Duke Energy Field Services

SITE CHARACTERIZATION
AND
PROPOSAL FOR RISK BASED CLOSURE

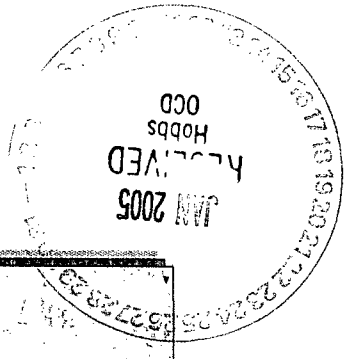
CC WEST RELEASE SITE
DEFS REF: 130011

UL-B (NW¼ OF THE NE¼) OF SECTION 25 T20S R36E
~11.3 MILES NORTHWEST OF EUNICE
LEA COUNTY, NEW MEXICO
LATITUDE: N 32° 33' 2.86" LONGITUDE: W 103° 18' 18.6"

Duke = 229153
facility = fPAC0602039591
incident = nPAC0602030802
application = pPAC0602031013

JANUARY 18, 2005

PREPARED BY:



Environmental Plus, Inc.
2100 Avenue O
P.O. Box 1558
Eunice, NM 88231
Phone: (505)394-3481
FAX: (505)394-2601
ioIness@hotmail.com

26 January 2005

THUR 1.27.05 4PM TALK W/ IAIN - REQUEST @ LEAST ONE ADD'L SOIL BORE - REMIND THAT CLOSURE & RISK-BASE CLOSURE REQUIRE GRAB - NEED BACK IN NOTIF IF INSIDE LANDFARM KRIEGER

Mr. Larry Johnson
NM Energy, Minerals, and Natural Resources Department
New Mexico Oil Conservation Division – Environmental Bureau
1625 North French Drive
Hobbs, NM 88240

Re: Site Characterization and Proposal for Risk-Based Closure
Duke Energy Field Services CC West Release Site (Ref. #130011)
UL-B Section 25 T20S R36E, Lea County, New Mexico
Landowner: Dale Cooper Family Trust

Dear Mr. Johnson,

Environmental Plus, Inc. (EPI), on behalf of Duke Energy Field Services (DEFS), submits for your consideration this *Site Characterization and Proposal for Risk-Based Closure Report* for the above-referenced site. Based on data collected during the site delineation process, DEFS recommends the installation of a clay barrier in the base of the excavation to prevent vertical migration of the remaining contaminants. The excavation will then be backfilled with clean soil and graded to allow natural drainage.

Should you have any questions or comments please call Mr. Cody Miller or me at (505) 394-3481. Mr. Steve Weathers (DEFS) may be contacted at (303) 607-1718.

All official correspondence should be addressed to:

Mr. Steve Weathers
Duke Energy Field Services
370 17th Street, Suite 900
Denver, CO 80202

swweathers@duke-energy.com

Sincerely,

ENVIRONMENTAL PLUS, INC.

Iain Olness

Iain Olness, P.G.
Hydrogeologist

RECEIVED
Hobbs OCD
JAN 2005

cc: Steve Weathers, DEFS – Denver
Lynn Ward, DEFS – Midland
Mark Owens, DEFS - Hobbs
Dale Cooper Family Trust, Landowner

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

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1.0 Background

On August 10, 2004, a historical release of an unknown volume of natural gas pipeline fluids was reported to the New Mexico Oil Conservation Division. The release was the result of the structural integrity of a four-inch steel pipeline being compromised in Lea County, New Mexico (reference Figures 1 & 2). No product was recovered from the release, which covered an area of approximately 10,200 square feet and was 126 feet by 81 feet. The four-inch steel pipeline has been removed.

2.0 Site Description

The site is located approximately 11.3 miles northwest of Eunice, Lea County, New Mexico on property owned by the Dale Cooper Family Trust.

2.1 Historical Use

The area has historically been used for livestock grazing and access to oil and gas production facilities. The release area is located within the confines of an operating, NMOCD licensed land farm facility.

2.2 Legal Description

The legal description for the site is: Unit Letter – B (NW¼ of the NE¼), Section 25, Township 20 South, Range 36 East, at latitude N 32° 33' 2.86" and longitude W 103° 18' 18.6". The site is at an elevation of approximately 3,543 feet above mean sea level.

2.3 Photographic Documentation

Photographs are included as Appendix II.

2.4 Ecological Description

The area is typical of the Upper Chiuahuan 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 Rats, Deer Mice, White Throated Wood Rat, Cottontail Rabbit, Blackmailed Jackrabbit, Pronghorn Antelope and Mule Deer. Reptiles, amphibians and birds are numerous and typical of the area. A Survey of *Listed, Threatened or Endangered Species* was not conducted.

3.0 Environmental Media Characterization

Chemical parameters of the soil and groundwater were 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); and
- Unlined Surface Impoundment Closure Guidelines (February 1993)

Acceptable contaminant concentration thresholds for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX) are determined based on the following:

- Depth to groundwater from deepest detectable contamination;
- Wellhead protection area (i.e., distance from potable water supply wells); and
- Distance to bodies of surface water.

3.1 Area Groundwater Levels

Information pertaining to the depth to groundwater in the area was provided by the operators of the South Monument Land Farm. This information was obtained from the Roswell office of the Office of the State Engineer when the license application to operate the land farm was submitted. The license was subsequently approved and the land farm began operations. This information indicated groundwater to be at a depth of approximately 117 feet below ground surface (bgs).

3.2 Depth to Groundwater Calculation

The NMOCD requires the site to be ranked to determine applicable remedial thresholds for TPH, benzene and total BTEX. The depth to groundwater is defined as the vertical distance from the lowermost contaminants to the seasonal high groundwater elevation. Depth to groundwater at the release site is approximately 117 feet bgs. Soil samples collected during the advancement of a soil boring at the site indicate contamination to depths of approximately 55 feet bgs. The calculated NMOCD depth to groundwater is approximately 62 feet.

3.3 Groundwater Gradient

The groundwater gradient in the area of the release is generally to the southeast according to the USGS Groundwater Report #6 – *Geology and Groundwater Conditions in Southern Lea County, New Mexico* (Nicholson, Jr. and Clebsch, 1961).

3.4 Wellhead Protection Area

There are no water supply wells located within a 1,000-foot radius of the release site, based on information available from the New Mexico Office of the State Engineer and the USGS.

3.5 Distance to Nearest Surface Water Body

There are no bodies of surface water located within a 1,000-foot radius of the release site.

3.6 Identification of Remedial Action Levels

Remedial goals for the impacted soil at this site were determined in accordance with NMOCD Guidelines. The NMOCD depth to groundwater is calculated to be approximately 62 feet bgs.

3.6.1 Site Ranking

Based on the information provided above, the site has the following scores and resultant site ranking:

- NMOCD Depth to Groundwater – 50 to 99 feet = 10 points
- Wellhead Protection Area - >1,000 feet from a water source = 0 points
- Distance to Surface Water Body – > 1,000 horizontal feet = 0 points
- **SITE RANKING = 10 POINTS**

3.6.2 Remedial Action Levels

Based on the Site Ranking, the remedial action levels for the soil at this site according to NMOCD Guidelines are:

Parameter	Remedial Action Levels
Benzene[A]	10 parts per million
BTEX	50 parts per million
TPH	1,000 parts per million

[A] – 100 ppm field analysis may be substituted for laboratory analyses.

The New Mexico Water Quality Control Commission (NMWQCC) groundwater maximum contaminant levels TPH, BTEX, chloride and sulfate are as follows:

- TPH – no standard
- Benzene – 0.01 milligrams per liter (mg/L)
- Toluene – 0.75 mg/L
- Ethylbenzene – 0.75 mg/L

- Total xylenes – 0.62 mg/L
- Chloride – 250 mg/L
- Sulfate – 600 mg/L

4.0 Site Delineation

The release occurred in a former 4-inch steel gathering line that was removed prior to any investigative/remedial activities occurring at the site. Initial site activities consisted of mapping the extent of surface impacts utilizing a GeoExplorer 3 GPS system (reference *Figure 3*). The initial impacted area was estimated to consist of approximately 8,500 square feet. Upon completion of mapping the impacted area, delineation activities commenced at the site. A track-hoe was utilized in an attempt to delineate the vertical and horizontal extents of impacted soil. The lateral extents of impacted soil were delineated utilizing the track-hoe; however, the vertical extent of hydrocarbon impacts could not be delineated utilizing the track-hoe.

The lateral extents of impacted soil were delineated by excavating trenches across the release area. Soil samples were collected during the excavation of the trenches and analyzed in the field for the presence of organic vapors utilizing a MiniRae® photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp. In addition, the samples were analyzed in the field for chloride concentrations utilizing the silver nitrate titration method. Once field analyses indicating the lateral extents had been delineated, excavation activities commenced to remove soil impacted above the NMOCD remedial guidelines for this site as discussed in Section 3.6.2

Due to the fact that the vertical extent of impacted soil could not be delineated utilizing the track-hoe, a drill rig was utilized to advance a soil boring to delineate the vertical extent of impacted soil. Delineation activities utilizing the track-hoe indicated vertical impacts extended to depths of at least 17 feet below ground surface (bgs). A pad was excavated at a depth of approximately 10 feet bgs within the release area so a soil boring could be advanced to delineate the vertical extent of contamination.

The soil boring was advanced to a depth of 60 feet bgs and discrete soil samples were collected at five-foot intervals starting at 35 feet bgs. The soil samples were analyzed in the field for the presence of organic vapors utilizing a MiniRae® PID equipped with a 10.6 eV lamp. Field analyses indicated contamination extended to a depth of approximately 55 feet bgs (reference *Figure 3*). Soil samples were also collected during the advancement of the soil boring and submitted for quantification of total petroleum hydrocarbons (TPH) via EPA Method 8015 modified (8015M), benzene, toluene, ethylbenzene and total xylenes (BTEX) via EPA Method 8260, sulfate and chlorides via EPA Method 600/7-79-020.

Samples for laboratory analyses were collected from 40, 55 and 60 feet bgs. Analytical results were non-detectable (ND) for BTEX for all samples at or above each analytes respective method detection limit (MDL). Analytical results were also reported as ND for TPH for all samples, with the exception of the sample collected at a depth of 40 feet bgs.

TPH concentrations were reported at 113 milligrams per kilogram (mg/Kg) for this sample. Analytical results for sulfate indicated concentrations ranging from 21 mg/Kg at 40 feet bgs to 105 mg/Kg at 60 feet bgs. Chloride concentrations, like the sulfate concentrations, increased with depth with concentrations ranging from 64 mg/Kg at 40 feet bgs to 208 mg/Kg at 60 feet bgs (reference *Table 1* and *Appendix I*).

Based on this information, it was determined that the release affected an area of approximately 7,670 feet and extended to a depth of approximately 55 feet bgs, resulting in a volume of approximately 15,620 cubic yards of impacted soil (reference *Figure 4*).

4.1 Excavation Activities

Remediation excavation activities commenced on August 24, 2004 and continued through September 9, 2004. A total of 6,622 cubic yards of soil were excavated during this time and transported to the South Monument Land Farm. On September 9, 2004, the excavation sidewalls were split into eight separate sections and composite samples were collected from the sidewalls (reference Figure 4) and analyzed in the field for the presence of organic vapors utilizing an UltraRae PID equipped with 10.6 eV lamp. Results of the field analyses indicated organic vapors present at concentrations ranging from 1.7 to 41.2 ppm. Samples were also submitted for laboratory analyses of TPH, and BTEX, chlorides and sulfates, depending upon the results of the TPH analyses.

Analytical results indicated TPH concentrations were <100 mg/Kg in samples collected from sidewalls 1 through 4. In addition, analytical results for these samples indicated that BTEX constituents were not detected at or above each analytes respective MDL. Chloride concentrations for these samples ranged from 48 mg/Kg to 64 mg/Kg and sulfate concentrations ranged from 48 mg/Kg to 136 mg/Kg.

Analytical results for the samples collected from sidewalls 5, 6 and 8 indicated TPH concentrations ranging from 215 mg/Kg to 665 mg/Kg, less than the NMOCD remedial threshold of 1,000 mg/Kg for soil contamination located between 50 and 99 feet above groundwater. These samples were not analyzed for BTEX, chloride or sulfates; however, samples were later collected from these sidewalls and submitted for quantification of BTEX, chloride and sulfates. Analytical results for these samples indicated BTEX constituents were not detected at or above each analytes respective MDL, chloride concentrations ranged from 32 mg/Kg to 112 mg/Kg and sulfate concentrations ranged from 12.4 mg/Kg to 769 mg/Kg.

The only sidewall sample collected during these sampling activities for which analytical results were above the NMOCD remedial guidelines was collected from sidewall 7. TPH concentrations were reported at 4,009 mg/Kg for this sample. Due to this, an additional 98 cubic yards of soil were excavated from this sidewall on September 22, 2004 and disposed of at the South Monument Land Farm. A sample was collected from the sidewall (8SW7-2) after excavation activities were complete

and submitted for quantification of TPH, BTEX, chlorides and sulfates. Analytical results for this sample indicated TPH concentrations of 219 mg/Kg, ND concentrations of BTEX at or above each analytes respective MDL, chloride concentrations of 37 mg/Kg and sulfate concentrations of 89 mg/Kg.

Two soil samples were collected from the floor of the excavation on September 9, 2004 and submitted for quantification of TPH. Analytical results indicated TPH concentrations ranging from 4,534 mg/Kg in the south end of the excavation to 8,780 mg/Kg in the north end of the excavation. In order to complete the risk assessment for this site, two additional samples were collected from the floor of the excavation on January 12, 2005 and submitted for quantification of BTEX, chlorides and sulfates. Analytical results for these samples indicated BTEX constituents were not detected at or above each analytes respective MDL, with the exception of ethylbenzene (0.377 mg/Kg) and total xylenes (1.37 mg/Kg) in the sample obtained from the south half of the excavation. Chloride concentrations ranged from 48 mg/Kg to 96 mg/Kg and sulfate concentrations ranging from 71.4 mg/Kg to 113 mg/Kg.

5.0 Soil Remediation

The excavated soil was transported to the South Monument Land Farm for treatment.

6.0 Groundwater Remediation

Based on the depth of groundwater and analytical results obtained from soil samples collected during the advancement of the soil boring, it is concluded that groundwater was not impacted due to this release. Therefore, no groundwater remediation is required.

7.0 Closure Proposal for Site Soil

Approximately 8,900 cubic yards of hydrocarbon impacted soil remain at the site and is represented by approximately 40 feet of impacted soil remaining beneath the excavation floor. It is proposed to isolate the remaining source term with an impermeable barrier constructed of dense compactable red clay with a minimum permeability of 1×10^{-5} cm/sec. The barrier will extend a minimum of four feet beyond the edges of soil impacted above the NMOCD remedial thresholds and will be a minimum of two-feet thick. The barrier will be installed in six-inch lifts, compacted and tested to verify that the compaction has achieved a minimum of 95% its Proctor Density. Installation of the clay barrier at a depth of approximately 15 feet bgs will protect the barrier from erosion and human intrusion for a term sufficient to allow natural biodegradation of contaminants in the soil. After the barrier has been installed and tested to be acceptable, the excavation will be backfilled with clean soil purchased from the South Monument Land Farm.

Does OCD have copy?

8.0 Risk / Exposure Assessment

To support and justify the closure proposal discussed in Section 7.0, a conservative risk/exposure assessment was conducted utilizing RISC Version 4.03, developed by Lynn R. Spence for BP Oil. The analytical information collected and the viable and supportive RISC risk/exposure assessment supports approval of this closure proposal addressing the soil contamination at the Duke Energy Field Services CC West release site.

8.1 Contaminated Soil Distribution

It is estimated that approximately 8,900 cubic yards of hydrocarbon impacted soil remain, extending approximately 45 feet from the base of the current excavation.

8.2 Engineered Barrier

The proposed compacted clay barrier will extend a minimum of four feet past the edges of soil impacted above the NMOCD remedial thresholds, will be a minimum of one-foot thick following compaction and will be installed in 6-inch lifts. The oversized barrier will prevent further vertical migration of the hydrocarbon source term. The clay barrier will have a minimum permeability of 1×10^{-5} cm/sec and compacted to 95% of its Proctor Density. The barrier will be installed from 13 to 15 feet bgs and will be sufficiently isolated as to ensure the barrier will not be eroded nor penetrated inadvertently by human activity. A conservative groundwater risk/exposure assessment was conducted to demonstrate the effectiveness of the clay barrier in preventing groundwater impacts by isolating the remaining hydrocarbon source term and interrupting the vertical migration pathway.

8.3 Conservative Model Inputs

To ensure that the closure proposal would prevent contaminants from impacting the area groundwater, conservative hydrogeologic parameters were used in the simulations. The input parameters/variables are included in Appendix IV.

8.4 Simulation I: No Barrier

A model was completed to simulate existing conditions to determine if groundwater would be impacted by the release. The input parameters for this model are included in Appendix IV.

Results of this simulation indicate that the groundwater would be impacted in approximately one year; however, concentrations would be below the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards (reference Tables 3 & 4 and Figures 7 & 8). In addition, this simulation indicated that contaminants would naturally biodegrade over time (reference Tables 4 & 5 and Figures 5 & 6).

8.5 Simulation II: Clay Barrier

A model was completed to simulate the placement of the clay barrier in the excavation at a depth of approximately 13 to 15 feet bgs. The input parameters for this model are included in Appendix IV.

Results of this simulation indicate that the barrier will be effective in eliminating the vertical transport mechanism (i.e., infiltration) and adequately isolate the remaining source term (reference Tables 4 & 5 and Figures 5 & 6).

9.0 Conclusions

The computer modeling efforts illustrate that the installation of an engineered barrier will adequately protect groundwater from future impacts by permanently interrupting the vertical transport mechanism. In addition, the engineered barrier will serve to isolate the hydrocarbon source term from the environment for a duration sufficient to allow natural biodegradation of contaminant concentrations to below acceptable levels.

10.0 Recommendations

Based on the results of the computer modeling efforts, it is recommended that a clay barrier be installed in the base of the excavation. The clay barrier should be installed in 6-inch lifts, compacted and tested to verify the barrier has been compacted to a minimum of at least 95% of its Proctor Density.

Results of these proposed remedial activities will be documented in a final report submitted to Duke Energy Field Services and the NMOCD. EPI, on behalf of Duke Energy Field Services, requests formal written approval from the NMOCD to implement these proposed remedial activities.

FIGURES

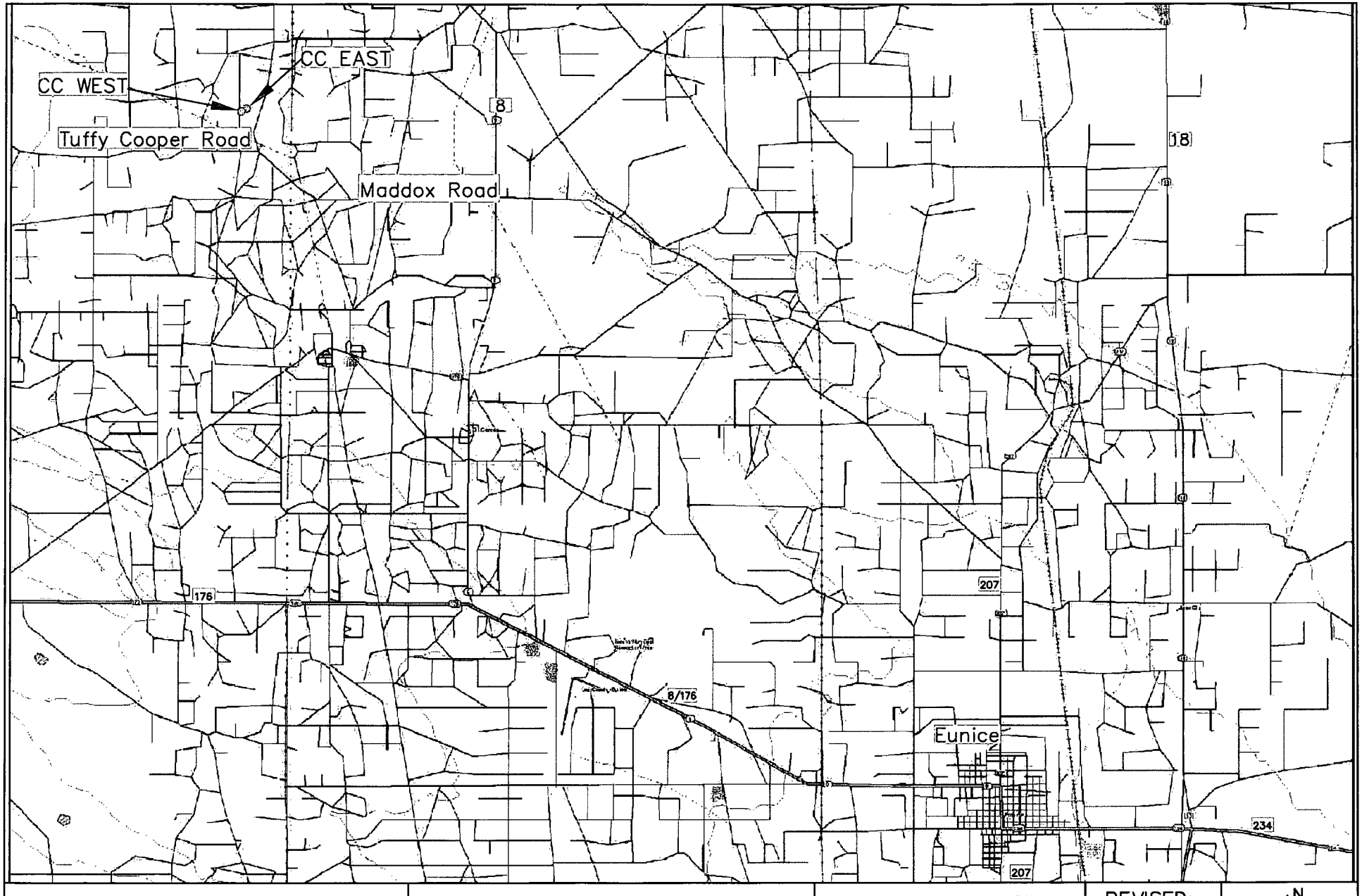

Figure 1
Area Map
Duke Energy Field Services
CC West (Removed 4" Line)

Lea County, New Mexico
NW 1/4 of the NE 1/4, Sec. 25, T20S, R36E
N 32° 33' 2.86" W 103° 18' 18.6"
Elevation: 3,543 feet amsl

DWG By: Iain Olness
August 2004

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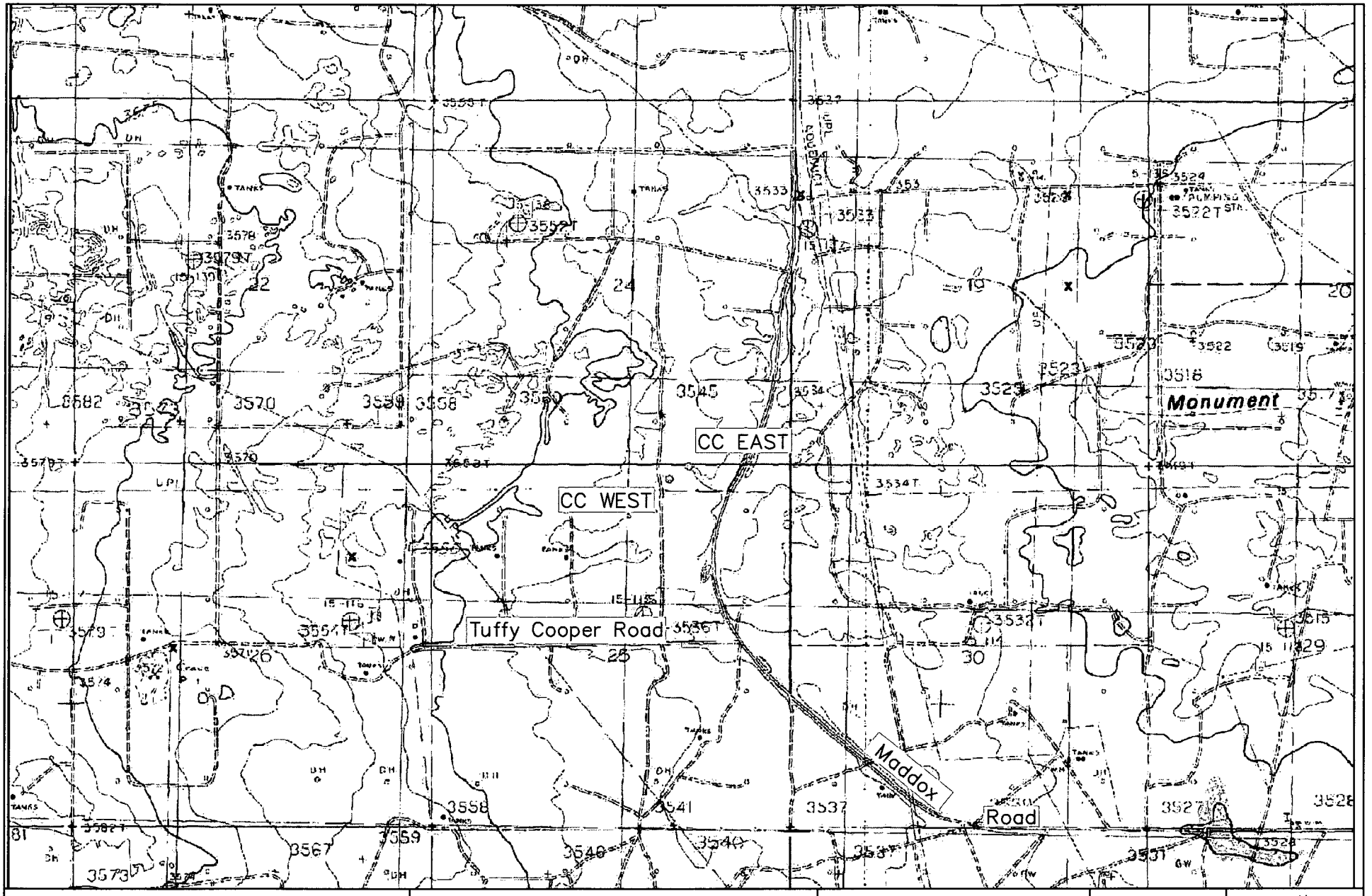

Figure 2
Site Location Map
Duke Energy Field Services
CC West (Removed 4" Line)

Lea County, New Mexico
NW 1/4 of the NE 1/4, Sec. 25, T20S, R36E
N 32° 33' 2.86" W 103° 18' 18.6"
Elevation: 3,543 feet amsl

DWG By: Iain Olness
August 2004

REVISED:
Jan. 2005

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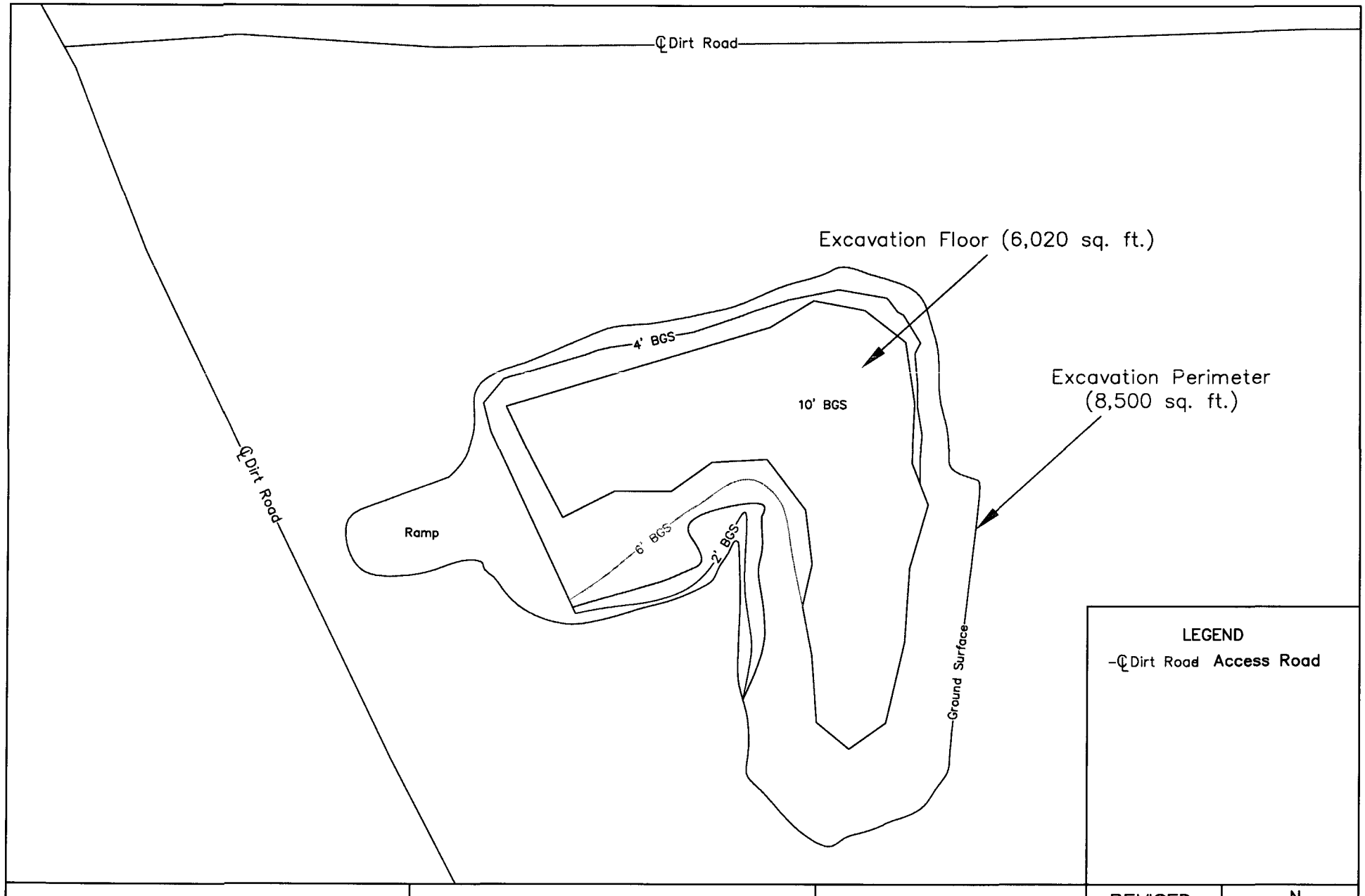

Figure 3 Site Map Duke Energy Field Services CC West (Removed 4" Line)	Lea County, New Mexico NW 1/4 of the NE 1/4, Sec. 25, T20S, R36E N 32° 33' 2.86" W 103° 18' 18.6" Elevation: 3,543 feet amsl	DWG By: Iain Olness August 2004	REVISED: Jan. 2005	N
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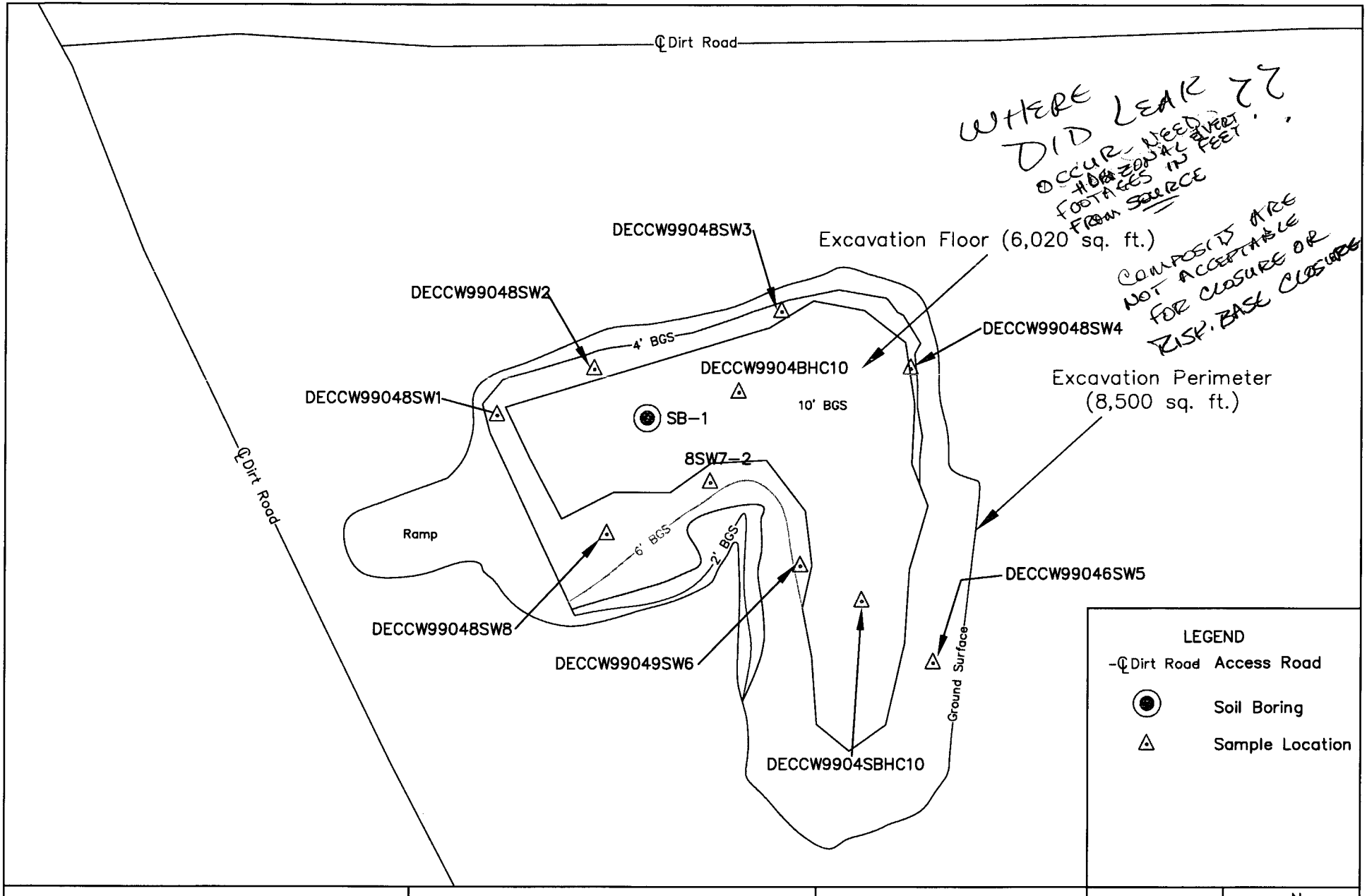

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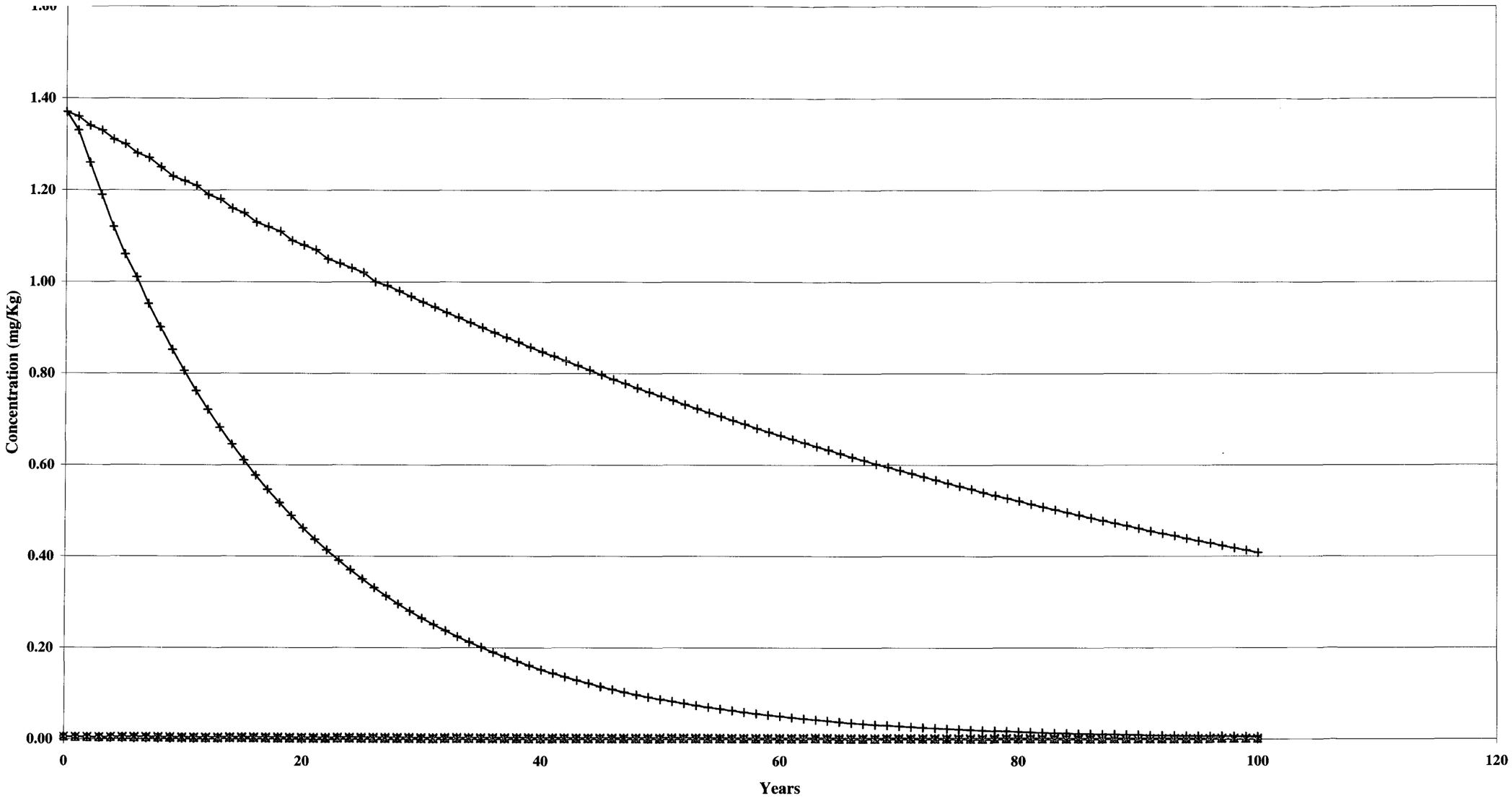
COMPOSITS ARE NOT ACCEPTABLE FOR CLOSURE OR RISK. BASE CLOSURE

Figure 4 Final Sampling Location Map Duke Energy Field Services CC West (Removed 4" Line)	Lea County, New Mexico NW 1/4 of the NE 1/4, Sec. 25, T20S, R36E N 32° 33' 2.86" W 103° 18' 18.6" Elevation: 3,543 feet amsl	DWG By: Iain Olness August 2004	REVISED: Jan. 2005	N SHEET 1 of 1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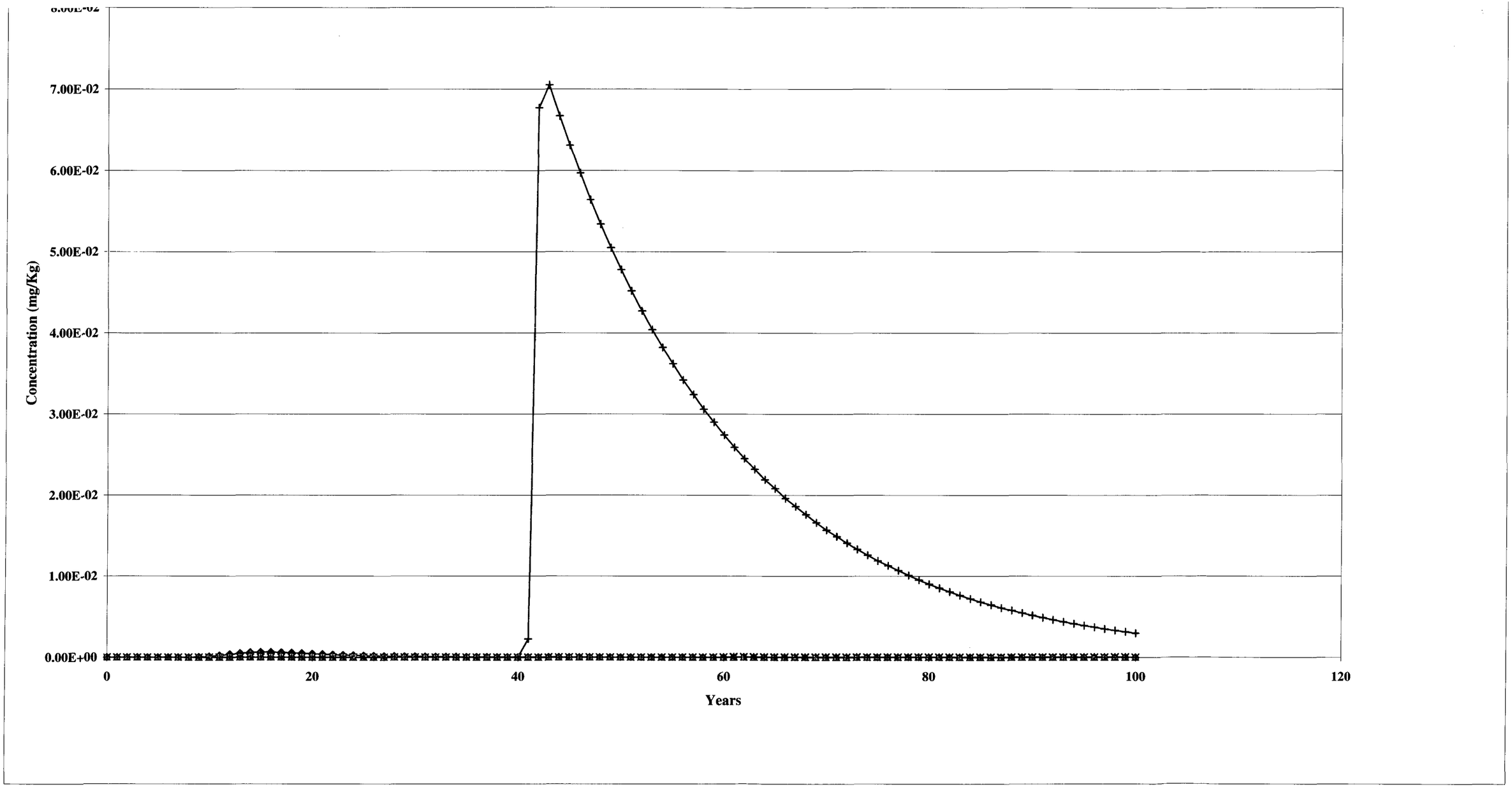
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Concentration (mg/Kg)
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20
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60
80
100
120
Years

TABLES

TABLE 1

Summary of Soil Boring Analytical Results

Duke Energy Field Services CC West Release Site - Ref #130011

Sample Name	Borehole	Interval	PID Analysis (ppm)	TPH (mg/Kg)	BTEX (mg/Kg)	Benzene (mg/Kg)	Chlorides (mg/Kg)	Sulfates (mg/Kg)
SDECCW090104BH1(35')	BH-1	35	2,999	NA	NA	NA	NA	NA
SDECCW090104BH1(40')		40	2,059	133	<0.030	<0.005	21	64
SDECCW090104BH1(45')		45	811	NA	NA	NA	NA	NA
SDECCW090104BH1(50')		50	174	NA	NA	NA	NA	NA
SDECCW090104BH1(55')		55	17.8	<40	<0.030	<0.005	80	96
SDECCW090104BH1(60')		60	16.2	<40	<0.030	<0.005	105	208
NMOCD Remedial Thresholds				1,000	50	10	250	600

ppm = parts per million, which is equivalent to milligrams per kilogram

mg/Kg = miiligrams per kilogram, which is equivalent to parts per million

NA = Not Analyzed

Results in **Bold** are above the remedial action levels as set by the NMOCD.

TABLE 2
Summary of Excavation Analytical Results

Duke Energy Field Services CC West Release Site - Ref #130011

Sample Name	Date	Sample Type	Depth	Location	PID Analysis (ppm)	TPH (mg/Kg)	BTEX (mg/Kg)	Benzene (mg/Kg)	Chloride (mg/Kg)	Sulfate (mg/Kg)
SDECCW99048SW1	9-Sep-04	Composite	8	Sidewall 1	36.7	<40	<0.030	<0.005	48	48
SDECCW99048SW2	9-Sep-04	Composite	8	Sidewall 2	41.2	<40	<0.030	<0.005	48	55
SDECCW99048SW3	9-Sep-04	Composite	8	Sidewall 3	13.6	79	<0.030	<0.005	64	136
SDECCW99048SW4	9-Sep-04	Composite	8	Sidewall 4	3.4	<40	<0.030	<0.005	48	66
SDECCW99046SW5	9-Sep-04	Composite	6	Sidewall 5	1.7	665	NA	NA	NA	NA
SDECCW99049SW6	9-Sep-04	Composite	9	Sidewall 6	32.1	215	NA	NA	NA	NA
SDECCW99048SW7	9-Sep-04	Composite	8	Sidewall 7	8.4	**4,009**	NA	NA	NA	NA
SDECCW99048SW8	9-Sep-04	Composite	8	Sidewall 8	3.6	530	NA	NA	NA	NA
SDECCW99048NBHC10	9-Sep-04	Composite	10	North Bottomhole	2,999	**9,297**	NA	NA	NA	NA
SDECCW99048SBHC10	9-Sep-04	Composite	10	South Bottomhole	2,999	**5,110**	NA	NA	NA	NA
8SW7-2	22-Sep-04	Composite	8	Sidewall 7	12.3	219	<0.030	<0.005	37	89
DECCW104046SW5	4-Oct-04	Composite	6	Sidewall 5	NA	NA	<0.030	<0.005	32	201
DECCW104049SW6	4-Oct-04	Composite	9	Sidewall 6	NA	NA	<0.030	<0.005	112	**769**
DECCW104048SW8	4-Oct-04	Composite	8	Sidewall 8	NA	NA	<0.030	<0.005	64	12.4
NBHC@10'	12-Jan-04	Grab	10	North Bottomhole	NA	NA	<0.030	<0.005	48	113
SBHC@10'	12-Jan-04	Grab	10	South Bottomhole	NA	NA	1.75	<0.005	96	71.4
NMOCD Remedial Thresholds						1,000	50	10	250	600

ppm = parts per million, which is equivalent to milligrams per kilogram

mg/Kg = miiligrams per kilogram, which is equivalent to parts per million

µg/Kg = micrograms per kilogram, which is equivalent to 0.001 milligrams per kilogram

NS = Not Sampled

NA = Not Analyzed

Results in **Red Bold** are above the remedial action levels as set by the NMOCD.

TABLE 3

Contaminant Concentrations in the Soil at the Source Area

Duke Energy Field Services CC West Release Site - Ref #130011

Time	Benzene		Toluene		Ethylbenzene		Total Xylenes	
	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier
(years)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/ Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
0	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03	5.00E-03	1.37E+00	1.37E+00
1	4.60E-03	4.95E-03	4.80E-03	4.95E-03	4.89E-03	4.97E-03	1.33E+00	1.36E+00
2	3.94E-03	4.87E-03	4.45E-03	4.87E-03	4.68E-03	4.93E-03	1.26E+00	1.34E+00
3	3.37E-03	4.79E-03	4.12E-03	4.78E-03	4.49E-03	4.88E-03	1.19E+00	1.33E+00
4	2.89E-03	4.71E-03	3.82E-03	4.70E-03	4.31E-03	4.83E-03	1.12E+00	1.31E+00
5	2.47E-03	4.63E-03	3.55E-03	4.61E-03	4.13E-03	4.78E-03	1.06E+00	1.30E+00
6	2.12E-03	4.56E-03	3.29E-03	4.53E-03	3.96E-03	4.74E-03	1.01E+00	1.28E+00
7	1.81E-03	4.48E-03	3.05E-03	4.45E-03	3.80E-03	4.69E-03	9.52E-01	1.27E+00
8	1.55E-03	4.40E-03	2.83E-03	4.38E-03	3.64E-03	4.65E-03	9.01E-01	1.25E+00
9	1.33E-03	4.33E-03	2.62E-03	4.30E-03	3.49E-03	4.60E-03	8.52E-01	1.23E+00
10	1.14E-03	4.26E-03	2.43E-03	4.22E-03	3.35E-03	4.56E-03	8.06E-01	1.22E+00
11	9.74E-04	4.19E-03	2.25E-03	4.15E-03	3.21E-03	4.51E-03	7.62E-01	1.21E+00
12	8.34E-04	4.12E-03	2.09E-03	4.08E-03	3.08E-03	4.47E-03	7.21E-01	1.19E+00
13	7.14E-04	4.05E-03	1.94E-03	4.01E-03	2.95E-03	4.42E-03	6.82E-01	1.18E+00
14	6.12E-04	3.98E-03	1.80E-03	3.94E-03	2.83E-03	4.38E-03	6.45E-01	1.16E+00
15	5.24E-04	3.92E-03	1.67E-03	3.87E-03	2.71E-03	4.34E-03	6.10E-01	1.15E+00
16	4.49E-04	3.85E-03	1.54E-03	3.80E-03	2.60E-03	4.30E-03	5.77E-01	1.13E+00
17	3.84E-04	3.79E-03	1.43E-03	3.73E-03	2.49E-03	4.26E-03	5.46E-01	1.12E+00
18	3.29E-04	3.72E-03	1.33E-03	3.67E-03	2.39E-03	4.21E-03	5.17E-01	1.11E+00
19	2.82E-04	3.66E-03	1.23E-03	3.60E-03	2.29E-03	4.17E-03	4.89E-01	1.09E+00
20	2.41E-04	3.60E-03	1.14E-03	3.54E-03	2.20E-03	4.13E-03	4.62E-01	1.08E+00
21	2.07E-04	3.54E-03	1.06E-03	3.48E-03	2.11E-03	4.09E-03	4.37E-01	1.07E+00
22	1.77E-04	3.48E-03	9.81E-04	3.42E-03	2.02E-03	4.05E-03	4.14E-01	1.05E+00
23	1.51E-04	3.42E-03	9.10E-04	3.36E-03	1.94E-03	4.01E-03	3.91E-01	1.04E+00
24	1.30E-04	3.37E-03	8.43E-04	3.30E-03	1.86E-03	3.97E-03	3.70E-01	1.03E+00
25	1.11E-04	3.31E-03	7.82E-04	3.24E-03	1.78E-03	3.94E-03	3.50E-01	1.02E+00
26	9.51E-05	3.26E-03	7.25E-04	3.19E-03	1.71E-03	3.90E-03	3.31E-01	1.00E+00
27	8.15E-05	3.20E-03	6.72E-04	3.13E-03	1.64E-03	3.86E-03	3.13E-01	9.92E-01
28	6.98E-05	3.15E-03	6.23E-04	3.08E-03	1.57E-03	3.82E-03	2.96E-01	9.80E-01
29	5.97E-05	3.10E-03	5.78E-04	3.02E-03	1.50E-03	3.79E-03	2.80E-01	9.68E-01
30	5.11E-05	3.04E-03	5.36E-04	2.97E-03	1.44E-03	3.75E-03	2.65E-01	9.56E-01
31	4.38E-05	2.99E-03	4.97E-04	2.92E-03	1.38E-03	3.71E-03	2.51E-01	9.45E-01
32	3.75E-05	2.94E-03	4.61E-04	2.87E-03	1.33E-03	3.68E-03	2.37E-01	9.33E-01
33	3.21E-05	2.90E-03	4.27E-04	2.82E-03	1.27E-03	3.64E-03	2.24E-01	9.22E-01
34	2.75E-05	2.85E-03	3.96E-04	2.77E-03	1.22E-03	3.61E-03	2.12E-01	9.11E-01
35	2.36E-05	2.80E-03	3.67E-04	2.72E-03	1.17E-03	3.57E-03	2.01E-01	9.00E-01
36	2.02E-05	2.75E-03	3.41E-04	2.67E-03	1.12E-03	3.54E-03	1.90E-01	8.89E-01
37	1.73E-05	2.71E-03	3.16E-04	2.62E-03	1.07E-03	3.50E-03	1.80E-01	8.78E-01
38	1.48E-05	2.66E-03	2.93E-04	2.58E-03	1.03E-03	3.47E-03	1.70E-01	8.68E-01
39	1.27E-05	2.62E-03	2.71E-04	2.53E-03	9.87E-04	3.43E-03	1.61E-01	8.57E-01
40	1.08E-05	2.57E-03	2.52E-04	2.49E-03	9.46E-04	3.40E-03	1.52E-01	8.47E-01
41	9.29E-06	2.53E-03	2.33E-04	2.44E-03	9.07E-04	3.37E-03	1.44E-01	8.37E-01
42	7.95E-06	2.49E-03	2.16E-04	2.40E-03	8.70E-04	3.33E-03	1.36E-01	8.27E-01
43	6.81E-06	2.45E-03	2.01E-04	2.36E-03	8.34E-04	3.30E-03	1.29E-01	8.17E-01
44	5.83E-06	2.41E-03	1.86E-04	2.32E-03	8.00E-04	3.27E-03	1.22E-01	8.07E-01
45	4.99E-06	2.37E-03	1.72E-04	2.28E-03	7.67E-04	3.24E-03	1.15E-01	7.97E-01
46	4.28E-06	2.33E-03	1.60E-04	2.24E-03	7.35E-04	3.21E-03	1.09E-01	7.87E-01
47	3.66E-06	2.29E-03	1.48E-04	2.20E-03	7.05E-04	3.18E-03	1.03E-01	7.78E-01
48	3.14E-06	2.25E-03	1.37E-04	2.16E-03	6.76E-04	3.15E-03	9.75E-02	7.68E-01
49	2.68E-06	2.21E-03	1.27E-04	2.12E-03	6.48E-04	3.11E-03	9.23E-02	7.59E-01
50	2.30E-06	2.18E-03	1.18E-04	2.09E-03	6.21E-04	3.08E-03	8.73E-02	7.50E-01
51	1.97E-06	2.14E-03	1.10E-04	2.05E-03	5.96E-04	3.05E-03	8.26E-02	7.41E-01
52	1.69E-06	2.10E-03	1.02E-04	2.01E-03	5.71E-04	3.02E-03	7.81E-02	7.32E-01
53	1.44E-06	2.07E-03	9.42E-05	1.98E-03	5.47E-04	3.00E-03	7.39E-02	7.23E-01
54	1.24E-06	2.04E-03	8.74E-05	1.94E-03	5.25E-04	2.97E-03	6.99E-02	7.14E-01
55	1.06E-06	2.00E-03	8.10E-05	1.91E-03	5.03E-04	2.94E-03	6.61E-02	7.06E-01

TABLE 3

Contaminant Concentrations in the Soil at the Source Area

Duke Energy Field Services CC West Release Site - Ref #130011

Time	Benzene		Toluene		Ethylbenzene		Total Xylenes	
	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier
(years)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/ Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
56	9.07E-07	1.97E-03	7.51E-05	1.88E-03	4.82E-04	2.91E-03	6.25E-02	6.97E-01
57	7.76E-07	1.94E-03	6.96E-05	1.84E-03	4.63E-04	2.88E-03	5.91E-02	6.89E-01
58	6.65E-07	1.90E-03	6.46E-05	1.81E-03	4.44E-04	2.85E-03	5.59E-02	6.80E-01
59	5.69E-07	1.87E-03	5.99E-05	1.78E-03	4.25E-04	2.83E-03	5.29E-02	6.72E-01
60	4.87E-07	1.84E-03	5.55E-05	1.75E-03	4.08E-04	2.80E-03	5.01E-02	6.64E-01
61	4.17E-07	1.81E-03	5.15E-05	1.72E-03	3.91E-04	2.77E-03	4.74E-02	6.56E-01
62	3.57E-07	1.78E-03	4.77E-05	1.69E-03	3.75E-04	2.74E-03	4.48E-02	6.48E-01
63	3.06E-07	1.75E-03	4.43E-05	1.66E-03	3.59E-04	2.72E-03	4.24E-02	6.40E-01
64	2.62E-07	1.72E-03	4.10E-05	1.63E-03	3.45E-04	2.69E-03	4.01E-02	6.33E-01
65	2.24E-07	1.69E-03	3.80E-05	1.60E-03	3.30E-04	2.66E-03	3.79E-02	6.25E-01
66	1.92E-07	1.66E-03	3.53E-05	1.57E-03	3.17E-04	2.64E-03	3.59E-02	6.17E-01
67	1.65E-07	1.64E-03	3.27E-05	1.55E-03	3.04E-04	2.61E-03	3.39E-02	6.10E-01
68	1.41E-07	1.61E-03	3.03E-05	1.52E-03	2.91E-04	2.59E-03	3.21E-02	6.02E-01
69	1.21E-07	1.58E-03	2.81E-05	1.49E-03	2.79E-04	2.56E-03	3.04E-02	5.95E-01
70	1.03E-07	1.56E-03	2.61E-05	1.47E-03	2.68E-04	2.54E-03	2.87E-02	5.88E-01
71	8.85E-08	1.53E-03	2.42E-05	1.44E-03	2.57E-04	2.51E-03	2.72E-02	5.81E-01
72	7.58E-08	1.50E-03	2.24E-05	1.41E-03	2.46E-04	2.49E-03	2.57E-02	5.74E-01
73	6.49E-08	1.48E-03	2.08E-05	1.39E-03	2.36E-04	2.46E-03	2.43E-02	5.67E-01
74	5.56E-08	1.45E-03	1.93E-05	1.37E-03	2.26E-04	2.44E-03	2.30E-02	5.60E-01
75	4.76E-08	1.43E-03	1.79E-05	1.34E-03	2.17E-04	2.42E-03	2.18E-02	5.53E-01
76	4.07E-08	1.41E-03	1.66E-05	1.32E-03	2.08E-04	2.39E-03	2.06E-02	5.47E-01
77	3.49E-08	1.38E-03	1.54E-05	1.30E-03	1.99E-04	2.37E-03	1.95E-02	5.40E-01
78	2.99E-08	1.36E-03	1.42E-05	1.27E-03	1.91E-04	2.35E-03	1.84E-02	5.33E-01
79	2.56E-08	1.34E-03	1.32E-05	1.25E-03	1.83E-04	2.32E-03	1.74E-02	5.27E-01
80	2.19E-08	1.32E-03	1.22E-05	1.23E-03	1.76E-04	2.30E-03	1.65E-02	5.21E-01
81	1.88E-08	1.29E-03	1.14E-05	1.21E-03	1.68E-04	2.28E-03	1.56E-02	5.14E-01
82	1.61E-08	1.27E-03	1.05E-05	1.19E-03	1.62E-04	2.26E-03	1.47E-02	5.08E-01
83	1.38E-08	1.25E-03	9.76E-06	1.17E-03	1.55E-04	2.24E-03	1.39E-02	5.02E-01
84	1.18E-08	1.23E-03	9.05E-06	1.14E-03	1.48E-04	2.21E-03	1.32E-02	4.96E-01
85	1.01E-08	1.21E-03	8.39E-06	1.12E-03	1.42E-04	2.19E-03	1.25E-02	4.90E-01
86	8.64E-09	1.19E-03	7.78E-06	1.11E-03	1.36E-04	2.17E-03	1.18E-02	4.84E-01
87	7.40E-09	1.17E-03	7.21E-06	1.09E-03	1.31E-04	2.15E-03	1.12E-02	4.78E-01
88	6.34E-09	1.15E-03	6.69E-06	1.07E-03	1.25E-04	2.13E-03	1.06E-02	4.72E-01
89	5.43E-09	1.13E-03	6.20E-06	1.05E-03	1.20E-04	2.11E-03	9.99E-03	4.67E-01
90	4.65E-09	1.11E-03	5.75E-06	1.03E-03	1.15E-04	2.09E-03	9.45E-03	4.61E-01
91	3.98E-09	1.09E-03	5.33E-06	1.01E-03	1.11E-04	2.07E-03	8.94E-03	4.55E-01
92	3.41E-09	1.08E-03	4.94E-06	9.94E-04	1.06E-04	2.05E-03	8.46E-03	4.50E-01
93	2.92E-09	1.06E-03	4.58E-06	9.77E-04	1.02E-04	2.03E-03	8.00E-03	4.45E-01
94	2.50E-09	1.04E-03	4.25E-06	9.60E-04	9.75E-05	2.01E-03	7.57E-03	4.39E-01
95	2.14E-09	1.02E-03	3.94E-06	9.43E-04	9.34E-05	1.99E-03	7.16E-03	4.34E-01
96	1.83E-09	1.01E-03	3.65E-06	9.26E-04	8.96E-05	1.97E-03	6.77E-03	4.29E-01
97	1.57E-09	9.89E-04	3.39E-06	9.10E-04	8.59E-05	1.95E-03	6.41E-03	4.23E-01
98	1.34E-09	9.72E-04	3.14E-06	8.94E-04	8.24E-05	1.93E-03	6.06E-03	4.18E-01
99	1.15E-09	9.56E-04	2.91E-06	8.78E-04	7.90E-05	1.91E-03	5.73E-03	4.13E-01
100	9.85E-10	9.40E-04	2.70E-06	8.63E-04	7.57E-05	1.89E-03	5.42E-03	4.08E-01

TABLE 4

Contaminant Concentrations in the Soil at the Watertable

Duke Energy Field Services CC West Release Site - Ref #130011

Time	Benzene		Toluene		Ethylbenzene		Total Xylenes	
	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier
(years)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/ Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1	1.95E-65	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2	1.29E-30	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3	3.42E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4	1.38E-13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5	2.57E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6	3.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7	8.15E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8	7.66E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	3.65E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10	1.08E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
11	2.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12	3.71E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13	5.04E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	5.97E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
15	6.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16	6.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
17	6.01E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18	5.48E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19	4.88E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	4.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
21	3.71E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22	3.21E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
23	2.76E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
24	2.37E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25	2.03E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26	1.74E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
27	1.49E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
28	1.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
29	1.09E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
30	9.35E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31	8.01E-05	0.00E+00	4.90E-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32	6.86E-05	0.00E+00	3.04E-20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
33	5.87E-05	0.00E+00	1.51E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
34	5.03E-05	0.00E+00	1.41E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35	4.31E-05	0.00E+00	1.30E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
36	3.69E-05	0.00E+00	1.21E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
37	3.16E-05	0.00E+00	1.12E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38	2.70E-05	0.00E+00	1.04E-19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39	2.31E-05	0.00E+00	9.64E-20	0.00E+00	0.00E+00	0.00E+00	4.48E-57	0.00E+00
40	1.98E-05	0.00E+00	8.94E-20	0.00E+00	0.00E+00	0.00E+00	2.43E-18	0.00E+00
41	1.70E-05	0.00E+00	8.29E-20	0.00E+00	0.00E+00	0.00E+00	2.27E-03	0.00E+00
42	1.45E-05	0.00E+00	7.68E-20	0.00E+00	0.00E+00	0.00E+00	6.77E-02	0.00E+00
43	1.24E-05	0.00E+00	7.12E-20	0.00E+00	0.00E+00	0.00E+00	7.05E-02	0.00E+00
44	1.07E-05	0.00E+00	6.60E-20	0.00E+00	0.00E+00	0.00E+00	6.67E-02	0.00E+00
45	9.13E-06	0.00E+00	6.12E-20	0.00E+00	0.00E+00	0.00E+00	6.31E-02	0.00E+00
46	7.82E-06	0.00E+00	5.68E-20	0.00E+00	0.00E+00	0.00E+00	5.97E-02	0.00E+00
47	6.69E-06	0.00E+00	5.26E-20	0.00E+00	0.00E+00	0.00E+00	5.64E-02	0.00E+00
48	5.73E-06	0.00E+00	4.88E-20	0.00E+00	0.00E+00	0.00E+00	5.34E-02	0.00E+00
49	4.91E-06	0.00E+00	4.53E-20	0.00E+00	0.00E+00	0.00E+00	5.05E-02	0.00E+00
50	4.20E-06	0.00E+00	4.20E-20	0.00E+00	0.00E+00	0.00E+00	4.78E-02	0.00E+00
51	3.60E-06	0.00E+00	3.89E-20	0.00E+00	0.00E+00	0.00E+00	4.52E-02	0.00E+00
52	3.08E-06	0.00E+00	3.61E-20	0.00E+00	0.00E+00	0.00E+00	4.27E-02	0.00E+00
53	2.64E-06	0.00E+00	3.35E-20	0.00E+00	0.00E+00	0.00E+00	4.04E-02	0.00E+00
54	2.26E-06	0.00E+00	3.10E-20	0.00E+00	0.00E+00	0.00E+00	3.82E-02	0.00E+00
55	1.94E-06	0.00E+00	2.88E-20	0.00E+00	0.00E+00	0.00E+00	3.62E-02	0.00E+00
56	1.66E-06	0.00E+00	2.67E-20	0.00E+00	0.00E+00	0.00E+00	3.42E-02	0.00E+00

TABLE 4

Contaminant Concentrations in the Soil at the Watertable

Duke Energy Field Services CC West Release Site - Ref #130011

Time	Benzene		Toluene		Ethylbenzene		Total Xylenes	
	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier	Without Barrier	With Barrier
(years)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/ Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
57	1.42E-06	0.00E+00	2.47E-20	0.00E+00	9.86E-45	0.00E+00	3.24E-02	0.00E+00
58	1.22E-06	0.00E+00	2.29E-20	0.00E+00	5.09E-21	0.00E+00	3.06E-02	0.00E+00
59	1.04E-06	0.00E+00	2.13E-20	0.00E+00	1.21E-08	0.00E+00	2.90E-02	0.00E+00
60	8.91E-07	0.00E+00	1.97E-20	0.00E+00	2.43E-05	0.00E+00	2.74E-02	0.00E+00
61	7.63E-07	0.00E+00	1.83E-20	0.00E+00	5.03E-05	0.00E+00	2.59E-02	0.00E+00
62	6.53E-07	0.00E+00	1.69E-20	0.00E+00	4.82E-05	0.00E+00	2.45E-02	0.00E+00
63	5.60E-07	0.00E+00	1.57E-20	0.00E+00	4.62E-05	0.00E+00	2.32E-02	0.00E+00
64	4.79E-07	0.00E+00	1.46E-20	0.00E+00	4.43E-05	0.00E+00	2.19E-02	0.00E+00
65	4.10E-07	0.00E+00	1.35E-20	0.00E+00	4.25E-05	0.00E+00	2.08E-02	0.00E+00
66	3.51E-07	0.00E+00	1.25E-20	0.00E+00	4.07E-05	0.00E+00	1.96E-02	0.00E+00
67	3.01E-07	0.00E+00	1.16E-20	0.00E+00	3.91E-05	0.00E+00	1.86E-02	0.00E+00
68	2.58E-07	0.00E+00	1.08E-20	0.00E+00	3.75E-05	0.00E+00	1.76E-02	0.00E+00
69	2.21E-07	0.00E+00	9.98E-21	0.00E+00	3.59E-05	0.00E+00	1.66E-02	0.00E+00
70	1.89E-07	0.00E+00	9.26E-21	0.00E+00	3.44E-05	0.00E+00	1.57E-02	0.00E+00
71	1.62E-07	0.00E+00	8.58E-21	0.00E+00	3.30E-05	0.00E+00	1.49E-02	0.00E+00
72	1.39E-07	0.00E+00	7.96E-21	0.00E+00	3.16E-05	0.00E+00	1.41E-02	0.00E+00
73	1.19E-07	0.00E+00	7.38E-21	0.00E+00	3.03E-05	0.00E+00	1.33E-02	0.00E+00
74	1.02E-07	0.00E+00	6.84E-21	0.00E+00	2.91E-05	0.00E+00	1.26E-02	0.00E+00
75	8.70E-08	0.00E+00	6.34E-21	0.00E+00	2.79E-05	0.00E+00	1.19E-02	0.00E+00
76	7.45E-08	0.00E+00	5.88E-21	0.00E+00	2.67E-05	0.00E+00	1.13E-02	0.00E+00
77	6.38E-08	0.00E+00	5.45E-21	0.00E+00	2.56E-05	0.00E+00	1.07E-02	0.00E+00
78	5.46E-08	0.00E+00	5.06E-21	0.00E+00	2.46E-05	0.00E+00	1.01E-02	0.00E+00
79	4.68E-08	0.00E+00	4.69E-21	0.00E+00	2.36E-05	0.00E+00	9.53E-03	0.00E+00
80	4.01E-08	0.00E+00	4.35E-21	0.00E+00	2.26E-05	0.00E+00	9.02E-03	0.00E+00
81	3.43E-08	0.00E+00	4.03E-21	0.00E+00	2.17E-05	0.00E+00	8.53E-03	0.00E+00
82	2.94E-08	0.00E+00	3.74E-21	0.00E+00	2.08E-05	0.00E+00	8.07E-03	0.00E+00
83	2.52E-08	0.00E+00	3.46E-21	0.00E+00	1.99E-05	0.00E+00	7.63E-03	0.00E+00
84	2.15E-08	0.00E+00	3.21E-21	0.00E+00	1.91E-05	0.00E+00	7.22E-03	0.00E+00
85	1.84E-08	0.00E+00	2.98E-21	0.00E+00	1.83E-05	0.00E+00	6.83E-03	0.00E+00
86	1.58E-08	0.00E+00	2.76E-21	0.00E+00	1.76E-05	0.00E+00	6.46E-03	0.00E+00
87	1.35E-08	0.00E+00	2.56E-21	0.00E+00	1.68E-05	0.00E+00	6.11E-03	0.00E+00
88	1.16E-08	0.00E+00	2.37E-21	0.00E+00	1.61E-05	0.00E+00	5.78E-03	0.00E+00
89	9.92E-09	0.00E+00	2.20E-21	0.00E+00	1.55E-05	0.00E+00	5.47E-03	0.00E+00
90	8.49E-09	0.00E+00	2.04E-21	0.00E+00	1.48E-05	0.00E+00	5.17E-03	0.00E+00
91	7.27E-09	0.00E+00	1.89E-21	0.00E+00	1.42E-05	0.00E+00	4.89E-03	0.00E+00
92	6.23E-09	0.00E+00	1.75E-21	0.00E+00	1.36E-05	0.00E+00	4.63E-03	0.00E+00
93	5.33E-09	0.00E+00	1.63E-21	0.00E+00	1.31E-05	0.00E+00	4.38E-03	0.00E+00
94	4.57E-09	0.00E+00	1.51E-21	0.00E+00	1.25E-05	0.00E+00	4.14E-03	0.00E+00
95	3.91E-09	0.00E+00	1.40E-21	0.00E+00	1.20E-05	0.00E+00	3.92E-03	0.00E+00
96	3.35E-09	0.00E+00	1.30E-21	0.00E+00	1.15E-05	0.00E+00	3.71E-03	0.00E+00
97	2.87E-09	0.00E+00	1.20E-21	0.00E+00	1.10E-05	0.00E+00	3.51E-03	0.00E+00
98	2.46E-09	0.00E+00	1.12E-21	0.00E+00	1.06E-05	0.00E+00	3.32E-03	0.00E+00
99	2.10E-09	0.00E+00	1.03E-21	0.00E+00	1.02E-05	0.00E+00	3.14E-03	0.00E+00
100	1.80E-09	0.00E+00	9.59E-22	0.00E+00	9.74E-06	0.00E+00	2.97E-03	0.00E+00

APPENDICES

APPENDIX A

LABORATORY ANALYTICAL REPORTS

AND

CHAIN-OF-CUSTODY FORMS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 10/04/04
Reporting Date: 10/06/04
Project Owner: DUKE ENERGY FIELD SERVICES
Project Name: NOT GIVEN
Project Location: CC WEST

Sampling Date: 10/04/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: AH

LAB NUMBER	SAMPLE ID	SO_4^* (mg/Kg)	Cl (mg/Kg)
ANALYSIS DATE:		10/06/04	10/06/04
H9206-1	DECCW104046SW5	201	32
H9206-2	DECCW104049SW6	769	112
H9206-3	DECCW104048SW8	12.4	64
Quality Control		50.98	1050
True Value QC		50.00	1000
% Recovery		102	105
Relative Percent Difference		1.2	2.9
METHODS: EPA 600/4-79-020		375.4	325.3

Note: Analyses performed on 1:4 w:v aqueous extracts.
*Matrix interference (color) observed.

Amy Hill
Chemist

10/6/04
Date

H9206

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 10/04/04
Reporting Date: 10/06/04
Project Owner: DUKE ENERGY
Project Name: NOT GIVEN
Project Location: CC WEST

Sampling Date: 10/04/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		10/05/04	10/05/04	10/05/04	10/05/04
H9206-1	DECCW104046SW5	<0.005	<0.005	<0.005	<0.015
H9206-2	DECCW104049SW6	<0.005	<0.005	<0.005	<0.015
H9206-3	DECCW104048SW8	<0.005	<0.005	<0.005	<0.015
Quality Control		0.089	0.090	0.092	0.285
True Value QC		0.100	0.100	0.100	0.300
% Recovery		89.4	90.2	92.4	95.1
Relative Percent Difference		1.4	0.3	2.0	2.5

METHOD: EPA SW-846 8260

Chemist

10/6/04
Date

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

Page____ of ____

Company Name:	Duke Energy	BILL TO	PO #:
Project Manager:	Paul Mulkey	Company:	EPI
Address:		Attn:	Ike
City:	Hobbs State: Zip:	Address:	
Phone #:		City:	Eunice
Fax #:		State:	Zip:
Project #:	Project Owner:	Phone #:	394-3481
Project Name:		Fax #:	
Project Location:	CCWEST		

ANALYSIS REQUEST

FOR LAB USE ONLY LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRES.: ACID:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	B-TEX	Chlorides	Sulfates
H9206-1	DECCW10404463W3	G				✓					✓		10/4/04	145	✓	✓	✓
-2	9SW6	✓				✓					✓		"	155	✓	✓	✓
-3	8SW8	✓				✓					✓		"	200	✓	✓	✓

Sampler Relinquished: Eddie Hayes	Date: 10/4/04 Time:	Received By: Ian Glenn	Phone Result ☐ Yes ☐ No Additional Fax #:
Relinquished By: Ian Glenn	Date: 10/4/04 Time: 1637	Received By: (Lab Staff)	Fax Result: ☐ Yes ☐ No
Delivered BY: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☒ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/23/04
Reporting Date: 09/29/04
Project Owner: DUKE ENERGY FIELD SERVICES
Project Name: CC WEST
Project Location: UL-B, SEC25, T20S, R36E

Sampling Date: 09/22/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: BC

LAB NO. SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:	9/28/04	9/28/04	09/23/04	09/23/04	09/23/04	09/23/04
H9181-1 8SW7-2	<10.0	219	<0.005	<0.005	<0.005	<0.015
Quality Control	732	754	0.090	0.093	0.097	0.296
True Value QC	800	800	0.100	0.100	0.100	0.300
% Recovery	91.5	94.2	90.2	92.3	96.5	98.6
Relative Percent Difference	0.0	0.4	4.7	2.4	3.0	4.1

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

9/29/04
Date

H9181A.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/23/04
Reporting Date: 09/24/04
Project Owner: DUKE ENERGY FIELD SERVICES
Project Name: CC WEST
Project Location: UL-B, SEC25, T20S, R36E

Sampling Date: 09/22/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: AH

LAB NUMBER	SAMPLE ID	SO_4 (mg/Kg)	Cl (mg/Kg)
ANALYSIS DATE:		09/24/04	09/24/04
H9181-1	8SW7-2	89	37
Quality Control		50.98	970
True Value QC		50.00	1000
% Recovery		102	97.0
Relative Percent Difference		1.2	6.2
METHODS: EPA 600/4-79-020		375.4	325.3

Amy Hill
Chemist

9/24/04
Date

H9181

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Iain Olness
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Duke Energy Field Services
Facility Name	CC WEST
Location	UL-B, Sect. 25, T20S, R36E
Project Reference	130011
EPI Sampler Name	Morris Burkett

Bill To

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>
H9181-1 1	8SW7-2	G	1			X					X		22-Sep	12:15	X	X	X	X			
2																					
3																					

Sampler Relinquished: Iain Olness — Date 9/23/04 Time 1641 — Received By:

Relinquished by: — Date 09/23/2004 Time 4:45PM — Received By: (lab staff)

Delivered by: — Sample Cool & Intact: Yes / No — Checked By:

Fax Results To Iain Olness 505-394-2601

REMARKS:

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO:

Receiving Date: 09/09/04
Reporting Date: 09/20/04
Project Numberer: 130011
Project Name: CC WEST
Project Location: NOT GIVEN

Sampling Date: 09/09/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: GP

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{35}) (mg/Kg)
ANALYSIS DATE:		09/18/04	09/18/04
H9140-1	SDECCW99048SW1	<20	<20
H9140-2	SDECCW99048SW2	<20	<20
H9140-3	SDECCW99048SW3	<20	79
H9140-4	SDECCW99048SW4	<20	<20
H9140-5	SDECCW99046SW5	<20	665
H9140-6	SDECCW99049SW6	<20	215
H9140-7	SDECCW99048SW7	<20	4009
H9140-8	SDECCW99048SW8	<20	530
H9140-9	SDECCW9904NBHC10	517	8780
H9140-10	SDECCW9904SBHC10	576	4534
Quality Control		269	214
True Value QC		270	230
% Recovery		99.4	92.8
Relative Percent Difference		7.6	12.6

METHOD: SW-846 8015 M

Chemist

09/20/2004
Date

H9140A.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/09/04
Reporting Date: 09/21/04
Project Number: 130011
Project Name: CC WEST
Project Location: NOT GIVEN

Sampling Date: 09/09/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: AH

LAB NUMBER	SAMPLE ID	SO_4 (mg/Kg)	Cl (mg/Kg)
ANALYSIS DATE:		09/13/04	09/13/04
H9140-1	SDECCW99048SW1	48	48
H9140-2	SDECCW99048SW2	55	48
H9140-3	SDECCW99048SW3	136	64
H9140-4	SDECCW99048SW4	66	48
Quality Control		50.98	1030
True Value QC		50.00	1000
% Recovery		102	103
Relative Percent Difference		1.2	7.8

METHODS: EPA 600/4-79-020	375.4	325.3

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill
Chemist

9/21/04
Date

h9140

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO:

Receiving Date: 09/09/04
Reporting Date: 09/20/04
Project Numberer: 130011
Project Name: CC WEST
Project Location: NOT GIVEN

Sampling Date: 09/09/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		09/20/04	09/20/04	09/20/04	09/20/04
H9140-1	SDECCW99048SW1	<0.005	<0.005	<0.005	<0.015
H9140-2	SDECCW99048SW2	<0.005	<0.005	<0.005	<0.015
H9140-3	SDECCW99048SW3	<0.005	<0.005	<0.005	<0.015
H9140-4	SDECCW99048SW4	<0.005	<0.005	<0.005	<0.015
Quality Control		0.093	0.089	0.091	0.278
True Value QC		0.100	0.100	0.100	0.300
% Recovery		93.0	89.3	91.2	92.6
Relative Percent Difference		0.4	22.8	9.6	14.8

METHOD: EPA SW-846 8260

Chemist

9/20/04
Date

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

Page____ of ____

Company Name:	Duke Energy
Project Manager:	Paul Mulkey
Address:	
City: Hobbs	State: NM Zip:
Phone #:	
Fax #:	
Project #: 130011	Project Owner:
Project Name:	CC West
Project Location:	

BILL TO	PO #:
Company:	EPI
Attn:	Ian
Address:	
City:	Eunice
State: NM	Zip:
Phone #:	394 3487
Fax #:	

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING		ANALYSIS REQUEST															
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	#CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME	TPH	BTEX	Chlorides	Sulfates												
H9140-1	SDECCW990485W1	G	1			✓					✓		9-9-04	900	✓	✓	✓	✓												
-2	SDECCW990485W2					✓					✓			915																
-3	SDECCW990485W3					✓					✓			930																
-4	SDECCW990485W4					✓					✓			945																
-5	SDECCW990485W5					✓					✓			1000																
-6	SDECCW990485W6					✓					✓			1015																
-7	SDECCW990485W7					✓					✓			1030																
-8	SDECCW990485W8					✓					✓			1045																
-9	SDECCW990485BH@9					✓					✓			1145																
-10	SDECCW990485BH@10					✓					✓			1200																

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Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: Eddie Hauger	Date: 9-9-04	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date: 09/09/2004	Received By: (Lab Staff)	REMARKS: TPH < 100 run BTEX, Benzene < 10 + BTEX < 50 run Cl^- + SO_4^{2-}
	Time: 2:50 PM		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☒ Yes ☐ No Intact: ☒ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

CARDINAL LABORATORIES

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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/03/04
Reporting Date: 10/04/04
Project Number: 130011
Project Name: CC WEST
Project Location: UL-B SECT.25, T20S, R36E

Sampling Date: 09/01/04 & 09/02/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: GP/BC

LAB NO. SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{35}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:	09/11/04	09/11/04	09/07/04	09/07/04	09/07/04	09/07/04
H9123-1 SDECCW090104BH1(40')	<20	133	<0.005	<0.005	<0.005	<0.015
H9123-2 SDECCW090204BH1(55')	<20	<20	<0.005	<0.005	<0.005	<0.015
H9123-3 SDECCW090204BH1(60')	<20	<20	<0.005	<0.005	<0.005	<0.015
Quality Control	282	240	0.101	0.097	0.101	0.308
True Value QC	270	230	0.100	0.100	0.100	0.300
% Recovery	105	104	101	97.2	101	103
Relative Percent Difference	5.3	8.8	4.4	1.1	3.7	3.5

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

10/04/04
Date

H9123A.XLS

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 09/03/04
Reporting Date: 09/08/04
Project Owner: DEFS
Project Name: CC WEST
Project Location: UL-B,SEC25 T20S R36E

Sampling Date: 09/01-09/02/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER	SAMPLE ID	SO_4 (mg/Kg)	Cl (mg/Kg)
ANALYSIS DATE:		09/07/04	09/07/04
H9123-1	SDECCW090104BH1(40')	21	64
H9123-2	SDECCW090204BH1(55')	80	96
H9123-3	SDECCW090204BH1(60')	105	208
Quality Control		50.98	950
True Value QC		50.00	1000
% Recovery		102	95.0
Relative Percent Difference		1.2	4.2
METHODS: EPA 600/4-79-020		375.4	325.3

Amy Hill
Chemist

9/8/04
Date

H9123

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Iain Olness
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Duke Energy Field Services
Facility Name	CC WEST
Location	UL-B, Sect. 25, T20S, R36E
Project Reference	130011
EPI Sampler Name	Manuel Gonzales

Bill To

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>
H9123-1 1	SDECCW090104BH1(40')	G	1			X					X		1-Sep	15:00	X	X	X	X			
-2 2	SDECCW090204BH1(55')	G	1			X					X		2-Sep	7:36	X	X	X	X			
-3 3	SDECCW090204BH1(60')	G	1			X					X		2-Sep	10:16	X	X	X	X			

Sampler Relinquished: Iain Olness
Date: 9/3/04
Time: 1210
Received By:

Relinquished by:
Date:
Time:
Received By: (lab staff) Amy Hill

Delivered by:
Sample Cool & Intact: Yes / No
Checked By:

Fax Results To Iain Olness 505-394-2601

REMARKS: Analyze sample SDECCW090204BH1(60') if contaminants are detected in sample SDECCW090204BH1(55').

CARDINAL LABORATORIES

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PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 01/12/05
Reporting Date: 01/17/05
Project Owner: DUKE ENERGY FIELD SERVICES (130011)
Project Name: CC WEST
Project Location: UL-B, SECT. 25, T20S, R36E

Sampling Date: 01/12/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		01/14/05	01/14/05	01/14/05	01/14/05
H9466-1	NHBC@10'	<0.005	<0.005	<0.005	<0.015
H9466-2	SHBC@10'	<0.005	<0.005	0.377	1.37
Quality Control		0.096	0.092	0.097	0.309
True Value QC		0.100	0.100	0.100	0.300
% Recovery		95.8	92.4	97.4	103.0
Relative Percent Difference		1.5	1.1	1.1	0.1

METHOD: EPA SW-846 8260

Chemist

1/17/05
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: IAIN OLNESS
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 01/12/05
Reporting Date: 01/14/05
Project Owner: DUKE ENERGY FIELD SERVICES (130011)
Project Name: CC WEST
Project Location: UL-B, SECT. 25, T20S, R36E

Sampling Date: 01/12/05
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)
ANALYSIS DATE:		01/14/05	01/14/05
H9466-1	NBHC@10'	48	113
H9466-2	SBHC@10'	96	71.4
Quality Control		1010	50.33
True Value QC		1000	50.00
% Accuracy		101	101
Relative Percent Difference		1.0	0.2

METHODS: Cl: Std. Methods 4500-ClˉB; SO_4: EPA 600 375.4

Note: Analyses performed on 1:4 w:v aqueous extracts.

Amy Hill
Chemist

11/14/05
Date

h9466

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Iain Olness
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Duke Energy Field Services
Facility Name	CC WEST
Location	UL-B, Sect. 25, T20S, R36E
Project Reference	130011
EPI Sampler Name	Roger Boone

Bill To

ANALYSIS REQUEST

LAB I.D.		SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>
H9466-1	1	NBHC@10'	G	1			X					X		12-Jan	11:00	X		X	X				
-2	2	SBHC@10'	G	1			X					X		12-Jan	11:15	X		X	X				
	3																						

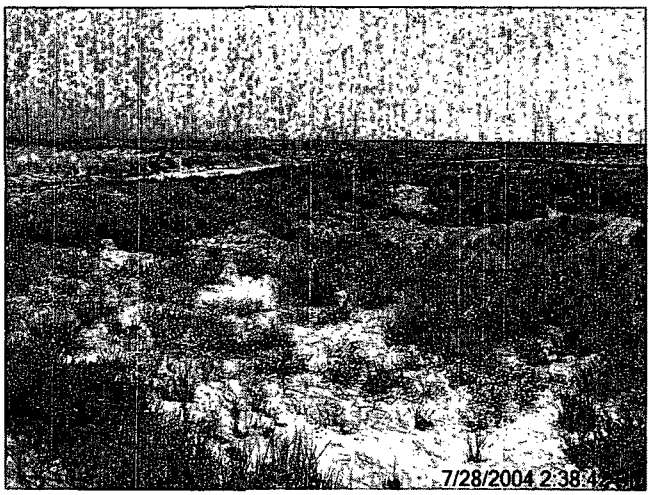
Sampler Relinquished: Roger Boone	Date 1-12-05 Time 2:40	Received By: Brett Clay
Relinquished by: Brett Clay	Date 1-12-05 Time 4:25	Received By: (lab staff) Burgess J. Cooke
Delivered by:	Sample Cool & Intact: (Yes) No	Checked By:

Fax Results To Iain Olness 505-394-2601

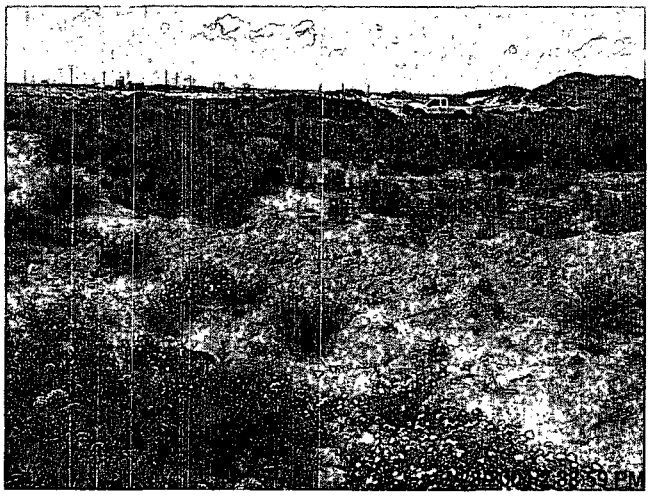
REMARKS:

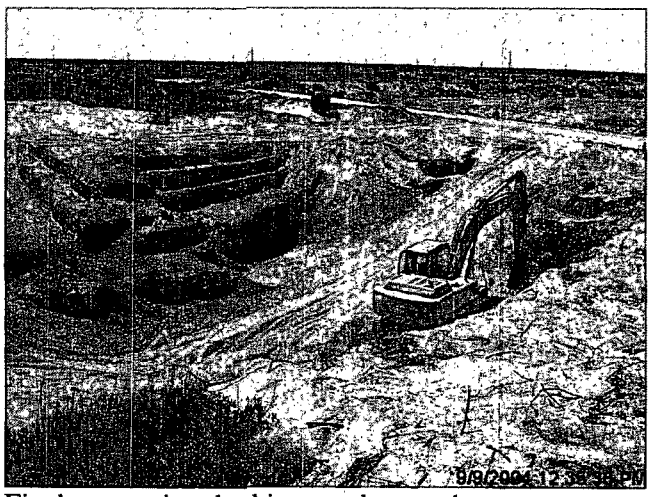
APPENDIX B

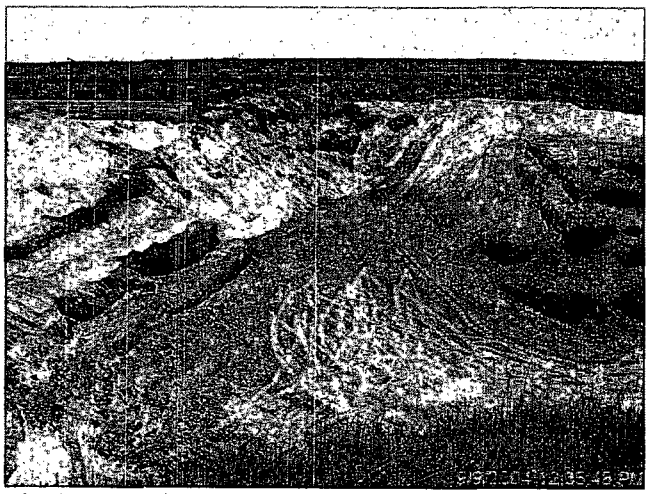
SITE PHOTOGRAPHS

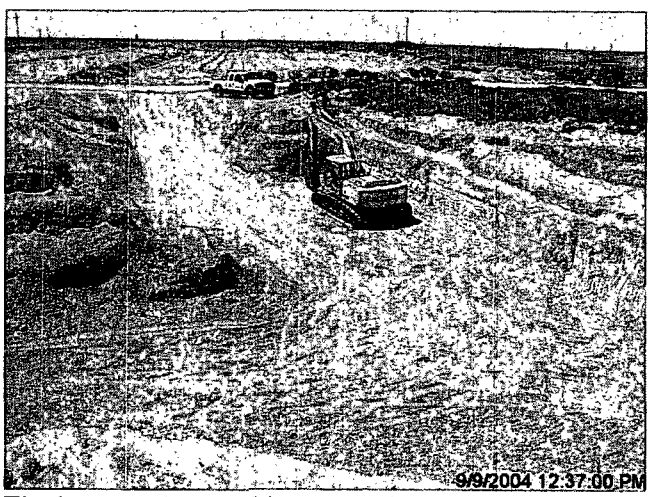


Release area, looking northwesterly.

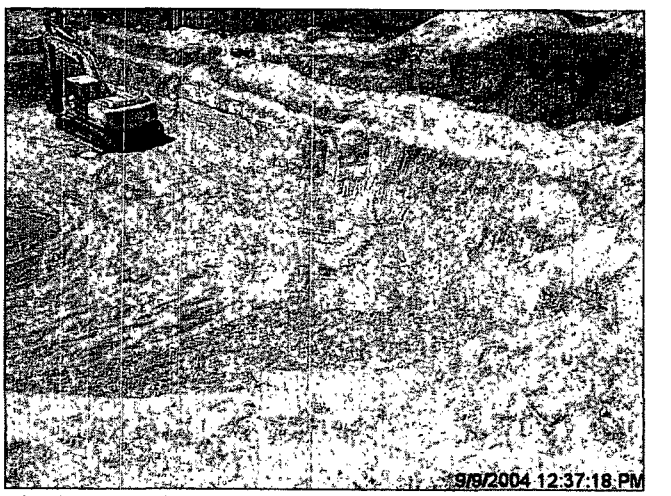

Release area, looking northerly.


Final excavation, looking southwesterly.


Final excavation, looking southerly.



Final excavation, looking westerly.



Final excavation, looking northwesterly.

APPENDIX C

SOIL BORING LOG

Log Of Test Borings

(NOTE - Page 1 of 2)

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES
EUNICE
505-394-3481

Project Number: 130011

Project Name: CC West

Location: Lea County, New Mexico

Boring Number: SB-1 | **Surface Elevation:** -

Start Date: 09/01/04 **Time:** 1000

Completion Date: 09/02/04 **Time:** 1030

Sample # and Time	Sample Type	Recovery (inches)	Moisture	PID Readings (ppm)	U.S.C.S. Symbol	Depth (feet)	Description
						5	
						10	10' Excavation Basin
							NO SAMPLES COLLECTED
						15	
						20	
						25	
						30	
						35	

Log Of Test Borings

ENVIRONMENTAL PLUS, INC.
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES
EUNICE
505-394-3481

Project Number: 130011
Project Name: CC West
Location: Lea County, New Mexico
Boring Number: SB-1 | **Surface Elevation:** -

Start Date: 09/01/04 Time: 1000
Completion Date: 09/02/04 Time: 1030

Sample # and Time	Sample Type	Recovery (inches)	Moisture	PID Readings (ppm)	U.S.C.S. Symbol	Depth (feet)	Description
						35	
1422	Tube			2,999	SP		Reddish-brown, medium, Fine to Medium-Grained SAND WITH SOME GRAVEL, TRACE CLAY.
						40	
1500	Tube			2,059	SP		
						45	
1647	Tube			811	SP		Caliche
						50	
1739	Tube			174	SP		Caliche
						55	
1936	Tube			17.8	SP		
						60	
1016	Tube			16.2	SP		End of Boring at 62.0'

Water Level Measurements (feet)

Date	Time	Sample Depth	Casing Depth	Cave-in Depth	Water Level
09/01/04	-	-	-	-	-
09/01/04	-	-	-	-	-

Drilling Method: HSA 3.5" ID
Backfill Method: Bentonite Chips and Cuttings
Field Representative: MG

APPENDIX D

RISK/EXPOSURE ASSESSMENT INPUT DATA

FATE AND TRANSPORT MODEL INPUT SUMMARY FILE

Model Description:
Unsaturated zone model linked with saturated zone model

Title:
CC West No Barrier

Simulation time (years). 100

Vadose Zone Source Parameters

Thickness of contamination (m)	14.
Depth to top of contamination (m).	3.5
Length of source (m)	49.
Width of source (m).	43.

Unsaturated Zone Properties

Total Porosity in vadose zone (cm3/cm3)	0.30
Residual water content (cm3/cm3)	5.00E-02
Fraction organic carbon (g oc/g soil).	2.00E-03
Soil bulk density (g/cm3).	1.7
Infiltration Rate (cm/yr).	36.
Saturated conductivity (m/d)	5.0
Van Genuchten's N.	2.7
Thickness of vadose zone (m)	34.

Aquifer Properties

Effective porosity (cm3/cm3)	0.30
Fraction organic carbon (g oc/g soil).	2.00E-03
Hydraulic conductivity (m/d)	5.0
Soil bulk density (g/cm3).	1.7
Hydraulic gradient (m/m)	1.00E-03

***Longitudinal dispersivity (m). code calculated
***Transverse dispersivity (m). code calculated
***Vertical dispersivity (m). code calculated

Receptor Well Location

Distance downgradient (m).	0.10
Distance cross-gradient (m).	0.10
Depth to top of well screen (m).	0.0
Depth to bottom of well screen(m).	2.0
Number of points used to calc. conc.	5

TPH Data for Unsaturated Zone Source

Concentration of TPH in soil (mg/kg)	0.0
Molecular weight of TPH (g/mol).	0.0

CHEMICAL DATA FOR: Benzene

Diffusion coefficient in air (cm2/s)	8.80E-02
Diffusion coefficient in water (cm2/s)	9.80E-06
Solubility (mg/l)	1.75E+03
Vapor pressure (mmHg)	95.
KOC (L/kg).	59.
Henry's Law coefficient (-).	0.23
Molecular weight (g/mol).	78.
Degradation rate, saturated zone (1/d).	9.60E-04
Degradation rate, vadose zone (1/d).	9.60E-04

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: Ethylbenzene

Diffusion coefficient in air (cm2/s)	7.50E-02
Diffusion coefficient in water (cm2/s)	7.80E-06
Solubility (mg/l)	1.69E+02
Vapor pressure (mmHg)	9.6
KOC (L/kg).	3.60E+02
Henry's Law coefficient (-).	0.32
Molecular weight (g/mol).	1.06E+02
Degradation rate, saturated zone (1/d).	3.00E-03
Degradation rate, vadose zone (1/d).	3.00E-03

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: Toluene

Diffusion coefficient in air (cm2/s)	8.70E-02
Diffusion coefficient in water (cm2/s)	8.60E-06
Solubility (mg/l)	5.26E+02
Vapor pressure (mmHg)	28.
KOC (L/kg).	1.80E+02
Henry's Law coefficient (-).	0.27
Molecular weight (g/mol).	92.
Degradation rate, saturated zone (1/d).	2.50E-02
Degradation rate, vadose zone (1/d).	2.50E-02

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: TPH Aromatic C8-10

Diffusion coefficient in air (cm2/s)	0.10
Diffusion coefficient in water (cm2/s)	1.00E-05
Solubility (mg/l)	65.
Vapor pressure (mmHg)	4.8
KOC (L/kg).	1.60E+03
Henry's Law coefficient (-).	0.49
Molecular weight (g/mol).	1.20E+02
Degradation rate, saturated zone (1/d).	0.0
Degradation rate, vadose zone (1/d).	0.0

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.76E+02

CHEMICAL DATA FOR: TPH Aromatic C16-21

Diffusion coefficient in air (cm2/s) 0.10

Diffusion coefficient in water (cm2/s)	1.00E-05
Solubility (mg/l)	0.51
Vapor pressure (mmHg)	5.80E-03
KOC (L/kg).	1.60E+04
Henry's Law coefficient (-).	1.30E-02
Molecular weight (g/mol).	1.90E+02
Degradation rate, saturated zone (1/d).	0.0
Degradation rate, vadose zone (1/d).	0.0

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 8.78E+03

CHEMICAL DATA FOR: Xylenes

Diffusion coefficient in air (cm2/s)	7.20E-02
Diffusion coefficient in water (cm2/s)	8.50E-06
Solubility (mg/l)	1.98E+02
Vapor pressure (mmHg)	8.8
KOC (L/kg).	2.40E+02
Henry's Law coefficient (-).	0.29
Molecular weight (g/mol).	1.06E+02
Degradation rate, saturated zone (1/d).	1.90E-03
Degradation rate, vadose zone (1/d).	1.90E-03

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 1.4

FATE AND TRANSPORT MODEL INPUT SUMMARY FILE

Model Description:
Unsaturated zone model linked with saturated zone model

Title:
CC West Barrier

Simulation time (years). 100

Vadose Zone Source Parameters

Thickness of contamination (m)	14.
Depth to top of contamination (m).	3.5
Length of source (m)	49.
Width of source (m).	43.

Unsaturated Zone Properties

Total Porosity in vadose zone (cm3/cm3)	0.30
Residual water content (cm3/cm3)	5.00E-02
Fraction organic carbon (g oc/g soil).	2.00E-03
Soil bulk density (g/cm3).	1.7
Infiltration Rate (cm/yr).	1.00E-02
Saturated conductivity (m/d)	5.0
Van Genuchten's N.	2.7
Thickness of vadose zone (m)	34.

Lens Parameters

Thickness of lens (m).	0.60
Total porosity in lens (cm3/cm3)	0.45
Residual water content--lens (cm3/cm3)	0.17
Saturated conductivity (m/d)	1.50E-02
Van Genuchten N in lens.	1.1

Aquifer Properties

Effective porosity (cm3/cm3)	0.30
Fraction organic carbon (g oc/g soil).	2.00E-03

Hydraulic conductivity (m/d)	5.0
Soil bulk density (g/cm3).	1.7
Hydraulic gradient (m/m)	1.00E-03

***Longitudinal dispersivity (m). code calculated
***Transverse dispersivity (m). code calculated
***Vertical dispersivity (m). code calculated

Receptor Well Location

Distance downgradient (m).	0.10
Distance cross-gradient (m).	0.10
Depth to top of well screen (m).	0.0
Depth to bottom of well screen(m).	2.0
Number of points used to calc. conc.	5

TPH Data for Unsaturated Zone Source

Concentration of TPH in soil (mg/kg)	0.0
Molecular weight of TPH (g/mol).	0.0

CHEMICAL DATA FOR: Benzene

Diffusion coefficient in air (cm2/s)	8.80E-02
Diffusion coefficient in water (cm2/s)	9.80E-06
Solubility (mg/l)	1.75E+03
Vapor pressure (mmHg)	95.
KOC (L/kg).	59.
Henry's Law coefficient (-).	0.23
Molecular weight (g/mol).	78.
Degradation rate, saturated zone (1/d).	9.60E-04
Degradation rate, vadose zone (1/d).	9.60E-04

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: Ethylbenzene

Diffusion coefficient in air (cm2/s)	7.50E-02
Diffusion coefficient in water (cm2/s)	7.80E-06
Solubility (mg/l)	1.69E+02
Vapor pressure (mmHg)	9.6
KOC (L/kg).	3.60E+02
Henry's Law coefficient (-).	0.32
Molecular weight (g/mol).	1.06E+02
Degradation rate, saturated zone (1/d).	3.00E-03
Degradation rate, vadose zone (1/d).	3.00E-03

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: Toluene

Diffusion coefficient in air (cm2/s)	8.70E-02
Diffusion coefficient in water (cm2/s)	8.60E-06
Solubility (mg/l)	5.26E+02
Vapor pressure (mmHg)	28.
KOC (L/kg).	1.80E+02
Henry's Law coefficient (-).	0.27
Molecular weight (g/mol).	92.
Degradation rate, saturated zone (1/d).	2.50E-02
Degradation rate, vadose zone (1/d).	2.50E-02

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.00E-03

CHEMICAL DATA FOR: TPH Aromatic C8-10

Diffusion coefficient in air (cm2/s)	0.10
Diffusion coefficient in water (cm2/s)	1.00E-05
Solubility (mg/l)	65.
Vapor pressure (mmHg)	4.8
KOC (L/kg).	1.60E+03
Henry's Law coefficient (-).	0.49
Molecular weight (g/mol).	1.20E+02
Degradation rate, saturated zone (1/d).	0.0
Degradation rate, vadose zone (1/d).	0.0

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 5.76E+02

CHEMICAL DATA FOR: TPH Aromatic C16-21

Diffusion coefficient in air (cm2/s)	0.10
Diffusion coefficient in water (cm2/s)	1.00E-05
Solubility (mg/l)	0.51
Vapor pressure (mmHg)	5.80E-03
KOC (L/kg).	1.60E+04
Henry's Law coefficient (-).	1.30E-02
Molecular weight (g/mol).	1.90E+02
Degradation rate, saturated zone (1/d).	0.0
Degradation rate, vadose zone (1/d).	0.0

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 8.78E+03

CHEMICAL DATA FOR: Xylenes

Diffusion coefficient in air (cm2/s)	7.20E-02
Diffusion coefficient in water (cm2/s)	8.50E-06
Solubility (mg/l)	1.98E+02
Vapor pressure (mmHg)	8.8
KOC (L/kg).	2.40E+02
Henry's Law coefficient (-).	0.29
Molecular weight (g/mol).	1.06E+02
Degradation rate, saturated zone (1/d).	1.90E-03
Degradation rate, vadose zone (1/d).	1.90E-03

Source Concentrations:

Source conc. for unsaturated zone model (mg/kg). 1.4

APPENDIX E

SITE INFORMATION AND METRICS FORM

AND

INITIAL C-141

Duke Energy Field Services

Duke Energy Field Services Site Information and Metrics	**Incident Date:** Historical	**NMOCD Notified:** Not Required

Site: CC West (Removed 4" Line)	**Assigned Site Reference #:** 130011
Company: Duke Energy Field Services	
Street Address:	
Mailing Address: 11525 West Carlsbad Highway	
City, State, Zip: Hobbs, New Mexico 88240	
Representative: Paul Mulkey	
Representative Telephone: (505) 397-5716	
Telephone:	
Fluid volume released (bbls): Unknown	**Recovered (bbls):** 0 barrels
>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: CC West (Removed 4" Line)	
Source of contamination: Removed 4" Steel Pipeline	
Land Owner, i.e., BLM, ST, Fee, Other: Dale Cooper Family Trust	
LSP Dimensions: 126 feet by 81 feet	
LSP Area: ≈10,217 ft^2	
Location of Reference Point (RP):	
Location distance and direction from RP:	
Latitude: N 32° 33' 2.85514"	
Longitude: W 103° 18' 18.55302"	
Elevation above mean sea level: 3,543	
Feet from South Section Line:	
Feet from West Section Line:	
Location- Unit or ¼¼: NW¼ of the NE¼	**Unit Letter:** B
Location- Section: 25	
Location- Township: T20S	
Location- Range: R36E	
Surface water body within 1000 ' radius of site: none	
Domestic water wells within 1000' radius of site: none	
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' below ground surface	
Depth of contamination (DC): Unknown	
Depth to ground water (DG – DC = DtGW): <50'	

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= 0*	*Surface Water Score= 0*

Site Rank (1+2+3) = 0

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

Duke Energy Field Services

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 – INFORMATIONAL ONLY

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Duke Energy Field Services	**Contact** Paul Mulkey
Address 11525 West Carlsbad Highway Hobbs, New Mexico 88240	**Telephone No.** (505) 397-5716
Facility Name CC West (Removed 4" Line)	**Facility Type** Removed 4" Steel Pipeline

Surface Owner	**Mineral Owner**	**Lease No.**
Dale Cooper Family Trust		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the North/South Line	Feet from the East/West Line	
B	25	T20S	R36E			**County:** Lea **Lat.** N 32° 33' 2.85514" **Lon.** W 103° 18' 18.553"

NATURE OF RELEASE

Type of Release Natural Gas Pipeline Fluids	**Volume of Release** Unknown	**Volume Recovered** 0 barrels
Source of Release Removed 4" steel pipeline operating at 20 lbs with a normal daily flow rate of 2.5 million gallons per day	**Date and Hour of Occurrence** Historical	**Date and Hour of Discovery** July 28, 2004
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	**If YES, To Whom?** Not Required	
By Whom? Not Required	**Not Required**	
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.*
4" steel line began leaking, probably due to internal corrosion. Line has subsequently been removed.

Describe Area Affected and Cleanup Action Taken.*
Soil contaminated above the NMOCD Remedial Guidelines will be disposed of at an approved facility or remediated on site. Remedial Goals: TPH = 100 mg/Kg, benzene = 10 mg/Kg, and BTEX = 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 **E-mail Address:** pdmulkey@duke-energy.com	**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