

Attachment "O"
Preparedness, Prevention and Contingency Plan
Zelman#1 Injection Well

The following PPC plan is designated site specific for the Windfall Oil & Gas Inc Zelman #1 Injection facility.

I. Description of Operations

The Facility will be permitted a Class II Type D injection well and is located in Brady Township, Clearfield County. See Attachment "B" for specific location. The well will be used to dispose of produced gas well fluids into the Chert/Oriskany formation at a depth of 7306 feet below ground level.

The Permit will be issued to:
Windfall Oil & Gas Inc.
63 Hill Street
Falls Creek, PA 15840

Responsible Officials and Organizational Structure

Michael Hoover – President	(814) 771-9686
Karen Hoover – Vice President	(814) 771-8318
The 24 hour contact number is:	(814) 771-9686

II. Companies History of Pollution Control

None

III. Pollution Prevention Measures

1. Location Construction for drilling purposes will be in accordance with the site specific Erosion and Sediment Control plan designed by Environmental Wells Development. See attached plan.
2. Produced fluids stored for disposal will be in epoxy lined steel tanks. All operations will be conducted on a concrete pad with a retaining walls to serve as secondary containment. The dyke will be designed to contain a minimum of 1.5 times the stored fluid volume.
3. The discharge manifold for unloading of the vacuum trucks will be designed so any discharge from the hoses will be contained in a concrete sump and pumped to the tanks battery.
4. All piping will be pressure tested prior to operation.
5. A high/low pressure kick out switch will be installed on the injection pump.

6. A relief valve on the pump discharge will be piped to the stored fluids containment.
7. A back pressure valve will be installed at the wellhead.
8. A fence will be erected around the facility to protect from third party acts.
9. A visual inspection of the site will be made daily to insure no environmental problems exist.
10. A quarterly inspection will be made of the tanks, filters, pumps, piping and wellhead to verify integrity.

Hazardous Material

The following chemicals will be used in the pretreatment phase of the operation:

Oxygen Scavenger	Fe Ox Clear
Surfactant/Corrosion Inhibitor	Alpha 3207
Corrosion Inhibitor	Alpha 2278W

Material safety data sheets are included in this section.

The following equipment will be available:

Water and Mud Pumps	Filter fabric and hay bales
Dozers& Backhoes	Vacuum trucks
Dump Trucks	Oil absorbent materials
Tractor trailers for equipment transport	Storage tank

The following Contractors will supply the equipment and materials listed above

Windfall Oil & Gas Inc.	(814) 771-9686
Miller Supply	(724) 465-8875
Multi Production Services	(724) 422-7525

Reporting

Any spill will be reported by: Michael Hoover
President, Windfall Oil & Gas Inc.

1. EPA (oral within 24 hrs and written with 5 days)
US EPA Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19106
(215) 814-5445
2. PA DEP
Pittsburgh Region
400 Waterfront Street
Pittsburgh, Pa 15221
(412) 442-4000

3. PA Fish Commission

Bill Sabatose, Commissioner
North Central Region Office
1150 Spring Creek Road
Bellefonte, PA 16823
(412) 359-5250

IV Personnel Training

The responsible officials shall be trained in:

Implementation of Sediment Control Plans

Construction Techniques for high pressure piping

Emergency Procedures in case of Spillage of Pollutants

V Method of Identification

A permanent Identification sign will be installed at the entrance to the facility. The sign shall include the facility name, company name, permit number and the 24 hour emergency number.

EROSION AND SEDIMENT CONTROL PLAN

for the

ZELMAN WELL NO. 1

Brady Township, Clearfield County

Prepared For:

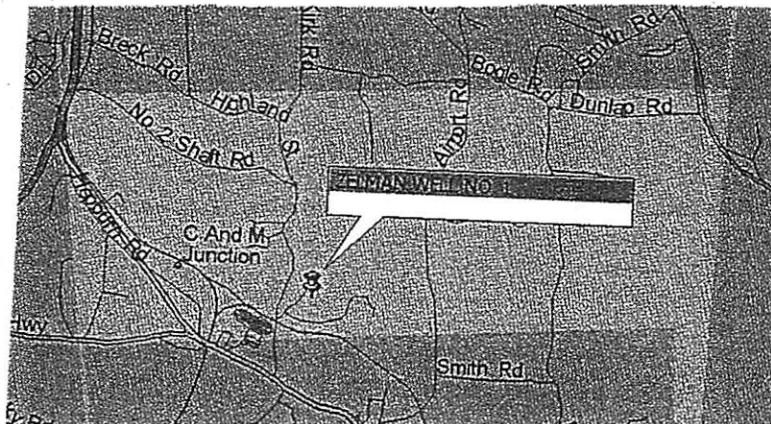
WINDFALL OIL & GAS

**63 Hill Street
Falls Creek, PA 15840
(814) 590-1985**

Prepared By:

Environmental Wells Development, Inc.

**P.O. Box 772
Indiana, PA 15701
(724) 349-4470**



March 18, 2012

GENERAL DESCRIPTION:

This project consists of the construction of 625 feet of access road and the excavation and grading of a site for the purpose of drilling a gas well in Brady Township, Clearfield County. The expected starting date will be on or about March 25, 2012. The expected completion date will be approximately nine months after completion of the well.

The staging sequence for the project will be as follows:

1. Prior to any earthmovement activity, all erosion and sediment controls (BMP's) at all streams, springs, and other sensitive areas will be installed.
2. Perform any brushing and/or clearing, if needed.
3. Earthmovement activities will begin with all culverts and drainage facilities (BMP's) installed with proper erosion and sediment controls (BMP's) installed. Rock fill will be installed as needed.
4. Well operations will be performed and completed.
5. The well site will be backfilled and all disturbed areas, including the cut and fill slopes of the access road, will be graded and immediately seeded and mulched.
6. All (BMP's) not needed for stabilization will be removed while all others will remain and be maintained until permanent stabilized.

STAGING AND CONSTRUCTION METHODS:

The well site is located in wooded areas with the access road leaving an existing private road and traveling over wooded and grassed areas to the well site. At the time of the field reconnaissance, the existing roadway will require only light grading with no changes to the drainage patterns and therefore is not part of this part. Under normal condition and Best Management Practices, the existing roadway should be in accordance with Chapter 102. **Note: Access roads leaving a paved road will have a clean rock entrance pad, 50 feet from the point of entry off the main road.**

Clearing and Brushing: The removal of trees and brush will be required to allow for the construction of portions of the project area. Savable trees will be cut and stacked along the site and will be accessible for removal. The brush will be burnt or stacked and compacted along the project area to serve as energy dissipators and filtration. Stumps removed from the project area will be buried, if permitted, or stacked and compacted along the perimeter of the project area. **Note: All brush and stumps must be within the sediment filtering devices boundary.**

Access Road: Where necessary, portions of the topsoil and/or excess material from the access road will be stripped and stored along the uphill side of the access road. The excess material will serve as diversion terraces and will be used during restoration. The access road will be constructed along natural contours, where possible, insloped at approximately 3 percent and constructed using a cut/fill method. The roadway will be crowned in flat areas. The access road drainage will be directed along roadside ditches, as per drawing. The installation of culverts will be required to allow the natural runoff as well as the access road drainage across the road. The discharge from the control facilities (BMP's) will be directed through siltation socks or filter fabric fence. When culverts are used, the installation of ditch line blocks will be required at the culvert's inflow end to direct the drainage through the culverts. Side slopes of six percent or greater will require the installation of larger-sized rocks at the discharge end of the culverts, to serve as energy dissipaters.

Well Site: Where practical, portions of the topsoil and/or excess material from the well site will be stripped and stored generally along the well site to serve as a diversion terrace and to be used during restoration. The well site will be constructed using a cut/fill method with the balance of the excess material being used as fill. The well site may require rock fill for stabilization. The on-site drainage will be directed toward an interceptor ditch at 1% and from there directed generally northwest and discharged through sediment filtering devices (BMPs) such as filter fabric fence or siltation socks. The drilling sumps will be constructed on-site of the well site, as per drawing. (Note: Site specific investigation will be performed to determine the actual depth to the seasonal high water table. If water is encountered which result in the water table being less than 20" below the bottom of the drilling sumps, alternate waste disposal methods will be performed, in compliance with 25 Pa Code § 78.56.)

SOILS:

The soil series for the well site is classified as Rayne-Gilpin complex, 15 to 25% slopes. This series consists of deep, well drained soils on uplands. They formed in material weathered from shale, siltstone, and sandstone. Bedrock is at a depth of 54 inches. The soil has an erosion factor of .20 and therefore the soil is considered erosion resistant. It is considered poor for road fill. (See Soil Report.)

CONTINGENCY CONDITIONS AND DISPOSAL PLAN:

In the course of earthmovement activities and/or drilling operations, conditions not anticipated may require the revision of the plan. If changes are required, the plan will be revised by the preparer or company field representative to reflect the project changes. The control and disposal of the generated wastes from the drilling, alteration, production, plugging, or other associated activities will be consistent with the regulations as set forth in Sections 78.55 thru 78.63 of Act 22.

BACKFILL AND RESTORATION PLAN:

Upon completion of the drilling activities, all disturbed areas will immediately be backfilled, graded, seeded and mulched. The disturbed areas will be graded to conform generally to the surrounding contours. Topsoil will be replaced and dressed. A level area at the well will be maintained to allow future service and access to the well. An interceptor ditch will be installed along the toe of the cut slope along the maintenance pad to direct upslope runoff around the pad. The drainage will be discharged either through natural ground cover of grass or sediment filtering devices. The site surface, where applicable, will be scarified with disc or other suitable implement unless soil has been completely worked since the last rainfall. Fertilizer will be applied at the rate/acre of 60 lbs. of Nitrogen, 100 lbs. of phosphorus, and 30 lbs. of potassium. All disturbed areas will be seeded with a mixture consistent with the Penn State Erosion Control & Conservation Plantings on Noncropland manual. A general seeding mixture is: Johnstone tall fescue (30 lbs./acre), Birdsfoot Trefoil (6 lbs./ acre), and redtop (3 lbs./acre). (Prior to seeding, lime ground limestone) will be applied at the rate of 4 tons/acre. After seeding, these areas will be mulched with hay or straw at the rate of 2-1/2 to 3 tons per acre.

All temporary controls will remain in place and be maintained until the well site and disturbed areas of the access road are stabilized with a minimum of uniform 70 % vegetative cover. All culverts will be clean and clear to allow for drainage flow with all energy dissipators remaining in place, where necessary. If construction is delayed, temporary seeding measures will be applied immediately, as follows: annual ryegrass or annual field brome grass applied at the rate of 40 pounds per acre.

Maintenance of the BMPs is important to insure proper performance of the control facilities. Therefore, all BMPs will be checked weekly, at a minimum, and after each runoff event, until permanent stabilization has occurred. This will be performed by a company representative or designated representative. Failure of the erosion and sediment control devices will be corrected immediately in accordance with the E&S Pollution Control Program manual.

Surface Owner:

Frank & Susan Zelman

Operator:

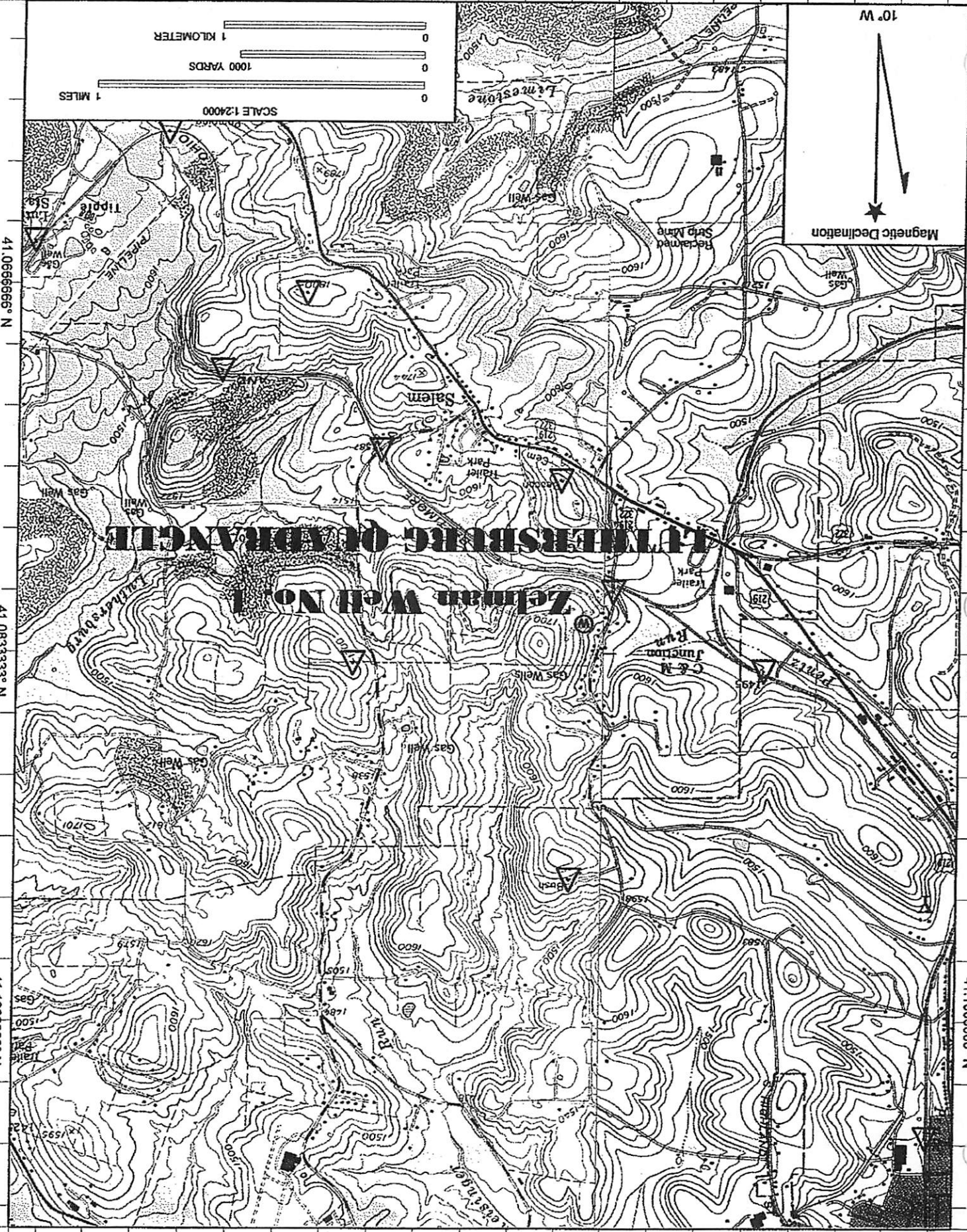
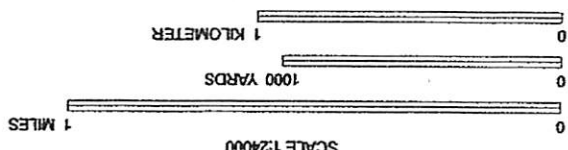
**Windfall Oil & Gas
63 Hill Street
Falls Creek, PA 15840
(814) 590-1985
Contact: Mike Hoover**

078.766666° W

078.750000° W

078.733333° W

078.716666° W



41.066666° N

41.083333° N

41.100000° N

41.066666° N

41.083333° N

41.100000° N

078.766666° W

078.750000° W

078.733333° W

078.716666° W

Clearfield County, Pennsylvania

RbF—Rayne channery silt loam, 25 to 65 percent slopes

Map Unit Setting

Mean annual precipitation: 37 to 65 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 110 to 180 days

Map Unit Composition

Rayne and similar soils: 90 percent

Description of Rayne

Setting

Landform: Mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop, upper third of
mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from shale and siltstone

Properties and qualities

Slope: 25 to 65 percent
Depth to restrictive feature: 40 to 72 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water
(Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability (nonirrigated): 7e

Typical profile

0 to 9 inches: Channery silt loam
9 to 38 inches: Channery silt loam
38 to 60 inches: Very channery silt loam
60 to 64 inches: Bedrock

Data Source Information

Soil Survey Area: Clearfield County, Pennsylvania
Survey Area Data: Version 6, Jul 31, 2009

Clearfield County, Pennsylvania

RcD—Rayne-Gilpin complex, 15 to 25 percent slopes

Map Unit Setting

Mean annual precipitation: 37 to 65 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 110 to 180 days

Map Unit Composition

Rayne and similar soils: 45 percent
Gilpin and similar soils: 40 percent

Description of Rayne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid fine-grained sandstone, siltstone, and shale

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.6 inches)

Interpretive groups

Land capability (nonirrigated): 4e

Typical profile

0 to 8 inches: Channery silt loam
8 to 47 inches: Channery silty clay loam
47 to 55 inches: Channery sandy loam
55 to 59 inches: Bedrock

Description of Gilpin

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from acid fine-grained sandstone, siltstone, and shale

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.8 inches)

Interpretive groups

Land capability (nonirrigated): 4e

Typical profile

0 to 6 inches: Channery silt loam

6 to 24 inches: Channery silt loam

24 to 28 inches: Channery sandy loam

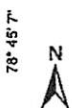
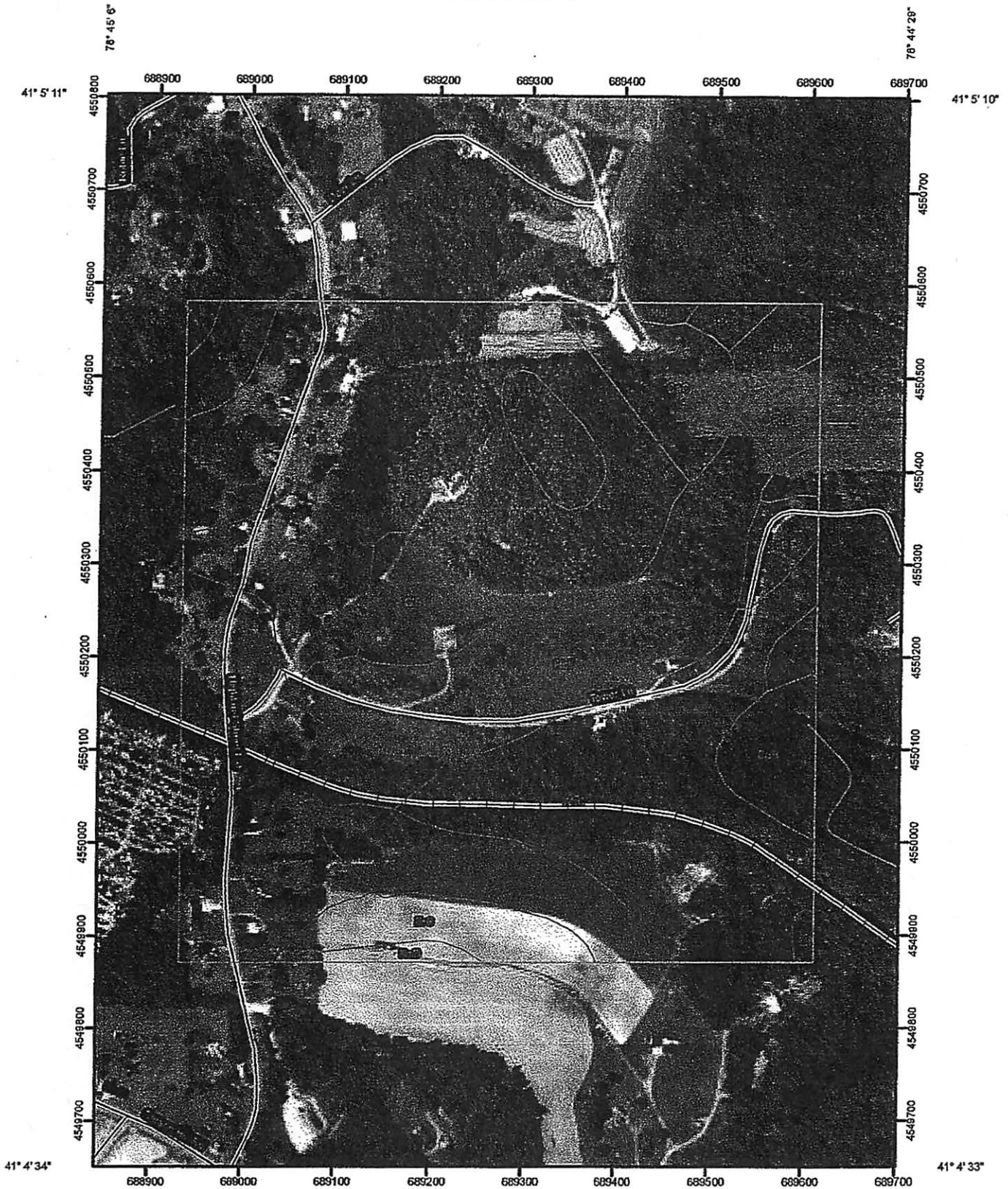
28 to 34 inches: Bedrock

Data Source Information

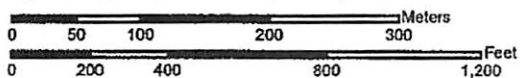
Soil Survey Area: Clearfield County, Pennsylvania

Survey Area Data: Version 6, Jul 31, 2009

Soil Map—Clearfield County, Pennsylvania
(Zelman Well No. 1)







































Map Scale: 1:5,500 if printed on A size (8.5" x 11") sheet.



Soil Map—Clearfield County, Pennsylvania
(Zelman Well No. 1)

MAP LEGEND

Area of Interest (AOI)		Very Stony Spot
 Area of Interest (AOI)		Wet Spot
Soils		Other
 Soil Map Units	Special Line Features	
Special Point Features		Gully
 Blowout		Short Steep Slope
 Borrow Pit		Other
 Clay Spot	Political Features	
 Closed Depression		Cities
 Gravel Pit	Water Features	
 Gravelly Spot		Streams and Canals
 Landfill	Transportation	
 Lava Flow		Rails
 Marsh or swamp		Interstate Highways
 Mine or Quarry		US Routes
 Miscellaneous Water		Major Roads
 Perennial Water		Local Roads
 Rock Outcrop		
 Saline Spot		
 Sandy Spot		
 Severely Eroded Spot		
 Sinkhole		
 Slide or Slip		
 Sodic Spot		
 Spoil Area		
 Stony Spot		

MAP INFORMATION

Map Scale: 1:5,500 if printed on A size (8.5" x 11") sheet.
The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.
Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clearfield County, Pennsylvania
Survey Area Data: Version 6, Jul 31, 2009

Date(s) serial images were photographed: Data not available.

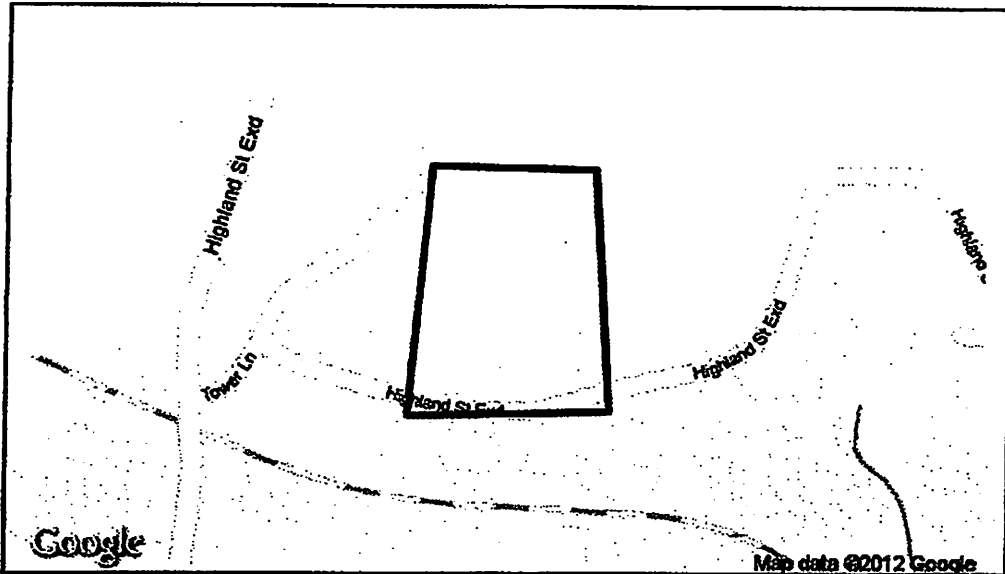
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Clearfield County, Pennsylvania (PA033)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Berks shaly silt loam, 3 to 8 percent slopes	4.0	3.4%
BeC	Berks shaly silt loam, 8 to 15 percent slopes	0.7	0.6%
CaB	Cavode silt loam, 3 to 8 percent slopes	12.7	10.7%
CaC	Cavode silt loam, 8 to 15 percent slopes	4.7	3.9%
ErC	Ernest silt loam, 8 to 15 percent slopes	4.6	3.8%
GiB	Gilpin channery silt loam, 3 to 8 percent slopes	3.3	2.7%
GiC	Gilpin channery silt loam, 8 to 15 percent slopes	15.9	13.3%
RbF	Rayne channery silt loam, 25 to 65 percent slopes	15.2	12.8%
RcD	Rayne-Gilpin complex, 15 to 25 percent slopes	31.4	26.3%
WhC	Wharton silt loam, 8 to 15 percent slopes	26.9	22.5%
Totals for Area of Interest		119.3	100.0%

1. PROJECT INFORMATION

Project Name: **Zelman Well No. 1**
 Date of review: **2/27/2012 9:42:13 AM**
 Project Category: **Energy Storage, Production, and Transfer, Energy Storage, Other**
 Project Area: **10.0 acres**
 County: **Clearfield Township/Municipality: Brady**
 Quadrangle Name: **LUTHERSBURG ~ ZIP Code: 15848**
 Decimal Degrees: **41.082036 N, -78.748583 W**
 Degrees Minutes Seconds: **41° 4' 55.3" N, -78° 44' 54.9" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are valid for one year (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies strongly advise against conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE: No impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE: No impacts to federally listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. For cases where a "Potential Impact" to threatened and endangered species has been identified before the application has been submitted to DEP, the application should not be submitted until the impact has been resolved. For cases where "Potential Impact" to special concern species and resources has been identified before the application has been submitted, the application should be submitted to DEP along with the PNDI receipt, a completed PNDI form and a USGS 7.5 minute quadrangle map with the project boundaries delineated on the map. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. DEP and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552, Harrisburg, PA.
17105-8552
Fax(717) 772-0271

U.S. Fish and Wildlife Service
Endangered Species Section
315 South Allen Street, Suite 322, State College, PA.
16801-4851
NO Faxes Please.

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA. 16823-7437
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA. 17110-9797
Fax:(717) 787-6957

7. PROJECT CONTACT INFORMATION

Name: _____
Company/Business Name: _____
Address: _____
City, State, Zip: _____
Phone:() _____ Fax() _____
Email: _____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

date



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP Application Tracking #	G:
Permit #	C:
Project #	

Denotes location of well on topo map.

True Latitude: NORTH
41° 04' 55.00"

True Longitude: WEST
78° 44' 48.95"

- Water Supply of Surface Owner or Water Purveyor within 1,000' (Continued)
- (5) = Dennis R. & Terry Marsh N 81°54' W 716' ± - Well
 - (6) = Theodore J. & Rona C. Cryster N 79°32' W 884' ± - Well
 - (7) = Rosemary VanTilburg N 68°56' W 659' ± - Well
 - (8) = Violet & Charles J. Marsh N 55°35' W 767' ± - Well
 - (9) = Robert L. & Joyce M. Whaling N 51°33' W 904' ± - Well
 - (10) = Wallace C. Kephart et ux N 42°13' W 638' ± - Well
 - (11) = Able E. & Helen D. Jenny N 38°17' W 934' ± - Well
 - (12) = Randal L. Baird et ux N 38°21' W 832' ± - Well
 - (13) = Randal T. Powers et ux N 25°02' W 969' ± - Well
 - (14) = Richard & Marianne Adkinson N 07°08' E 971' ± - Well

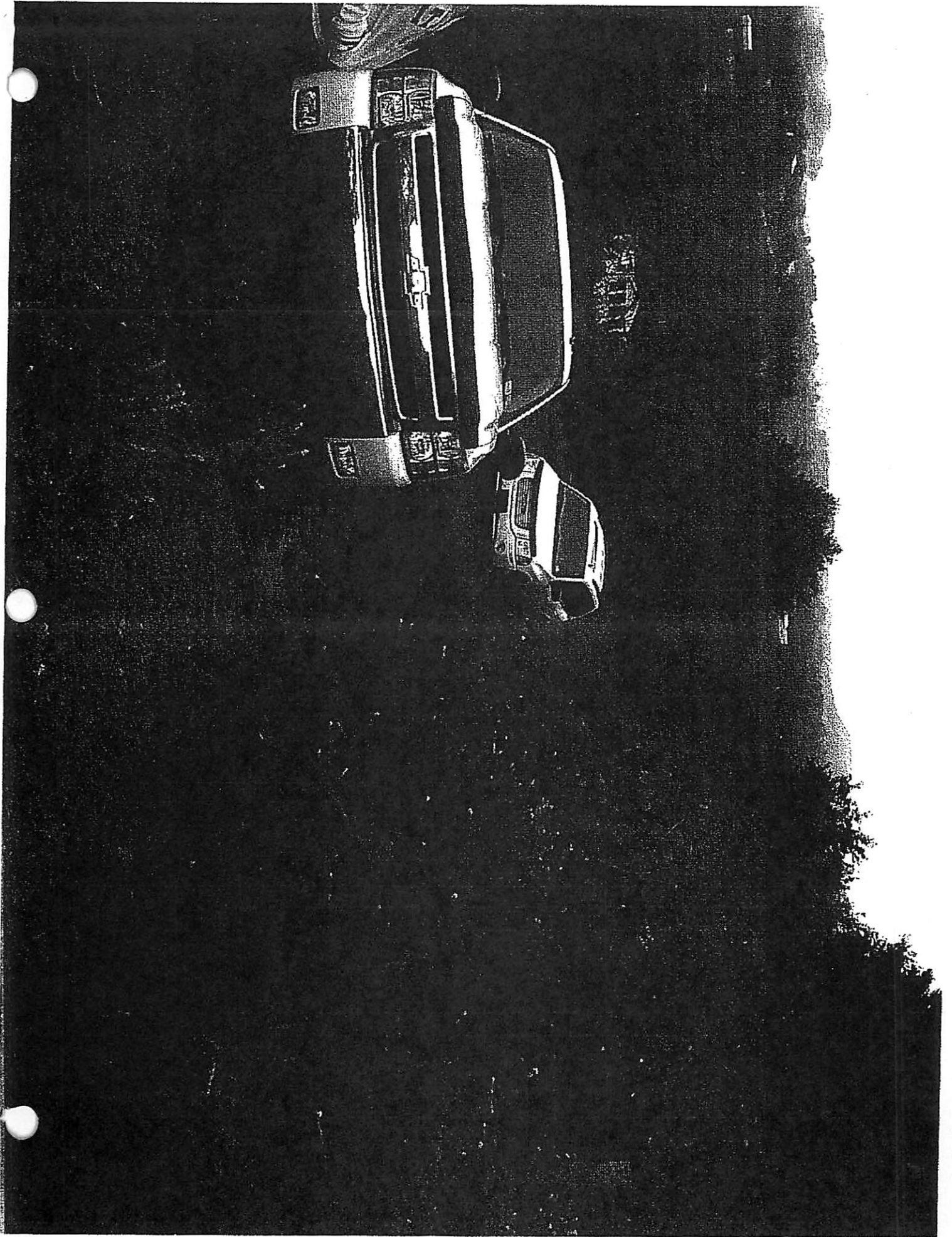


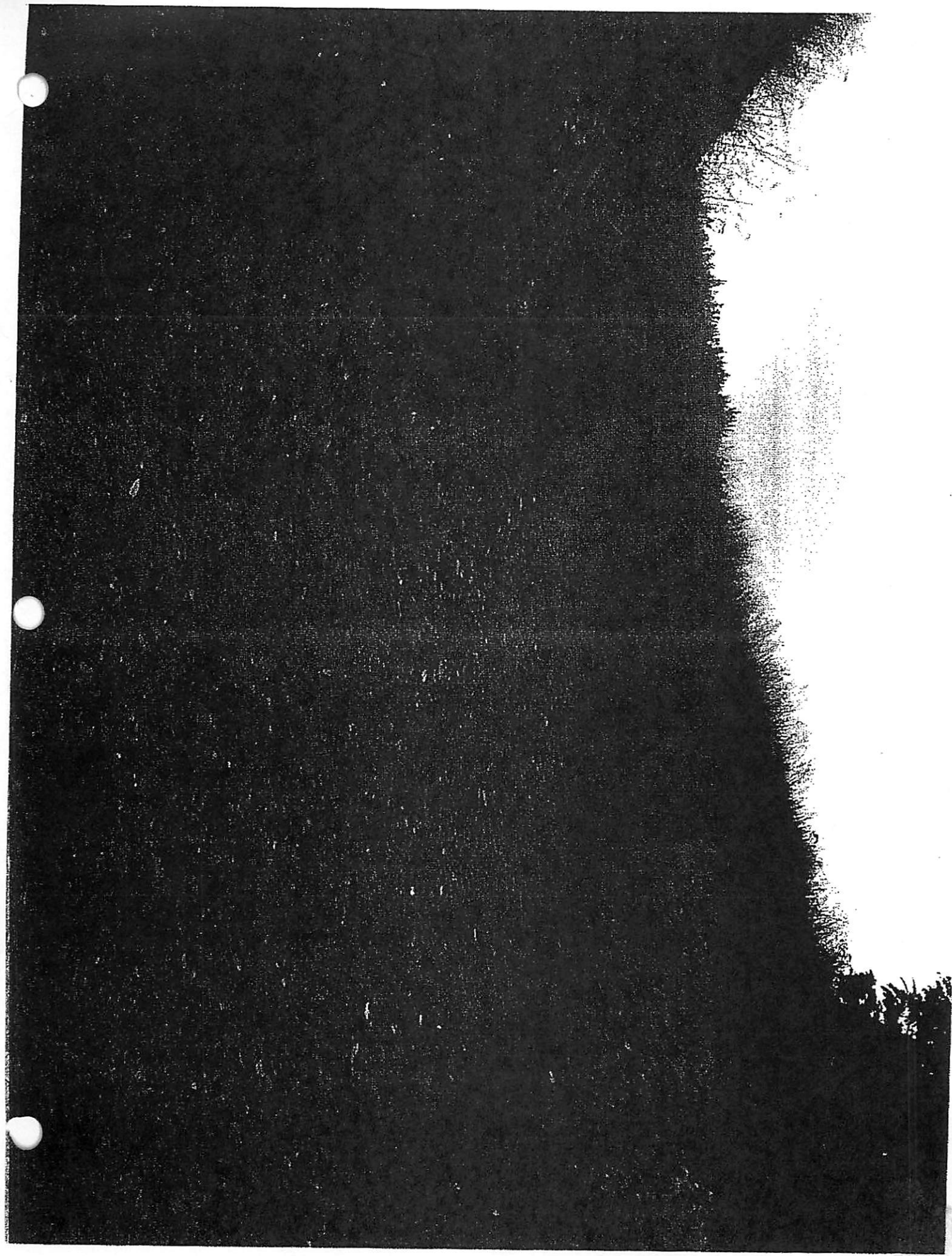
- Well Ties -**
- Cor.(A) — Cor.(B) = S 00°20'35" W 1,908.8'
 - Cor.(A) — Well No. 1 = S 48°44'25" W 1,002.8'
 - Cor.(B) — Well No. 1 = N 71°42'05" W 788.3'
 - P/L (C) — Well No. 1 = S 11°39'40" W 125.0'
 - P/L (D) — Well No. 1 = N 61°43'25" W 614.4'
 - P/L (E) — Well No. 1 = N 11°52'50" E 561.7'
 - P/L (F) — Well No. 1 = S 74°38'40" E 427.5'

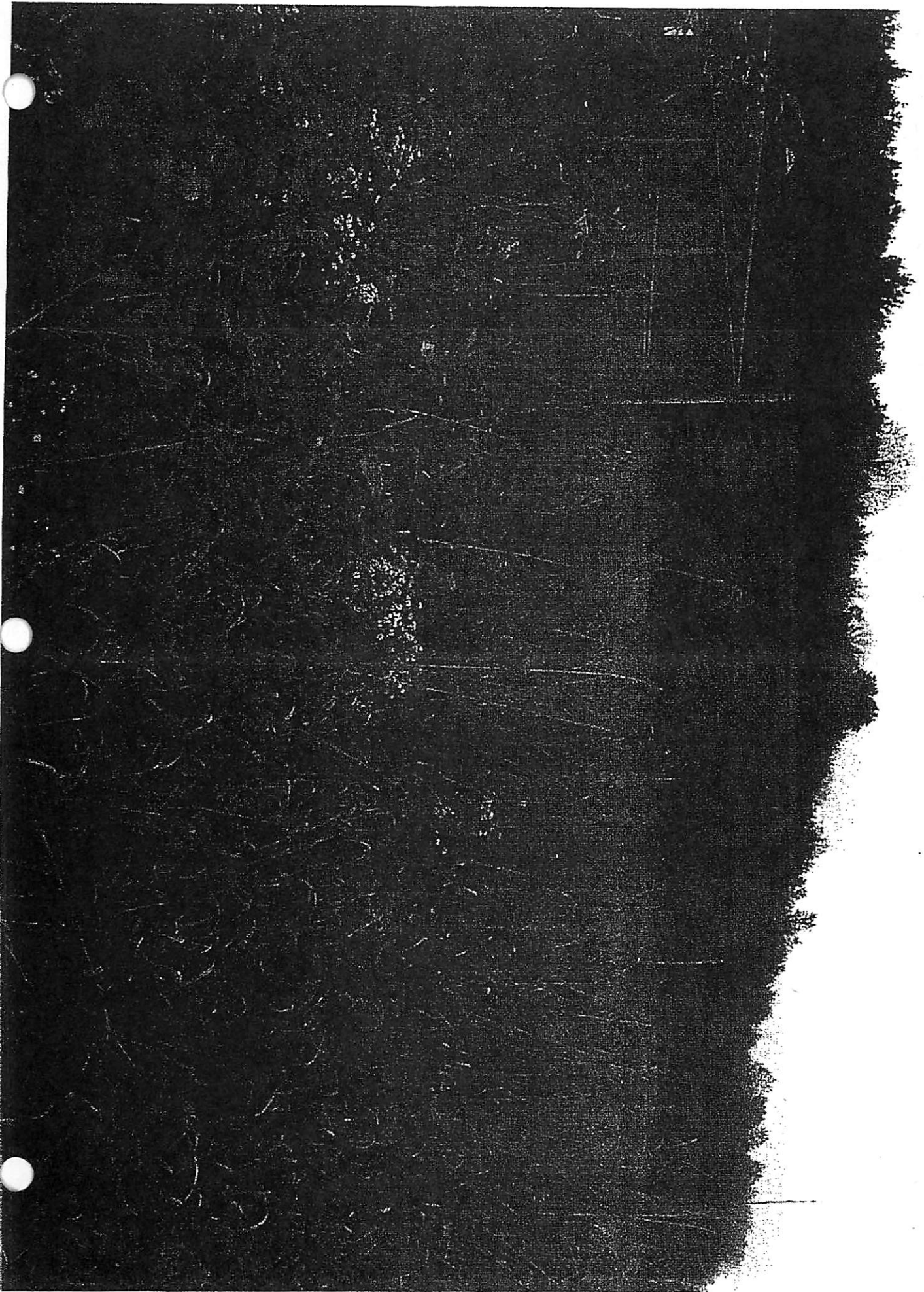
Surveyor or Engineer **Lional Alexander** Phone # (814) 371-5578 Dwg. # **JN336411 Well 1 Plat** Date **August 02, 2011** Scale **1" = 500'** Tract Acreage **23.8 Acres**

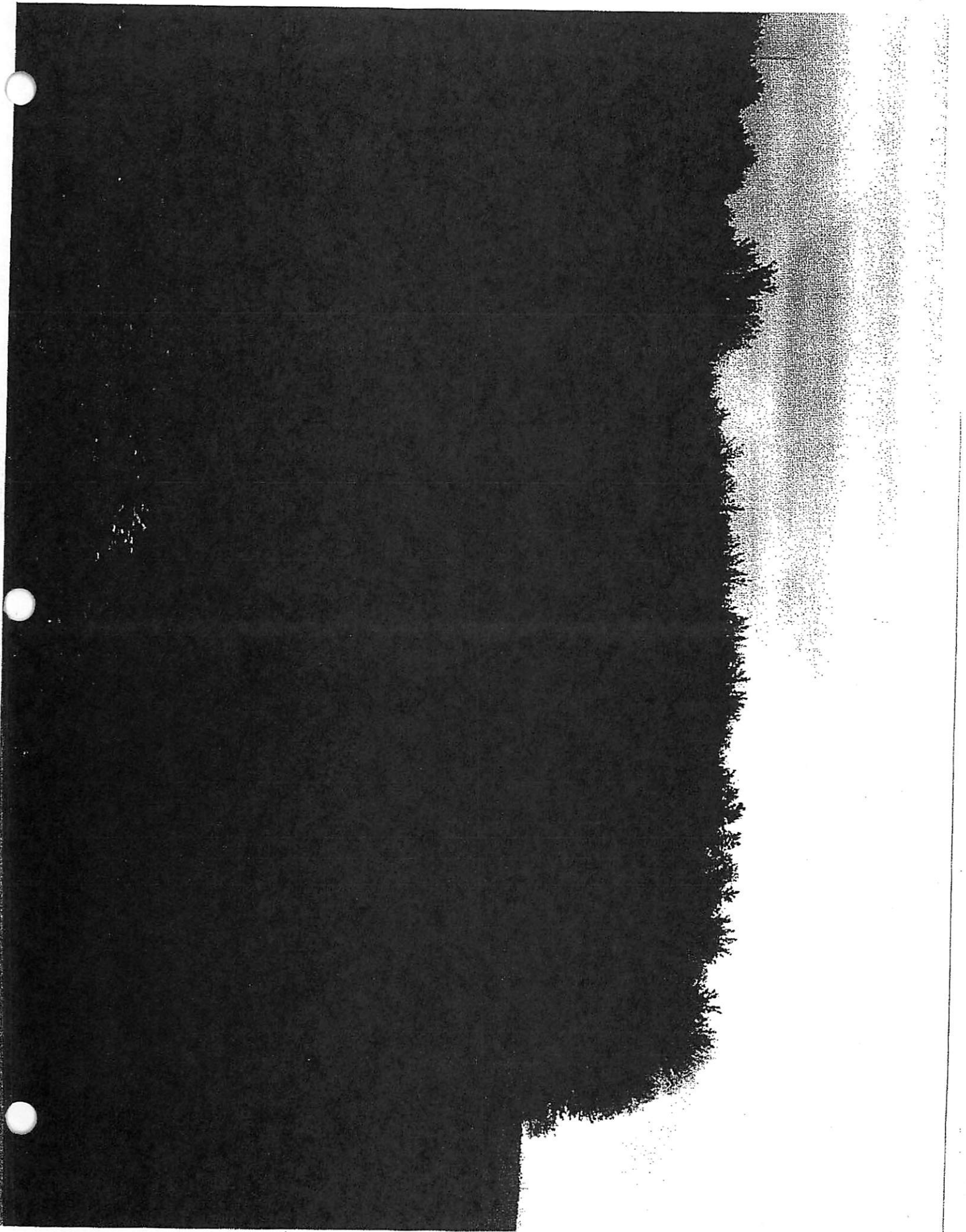
Lat. & Long Metadata		Elevation Metadata		Survey Date	
Method	GPS	Accuracy	Submeter	ft. Datum	NAD 83
Method	Topo	Accuracy	10' ±	ft. Datum	NVGD 88
Applicant / Well Operator Name		DEP ID#	Well(Fam) Name		Well #
Windfall Oil & Gas			Frank & Susan Zelman		1
Address		County - Code	Municipality	Well Type	
63 Hill Street, Falls Creek, Pa.		Clearfield - 17	Brady Township	Gas	
Surface Landowner / Lessor		USGS 7 1/2 Quadrangle Map Name		Map Section	Surface Elevation
Frank & Susan Zelman		Luthersburg		4	1697 ft.
Target Formation(s)		Angle & Course of Deviation (Drilling)		Anticipated Total Depth	
Chert / Oriskany		Vertical		TVD 7,500'	
Surface Owner's Water Supply		Approximate Course and Distance to Water Supply		Waterable Cont. Season	
(1) = Rita M. & David W. Barr		S 58°54' E 772' ± - Well			
(2) = John M. & Sue A. Barr		S 33°39' E 716' ± - Well			
(3) = Carol J. & Steve Steinbeiser		S 53°38' W 881' ± - Well			
(4) = Frank & Susan Zelman		S 80°21' W 826' ± - Well			

- List Continued - See Above On Well Plat -

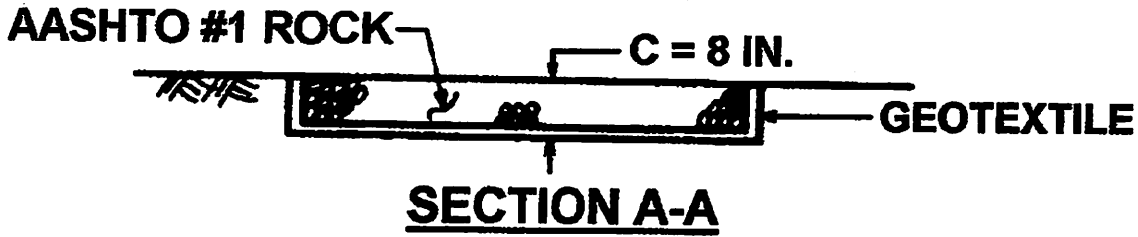
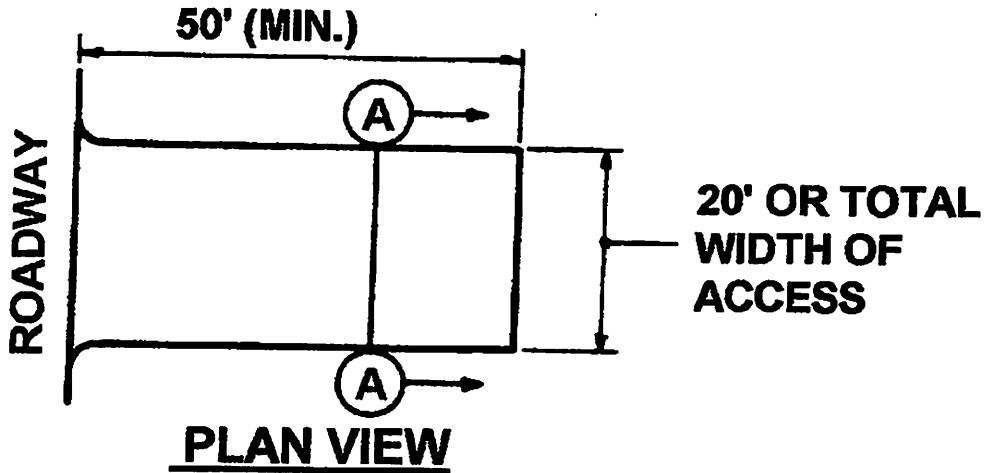






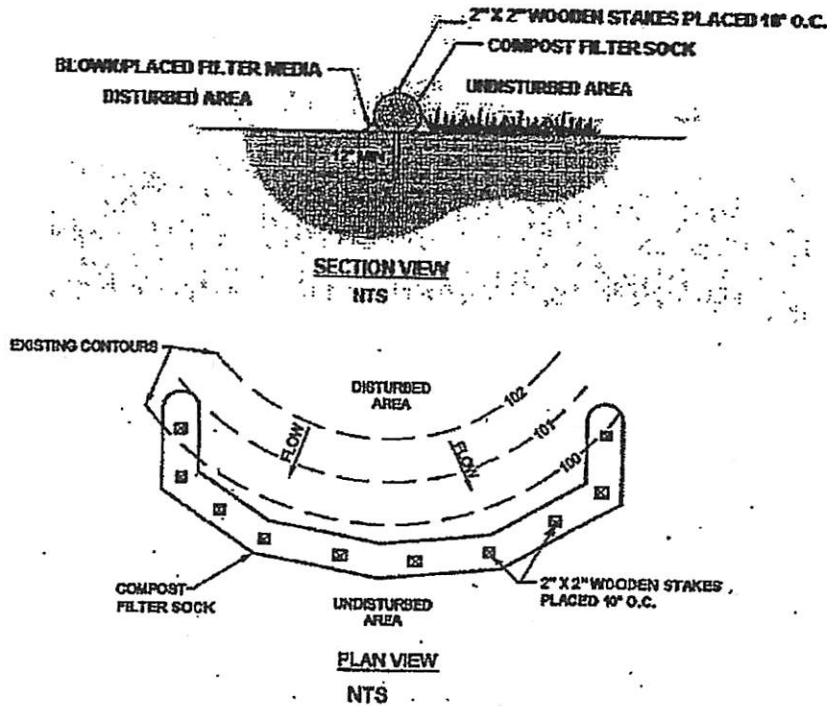


**STANDARD CONSTRUCTION DETAIL #16
Rock Construction Entrance**



MAINTENANCE: Rock Construction Entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. At the end of each construction day, all sediment deposited on paved roadways shall be removed and returned to the construction site.

J. COMPOST FILTER SOCK



Compost shall meet the following standards:

Organic Matter Content	80% - 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 - 8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS Maximum

Compost Filter Sock shall be placed at existing level grade. Both ends of the sock shall be extended at least 8 feet up slope at 45 degrees to the main sock alignment. Maximum slope length above any 18" diameter sock shall not exceed that shown on above table for reinforced silt fence. Maximum slope length for a 24" diameter sock shall not exceed that for super silt fence.

Traffic shall not be permitted to cross filter socks.

Accumulated Sediment shall be removed when it reaches 1/2 the above ground height of the sock and disposed in the manner described elsewhere in the plan.

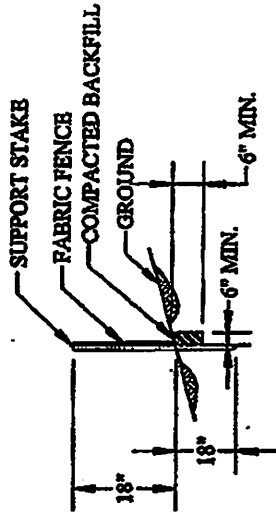
Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection.

Biodegradable filter sock shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations.

Upon stabilization of the area tributary to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed. In the latter case, the mesh shall be cut open and the mulch spread as a soil supplement.



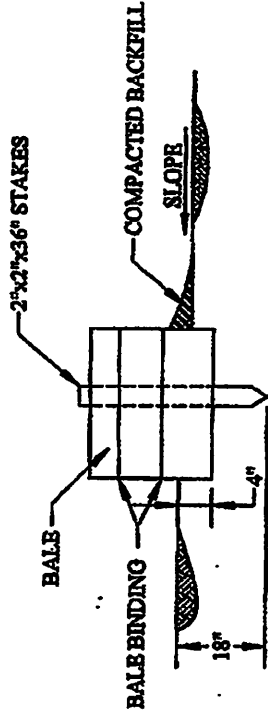
JOINING FENCE SECTIONS



STAKES SPACED @ 8' MAXIMUM. USE 2"x2" WOOD OR EQUIVALENT STAKES.

FILTER FABRIC FENCES MUST BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 8 FT. UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.



STRAW BALE BARRIERS SHOULD NOT BE USED FOR MORE THAN 3 MONTHS

STRAW BALE BARRIERS SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FT. UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.

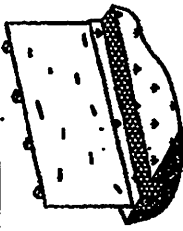
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE ABOVE GROUND HEIGHT OF THE BARRIER.

STEP 2



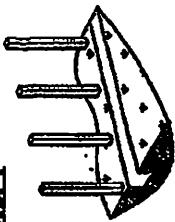
A FENCING INTERVAL -- WIDE MESH WOOD SLATS, ETC., IF REQUIRED, IS THEN AFFIXED TO THE POLES. THIS SUPPORT SYSTEM ACTS AS THE FRAMEWORK FOR THE FILTER FABRIC.

STEP 4



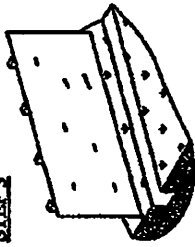
ROCKFILL THE LINED TRENCH TO COMPLETE THE TOP-IN

STEP 1



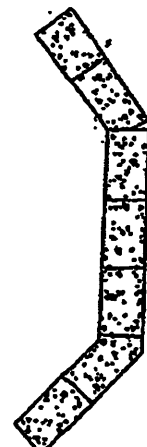
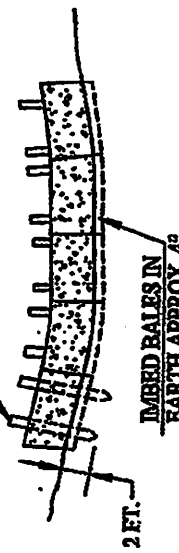
SET SUPPORT POLES AND EXCAVATE A MINIMUM 6 INCH TRENCH TO SERVE AS A TOE-IN FOR THE FABRIC. POLES SHOULD BE EMBEDDED 18" DEEP.

STEP 3



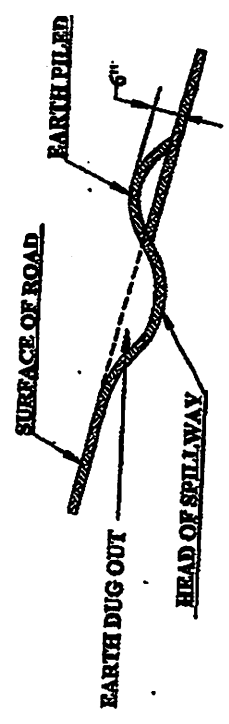
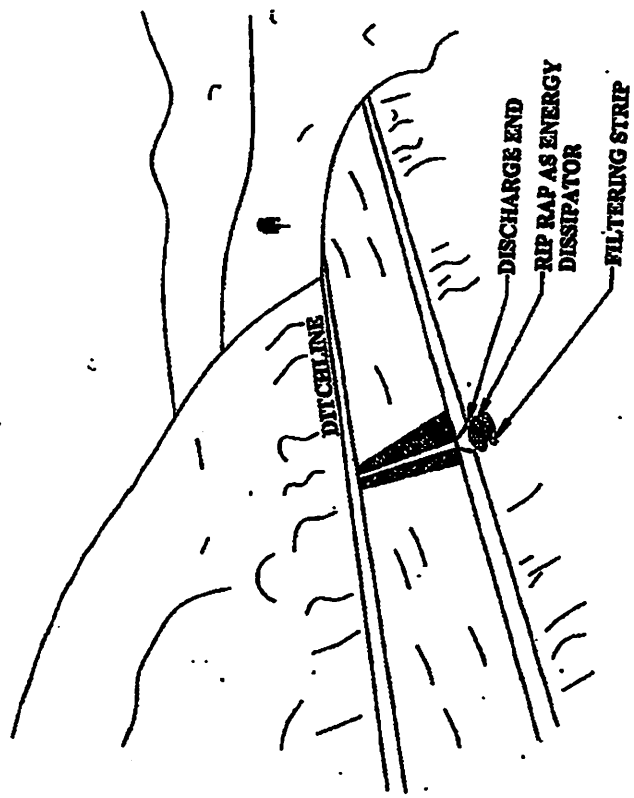
EASTEN A SUFFICIENTLY WIDE STRIP OF FILTER FABRIC TO THE FENCE WITH STAPLES OR NAILS. LEAVE A 12-18 INCH WIDE BOTTOM STRIP TO LINE THE TRENCH.

#4 REBAR OR WOOD STAKES - 2" x 2" x 3'

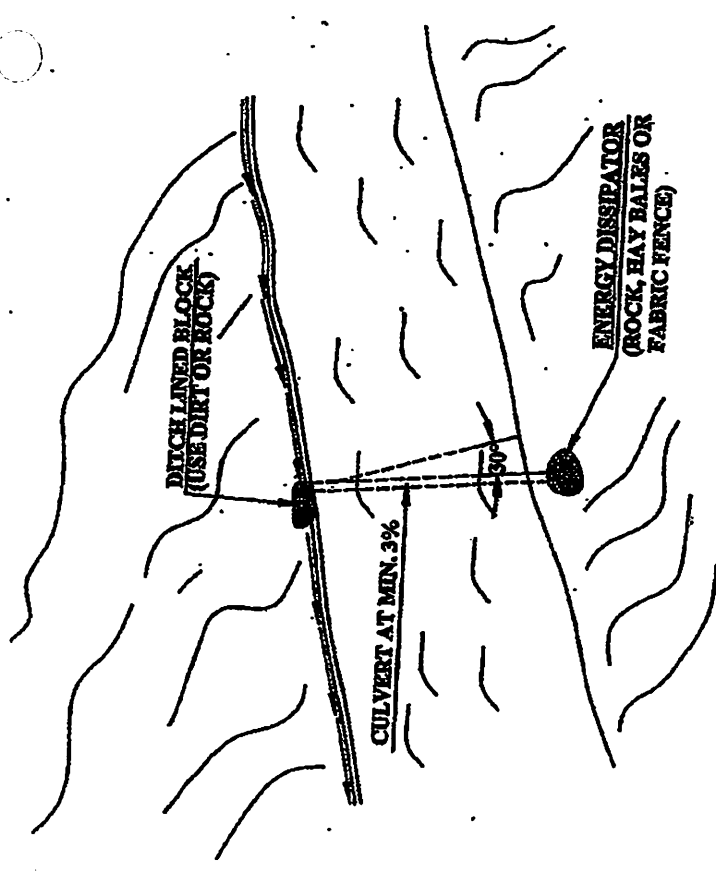


BARRIER DESIGN TO SUIT FIELD APPLICATION

HAY OR STRAW SEDIMENT BARRIER



ROAD GRADE PERCENT	DRAINAGE DIP SPACING FEET
2	250
5	135
10	80
15	60
20	45
25 (AND GREATER)	40



CULVERT SPACING

2% - 500'
3% - 400'
4% - 350'
5-6% - 300'
7-8% - 250'
9-11% - 200'
12-13% - 150'
14% - 100'

DETAILS - A
CULVERT INSTALLATION

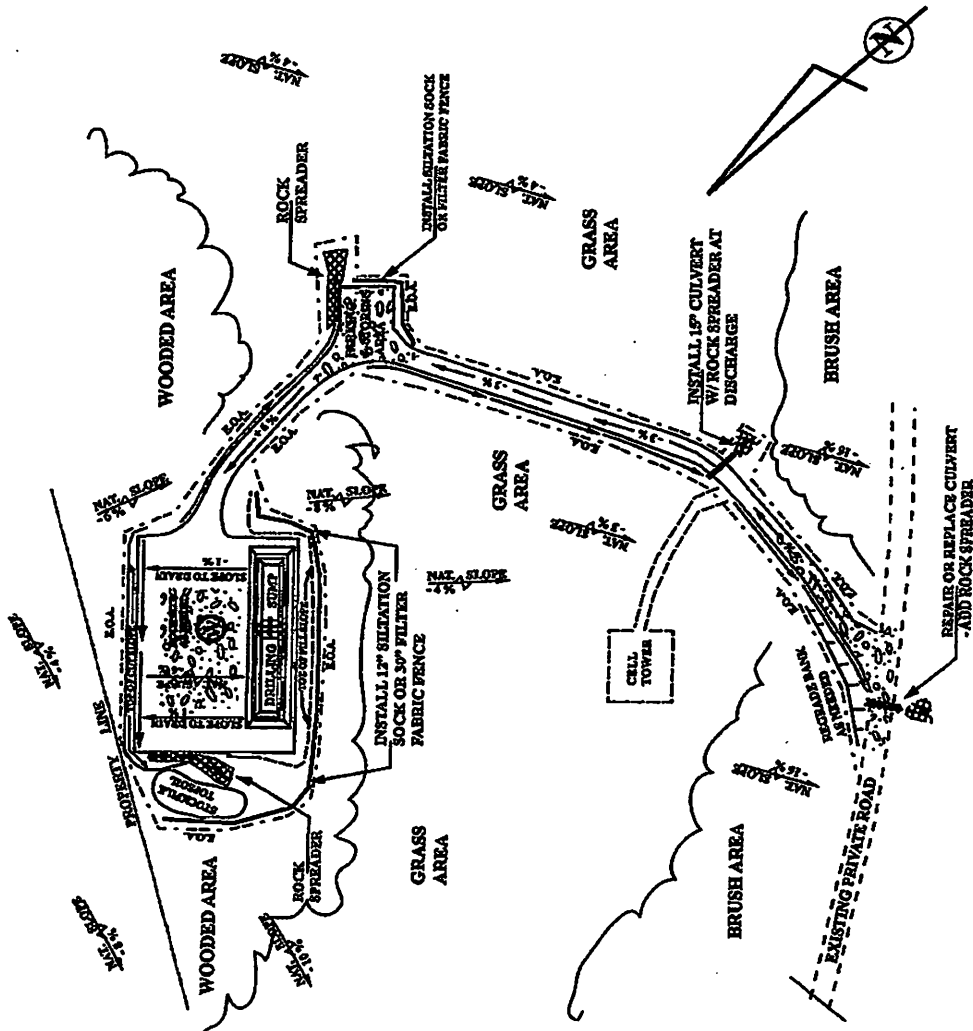
STAGING SEQUENCE:

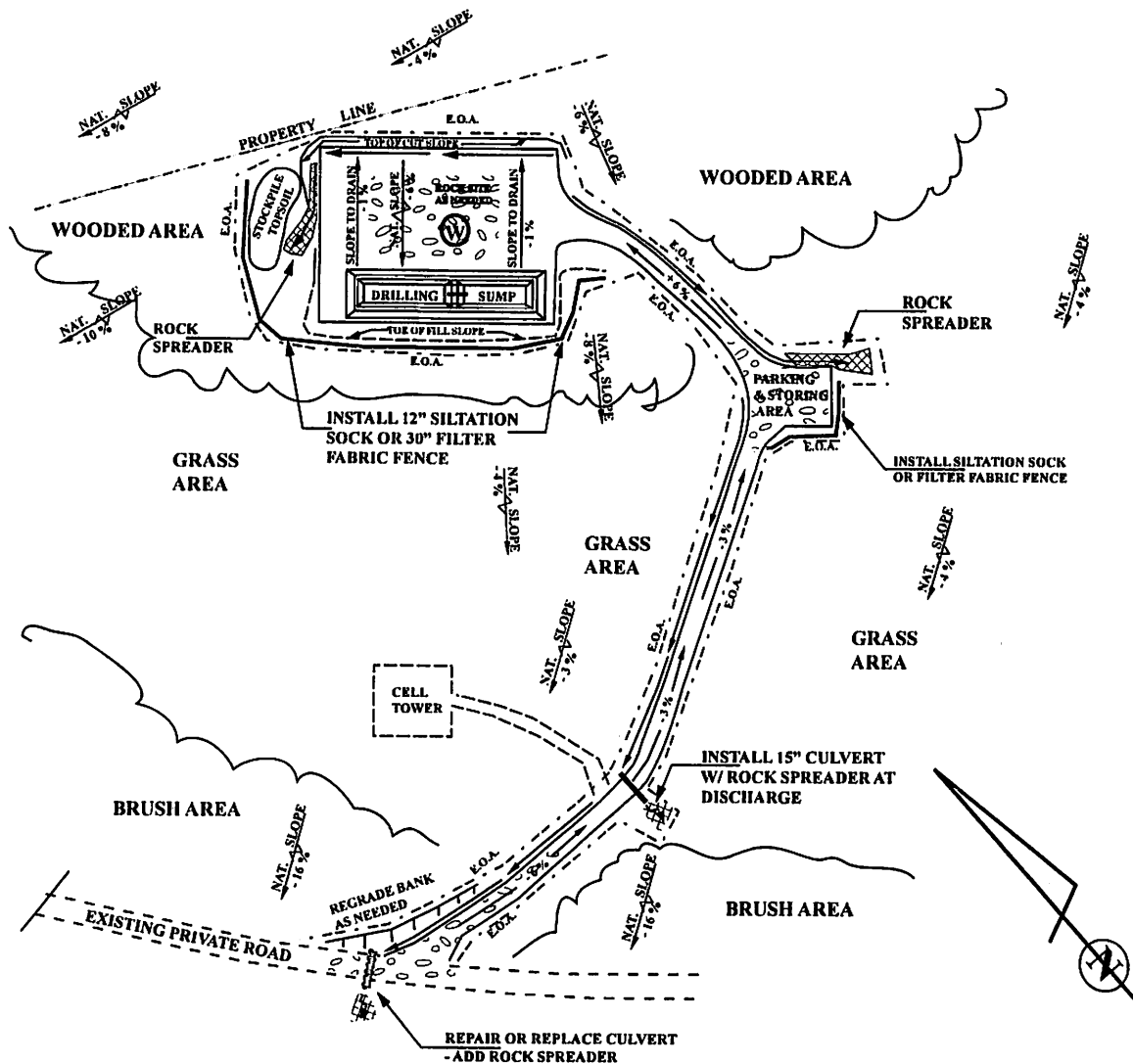
1. Prior to any earthmovement activity, all erosion and sediment control devices (BMPs), will be installed.
2. Perform any brushing, grubbing, and/or clearing required.
3. Earthmovement activities will begin with all culverts and drainage facilities installed, as per drawing.
4. All disturbed areas will be stabilized.
5. Well drilling activities will be performed and completed.
6. The well site will be backfilled and all disturbed areas, including the cut and fill slopes, will be immediately seeded and mulched.
7. All BMPs not needed for stabilization, will be removed while all other will remain in place until the site is stabilized.
8. Upon stabilization, all temporary controls will be removed and all permanent control will be maintained.

NOTES:

1. The well site is located 1325 feet from Pentz Run (CWF) through wooded areas with average slopes of 12%.
2. The watershed area above the site is equal to .3 acres.
3. The 24 hr rainfall frequency for 10 yrs is equal to 4.0 in.
4. The total project area is equal to 2.7 acres.
5. E.O.A. = Extent of Alteration.
6. If water is encountered at the drilling stumps, the drilling stumps will be constructed above ground.
7. All brush and stumps must be within the designated BMPs.
8. Install all BMPs in accordance with proper procedures, including the ends of any culverts and/or drainage ditches.

Prepared for: WINDFALL OIL & GAS	
Project Name:	ZELMAN WELL NO. 1
Location:	Brady Township, Clearfield County
Prepared by:	Environmental Wells Development, Inc.
Scale: 1" = 100'	Date: March 15, 2012





STAGING SEQUENCE:

1. Prior to any earthmovement activity, all erosion and sediment control devices (BMPs), will be installed.
2. Perform any brushing, grubbing, and/or clearing required.
3. Earthmovement activities will begin with all culverts and drainage facilities installed, as per drawing.
4. All disturbed areas will be stabilized.
5. Well drilling activities will be performed and completed.
6. The well site will be backfilled and all disturbed areas, including the cut and fill slopes, will be immediately seeded and mulched.
7. All BMPs not needed for stabilization, will be removed while all other will remain in place until the site is stabilized.
8. Upon stabilization, all temporary controls will be removed and all permanent control will be maintained

NOTES:

1. The well site is located 1325 feet from Pentz Run (CVF) through wooded areas with average slopes of 12%.
2. The watershed area above the site is equal to .3 acres.
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4. The total project area is equal to 2.7 acres.
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Prepared for: WINDFALL OIL & GAS	
Project Name: ZELMAN WELL NO. 1	
Location: Brady Township, Clearfield County	
Prepared by: Environmental Wells Development, Inc.	
Scale: 1" = 100'	Date: March 15, 2012

ALPHA 2278W

CORROSION INHIBITOR

DESCRIPTION

Alpha 2278W Corrosion Inhibitor is an alkyl phosphate ester/alkyl pyridine quaternary ammonium chloride. It is an excellent corrosion preventive for use in foam or air mist drilling and does not normally offset drilling fluid properties.

Alpha 2278W Corrosion Inhibitor is for drilling water-based systems. It is designed for oxygen, carbon dioxide, and hydrogen sulfide corrosion prevention. It is also effective against inorganic and organic salts.

Alpha 2278W Corrosion Inhibitor is an anodic inhibitor and controls general pitting and corrosion. It is a cathodic inhibitor for acid attack and embrittlement.

ADVANTAGES

- Minimizes corrosion rates.
- Effective against CO₂, H₂S, and oxygen corrosion.
- Effective against inorganic and organic salts.
- A cathodic inhibitor for acid attack.
- An anodic inhibitor for general pitting and corrosion.

MIXING PROCEDURE

Alpha 2278W Corrosion Inhibitor is 24% active solution in water. It is ready for field use.

USAGE

For Mist Drilling, add Alpha 2278W Corrosion Inhibitor at a rate of 4 gallons/hour to fresh water mist tank.

For Assist Drilling, add Alpha 2278W Corrosion Inhibitor at a rate of 4 gallons/hour to mud tank.

In extremely corrosive environments, pour 1.5 to 2 gallons per joint of Alpha 2278W Corrosion Inhibitor down to about 5000 feet. Below 5000 feet, add 3 to 3.5 gallons per joint of Alpha 2278W Corrosion Inhibitor.

Run corrosion rings and inspect external collar and upset areas.

PHYSICAL PROPERTIES

Appearance.....Dark, Red Liquid
pH, Neat.....7 to 8.5
Specific Gravity.....1.098 ± 0.015
Density.....9.02 to 9.27 lbs/gal
Flash Point.....No Data
Solubility in Water.....Dispersible



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Material Safety Data Sheet

ALPHA 2278W

HEALTH	2
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

1. Product and Company Identification

Material name	ALPHA 2278W
Patent Number	Not available
Revision date	July-10-2008
Version No.	1
CAS #	Mixture
Product use	Corrosion Inhibitor
Manufacturer information	Weatherford Engineered Chemistry 4420 South Flores Road Elmendorf, TX 78112 US CHEMTREC 1-800-424-9300/703-527-3887
Emergency	CHEMTREC 1-800-424-9300/703-527-3887
Supplier information	Clearwater International L.L.C. 4420 South Flores Rd. Elmendorf, TX 78112 US

2. Hazards Identification

Emergency overview	WARNING May be ignited by heat, sparks or flames. Prolonged exposure may cause chronic effects. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Eyes	Do not get this material in contact with eyes.
Skin	Do not get this material in contact with skin.
Inhalation	Prolonged inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray.
Ingestion	May cause delayed lung damage. Do not ingest. Components of the product may be absorbed into the body by ingestion.
Target organs	Central nervous system. Eyes. Lungs. Respiratory system. Skin.
Chronic effects	Shortness of breath. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. May cause delayed lung damage.
Signs and symptoms	Discomfort in the chest. Shortness of breath. Narcosis. Decrease in motor functions. Behavioral changes. Cough.
Potential environmental effects	May cause long-term adverse effects in the environment.



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3. Composition / Information on Ingredients

Components	CAS #	Percent
Ethylene Glycol	107-21-1	30 - 60

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
Skin contact	Immediately flush skin with plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse.
Inhalation	Move to fresh air. Do not use mouth-to-mouth method if victim inhaled the substance. Call a physician if symptoms develop or persist.
Ingestion	Rinse mouth. Do not induce vomiting without medical advice. Do not use mouth-to-mouth method if victim ingested the substance. Get medical attention immediately.

Notes to physician

Symptoms may be delayed.

General advice

Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Water. Water spray. Water fog. Alcohol foam. Polymer foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. Do not scatter spilled material with high pressure water streams. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

6. Accidental Release Measures

Personal precautions

Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewers, basements or confined areas.



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Methods for cleaning up

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Do not handle or store near an open flame, heat or other sources of ignition. Do not breathe vapors or spray mist. Avoid release to the environment. Avoid prolonged exposure.

Storage

Keep tightly closed in a dry, cool and well-ventilated place. Store in accordance with local/regional/national/international regulation.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components

CAS #

TWA

STEL

Ceiling

Ethylene Glycol

107-21-1

Not established

Not established

100 mg/m3

Engineering controls

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection

Wear chemical goggles.

Skin protection

Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Protective gloves. Impervious gloves.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use.

General hygiene considerations

When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance

Cloudy.

Color

brown

Odor

Not available.

Odor threshold

Not available

Physical state

Liquid.

Form

Liquid.

pH

7 - 9

Melting point

24.8 °F (-4.06 °C) estimated





Freezing point	Not available
Boiling point	273.2 °F (134 °C) estimated
Flash point	201 °F (93.9 °C)
Evaporation rate	Not available
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available
Flammability limits in air, lower, % by volume	Not available
Vapor pressure	Not available
Vapor density	Heavier than Air
Specific gravity	1.14 - 1.18
Relative density	1.1599 g/cm3 estimated
Solubility (water)	100
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	748.4 °F (398 °C) estimated
Decomposition temperature	Not available
VOC	30 % estimated

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Amines. Isocyanates. Strong oxidizing agents. Strong acids. Caustics.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects	Acute LD50: 13333 mg/kg estimated, Rat, Oral	
Component analysis - LD50		
Toxicology Data - Selected LD50s and LC50s		
Ethylene Glycol	107-21-1	Oral LD50 Rat: 4000 mg/kg; Dermal LD50 Rabbit: 9530 µL/kg
Sensitization	Not expected to be hazardous by OSHA criteria.	
Chronic effects	Hazardous by OSHA criteria. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged or repeated exposure may cause lung injury. Prolonged exposure may cause chronic effects.	
Carcinogenicity	Not expected to be hazardous by OSHA criteria.	
ACGIH - Threshold Limit Values - Carcinogens		
Ethylene Glycol	107-21-1	A4 - Not Classifiable as a Human Carcinogen
Neurological effects	Hazardous by OSHA criteria.	
Further information	Symptoms may be delayed.	



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12. Ecological Information

Ecotoxicity

Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae Data

Ethylene Glycol 107-21-1 96 Hr EC50 *Selenastrum capricornutum*: 6500-1300 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethylene Glycol 107-21-1 96 Hr LC50 *Oncorhynchus mykiss*: 41000 mg/L; 96 Hr LC50 *Lepomis macrochirus*: 27500 mg/L; 96 Hr LC50 *Oncorhynchus mykiss*: 40761 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 49000 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 16000 mg/L [static]

Ecotoxicity - Microtox Data

Ethylene Glycol 107-21-1 30 min EC50 *Photobacterium phosphoreum*: 620.0 mg/L; 30 min EC50 *Photobacterium phosphoreum*: 620 mg/L; 16 Hr EC50 *Pseudomonas putida*: 10000 mg/L

Ecotoxicity - Water Flea Data

Ethylene Glycol 107-21-1 48 Hr EC50 water flea: 46300 mg/L

Environmental effects

Ecotoxicity - Freshwater Algae Data

Ethylene Glycol 107-21-1 96 Hr EC50 *Selenastrum capricornutum*: 6500-1300 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethylene Glycol 107-21-1 96 Hr LC50 *Oncorhynchus mykiss*: 41000 mg/L; 96 Hr LC50 *Lepomis macrochirus*: 27500 mg/L; 96 Hr LC50 *Oncorhynchus mykiss*: 40761 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 49000 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 16000 mg/L [static]

Ecotoxicity - Microtox Data

Ethylene Glycol 107-21-1 30 min EC50 *Photobacterium phosphoreum*: 620.0 mg/L; 30 min EC50 *Photobacterium phosphoreum*: 620 mg/L; 16 Hr EC50 *Pseudomonas putida*: 10000 mg/L

Ecotoxicity - Water Flea Data

Ethylene Glycol 107-21-1 48 Hr EC50 water flea: 46300 mg/L

13. Disposal Considerations

Disposal instructions

Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Not regulated as hazardous goods.



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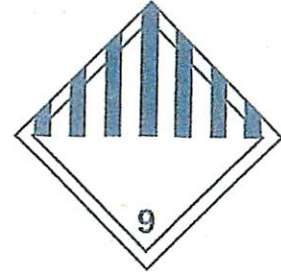
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Department of Transportation (DOT) Requirements

Bulk

Basic shipping requirements:

Proper shipping name	Environmentally hazardous substances, liquid, n.o.s. (ETHYLENE GLYCOL)
Hazard class	9
UN number	UN3082
Packing group	III
Additional information:	
Special provisions	8, 146, IB3, T4, TP1, TP29
Packaging exceptions	155
Packaging non bulk	203
Packaging bulk	241



Canadian Transportation of Dangerous Goods (TDG) Requirements

Not regulated as hazardous goods.

IMDG

Not regulated as dangerous goods.

IATA

Not regulated as hazardous goods.

15. Regulatory Information

Labelling

Contains Ethylene Glycol

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Ethylene Glycol 107-21-1 1.0 % de minimis concentration

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

Ethylene Glycol: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes



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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

Ethylene Glycol 107-21-1 1 %

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

Ethylene Glycol 107-21-1 Present

U.S. - Minnesota - Hazardous Substance List

Ethylene Glycol 107-21-1 Present (particulate and vapor)

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethylene Glycol 107-21-1 sn 0878

U.S. - Pennsylvania - RTK (Right to Know) List

Ethylene Glycol 107-21-1 Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Ethylene Glycol 107-21-1 Toxic; Flammable

U.S. - Texas - Effects Screening Levels - Long Term

Ethylene Glycol 107-21-1 10 ppb ESL (46% Ethylene glycol); 26 µg/m3 ESL (46% Ethylene glycol)

U.S. - Texas - Effects Screening Levels - Short Term

Ethylene Glycol 107-21-1 100 ppb ESL (46% ethylene glycol); 260 µg/m3 ESL (46% ethylene glycol)

16. Other Information

HMIS® ratings

Health: 2
Flammability: 1
Physical hazard: 0
Personal protection: B

NFPA ratings

Health: 2
Flammability: 1
Instability: 0

Prepared by

Naser S. Hussaini
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+1-713-693-7706

Disclaimer

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Alpha 3207

Packer Fluid Corrosion Inhibitor

DESCRIPTION

Alpha 3207 is a 23-27% active synergistic blend of organic acid-amine salts in isopropanol and water. It is used as a base for formulating water-soluble corrosion preventives for packer fluids.

APPLICATION

Alpha 3207 can be used to prepare surfactants, corrosion preventives, anti-foulants, and water clarifiers for water flood injection and disposal systems. Alpha 3207 can be used in hydrogen sulfide containing waters to reduce fouling.

Alpha 3207 can be used in concentrated form or diluted with water or alcohol for application purposes.

ADVANTAGES

- Highly cationic amine
- Minimizes corrosion rates
- Functions as a surfactant, water clarifier, & anti-foulant
- Can be used in concentrated form or diluted

USEAGE

Optimum treatment concentration will vary depending upon the specific application. Normal concentration ranges from 100 to 200 ppm.

PHYSICAL PROPERTIES

Appearance.....	Light Amber to Amber-Orange Liquid
Activity.....	23-27%
Specific Gravity @ 25°C.....	0.94-1.00
Density @ 25°C.....	7.83-8.33lbs/gal
pH (5% solution in water).....	5.0-6.0
Flash Point, TCC.....	14.4°C (58°F)

Solubility, 10% in:

Fresh Water.....	Soluble
Xylene.....	Dispersible
Isopropanol.....	Soluble
Kerosene.....	Insoluble

Material Safety Data Sheet

ALPHA 3207

HEALTH	2
FLAMMABILITY	4
REACTIVITY	0
PERSONAL PROTECTION	G

24 hr. Emergency Contact (CHEMTREC) US Tel: 1- 800 - 424-9300 - Int'l. Tel. 703 - 527 - 3887

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: AQUA-CLEAR INC.
608 VIRGINIA St. EAST
CHARLESTON W.V. 25301

PRODUCT NAME: ALPHA 3207

PRODUCT USE/CLASS: CORROSION INHIBITOR

MSDS REVISION DATE: 06/15/04

PHONE: 304-343-4792

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	EXPOSURE LIMITS	CAS#	% BY WEIGHT
ISOPROPANOL	ACGIH TLV – 400 ppm TWA , 500 ppm STEL OSHA PEL – 400 ppm TWA,	67-63-0	10-30 %

3. HAZARD IDENTIFICATION

EYE: Liquid, aerosols and vapors of this product may be irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.

SKIN: May cause skin irritation. Allergic reactions are possible.

INGESTION: This material may be harmful if swallowed. May be irritating to mouth, throat, and stomach. .

INHALATION: Prolonged inhalation may be harmful and can cause headaches, dizziness, nausea, anesthesia, narcosis, decreased blood pressure, changes in heart rate and cyanosis. May be irritating to mucous membranes and lung tissue.

CHRONIC INFORMATION: None Known

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Ingestion

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention, if irritation persists.

SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persists.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

INGESTION: Place victim on left side with head down to prevent aspiration into lungs. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

5. FIRE FIGHTING MEASURES

FLASH POINT: 70 F
(TAGLIABUE CLOSED CUP)

LOWER EXPLOSIVE LIMIT: N.D.
UPPER EXPLOSIVE LIMIT: N.D.

Material Safety Data Sheet

ALPHA 3207

AUTOIGNITION TEMPERATURE: N.D.

EXTINGUISHING MEDIA: ALCOHOL FOAM CO2 DRY CHEMICAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: Can release vapors that form explosive mixtures at temperatures at or above the flash point. Empty containers retain product residue (liquid and/or vapor) and can be dangerous.

SPECIAL FIRE FIGHTING PROCEDURES: Containers can build up pressure if exposed to heat (fire). As in any fire, wear a self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent) and full protective gear. Apply alcohol-type foam or all purpose foam by manufacturers recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires. Use water spray to keep containers cool.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Extinguish any possible ignition source until the area is determined to be free from fire or explosion hazard. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. (See exposure controls / personal protection section) Spilled material should be disposed of according to applicable regulations.

7. HANDLING AND STORAGE

HANDLING: Handle all chemicals with care. Ground and bond containers when transferring materials.

STORAGE: Keep away from heat, sparks, and flames. Keep container closed when not in use. Store in a cool, dry, well ventilated place away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their exposure limits.

RESPIRATORY PROTECTION: No protection needed under normal use and conditions. Use a NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge when airborne concentrations are expected to exceed exposure limits. Protection by air purifying respirators is limited.

SKIN PROTECTION: When contact is likely wear chemical resistant gloves and boots.

EYE PROTECTION: Wear safety glasses with side shields or goggles.

OTHER PROTECTIVE EQUIPMENT: Emergency eye wash stations and deluge showers should be available in the work area.

HYGIENIC PRACTICES: Wash hands before eating. Use only with adequate ventilation. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Dark amber

ODOR: Sl alcohol

BOILING POINT (RANGE): N.D.

FREEZE POINT: N.D.

VAPOR DENSITY: Heavier than air

VAPOR PRESSURE: N.D.

PHYSICAL STATE: Liquid

SOLUBILITY IN WATER: Soluble

PH (AS IS): 4.5-6.0

SPECIFIC GRAVITY: 0.94-1.00

10. STABILITY AND REACTIVITY DATA

CONDITIONS TO AVOID: Avoid temperature extremes. Excessive heat causes the vapor pressure to increase rapidly.

INCOMPATIBILITY: Avoid contact with strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon and nitrogen.

Material Safety Data Sheet

ALPHA 3207

HAZARDOUS POLYMERIZATION: Will not occur under normal use and storage conditions.

CHEMICAL STABILITY: This product is stable under normal storage conditions.

11. TOXICOLOGICAL INFORMATION

ORAL: No product information is available.

DERMAL: No product information is available.

INHALATION: No product information is available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: No product information is available.

CHEMICAL FATE INFORMATION: No product information is available.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Consult local, state, or federal regulatory agencies for acceptable disposal procedures and disposal locations. Disposal in streams or sewers may be prohibited by federal, state, and local regulations.

RCRA STATUS: D001 - Characteristic of ignitability

14. TRANSPORTATION INFORMATION

(NON-BULK SHIPMENTS)

D.O.T. PROPER SHIPPING NAME: Isopropanol Solution

D.O.T. TECHNICAL NAME:

D.O.T. HAZARD CLASS: 3

D.O.T. UN NUMBER: UN1219

HAZARD SUBCLASS: N/A

PACKING GROUP: II

RESP. GUIDE PAGE: 129

(BULK SHIPMENTS)

D.O.T. PROPER SHIPPING NAME: Isopropanol Solution

D.O.T. TECHNICAL NAME:

D.O.T. HAZARD CLASS: 3

D.O.T. UN NUMBER: UN1219

HAZARD SUBCLASS: N/A

PACKING GROUP: II

RESP. GUIDE PAGE: 129

T.D.G. PROPER SHIPPING NAME: Isopropanol Solution

T.D.G. TECHNICAL NAME:

T.D.G. HAZARD CLASS: 3

T.D.G. UN NUMBER: UN1219

HAZARD SUBCLASS: N/A

PACKING GROUP: II

RESP. GUIDE PAGE: 129

IMDG PROPER SHIPPING NAME: Isopropanol Solution

IMDG TECHNICAL NAME:

IMDG HAZARD CLASS: 3.2

IMDG UN NUMBER: UN1219

HAZARD SUBCLASS: N/A

PACKING GROUP: II

EmS No: F-E, S-C

15. REGULATORY INFORMATION

CERCLA - SARA HAZARD CATEGORY:

SECTION 311/312: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

IMMEDIATE HEALTH HAZARD FIRE HAZARD

SARA SECTION 313: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Material Safety Data Sheet
ALPHA 3207

COMPONENT

CAS#

% BY WEIGHT

TSCA STATUS:

All components of this product are listed on the Toxic Substance Control Act Inventory or are excluded from the listing requirements.

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: B-2, D-2B

CANADIAN ENVIRONMENTAL PROTECTION ACT:

All components of this product are listed on the Canadian Domestic Substance List (DSL).

16. OTHER INFORMATION

HMIS RATING – HEALTH: 2 FLAMMABILITY: 4 REACTIVITY: 0 PERSONAL PROTECTIVE RATING: G

LEGEND: N.A. – NOT APPLICABLE, N.E. - NOT ESTABLISHED, N.D. – NOT DETERMINED

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Fe-Oxclear

Iron and Oxygen Control

DESCRIPTION

Fe-Oxclear chemically reacts with dissolved oxygen in water. It is a unique oxygen scavenger, being highly active and freeze-proofed. Unlike other oxygen scavengers, Fe-Oxclear rapidly reacts with dissolved oxygen in oilfield waters, regardless of temperature.

PURPOSE

Fe-Oxclear controls two common injection well problems: iron and oxygen corrosion. Produced waters contain high concentrations of dissolved (ferrous) iron. Oxygen combines with the iron to form a new compound (ferric iron) that does not remain in solution above pH 3.0. Ferric iron turns water orange and permeability-damaging fines drop out of solution. Unfortunately, any handling of oilfield waters puts dissolved oxygen into the water. Filtration and de-aerators take out some of the iron; however, far more goes through the filters as dissolved iron. It combines with the dissolved oxygen to produce formation-plugging ferric iron fines. Eliminating dissolved oxygen keeps iron in solution, and with no damage to the formation. Injecting Fe-Oxclear before the filters improves filter life, because less ferric iron fines will be in the water.

Corrosion is an electro-chemical process. Oxygen is a key component in the chemical equation. Moving water accelerates corrosion; however, eliminating dissolved oxygen greatly slows the corrosion process.

ADVANTAGES

- Rapidly reacts with dissolved oxygen.
- Effectively scavenges at low temperatures.
- Easy to feed.
- Easy to test and control.
- End product of reaction is non-scaling and non-damaging.
- Freeze-proofed.
- Can be fed directly from shipping drum.

- Residual provides oxygen-consuming reserve.

FEED REQUIREMENTS

Fe-Oxclear may be fed separately or with other water treatment chemicals not affected by a reducing agent. Approximately 5 lbs. (0.5 gallons) of Fe-Oxclear is required for each ppm dissolved oxygen present in each 1,000 barrels of water treated, or 1.0 gallon of Fe-Oxclear will combine with and remove about 2 ppm dissolved oxygen per 1,000 barrels of water.

METHOD OF FEEDING

Fe-Oxclear can be batch treated or fed continuously with a chemical proportioning pump.

SPECIFICATIONS

Physical Form.....clear, yellow liquid
SG @ 25°C.....1.3
Weight/gallon.....10.9 lbs.
pH @ 25°C.....4.5-6.0
Flash Point.....>200°F
Freeze Point.....-25°F

CONTROL

Control is easily maintained by measuring dissolved oxygen content in the injection fluid. Treatment can also be controlled by determining sulfite residual in treated waters. Using a sulfite test kit, multiply the results obtained as ppm sodium sulfite by a factor of 1.5 to obtain the Fe-Oxclear residual.

SAFETY

WARNING! Fe-Oxclear contains ammonium bisulfite. It is mildly acidic and may cause irritation. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Keep container closed when not in use. First Aid: Eyes - In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If irritation develops, call a physician.



Material Safety Data Sheet

FE OXCLEAR

HAZARD	
HEALTH	2
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

1. Product and Company Identification

Material name	FE OXCLEAR
Patent Number	Not available
Revision date	September-01-2009
Version No.	2
CAS #	Mixture
Product use	Scavenger
Manufacturer information	WEATHERFORD® ENGINEERED CHEMISTRY® 4420 South Flores Road Elmendorf, TX 78112 US CHEMTREC 1-800-424-9300 CHEMTREC INT'L 001-703-527-3887
Emergency	CHEMTREC 1-800-424-9300 CHEMTREC INT'L 001-703-527-3887
Supplier information	WEATHERFORD® ENGINEERED CHEMISTRY® 515 Post Oak Blvd. Houston, TX 77027 US
Supplier emergency telephone number(s)	Chemtrec 800-424-9300 Int'l 703-527-3887

2. Hazards Identification

Emergency overview	WARNING Causes skin and eye burns. Corrosive material. Harmful by inhalation, in contact with skin and if swallowed. Vapors may be irritating to eyes, nose, throat, and lungs. Vapors may cause dizziness or suffocation. May cause breathing disorders and lung damage. Harmful to aquatic organisms. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Skin contact. Eye contact. Ingestion.
Eyes	Do not get this material in contact with eyes. This product causes eye burns. Risk of serious damage to eyes.
Skin	Do not get this material in contact with skin. Causes skin burns. Irritating to skin.



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Methods for cleaning up

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Use only with adequate ventilation. Avoid release to the environment. Wash thoroughly after handling. Avoid prolonged exposure.

Storage

Store in a closed container away from incompatible materials. Store in accordance with local/regional/national/international regulation.

8. Exposure Controls / Personal Protection

Engineering controls

Ensure adequate ventilation, especially in confined areas. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower nearby.

Personal protective equipment

Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.

Skin protection

Do not get this material in your eyes, on your skin, or on your clothing. Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Impervious gloves.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance

Liquid.

Color

Yellow

Odor

Sulfur dioxide

Odor threshold

Not available

Physical state

Liquid.

Form

Liquid.

pH

Not available

Melting point

Not available

Freezing point

Not available

Boiling point

180 °F (82.2 °C)





14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	IB3, T7, TP1, TP28
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
ERG number	154



Department of Transportation (DOT) Requirements

Bulk

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	IB3, T7, TP1, TP28
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
ERG number	154



Canadian Transportation of Dangerous Goods (TDG) Requirements

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	16
ERG number	154



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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

Ammonium bisulfite 10192-30-0 1 %

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

Ammonium bisulfite 10192-30-0 Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ammonium bisulfite 10192-30-0 sn 0090

U.S. - Pennsylvania - RTK (Right to Know) List

Ammonium bisulfite 10192-30-0 Environmental hazard

16. Other Information

HMIS® ratings

Health: 2
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Prepared by

Product Stewardship
515 Post Oak Blvd
Suite 142-C
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+1-713-693-7706

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Issue date

September-01-2009

MSDS sections updated

This document has undergone significant changes and should be reviewed in its entirety.



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MATERIAL SAFETY DATA SHEET

Product Trade Name: **CLA-STA XP ADDITIVE**

Revision Date: 04-Jan-2011

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
--

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
53-55 Bannister Road
Canning Vale
WA 6155
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: CLA-STA XP ADDITIVE
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Clay Stabilizer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

2. COMPOSITION/INFORMATION ON INGREDIENTS
--

Substances	CAS Number	PERCENT	Australia NOHSC	ACGIH TLV-TWA
Polyepichlorohydrin, trimethyl amine quaternized	51838-31-4	30 - 60%	Not applicable	Not applicable

Total to 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye, skin, and respiratory irritation. May be harmful if swallowed.

Hazard Ratings

Flammability:	1
Toxicity:	0
Body Contact:	0
Reactivity:	0
Chronic:	0

Scale: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons None known.

Special Exposure Hazards Product is not expected to burn unless all the water is boiled away. Decomposition in fire may produce toxic gases.

Special Protective Equipment for Fire-Fighters Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

Environmental Precautionary Measures Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning / Absorption Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.

Storage Information

Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.
Respiratory Protection	Organic vapor respirator with a dust/mist filter.
Hand Protection	Impervious rubber gloves.
Skin Protection	Rubber apron.
Eye Protection	Chemical goggles; also wear a face shield if splashing hazard exists.
Other Precautions	Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES
--

Physical State:	Liquid
Color:	Clear amber
Odor:	Amine
pH:	4-8
Specific Gravity @ 20 C (Water=1):	1.13
Density @ 20 C (kg/l):	1.13
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined Min: > 93
Flash Point Method:	PMCC
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	40-55
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data:	Stable
Hazardous Polymerization:	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.

Hazardous Decomposition Products Oxides of nitrogen. Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Inhalation May cause respiratory irritation.

Skin Contact May cause skin irritation.

Eye Contact May cause severe eye irritation.

Ingestion Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

Aggravated Medical Conditions None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Other Information None known.

Toxicity Tests

Oral Toxicity: Not determined

Dermal Toxicity: Not determined

Inhalation Toxicity: Not determined

Primary Irritation Effect: Not determined

Carcinogenicity Not determined

Genotoxicity: Not determined

Reproductive / Developmental Toxicity: Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air) Not determined

Persistence/Degradability Not determined

Bio-accumulation Not determined

Ecotoxicological Information

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: TLM96: 300 ppm (Mysidopsis Bahía)

Acute Algae Toxicity: Not determined

Chemical Fate Information Not determined

Other Information Not applicable

13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory Product contains one or more components not listed on inventory.
US TSCA Inventory All components listed on inventory or are exempt.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Xi - Irritant.

Risk Phrases R41 Risk of serious damage to eyes.

Safety Phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S29 Do not empty into drains.
S35 This material and its container must be disposed of in a safe way.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

*****END OF MSDS*****