

ENVIRONMENTAL PLUS, INC.

STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES

5 August 2005

Mr. Larry Johnson, Environmental Engineer New Mexico Oil Conservation Division 1625 North French Drive Hobbs, New Mexico 88240



13231

Re: Closure Proposal Chesapeake Energy Ruth 20-2 – Reference #160011 UL-D (NW¼ of the NW¼) of Section 20, Township 16 South, Range 36 East 1172 Latitude N 32° 54' 48.033" and Longitude W 103° 22' 57.430"

Dear Mr. Johnson:

Introduction

Environmental Plus, Inc. (EPI), on behalf of Mr. Bradley Blevins, Chesapeake Energy Corporation (Chesapeake), submits this letter report documenting the work completed at the above referenced release site. The release site is situated on land owned by the State of New Mexico and is located approximately 2.4 miles southwest of Lovington, New Mexico (reference *Figure 1*). Information obtained from the New Mexico Office of the State Engineer's website and a United States Geological Survey (USGS) database indicates there are two water supply wells located within a 1,000-foot radius of the release site (reference Figure 2). In addition, there are more than twenty wells located within a one-mile radius of the release site. Groundwater level data for the well labeled USGS #1 was recorded at 70.5 feet below ground surface (bgs) in February 1991. The average depth to water for all wells with recorded groundwater level data is approximately 71 feet bgs (reference *Table 1*). Based on this information, it is estimated that the depth to groundwater at the site is between 50 and 100 feet bgs. The attached site information and metrics form ranks the site in accordance with the <u>NMOCD</u> Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993).

The release of 500 gallons of diesel fuel was the result of the fuel line located between the diesel tank and the generator being cut by vandals and the diesel fuel being allowed to flow out onto the caliche pad. Upon being notified of the release, Chesapeake retained EPI to conduct emergency response measures at the site. EPI mobilized to the site and excavated the saturated soil and stockpiled it on plastic until such time that remediation activities could commence. Upon completion of initial excavation activities, three composite samples were collected from the base of the excavation and submitted to an independent laboratory for quantification or total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene and total xylenes (BTEX constituents). Analytical results for these samples indicated TPH concentrations ranging from 3,440 parts per million (ppm) to 8,790 ppm with an average concentration of 5,350 ppm remaining in the excavation (reference *Table 1*). In addition, reported BTEX constituent concentrations ranged from 0.887 ppm to 3.11 ppm with an average concentration of 1.64 ppm (reference *Table 1*).

Field Work

EPI returned to the site on June 8, 2005 and initiated remediation activities. Excavation of the hydrocarbon impacted soil (approximately 100 cubic yards) continued until field analyses indicated

Chesapeake - 147179 facility Box f PACOLO3353567 Inspice - C PACOLO3353545481 incident - APACOLO335454543/481

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remedial concentrations had been achieved. Field analyses were conducted utilizing a MiniRae[©] photoionization detector (PID) equipped with a 9.7 electron volt (eV) lamp. The field analyses indicated organic vapor concentrations ranged from 10.1 parts per million (ppm) to 73.5 ppm, with an average concentration of 33.5 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents).

Analytical results, received on July 14, 2005 indicated remedial goals had not been achieved and, as such, additional excavation activities commenced on July 25, 2005 to excavate the areas from which analytical results indicated contaminant levels exceeded NMOCD remedial guidelines. An additional 40 cubic yards of soil were excavated during this phase of the remedial activities. Excavation activities continued until field analyses utilizing a MiniRae[®] PID equipped with a 9.7 eV lamp indicated remedial concentrations had been achieved. The field analyses indicated organic vapor concentrations ranged from 0.5 ppm to 3.0 ppm, with an average concentration of 1.1 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of TPH and BTEX constituents.

Analytical Results

Eleven soil samples were collected from the excavation on July 11, 2005 and submitted to an independent laboratory for quantification of TPH and BTEX constituents. Analytical results for two of the soil samples (SP-1 and SP-2) reported contaminant concentrations at or below each analyte's respective method detection limit (MDL). Analytical results for two additional samples (SP-4 and SP-8) reported contaminant concentrations below the NMOCD remedial guidelines. The only contaminants detected in these samples were diesel range organics (DRO) at concentrations of 90.4 milligrams per kilogram (mg/Kg) in sample SP-4 and 27.8 mg/Kg in sample SP-8.

Analytical results for the remaining seven soil samples (SP-2, SP-3, SP-5, SP-6, SP-9, SP-10 and SP-11) indicated TPH concentrations ranging from 108 mg/Kg to 3,410 mg/Kg, with an average concentration of 835 mg/Kg (reference *Table 1*). Of these samples, the only contaminants detected in three of the samples (SP-3, SP-5 and SP-11) were DRO, ranging in concentrations from 108 mg/Kg to 213 mg/Kg, with an average concentration of 163 mg/Kg (reference *Table 1*). The remaining four samples (SP-2, SP-6, SP-9 and SP-10) had gasoline range organic (GRO) concentrations ranging from 14.7 mg/Kg to 166 mg/Kg and DRO concentrations ranging from 315 mg/Kg to 3,240 mg/Kg (reference *Table 1*). BTEX constituents were not detected at or above each analyte's respective MDL in any of these seven soil samples.

Based on the fact that contaminant concentrations exceeded the NMOCD remedial goals in seven of the sampling points, additional excavation activities were completed. The additional excavation activities were completed in the areas where contaminant concentrations exceeded the NMOCD remedial goals. When field analyses indicated the successful removal of the impacted soil, five additional soil samples were collected from these areas.

Analytical results for three of these five samples (SP-5, SP-10 and SP-11) reported contaminant concentrations as ND at or above each analyte's respective MDL (reference *Table 1*). Analytical results for the remaining two samples (SP-6 and SP-9) indicated TPH concentrations of 138 mg/Kg and 276 mg/Kg, respectively (reference *Table 1*). The only contaminants detected in sample SP-6 were

DRO, while GRO and DRO were detected in sample SP-9. BTEX constituents were not detected in any sample at or above each analyte's respective MDL.

Discussion

Based on NMOCD guidelines, the remedial goals for this site are as follows:

| Analyte | Remedial Goal |
|-------------------|---------------|
| Benzene | 10 mg/Kg |
| BTEX constituents | 50 mg/Kg |
| ТРН | 100 mg/Kg |

Based on these remedial goals, analytical results indicate four areas with contamination remaining above the remedial goals. TPH concentrations for these areas ranged from 108 mg/Kg to 861 mg/Kg (reference *Figure 4*). Contaminant concentrations in three of these areas, SP-3, SP-6 and SP-9, only slightly exceed these remedial goals. TPH concentrations for these areas are 108 mg/Kg, 138 mg/Kg and 276 mg/Kg, respectively. Analytical results for the sample collected from the fourth area, SP-2, indicate TPH concentrations of 861 mg/Kg (reference *Figure 4*).

The remedial goals for this site are based on the fact that there are two water supply wells, L 00209C and USGS #1, located within a 1,000-foot radius of the release site (reference *Figure 2* and *Table 2*). Well L 00209C is an irrigation well and is owned by <u>The College of The Southwest</u> and well USGS #1 is either an irrigation or stock well. However, groundwater in this area flows southeasterly and these wells area located northeast (L00209C) and northwest (USGS #1) of the release site and, thus are located upgradient and will not be impacted by the release.

Based on this and the fact that the depth to groundwater is between 50 and 100 feet below the extent of contamination and there are no bodies of surface water located within a 200-foot radius of the release site, it is suggested that there is minimal to no risk to human health or the environment. Therefore, the TPH remedial goal should be changed from 100 mg/Kg to 1,000 mg/Kg.

Conclusions and Recommendations

Based on field and laboratory analyses and the fact that there is minimal threat to human health or the environment as evidenced by the discussion presented above, it is recommended that the excavation be backfilled with caliche obtained from an off site source. Upon completion of the backfilling activities, it is further recommended the site file be closed and a *No Further Action Required* letter be issued to Chesapeake Energy.

Chesapeake

Should you any questions or concerns, please feel free to contact me at (505) 394-3481 or via e-mail at <u>iolness@envplus.net</u> or Mr. Bradley Blevins at (505) 391-1462 ext. 24 or via e-mail at <u>bblevins@chkenergy.com</u>. All official communication should be addressed to:

Mr. Bradley Blevins Chesapeake Energy 5014 Carlsbad Highway Hobbs, New Mexico 88240

Sincerely,

ENVIRONMENTAL PLUS, INC.

Iain Olness, P.G. Hydrogeologist

cc: Bradley Blevins, Chesapeake Energy – Hobbs, NM
 Curtis Blake, Chesapeake Energy – Hobbs, NM
 Jace Marshall, Chesapeake Energy – Oklahoma City, OK
 Cody Morrow, New Mexico State Land Office, Surface Resource Division – Albuquerque, NM

| | A | Incident Date: | NMOCD Not | ified: | | | | | |
|---|----------------------------|-------------------------------|---|--|--|--|--|--|--|
| | | 03 June 2005 | 04 June 2005 | | | | | | |
| Che | esapeake | | | | | | | | |
| | tion and Metrics | | | | | | | | |
| Site: BRC Federal Well #1 Battery Assigned Site Reference #: 160010 | | | | | | | | | |
| | esapeake Energy | _ | | | | | | | |
| | 5014 Carlsbad Highwa | 1V | | - 1,44 | | | | | |
| | s: 5014 Carlsbad Highw | | | | | | | | |
| | : Hobbs, New Mexico | | 18,1 1 18881 | | | | | | |
| | Bradley Blevins | | | | | | | | |
| Representative | | -1462 ext. 24 | | | | | | | |
| Telephone: | () | | | | | | | | |
| | eleased (bbls): 500 gallo | ons | Recovered (bbls): 0 ga | llons | | | | | |
| | | OCD verbally within 24 h | | · · · · · · · · · · · · · · · · · · · | | | | | |
| | | oplies to unauthorized rele | | | | | | | |
| 5-25 bi | ols: Submit form C-141 wit | thin 15 days (Also applies | to unauthorized release | es of 50-500 mcf Natural Gas) | | | | | |
| | Pit (LSP) Name: Ruth | | | | | | | | |
| Source of conta | mination: Fuel line supp | lying diesel to a generator v | was vandalized and all the | diesel fuel was released onto the surface. | | | | | |
| | e., BLM, ST, Fee, Other | : State of New Mexico | | | | | | | |
| | s: 75 feet by 45 feet | | | | | | | | |
| LSP Area: ≈3, | 150 ft ² | | | | | | | | |
| Location of Ref | ference Point (RP): | | | | | | | | |
| Location distan | ice and direction from R | P : | | | | | | | |
| Latitude: N 32° | 54' 48.033" | | | | | | | | |
| Longitude: W | 03° 22' 57.430" | | | · · · · · · · · · · · · · · · · · · · | | | | | |
| | e mean sea level: 3,938 | | | | | | | | |
| Feet from Sout | h Section Line: | | | | | | | | |
| Feet from West | Section Line: | | | | | | | | |
| Location-Unit | or 1/41/4: NW1/4 of the NV | W ¹ /4 Uni | t Letter: D | | | | | | |
| Location-Section | on: 20 | | | | | | | | |
| Location- Town | nship: T16S | | | | | | | | |
| Location- Rang | | | _ 1 | | | | | | |
| | | | · · · · · · · · · · · · · · · · · · · | | | | | | |
| Surface water | oody within 1000 ' radiu | s of site: none | · · · • · · · · · · · · · · · · · · · · | | | | | | |
| | wells within 1000' radi | | #1 as illustrated on Fig | ure 2) | | | | | |
| | | | | rigation well – L 00209C and USGS | | | | | |
| | | | strated on Figure 2) | | | | | | |
| Public water su | pply wells within 1000' | | | | | | | | |
| | d surface to ground wat | | | | | | | | |
| | mination (DC): < 10 fee | | | · · · · · · · · · · · · · · · · · · · | | | | | |
| | d water (DG – DC = Dt | | | | | | | | |
| | round Water | 2. Wellhead Pr | cotection Area | 3. Distance to Surface Water Body | | | | | |
| | <50 feet: 20 points | If <1000' from water se | | <200 horizontal feet: 20 points | | | | | |
| | 50 to 99 feet: 10 points | private domestic water | | 200-100 horizontal feet: 10 points | | | | | |
| | | If >1000' from water se | | | | | | | |
| - | >100 feet: 0 points | private domestic water | source: 0 points | >1000 horizontal feet: 0 points | | | | | |
| Ground water S | | Wellhead Protection A | rea Score= 20 | Surface Water Score= 0 | | | | | |
| Site Rank (1+2+ | | | | | | | | | |
| <u> </u> | | te Ranking Score and A | Acceptable Concentration | tions | | | | | |
| Parameter | >19 | | 0-19 | 0-9 | | | | | |
| | 10 ppm | 10 | 0 ppm | 10 ppm | | | | | |
| Benzene ¹ | | | | 50 ppm | | | | | |
| Benzene ¹ BTEX ¹ | 50 ppm | 5 | 0 ppm | 50 ppm | | | | | |
| BTEX ¹ TPH | | 1,0 | 00 ppm | 50 ppm 5,000 ppm | | | | | |

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

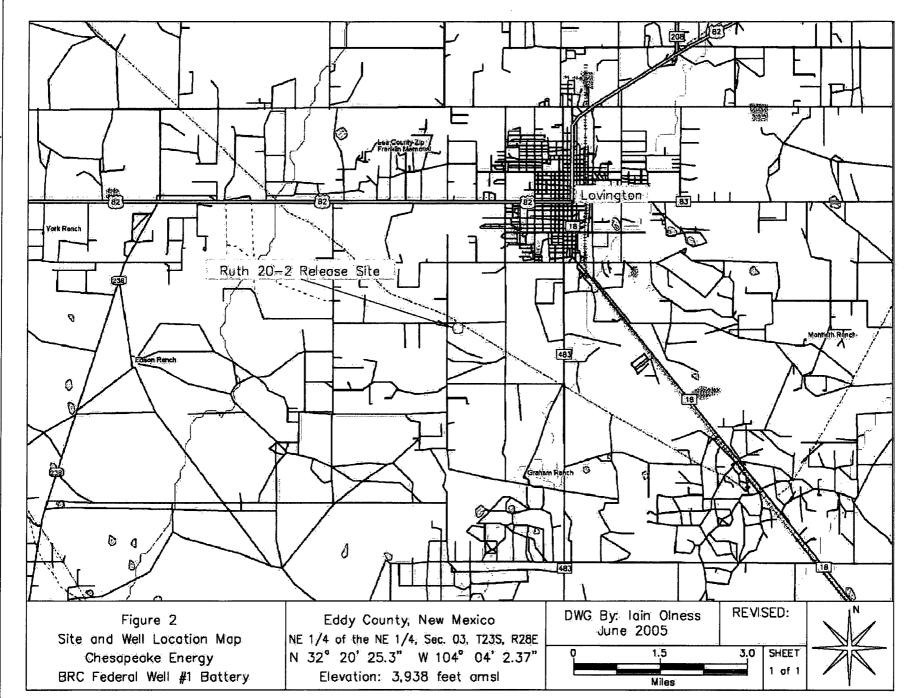
| | 5 5 | Chesapeake 29 C |
|---|-------------|--|
| State of New Mexico Energy Minerals and Natural Resources | 8.18.000 B. | Form C-141 Revised October 10, 2003 |
| Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 | N Hareer or | Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form |

| Release | Notification | and Corrective | Action |
|----------|--------------|----------------|--------|
| Inciense | TYONHCATION | and corrective | ACHOH |

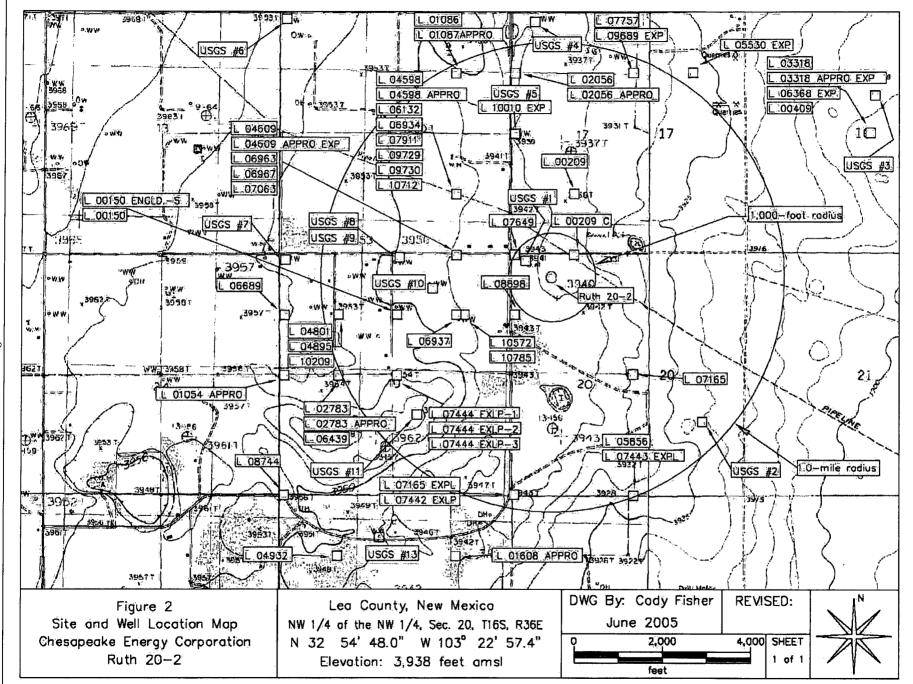
| | | | | | | OPERATO | R | 🛛 Initial | Report | Final Report | |
|--|--|---|--|---|--|--|--|--|--|---|--|
| Name of Co | | | nergy | | | Contact: Bradley Blevins | | | | | |
| Address: 50 | | | | | | Telephone No.: (505) 391-1462 ext. 24 | | | | | |
| Facility Nar | ne: Ruth 2 | 0-2 | | | | Facility Type: | Tank Battery | | | , | |
| and the second second second second | Surface Owner: State of New Mexico - Mineral Owner Leased by Dale Gandy | | | | | State of New | Mexico | Lease No | .: V0-47 | /19-0000 | |
| LOCATIO | | | | | ION | NOF RELE | ASE | 30 | ,025 | 36866 | |
| Unit Letter D | Section 20 | Township 16 S | Range 36 E | Feet from the | North/South Line Feet from the | | East/West Li | 10 | County Lea | | |
| | _ | L | Latitu | | | 33" Longitude: W 103° 22' 57.430" E OF RELEASE | | | | | |
| Type of Relea | se: Diesel I | Fuel | | | | | lease: 500 gallons | Volume Re | covered: | 0 gallons | |
| Source of Re | ease: Tank | | | | | | r of Occurrence: | 1 | | iscovery: | |
| Was Immedi | to Notico (| iwon? | | | | 03 June 2005, If YES, To W | | 04 June 200 |)5 | | |
| vi as minieur | al <u>e</u> i turce v | | Yës 🔲 1 | No 🖾 Not Requ | ired | Not Applicable | | | | | |
| By Whom? N | ot Applicab | le | | | | Date and Hou | r: Not Applicable | | | | |
| Was a Water | course Rea | ched? | | | | If YES, Volur | ne Impacting the | | | · | |
| | | ĻĻ | Yes 🖾 N | Ňo | | Not Applicable | | | | | |
| the diesel allo Describe Are the caliche pa excavated on laboratory and required for cl above the NM clean soil and | wed to flow a Affected i d at the site. June 8, 2005 ilyses. Anal- oser. Additi OCD remer returned to | onto the calic and Cleanup Saturated soi and, based o tical results r onal excavation the excavation | the pad. Sa Action Ta I has been n field ana eccived or on activitie has been h | turated soil was so ken.* Approximat excavated and stoo lyses, it was detern | raped tely 3, kpile nined dicate teted 1 avate | up and placed o 150 square feet o d on plastic on si that remedial guid ed remedial guid by the end of Jun d soil will be trai | n plastic pending a of surface area wa te until a remediat idelines had been elines had not been elines had not been e 2005 and sample asported to an app | a decision as how s impacted by the ion plan is devel achieved and sam achieved and a s will be collector roved lad treatm | v to remed e release, oped. Ad mples wer dditional d dditional e ed to verifi ent facilit | all of which was on ditional soil was e collected for excavation would be fy soil impacted y or blended with | |
| regulations all public health should their o | operators a or the enviro perations ha ment. In ad | re required to mment. The reverse of the reduced to action the reduced to a reduced | report and acceptance lequately i CD accepta | fue and complete for file certain rele of a C-141 report nvestigate and rem ince of a C-141 rep | ase no by the | otifications and p e NMOCD mark e contamination | erform corrective ed as "Final Repor hat pose a threat t | actions for relea t" does not reliev o ground water, | ses which /e the ope surface wa | may endanger rator of liability ater, human health | |
| | | | | | | OIL CONSERVATION DIVISION | | | | | |
| Signature: | | | | | | | | | | | |
| Printed Nam | e: Bradley H | Blevins | | | | Approved by District Supervisor: | | | | | |
| Title: Field T | chnician | | | | | Approval Date: | | Expiration I |)ate: | | |
| E-mail Addr | ess: bblevin | s@chkenergy | com | | ! | Conditions of Approval: | | | | d [] | |
| Date: | _ |] | Phone: (50 | 5) 391-1462 ext. 2 | 4 | | | | | | |

* Attach Additional Sheets If Necessary

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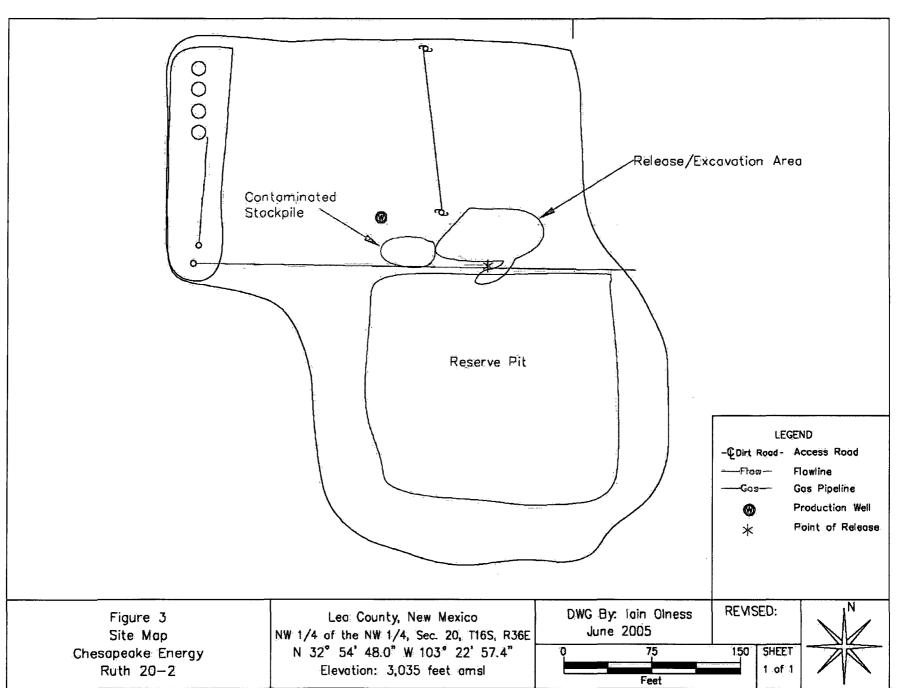
Ruth 20-2 160011 () Chesapeake

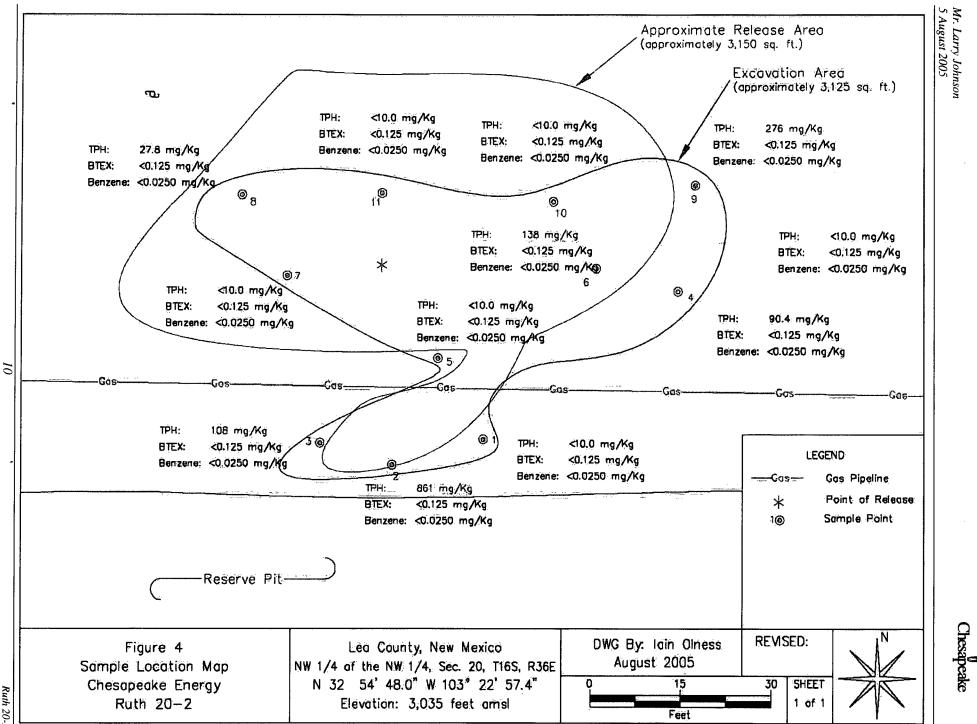


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Chesapeake

Chesapeake





Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

| Sample ID | Depth (feet) | Sample Date | PID Reading (ppm) | Benzene (mg/Kg) | Toluene (mg/Kg) | Ethylbenzene (mg/Kg) | Total Xylenes (mg/Kg) | Total BTEX (mg/Kg) | TPH (as gasoline) (mg/Kg) | TPH (as diesel) (mg/Kg) | Total TPH (mg/Kg) |
|-----------------------------------|-----------------|-------------|----------------------|--------------------|--------------------|-------------------------|--------------------------|-----------------------|---------------------------------|-------------------------------|----------------------|
| | | | | | | | <u></u> | | | | |
| Ruth 20-2 S. Flowpath | Comp | 08-Jun-05 | NA | <0.0250 | 0.0711 | 0.510 | 2.53 | 3.11 | 1,590 | 7,200 | 8,790 |
| Ruth 20-2 W. Half Pooling Area | Comp | 08-Jun-05 | NA | <0.0250 | 0.0683 | 0,134 | 0.685 | 0.887 | 507 | 3,300 | 3,810 |
| Ruth 20-2 E. Half Pooling Area | Comp | 08-Jun-05 | NA | <0.0250 | 0.0518 | 0.0877 | 0.781 | 0.921 | 470 | 2,970 | 3,440 |
| SP-1 | ľ | 11-Jul-05 | 23.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-2 | 1 | 11-Jul-05 | 10.1 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 14.7 | 846 | 861 |
| SP-3 | 1 | 11-Jul-05 | 10.4 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 108 | 108 |
| SP-4 | 1 | 11-Jul-05 | 24 .1 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 90.4 | 90.4 |
| SP-5 | 1 | 11-Jul-05 | 38.9 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 169 | 169 |
| ar-a | 2 | 26-Jul-05 | 0.7 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-6 | 1 | 11-Jul-05 | 41.4 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 30.9 | 724 | 755 |
| 3r-0 | 6 | 26-Jul-05 | 0.9 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 138 | 138 |
| SP-7 | 1 | 11-Jul-05 | 25.0 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

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Ruth 20-2 160011

Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

| Sample ID | Depth (feet) | Sample Date | PID Reading (ppm) | Benzene (mg/Kg) | Toluene (mg/Kg) | Ethylbenzene (mg/Kg) | Total Xylenes (mg/Kg) | Total BTEX (mg/Kg) | TPH (as gasoline) (mg/Kg) | TPH (as diesel) (mg/Kg) | Total TPH (mg/Kg) |
|------------|-----------------|-------------|----------------------|--------------------|--------------------|-------------------------|--------------------------|-----------------------|---------------------------------|-------------------------------|----------------------|
| SP-8 | . 1 . | 11-Jul-05 | 39.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 27.8 | 27.8 |
| SP-9 | 1 | 11-Jul-05 | 46.2 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 16.9 | 315 | 332 |
| | 6 | 26-Jul-05 | 3.0 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 12.4 | 264 | 276 |
| SP-10 | 1 | 11-Jul-05 | 73.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 166 | 3,240 | 3,410 |
| 31-10 | 2 | 26-Jul-05 | 0.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-11 | 1. | 11-Jul-05 | 31.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 213 | 213 |
| 51-11 | 2 | 26-Jul-05 | 0.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| NMOCD Reme | dial Thres | sholds | 100 | 10 | | | | 50 | | | 100 |

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

¹Bolded values are in excess of NMOCD Remediation Thresholds

² NA=Not Applicable

³Chloride and Sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 650 mg/L respectively.

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011).

| Well Number | Diversion ^A | Øwhér | Use | Twsp | Rng | Sec q q q | Lutitude | Loughude | Date Measured | Well Depth | Depth to Water (ft bgs) |
|-------------------|--|--|---|----------------|-------------------------|--|--|--------------------------------|--|--|--|
| U05856 | With the second second | Prome Enterprise | STR | -16 S | - 36 2 - | [20] 2 | N/32*54-0.66 | W 103 22 35 46" | 05-Mar-66 | 105 | T.S. (Cogs) |
| 107165 | (| G: Cáltie Company | STK | 16 8 | 36 2 | 20 2 3 1 | NU329-541-26-839 | W 1030 200 35 47" | | | and an and and the second |
| L 07165 EXPL | 0.79 | G. Coffle Company | RAD | 168 | - 36 E | 20 | N 32° 54' 0.63" | W 103° 23' 6.6" | and a star of the star of the star | And the second second | |
| LOTAIZ EXPL | A. 10 | C.Cattle Commun | EKP | 16'S | 36.1 | 20 | N 32" 54 0.63" | W 103" 23" 0.6" | the state of the s | | Tone Service Mar |
| E 07443 EXPL | | G Cattle Company | BEP | * 16 B | 36 E | 20, 4 | N 32º 34' 0.661 | W 103* 22*33.467 | A Wanter and | ALC: STATE | 1998 Card 94 |
| L08898 | Martin (Orange) | Roger C. Hanks | PRO | 16 ST | 36 B | 20 114 | N 32º 54" 39 88" | W107 23 6 64" | 31 Jul-82 | 147 | 70 |
| L 10572 | 3. 3 | A A Yates Petroleum | OIL | 16-3 | 36 B | 20 221 | N 329 54 39.94 | W 1039 22 10 911 | 27-Jun-96 | 150 | 1. A 70 1 4 |
| Lions - | 254 10 7-72 | Yutes Peimleum | PRO | 16 3 | 36 E. | 20 2 2 1 | N 32" 54" 39.940- | W 1038 22 19.918 | 27-Jun 96 | 150 | 70 |
| 🐨 USOS #1 | y.T.H.M. M. Milatipa M.M.M.M.M.M. | | date or uport and | 16 S | 66 E | 20-11-1- | i, man aligheir gub. mag uliat 1. Mai 2. Mar Chir annar | Water and the set | 27-1-6-91 | Standing and and state | 70:47 |
| USOS #2 | | | A STATE OF STREET | 16 5 | 36 E | 20 423 | | ALC: A STORE | 31-Mar-81 | | 7534 |
| 1.0318 | رد بالاه این | T M Blackmon | DOM * | 16 8 | 36 E | 16 231 | N-32º 551-19:33" | W 103 21/33.28 | 1. 1. A.H. 1. 4. C. 1. 4. | 1 | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |
| L 03318 APPRO EXP | | T. M. Blackmon | | 16 S | 36 E | 16 231 | N 32° 55' 19.33" | W 103° 21' 33.28" | | | <u> </u> |
| L 04487 APPRO | 3 | Kenneth Cox | DOM | 16 S | 36 E | 16 222 | N 32º 55' 32.49" | W 103° 21' 17.73" | 01-Jun-60 | 110 | 82 |
| L DOME EXP | 10 m | T.M. Bieckman | STK - | 16 B: 1 | 1. 36 B | 16 2 | N 32 31 19 33" | W 101921-3328 | la sa sa rina | 10 - 92 C 22 C 23 | \$ \$ 1 C + 2 - 3 |
| 1/00409 | 些" <u>"</u> 例0一些"影 | Chesepeake Operating | PRO | 16 5 | 36 B | 16 234 | N 32º 55' 19:33" | W 109 21 33 28 | No. A DO TO | 193 | internation the second |
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| C 00209 B | 203.9 | College of the SW Foundation | TIRR . | 16.8 | 36 B | 17:323 | N 32" 55" 6.07" | W 103° 22' 51.08" | alan and a state of the second | 127 | မွန္တားမွန္ကာ ဘူး |
| L00209 C | 287.7 | College of the SW Foundation | URR | 16 S | 36 2 | 17:43 | N 32* 54: 53* | W 103º 22751.08" | | 128 | 1. 7 7 7 7 |
| 102056 | 3 | Noble Drilling Company | RRO | 16 \$ | 36 8 | 17. 11 | N 32º 551-32.22" | W 103* 23' 6.68" | .06-Mar-53 | 130 | 60 |
| LO2056 APPRO | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | Noble Drilling Company, | Self to a n | | 1 36 E | 17 14 | N 32° 55; 32.22" | W 103 23 6,68" | 06-Mar-53 | 130 | 5 0 |
| L 04437 | 3 | Roy Boland | DOM | 16 S | 36 E | 17 3. | N 32° 54' 52.96" | W 103º 23' 6.65" | 30-May-60 | 120 | 95 |
| L 04437 APPRO | | Roy Boland | | 16 S | 36 E | 17 3 | N 32º 54' 52.96" | W 103º 23' 6.65" | 30-May-60 | 120 | 95 |
| L 05530 EXP | T. X. Olever a | Bary Lee Hobbs | DOM. | 16 S | 36 B | 17 222 | N 32° 35' 32-31 | W 10P 22 19.98 | 1 apr 1 10 10 10 | Hand and and the | La La e |
| £ 97649 | | Hulda R: Heide | PRO | 16.5 | 36 E | 17 | N 22º 94 52.96 | W 103* 23' 5.85" | 05-Feb-77 | 140 | terchant and the |
| LOTSI | 3 | Berry Lee Hobbs | MÓQ | 168 | 36 B | 17-211 | N 32* 55' 32.27" | W 103° 22' 35.55" | 18-Jan-78 | 22 | A-A-A-BA |
| 09689 EXP. | And De moridade | Calvin of Io Am Holloway | DOM | 16'S AST | 36 2 | 17 212 | N 32* 35: 32.27% | W103* 22/35:55 | Las Marts Street Fre | markes niver the | taga na bar ta |
| -1.10010 BOP | × 1° 10 27 5 | Inerco Oll Company | RRO | 16.5 | 36 2 | 17-13 | N 329 55 19 13" | W 103° 23' 6.67' | and and the second | and the second sec | 15.5. 19. 1 |
| USOS #4 | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | The second | 1 | 16 8 | 36 E | 城市工业。 | ha in the same and the | portantin and the time that is | 26 Feb 91 | 的现在分词 | 63.24 |
| USOS #S | and the second sec | and the second | Pang ang tang ang ang ang ang ang ang ang ang ang | 16.8 | 36 15 | 17 133 | and for a long of the second s | | 15-Jan-69 | 19 . 19 . 19 A. 19 . 19 . 19 . 19 . 19 . | r 67.82 |
| 1/01085 | Carl Strate State | CC Chambers | DOM | 16 8 | 36 E | 16 22 | N 37° 55' 37, 19" | W 107925 22.10 | 02-Apt-S1 | CC/45 | Toma and the second s |
| LOIOST AFFR.C. | Brand and | C.C. Chambers | DOM | 10 16 S | 1. 36 49 | 18 22 | N 32 15 32.19 | W 1039 23 22 19" | 02-Apr-51 | G. B.C. | State and soft and |
| | i hearing and a | Ere - Rimer H. Stenruld | DOM | 16 5 | 36 E | 18 4 29 | N 329 35 6 002 | W 103* 28 22 17* 2 | 21-Jan-62 | 136 - 1 | |
| T/04598 APPRO | 6. P. el. 15 | Coner H. Stonruld | han da harden de serie de ser Serie de serie de ser | 168 | 36 B | 18 42 | N 32º 55' 6.02" | W100° 23 22.17# | 21-Jan-62 | 136 | |
| E 04609 | minut int int | George Wayne Sumuld | DOM | 16 8 | 36 E | 18 4 43. | N 37" 54" 57.93" | W103 23 22 16 | A second second | the second states | |
| L 84609 APPRO EXP | 1 40° - 50° - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - | George Wayne Sumruld | 9 . F. S. K. A. | 16 5 | 36 E | 18 443 | N 32° 54' 52 93" | W 1039 23:22.16" | (| This is a second | C. Deres |
| £05132 | in the Barry and | Greage Wayne Summaid | DOM | 1 6 8 | 36 E | 42. | N32°.55 6.02" | W103°23'22.178 | 30 May 67 | :95 | 70 |
| D 00934 | 5.4. B. S. S | E.H. Sumuld | DOM | -16 S | | 18 421 | N/32*35'502" | W 103 23 22.17 | 12-May-72 | 118 | 2 |
| 1,06963 | 2 | Ricky Jones | DONC | A5 B | 36 B | 18.444 | N 972-541-52-932 | W 103°23'22'16" | 24 Aug 72 | 120 / - | 12 AN 88 - 2 |
| L 06967 | <u>ez (0 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - </u> | Oscal V. Neidick | ØOM | 16 S | 36 B | 18/443 | N 32 54 52.93 | W10P/23/22.16 | For Real Anna Pre- | | the emount of |
| E 07053 | and a state of the second | Odel Black | DOM | 16 S | 36 E | 18 442 | N 324 54 52 938 | W 103 23 22 16" | 26-Apr-00 | 120 0 1 | 1 ··· 3 80 / ··· |
| | Q | Wayne Suppoid | STX | 168 | 36 B ⊃ | Contraction in the state of the state | N 32" 55' 6.02" | W 103° 23' 22.17" | ANAROM DI | Constant State | |
| 1.09729 | n et l | R. H. Sumuld | EXO5 | 2 16 ST ! | 96 B | 18 4 2 | N 32° 53' 6.000 | W 103° 23' 22.17" | | N. A. 198. 7 | Francisco I. A. |
| 1.09730 | | B. H. Sonruld | EXP. | 168 | -36 E _ | 18942 <i>4</i> a.cz | N 32° 55' 6 02" | W103*23'22.37" | film alm ise 付 😒 | 14 200 S 3 | Total Among the way |
| E 10712 | and Quarter | Chestpecke Operating | PRO | 168 | | 181.42 Car 10 | N 32° 55 6.02" | W 103°23'22.17 | 01-Sep-97 | 165 | 60 |
| USOS #6 | | | area and a second s | 16 S | 36.8 | 18-1.1 1月 第 | St. M. B. St. Conferment | rrantin human | 20-Jun 96 | ALL DESCRIPTION | 54.94 |
| LOID4 APPRO | 31 | George Spires | DOM | 16 8 | - 36 E | 19 13 | N 32 54 26.72 | W10P247#1 | 15-Dec-30 | 7.75 | 1.1945 |
| L 02783 | | Venion N. Key | odom _ | 16 \$ | a secol place and place | 2.11. 40.1 ··· · · · · · · · · · · · · · · · · · | N 32" 54' 26.74" | W,103 23 53 17 | 19-Feb-55 | 80 | 50% of |
| 1 02783 APPRO | Star Bar Barna and | Vemon N. Key | an and the second | 16 8 | 36 B. | 19.1.4.2 | N 32º 54' 26.74" | W 10P 23: 53:17 | 19-Feb-55 | 13. J 891. CT | 50 ···· |

() Chesapeake .

Chesapeake

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

| Well Number | Diversion ^A | version ^A Owner | | ton ^A Owner | | rsion ^A Owner | | Twsp | Rig | Sec q q q | Latitude | Löngttude | Date Measured | Well Depth (ft bgs) | Depth to Water (ft bgs) |
|-----------------|---|---|--|------------------------|------------|--------------------------|--|--|-----------------|--|--------------------------------|-----------|------------------|------------------------|-------------------------------|
| D04801 | S | Cieorge Spices | DOM | 16 \$7.1 | 36 F | 12 12 | N 329 541 39 81 | W 103* 23'.53.18" | | i. Kara | le A ^{Sana} tina } | | | | |
| C. C. 2E04895 | Tour FS and a f | Create Spires | DOM | 16 S | 36 E. | 19 12 11 | N 32° 54' 39.81 | W 103° 23' 53 18" | 05 May 62 | 1 100 [] | Brillian | | | | |
| LOSIO9 IXP | and 0 had | Joe Grado | DOM . | 16 5 | 36E | 196 1 4 2 | N 32º 54:26.74" | W 103 23 53 17% | F. S. Barres | Pars 2 1 | S 84. 1 | | | | |
| 1.06689 KXP. | 1. 10 Se & | Walter Hannan | DOM | 16 S. | 36 E | 19 114 | N 32° 54' 39.78% | W 103P 2457 4 | | 1 | Parts - BARGAR | | | | |
| L 06937 | - 3 30 | I | DOM | 216.8 | 5.36 D); (| 19. 2.2.4 | N 329 54 39.85% | W 1092/231 22 15 | 25-Apr 72 | 110 | - 69 | | | | |
| L 07444 EXPL-1 | 0 | G. Cattle Company | BXP | 16 S | 96 E | 19 23 I, j | N 329 54 26 76 | W 1039 23 37 641 | 13-Oct-75 | 130 | i na internet | | | | |
| - 107444 EXPI/2 | ann unn geralte an | G. Cattle Company | ESP | 16 8 | 16BC | 19 231 | NG7 54 26 76" | W 103 23 37.64 | 13-Oct-75 | 140.1 | Linne with Mirroray I | | | | |
| E 07444 EXPL-3 | 127 June 14 | G. Cattle Company | EXC . | -216 824 | 36 8 | 19 231 | N 32º 54' 26.76" | W 103P 23: 37.64 | 14 Oct-75 | 7. 178%。而 | 120 | | | | |
| L 08744 | TOBET | Roger Price | DOM | 14 416 ST. | 36 B | 19: 33. | N 32? 54 0.59 | W 1039 24'7 42" | A set manufact | 108 | 79 | | | | |
| E10209 | 3 | SKenny Inckson | DOM | 16 8 · · · | 36 E - | 19 1 2 2 | N 32" 54 39.81 | W-105° 23' 53.48" | 03-Aug-91 | 128 | 94 | | | | |
| D00150 ENGLD -8 | 0 | Chestpeake Operating | PRO | A 16 S A | 26 E | 19 213 | N 32º 54: 39.83 | W 103" 23: 37.66" | (in my the sty | 80 | R. O. Ser Speed | | | | |
| 1:00139 | A SOM | Nertourg Producing Company | [:::PRO | C. 16 S. | 36 F. | 19:21年 二 | N 32° 34' 39,83" | W 103º 23' 37.66" | Lt. | 125 | See Wheel is | | | | |
| USOS #7 | y a sec of the second | and the second | L. W. Alsonation and According Strategy and | 16 9 C I | 12 36 B | 19 111 | And the second second second | States States States and | 31-Mar-81 | 能多些影響的 | 59,95 | | | | |
| USOS#8 | | Contraction of the second se | | 168 | 1. 36 B 1 | 19 211 | to superior of the second second | and the second | 16.Feb-61 | L'ESSER. | 59.9 | | | | |
| USOS # | ing a state and and a state of the state of | The second s | and the second sec | 16 9 | 196 B | 19 21 1 | har a groe of a series of a series of the se | and the second | 63-Mar-76 | han the second s | 54.9 | | | | |
| USOS#10 | | and the state of the | | 168 | 36 2 | 19 214 | No. St. of Sugar Street | C. Stork W | 15-Peb-71 | 家会交流 | TE (64.05) | | | | |
| USOS#IL | | the second s | | 168 | 36 E | 19 413 | New Street Street | 和"···································· | 30-Sep-81 | 1.18 2 | 66.54 | | | | |
| L 03965 | 3 | Robert Ralph Sims | DOM | 16 S | 36 E | 21 244 | N 32º 54' 26.96" | W 103° 21' 17.68" | 18-Aug-58 | 95 | 60 | | | | |
| L 03966 APPRO | | 5 | | 16 S | 36 E | 21 224 | N 32° 54' 40.06" | W 103º 21' 17.68" | 18-Aug-58 | 95 | 60 | | | | |
| L 05269 | 3 | Raph E. Collins | DOM | 16 S | 36 E | 21 224 | N 32º 54' 40.06" | W 103º 21' 17.68" | 19-Oct-63 | 110 | 90 | | | | |
| USGS #12 | | | | 16 S | | 21 232 | 3 | | 01-Fcb-96 | | 66.58 | | | | |
| 1.01508 APPRO | i na san | Lawton Ol Group | PRO | 16 S | 1.36B | 30 32 | N 32" 53.47.54" | W 103 23 22.07 | 24-Oct-52 | 1457 | 1. and 80 the 1. | | | | |
| L 01932 | And States and States | Coorge Spines | DOM | 16.9 | SAGE L | 30.12 | N 327 53 47 53 | W 103 23 33.08 | 12-ful-62 | 104 | 90 | | | | |
| L'06334 | 0 | Marcum Drilling Company | PRO | 16 S | 36 E | 30 311 | N 32º 53' 21.38" | W 103º 24' 7.28" | 02-Jun-68 | 135 | 75 | | | | |
| L 06334 (E) 1 | Q | Humble Oil & Refining Co. | PRO | 16 S | 36 E | 30 311 | N 32º 53' 21.38" | W 103º 24' 7.28" | | | | | | | |
| USOS #13 | 1 the seal and seal of | Carl State of the Second States | | 16 8.4 | 36 E | 30 124 | World and the second states of | to the second with the | 10 Mar-76 | 1 · · · · · · · · · · · · · · · · · · · | W 75.23 | | | | |

*= Data obtained from the New Mexico Office of the State Engineer Website (http://waters.ose.state.nm.us.7001/iWATERS/wr_RegisServlett)

Well locations shown on Figure 2

A = in acre feet per annum

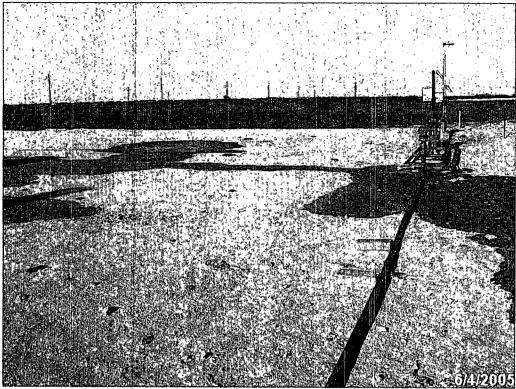
IND = Industrial

IRR = Irrigation

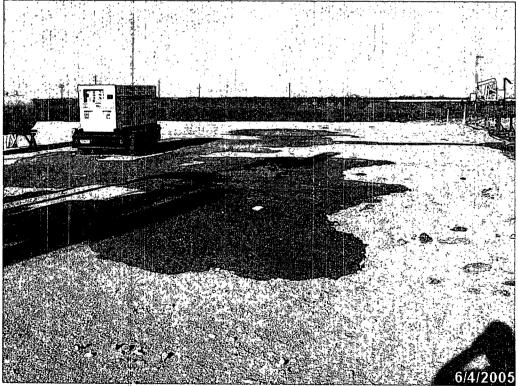
DOM = Domestic

EXP = Exploration

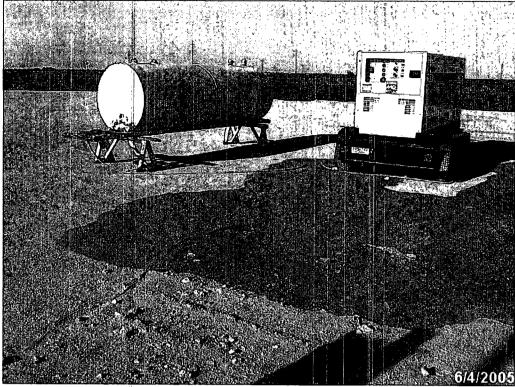
quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest



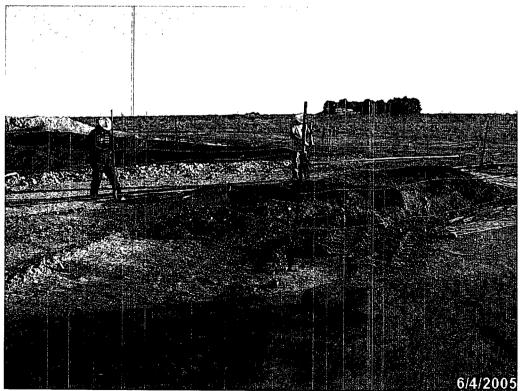
Photograph #1: Release area, looking easterly.



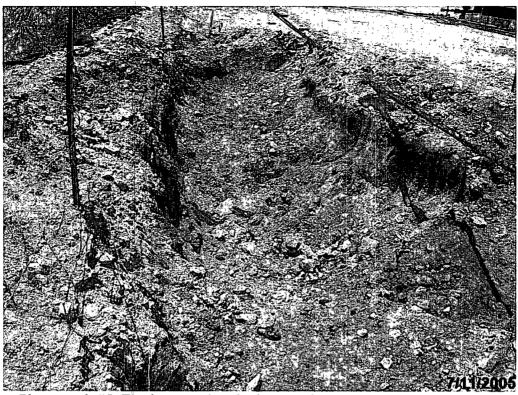
Photograph #2: Release area, looking easterly.



Photograph #3: Diesel tank and generator, looking northeasterly. Note cut fuel line between diesel tank and generator.



Photograph #4: Saturated soil stockpiled on plastic and fenced.



Photograph #5: Final excavation, look westerly.



Photograph #6: Final excavation, looking northeasterly.

LETTER OF TRANSMITTAL



| Date: | 11 August 2005 |
|---------------------|-------------------------------------|
| To: | |
| Company Name: | NMOCD |
| Address: | 1625 North French |
| City / State / Zip: | Hobbs, NM 88240 |
| From: | lain Olness |
| CC: | Brad Blevins, Chesapeake-Hobbs, NM |
| | Curtis Blake, Chesapeake-Hobbs, NM |
| | Jace Marshall, Chesapeake-Tulsa, OK |
| Project #: | 160012 |
| Project Name: | Ruth 20-2 |
| Subject: | Closure Proposal |

| # of originals # c | of copies | Description |
|--------------------|-----------|------------------|
| 1 | | Closure Proposal |
| | | |

Dear Mr. Johnson:

Enclosed is the *Closure Proposal* for the above-referenced site amended to include the changes the NMOCD required. Upon your approval, the proposal will be implemented and final *Closure Documentation* will be submitted upon the successful removal of the remaining impacted soil.

Should you have any questions or concerns, please feel free to contact me at (505) 394-3481 or via email at iolness@envplus.net.

Signed: 200

ived

P. O. Box 1558 Eunice, NM 88240 (505) 394-3481 Fax: (505) 394-2601

Y:\Clients\Chesapeake Energy Corp (160)\160011 (Ruth 20-2)\CORRESPONDENCE\LJ 081105 LOT.doc



Nec

SESSER'S

11 August 2005

Mr. Larry Johnson, Environmental Engineer New Mexico Oil Conservation Division 1625 North French Drive Hobbs, New Mexico 88240

Re: Closure Proposal Chesapeake Energy Ruth 20-2 – Reference #160011 UL-D (NW¼ of the NW¼) of Section 20, Township 16 South, Range 36 East Latitude N 32° 54' 48.033" and Longitude W 103° 22' 57.430"

Dear Mr. Johnson:

Introduction

Environmental Plus, Inc. (EPI), on behalf of Mr. Bradley Blevins, Chesapeake Energy Corporation (Chesapeake), submits this letter report documenting the work completed at the above-referenced release site. The release site is situated on land owned by the State of New Mexico and is located approximately 2.4 miles southwest of Lovington, New Mexico (reference *Figure 1*). Information obtained from the New Mexico Office of the State Engineer's website and a United States Geological Survey (USGS) database indicates there are two water supply wells located within a 1,000-foot radius of the release site (reference Figure 2). In addition, there are more than twenty wells located within a one-mile radius of the release site. Groundwater level data for the well labeled USGS #1 was recorded at 70.5 feet below ground surface (bgs) in February 1991. The average depth to water for all wells with recorded groundwater level data is approximately 71 feet bgs (reference *Table 1*). Based on this information, it is estimated that the depth to groundwater at the site is between 50 and 100 feet bgs. The attached site information and metrics form ranks the site in accordance with the <u>NMOCD</u> Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993).

The release of 500 gallons of diesel fuel was the result of the fuel line located between the diesel tank and the generator being cut by vandals and the diesel fuel being allowed to flow out onto the caliche pad. Upon being notified of the release, Chesapeake retained EPI to conduct emergency response measures at the site. EPI mobilized to the site and excavated the saturated soil and stockpiled it on plastic until such time that remediation activities could commence. Upon completion of initial excavation activities, three composite samples were collected from the base of the excavation and submitted to an independent laboratory for quantification or total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene and total xylenes (BTEX constituents). Analytical results for these samples indicated TPH concentrations ranging from 3,440 parts per million (ppm) to 8,790 ppm with an average concentration of 5,350 ppm remaining in the excavation (reference *Table 1*). In addition, reported BTEX constituent concentrations ranged from 0.887 ppm to 3.11 ppm with an average concentration of 1.64 ppm (reference *Table 1*).

Field Work

EPI returned to the site on June 8, 2005 and initiated remediation activities. Excavation of the hydrocarbon impacted soil (approximately 100 cubic yards) continued until field analyses indicated

remedial concentrations had been achieved. Field analyses were conducted utilizing a MiniRae^{®®} photoionization detector (PID) equipped with a 9.7 electron volt (eV) lamp. The field analyses indicated organic vapor concentrations ranged from 10.1 parts per million (ppm) to 73.5 ppm, with an average concentration of 33.5 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents).

Analytical results, received on July 14, 2005 indicated remedial goals had not been achieved and, as such, additional excavation activities commenced on July 25, 2005 to excavate the areas from which analytical results indicated contaminant levels exceeded NMOCD remedial guidelines. An additional 40 cubic yards of soil were excavated during this phase of the remedial activities. Excavation activities continued until field analyses utilizing a MiniRae[®] PID equipped with a 9.7 eV lamp indicated remedial concentrations had been achieved. The field analyses indicated organic vapor concentrations ranged from 0.5 ppm to 3.0 ppm, with an average concentration of 1.1 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of TPH and BTEX constituents.

Analytical Results

Eleven soil samples were collected from the excavation on July 11, 2005 and submitted to an independent laboratory for quantification of TPH and BTEX constituents. Analytical results for two of the soil samples (SP-1 and SP-2) reported contaminant concentrations at or below each analyte's respective method detection limit (MDL). Analytical results for two additional samples (SP-4 and SP-8) reported contaminant concentrations below the NMOCD remedial guidelines. The only contaminants detected in these samples were diesel range organics (DRO) at concentrations of 90.4 milligrams per kilogram (mg/Kg) in sample SP-4 and 27.8 mg/Kg in sample SP-8.

Analytical results for the remaining seven soil samples (SP-2, SP-3, SP-5, SP-6, SP-9, SP-10 and SP-11) indicated TPH concentrations ranging from 108 mg/Kg to 3,410 mg/Kg, with an average concentration of 835 mg/Kg (reference *Table 1*). Of these samples, the only contaminants detected in three of the samples (SP-3, SP-5 and SP-11) were DRO, ranging in concentrations from 108 mg/Kg to 213 mg/Kg, with an average concentration of 163 mg/Kg (reference *Table 1*). The remaining four samples (SP-2, SP-6, SP-9 and SP-10) had gasoline range organic (GRO) concentrations ranging from 14.7 mg/Kg to 166 mg/Kg and DRO concentrations ranging from 315 mg/Kg to 3,240 mg/Kg (reference *Table 1*). BTEX constituents were not detected at or above each analyte's respective MDL in any of these seven soil samples.

Based on the fact that contaminant concentrations exceeded the NMOCD remedial goals in seven of the sampling points, additional excavation activities were completed. The additional excavation activities were completed in the areas where contaminant concentrations exceeded the NMOCD remedial goals. When field analyses indicated the successful removal of the impacted soil, five additional soil samples were collected from these areas.

Analytical results for three of these five samples (SP-5, SP-10 and SP-11) reported contaminant concentrations as ND at or above each analyte's respective MDL (reference *Table 1*). Analytical results for the remaining two samples (SP-6 and SP-9) indicated TPH concentrations of 138 mg/Kg and 276 mg/Kg, respectively (reference *Table 1*). The only contaminants detected in sample SP-6 were

DRO, while GRO and DRO were detected in sample SP-9. BTEX constituents were not detected in any sample at or above each analyte's respective MDL.

Discussion

Based on NMOCD guidelines, the remedial goals for this site are as follows:

| Analyte | Remedial Goal |
|-------------------|---------------|
| Benzene | 10 mg/Kg |
| BTEX constituents | 50 mg/Kg |
| ТРН | 100 mg/Kg |

Based on these remedial goals, analytical results indicate four areas with contamination remaining above the remedial goals. TPH concentrations for these areas ranged from 108 mg/Kg to 861 mg/Kg (reference *Figure 4*). Contaminant concentrations in three of these areas, SP-3, SP-6 and SP-9, only slightly exceed these remedial goals. TPH concentrations for these areas are 108 mg/Kg, 138 mg/Kg and 276 mg/Kg, respectively. Analytical results for the sample collected from the fourth area, SP-2, indicate TPH concentrations of 861 mg/Kg (reference *Figure 4*).

The remedial goals for this site are based on the fact that there are two water supply wells, L 00209C and USGS #1, located within a 1,000-foot radius of the release site (reference *Figure 2* and *Table 2*). Well L 00209C is an irrigation well and is owned by <u>The College of The Southwest</u> and well USGS #1 is either an irrigation or stock well. However, groundwater in this area flows southeasterly and these wells area located northeast (L00209C) and northwest (USGS #1) of the release site and, thus are located upgradient and will not be impacted by the release.

Conclusions and Recommendations

Based on field and laboratory analyses, it is recommended that the northern portion of the excavation be backfilled with caliche obtained from an off site source. The southern portion of the excavation located near the pit will remain open until such time that the pit is closed according to the State of New Mexico Rules. At the time the pit is closed, soil impacted above the NMOCD remedial guidelines will be excavated and transported to an off site treatment/disposal facility. Soil samples will be collected from the area where additional excavation activities will occur and submitted to verify the removal of the impacted soil. Upon receipt of analytical results confirming the removal of the impacted soil, the final excavation will be backfilled with caliche obtained from an off site source. Upon completion of the additional excavation and subsequent backfilling activities, it is recommended the site file be closed and a *No Further Action Required* letter be issued to Chesapeake Energy. A letter documenting the successful removal of the additional impacted soil will be submitted prior to final backfilling activities at the site.

Ruth 20-2 16001



Should you any questions or concerns, please feel free to contact me at (505) 394-3481 or via e-mail at <u>iolness@envplus.net</u> or Mr. Bradley Blevins at (505) 391-1462 ext. 24 or via e-mail at <u>bblevins@chkenergy.com</u>. All official communication should be addressed to:

Mr. Bradley Blevins Chesapeake Energy 5014 Carlsbad Highway Hobbs, New Mexico 88240

Sincerely,

ENVIRONMENTAL PLUS, INC.

Vones

Iain Olness, P.G. Hydrogeologist

cc: Bradley Blevins, Chesapeake Energy – Hobbs, NM
 Curtis Blake, Chesapeake Energy – Hobbs, NM
 Jace Marshall, Chesapeake Energy – Oklahoma City, OK
 Cody Morrow, New Mexico State Land Office, Surface Resource Division – Albuquerque, NM

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|--|---|---|---|--|
| | | Incident Date: | NMOCD No | tified |
| | A | 03 June 2005 | 04 June 2005 | |
| Ch | esapeake | 05 June 2005 | | |
| | 1 | | | |
| | tion and Metrics | l | 1. 1.0% D. 6 | 1/2010 |
| | eral Well #1 Battery | A | ssigned Site Reference #: | 160010 |
| | nesapeake Energy | | | |
| | : 5014 Carlsbad Highwa | | | |
| | ss: 5014 Carlsbad Highv | | | |
| | Hobbs, New Mexico | 88240 | | |
| | : Bradley Blevins | | | |
| Representative | Telephone: (505) 391 | -1462 ext. 24 | | |
| Telephone: | | | | |
| Fluid volume re | eleased (bbls): 500 gallo | | Recovered (bbls): 0 g | |
| | | | n 24 hrs and submit form C-1 and releases >500 mcf Natural | |
| | | | applies to unauthorized releas | ses of 50-500 mcf Natural Gas) |
| | Pit (LSP) Name: Ruth | | | |
| | | | | e diesel fuel was released onto the surface. |
| | .e., BLM, ST, Fee, Other | : State of New M | exico | |
| | ns: 75 feet by 45 feet | | <u> </u> | |
| LSP Area: ≈3, | | | | |
| | ference Point (RP): | | | |
| | nce and direction from R | <u>P:</u> | | |
| Latitude: N 32° | | | | <u> </u> |
| Longitude: W | 103° 22' 57.430" | | | 1 |
| Elevation abov | e mean sea level: 3,938 | | | the first site |
| Feet from Sout | h Section Line: | | | 1 MOO |
| Feet from West | t Section Line: | | | |
| | or 1/41/4: NW1/4 of the N | W1⁄4 | Unit Letter: D | |
| Location-Secti | ion: 20 | | | |
| Location- Tow | nship: T16S | | | |
| Location- Rang | ge: R36E | | | |
| Surface water ' | body within 1000 ' radiu | s of site none | n | |
| | | | USGS #1 as illustrated on Fi | gure 2) |
| | | | | irrigation well – L 00209C and USGS |
| igneuturur w | ater wend within 1000 I | | as illustrated on Figure 2) | ingation well – E 00207C and 0505 |
| Public water si | upply wells within 1000' | | | ······································ |
| | d surface to ground wat | | | |
| | mination (DC): < 10 fee | | | |
| | $\frac{1}{10000000000000000000000000000000000$ | | | |
| | round Water | | ead Protection Area | 3. Distance to Surface Water Body |
| 1. U | | 2. WCHI | | |
| If Depth to GW | | $If < 1000^{\circ} from 1$ | | 200 horizontal faat: 20 hoints |
| | <50 feet: 20 points | If <1000' from v | | <200 horizontal feet: 20 points 200 100 horizontal feet: 10 points |
| | | private domestic | water source: 20 points | 200-100 horizontal feet: 10 points |
| If Depth to GW If Depth to GW | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points | private domestic If >1000' from v private domestic | water source: 20 points vater source, or; >200' from water source: 0 points | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points |
| If Depth to GW If Depth to GW Ground water S | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points core = 10 | private domestic If >1000' from v private domestic | water source: 20 points vater source, or; >200' from | 200-100 horizontal feet: 10 points |
| If Depth to GW If Depth to GW | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points core = 10 | private domestic If >1000' from v private domestic | water source: 20 points vater source, or; >200' from water source: 0 points | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points |
| If Depth to GW If Depth to GW Ground water S | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points Core = 10 +3) = 10 | private domestic If >1000' from v private domestic Wellhead Protec | water source: 20 points vater source, or; >200' from water source: 0 points | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points Surface Water Score= 0 |
| If Depth to GW If Depth to GW Ground water S Site Rank (1+2- Parameter | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points Core = 10 +3) = 10 | private domestic If >1000' from v private domestic Wellhead Protec | water source: 20 points vater source, or; >200' from water source: 0 points tion Area Score= 20 | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points Surface Water Score= 0 |
| If Depth to GW If Depth to GW Ground water S Site Rank (1+2- Parameter Benzene ¹ | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points Core = 10 +3) = 10 Total Si | private domestic If >1000' from v private domestic Wellhead Protec | water source: 20 points water source, or; >200' from water source: 0 points tion Area Score= 20 and Acceptable Concentra | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points Surface Water Score= 0 ations |
| If Depth to GW If Depth to GW Ground water S Site Rank (1+2- Parameter | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points <i>Core</i> = 10 +3) = 10 Total Si >19 | private domestic If >1000' from v private domestic Wellhead Protec | water source: 20 points vater source, or; >200' from water source: 0 points tion Area Score= 20 and Acceptable Concentra 10-19 10 ppm | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points Surface Water Score= 0 ations 0-9 10 ppm |
| If Depth to GW If Depth to GW Ground water S Site Rank (1+2- Parameter Benzene ¹ | <50 feet: 20 points 50 to 99 feet: 10 points >100 feet: 0 points core = 10 +3) = 10 Total Si >19 10 ppm | private domestic If >1000' from v private domestic Wellhead Protec | water source: 20 points vater source, or; >200' from water source: 0 points tion Area Score= 20 and Acceptable Concentre 10-19 | 200-100 horizontal feet: 10 points >1000 horizontal feet: 0 points Surface Water Score= 0 ations 0-9 |

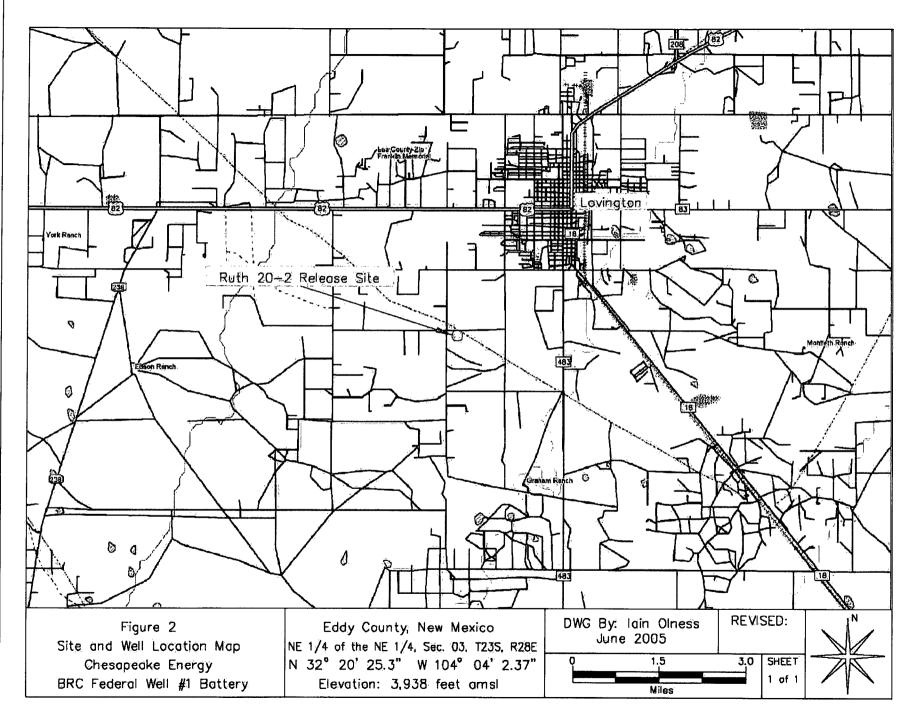
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| strict 1 25 N. French Dr., Hobbs, NM 88 strict II | 240 | | State Energy Miner | | New Mexico Ind Natural R | | | Form C-14 Revised October 10, 200 | | | |
|--|--|--|---|--|--|--|---|--|--|--|--|
| DI W. Grand Avenue, Artesia, N strict III 00 Rio Brazos Road, Aztec, NM | | | | | vation Divisi St. Francis 1 | - | Sut E | mit 2 Copies Warphopriat istrict Office in accordanc | | | |
| <u>strict IV</u> 20 S. St. Francis Dr., Santa Fe, N | IM 87505 | | | | SL Francis 1 , NM 87505 | | | with Rule 116 on bac side of form | | | |
| | | Relea | ise Notificat | | | | o n | | | | |
| | | | | | OPERATO | f . | 🛛 Initial Re | port Final Repo | | | |
| ame of Company: Chesa | | nergy | | | Contact: Brad | ey Blevins | | | | | |
| Address: 5014 Carlsbad H Facility Name: Ruth 20-2 | ighway | ······ | | | Lelephone No. Facility Type: | : (505) 391-1462 Tank Battery | 2 ext. 24 | | | | |
| | Owner: State of New Mexico - Mineral Owner: State of New Mexico Lease No.: V0-471 | | | | | | | | | | |
| <u></u> | | | LOCAT | ION | OF RELE | ASE | | | | | |
| | wuship | Range | Feet from the | | th/South Line | Feet from the | East/West Line | County | | | |
| D 20 | 16 <u>S</u> | 36 E | | | | | | Lea | | | |
| ype of Release: Diesel Fuel ource of Release: Tank | | | | | Date and Hou 03 June 2005, | | | Volume Recovered: 0 gallons Date and Hour of Discovery: 04 June 2005 | | | |
| Was Immediate Notice Give | | Ves [] | No 🛛 Not Requ | ired | If YES, To Whom? Not Applicable | | | | | | |
| By Whom? Not Applicable | | | | | | r: Not Applicable | | | | | |
| | | | | Date and not | a not applicable | | | | | | |
| | | Yes 🖂 I | No | | | ne Impacting the | | | | | |
| Vas a Watercourse Reache | | | | | If YES, Volu | ne Impacting the | | | | | |
| Was a Watercourse Reacher if a Watercourse was Impac Describe Cause of Problem he diesel allowed to flow ont | ted, Desc and Rem | ribe Fully edial Acti | •.* Not Applicable ••• Taken.* The sit | | If YES, Volu Not Applicabl | ne Impacting the e the fuel line from t | Watercourse: the diesel tank to th | | | | |
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Chesapeake

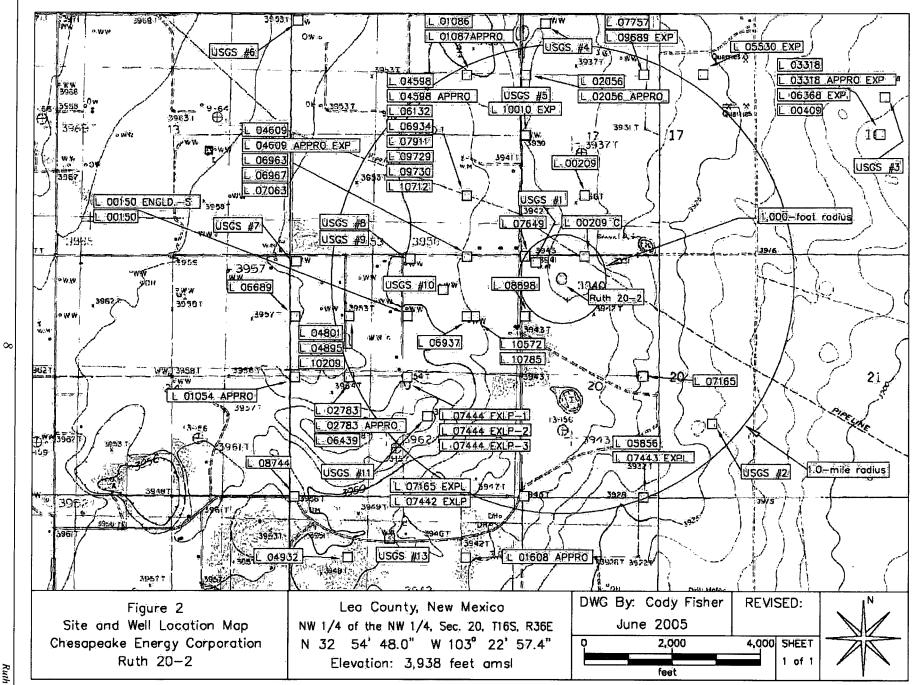
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Chesapeake

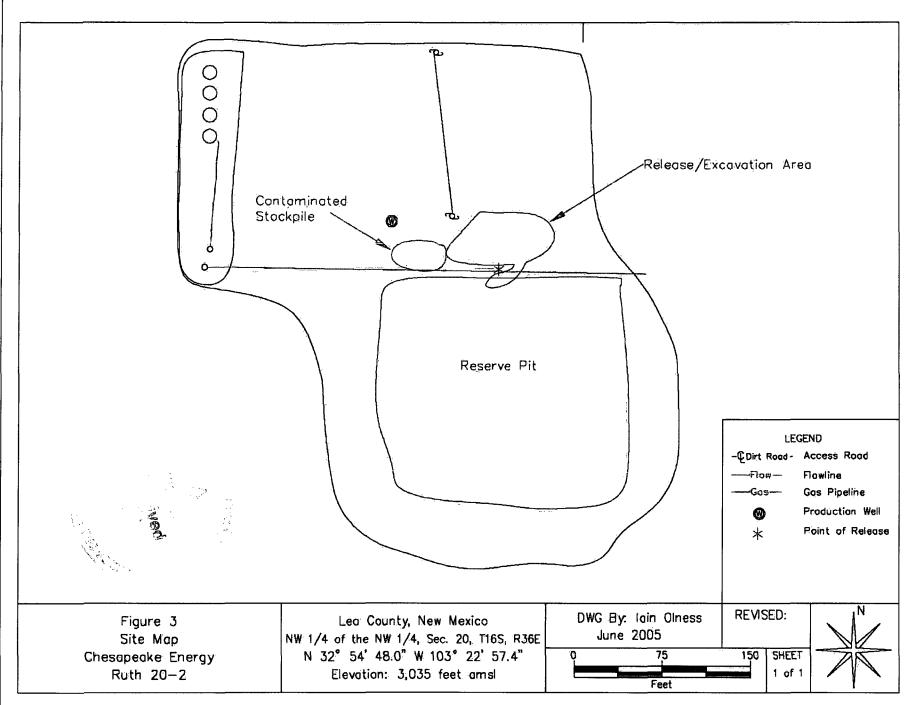


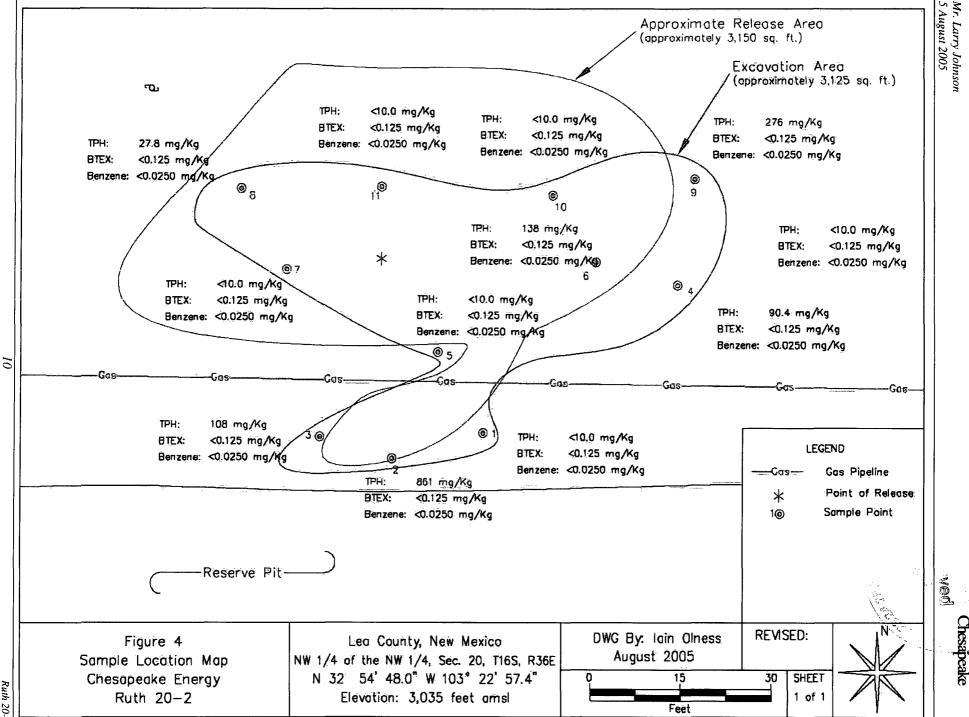
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Chesapeake





Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

| Sample ID | Depth (feet) | Sample Date | PID Reading (ppm) | Benzene (mg/Kg) | Toluene (mg/Kg) | Ethylbenzene (mg/Kg) | Total Xylenes (mg/Kg) | Total BTEX (mg/Kg) | TPH (as gasoline) (mg/Kg) | TPH (as diesel) (mg/Kg) | Total TPH (mg/Kg) |
|-----------------------------------|-----------------|-------------|----------------------|--------------------|--------------------|-------------------------|--------------------------|-----------------------|---------------------------------|-------------------------------|----------------------|
| Ruth 20-2 S. Flowpath | Comp | 08-Jun-05 | NA | <0.0250 | 0.0711 | 0.510 | 2.53 | 3.11 | 1,590 | 7,200 | 8,790 |
| Ruth 20-2 W. Half Pooling Area | Comp | 08-Jun-05 | NA | <0.0250 | 0.0683 | 0.134 | 0.685 | 0.887 | 507 | 3,300 | 3,810 |
| Ruth 20-2 E. Half Pooling Area | Comp | 08-Jun-05 | NA | <0.0250 | 0.0518 | 0.0877 | 0.781 | 0.921 | 470 | 2,970 | 3,440 |
| SP-1 | 1 | 11-Jul-05 | 23.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-2 | 1 | 11-Jul-05 | 10.1 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 14.7 | 846 | 861 |
| SP-3 | 1 | 11-Jul-05 | 10.4 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 108 | 108 |
| SP-4 | 1 | 11-Jul-05 | 24 .1 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 90.4 | 90.4 |
| SP-5 | 1 | 11-Jul-05 | 38.9 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 169 | 169 |
| 51-5 | 2 | 26-Jul-05 | 0.7 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-6 | 1 | 11-Jul-05 | 41.4 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 30.9 | 724 | 755 |
| 51-0 | 6 | 26-Jul-05 | 0.9 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 138 | 138 |
| SP-7 | 1 | 11-Jul-05 | 25.0 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |

Ruth 20-2 160011

Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

| Sample ID | Depth (fect) | Sample Date | PID Reading (ppm) | Benzene (mg/Kg) | Toluene (mg/Kg) | Ethylbenzene (mg/Kg) | Total Xylenes (mg/Kg) | Total BTEX (mg/Kg) | TPH (as gasoline) (mg/Kg) | TPH (as diesel) (mg/Kg) | Total TPH (mg/Kg) |
|------------|---------------------------|-------------|----------------------|--------------------|--------------------|-------------------------|--------------------------|-----------------------|---------------------------------|-------------------------------|----------------------|
| SP-8 | 1 | 11-Jul-05 | 39.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 27.8 | 27.8 |
| SP-9 | 1 | 11-Jul-05 | 46.2 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 16.9 | 315 | 332 |
| 51 - 7 | 6 | 26-Jul-05 | 3.0 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 12.4 | 264 | 276 |
| SP-10 | 1 | 11-Jul-05 | 73.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | 166 | 3,240 | 3,410 |
| Sr-10 | 2 | 26-Jul-05 | 0.5 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| SP-11 | 1 | 11-Jul-05 | 31.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | 213 | 213 |
| 55-11 | 2 | 26-Jul-05 | 0.6 | <0.0250 | <0.0250 | <0.0250 | <0.0500 | <0.125 | <10.0 | <10.0 | <10.0 |
| NMOCD Reme | NMOCD Remedial Thresholds | | 100 | 10 | | | | 50 | | | 100 |

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

¹Bolded values are in excess of NMOCD Remediation Thresholds

² NA=Not Applicable

³Chloride and Sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 650 mg/L respectively.

ALL CALL

Ruth 20-2 160011

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TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

| Well Number | Diversion ^A | Owner | Use | Twsp | Rng | Sec q q q | Latitude | Longtude | Date Measured | Well Depth (ft bgs) | Depth to Water (ft bgs) | |
|------------------|--|--|--|--|---|--|--|--|--|---|--|------|
| | an an air an | Payne Enterprise | STK | - 16 S | 36 E | 20.4 | N 32º 54 0.66" | W 103º 22' 35 46" | 05-Mar-66 | 106. | Let 90 menne | |
| 1.87165 | a to contract the second | G.Cattle Company | STK | 16 S. 4 | 36 E | 20 231 | N 32° 54' 26.83'' | W 103° 22' 35:47" | | | 9 | |
| L 07165 EXPL | ×9 | G. Cattle Company | EXP | 168 | -36 E | 20 | N 32° 34' 0.63" | W 103°23' 6.6" | the second second | | harmonia and a second | |
| LO7402 EXPL | 10 | G. Calle Company | EXP | 16 S | 36 E | 20 | N 32" 54 0.63" | W-103" 23' 6.6" | 1 | The second second | The store start | |
| 107443 EXPL | ····· ·· ·· ··· ··· ··· ···· ···· | G. Calle Company. | EXP | 16 8 | 36 E | 20. 41 | N-32 34 0.661 | W-103º 22: 35.46" | and the second second | PER 1 | agent and an and an | |
| 1/08899 | . 10 | Roper C. Hanks | PRO | 16 85 | 36 E | 20 114 | N 329-341-39,887 | W 103 23 6.64 | 31 Jul-82 | 142 | Pharm 70 and | |
| E 10572 | | Yates Petroleum. | OIL | 16.8 | 36 B | 20 22.1 | N 32 54 39.94" | W 103 22 19.91 | 27-Jun-96 | 150 | 70 | |
| L 10785 | din in | Yntes Beipoleum | PRO | 16 8 | 36 E | 20 221 | N 325 94 39 94 | W 103 22 19.91 | 27-Jun-96 | 130 | 70 | |
| USOS #1 | No of a spice constant. Manality a submit of a | a mana mana ya ina mana na nanya kamana kana kana kana kana kana kana k | and the second sec | 16 \$ | 36 E | 20 111 | and the independence of the second | The state of the second s | 27-Feb-91 | 10.00 CT - 4.99 | 70:47 | |
| USOS #2 | | | | 16 5 | | 20, 423 | 1.5 | | 31-Mar-81 | Provent and the second | Comments on Life Contractores | |
| 1 03318 | 3 | T.M. Binckmon | DOM | 16 S | | 16 231 | N 329 55 19.33" | W 103 21:33.28" | State of Contents | Sector sector sector | | |
| .03318 APPRO EXP | | T. M. Blackmon | and a state of the | 16 S | 36 E | 16 231 | N 32° 55' 19.33" | W 103° 21' 33.28" | | <u> </u> | | |
| L 04487 APPRO | 3 | Kenneth Cox | DOM | 16 \$ | 36 E | 16: 222 | N 32° 55' 32.49" | W 103° 21' 17.73" | 01-Jun-60 | 110 | 82 | |
| 1-06368 EXP | 0 | T.M. Blackmon | SIK | 16 8 | 36 E | 16: 2 | N 32° 35' 19 33" | W 103 21 33 28" | | | | |
| 1.00409 | 0 | Chesapeake Operating | PRO | 16 \$ | 36 E | 16 231 | N 32º 55' 19 33" | W 103° 21' 33.28" | | 193 | finantaniti ana ana ana ana ana ana ana ana ana an | |
| USGS #3 | CONSTRUCTION OF A DESCRIPTION OF A DESCR | | | 16.5 | | 16 231 | A (Date (Lat) (Lat) (Date (Lat) (Lat) | | 27-Feb-91 | All and the second second | 61.33 | |
| L 00209 B | 203.9 | College of the SW Foundation | URB | 168 | The second s | 17 323 | N 32" 55' 6.07" | W 103° 22' 51.08" | | 127 | if the state of the second | |
| L/00209 C | 237.7 | College of the SW Foundation | IRR | 16 S | 36 8 | 17 43 | N 37° 54' 53" | W 103° 22' 51.08" | a and a start of the | 128 | | |
| 1.02056 | S. S. | Noble Brilling Company | PRO | 165 | 36 E | 17 11 | N 32° 55' 32.22" | W 103 23 6.68" | 06-Mar-53 | 130 | 60 | |
| LO2056 APPRO | e | Noble Dilling Company | **** | 16.5 | 36 E | 47 1.1 | 14.00 | | 06-Mar-53 | 130 | | |
| L 04437 | 3 | Roy Boland | DOM | 16 S | 36 E | 17 3 | N 32° 55 32.22" | W 103° 23' 6.68" | 1 19 100 1 100 H 100 | 1:00 | 60 | |
| L 04437 APPRO | 3 | · · · · · · · · · · · · · · · · · · · | DON | 16 \$ | 36 E | 17 3 | N 32° 54' 52.96" | W 103° 23' 6.65" | 30-May-60 | | 95 | |
| LOSSO EXP | Taking (| Roy Boland | DOM | 16.5 | .30 E | | N 32° 54' 52.96" | W 103° 23' 6.65" | 30-May-60 | 120 | 95 , | |
| £07649 | 6 | Beny Lee Hobbs Huide & Heidel | PRO | 16 S | 36 B | | N 32° 35, 32, 3" | W 102 22 19.98 | | 1. Jacob 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. | · · · | |
| L 6//5/ | | ar er ere seren seren an er | DOM | 16'8 | The states of the second second | and a start of the | N 32 ⁶ 54' 32 96" | W 103* 23 6.65" | 05-Beb-77 | 140 | ali ali seg 19 per sen e Sur in acategos altar ana terraradi da sib | |
| LOSEPEXP | | Berry Lee Hobbs | Particular and Particular and Particular | and a start a star | 36 B | | N 32° 55' 32 27" | W 103° 22' 35.55" | | E | fin an gada a ch 1 dial Gainthead a' 1 dial - Gainthead a' | |
| | () () () () () () () () () () () () () (| Calvin or Jo Ann Holloway | DOM | 16 S | 36 E | 17 21-2 | N 32° 55, 32,27" | W 103° 22535 55" | 66243 | Sec. 2 | | |
| LIONERP | A Star Contact of the second | Ineco Oll Company | RRO | 16 5 | 36 E | 176 (1.3) | N 329 55 19,13" | W 163° 23: 6.67" | | | 1 . N. 6 | |
| USOS #4 | | a series of the | | 16 8 | 36 E | 48-4-1-4 | and the second sec | and was builded and build | 26 Feb-91 | | 63.2 A | |
| USGS #S | where where the state of the st | and the second second | a a a a a a a a a a a a a a a a a a a | 16 8 | 36 E | 17 133 | in the state of th | <u> </u> | 10-100-09 | 1 | 67.82 | |
| 1.01086 | TOLE OF A STATE | C.C. Champers | DOM | 46.8 | 36 E | 18 22 | N 32º 35' 32.19" | W 103 23 22 19" | 02-Apt-51 | 75 | Annonement-terrenterent | |
| 1.01087 APPRO. | <u>3</u> | C.C. Chambers | DOM | 16.5 | 36 Đ | 18/ 22 | N 32° 55' 32.19" | W 103º 23' 22 19" | 02-Apr.51 | 75 | The search adjusticity a spectral | |
| L 04598 | 3 and a second second | Chiner H. Summald | Dom | 16 \$ | 36 B | to the start date that the | N 324 55 6.027 | W 103*23 22.17* | 21-Jan-62 | 136 | 75 | |
| 1.04598 APPRO | Sa pres a ranna fu mb | Emer H. Sunruld | istan "ungiplanistan) han si Pananan "Pana han si Pananan "Pana | 168 | Transfer of the second s | 18 42 | N 32° 55' 6.02" | W 103° 23' 22.17* | - 21-Jan 62 | 136 | 45 | |
| | 31 | George Wayne Sumuld | DOM. | 16 S | | | N 37° 54' 52.93' | W 103° 23' 22 16" | y mat or a | | Jane and Article | 20 |
| 94609 APRRO EXP | | George Wayne Sunnuld | | 16 S | 8 13 | 18 443 | N 32° 54' 52 93" | W 103° 23' 22.16" | Ť , | 6 | t | |
| E 08132 | 3 | George Wayne Sumruld | DOM | 16'8 | 36 E | 18 42 | N 32° 55' 6,02" | W 103° 23' 22.47" | 30-May-67 | 95 | 70 | . V. |
| 1.00934 | 3.1 | R. FL Storrald | DOM . | 16,8 | | | N 32:35.6.02 | W 103°23' 22.17" | 12 May 72 | 118 | 68 | 4. s |
| 1/06963 | 3~ | Ricky Jones | DOM | 16 5 | 36 E | 18.444 | N 37º 54"52 99" | W 103° 28: 22.16" | 24 Aug 72 | 120 J | 80 | 1. C |
| 106967 | | Oscar V. Neidick | DOM | 16 \$ | | 18 443 | N 32° 54' 52.93° | W 1039 23 22 16 | The impost of the 4 | | the set he | 18.2 |
| 1070637 | tweet ritter Billion desaure | Odel Huck | DOM | 165.4 | 36 Đ | 18 442 | N 326 94 32 938 | W 103 23, 22 16 | 26-App-00 | 120 | 80 | ~ |
|]. (79] (| | Wayne Summid | \$1X - | 168 | ∵%∄ _" | 18 42 | N 32° 55' 6.02" | W103*23-22172 | p ca processiones and p ". Innerside Max ". | WHATEN | Sevennes das Bils Incorne | |
| 1009729 | | B.H. Sumula | 1309 | 16 S | 36 B | 18 42 | N37 35 6.02 | W 103° 23' 22.17" | | Sec. 12.53 | and the second s | |
| 1.09730 | | E. H. Sumuld | D XP | 168 | 36 2 | 18 42 | N 32° 551 6:02" | W-103*23'22.17" | | | Levense viersel | |
| E/10712 | 0 | Chesopeake Opbreting | PRO | 16 8 | 36 E | 1 B 42. | N 32° 55 6.02 | W 103 23 22.17 | 01-Sep-97 | 165 | (60) | |
| USOS #6 | La Carlos Antonio | and the second s | | 16 S | - 36 B. | 18 11 1 | 6-2-2 C 7 E | The second s | 26-Jun-96 | labi si ji | 54.94 | |
| LOIOSA APPRO | 3 | Cientine Spines | DOM | 16 8 | 36 B | 19 13 | N 32º 54' 26.72" | W 103224 7 412 | 15 Dec-50 | 76 | 45 | |
| 1.02783 | 3 | Vemon N.Key | DOM | 16 S | 36 B | 192142 | N 32* 54' 26.74" | W 103º 23' 53 17" | 19-Feb-35 | 80 | 50 | |
| LO2783 APPRO | and the states of the second | Vemon N. Key | | 1168 | 1 36 16 -1 | 19 142 | | W10223'53 17"*** | 19 Feb.35 | 80 | 50 | |

Mr. Larry Johnson 5 August 2005

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Chesapeake

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TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

| Well Number Diversion ^A | | Owner | Uść. | Twsp | Rig | Sec q q q | Latitude | Löngtnide | Date Measured | Well Depth (R bgs) | Depth to Water (ft bgs) |
|------------------------------------|--|--|----------------------|------------|---------------------------|--|---|--|--|--|---|
| 104801 | No. 1 | Secrepe Spines | DOM | 16 S | 36 E | 12 12 | N 32° 54' 39 81." | W 103* 23' 53.18" | Carrier and the second se | a second and a second s | ij+ (; istrationalist Matrix Matrix atmaxat |
| 1-04895 | inerita and | George Spires | DOM : | 16 S | 36 E | 19 12 | N 32° 54' 39.81 | W 103° 23 53 18" | 05-May-62 | 1 . LOOK 1 | |
| LOSCO HAP | 7.8.0 | Toe Cristo | - DOM | 16 3 | 36 B | 19 142 | N 32º 54 26.74% | W 103: 23: 43:17. | Two y when when " | te anne vit f | |
| L 06689 EXP | and Others of | Weber Hannan | DOM . | 1 26 Stal | \$ 36 B | 19 114 | N 32° 54' 39.78" | W 103 24 7.4 | 1 | 1 Section and | 1 |
| 1.06937 | 1.23 | Dale Candy | DOM | - 16 St. 1 | 36 B | 19 224 | N 32º 54/39.85" | W 103º 23' 22 15" | -25 Apr 72 | 110 | |
| 1.07444 EXPL-1 | 0 | G. Cattle Company | EXP. | 16 S] | 36/E | 19 234 | N 32 54 28.76 | W 103 23 37 64 | 13 Oct-75 | 130 | وتبيعه ومدروه |
| TO 444 EXPL-2, | | G Cattle Company | EXP | 16.9 | 36 E | 19 231 | N 32º 54 26 75 | W 103 23 37 64 | 13-Oct-75 | 1407.4 | i un principal di anti- |
| 1/07444 EXPL-1 | بېلونون ورو د دونو د ورو د د د دوه د خدې ورو د | G. Cattle Company | EXP | 1 10 5 | 36 E | 19 231 | N 32º 54' 20.76" | W 103P 23137 64" | 14-Oct-75 | 178 | 120 |
| 108744 | 3 | Roger Price | DOM. | 16.5 | 36 E | 19 33 | N 329 54 D.59" | W-103* 24:7:42 | and the second s | 108 | 79 |
| 1,10209 | 3. 4. | Kenny Jackson | DOM | 168 | 36 E | 19 122 | N 32º 54' 39.81 | W 103°23'53.18" | 03-Aug-91 | 128 | 94 |
| L 00150 ENGLD -8 | 0 | Chesapeake Operating | PRO | 16.8 | 36 E | 19 213 | N 32º 54' 39.83" | W 103 23 37.66 | L. dec | 80 | are an area |
| 1:00150 | | Nearburg Producing Company | PRO | 168 | 36 P. | 19 211 | N 32º 54 39.83 | W 103º 23' 37.66" | 1 | 125 | 9400 - 14 - 14 - 14 11, 1 |
| USOS #7 | | the second second second second second | L | 16 8 | - 36 B | 1951314 | Finets de Prof | para principal and the second | 31-Mar-81 | Yet. | 59.25 |
| USOS #8 | | and the second s | | 16 S | 36 B | 19 21 I. | Se | and the second second | 16-Feb-61 | | 59.9 |
| USGS #9 | ant have a comment | H The Local A state of the stat | 1938 . R.C., C., S & | 16S. | 36 B | 19 211 | Anna an an an an an gang | Bound to also an and and the second | 03-Mar-76 | And a start and a start of the second start of | 64.9 |
| USOS #10 | and the second sec | an a | a alternation | 16 5 | 1 36 E | 19 214 | an a | an a | 15-Feb-71 | | 64.05 |
| USOS#1L | int | | america data si mad | 16 87 | the second power of | 19 413 | a contraction of the second | an te and the state of the stat | 30-Sep-81 | 1 | 66.54 |
| L 03966 | 3 | Robert Ralph Sims | DOM | 16 S | 36 E | 21 244 | N 32º 54' 26.96" | W 103º 21' 17.68" | 18-Aug-58 | 95 | 60 |
| L 03966 APPRO | | | | 16 S | 36 E | 21 224 | N 32º 54' 40.06" | W 103º 21' 17.68" | 18-Aug-58 | 95 | 60 |
| L 05269 | 3 | Ralph E. Collins | DOM | 16 S | 36 E | 21 2 2 4 | N 32º 54' 40.06" | W 103º 21' 17.68" | 19-Oct-63 | 110 | 90 |
| USGS #12 | | • | , | 16 S | 36 E | 21 232 | | | 01-Feb-96 | | 66.58 |
| - LOISON APPRO | 3.33 | Lawinn Ol Group | PRO | 16 S | | | N 320 531 47 547 | W 103-23 22.07 | 24-Oct-52 | 145 | 180 |
| L 04932 | 10. 10. 10 | Coone Spires | DOM | 16.5 | THE STATE STATES | Laudd C. (| | W 103* 23' 53.08" | 12-Jul-62 | 164 1 | -to |
| L 06334 | 0 | Marcum Drilling Company | PRO | 16 S | Annual Constant Streeting | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | N 32º 53' 21.38" | W 103º 24' 7.28" | 02-Jun-68 | 135 | 75 |
| L 06334 (E) 1 | .0 | Humble Oil & Refining Co. | PRO | 16 S | 36 E | | N 32º 53' 21.38" | W 103° 24' 7.28" | | | |
| USO8#13 | <u></u> | | 1 | 16 S | | 30.124 | | ar a change that the state of | 10 Mar 76 | delines gast a server s | 75.23 |

*= Data oblained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us/2001/WATERS/wr_RegisServlet1)

Well locations shown on Figure 2

 A = in acre feet per annum

IND = Industrial

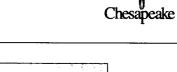
IRR = Irrigation

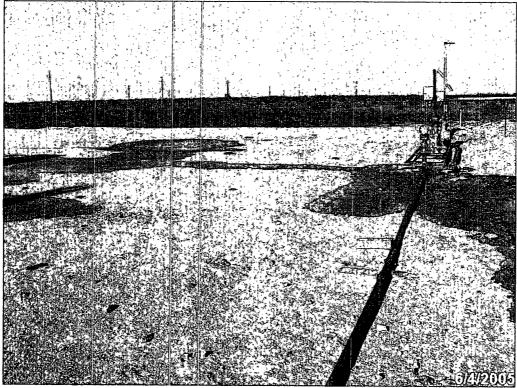
DOM = Domestic

EXP = Exploration

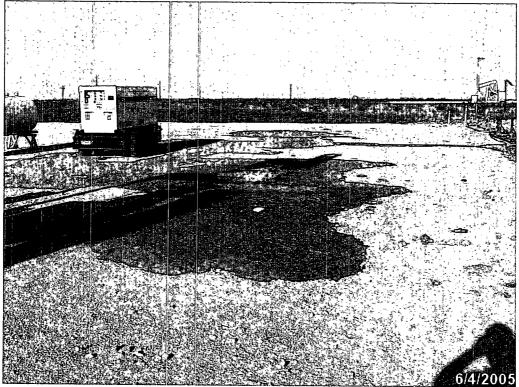
quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest

The state of the s





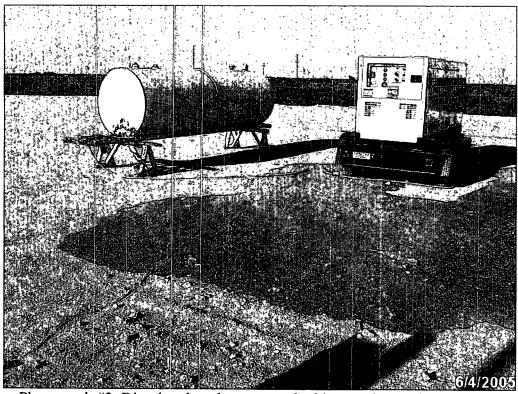
Photograph #1: Release area, looking easterly.



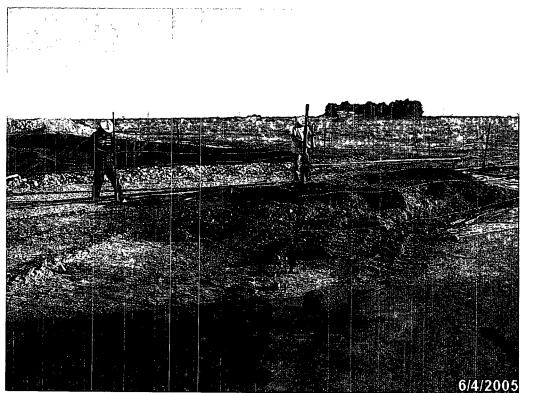
Photograph #2: Release area, looking easterly.







Photograph #3: Diesel tank and generator, looking northeasterly. Note cut fuel line between diesel tank and generator.

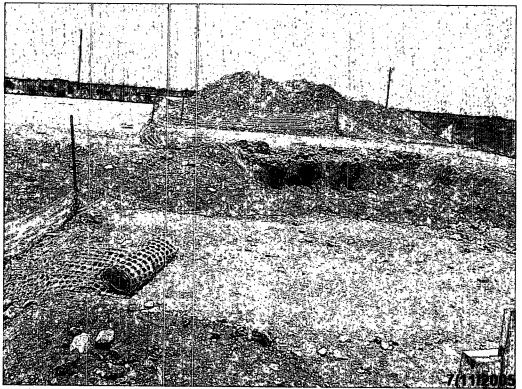


Photograph #4: Saturated soil stockpiled on plastic and fenced.

ved



Photograph #5: Final excavation, look westerly.



Photograph #6: Final excavation, looking northeasterly.

