01630651

RECEIVED
APR 07 2009
COGCC

FORM 15 Rev 6/99

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109

FOR OGCC USE ONLY

EARTHEN PIT REPORT/PERMIT

This form is to be used for both reporting and permitting pits. Rule 903 describes when a Permit with prior approval, or a Report within 30 days, is required for pits. Submit required attachments and forms.

Complete the Attachment Checklist

	Oper	OGCC
Detailed Site Plan	✓	
Topo Map w/ Pit Location	✓	
Water Analysis (Form 25)		
Source Wells (Form 26)		
Pit Design/Plan & Cross Sect	✓	
Design Calculations	✓	
Sensitive Area Determ.		
Mud Program		
Form 2A	✓	

FORM SUBMITTED FOR:

☐ Pit Report ☑ Pit Permit

OGCC Operator Number: 66571
Name of Operator: OXY USA WTP LP
Address: P.O. Box 27757
City: Houston State: TX Zip: 77227-7757

Contact Name and Telephone:
Denny Vigil
No: 970-263-3650
Fax: 970-263-3694

API Number (of associated well): 05-045-10444-00 OGCC Facility ID (of other associated facility):
Pit Location (QtrQtr, Sec, Twp, Rng, Meridian): SENW, Sec. 16, T6S, R97W, 6th P.M.
Latitude: 39.525690 Longitude: -108.228311 County: Garfield

Pit Use: ☑ Production ☐ Drilling (Attach mud program) ☐ Special Purpose (Describe Use):
Pit Type: ☑ Lined ☐ Unlined Surface Discharge Permit: ☐ Yes ☐ No
Offsite disposal of pit contents: ☐ Injection ☐ Commercial Pit/Facility Name: Pit/Facility No:
Attach Form 26 to identify Source Wells and Form 25 to provide Produced Water Analysis results.

Existing Site Conditions

Is the location in a "Sensitive Area?" ☐ Yes ☑ No **Attach data used for determination.**
Distance (in feet) to nearest surface water: 440' ground water: 110' water wells: 8765'

LAND USE (or attach copy of Form 2A if previously submitted for associated well) Select one which best describes land use:

Crop Land: ☐ Irrigated ☐ Dry Land ☐ Improved Pasture ☐ Hay Meadow ☐ CRP
Non-Crop Land: ☑ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe):
Subdivided: ☐ Industrial ☐ Commercial ☐ Residential

SOILS (or attach copy of Form 2A if previously submitted for associated well)

Soil map units form USNRCS survey: Sheet No: 57 Soil Complex/Series No:
Soils Series Name: Parachute-Rhone Loams Horizon thickness (in inches): A: 10 ; B: 15 ; C: 25
Soils Series Name: Horizon thickness (in inches): A: ; B: ; C:

Attach detailed site plan and topo map with pit location.

Pit Design and Construction

Size of pit (feet): Length: 450' Width: 253' Depth: 14' (FreeBoard)
Calculated pit volume (bbls): 214,585 (Freeboard) Daily inflow rate (bbls/day):
Daily disposal rates (attach calculations): Evaporation: 194 bbls/day Percolation: 0 bbls/day
Type of liner material: Reinforced Polyethylene Thickness: 60 Mills

Attach description of proposed design and construction (include sketches and calculations).

Method of treatment of produced water prior to discharge into pit (separator, heater treater, other): Separator
Is pit fenced? ☑ Yes ☐ No Is pit netted? ☐ Yes ☐ No

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Denny Vigil Signed:
Title: Regulatory Analyst Date: 04/02/2009

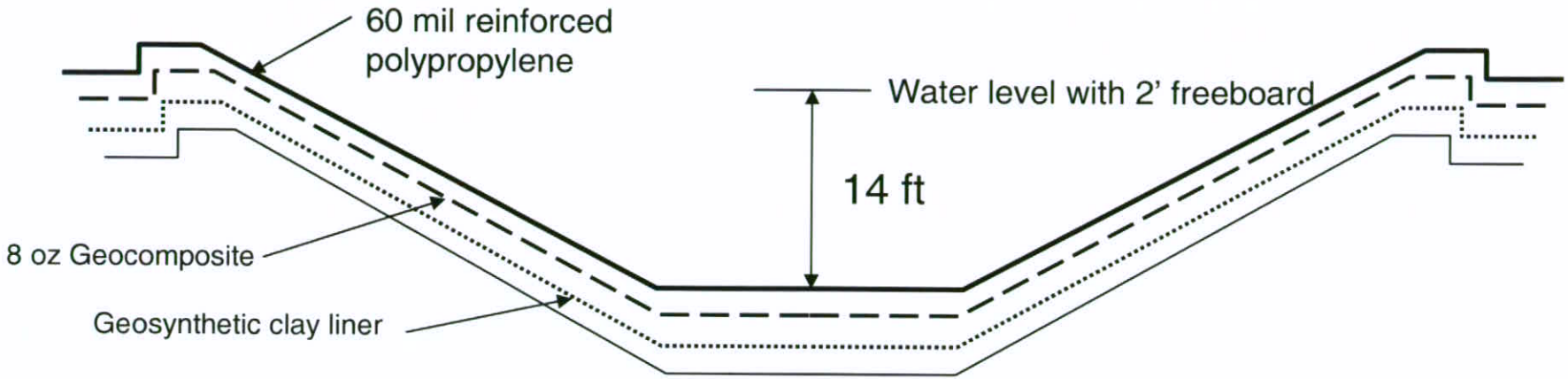
OGCC Approved: Title: EPS - NW Area Date: 11/13/09

CONDITIONS OF APPROVAL, IF ANY:

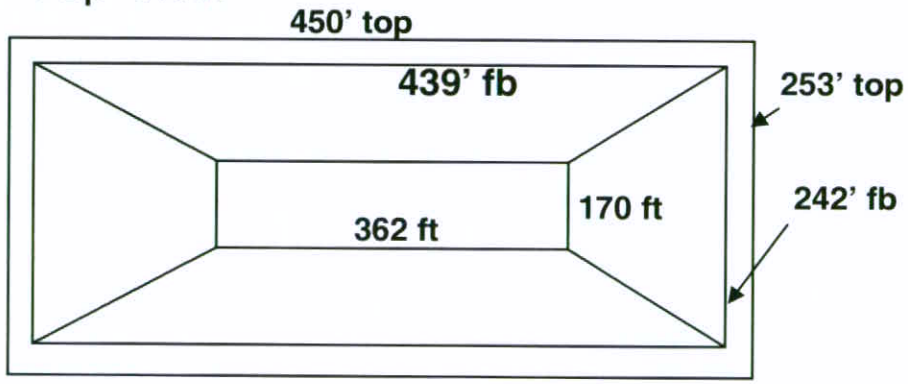
FACILITY NUMBER: 414402

PRODUCTION PIT

Side View



Top View



Volume of Pit = 258,230 bbls (without FB)

Volume Calculation:

$$= \frac{14*[(439*242)+(340*266)+(362*170)]}{3}$$

= ~1,204,910 cu ft = 214,585 bbls (w/2" FB)

OXY USA WTP LP	Production Pit POND G (Garfield County)	
April 02, 2009	Not to scale	Page 1 of 1

Calculations for Earthen Pit Permit Applications

Calculation of Pit Capacities:

Pit capacities were estimated from length and width measured at ground level and at the bottom of the pit. Figure 1 shows the top view with the measured dimensions shown. For non-rectangular shapes, equivalent dimensions were used for volume calculations. For capacity calculations, the depth was reduced by two feet from the total pit depth to allow for a minimum of the required two feet of freeboard.

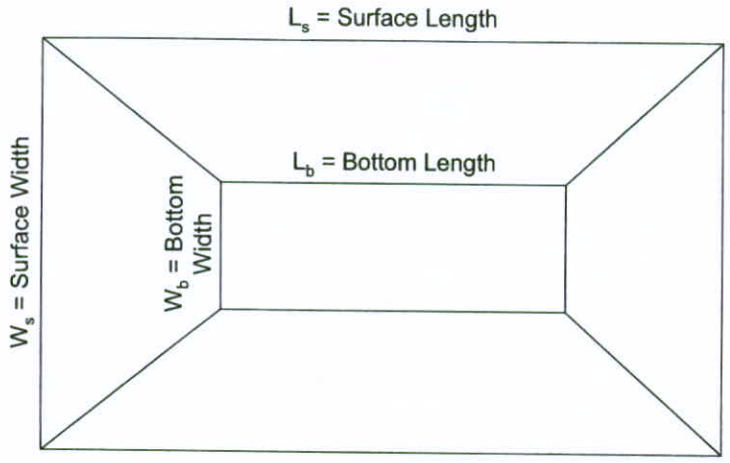


Figure 1. Top View of an earthen pit.

Figure 2 shows the dimensions and calculated terms in a cross-sectional view of a pit. The angle β is calculated from the length and width at the surface and the freeboard depth. Pits are designed to have a 2 (horizontal) to 1 (vertical) slope on the sides. With a ~~2~~ 3 to 1 slope the angle β is ~~63.435~~ 70.0 88° from vertical as shown by the yellow shaded area.

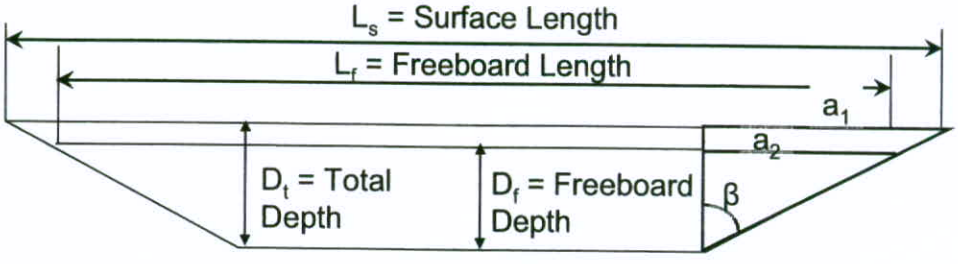


Figure 2. Cross-section of an earthen pit.

A sample calculation is shown based on the construction design for a 2500 barrel pit with a 10-ft depth. The following terms are defined:

L_s = surface length = 80'
W_s = surface width = 50'
L_b = length along bottom = 40'
W_b = width along bottom = 10'
D_t = total depth = 10'
D_f = depth with 2' freeboard (D_t – 2')

The distance a_1 can be calculated from the measured surface lengths:

$a_1 = (L_s - L_b)/2 = (80' - 40')/2 = 20'$

The angle β can be calculated using the two sides of the yellow-shaded triangle.

Tanβ = opposite side/adjacent side = 20'/10' = 2.0 and taking the arctangent, β = 63.435°.

Side a_2 on the smaller yellow triangle can then be calculated using the angle β with the freeboard depth as:

$a_2 = D_f$ * Tangent β = 8'*2.0 = 16'

$L_f = Ls - 2 * (a_1 - a_2) = 80' - 2*(20' - 16') = 72'$

The widths were calculated in the same manner using the same angle β:

$a_1 = (W_s - W_b)/2 = (50' - 10')/2 = 20'$

$a_2 = D_f$ * Tangent β = 8'*2.0 = 16

$W_f = Ws - 2 * (a_1 - a_2) = 50' - 2*(20' - 16') = 42'$

Capacities were calculated using the standard formula for a truncated rectangular pyramid as follows where V is the pit capacity in cubic feet:

$$V = \frac{D_f * \left[L_f * W_f + \left(L_f + W_f/2\right)\left(L_b + W_b/2\right) + L_b * W_b \right]}{3}$$

Substituting example values (all dimensions are in feet) into the volume equation:

$$V = \frac{8 * \left[72 * 42 + (72 + 42/2)(40 + 10/2) + 40 * 10\right]}{3}$$

The resulting volume is 12,930.7 ft^3.

Converting to barrels the capacity is:

Capacity = 12930.7 ft^3/5.61458 ft^3/bbl = 2303 bbls

Freeboard Surface Calculations

Surface Volume at Freeboard Line

The volume at the freeboard line is calculated for a depth of 1 inch using the freeboard length and width and converting to barrels as:

$$\text{SurfaceVolume} = \frac{L_f\,(\text{ft}) * W_f\,(\text{ft}) * (1\text{"depth})}{5.61458\ \text{cu ft/bbl}}$$

For the example calculation:

Surface volume of 1" @ freeboard line = (72')*(42')*(1/12')/5.61458 ft^3/bbl = 45 bbls

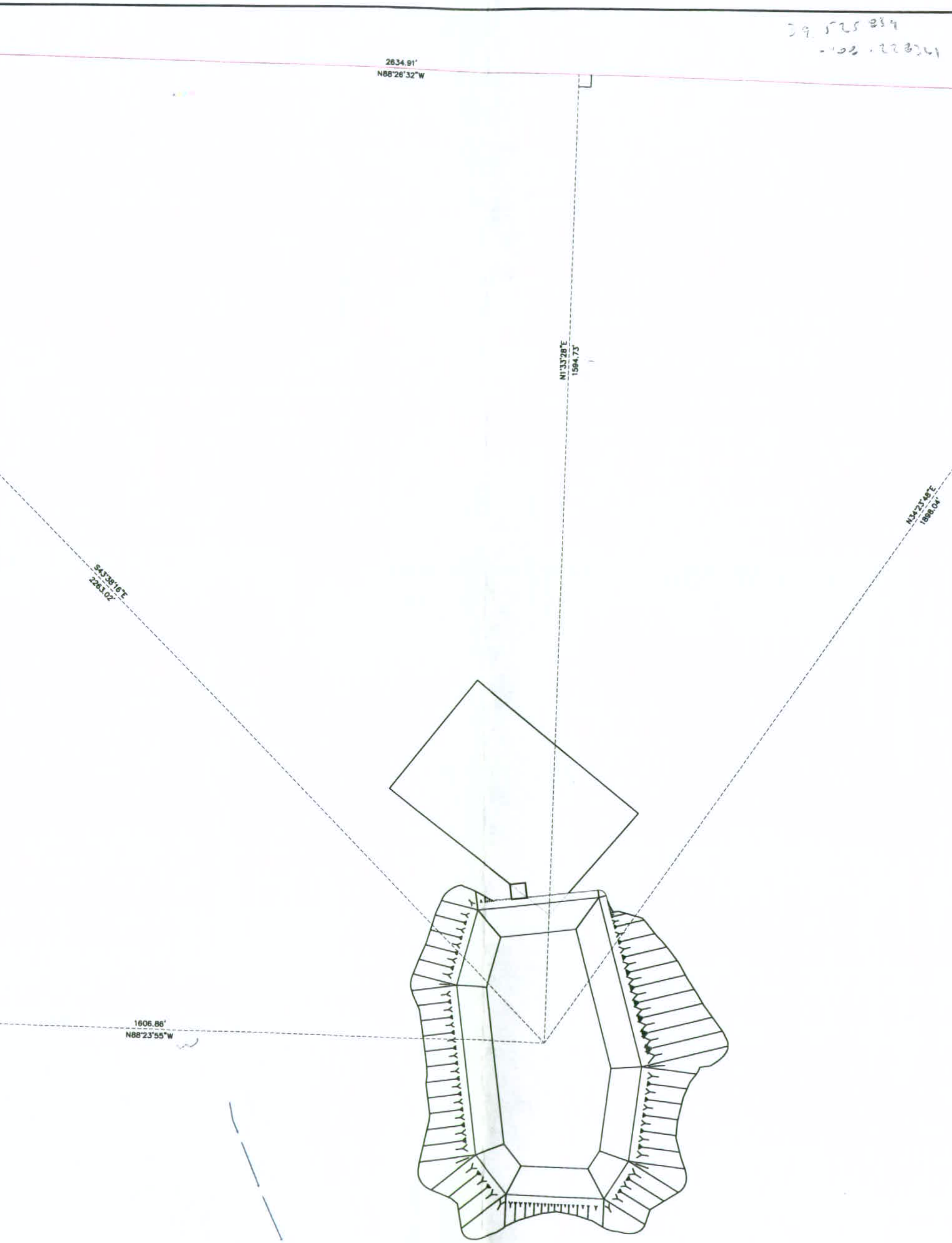
Evaporation Rate

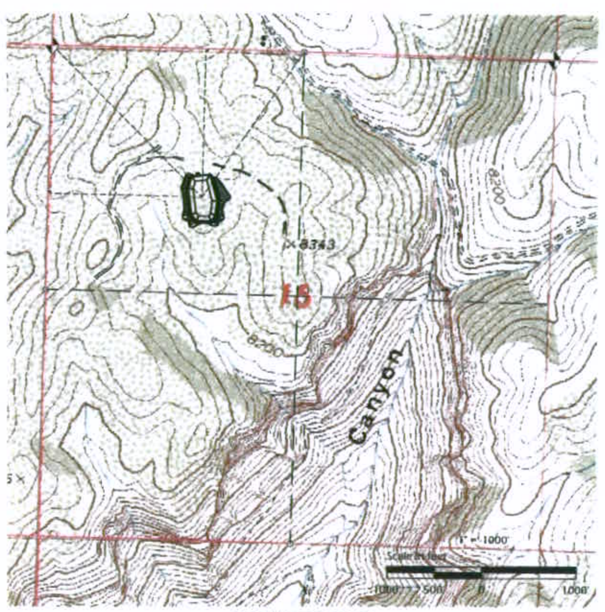
The evaporation rate is calculated from the surface area at the freeboard based on the average evaporation rate for Garfield County of 45 in/yr/sq ft surface area. The evaporation rate in barrels per day is calculated by the equation:

$$\text{Evaporation Rate} = \frac{L_f\,(\text{ft}) * W_f\,(\text{ft}) * (\text{evap rate (in)}/12)}{(365\ \text{days/yr}) * (5.61458\ \text{cu ft/bbl})}$$

Using the sample calculation numbers the evaporation in bbl/day is:

Evaporation rate = (72')*(42')*(45 "/12) / (365 days/yr)*(5.61458 ft^3/bbl) = 5.5 bbl/day





VICINITY MAP

Site Information:

Development site is located within the SE 1/4 NW 1/4 Section 16, Township 6 South, Range 97 West, Garfield County Colorado.

Property Zoning:	RL (Resource Lands)

Please refer to Land Suitability Analysis for additional detail.

Wastewater Treatment:	N/A
Water Service:	N/A

Owner Information:
Surface rights for the subject property are 100% owned by the developer, OXY USA WTP LP.
Developer controls 95% of the mineral rights for the subject property.

Development Information:
Development scope: Such excavation and embankment construction as required by the attached detailed grading plan to create a water holding facility with the holding volume indicated (Approximate dimensions of 520'x300' with depth of 16'). Trenching as required to realign existing sub-surface water and natural gas transmission pipelines. Erosion and sedimentation controls as required to prevent sedimentary debris from exiting the construction site.
Embankment slopes shall be constructed at 3:1.
The excavated cavity shall be lined with an impermeable liner by others following the completion of construction.

Total Disturbed Area: 7.0 Acres (Including Spoils and Topsoil Stockpile locations)

Existing Grade (MSL):	8284 - 8342
Proposed Grade(MSL):	8284 - 8330
Maximum Constructed Height AGL:	10'

General Notes:

1. All construction shall be completed in compliance with the appropriate Garfield County construction standards, including but not limited to; Appendix J, International Building Code; Geologic Hazard Regulations Sec: 5.11 of the Garfield County Zoning Regulations; Colorado Department of Public Health and Environment - Water Quality Control Division; ASTM D-1557-00.
2. Areas to receive embankment shall be stripped of topsoil and vegetative matter, scarified to a minimum depth of 6", and benched per detail J107.3 of the International Building Code prior to placement of embankment.
3. Constructed embankments shall have side slopes of 3:1 or less. Cut slopes shall be 1.5:1 or less (unless supported by documentation from a qualified geotechnical engineer, then slopes may be steepened to a maximum of 1:1).
4. Constructed embankments shall be composed of material not larger than 12" in the largest dimension. Larger materials may be used in the lower levels of large embankments with the authorization of a qualified geotechnical engineer.
5. All embankments greater than 4' in height above existing grade shall be constructed with a 2' wide, 1' deep key into existing soil near the toe of the embankment.
6. The contractor shall be responsible for providing the owner and the engineer test results from a qualified geotechnical engineer demonstrating that the embankments to be constructed as part of this project have been constructed in accordance with ASTM D 1557-00.
7. All temporary and permanent stormwater management devices and practices shall be implemented as soon as practicable.
8. Construction practices shall be consistent with the Garfield County Weed Management and Site Reclamation Requirements. The contractor shall be responsible for provision of the Financial Security associated with the Weed Management and Reclamation Plan.

BASIS OF BEARING/DATUM
A GPS observation from NGS PID AJ3463 (McCARY).

BASIS OF ELEVATION
A GPS observation from NGS PID AJ3463 (McCARY). Elevation is 5174.69'.

DIMENSIONAL TIES
All dimensional ties to section lines are measured at a 90° angle to the section line.

NO	DATE	REVISIONS	BY

DEL-MONT CONSULTANTS, INC.
ENGINEERING • SURVEYING • PLANNING

DESIGNED BY	SCALE	CHECKED BY
MGW	AS NOTED	S.STEVENSON
DRAWN BY	FILE NAME	DATE ISSUED
MGW		2009-02-10

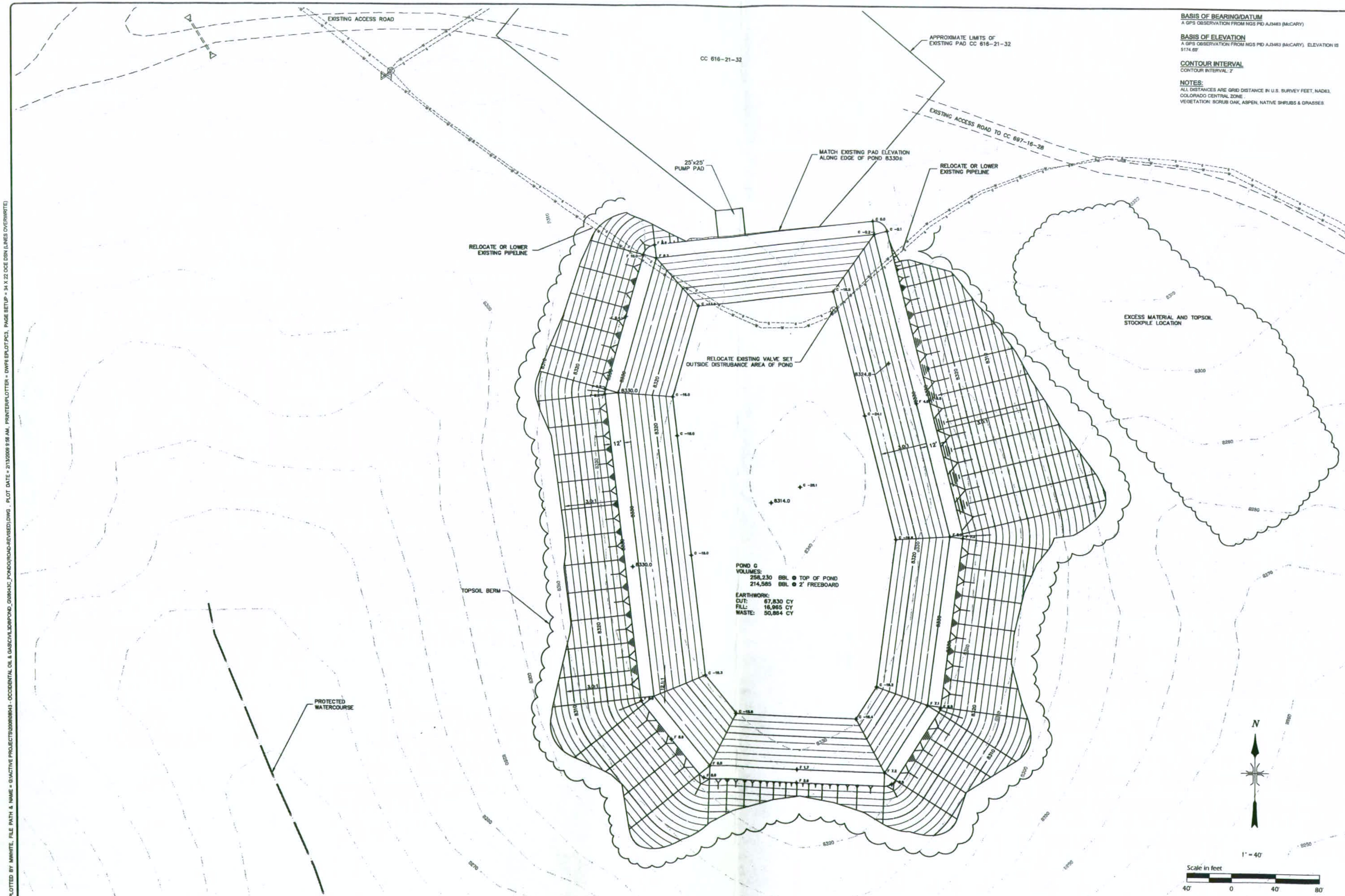
OXY USA WTP LP
POND G
SE1/4 NW1/4 SEC. 16, T6S, R97W, 6TH PM, GARFIELD COUNTY, COLORADO

POND G LOCATION MAP AND SITE DEVELOPMENT NOTES

08043

SHEET NO. 1 OF 2

PLOTTED BY MWHITE, FILE PATH & NAME = G:\ACTIVE PROJECTS\2008\08043 - OCCIDENTAL OIL & GAS\CIVIL3D\POND_G\08043C_PONDG(ROAD-REVISED).DWG , PLOT DATE = 2/13/2009 9:56 AM, PRINTER/PLOTTER = DWF6 EPLOT.PC3, PAGE SETUP = 34 X 22 OCE DSN (LINES OVERWRITE)



BASIS OF BEARING/DATUM
A GPS OBSERVATION FROM NGS PID AJ3463 (McCARY)

BASIS OF ELEVATION
A GPS OBSERVATION FROM NGS PID AJ3463 (McCARY). ELEVATION IS 5174.69'

CONTOUR INTERVAL
CONTOUR INTERVAL: 2'

NOTES:
ALL DISTANCES ARE GRID DISTANCE IN U.S. SURVEY FEET, NAD83, COLORADO CENTRAL ZONE.
VEGETATION: SCRUB OAK, ASPEN, NATIVE SHRUBS & GRASSES

NO	DATE	REVISIONS	BY

DEL-MONT CONSULTANTS, INC.
ENGINEERING • SURVEYING • PLANNING

DESIGNED BY	SCALE	CHECKED BY
MGW	AS NOTED	S.STEVENSON
DRAWN BY	FILE NAME	DATE ISSUED
MGW	08043C_PONDG(ROAD-REVISED).DWG	2009-02-10

OXY USA WTP LP
POND G
SE1/4 NW1/4 SEC. 16, T6S, R97W, 6TH PM, GARFIELD COUNTY, COLORADO

POND G GRADING, DRAINAGE & ACCESS PLAN

DMC JOB NO. 08043

SHEET NO. 2 OF 2 SHEETS

OXY USA WTP LP
760 Horizon Drive, Suite 101
Grand Junction, CO 81506

OXY Cascade Creek Operations
Garfield County, Colorado
0 0.0375 0.075 0.15 Miles

008
009
017
016

CC 609-14
CC 697-09-61
CC 616-21-32
CC 697-16-28
CC 697-16A

POND G
SENW, Sec 16
T6S, R97W, 6th PM

8343
16
8200

Existing Pad
Proposed Location of Pond G
Guard Shack
OXY owned roads
Unimproved Public Road
Gravel Public Road
Paved Public Road