

ZELMAN NO. 1 WELL EROSION & SEDIMENTATION CONTROL PLAN

BRADY TOWNSHIP, CLEARFIELD COUNTY, PENNSYLVANIA

PREPARED FOR:
WINDFALL OIL & GAS
63 HILL STREET
FALLS CREEK, PENNSYLVANIA 15840

CONSULTANTS	
SIGNATURES	DATE



100 PERCENT CERTAIN TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE EROSION AND SEDIMENT CONTROL PLAN AND THE RECONSTRUCTION PLAN ARE TRUE AND CORRECT REPRESENTATIONS OF THE PROJECT AND ARE IN ACCORDANCE WITH THE 36 PA CODE CHAPTER 78 AND 32 OF THE DEPARTMENT'S RULES AND REGULATIONS. I AM AWARE THAT THERE ARE SOMEWHAT PROVIDED FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

TS-1	TITLE SHEET
ES-1	EROSION & SEDIMENTATION CONTROL PLAN
DS-1	EROSION & SEDIMENTATION CONTROL NOTES
DS-2	EROSION & SEDIMENTATION CONTROL DETAILS
DS-3	EROSION & SEDIMENTATION CONTROL DETAILS
PCSM-1	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
PCSM-2	POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES
FORWARD 24 HOURS NOTICE FOR
CONSTRUCTION PLANS AND TO WORKING
DAYS IN DESIGN ETHICS - 10707 CALL
Pennsylvania One Call System, Inc.
8-1-1
P.O. Box 10000



CONCRETE	EROSION	SEDIMENT	STORMWATER
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THIS DRAWING IS FOR THE EROSION AND SEDIMENTATION CONTROL PLAN/PERMIT ONLY.

WINDFALL OIL & GAS ZELMAN NO. 1 WELL	
BRADY TOWNSHIP, CLEARFIELD COUNTY PENNSYLVANIA	TITLE SHEET
Project Number: 2011001 Drawing Scale: 1" = 100' Date Issued: 11/19/2010 Issue Number: 1 Drawn By: JES Checked By: JES Project Manager: JES TS-1	

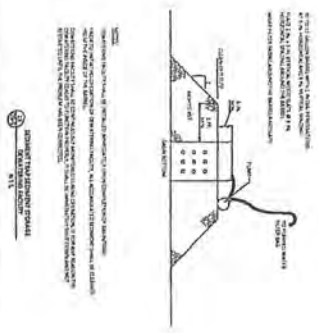
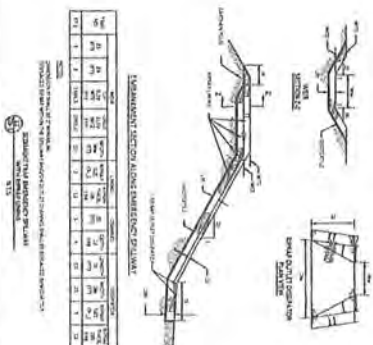
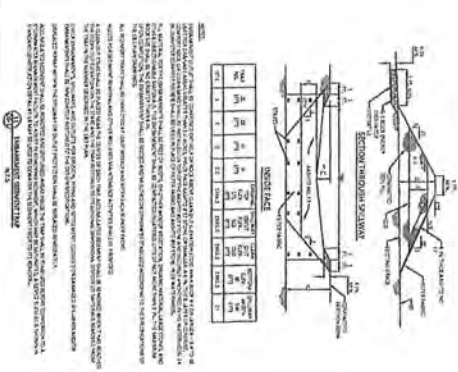
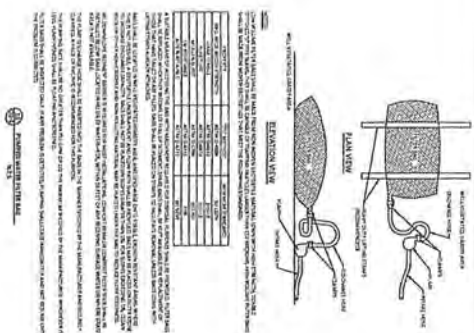
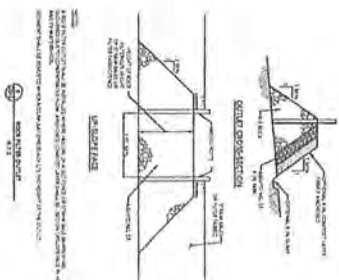
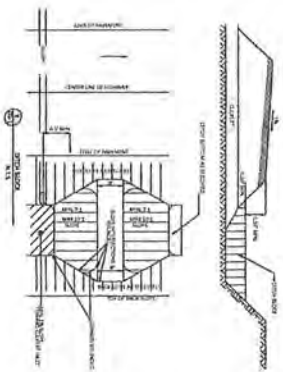
FOLESTAR
 1000 W. 10TH STREET
 PITTSBURGH, PA 15204
 PHONE: (724) 500-4399 FAX: (724) 500-4328
 AUTOCAD 2010
 LAYOUT: 11/19/2010

THIS DRAWING IS FOR THE EROSION AND SEDIMENTATION CONTROL PLAN/PERMIT ONLY.

WINDFALL OIL & GAS
ZELMAN NO. 1 WELL

EROSION AND SEDIMENTATION CONTROL PLAN	
Project Number:	221MAN
Drawing Scale:	1"=40'
Date Issued:	4/13/2018
Index Number:	-
Drawn By:	RAS
Checked By:	JAA
Project Manager:	VBB
ES-1	

POLESTAR
ENGINEERING SUPPLYING DIAMONDS
PH: (717) 550-4190 FAX: (717) 550-4128
400 DIXON BLVD.
UNIONTOWN, PA 15401



THIS DRAWING IS FOR THE EROSION AND SEDIMENTATION CONTROL PLAN/PERMIT ONLY.

REVISION RECORD	
Date	Revision

WINDFALL OIL & GAS
ZELMAN NO. 1 WELL

BRADY TOWNSHIP, CLEARFIELD COUNTY
PENNSYLVANIA

DS-3

POLESTAR
ENGINEERING & SURVEYING, INC.
NORWICH, CT 06250-1100
400 ECHO BLVD.
LAKESIDE, PA 15458

Monitoring Program Zelman #1 Injection Well

Injection Fluid Samples

A representative sample of the injection fluids will be collected and analyzed by a certified laboratory annually unless a change in the injection fluid is anticipated. In which case, Windfall Oil & Gas Inc. will submit a new analysis and wait for approval prior to injection. The analysis will consist of the following parameters:

PH	Aluminum
Alkalinity	Barium
Specific Conductance	Calcium
T. Dissolved Solids	Iron
Chlorides	Magnesium
Potassium	Manganese
Total suspended solids	Sodium
Sulfate	Strontium

A copy of each analysis will be supplied to the EPA. The initial sample analysis are included in attachment H of this application.

Injection Pressures, Rate and Volume

The tubing and annulus pressure will be continuously monitored with a 2 pen recorder. Annulus pressure will be monitored to ensure that mechanical integrity is being maintained during injection. Flow rates will be monitored with an in line flow meter and cumulative volume will be monitored with a flow meter totalizer, verified with containment level straps. Specific gravity will be measured with a dens-o-meter and bottom-hole pressure will be calculated in real time. Injection pressure, rates and volumes will be observed at a minimum of one time per week and recorded a minimum of one time per month. The above data shall be submitted annually to the EPA on Form 7520-11.

Mechanical Integrity

To demonstrate mechanical integrity in the wellbore; a pressure of 3700 psig will be applied to the 2 7/8 tubing x 4 1/2 casing annulus; this pressure test will be observed and recorded. The test will be witnessed by an EPA representative.

This test will be performed prior to injection and no more than thirty (30) days prior to the fifth and tenth anniversary dates of the permit issuance. Additionally, this test will be performed whenever tubing is pulled, the packer is unseated or a well failure is suspected.

Local Water Sources

Local water sources have been sampled and analyzed by a certified laboratory. The analysis includes the same parameters as for the "injection fluid" listed above. Water samples will be collected and analyzed, annually, from at least four monitoring points identified as 10-9-14; 7-9-13; 2-9-14 and 4-9-19 in the Hydrology report prepared by Resource Management Services Inc. Two additional water sources to be monitored were recommended by RMS however continued access to the supplies has been refused by the water purveyors. The complete Hydrology report is included as attachments D&E.