

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
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.

3282 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

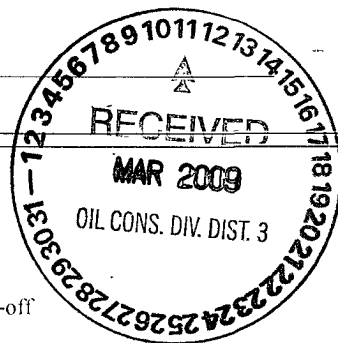
1.
Operator: Dugan Production Corp. OGRID #: 006515
Address: 709 East Murray Drive, Farmington, New Mexico 87401
Facility or well name: OK Henry #2
API Number: 30-045-34922 OCD Permit Number: _____
U/L or Qtr/Qtr L Section 36 Township 30N Range 14W County: San Juan County
Center of Proposed Design: Latitude 36.76890 N Longitude 108.26732 W 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
Temporary: ☒ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
☒ String-Reinforced
Liner Seams: ☐ Welded ☐ Factory ☐ Other _____ Volume: 600 bbl Dimensions: L 76' x W 13' x D 8'

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' Hogwire

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) - Visual inspection (certification) of the proposed site: Aerial photo; Satellite image	☐ 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. - 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

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: 30-045- 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 H₂S, 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 identify 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): Kurt Fagrelus Title: Vice President, Exploration

Signature: Kurt Fagrelus Date: March 9, 2009

e-mail address: kfagrelus@duganproduction.com Telephone: 505-325-1821 (o), 505-320-8248 (H)

20.

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

OCD Representative Signature: Brandon Powell Approval Date: 3-30-09

Title: Enviro Spec 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 identify 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: _____

Form C-102
Revised October 12, 2005
Instructions on back
Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

JASON C. EDWARDS
Certificate Number 15269

Oh Henry #2 Temporary Pit Hydrogeologic Report

The Oh Henry #2 temporary pit is located on State land on the flats below "Pinon Mesa" on the northwest margin of the San Juan Basin, in San Juan County, New Mexico. The area is characterized as a flat grassy area on the Kirtland Shale that is bordered by "Pinon Mesa" (2-miles north) and "Badlands" topography to the north and east.

A records search of the NM Office of the State Engineer –iWATERS database was conducted on a three square mile area centered on the Oh Henry #2 Temporary Pit location (Exhibit 2). Three water wells were located in the data search. The closest water well is 9,500 feet to the northeast (total depth 46-feet, depth to water 21-feet). The other two are 10,000-feet to the northeast (total depth 100-feet, depth to water 45-feet) and 10,000-feet to the southeast (total depth 50-feet, depth to water 12-feet). These shallow water wells are located in arroyos and one is right next to the La Plata River. 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. Also, there are stock ponds constructed on surface shale at the confluences and upper reaches of some of the main arroyos. The proposed temporary pit is not located in an arroyo; the closest arroyo is 1700-feet to the west (Exhibit 2).

The Kirtland Shale extends from the surface down to a depth of approximately 850-feet. The interval is comprised of an upper shale member and a lower shale member. The middle sandstone member is either poorly developed or absent from the section. There is siltstone and thin sands inter-bedded with shale from 270 to 400-feet that may contain ground water but the quality is expected to be poor and the amount small.

Based on electric open hole logs, the iWATERS database and literature reviewed, depth to ground water ranges from 15 – 20 feet below the surface in major arroyos in the area. Moving away from the washes, depth to ground water drops rapidly to greater than 200-feet below the surface. At the location of the temporary pit, lesser amounts of poor quality ground water might be found at a depth of approximately 270 to 400-feet from thin, discontinuous siltstone and sand layers in the Kirtland Shale. Larger quantities of poor quality ground water could be expected from the Fruitland sand at 850 to 890- feet or the Fruitland Coal and Pictured Cliffs interval from 1100 to 1250-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.

This Hydrogeologic Report was prepared by Mr. Kurt Fagrelus, Geologist for Dugan Production. Mr. Fagrelus has been employed as a geologist for Dugan for the past 31-years, received a MS in Geology from NMIMT in Socorro, NM and a BS in Geology from FLC in Durango, CO.

- 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., Craig, 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., Craig, 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.G.S, Atlas HA-720-B, Sheet 1 and 2.

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 30N Range: 14W Sections: 25,26,35,36

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic
☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 03/10/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	(quarters are biggest to smallest)						X	Y	Depth	Depth	Water
	Tws	Rng	Sec	q	q	q			Zone	Well	Water

No Records found, try again

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 29N Range: 14W Sections: 1,2

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic
☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 03/10/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column
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No Records found, try again

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 29N Range: 13W Sections: 6

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic
☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 03/10/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column
SJ 02931	29N	13W	06	4	3	2				50	12	3

Record Count: 1

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 30N Range: 13W Sections: 30,31

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic
☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

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WATER COLUMN REPORT 03/10/2009

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column
RG 22431	30N	13W	30	2						100	45	5
SJ 00467	30N	13W	30	4	4					36	21	1

Record Count: 2

Siting Criteria for the Oh Henry #2

1. Ground water is not less than 50-feet below the bottom of the temporary pit. Ground water is greater than 100-feet below the bottom of the temporary pit.
2. The temporary pit 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 temporary pit.
3. The temporary pit 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 temporary pit.
4. The temporary pit 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 temporary pit.
5. The temporary pit 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 temporary pit.
6. The temporary pit 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 temporary pit.
7. The temporary pit 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 temporary pit is not located within an unstable area. See the attached Topographic map of the location and area around the subject temporary pit.
9. The temporary pit 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.

Oh Henry #2 Visual Inspection Certification

I, Kurt Fagrelius, Vice President of Exploration for Dugan Production Corp. 709 East Murray Drive, Farmington, New Mexico hereby certify that I or persons under my direct supervision, prepared the attached exhibits and conducted a Visual Inspection of the location and area around the Oh Henry #2 temporary pit (March 9, 2009) and that this application is in full compliance with all siting criteria and standards for temporary pits established by the State of New Mexico, Energy Minerals and Natural Resources Department 19.15.17.10 NMAC.



Kurt Fagrelius

March 10, 2009
Date

108°17.000' W

108°16.000' W

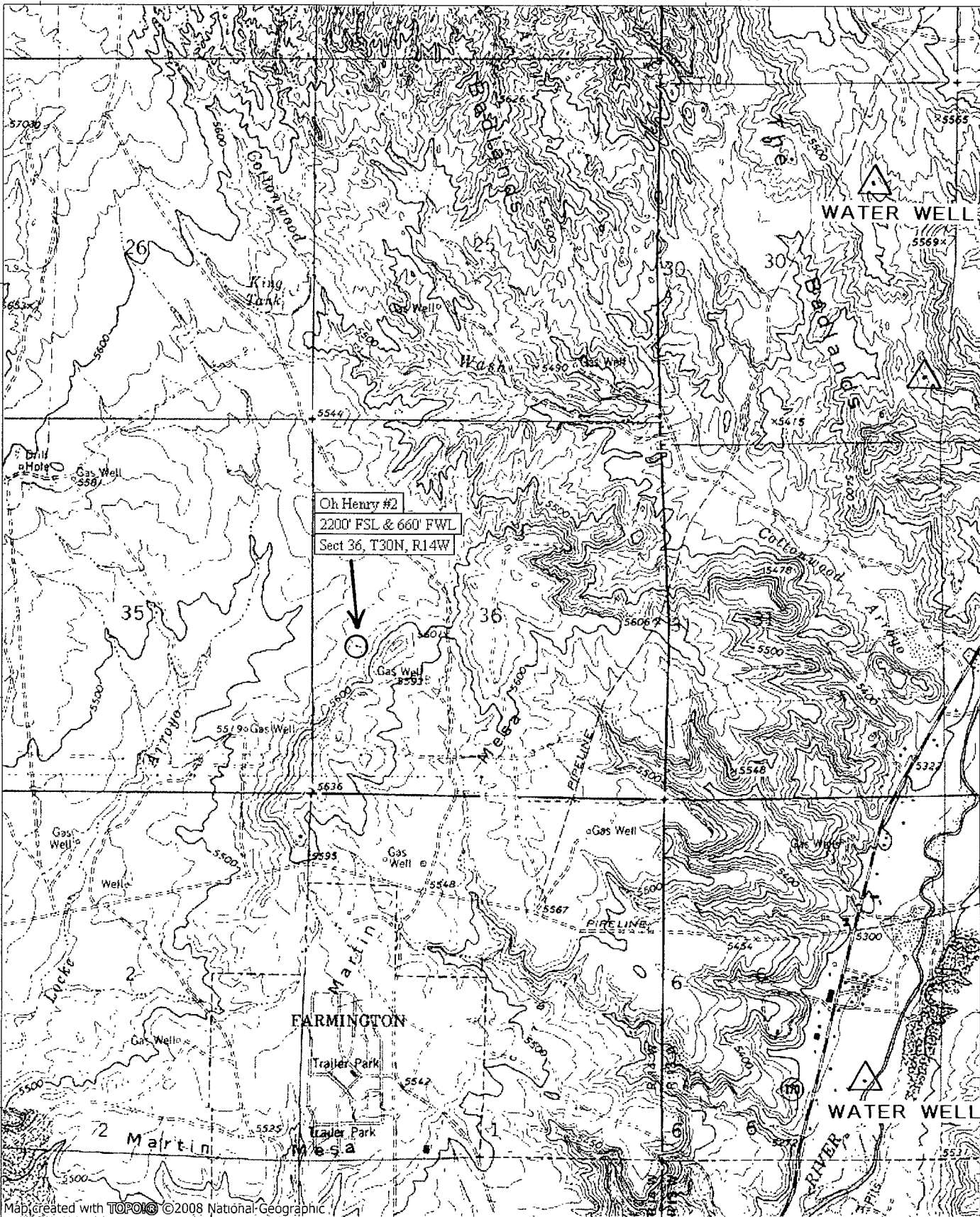
WGS84 108°15.000' W

EXHIBIT 2.

36°47.000' N

36°46.000' N

36°45.000' N



Map created with TOPO! ©2008 National Geographic

108°17.000' W

108°16.000' W

WGS84 108°15.000' W

NATIONAL
GEOGRAPHIC

0.0

0.5 miles

0.0

0.5

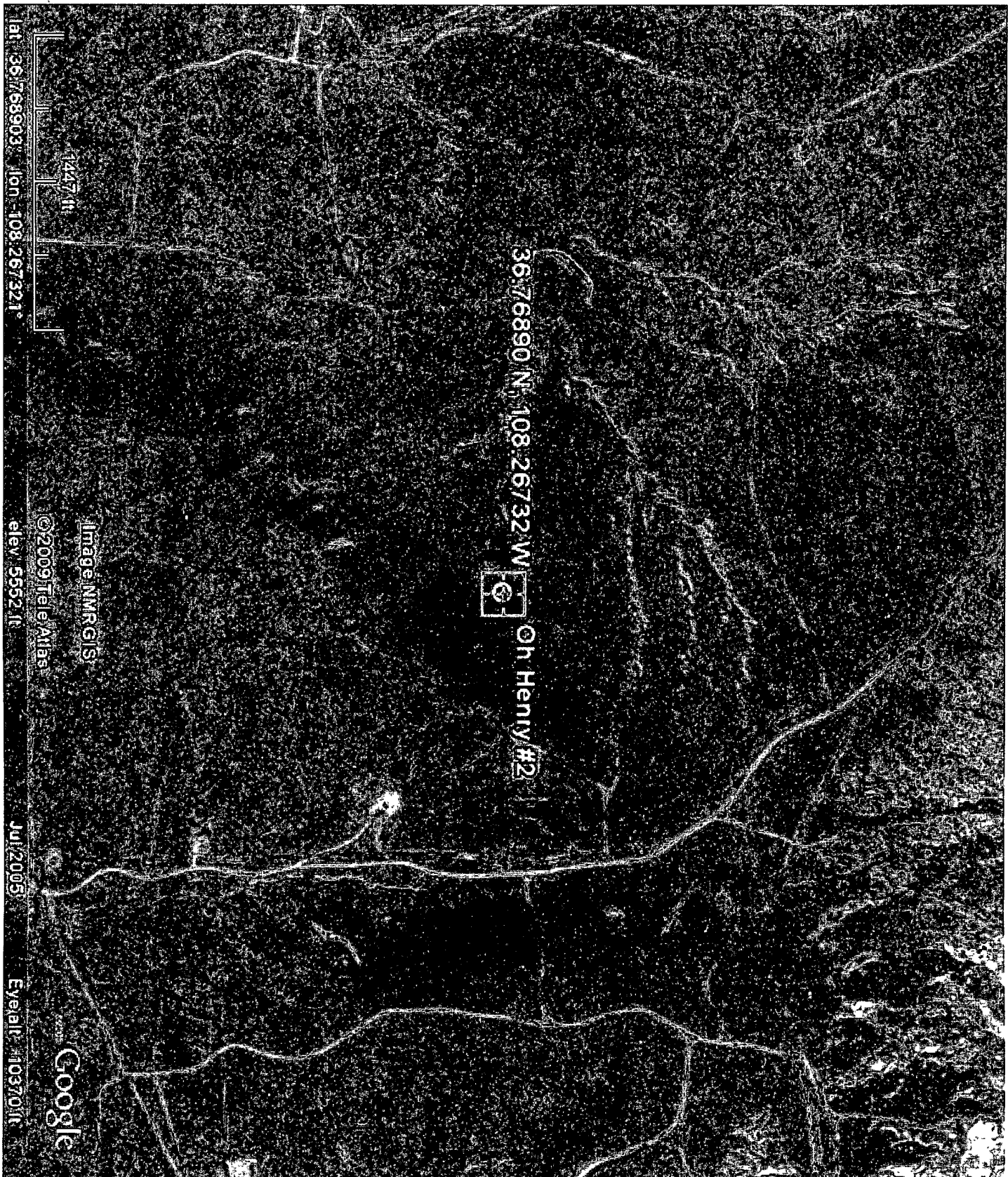
1.0 km

TN MN

10 1/2°

03/09/09

EXHIBIT 3.



**New Mexico Office of the State Engineer
POD Reports and Downloads**

Township: 30N Range: 14W Sections: 35,36

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic
☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 03/10/2009

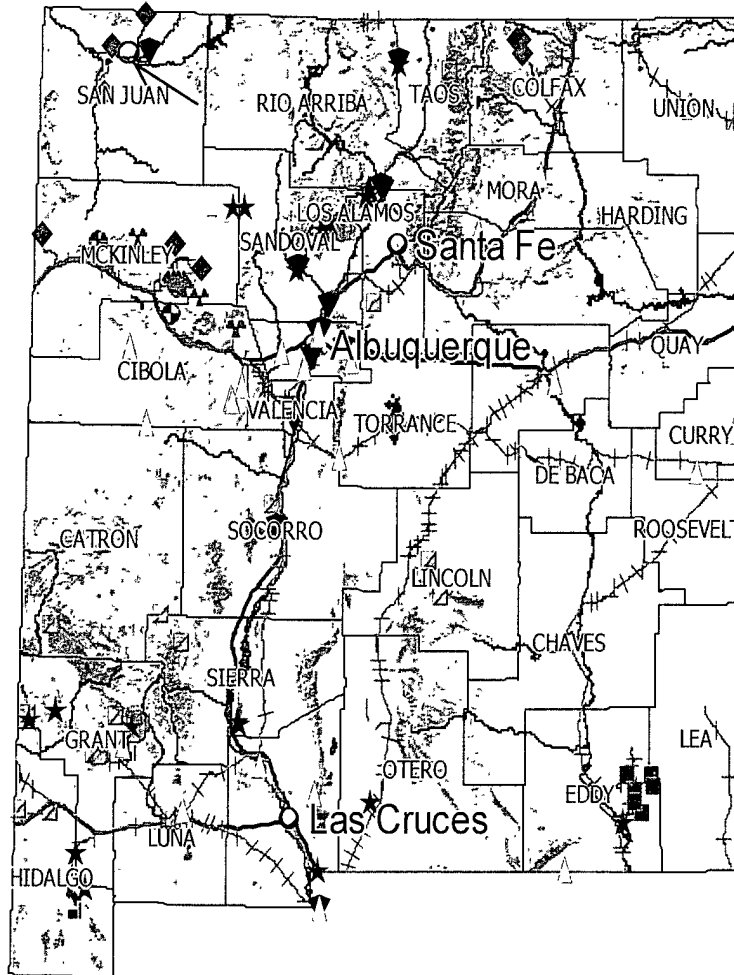
(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column
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No Records found, try again

EXHIBIT 4.

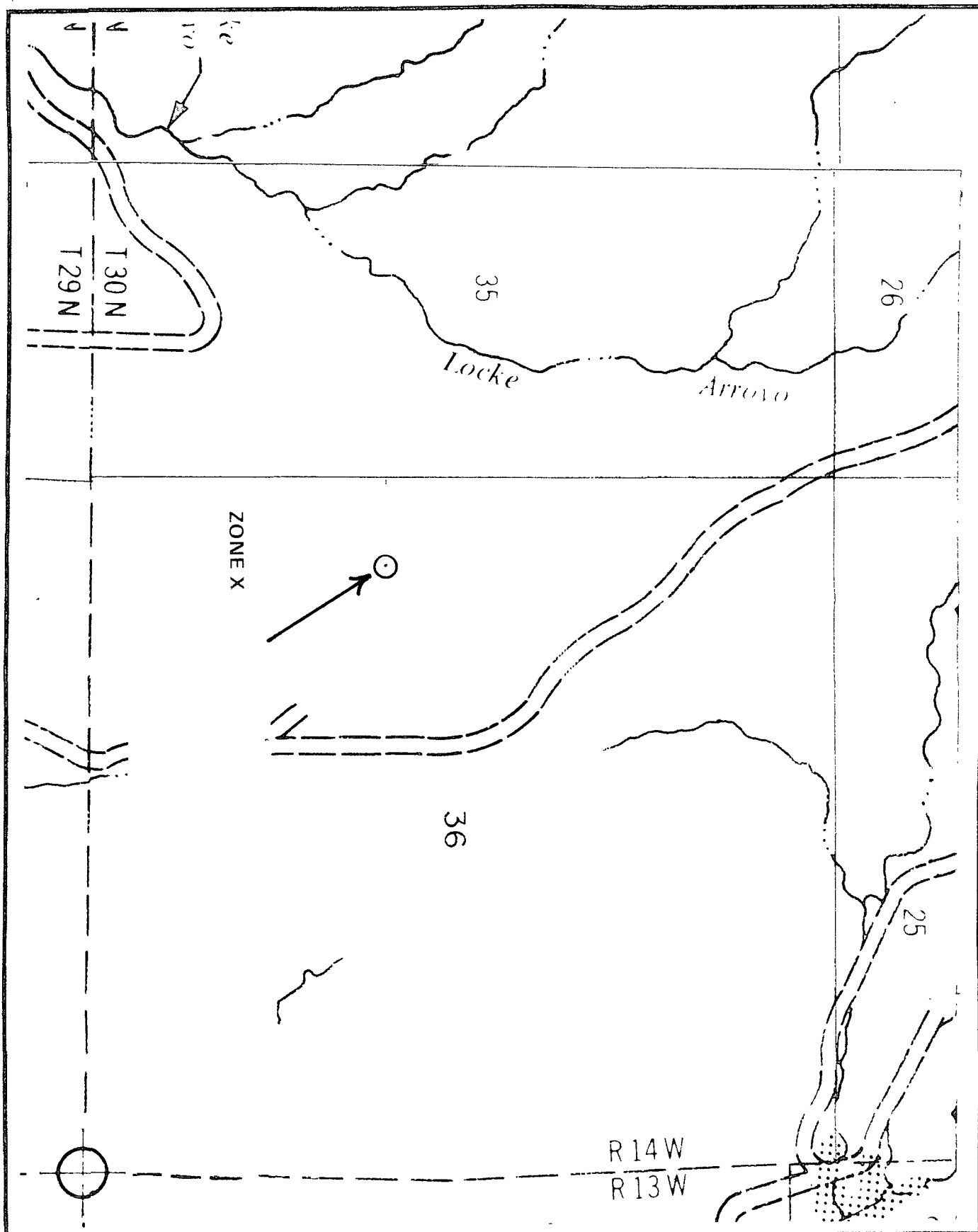


Mine, Mills and Quarry Map of New Mexico

Dugan Production Corp.

Oh Henry #2

Taken from the New Mexico Energy, Minerals and Natural Resources Department.
Mining and Minerals Division.



FEMA 100-Year Floodplain Map

Oh Henry #2

Oh Henry #2 Design and Construction Plan

1. The Oh Henry #2 temporary pit will be designed and constructed in accordance with the following requirements:
2. Temporary pit will be designed and constructed to contain liquids and solids and prevent contamination of fresh water and protect public health and the environment.
3. Stockpile topsoil prior to digging pit, keep separate from subsoil and use as final cover and fill when closing pit.
4. Sign-12" by 24" with operator name, lease name, well #, location (unit letter, qtr/qtr, Sect., Twp., and Rge.) and emergency phone #'s will be posted on location. Sign will be posted in a location where it can be easily read.
5. Fencing around the Oh Henry #2 temporary pit will be constructed and operated in a manner that prevents unauthorized access and shall be maintained in good condition to protect the public and wildlife. Oh Henry #2 temporary pit is not located within 1000 feet of house, school, hospital or church. Administrative Approval is requested for alternative design (4'-hogwire). See attachment.
6. Oh Henry #2 temporary pit will be designed and constructed to ensure the confinement of liquids and prevent unauthorized releases. Pit will be constructed with a firm foundation and interior slopes, smooth and free of rocks or sharp edges. Administrative Approval is requested for alternative design (2H: 1V slopes on 2-sides, vertical on 2-sides). See attachment.
7. Liner will be 20-mil string reinforced LLDPE, impervious material, resistant to UV light, hydrocarbons, salt, acidic or basic liquids. Liner seams will be minimized, oriented up and down, not across slopes, will have factory seam welds. Construction methods to avoid excessive stress-strain on the liner will be used. Geo-textile will be used under the liner as needed to reduce localized stress-strain on the liner in order to prevent punctures or tears in the liner.
8. Anchor trenches for the liner will be at least 18-inches deep.
9. A header, diverter, smooth flanged fittings or other devices that prevent damage to the liner by fluid force or mechanical damage at any point of discharge into or suction from the pit will be used.
10. Diversionary berms, ditches or sloping will be constructed as necessary to prevent surface run-off from flowing into pit.

Oh Henry #2 Operational Requirements

1. The Oh Henry #2 temporary pit will be maintained and operated in accordance with the following requirements:
2. Recycle, re-use, reclaim or dispose of fluids in a manner approved by the NMOCD rules.
3. Drilling fluids will be transferred to the next temporary (drilling reserve) pit to be used again in drilling the next well. Free fluid that shakes out of mud will be transferred to the Dugan operated Sanchez O'Brien SWD #1 disposal well.
4. Do not dispose of solid waste, trash, debris or hazardous material into the pit.
5. If the pit liner becomes torn or damaged, notify the appropriate NMOCD district office within 48-hours and repair or replace and remove all liquid above leak (505) 334-6178. If a hole or tear occurs below the fluid level, call the NMOCD office within 24-hours.
6. All injection or withdrawal of liquids from a pit using a water truck will be done through a header, diverter or other device that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
7. Discharge line from pit and suction lines to mud pumps will be equipped with smooth flanged fittings and hoses to prevent damage to the pit liner.
8. BOP manifolds will be constructed, installed and staked down in a manner that prevents damage to the pit liner.
9. Temporary pit will be constructed and operated in a manner that prevents surface water from entering the pit. Diversion berms will be constructed along the upslope sides of pit.
10. Oil absorbent booms or other devices to contain and remove oil from pit's surface will be kept onsite until final pit closure.
11. Discharge only fluids generated during drilling or work-over operations into the pit.
12. Immediately following drilling or work-over operations, remove any oil from pit surface.
13. Maintain at least 2-feet of freeboard in pit at all times.
14. Keep log book of daily inspections during drilling and work-over operations.
15. Keep log book of weekly inspections after rig is moved off, until final pit closure.
16. Note date of drilling or work-over rig release on form C-105 or C-103.

Oh Henry #2 Closure Plan—Methods, Procedures and Protocols

1. Comply with siting criteria for temporary pits established by the State of New Mexico, Energy Minerals and Natural Resources Department 19.15.17.10 NMAC.
2. Provide the NMOCD district office at least 72-hours notice but no greater than 1 week prior to any closure operations. Notice will include operator name, well name and number, API number, and location (unit letter, section, township and range).
3. Provide the surface owner notice of the operator's proposal of an on-site closure method. Proof of notice will be attached to the permit application. Also, proof of closure notice will be provided by certified mail to surface owner after closure. Proof of notice will be attached to final closure report.
4. Remove all liquid from pit and reclaim, re-use or dispose of at an NMOCD approved facility. Upon completion of drilling operations, drilling mud will be vacuumed from pit and transported to the next reserve pit for re-use at another drilling location. After the remaining mud settles, the free water that shakes out and any free water left over from completion operations will be hauled to the Dugan Production operated Sanchez O'Brien #1 SWD located 1650 feet from the South line and 990 feet from the West line (Unit L) of Section 6, Township 24 North, Range 9 West NMPM, San Juan County, New Mexico. The disposal facility was permitted by the NMOCD with Administrative Order SWD-694.
5. Remove all fluids from temporary pit within 30-days and close within 6-months following release of drilling rig.
6. Air dry pit contents and stabilize or solidify to a load bearing capacity sufficient to support the temporary pit's final cover.
7. Collect a five point, composite sample of the pit contents to demonstrate that Benzene, BTEX, the GRO and DRO combined fraction, TPH, and chlorides (depth to groundwater from bottom of pit is greater than 100-feet), do not exceed the standards as specified in 19.15.17.9.B or the background concentration, whichever is greater.

Components	Test Method	Limit (mg/kg)
Benzene	EPA SW-846 8021B or 8260B	0.2
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418 1	2500
GRO/DRO	EPA SW-846 8015M	500
Chlorides	EPA 300.1	1000 / 500

8. Other methods if the standards in 19.15.17.9.B can not be met will include:
The pit contents may be mixed to a ratio not to exceed 3:1, un-contaminated soil or other material to pit contents. A second five point, composite sample of the contents after treatment or stabilization will be taken to demonstrate that the contents do not exceed the standards. If the second soil analyses do not satisfy the closure standards, the operator will close the temporary pit using the waste excavation and removal method.

9. Cut pit liner off at the mud line (solids level); remove liner and apron and transport to a NMOCD approved facility for disposal.
10. Stockpiled sub-surface soil will be used to backfill pit and re-contour well pad (to a final or intermediate cover that blends with the surrounding topography). A minimum of four feet of compacted, non-waste containing, earthen material will be used as backfill.
11. Stockpiled surface soil will be used as a cover over the backfilled pit and disturbed areas of the well pad no longer needed for production operations. The soil cover will include either the background thickness of top soil or one foot of suitable material to establish vegetation at the site whichever is greater.
12. The area will be re-seeded as per BLM guidelines. Re-seeding will be repeated until 70% of the native natural cover is achieved and maintained for two successive growing seasons. The first growing season after the pit is closed the disturbed area will be re-seeded. The seeding method will be to drill on contour whenever possible.
13. The NMOCD will be notified once successful re-vegetation has been achieved.
14. A steel marker will be set at the center of the on-site burial following onsite-pit closure (see application for administrative approval). The marker will be (24" X 24") and will have the operator name, lease name, well number, location (UL, Sec., Twp. and Rge.) and that it designates an "on-site burial location" lettering welded on the top side with a 4" threaded collar welded to the bottom side. The marker will be set at ground level and attached to a 4" diameter pipe that is cemented in a hole three feet deep. When the well is abandoned, a steel riser that is 4" in diameter, extending 4' above the ground will be welded to the pipe anchored in cement below the surface. The riser will have lettering welded on side showing operator name, well number, location (UL, Sec., Twp., and Rge.) and that it designates an on-site burial location.
15. Closure Report will be submitted 60-days after re-seeding.
16. A deed notice identifying the exact location of the on-site burial will be filed with the County clerk in the county where the on-site burial occurs.

Oh Henry #2 Request for Administrative Approval

Administrative approval is hereby requested for an alternative to the slope requirement (2H:1V), fencing design and steel marker to be set at the center of burial site following on-site pit closure for the Oh Henry #2 temporary pit.

The requests for administrative approval cited above are needed to help minimize environmental impact and increase safety and protect wildlife and public health. The alternatives proposed will protect fresh water, public health, safety and the environment more effectively than the design and construction specifications established by the State of New Mexico, Energy Minerals and Natural Resources Department do in rule 19.15.17.11 NMAC.

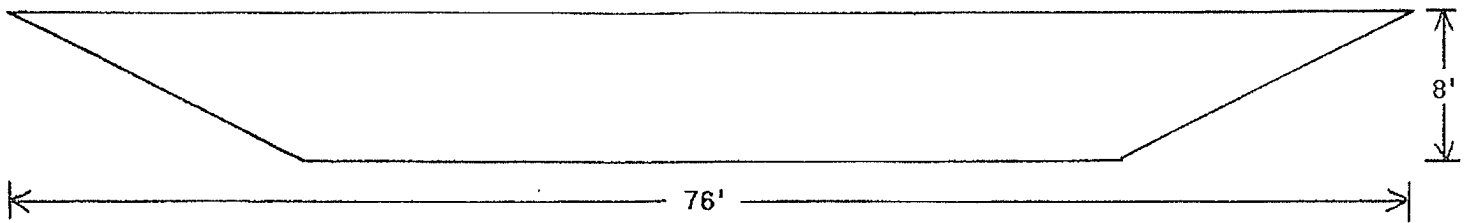
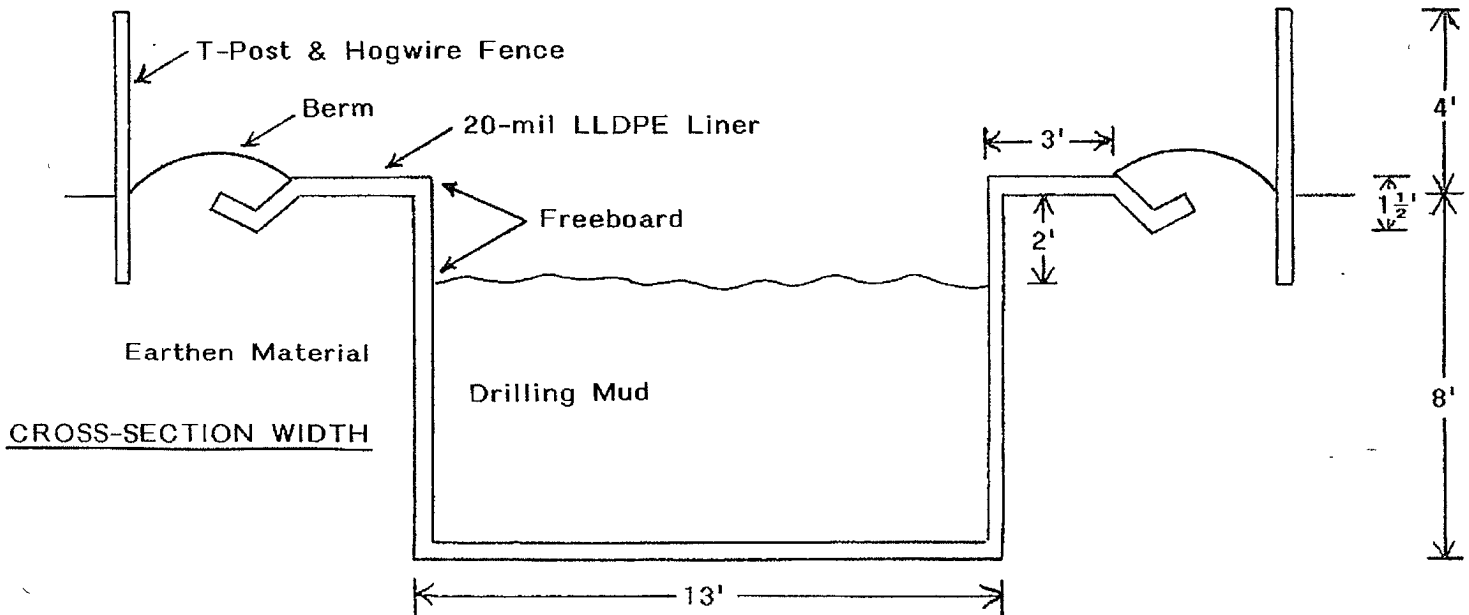
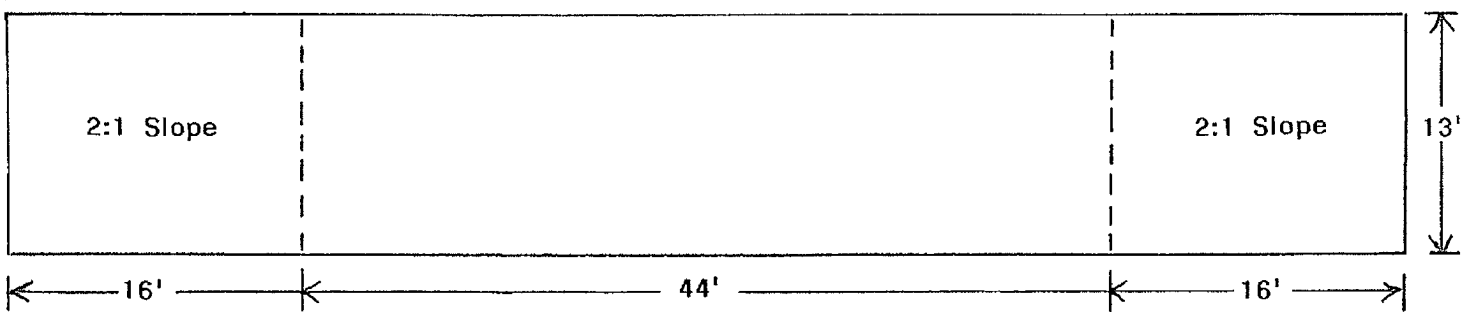
1. The proposed alternative pit design would have 2H: 1V slopes on two ends and vertical walls in the middle (Exhibit 7). The maximum depth of the pit would be 8-feet, never exceeding 6-feet of drilling fluid with at least 2-feet of freeboard. This pit size, depth and design (developed over the last 30+-years) is the best design (enabling separation of cuttings and mud) for the small water well rig and mud pump that will be used to drill the subject well. Based on the small size of the pit and larger size of liner installed, there will not be any vertical strain on the liner. In the event someone falls into the pit they will be able to exit the pit using the 2H: 1V slopes on either end of the pit (spaced 40-feet apart), using a rope ladder located at the midpoint on the far side of pit or by climbing up the suction or discharge lines on the rig side of the pit.

The existing rule (19.15.17.11.F.2) would require the operator to build a temporary pit that has 2H: 1V slopes on all four sides. To achieve the minimum depth and width needed for proper separation of cuttings and mud (8-feet deep, 13-feet wide, 6-feet of mud and 2-feet of freeboard) the width of the pit required under the existing rule would have to be doubled (13-feet wide proposed design, 45-feet wide under the existing rule). The larger pit size required under the existing rule would require the pad size to be increased from the current 105-feet by 150-feet (0.36 acres) to 150-feet by 150-feet (0.52 acres). The larger pit size required under the existing rule would require a doubling of mud volume (600-bls proposed design, 1200-bls existing rule) to operate properly and would have to be disposed of once the temporary pit is closed. Also the larger pit size required under the existing rule would require a larger liner (102' X 42' proposed design, 102' X 60' existing rule) and would have to be disposed of once the temporary pit is closed. The proposed alternative temporary pit design is needed so that the optimum size and design can be constructed which will also minimize the impact on the environment.

The proposed temporary pit will be constructed and operated in a safe manner to prevent contamination of fresh water and protect public health and the environment.

2. The proposed alternative fencing design will include T-posts spaced 10-feet apart with 3-T-posts on each end. T-posts will be located outside of the liner apron and burial trench. Hog-wire / field fence 4-feet in height will be strung tightly and anchored to the top and bottom of each T-post. Small holes (3" high X 6" wide) in the hog-wire will be located at ground level with increasing larger holes (up to 7" high X 6" wide) located at the top of the fence. Anchor braces will be put at all four corners to strengthen and tighten the fence. During drilling or work-over operations, there will be no fence

Temporary Drilling Pit

CROSS-SECTION LENGTHPLAN VIEW

Dugan Production Corp.

Oh Henry #2

adjacent to the rig. However, the ends of fence will be attached to the front and rear of rig when responsible personnel are not on-site. Once the rig is moved off, the third side of fence will be constructed in the same manner. This fence design (developed over the last 30-years) has proven to be very effective controlling unauthorized access to temporary drilling pits.

The existing rule (19.15.17.11.D.3) would require the operator to fence the temporary pit with a four foot fence that has at least four strands of barbed wire evenly spaced in the interval between on foot and four feet above the ground level. The proposed fencing alternative would provide better security against unauthorized access to temporary drilling pits. The smaller holes in hog-wire (3" X 6" up to 7" X 6") is more effective at controlling unauthorized access by the public and wildlife than 4-strands of barbed wire spaced 12" apart.

The proposed fence around the temporary pit will be constructed and operated in a manner that prevents unauthorized access and shall maintain the fence in good condition to protect the public and wildlife.

3. The proposed alternative steel marker set at the center of the on-site burial following onsite-pit closure will be a flat steel marker. The marker will be (24" X 24") and will have the operator name, lease name, well number, location (UL, Sec., Twp., Rge.) and that it designates an "on-site burial location" lettering welded on the top side with a 4" threaded collar welded to the bottom side. The marker will be set at ground level and attached to a 4" diameter pipe that is cemented in a hole three feet deep. When the well is abandoned, a steel riser that is 4" in diameter, extending 4' above the ground will be welded to the pipe anchored in cement below the surface. The riser will have lettering welded on side showing operator name, well number, location (UL, Sec., Twp., and Rge.) and that it designates an on-site burial location.

The existing rule (19.15.17.13.F.1.d) would require the operator to install a 4" diameter steel marker a minimum 3' deep in cement and extending at least 4' above ground. The proposed steel marker alternative would be much safer than the existing rule. The steel marker will be located approximately 15 – 20 feet from the well head. A marker that stands 4' tall would present a safety hazard for personnel and vehicle traffic working around the well-head.

The requests for administrative approval cited above are needed to help minimize environmental impact, increase safety and protect wildlife and public health. The alternatives proposed will protect fresh water, public health, safety and the environment more effectively than the design and construction specifications established by the State of New Mexico, Energy Minerals and Natural Resources Department do in rule 19.15.17.11 NMAC.