

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~~

771-9686

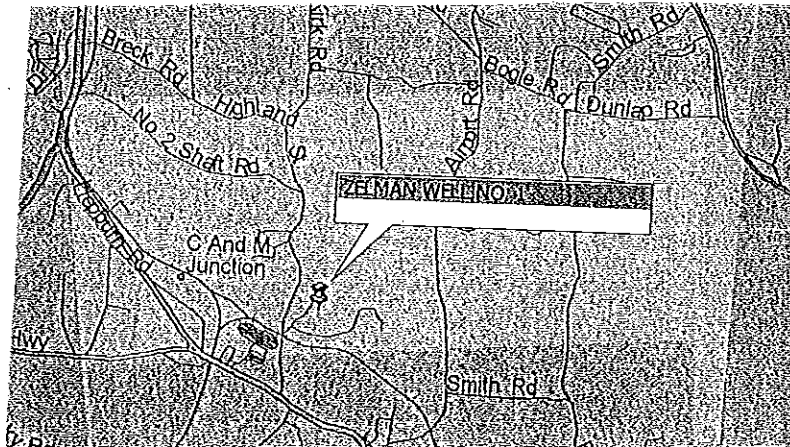
Prepared By:

Environmental Wells Development, Inc.

P.O. Box 772

Indiana, PA 15701

(724) 349-4470



March 18, 2012

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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.**

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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.)

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CONTINGENCY CONDITIONS AND DISPOSAL PLAN:

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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 redbtop (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

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078.766666° W

078.750000° W

078.733333° W

078.716666° W

41.100000° N

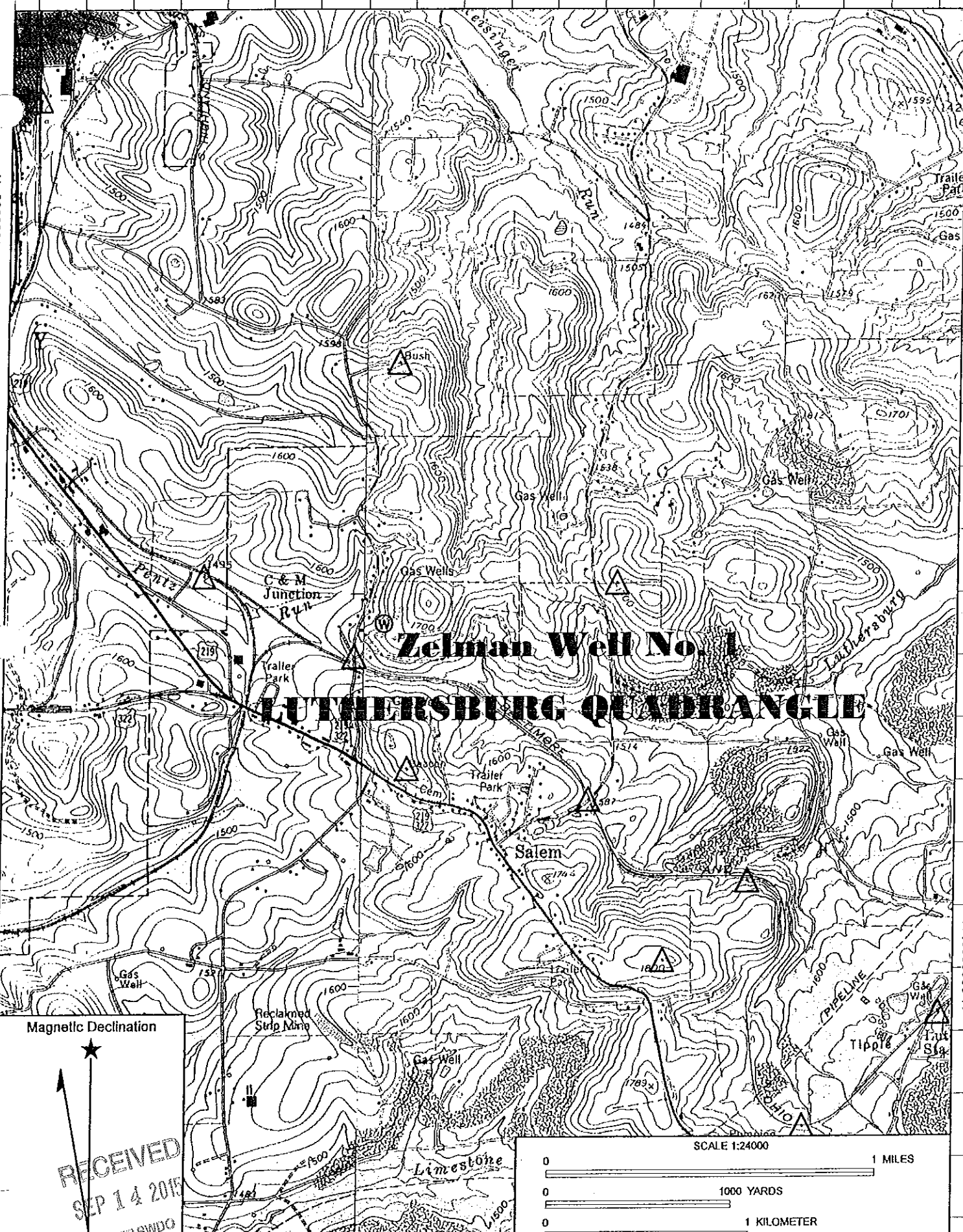
41.100000° N

41.083333° N

41.083333° N

41.066666° N

41.066666° N



Zelman Well No. 1

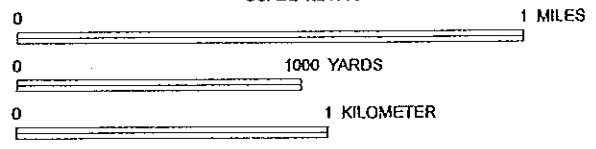
LUTHERSBURG QUADRANGLE

Magnetic Declination



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 10° W

SCALE 1:24000



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

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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

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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

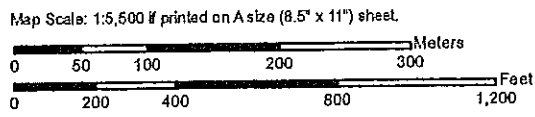
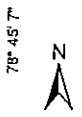
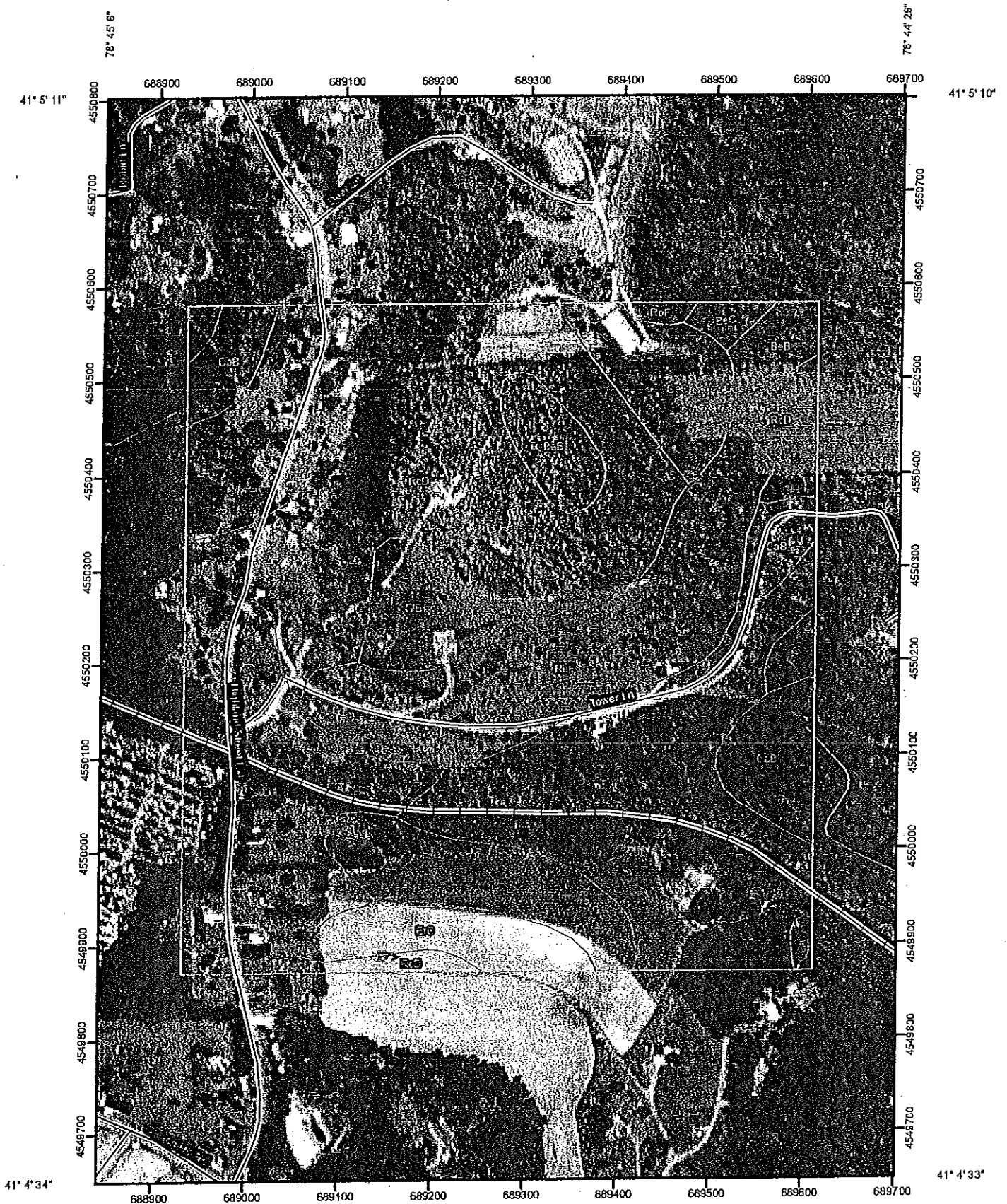
Survey Area Data: Version 6, Jul 31, 2009

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



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MAP LEGEND

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

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) aerial 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.

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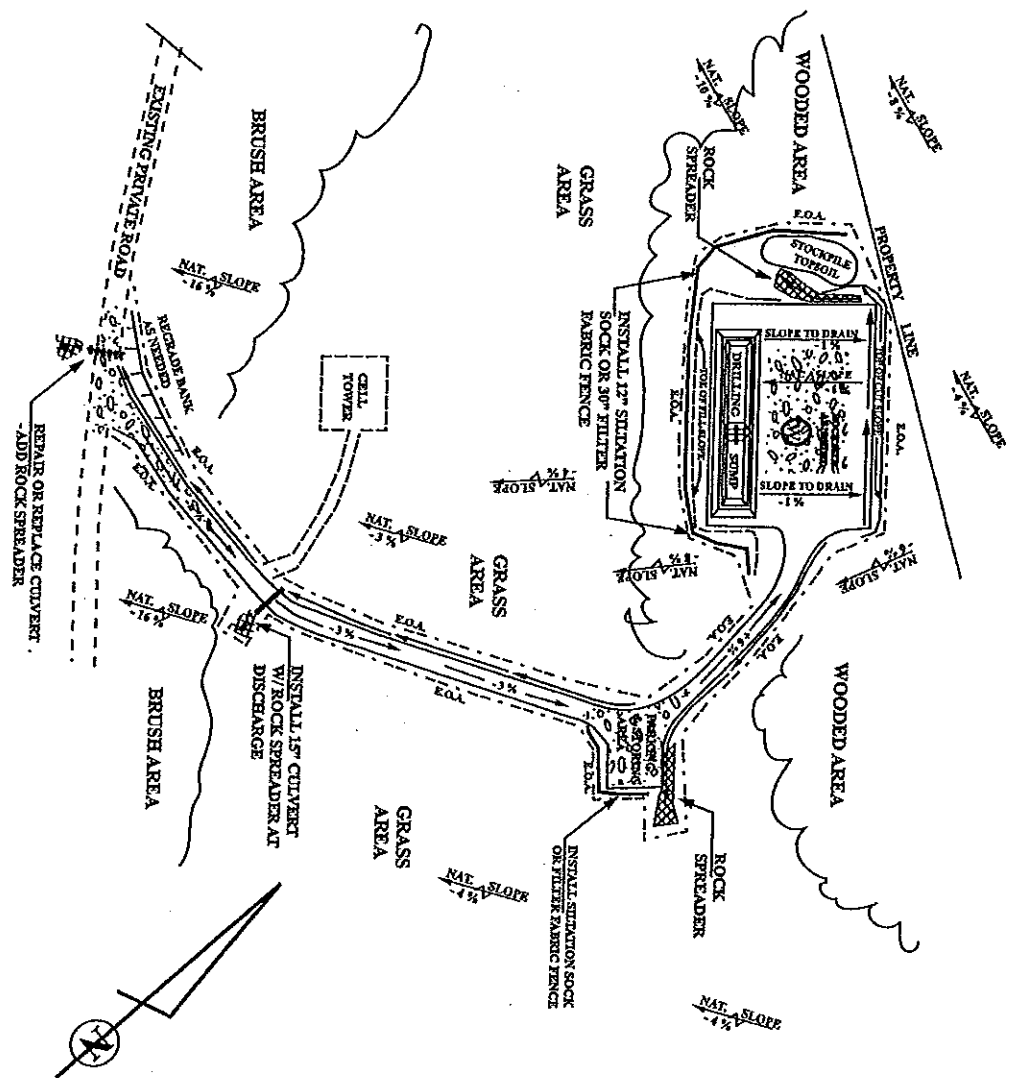
Map Unit Legend

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%

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STAGING SEQUENCE:

1. Prior to any earthmovement activity, all erosion and sediment control devices (BMD's), 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 BMD's 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 Peetz 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 .3 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 snags, the drilling snags will be constructed above ground.
7. All brush and stumps must be within the designated BMD's.
8. Install all BMD's in accordance with proper procedures, including the ends of any culverts and/or drainage ditches.

Prepared for:	WINDELL 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

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