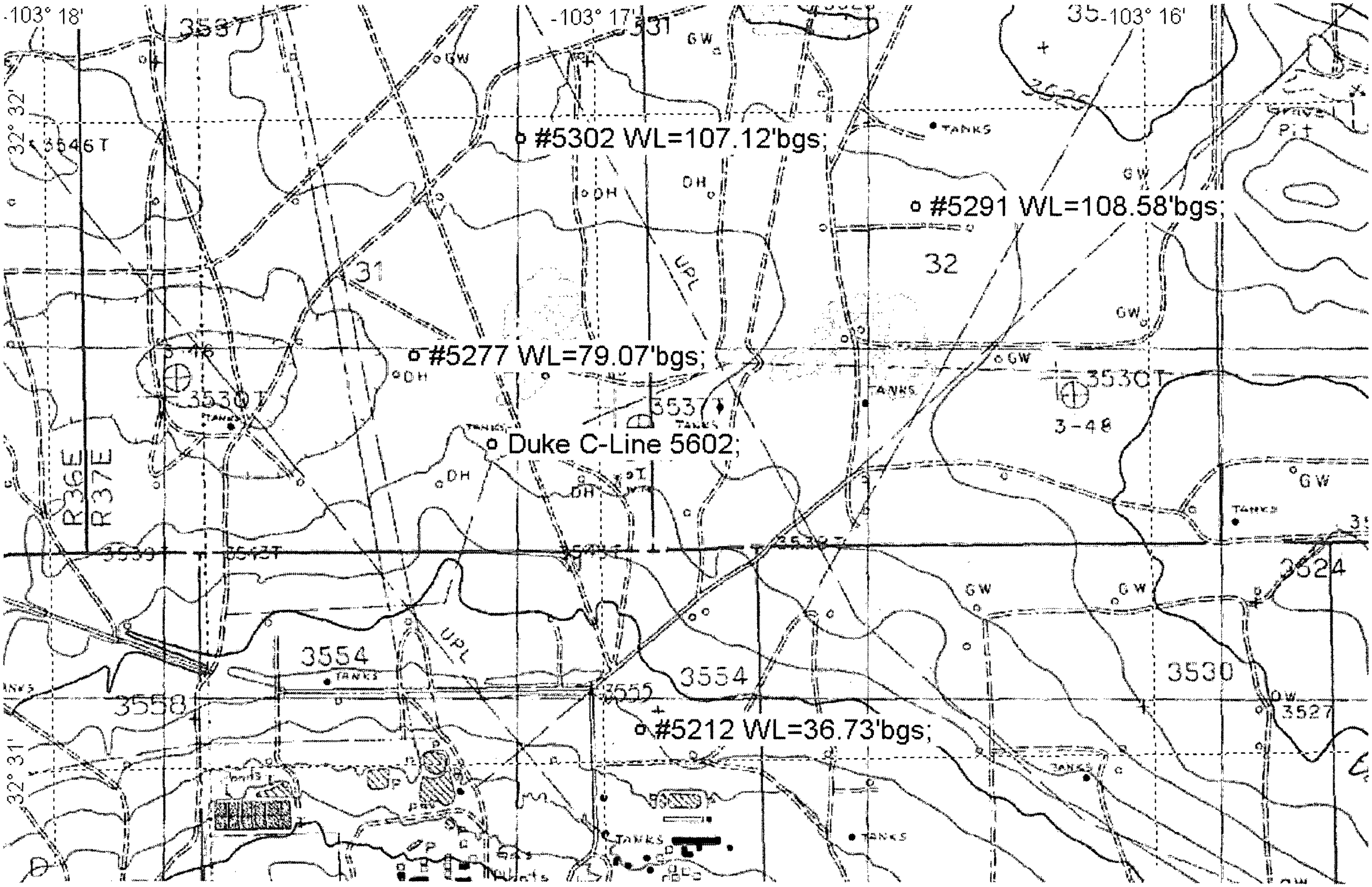
Dear Ms. Padilla,
My name is Pat McCasland and serve as the technical services manager for Environmental Plus, Inc. (EPI) and as such submit this request for a "Right of Entry Permit" on behalf of Duke Energy Field Services. The project information is listed below.

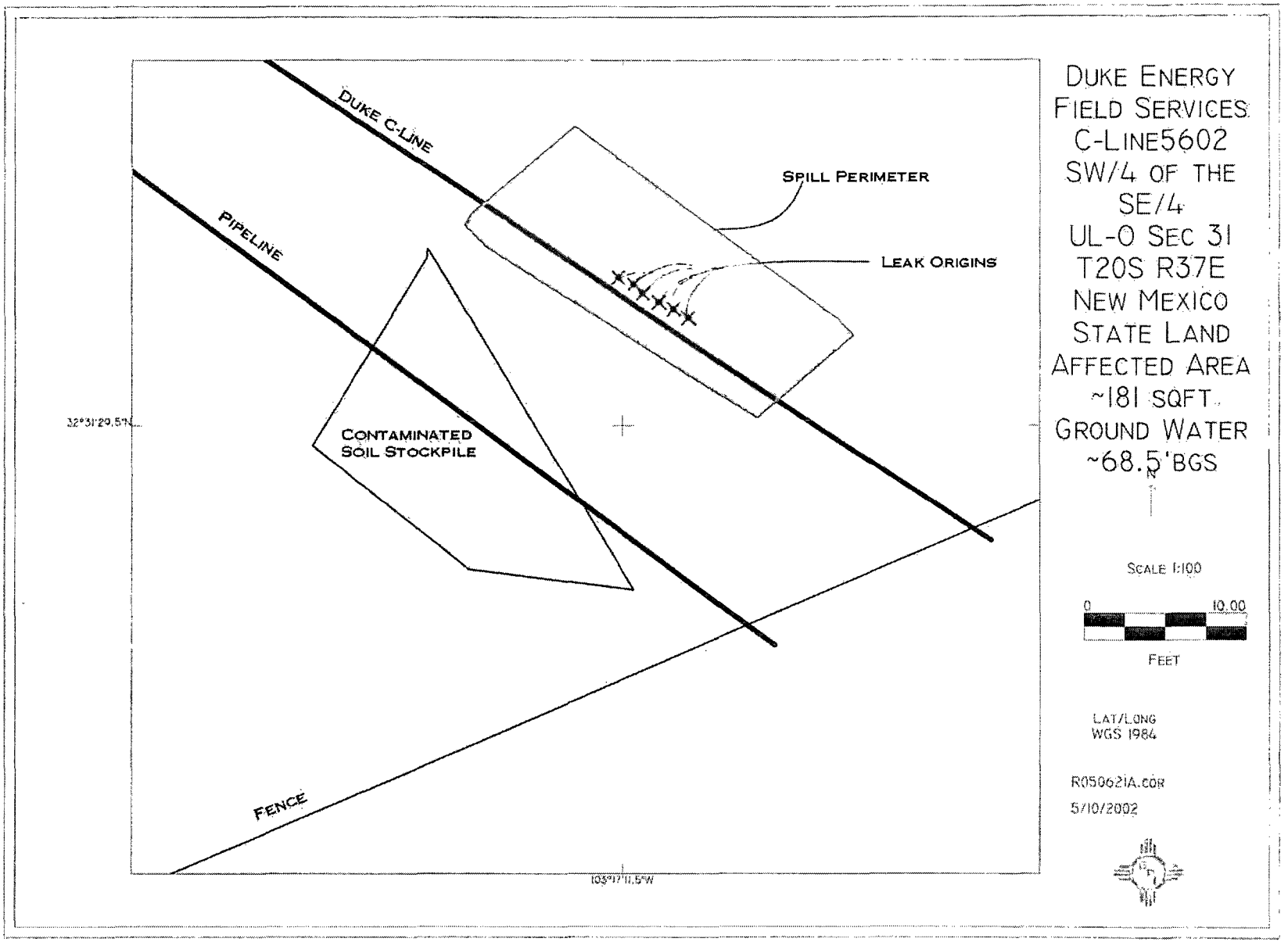
- Client: Duke Energy Field Services, 1625 W. Marland, Hobbs, NM 88240
- Purpose: Delineate and Characterize the extent of pipeline fluid contamination and excavate soil for remediation purposes, i.e., off-site disposal, mechanically shred/aerate, land spread, blend, and treat with MicroBlaze spill control to reduce vapor emissions and promote biological attenuation of the crude oil.
- Site Name: "Duke C-Line5602"
- Legal Description: UL-O, SW¼ of the SE¼ Section 31 T20S R37E
- Duration: The project should be completed within 30 days.
- Affected Area: 181 ft^2 ~25' x 11'. Potential off right of way use area 300'x300', i.e, 9,000 ft^2.
- Attachments: Site map, Material Safety Data Sheet for MicroBlaze Spill Control, and USGS map

Please call if you have any questions or more information is needed.
I would request also that the "Right of Entry Permit" be Faxed to me at 505.394.2601.

Sincerely,

Pat McCasland


-103° 18'
-103° 17'
-103° 16'
32° 32'
32° 31'
R36E
R37E
#5302 WL=107.12'bgs;
#5291 WL=108.58'bgs;
#5277 WL=79.07'bgs;
Duke C-Line 5602;
#5212 WL=36.73'bgs;
32
31
3554
3554
3558
3530
3524
3527
3-48
UPL
UPL
TANKS
GW
DH


DUKE C-LINE
PIPELINE
SPILL PERIMETER
LEAK ORIGINS
CONTAMINATED SOIL STOCKPILE
FENCE
32°31'29.5"N
103°17'11.5"W
DUKE ENERGY FIELD SERVICES
C-LINE5602
SW/4 OF THE SE/4
UL-O SEC 31 T20S R37E
NEW MEXICO STATE LAND
AFFECTED AREA
~181 SQFT.
GROUND WATER
~68.5'BGS
SCALE 1:100
0
10.00
FEET
LAT/LONG
WGS 1984
R050621A.COR
5/10/2002

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

July 16, 2002

Mr. Steve Weathers SWWeathers@Duke-Energy.com
Duke Energy Field Services
Denver, CO

Re: Remediation Plan Approval, Duke Energy Field Services C-Line 52302
Site Reference UL-P, Sec-31 T-20S R-37E
Request Plan Dated: July 10, 2002

Dear Mr. Weathers,

The Remediation Work Plan Proposal submitted to the New Mexico Oil Conservation Division (OCD) by Environmental Plus, Inc. for Duke Energy Field Services is **hereby approved** with the following conditions.

- Installation of a minimum of one (1) or preferably more monitor wells to assure no groundwater contamination has occurred.

- 48-hour notification to OCD prior to closure sampling events

Please be advised that OCD approval of this plan does not relieve Duke Energy Field Services of liability should their operations fail to adequately investigate and remediate contaminants that threaten ground water, surface water, human health or the environment. Additionally, OCD approval does not relieve Duke Energy Field Services of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you have any questions or need assistance please feel free to call or e-mail me at (505) 393-6161, x111 or email lwjohnson@state.nm.us

Sincerely,

Larry Johnson - Environmental Engineer

Cc: Roger Anderson - Environmental Bureau Chief
Chris Williams - District I Supervisor
Randy Bayless - Hydrologist
Paul Sheeley - Environmental Engineer
Pat McCasland - Environmental Plus, Inc.