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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Elm Ridge Exploration	Contact: Amy Mackey
Address: PO Box 156, Bloomfield, NM 87413	Telephone No.: (505) 632-3476 Ext 201
Facility Name: West Bisti Coal 10-2	Facility Type: Gas Well

Surface Owner: Federal	Mineral Owner:	Lease No.: NM 31311

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	10	25N	13W	1850	FSL	2475	FWL	San Juan

Latitude 36.413548 **Longitude** -108.207010

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: Unknown	Volume Recovered: Unknown
Source of Release: Earth Pit	Date and Hour of Occurrence: Historical	Date and Hour of Discovery: NA
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Produced Water from gas well at the mentioned location formerly discharged into an earthen pit on location. The well has been altered to no longer drain into an earthen pit, but instead into an Above Ground Storage Tank (AST).

Describe Area Affected and Cleanup Action Taken.*
On September 15, 2009, 'Production Sludge' was removed from the earthen pit to extents of approximately 10' x 10' x 4.5' below the bottom of the pit, where a hard shale was encountered. Sludge was removed to visual extents of contamination, where confirmation samples were collected; see attached ***Analytical Results***. A sample was collected at the bottom at five (5) feet below ground surface, and a composite sample was collected from each of the walls at 10' x 10' and analyzed in the field for TPH via USEPA Method 418.1, and in Envirotech's laboratory for benzene and BTEX via USEPA Method 8021 and for total chlorides via USEPA Method 4500B. Excavation could not continue beyond 10' x 10' due to well site equipment and the fence line for the Navajo Reservation. The samples collected from the bottom of the pit on shale and the wall composite both returned results below 100 mg/kg TPH, 0.2 mg/kg of benzene and 50 mg/kg of total BTEX. The samples from the bottom at shale and the wall composite returned results of 410 mg/kg and 385 mg/kg above background for chlorides respectively, confirming that a release occurred. Please reference the attached West Bisti Coal 10-2 Closure Plan for Elm Ridge Exploration's proposed course of action concerning this release.

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: Ms. Amy Mackey	Approved by District Supervisor:
Title: Administrative Manager	Approval Date: / Expiration Date:
E-mail Address: amackey1@elmridge.net	Conditions of Approval: / Attached ☐
Date: 11/11/09 Phone: 505-632-3476 Ext 201	

* Attach Additional Sheets If Necessary

RELEASE CLOSURE PLAN

SITE NAME:

WEST BISTI COAL 10-2
UNIT LETTER K, SECTION 10, TOWNSHIP 25N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO
LATITUDE 36.413548 LONGITUDE -108.207010

SUBMITTED TO:

MR. BRAD JONES
NEW MEXICO OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DRIVE
SANTA FE, NEW MEXICO 87505
(505) 476-3490

SUBMITTED BY:

MS. AMY MACKEY
ELM RIDGE EXPLORATION
P.O. BOX 156
BLOOMFIELD, NEW MEXICO 87413
(505) 632-3476 EXT. 201

NOVEMBER 2009

INTRODUCTION

The purpose of this release closure plan is to provide the details of activities involved in the closure of the confirmed release from the former earthen pit located at the West Bisti Coal 10-2 well site located in Unit K, Section 10, Township 25N, Range 13W, San Juan County, New Mexico. On September 15, 2009, 'production sludge' was removed from the former earthen pit located at the West Bisti Coal 10-2 well site. The 'production sludge' was removed to visual extents of approximately 10' x 10' x 4.5' below the ground surface, where a hard shale was encountered. The walls of the earthen pit were excavated to extents of 10' x 10' where excavation could no longer continue due to stability issues from the onsite well equipment used for oil and gas operations and the fence line for the Navajo Reservation. One (1) composite sample was collected at these extents of excavation from the walls, and one (1) sample was collected from the bottom at shale. Both earthen pit samples were analyzed in the field for TPH via USEPA Method 418.1 with both samples returning results below the 100 mg/kg standard required by the 'Pit Rule'. Both samples were then collected into four (4)-ounce glass jars, capped headspace free, and transported with ice under chain of custody to Envirotech's laboratory to be analyzed for benzene and BTEX via USEPA Method 8021 and for total chlorides via USEPA Method 4500B. Both samples were below the 100 mg/kg TPH standard, the 0.2 mg/kg benzene standard and the 50 mg/kg BTEX standard. Both sample returned results above the 250 mg/kg above background (10 mg/kg) standard for total chlorides at 410 mg/kg and 385 mg/kg above background, confirming that a release has occurred at this site.

Closure Plan

Elm Ridge Exploration is proposing to close the remainder of the earthen pit in place citing precedence set forth in the NMOCD 'Pit Rule'.

- The composite sample collected from the walls was dry, and did not contain groundwater.

- No water wells or cathodic well data exists in the area within 1 mile; see attached ***iWATERS Database Search***. The Salge Federal A #4 well site, owned and operated by Duggan Production, demonstrated a depth to groundwater of over 100 feet at this well site. The Salge Federal A #4 well site is located approximately 1.05 miles to the north of the West Bisti Coal 10-2 well site at an elevation approximately 20 feet lower than the West Bisti Coal 10-2 well site; see attached ***Topographic Map*** and ***Salge Federal A #4 C-144 and Hydro Geologic Data.***

- The nearest surface water is approximately 5,000 feet to the north of the West Bisti Coal 10-2 well site; see attached ***Topographic Map***.

- According to an iWATERS database search, no registered water wells exist within 1,000 of the West Bisti Coal 10-2 well site; see attached ***iWATERS Database Search***.

- The West Bisti Coal 10-2 well site is not located within an area overlying a subsurface mine; see attached ***Mine Map***.

- The West Bisti Coal 10-2 well site is not within 300 feet of a permanent residence, school, hospital, institution or church; see attached ***Aerial Photograph***.

- The West Bisti Coal 10-2 well site is not within incorporated municipal boundaries; see attached ***Topographic Map***.

- The West Bisti Coal 10-2 well site is not located within 500 feet of a wetland due to the fact that it is not within 5,000 feet of a surface water source; see attached ***Topographic Map***.

- The West Bisti Coal 10-2 well site is not located within an unstable area. This data was obtained from frequent site visits during closure activities by Envirotech, Inc. personnel.

- The West Bisti Coal 10-2 well site is not within a 100 year flood plain; see attached ***FEMA Map.***

Currently, the NMOCD allows on-site burial of drill pits that meet these criteria, outlined in 19.15.17.10 Subpart A NMAC. The chloride levels found in the earthen pit at the West Bisti Coal 10-2 well site are well below the 1,000 mg/kg chloride standard allowed for on-site burial at well sites with groundwater depths greater than 100 feet from the bottom of the drill pit based on rule 19.15.17.10 Subpart C . Elm Ridge Exploration is proposing to bury the remainder of the chloride and TPH found at this site based on the analytical results found and the siting criteria determined for this site, which indicate that the chloride and TPH levels found at this site "do not pose a threat to present or foreseeable beneficial use of fresh waters, public health and the environment". Due to shale encountered at 4.5 feet below ground surface, maximum reasonable extent of excavation has been achieved at this depth.

REPORTING

Elm Ridge Exploration will submit a closure report within 60 days following the earthen pit final closure. The closure report will consist of a form C-144 with all supporting data. The supporting data will include proof of closure notice to the surface owner and the OCD, confirmation sampling analytical results, a site diagram, soil backfilling and cover installation, re-vegetation rates, re-seeding techniques and site reclamation photo documentation if applicable, along with all other information related to the onsite activities.

We appreciate the opportunity to be of service. If you have any questions or require further information, please do not hesitate to contact our office at (505) 632-3476 Ext. 201.

Respectfully Submitted,
Elm Ridge Exploration

Amy Mackey
Elm Ridge Exploration

Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- [X] Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- [X] Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- [X] Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- [X] Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- [X] Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- [X] Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Haul-off Bins Only: (19.15.17.13.D NMAC) ***Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings.***

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- [ ] Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- [ ] Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- [ ] Construction and Design of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC
- [ ] Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- [ ] Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- [ ] Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15 17.13 NMAC
- [ ] Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- [ ] Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- [ ] Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- [ ] Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief

Name (Print): Kurt Fagrelius Title: Vice President, Exploration

Signature: Kurt Fagrelius Date: August 12, 2008

e-mail address: kfagrelius@duganproduction.com Telephone: 505-325-1821 (O), 505-320-8248 (C)

OCD Approval: [X] Permit Application (including closure plan) [ ] Closure Plan (only)

OCD Representative Signature: Brandon Powell **Approval Date:** 8-25-08

Title: EnviroIspec **OCD Permit Number:** _____

Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

[ ] **Closure Completion Date:** _____

Closure Method:

[ ] Waste Excavation and Removal [ ] On-Site Closure Method [ ] Alternative Closure Method

[ ] If different from approved plan, please explain.

Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

- [ ] Proof of Closure Notice
- [ ] Proof of Deed Notice (if applicable)
- [ ] Plot Plan
- [ ] Confirmation Sampling Analytical Results
- [ ] Waste Material Sampling Analytical Results
- [ ] Disposal Facility Name and Permit Number
- [ ] Soil Backfilling and Cover Installation
- [ ] Re-vegetation Application Rates and Seeding Technique
- [ ] Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD: [ ] 1927 [ ] 1983

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): Kurt Fagrelius Title: Vice President, Exploration

Signature: _____ Date: _____

e-mail address: kfagrelius@duganproduction.com Telephone: 505-325-1821

Salge Federal A #4 Hydrogeologic Data

The Salge Federal A #4 is located on Navajo Nation Trust Lands within the Navajo Indian Irrigation Project (NIIP), San Juan County, New Mexico. Water used for irrigation on NIIP is transported to the area from Cutter Dam and Navajo Dam over 25-30 miles to the north and east through an elaborate, cement lined canal system. The area is characterized as very arid with abundant dunes surrounding patches of "Badlands" topography with a sparse cover of grass and sage.

A records search of the NM Office of the State Engineer –iWATERS database was conducted on a three square mile area centered on the Salge Federal A #4 location (Exhibit 2). No water wells were located in the area of the below grade tank. The results of the search are shown on Exhibit 1.

The main source of stock water in the region is encountered in valley-fill deposits in existing arroyos at shallow depths of approximately 15 – 50 feet below the surface. The proposed below grade tank is not located in an arroyo. A very small arroyo is located 230 feet to the south and a stock tank (Jeters Lake) is located 500 feet to the southwest.

The Nacimiento Formation extends from the surface down to a depth of approximately 520 feet. The interval is comprised of only mudstone / shale with a siltstone layer at 390-430. This interval is not expected to yield significant volumes of groundwater

The underlying Ojo Alamo Sandstone ranges from approximately 520 feet down to a depth of approximately 615 feet and is comprised of a coarse grained alluvial sandstone inter-bedded with lenses of mudstone and occasional conglomeratic sandstone. The Ojo Alamo may yield marginal quantities of water for livestock, however, the water quality is typically greater than 1,000 ppm total dissolved solids and high in sulfate.

The underlying Kirtland Shale ranges from approximately 615 feet down to 1070 feet and is comprised of shale. The middle sandstone member (Farmington Ss.) is not developed.

Based on electric open hole logs, the iWATERS database and literature reviewed, poor quality ground water might be found at a depth of approximately 390-430 feet from thin discontinuous siltstone layers of the lowermost Nacimiento Formation or the underlying Ojo Alamo Sandstone at a depth of 520 to 615 feet below the surface..

Excessive drilling depth, unpredictable variations in reservoir quality and water quality have discouraged the drilling of water wells in the in the subject area.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p.

Brown, D.R., and Stone, W.J., 1979, Hydrogeology of Aztec quadrangle, San Juan County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrogeologic Sheet 1.

Levings, G.W., Craigg, S.D., Dam, W.L. Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, and Animas Formations in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah: U.S. Geological Survey, Atlas HA-720-A, Sheet 1 and 2.

Thorn, C.R., Levings, G.W., Craigg, S.D., Dam, W.L., and Kernodle, J.M., 1990, Hydrogeology of the Ojo Alamo Sandstone in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah: U.S. Geological Survey, Atlas HA-720-B, Sheet 1 and 2.

Siting Criteria for the Salge Federal A #4

1. Ground water is not less than 50-feet below the bottom of the below grade tank. Ground water is greater than 100-feet below the bottom of the below grade tank.

2. The below grade tank is not within 300-feet of a continuously flowing water course, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from ordinary high water mark). See the attached Topographic map (Exhibit 2) and Visual Inspection Certification of the location and area around the subject below grade tank.

3. The below grade tank is not within 300-feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. See the attached Satellite Image (Exhibit 3) and Visual Inspection certification of the location and area around the subject below grade tank.

4. The below grade tank is not within 500-feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. See the attached NM Office of the State Engineer iWATERS database search (Exhibit 4) and Visual Inspection certification of the location and area around the subject below grade tank.

5. The below grade tank is not located within the incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978 Section 3-27-3, as amended. See the attached Topographic map of the location and area around the subject below grade tank.

6. The below grade tank is not located within 500-feet of a wetland. See the attached Topographic map and Visual Inspection Certification of the location and area around the subject below grade tank.

7. The below grade tank is not located within the area overlying a subsurface mine. See the attached Mine, Mills and Quarry Map of New Mexico (New Mexico, EMND 2008) (Exhibit 5) showing the location and area around the subject pit.

8. The below grade tank is not located within an unstable area. See the attached Topographic map of the location and area around the subject below grade tank.

9. The below grade tank is not located within a 100-year floodplain area. See the attached FEMA map (Exhibit 6) of the 100 year floodplain showing the location and area around the subject pit.

envirotech

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Elm Ridge Exploration	Project #:	03056-0206
Sample No.:	1	Date Reported:	10/2/2009
Sample ID:	Bottom @ 5' (Shale)	Date Sampled:	9/15/2009
Sample Matrix:	Soil	Date Analyzed:	9/15/2009
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**60**	**20.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **West Bisti Coal 10-2**

Instrument calibrated to 200 ppm standard. Zeroed before each sample

Analyst

Robyn Jones
Printed

James McDaniel
Printed

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 info@envirotech-inc.com envirotech-inc.com

envirotech

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Elm Ridge Exploration	Project #:	03056-0206
Sample No.:	2	Date Reported:	10/2/2009
Sample ID:	Wall Composite	Date Sampled:	9/15/2009
Sample Matrix:	Soil	Date Analyzed:	9/15/2009
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**40**	**20.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **West Bisti Coal 10-2**

Instrument calibrated to 200 ppm standard. Zeroed before each sample

Analyst

Robyn Jones
Printed

James McDaniel
Printed

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CONTINUOUS CALIBRATION
EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Cal. Date: 15-Sep-09

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	
	200	206
	500	
	1000	

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.

Analyst — Date 10/5/09

Robyn Jones
Print Name

Review — Date 10/5/09

James McDaniel
Print Name

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envirotech
Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	ElmRidge	Project #:	03056-0206
Sample ID:	Wall Comp	Date Reported:	09-21-09
Laboratory Number:	51714	Date Sampled:	09-15-09
Chain of Custody:	7996	Date Received:	09-17-09
Sample Matrix:	Soil	Date Analyzed:	09-18-09
Preservative:	Cool	Date Extracted:	09-17-09
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**ND**	**1.0**
Ethylbenzene	**ND**	**1.0**
p,m-Xylene	**ND**	**1.2**
o-Xylene	**ND**	**0.9**
Total BTEX	**ND**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**96.0 %**
	1,4-difluorobenzene	**96.0 %**
	Bromochlorobenzene	**96.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **West Bisti Coal 10-2**

Analyst

Review

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Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	ElmRidge	Project #:	03056-0206
Sample ID:	Bottom 5' Below Pit	Date Reported:	09-21-09
Laboratory Number:	51715	Date Sampled:	09-15-09
Chain of Custody:	7996	Date Received:	09-17-09
Sample Matrix:	Soil	Date Analyzed:	09-18-09
Preservative:	Cool	Date Extracted:	09-17-09
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**4.4**	**1.0**
Ethylbenzene	**1.4**	**1.0**
p,m-Xylene	**4.8**	**1.2**
o-Xylene	**2.6**	**0.9**
Total BTEX	**13.2**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**96.0 %**
	1,4-difluorobenzene	**96.0 %**
	Bromochlorobenzene	**96.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **West Bisti Coal 10-2**

Analyst

Review

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envirotech
Analytical Laboratory

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	09-18-BT QA/QC	Date Reported:	09-21-09
Laboratory Number:	51680	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	09-18-09
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	1.1778E+006	1.1802E+006	0.2%	ND	0.1
Toluene	1.0723E+006	1.0744E+006	0.2%	ND	0.1
Ethylbenzene	9.5649E+005	9.5840E+005	0.2%	ND	0.1
p,m-Xylene	2.4071E+006	2.4119E+006	0.2%	ND	0.1
o-Xylene	9.0247E+005	9.0428E+005	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	0.9
Toluene	ND	ND	0.0%	0 - 30%	1.0
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.0
p,m-Xylene	ND	ND	0.0%	0 - 30%	1.2
o-Xylene	ND	ND	0.0%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	49.6	99.2%	39 - 150
Toluene	ND	50.0	48.0	96.0%	46 - 148
Ethylbenzene	ND	50.0	44.0	88.0%	32 - 160
p,m-Xylene	ND	100	96.0	96.0%	46 - 148
o-Xylene	ND	50.0	47.0	94.0%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 51680 - 51684, 51699, 51714, 51715, 51717, and 51718.**

Analyst

Review

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envirotech
Analytical Laboratory

Chloride

Client:	Elm Ridge	Project #:	03056-0206
Sample ID:	Wall Comp	Date Reported:	09-21-09
Lab ID#:	51714	Date Sampled:	09-15-09
Sample Matrix:	Soil	Date Received:	09-17-09
Preservative:	Cool	Date Analyzed:	09-18-09
Condition:	Intact	Chain of Custody:	7996

Parameter	Concentration (mg/Kg)
Total Chloride	**395**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **West Bisti Coal 10-2.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

Chloride

Client:	Elm Ridge	Project #:	03056-0206
Sample ID:	Bottom 5' Below Pit	Date Reported:	09-21-09
Lab ID#:	51715	Date Sampled:	09-15-09
Sample Matrix:	Soil	Date Received:	09-17-09
Preservative:	Cool	Date Analyzed:	09-18-09
Condition:	Intact	Chain of Custody:	7996

Parameter	Concentration (mg/Kg)
Total Chloride	**420**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **West Bisti Coal 10-2.**

Analyst

Review

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envirotech
Analytical Laboratory

Chloride

Client:	Elm Ridge	Project #:	03056-0206
Sample ID:	Background	Date Reported:	09-21-09
Lab ID#:	51716	Date Sampled:	09-15-09
Sample Matrix:	Soil	Date Received:	09-17-09
Preservative:	Cool	Date Analyzed:	09-18-09
Condition:	Intact	Chain of Custody:	7996

Parameter	Concentration (mg/Kg)
Total Chloride	**10**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **West Bisti Coal 10-2.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

CHAIN OF CUSTODY RECORD

Client:	Project Name / Location:
Elm Ridge	West Bisti Coal 10-2
Client Address:	Sampler Name: R. Jones
Client Phone No.:	Client No.: 03056-0204

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative: Cool	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
Wall Comp	9/15/09	13:30	51714	(Soil) Solid Sludge Aqueous	1-40z			X		X								X				✓	✓
Bottom 5' Below Pit	9/15/09	13:40	51715	(Soil) Solid Sludge Aqueous	1-40z			X		X								X				✓	✓
Background	9/15/09	13:35	51716	(Soil) Solid Sludge Aqueous	1-40z			X										X				✓	✓
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			
				Soil Solid Sludge Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/17/09	14:50	Kendall Anglin	9/17/09	14:50
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

envirotech
Analytical Laboratory
5796 US Highway 64 • Farmington, NM 87401 • 505-632-0615 • lab@envirotech-inc.com

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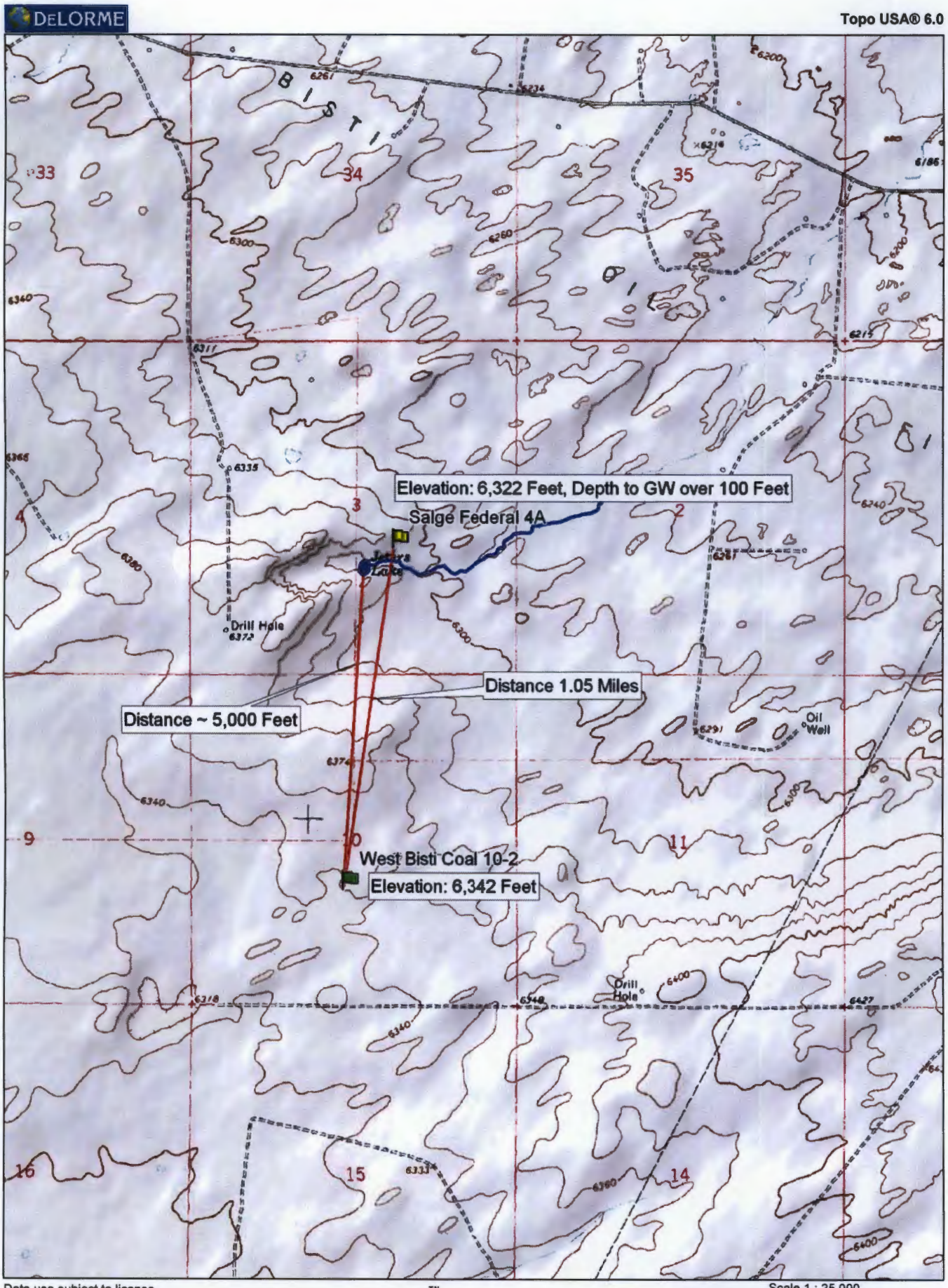
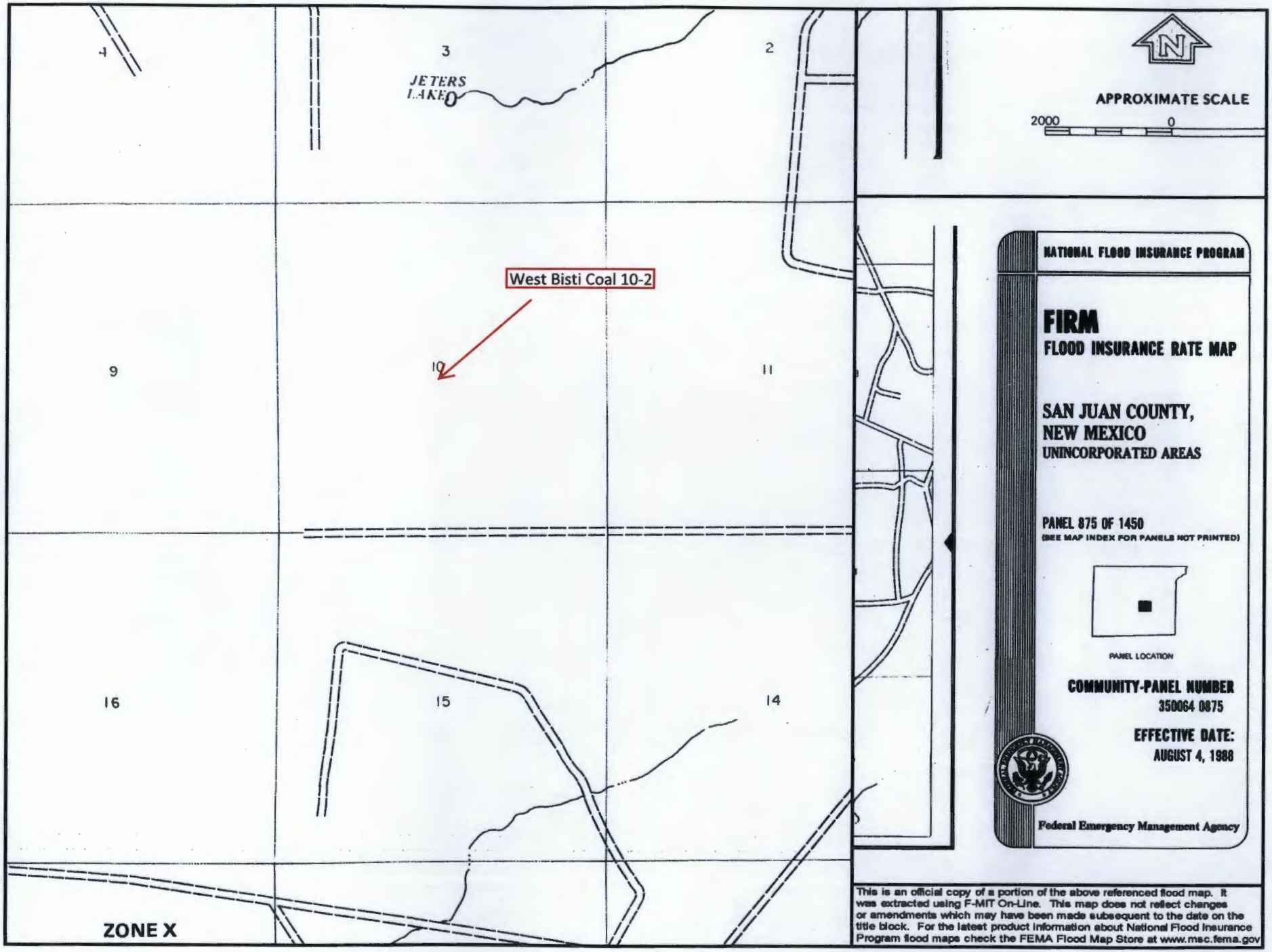

DeLORME
Topo USA® 6.0
Elevation: 6,322 Feet, Depth to GW over 100 Feet
Salge Federal 4A
Drill Hole
6372
Distance 1.05 Miles
Distance ~ 5,000 Feet
Oil Well
West Bisti Coal 10-2
Elevation: 6,342 Feet
Drill Hole
Data use subject to license.
© 2006 DeLorme. Topo USA® 6.0.
www.delorme.com
TN
MN (10.2°E)
Scale 1 : 25,000
1" = 2,083.3 ft
Data Zoom 13-0

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 2, 3, 4, 9, 10, 11, 14, 15, 16 **Township:** 25N **Range:** 13W


4
3
2
JETERS LAKE
West Bisti Coal 10-2
9
10
11
16
15
14
ZONE X
N
APPROXIMATE SCALE
2000
0
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
SAN JUAN COUNTY, NEW MEXICO
UNINCORPORATED AREAS
PANEL 875 OF 1450
(SEE MAP INDEX FOR PANELS NOT PRINTED)
PANEL LOCATION
COMMUNITY-PANEL NUMBER
350064 0875
EFFECTIVE DATE:
AUGUST 4, 1988
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Aerial Photograph

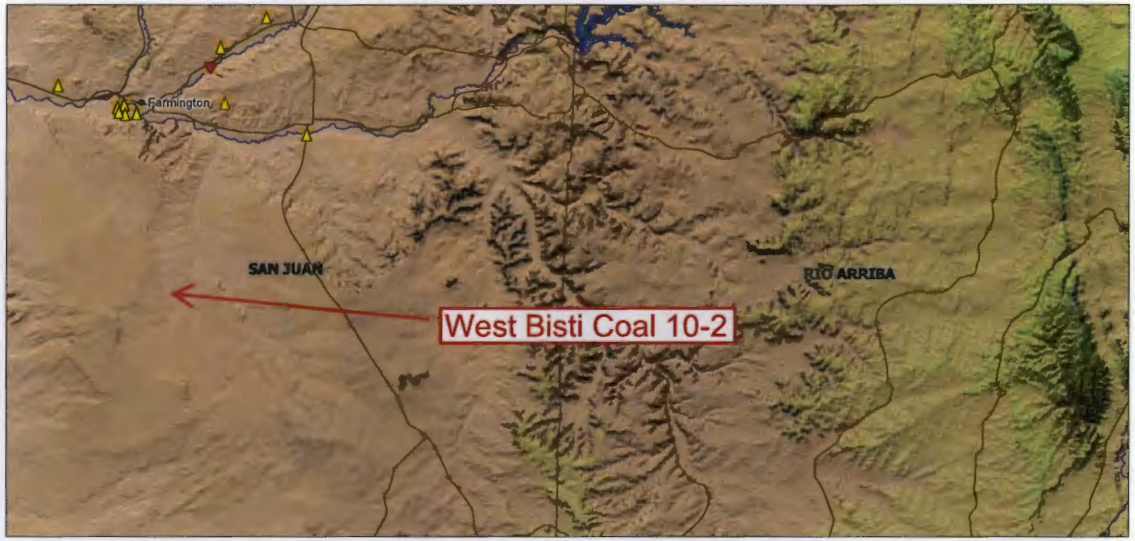
MMQonline Public Version

Mines, Mills & Quarries Commodity Groups

- Aggregate & Stone Mines
- Coal Mines
- Industrial Minerals Mines
- Industrial Minerals Mills
- Metal Mines and Mill Concentrate
- Potash Mines & Refineries
- Smelters & Refinery Ops.
- Uranium Mines
- Uranium Mills

Mines, Mills & Quarries Status

- Active Mining



SCALE 1 : 918,081

10 0 10 20 30

MILES

N

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

2008 FEB 2 PM 1 08

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action:
- ☐ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
- ☒ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
- ☐ Modification to an existing permit
- ☐ Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank, or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations, or ordinances.

Operator: Elm Ridge Exploration OGRID #: 149052

Address: P.O. Box 156; Bloomfield, NM 87413

Facility or well name: West Bisti Coal 10-2

API Number: 3004528799 OCD Permit Number:

U/L or Qtr/Qtr K Section 10 Township 25N Range 13W County: San Juan

Center of Proposed Design: Latitude 36.413497 Longitude -108.206883 NAD: ☐ 1927 ☒ 1983

Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.

☒ **Pit:** Subsection F or G of 19.15.17.11 NMAC Ceased operation prior to June 16, 2008.

Temporary: ☐ Drilling ☐ Workover

☒ Permanent ☐ Emergency ☐ Cavitation ☐ P&A

☐ Lined ☒ Unlined Liner type: Thickness _____ mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other _____

☐ String-Reinforced

Liner Seams: ☐ Welded ☐ Factory ☐ Other _____ Volume: _____ bbl Dimensions: L 12' x W 10' x D 2"

3.

☐ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC

Type of Operation: ☐ P&A ☐ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)

☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other _____

☐ Lined ☐ Unlined Liner type: Thickness _____ mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other _____

Liner Seams: ☐ Welded ☐ Factory ☐ Other _____

4.

☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC

Volume: _____ bbl Type of fluid:

Tank Construction material:

☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off

☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other:

Liner type: Thickness _____ mil ☐ HDPE ☐ PVC ☐ Other _____

5.

☐ **Alternative Method:**

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

6.

Fencing: Subsection D of 19.15.17.11 NMAC *(Applies to permanent pits, temporary pits, and below-grade tanks)*

☐ Chain link, six feet in height, two strands of barbed wire at top *(Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)*

☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet

☒ Alternate. Please specify 4' tall hogwire fencing with pipe railing

7.

Netting: Subsection E of 19.15.17.11 NMAC *(Applies to permanent pits and permanent open top tanks)*

☐ Screen ☒ Netting ☐ Other_____

☐ Monthly inspections (If netting or screening is not physically feasible)

8.

Signs: Subsection C of 19.15.17.11 NMAC

☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☒ Signed in compliance with 19.15.3.103 NMAC

9.

Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

☐ Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

10.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. **Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.**

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - *(Applies to temporary, emergency, or cavitation pits and below-grade tanks)*	☐ Yes ☐ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. *(Applies to permanent pits)* - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No ☐ NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.	☐ Yes ☐ No
Within 500 feet of a wetland.	☐ Yes ☐ No
Within the area overlying a subsurface mine.	☐ Yes ☐ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☐ No
Within a 100-year floodplain. - FEMA map	☐ Yes ☐ No

11.
Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9
- ☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____

☐ Previously Approved Operating and Maintenance Plan API Number: _____ *(Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)*

13.
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

14.
Proposed Closure: 19.15.17.13 NMAC
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

Type: ☐ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☒ Permanent Pit ☐ Below-grade Tank ☐ Closed-loop System ☐ Alternative

Proposed Closure Method:
- ☒ Waste Excavation and Removal
- ☐ Waste Removal (Closed-loop systems only)
- ☐ On-site Closure Method (Only for temporary pits and closed-loop systems)
  - ☐ In-place Burial ☐ On-site Trench Burial
- ☐ Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

15.
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

16.

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC)

Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please provide the information below) ☐ No

Required for impacted areas which will not be used for future service and operations:

☐ Soil Backfill and Cover Design Specifications - - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC

☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

17.

Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC

Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☐ No
Within a 100-year floodplain. - FEMA map	☐ Yes ☐ No

18.

On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC

☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC

☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC

☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

☐ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)

☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC

☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19.
Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Ms. Amy Mackey Title: Administrative Manager

Signature: Date: 1-28-09

E-mail address: amackey1@elmridge.net Telephone: (505) 632-3476 Ext. 201

20.
OCD Approval: ☐ Permit Application (including closure plan) ☑ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: Carl J Chavez **Approval Date:** 2/19/2009

Title: Environmental Engineer **OCD Permit Number:**

21.
Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ **Closure Completion Date:**

22.
Closure Method:

☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)

☐ If different from approved plan, please explain.

23.
Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: Disposal Facility Permit Number:

Disposal Facility Name: Disposal Facility Permit Number:

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

24.
Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

☐ Proof of Closure Notice (surface owner and division)
☐ Proof of Deed Notice (required for on-site closure)
☐ Plot Plan (for on-site closures and temporary pits)
☐ Confirmation Sampling Analytical Results (if applicable)
☐ Waste Material Sampling Analytical Results (required for on-site closure)
☐ Disposal Facility Name and Permit Number
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique
☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude Longitude NAD: ☐1927 ☐ 1983

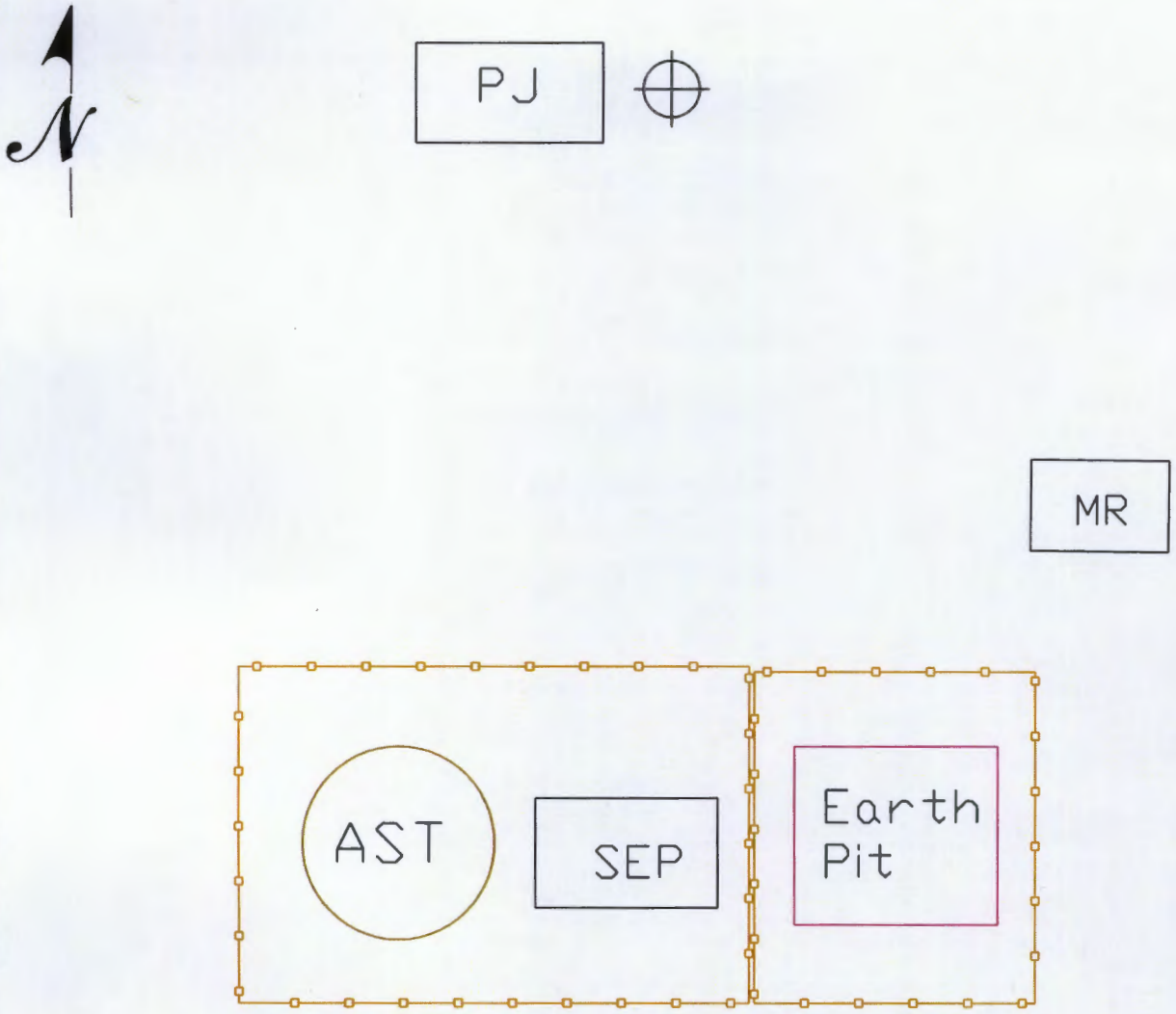
25.
Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): Title:

Signature: Date:

E-mail address: Telephone:



LEGEND

4' Tall Hogwire Fencing

Berm

Well Head

SITE MAP
ELM RIDGE EXPLORATION
WEST BISTI COAL 10-2
SEC 10 TWN 25N RGE 13W
SAN JUAN COUNTY, NEW MEXICO

SCALE: NTS	FIGURE NO. A	REV
PROJECT NO03056-0136		

REVISIONS

NO.	DATE	BY	DESCRIPTION

MAP DRWN	MDD	11/17/08	BASE DRWN		

ENVIRONMENTAL SCIENTISTS & ENGINEERS
ENVIROTECH
5796 U.S. HIGHWAY 64, FARMINGTON, NM 87410 505-632-0615

EARTHEN PIT CLOSURE PLAN

SITE NAME:

WEST BISTI COAL 10-2
UNIT LETTER K, SECTION 10, TOWNSHIP 25N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO
LATITUDE 36.413497 LONGITUDE -108.206883

SUBMITTED TO:

MR. WAYNE PRICE
NEW MEXICO OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DRIVE
SANTA FE, NEW MEXICO 87505
(505) 476-3490

SUBMITTED BY:

MS. AMY MACKEY
ELM RIDGE EXPLORATION
P.O. BOX 156
BLOOMFIELD, NEW MEXICO 87413
(505) 632-3476 EXT. 201

JANUARY 2009

EARTHEN PIT CLOSURE PLAN
ELM RIDGE EXPLORATION
WEST BISTI COAL 10-2
SAN JUAN COUNTY, NEW MEXICO

TABLE OF CONTENTS

INTRODUCTION

Elm Ridge Exploration would like to submit a closure plan for the earthen pit at the West Bisti Coal 10-2 well site located in the NE ¼ SW ¼ of Section 10, Township 25N, Range 13W, San Juan County, New Mexico. This closure plan has been prepared in conformance with the closure requirements of 19.15.17.13 NMAC.

SCOPE OF CLOSURE ACTIVITIES

The purpose of this closure plan is to provide the details of activities involved in the closure of the permanent unlined pit at the West Bisti Coal 10-2 well site. The following scope of closure activities has been designed to meet this objective:

1) Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will close all former earthen pits prior to the closure date agreed upon by the New Mexico Oil Conservation Division of December 31, 2009.

2) In accordance with of Subsection A of 19.15.17.13 NMAC, Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will close any earthen pits at a date the division requires because of imminent danger to fresh water, public health, or the environment.

3) Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will close earthen pits first which seem to pose a greater risk to fresh water, public health, or the environment. This will be determined by the locations proximity to surface water sources and distance to groundwater.

4) No less than 60 days prior to any earthen pit closure activities, Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will provide written notification to the Santa Fe NMOCD office as well as a schedule of on-site activities, as in accordance with 19.15.17.13 Subsection J Paragraph (3) NMAC.

5) No less than 24 hours and no greater than one (1) week prior to earthen pit removal Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will provide written notification to the appropriate surface owner as well as a schedule of on-site activities, as in accordance with 19.15.17.13 Subsection J Paragraph (1) NMAC. Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will notify the surface owner by certified mail, return receipt requested, that the operator plans to close an earthen pit. The return receipt will be used to ensure that the surface owner has received written notification no less than 24 hours and no greater than one (1) week prior to the beginning of BGT closure activities. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records is sufficient to demonstrate compliance with this requirement. Closure activities that will take place on tribal land will have notifications sent by certified mail, return receipt requested, to the appropriate tribal office. Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will notify the Bureau of Land Management (BLM) of closure activities for wells located on federal land per a Sundry Notice, as in accordance with 19.15.17.13 Subsection J Paragraph (1) NMAC. All notices will be sent in such a way that the surface owner received notice at least 24 hours prior to the beginning of

closure activities.

6) Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will remove all liquids, and/or sludge, to visual extents, prior to closure sampling. Material will be disposed of at Envirotech's Landfarm #2, Permit # NM-01-0011, TNT Environmental Inc. Landfarm, Permit # NM-01-0008, Industrial Ecosystems Inc. (IEI) Landfarm, Permit # NM-01-0010B or Basin Disposal, Permit # NM-01-0005, depending on the consistence of the material removed, as in accordance with 19.15.17.13 Subsection C Paragraph (1) NMAC .

7) Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will remove all on-site equipment associated with this earthen pit unless it is required for some other purpose, as in accordance with 19.15.17.13 Subsection C Paragraph (2) NMAC. The equipment that meets the requirements of 19.15.9.712 Subsection A NMAC and 19.15.9.712 Subsection D Paragraph (1) will be disposed of at San Juan County Regional Landfill. Waste that is classified by 19.15.9.712 Subsection D Paragraph (2) will be sampled accordingly to determine acceptance of this material at the San Juan County Regional Landfill. Waste that is unable to be accepted at the San Juan County Regional Landfill will be submitted to the OCD on a case-by-case basis in accordance with Paragraph (3) of Subsection D of 19.15.9.712.

8) Once the earthen pit is removed to visual extents of contamination, a five (5)-point composite sample will be collected from directly below the liner(s) or at native soil. Additional discrete samples will be collected from any area that is wet, discolored, or show other evidence of a release. All samples being collected will be analyzed for benzene, and total BTEX via USEPA Method 8021B, TPH via USEPA Method 418.1, and chlorides via USEPA 300.1, as in accordance with 19.15.17.13 Subsection C Paragraph (3) NMAC.

9) Depending on soil sample results the area will be either backfilled or the area will be excavated.
    a. If soil samples do not exceed the regulatory standards of 0.2 mg/kg benzene, 50 mg/kg BTEX, 100 mg/kg TPH, and 250 mg/kg or background concentration of chlorides, as in accordance with 19.15.17.13 Subsection C Paragraph (3) NMAC.
        i. Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, shall submit a Form C-141 with the laboratory results so that the division may review the results to determine if additional delineation is required in accordance with Paragraph (4) of Subsection C of 19.15.17.13 NMAC.
        ii. Elm Ridge Exploration or a contractor acting on behalf of Elm Ridge Exploration will backfill the excavation or impacted area with non-waste containing, earthen material, in accordance with 19.15.17.13 Subsection E Paragraph (6) NMAC. A soil cover shall be installed for all backfilled excavations consisting of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater in accordance with Subsections H of 19.15.17.13 NMAC. The operator shall construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material.
        iii. All areas of the well site that are no longer utilized on a day to day basis for the production of oil and/or gas, Elm Ridge Exploration, or a

contractor acting on behalf of Elm Ridge Exploration, will substantially restore, re-contour, and re-vegetate the areas, in accordance with 19.15.17.13 Subsections G and I NMAC. The operator shall notify the division when it has been re-seeded and when it has achieved successful re-vegetation. For re-vegetation methods, please see attached re-vegetation plan.

b. If soil samples exceed the regulatory standards stated above.
   i. Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, shall submit a Form C-141 with the laboratory results so that the division may review the results to determine if additional delineation is required in accordance with Paragraph (4) of Subsection C of 19.15.17.13 NMAC.
   ii. Activities beyond this point will be in accordance with 19.15.3.116 NMAC and 19.15.11.19 NMAC.

REPORTING

Elm Ridge Exploration will submit a closure report within 60 days following the earthen pit closure. The closure report will consist of a form C-144 with all supporting data, and a form C-141 with all supporting data. The supporting data will include proof of closure notice to the surface owner and the OCD, confirmation sampling analytical results, a site diagram, soil backfilling and cover installation, re-vegetation rates, re-seeding techniques, and site reclamation photo documentation, if applicable, along with all other information related to the onsite activities.

We appreciate the opportunity to be of service. If you have any questions or require further information, please do not hesitate to contact our office at (505) 632-3476 ext 201.

Respectfully Submitted:
Elm Ridge Exploration

Amy Mackey
Elm Ridge Exploration

Elm Ridge Exploration

Re-Seeding Techniques and Seed Mixture Ratios

These applied practices by Elm Ridge Exploration will at a minimum comply with the New Mexico Oil Conservation Divisions rule 19.15.17.13, Subsection I NMAC Elm Ridge Exploration has adopted these re-seeding application techniques, ratios, and mixtures as their standard operating procedures.

1. The first growing season after closure of a below grade tank or pit, all areas of the well site not utilized for the production of oil and/or gas on a daily basis will be re-seeded with the specified seed mixture.

2. The seed mixture used will be certified with no primary or secondary noxious weeds in seed mixtures. The seed labels from each bag shall be available for inspection while seed is being sown.

3. The operator shall accomplish seeding by drilling on the contour whenever practical or by other division-approved methods. The operator shall obtain vegetative cover that equals 70% of the native perennial vegetative cover (un-impacted by overgrazing, fire or other intrusion damaging to native vegetation) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. During the two growing seasons that prove viability, there shall be no artificial irrigation of the vegetation.

4. Hand seeding with hydro-mulch, excelsior netting, or mulch with netting is required on the cut/fill slopes. Mulch will be spread at a rate of 2,000-3,000 pounds per acre.

5. Compacted areas determined by visual inspection will be ripped to a depth of 12 inches below ground surface and disked to a depth of six (6) inches before seeding. Seeding shall be done with a disk type drill with two (2) boxes for various seed sizes. The drill rows shall be eight (8) to ten (10) inches apart. Seed shall be planted at no less than one-half (1/2) inch deep or more than one (1) inch deep. The seeder shall be followed with a drag, packer, or roller to ensure uniform coverage of the seed and adequate compaction. Drilling shall be done on the contour where possible, but not up and down the slope.

6. Where slopes are too steep for contour drilling a hand seeder shall be used. Seed shall be covered to the depth stated above by whatever means is practical. If the seed is unable to be covered by the means listed above, the prescribed seed mixture amount will be doubled.

7. Elm Ridge Exploration shall repeat seeding or planting until it successfully achieves the required vegetative cover of 70% of the native perennial vegetation cover.

8. Upon abandonment of a well site, if the retention of the access road is not considered necessary for the management and multiple uses of the natural resources, or by the surface owner, it will be ripped a minimum of 12 inches in depth. After ripping, water bars will be installed. All ripped surfaces are to be protected from vehicular travel by construction of a dead end ditch and earthen barricade at the entrance to these ripped areas. Re-seeding of areas affected by the ditch and barriers will be re-seeded if necessary.

9. Elm Ridge Exploration, or a contractor acting on behalf of Elm Ridge Exploration, will inform the division once successful re-vegetation has occurred.

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

RECEIVED
2008 MAY 18 PM 2 39

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 October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: Elm Ridge Exploration	Contact: Amy Mackey
Address: PO Box 156, Bloomfield, NM 87413	Telephone No.: (505) 632-3476 Ext 201
Facility Name: West Bisti Coal 10-2	Facility Type: Gas Well

Surface Owner: Federal	Mineral Owner:	Lease No.: 31311

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	10	25N	13W	1850	FSL	2475	FWL	San Juan

Latitude 36.413549 **Longitude** -108.207010

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: Unknown	Volume Recovered: Unknown
Source of Release: Earth Pit	Date and Hour of Occurrence: Historical	Date and Hour of Discovery: NA
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Produced Water from gas well at the mentioned location formerly discharged into an earthen pit on location. The well has been altered to no longer drain into an earthen pit, but instead into an Above Ground Storage Tank (AST).

Describe Area Affected and Cleanup Action Taken.*
Earthen pit was dry, and has not been discharged into since prior to June 16, 2008. A sample was collected from the earthen pit and the sample results are attached to this document for reference. The sample was analyzed for in the field for Total Petroleum Hydrocarbons (TPH) via USEPA Method 418.1 and in Envirotech's laboratory for benzene and total BTEX via USEPA Method 8021, TPH via USEPA Method 8015 and for total chlorides via USEPA Method 4500B. The sample returned results that were below the 0.2 ppm benzene and the 50 ppm BTEX standards, but above the 100 ppm TPH standard via USEPA Method 418.1 and the 250 ppm total chloride standard, confirming that a release had occurred at this site. The site was then ranked pursuant to the NMOCD Guidelines for the Remediation of Leaks, Spills and Releases. The site was ranked a 10 due to groundwater being greater than 50 feet below ground surface, but less than 100 feet. This set the closure standards to 1000 ppm TPH, 10 ppm benzene and 50 ppm total BTEX. There is no closure standard for total chlorides per the NMOCD Guidelines for the Remediation of Leaks, Spills and Releases. All analytical results were below the closure standards determined for this site. TPH was below the 1000 ppm closure standard via USEPA Method 8015.

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: Ms. Amy Mackey	Approved by District Supervisor:
Title: Administrative Manager	Approval Date: / Expiration Date:
E-mail Address: amackey1@elmridge.net	Conditions of Approval: / Attached ☐
Date: Phone: 505-632-3476 Ext 201	

* Attach Additional Sheets If Necessary

PAGE NO: 1 OF 1

DATE STARTED: 10/9/08
DATE FINISHED: 10/9/08

ENVIROTECH INC

ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64 - 3014
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615

ENVIRONMENTAL SPECIALIST: S. Putt
LAT: 36.413549
LONG: -108.207010

FIELD REPORT: BGT / PIT CLOSURE VERIFICATION

Lease# 31311

LOCATION: NAME: W. Bisti Coal 10 WELL #: 2 TEMP PIT: PERMANENT PIT: ✓ BGT:
LEGAL ADD: UNIT: K SEC: 10 TWP: 25N RNG: 13W PM: NMPM
QTR/FOOTAGE: 1850' FSL X 245' FWL CNTY: San Juan ST: NM

EXCAVATION APPROX: — FT. X — FT. X — FT. DEEP CUBIC YARDAGE: —
DISPOSAL FACILITY: — REMEDIATION METHOD: —
LAND OWNER: Federal API: 3004528799 BGT / PIT VOLUME: 18'X19'X5
CONSTRUCTION MATERIAL: FABRIC DOUBLE-WALLED, WITH LEAK DETECTION: —

LOCATION APPROXIMATELY: 54' FT. 160° FROM WELLHEAD
DEPTH TO GROUNDWATER: >100

___ TEMPORARY PIT - GROUNDWATER 50-100 FEET DEEP
BENZENE ≤ 0.2 mg/kg, BTEX ≤ 50 mg/kg, GRO & DRO FRACTION (8015) ≤ 500 mg/kg, TPH (418.1) ≤ 2500 mg/kg, CHLORIDES ≤ 500 mg/kg

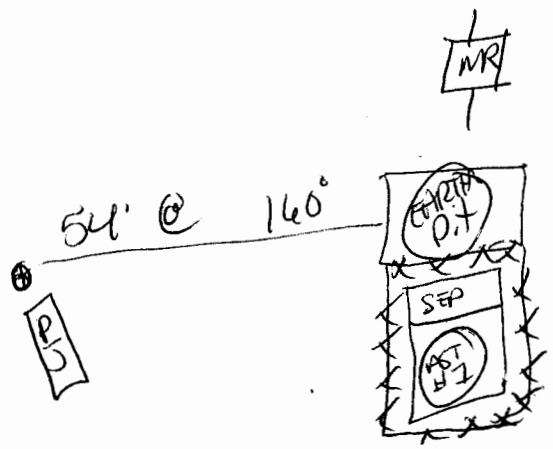
___ TEMPORARY PIT - GROUNDWATER ≥100 FEET DEEP
BENZENE ≤ 0.2 mg/kg, BTEX ≤ 50 mg/kg, GRO & DRO FRACTION (8015) ≤ 500 mg/kg, TPH (418.1) ≤ 2500 mg/kg, CHLORIDES ≤ 1000 mg/kg

✓ PERMANENT PIT OR BGT
BENZENE ≤ 0.2 mg/kg, BTEX ≤ 50 mg/kg, TPH (418.1) ≤ 100 mg/kg, CHLORIDES ≤ 250 mg/kg

FIELD 418.1 ANALYSIS

TIME	SAMPLE I.D.	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	READING	CALC. (mg/kg)
	200 STD		-	-	-	200	
3:35	SpotCamp	1	5	20	4	834	3336
		2					
		3					
		4					
		5					
		6					

PERIMETER



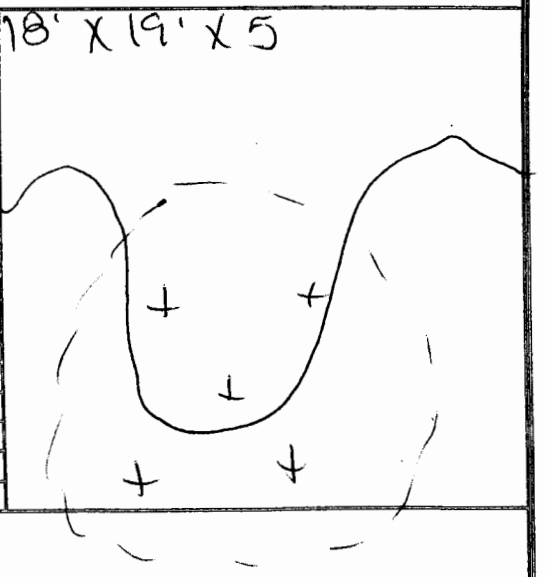
FIELD CHLORIDES RESULTS

SAMPLE ID	READING	CALC. (mg/kg)

PID RESULTS

SAMPLE ID	RESULTS (mg/kg)

PROFILE



LAB SAMPLES

SAMPLE ID	ANALYSIS	RESULTS
	BENZENE	
	BTEX	
	GRO & DRO	
	CHLORIDES	

NOTES:

WORKORDER # WHO ORDERED

Client: Elm Ridge Resources	ENVIROTECH INC ENVIRONMENTAL SCIENTISTS & ENGINEERS 5796 U.S. HIGHWAY 64 - 3014 FARMINGTON, NEW MEXICO 87401 PHONE: (505) 632-0615	Location No: W. Bisti Coal 10 #2 C.O.C. No:

FIELD REPORT: SPILL CLOSURE VERIFICATION

PAGE NO: 1 OF 1

DATE STARTED: 10/9/08

DATE FINISHED: 10/9/08

ENVIRONMENTAL SPECIALIST: BP

LOCATION: NAME: W. Bisti Coal 10 WELL #: 2

QUAD/UNIT: K SEC: 10 TWP: 25N RNG: 13W PM: NMPM CNTY: SJ ST: NM

QTR/FOOTAGE: 1850'FSL X 2475'FWL CONTRACTOR: —

EXCAVATION APPROX: — FT. X — FT. X — FT. DEEP CUBIC YARDAGE: —

DISPOSAL FACILITY: — REMEDIATION METHOD: —

LAND USE: Range Earth LEASE: 31311 LAND OWNER: —

CAUSE OF RELEASE: Earth METERAIL RELEASED: Water & [illegible] Incidental

SPILL LOCATED APPROXIMATELY: 54' FT. 160° FROM wellhead

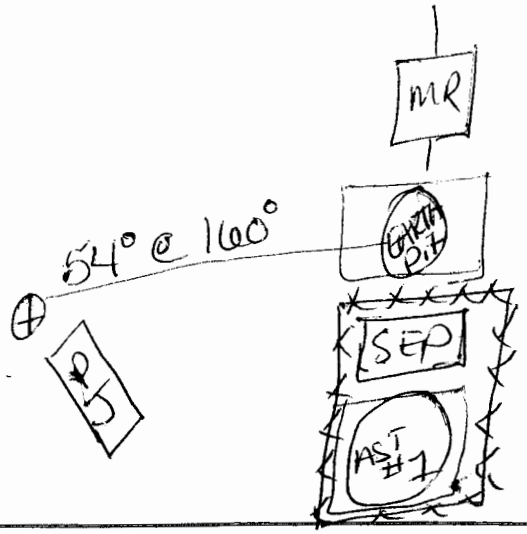
DEPTH TO GROUNDWATER: >100 NEAREST WATER SOURCE: >1000 NEAREST SURFACE WATER: >1000

NMOCD RANKING SCORE: NMOCD TPH CLOSURE STD: 1000 PPM

SOIL AND EXCAVATION DESCRIPTION:

TIME	SAMPLE I.D	LAB NO.	WEIGHT (g)	mL FREON	DILUTION	READING	CALC. ppm
	Std 200					206	
15:35	SpitComp	1	5	20	4	834	33336

SPILL PERIMETER



OVM RESULTS

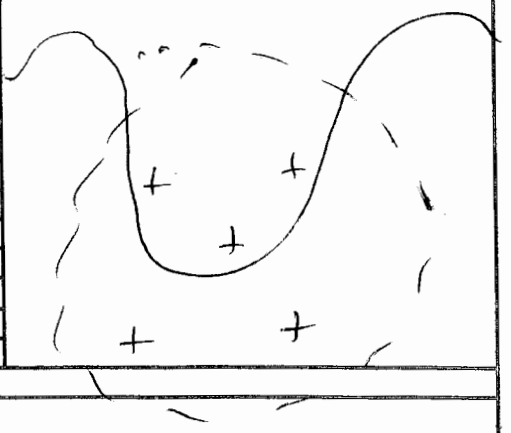
SAMPLE ID	FIELD HEADSPACE PID (ppm)

LAB SAMPLES

SAMPLE ID	ANALYSIS	TIME

SPILL PROFILE

18'X19'X5 deep



TRAVEL NOTES: CALLED OUT: ONSITE:

envirotech

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	Elm Ridge Exploration	Project #:	03056-0206
Sample No.:	1	Date Reported:	2/23/2009
Sample ID:	5 Point Composite	Date Sampled:	10/9/2008
Sample Matrix:	Soil	Date Analyzed:	10/9/2008
Preservative:	Cool	Analysis Needed:	TPH-418.1
Condition:	Cool and Intact		

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	**3,340**	**5.0**

ND = Parameter not detected at the stated detection limit.

References: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No. 4551, 1978.

Comments: **West Bisti Coal 10-2 Earthen Pit**

Instrument calibrated to 200 ppm standard. Zeroed before each sample

For

Analyst

Review

Sharon Putt

Printed

Greg Crabtree

Printed

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 info@envirotech-inc.com envirotech-inc.com

envirotech

CONTINUOUS CALIBRATION
EPA METHOD 418.1
TOTAL PETROLEUM
HYDROCARBONS

Cal. Date: 9-Oct-08

Parameter	Standard Concentration mg/L	Concentration Reading mg/L
TPH	100	
	200	206
	500	
	1000	

The accepted percent relative deviation (%RSD) of the calibration factor is less than 20% over the working range.

For

Analyst

2/23/09

Date

Sharon Putt

Print Name

Review

2/23/09

Date

Greg Crabtree

Print Name

5796 US Highway 64, Farmington, NM 87401 Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 info@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Elmridge	Project #:	03056-0136
Sample ID:	West Bisti Coal 10-002	Date Reported:	11-10-08
Laboratory Number:	48019	Date Sampled:	11-03-08
Chain of Custody No:	5698	Date Received:	11-03-08
Sample Matrix:	Soil	Date Extracted:	11-06-08
Preservative:	Cool	Date Analyzed:	11-07-08
Condition:	Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	**ND**	**0.2**
Diesel Range (C10 - C28)	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Earth Pit Samples, 5pt Comp**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	11-07-08 QA/QC	Date Reported:	11-10-08
Laboratory Number:	48015	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	11-07-08
Condition:	N/A	Analysis Requested:	TPH

	I-Cal Date	I-Cal RF:	C-Cal RF:	% Difference	Accept. Range
Gasoline Range C5 - C10	05-07-07	1.0047E+003	1.0051E+003	**0.04%**	**0 - 15%**
Diesel Range C10 - C28	05-07-07	9.9713E+002	9.9753E+002	**0.04%**	**0 - 15%**

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	**ND**	**0.2**
Diesel Range C10 - C28	**ND**	**0.1**
Total Petroleum Hydrocarbons	**ND**	**0.2**

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	**ND**	**ND**	**0.0%**	**0 - 30%**
Diesel Range C10 - C28	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	**ND**	**250**	**246**	**98.4%**	**75 - 125%**
Diesel Range C10 - C28	**ND**	**250**	**240**	**96.0%**	**75 - 125%**

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **QA/QC for Samples 48015 - 48019, 48022 and 48024.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Elm Ridge Resources	Project #:	03056-0136
Sample ID:	W. Bisti Coal 10 #2	Date Reported:	10-23-08
Laboratory Number:	47692	Date Sampled:	10-09-08
Chain of Custody:	5529	Date Received:	10-09-08
Sample Matrix:	Soil	Date Analyzed:	10-15-08
Preservative:	Cool	Date Extracted:	10-15-08
Condition:	Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	**ND**	**0.9**
Toluene	**5.7**	**1.0**
Ethylbenzene	**1.2**	**1.0**
p,m-Xylene	**5.4**	**1.2**
o-Xylene	**2.4**	**0.9**
Total BTEX	**14.7**	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	**96.0 %**
	1,4-difluorobenzene	**96.0 %**
	Bromochlorobenzene	**96.0 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: **Earth Pit Samples, 5pt Composite.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	10-15-BT QA/QC	Date Reported:	10-23-08
Laboratory Number:	47673	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	10-15-08
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc	Detect. Limit
Benzene	5.3045E+007	5.3151E+007	0.2%	ND	0.1
Toluene	3.6704E+007	3.6778E+007	0.2%	ND	0.1
Ethylbenzene	2.8638E+007	2.8695E+007	0.2%	ND	0.1
p,m-Xylene	6.3900E+007	6.4028E+007	0.2%	ND	0.1
o-Xylene	2.9367E+007	2.9426E+007	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	1.2	1.2	0.0%	0 - 30%	0.9
Toluene	6.5	6.7	3.1%	0 - 30%	1.0
Ethylbenzene	2.5	2.6	4.0%	0 - 30%	1.0
p,m-Xylene	7.4	7.7	4.1%	0 - 30%	1.2
o-Xylene	4.1	3.9	4.9%	0 - 30%	0.9

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	1.2	50.0	50.2	98.0%	39 - 150
Toluene	6.5	50.0	51.5	91.2%	46 - 148
Ethylbenzene	2.5	50.0	50.5	96.2%	32 - 160
p,m-Xylene	7.4	100	99.4	92.6%	46 - 148
o-Xylene	4.1	50.0	51.1	94.5%	46 - 148

ND - Parameter not detected at the stated detection limit.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for Samples 47673 - 47674, 47687, 47692 - 47695, 47697, 47699, and 47701.**

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Chloride

Client:	Elm Ridge Res.	Project #:	03056-0136
Sample ID:	W. Bisti Coal 10 #2	Date Reported:	10-25-08
Lab ID#:	47692	Date Sampled:	10-09-08
Sample Matrix:	Soil	Date Received:	10-09-08
Preservative:	Cool	Date Analyzed:	10-17-08
Condition:	Intact	Chain of Custody:	5529

Parameter	Concentration (mg/Kg)
Total Chloride	**700**

Reference: U.S.E.P.A., 4500B, "Methods for Chemical Analysis of Water and Wastes", 1983. Standard Method For The Examination of Water and Waste Water", 18th ed., 1992.

Comments: **Earth Pit Samples.**

Analyst

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CHAIN OF CUSTODY RECORD

Client:	Project Name / Location:
Elm Ridge Res.	EARTH Pit Samples
Client Address:	**Sampler Name:** S. Putt
Client Phone No.:	**Client No.:** 03056-0136

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	Sample Matrix	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl	Preservative Ice	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	PAH	TPH (418.1)	CHLORIDE			5pt. Composite	Sample Cool	Sample Intact
W. Bisti Coal 10 #2	10/9/08	15:30	47692	(Soil) Sludge Solid Aqueous	1 4oz			X		X								X			X	X	X
Bisti Coal 15K Com #2	10/9/08	13:30	47693	(Soil) Sludge Solid Aqueous	1 4oz			X		X								X			X	X	X
Bisti Coal 8 #1	10/9/08	12:45	47694	(Soil) Sludge Solid Aqueous	1 4oz			X		X								X			X	X	X
Bisti Coal 8L Com #2	10/9/08	12:20	47695	(Soil) Sludge Solid Aqueous	1 4oz			X		X								X			X	X	X
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			
				Soil Sludge Solid Aqueous																			

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Shawn Putt	10/9/08	17:40		10/9/08	17:40
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

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