Appendices

Appendix 3 – Turkey Track - Recycling Containments Geotechnical/Boring Report

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ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

Soils Investigation

Turkey Track Produced Water Ponds
Eddy County, New Mexico

Debra P. Hicks, PE/LSI
NM 10871

PREPARED FOR:

Oxy USA, Inc.
Permian Central Field Location
Attn: Clemente Vasquez, Project Manager
Midland, TX 79705

LAB No. 17 4111
PROJECT No. 2017.1064

May 3, 2017

PREFACE

This report is generated specifically for the purpose of providing design criteria for the Turkey Track Produced Water Ponds – Eddy County, NM. Under no circumstances shall it be used for any other project on or off the site. This report is meant to provide information that will inform Oxy USA, Inc. of appropriate design criteria for the planned use. The conditions encountered in field exploration and reported herein are accurate for the test location(s), time and conditions. It is not meant to eliminate the uncertainty regarding the potential for variation or changes in subsurface conditions at the site. Subsurface descriptions contained herein are of a generalized nature to provide highlights of major strata and conditions revealed in the soil samples, however it represents only the conditions at the actual boring locations.

Debra P. Hicks, PE/LSI

NM 10871

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Soils Investigation

Introduction

This report presents the results of the field and laboratory soils investigation for the Turkey Track Produced Water Ponds – Eddy County, NM. This investigation was performed at the direction and authorization of Mr. Clemente Vasquez of Oxy USA, Inc.

The purpose of this investigation is to determine the characteristics of the subsoils and provide recommendations for foundation design. This report provides an overview of existing geotechnical/geologic conditions at the proposed site and geotechnical design parameters for the proposed facilities. The geotechnical site conditions presented herein are based on our field exploration. This report does not include environmental site characterization, hazardous materials testing, or other environmental services.

Proposed Development

Oxy USA, Inc. proposes to build two produced water ponds 272' x 380'. Each pond will have an approximate capacity of 250,000 bbls (not including the 3' of freeboard).

Field Exploration

Five (5) exploratory borings were drilled April 4, 2017. The exploratory borings were drilled to approximate depths listed in Table 1 of this Report. Boring locations are shown on the Boring Location Map. Drilling was carried out using a truck-mounted drill rig contracted with Enviro-Drill, Inc. – Albuquerque, New Mexico. Field sampling and logging was provided by Tetra Tech. Boreholes were backfilled with bentonite grout upon completion of sampling.

TABLE – 1 Boring Dates and Depths

Boring	Date Drilled	Depth (Feet)
BH-1	4/4/17	30'0"
BH-2	4/4/17	30'0"
BH-3	4/4/17	30'0"
BH-4	4/4/17	30'0"
BH-5	4/4/17	80'0"

Subsurface materials were sampled at varying intervals by split spoon sampler and/or drill cuttings where applicable.

Air-rotary/auger drilling methods were employed to cut the test borings. During the drilling, the soils encountered were continuously examined, visually classified and, where applicable, sampled.

Standard penetration tests (SPT) were performed at varying depths. Penetration resistance was measured in accordance with ASTM D 1586 by driving a standard 2" split tube sampler having a 30" free fall drop hammer weighing 140 pounds. The penetration resistance value is a useful index in estimating the consistency, relative density or hardness of the materials encountered.

Laboratory Analysis

Representative samples were tested in the laboratory to determine certain engineering properties of the soils. Mechanical analysis and soil constant determinations were performed for classification and identification of each soil type encountered. Classifications are in accordance with the Unified Soil Classification System ASTM D 2487. The results of the laboratory tests are presented on the Logs.

The following tests were conducted on selected soil samples:

- Moisture Content
- Sieve Analysis
- Atterberg Limits

Site Conditions

The Turkey Track Ponds are located in north half of Section 8 in Township 19 South and Range 28 East. This site is currently undeveloped. The surface has native vegetation.

Subsurface Soil Conditions

Stratigraphy

In general, the site consists of up to 7′ of sand. This sand is underlain by approximately 6′ of caliche. Below the caliche is 6′ of sand and/or clay underlain by a 20′ thick layer of hard fat clay. The advantage of the thick clay layer is that upon the unlikely event of a liner leak, the clay will serve as a barrier minimizing contamination of the groundwater.

Groundwater

Groundwater was not encountered in any of the borings that were advanced to a maximum depth of 80′ below ground surface.

Discussion and Recommendations

The following discussion and recommendations are based upon the results of field and laboratory testing, engineering analyses, experience with similar soil conditions, and our understanding of the proposed project.

Site Work

In general, field test results indicate that the silty sands vary from very loose at the surface to very dense in relative density as indicated by measured SPT-N Values of 4 blows in 12″ to 50 blows per 2″. Very dense materials (N>30) were encountered at 10′0″ below ground surface. Based on the results of the field investigation, excavations within the soil matrix and cemented zones may be difficult.

Recommendations

1) **CLEARING AND GRUBBING:** All vegetation and other deleterious materials should be removed from the construction site prior to construction activities. Stripped materials consisting of vegetation and organic materials (estimated depth of 8") should be wasted from the site, or stockpiled for reuse during pit closure. Deleterious material should be removed from the site.

2) **EXISTING MATERIALS:** The pits are anticipated to be approximately 13' to 22' below ground. The general contractor will excavate the insitu soils to the depths and grades shown on the construction plans. The surface soils will be stockpiled and stored onsite while the caliche materials can be stockpiled for use in construction of berm walls, roads, pads, etc.

3) **SUBGRADE PREPARATION:** All soils that are to receive foundation elements including primary liner and dike should be scarified a minimum of 10" and compacted, at approximately optimum moisture (plus 2% to minus 2%), to not less than 95% of Laboratory Density as determined by ASTM D 698. The entire site should then be proofrolled to observe for unsuitable or weak soils. At least five passes with a heavy vibratory roller should be made during proofrolling. Soft materials or loose soils indicated during proofrolling should be stripped or further compacted. Areas of subgrade in which pumping or significant deflections are observed should be removed or stabilized. Use of lime, fly ash, kilm dust, cement or geotextiles could be considered as a stabilization technique.

4) All fill and/or backfill be placed in lifts not to exceed 8" (loose), and compacted at approximately optimum moisture (plus 2% to minus 2%), to not less than 95% of Laboratory Density as determined by ASTM D 698.

5) **ENGINEERED FILL:** Materials for Engineered Fill shall be composed of an appropriate combination of crushed stone, crushed or screened gravel, caliche, and/or sand to meet the specifications contained herein. Materials shall be free from vegetable matter and all other deleterious materials, including silt and clay balls.

Size	Cumulative % Passing
2"	100
½"	30-80
#4	20-60
#200	5-20

Liquid Limit	35 max
Plasticity Index	4 min to 15 max

6) All imported fill material shall be from same source.

7) **CONTROLLED FILL:** Unless otherwise provided for in the specifications, materials to be used for non-load bearing dike embankment (controlled fill) shall be constructed with moisture and density control as specified herein. Materials for controlled fill shall have a maximum particle size of two and one-half (2-1/2) inches, and a plasticity index of four (4) minimum to fifteen (15) maximum. The liquid limit shall not exceed thirty-five (35).

8) **PRIMARY LINER BEDDING:** Upon completion of pit excavation and subgrade preparation, a site inspection shall be conducted to determine the need for bedding beneath the liner. In accordance with liner installation guidelines, subgrade shall be free of rocks, roots, and other protruding objects. All loose or disturbed material soil shall be removed from bearing surface. According to the New Mexico Administrative Code, geotextile is required under the liner when needed to reduce localized stress-strain or protuberances that otherwise may compromise the liner's integrity.

9) **SUITABILITY OF EXISTING SOILS FOR ENGINEERED FILL:** At the request of the contractor, suitability of existing soils may be determined based upon laboratory test results and the intended use.

10) **MOISTURE PROTECTION:** Positive drainage should be established away from the pit during and after construction. The ground immediately adjacent to the pit shall be sloped away from the dike at a slope not less than 5% for a minimum of 10'. In no case should long-term ponding of water be allowed around the perimeter of the dike.

11) **PORTLAND CEMENT CONCRETE:** Portland Cement Concrete shall be proportioned in accordance with ACI 211.1-81; all portland cement shall be an approved American (USA) brand conforming to ASTM C150, Type II, or Type V with Class F flyash, where concrete is to be placed against high sulfate content soils, low alkali; and, all exposed Portland Cement Concrete or Portland Cement Concrete slabs on grade shall be air entrained.

12) **OSHA EXCAVATIONS:** Temporary construction slopes should be designed and excavated in strict compliance with the rules and regulations of the Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA), 29 CFR, Part 1926. This document was prepared to better insure the safety of workers entering trenches or excavations, and requires that all excavations conform to the new OSHA guidelines.

The contractor is solely responsible for protecting excavations by shoring, sloping, benching or other means as required to maintain stability of both the excavation sides and bottom. Pettigrew & Associates, P.A. does not assume any responsibility for construction site safety or the activities of the contractor.

For this site, the overburden soil encountered in our exploratory borings consisted of mostly sand, OSHA classification Type C. OSHA recommends a maximum slope inclination of 1.5H:1V for Type C soils. Excavation requirements will vary depending on the actual soil conditions in some areas. Temporary construction slopes should be closely observed for signs of mass movement, such as tension cracks near the crest, bulging at the toe of the slope, etc.

Construction Quality Assurance

Pettigrew & Associates shall perform construction observation and testing of the following:

- Subgrade preparation and proof-rolling;
- Suitability of Engineered fill and controlled fill;
- Backfill and compaction of excavations;
- Fill placement and compaction; and
- Compliance with the geotechnical recommendations.

Testing Frequency

Subgrade (Insitu soils) - One (1) soil density every 2500 square feet of prepared surface for dike or pit bottom and side slopes (ASTM D 698 and ASTM D 2922)

Engineered Fill/Primary Liner Bedding - One (1) soil density every 2500 square feet of prepared pit surface including bottom and side slopes per compacted lift (ASTM D 698 and ASTM D 2922)

Controlled Fill - One (1) soil density every 150 lineal feet of dike per lift of compacted material (ASTM D 698 and ASTM D 2922)

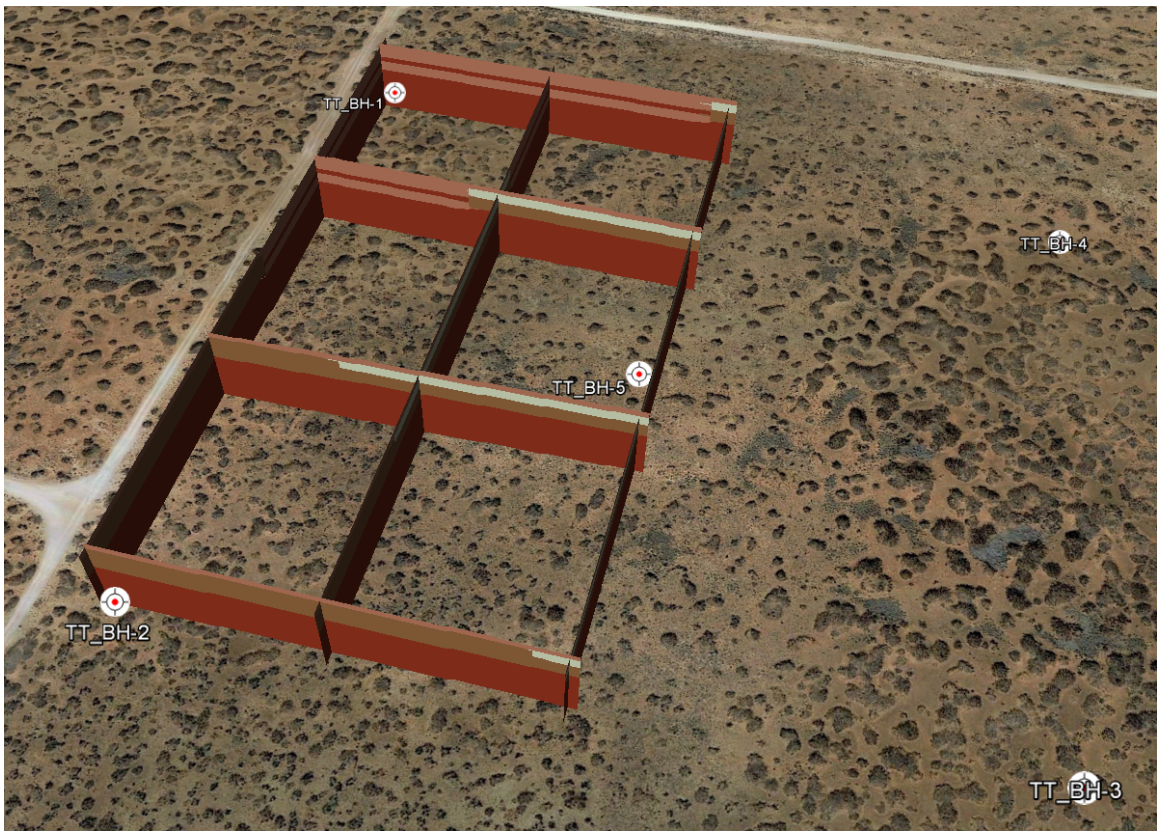
One (1) sieve analysis and plasticity index per material (subgrade, engineered fill, controlled fill) (ASTM C 136 and ASTM D 4318)

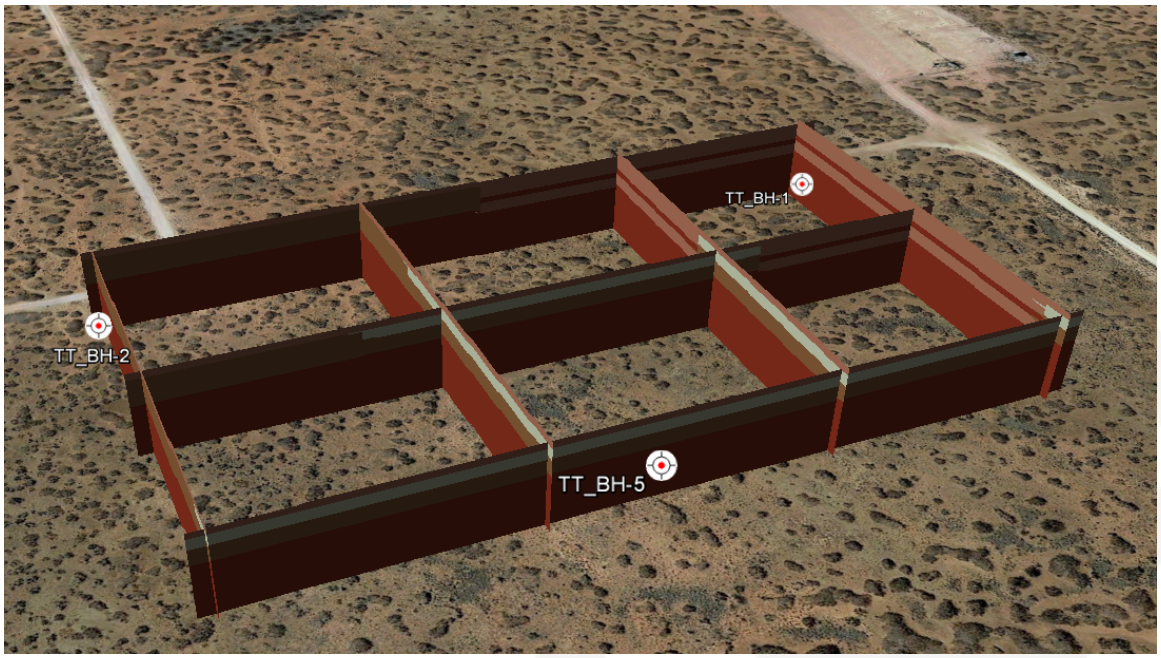
One (1) moisture density determination (proctor) per each type of material (ASTM D 698)

Closure

Our conclusions, recommendations and opinions presented herein are based upon our evaluation and interpretation of the findings of the field and laboratory investigation. **If during construction, conditions are found to be other than those presented in this report, this office should be consulted.**

Boring Location Map


TT_BH-1
TT_BH-4
TT_BH-5
TT_BH-2
TT_BH-3


TT_BH-1
TT_BH-2
TT_BH-5

Logs and Summaries

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-1

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.679650 -104.097830
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3391.81'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	30'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
0			15	Reddish Brown Silty Clayey Sand	SC-SM	--	100	100	100	97	30.8	23	16	7	2,510		
			23												4,280		
5			50/3"												>8,000		
			50/3"	Tan Clayey Sand (Caliche)	SC	--	100	98	96	89	39.7	43	17	26	>8,000		
10			43												>8,000		
15				Red Sandy Fat Clay													

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

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DEFINING QUALITY SINCE 1965

BORING NO.: BH-1

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.679650 -104.097830
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3391.81'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	30'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
15					CH	--	100	96	89	81	51.4	51	24	27			
			51												>8,000		
20				Reddish Brown Silty Sand													
			21		SM	--	100	100	100	98	19.1	SNP	SNP	SNP	3,840		
25																	
			32												6,260		
30																	

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

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ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-2

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.677400 -104.097830
SURFACE ELEVATION: 3393.79'
BOREHOLE DEPTH: 30'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
0				Reddish Brown Silty Clayey Sand	SC-SM	--	100	100	100	97	30.8	23	16	7			
			13	Tan Clayey Sand (Caliche)											2,760		
			15		SC	--	100	98	96	89	39.7	43	17	26	3,350		
5				Red Silty Sand													
			13												2,070		
			20												3,620		
10																	
			34												6,700		
15																	

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

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ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-2

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.677400 -104.097830
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3393.79'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	30'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
15					SM	--	100	100	100	94	12.5	SNP	SNP	SNP			
			39												7,800		
20																	
			76												>8,000		
25																	
			50/5"	Red Fat Clay	CH	--	100	100	100	100	98.9	60	23	37	>8,000		
30																	

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

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DEFINING QUALITY SINCE 1965

BORING NO.: BH-3

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.677520 -104.094940
SURFACE ELEVATION: 3392.82'
BOREHOLE DEPTH: 30'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
0				Reddish Brown Silty Clayey Sand	SC-SM	--	100	100	100	97	30.8	23	16	7			
			13	Tan Clayey Sand (Caliche)	SC	--	100	98	96	89	39.7	43	17	26	2,760		
5			18												4,230		
			50/5"	Red Silty Sand											>8,000		
			50/6"												>8,000		
10					SM	--	100	100	100	94	12.5	SNP	SNP	SNP			
			52												>8,000		
15																	

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

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ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-3

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.677520 -104.094940
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3392.82'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	30'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
15																	
				Reddish Brown Silty Sand													
			50/6"		SM	--	100	100	100	98	19.1	SNP	SNP	SNP	>8,000		
20																	
			50/6"												>8,000		
25																	
			50/6"	Red Fat Clay	CH	--	100	100	100	100	98.9	60	23	37	>8,000		
30																	

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-4

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.679460 -104.095050
SURFACE ELEVATION: 3391.78'
BOREHOLE DEPTH: 30'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
0				Reddish Brown Silty Clayey Sand													
			13		SC-SM	5.7	100	100	100	97	30.8	23	16	7	2,070		
			25												4,720		
5			42	Tan Clayey Sand (Caliche)											>8,000		
			76		SC	5.8	100	98	96	89	39.7	43	17	26	>8,000		
10																	
			50/5"	Red Sandy Fat Clay											>8,000		
15																	

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

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DEFINING QUALITY SINCE 1965

BORING NO.: BH-4

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.679460 -104.095050
SURFACE ELEVATION: 3391.78'
BOREHOLE DEPTH: 30'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
15					CH	9.6	100	96	89	81	51.4	51	24	27			
			50/5"												>8,000		
20				Reddish Brown Silty Sand	SM	2.8	100	100	100	98	19.1	SNP	SNP	SNP			
			64												>8,000		
25																	
				Red Fat Clay	CH	--	100	100	100	100	98.9	60	23	37			
30			50/5"												>8,000		

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.678530 -104.096470
SURFACE ELEVATION: 3394.26'
BOREHOLE DEPTH: 80'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
0			4	Reddish Brown Silty Clayey Sand	SC-SM	--	100	100	100	97	30.8	23	16	7	90		
			50/4"	Tan Clayey Sand (Caliche)											>8,000		
			38		SC	--	100	98	96	89	39.7	43	17	26	>8,000		
5			45	Reddish Tan Silty Sand											>8,000		
			46												>8,000		
10					SM	4.9	100	82	70	56	36.7	29	23	6			
			49												>8,000		
15																	

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.678530 -104.096470
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3394.26'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	80'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
15				Red Silty Sand													
			34		SM	1.6	100	100	100	94	12.5	SNP	SNP	SNP	>8,000		
20																	
			61												>8,000		
25																	
			62	Red Fat Clay											>8,000		
30																	

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

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ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

CLIENT: Oxy Occidental Petroleum Corporation
PROJECT NAME: Turkey Track
PROJECT NO.: 2017.1064
DATE DRILLED: 4/4/17

COORDINATES: 32.678530 -104.096470
SURFACE ELEVATION: 3394.26'
BOREHOLE DEPTH: 80'0"
DEPTH TO WATER: N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA									BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
						% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)			
30																	
			50												>8,000		
35																	
					CH	16.7	100	100	100	100	98.9	60	23	37			
			51												>8,000		
40																	
45																	

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.678530 -104.096470
PROJECT NAME:	Turkey Track	**SURFACE ELEVATION:**	3394.26'
PROJECT NO.:	2017.1064	**BOREHOLE DEPTH:**	80'0"
DATE DRILLED:	4/4/17	**DEPTH TO WATER:**	N/A

DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
50			50/5"	Reddish Brown Clayey Sand	--	4.4	100	88	77	65	26.1	--	--	--	>8,000		
55																	
60			50/3"	Red Clayey Sand											>8,000		

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

CLIENT:	Oxy Occidental Petroleum Corporation	**COORDINATES:**	32.678530 -104.096470
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65																	
70			50/2"		--	13.5	100	97	93	84	33.3	--	--	--	>8,000		
75																	

SPLIT SPOON SAMPLE AIR ROTARY WATER SHELBY SAMPLE

PETTIGREW & ASSOCIATES PA

ENGINEERING | SURVEYING | TESTING

DEFINING QUALITY SINCE 1965

BORING NO.: BH-5

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DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	LABORATORY TEST DATA: % MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	qu (psf)	SHEAR STREGTH (tsf)
80			50/2"												>8,000		

SPLIT SPOON SAMPLE | AIR ROTARY | WATER | SHELBY SAMPLE

APPENDIX A – UNIFIED SOIL CLASSIFICATION

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very Stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

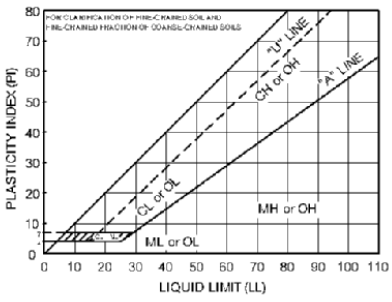
1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. they are not guaranteed to be representative of subsurface conditions at other locations or times.

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained soils (more than half the material is larger than No. 200 sieve size)	Gravels (more than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. greater than 7
	Sands (more than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly-graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits below "A" line or P.I. greater than 7
Fine-Grained soils (more than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, organic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly Organic Soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain size curve, Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:
Less than 5 percent..... GW, GP, SW, SP
More than 12 percent..... GM, GC, SM, SC
6 to 12 percent..... Borderline cases requiring dual symbols**



Plasticity Chart

Particle Size	Material	mm	Sieve sizes
	Silt or Clay	< 0.074	< #200
	Sand	0.074 to 4.76	# 200 to # 4
	Fine	0.074 to 0.42	# 200 to # 40
	Medium	0.42 to 2.00	# 40 to #10
	Coarse	2.00 to 4.76	#10 to #4
	Gravel	4.76 to 76.2	#4 to 3 in.
	Fine	4.76 to 19.1	#4 to 3/4 in.
	Coarse	19.1 to 76.2	3/4 in. to 3 in.
	Cobble	76.2 to 304.8	3 in. to 12 in.
	Boulders	304.8 to 914.4	12 in. to 36 in.

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 23 or less; the suffix is used when L.L. is greater than 25.

** Borderline classifiactions used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

APPENDIX B – TERMINATION

TERMINOLOGY USED TO DESCRIBE THE RELATIVE DENSITY,
CONSISTENCY, OR FIRMNESS OF SOILS

The terminology used on the boring logs to describe the relative density, consistency, or firmness of soils relative to the standard penetration resistance is presented below. The standard penetration resistance (N) in blows per foot is obtained by ASTM D1586 procedure using 2" O.D., 1-3/8" I.D. samplers.

1. Relative Density. Terms for description of relative density of cohesionless, uncemented sands and sand-gravel mixtures.

N	Relative Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
50+	Very Dense

2. Relative Consistency. Terms for the description of clays which are saturated or near saturation.

N	Relative Consistency	Remarks
0 - 2	Very Soft	Easily penetrated several inches with fist
3 - 4	Soft	Easily penetrated several inches
5 - 8	Medium Stiff	Can be penetrated several inches with thumb with moderate effort
9 - 15	Stiff	Readily indented with thumb, but penetrated only with great effort
16 - 30	Very Stiff	Readily indented with thumbnail
30+	Hard	Indented only with difficulty with thumbnail

3. Relative Firmness. Terms for the description of partially saturated and/or cemented soils which commonly occur in the Southwest including clays cemented granular materials, silts, and silty and clayey granular soils.

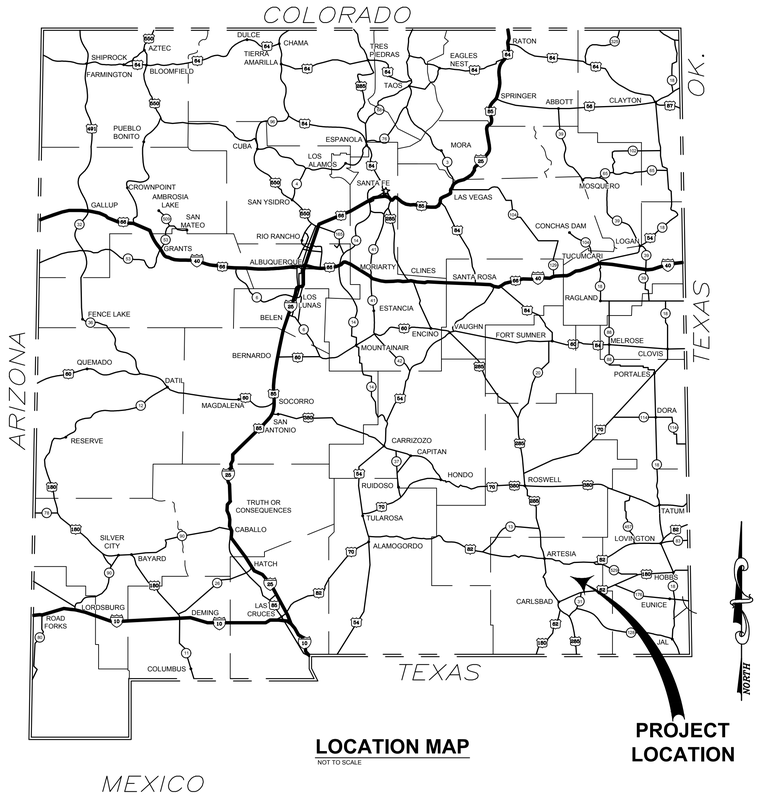
N	Relative Firmness
0 - 4	Very Soft
5 - 8	Soft
9 - 15	Moderately Firm
16 - 30	Firm
31 - 50	Very Firm
50+	Hard

Appendices

Appendix 4 – Turkey Track - Recycling Containments Engineering Drawings

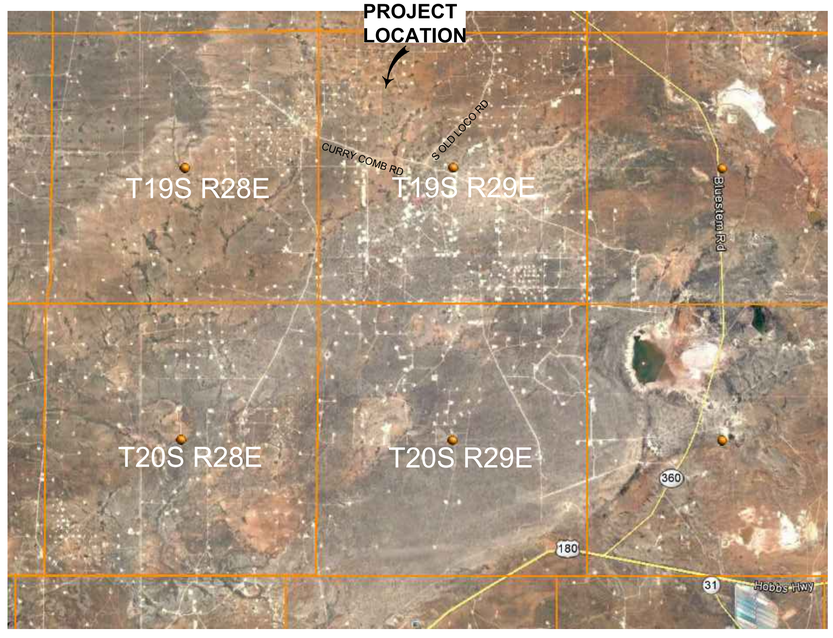
TURKEY TRACK
RECYCLING CONTAINMENT
OXY U.S.A. INC.
EDDY COUNTY, NEW MEXICO
S8 T19S R29E

INDEX OF DRAWINGS



LOCATION MAP
NOT TO SCALE

PROJECT LOCATION



VICINITY MAP
NOT TO SCALE

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

FLOOD NOTE

THIS PROJECT IS LOCATED IN ZONE X AS DESCRIBED IN FEMA FIRM PANEL 35015C0625D, WITH EFFECTIVE DATE OF JUNE 4, 2010

CONTACTS

OWNER
CLEM VASQUEZ
Sr. FACILITIES ENGINEER
OXY PERMIAN RESOURCES
DELAWARE BASIN OPERATIONS
1502 W. COMMERCE DRIVE
CARLSBAD, NM 88220
C: (575)-200-7356 I O: (575)-628-4133
clemente_vasquez@oxy.com

CIVIL ENGINEERING
PETTIGREW & ASSOCIATES, P.A.
100 E NAVAJO DRIVE, SUITE 100
HOBBS, NM 88240
(575) 393-9827
CLAUDIUS SANCHEZ CZYZEWSKA, PE

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

CLAUDIUS SANCHEZ CZYZEWSKA NEW MEXICO 22897 PROFESSIONAL ENGINEER
05/09/2017

PROJECT ENGINEER: Claudius Sanchez Czyzewska, PE
PROJECT DESIGNER: Juan C. Saenz, EIT
DRAWN BY: JCS

REVISIONS

No.	DATE	DESCRIPTION

COVER SHEET

TURKEY TRACK
RECYCLING
CONTAINMENT
OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER: 2017.1064

SHEET: C-001

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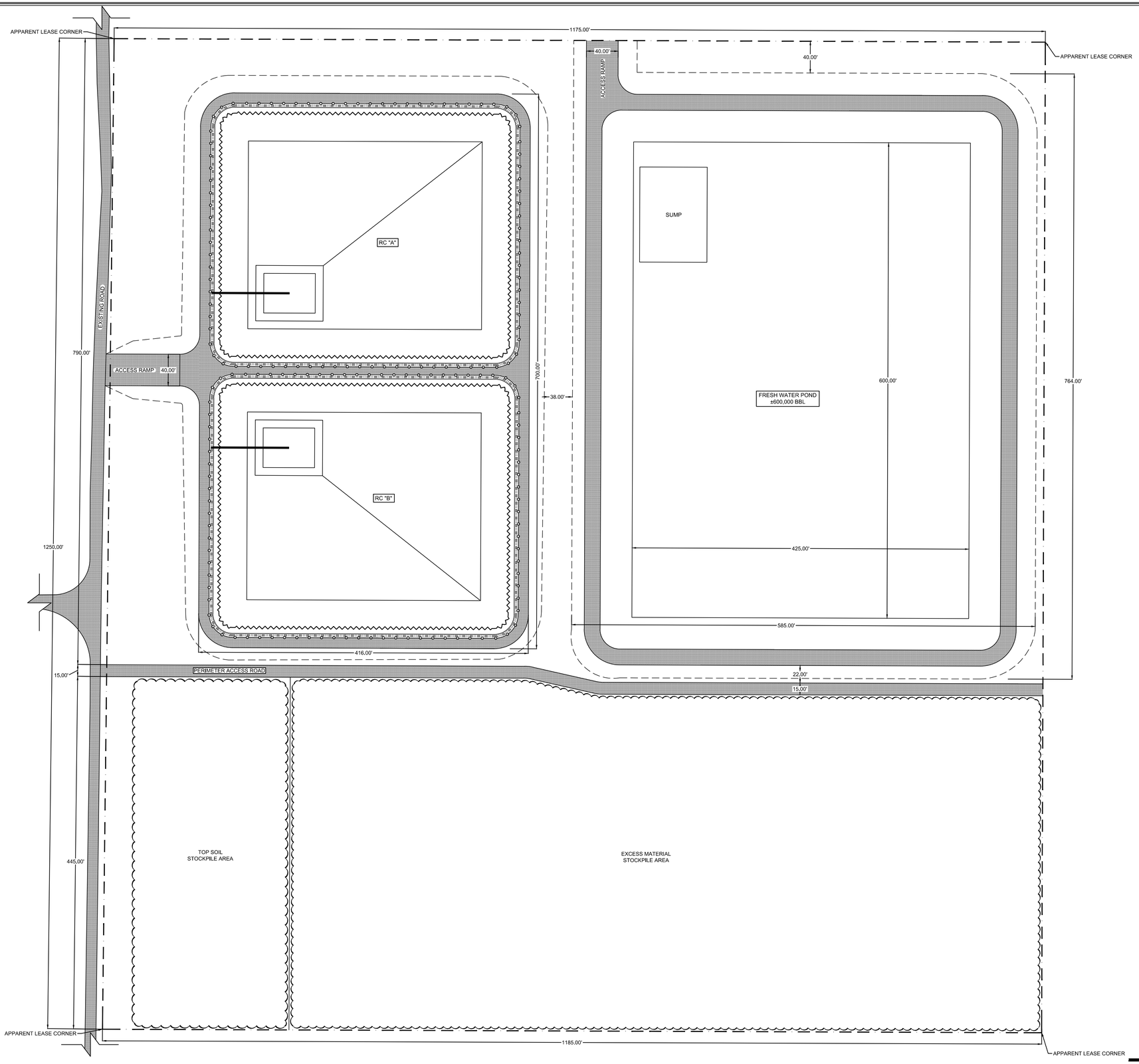

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

05/09/2017

PROJECT ENGINEER:	Claudius Sanchez Czyzewska, PE
PROJECT DESIGNER:	Juan C. Saenz, EIT
DRAWN BY:	JCS

LEGEND

- GRADING LIMITS
- DRIVING SURFACE
- 3' FREEBOARD DEPTH
- CONTAINMENT FENCE
- ANCHOR TRENCH
- APPARENT LEASE PROPERTY

REVISIONS

No.	DATE	DESCRIPTION

OVERALL SITE LAYOUT

TURKEY TRACK RECYCLING CONTAINMENT OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER: 2017.1064

SHEET: CS-100

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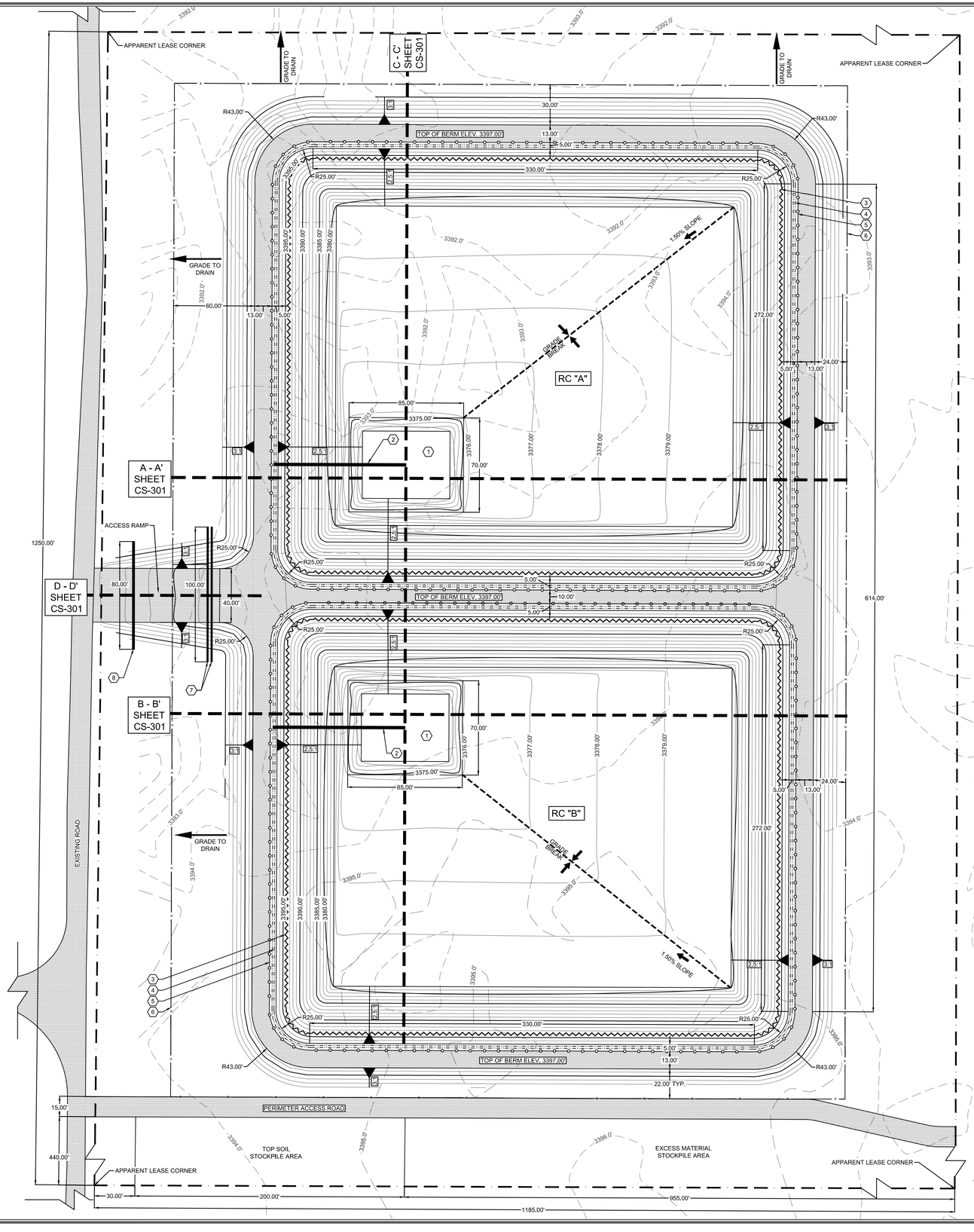

GENERAL NOTES

1. THE PROPOSED DESIGN IS BASED ON TOPOGRAPHIC AND BOUNDARY INFORMATION OBTAINED FROM JOHN WEST SURVEYING COMPANY, W.O. No.: 17110364 DATED 05/01/2017.
2. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT CONSTRUCTION PLANS OF THE REGISTRATION/PERMIT. NEW MEXICO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION LATEST EDITION SHALL APPLY TO THIS PROJECT.
3. ALL DATA SHOWN HEREIN CONCERNING EXISTING PRIVATE AND/OR PUBLIC OWNED UTILITIES HAVE BEEN OBTAINED FROM THE OWNERS AND/OR FIELD OBSERVATIONS. THESE MAY OR MAY NOT BE ACCURATE. THE CONTRACTOR IS CAUTIONED THAT HE IS RESPONSIBLE FOR THE EXACT LOCATION AND PROTECTION OF ALL LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING, IN ADVANCE OF HIS/HER CONSTRUCTION OPERATIONS, IF OVERHEAD UTILITY LINES, SUPPORT STRUCTURES, POLES, GUYS, ETC. ARE AN OBSTRUCTION TO CONSTRUCTION OPERATIONS. IF ANY OBSTRUCTION IS EVIDENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE APPROPRIATE UTILITY OWNER TO REMOVE OR SUPPORT THE UTILITY OBSTRUCTION. ANY COST ASSOCIATED WITH THIS EFFORT IS INCIDENTAL TO THE PROJECT.
4. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO SECURE AND SUPPLY WATER FOR THE PROJECT.
5. THE BOTTOM OF PIT SHALL BE SLOPED AT A MINIMUM 1.5% AS SHOWN.
6. THE PERIMETER OF THE SITE SHALL BE ENCLOSED WITH CHAINLINK FENCE AS PRESCRIBED BY DESIGN/CONSTRUCTION PLAN IN REGISTRATION/PERMIT APPLICATION.
7. STRIP AND STOCKPILE TOP SOIL FOR FUTURE CLOSURE USE. NEW MEXICO ADMINISTRATIVE CODE 19.15.34 AND (DESIGN AND CONSTRUCTION SPECIFICATIONS FOR A RECYCLING CONTAINMENT IN REGISTRATION/PERMIT) SHALL APPLY TO THIS PROJECT.
8. THE RECYCLING CONTAINMENT SHALL HAVE A PROPERLY CONSTRUCTED FOUNDATION AND INTERIOR SLOPES CONSISTING OF A FIRM, UNYIELDING BASE, SMOOTH AND FREE OF ROCKS, DEBRIS, SHARP EDGES OR IRREGULARITIES TO PREVENT THE LINER'S RUPTURE OR TEAR. GEOTEXTILE IS REQUIRED UNDER AND OVER THE LINER WHEN NEEDED TO REDUCE LOCALIZED STRESS-STRAIN OR PROTUBERANCES THAT OTHERWISE MAY COMPROMISE THE LINER'S INTEGRITY.
9. AS DESCRIBED IN THE DESIGN/CONSTRUCTION PLANS OF THE REGISTRATION/PERMIT, ALL PRIMARY (UPPER) LINERS IN A RECYCLING CONTAINMENT SHALL BE GEOMEMBRANE LINERS COMPOSED OF AN IMPERVIOUS, SYNTHETIC MATERIAL THAT IS RESISTANT TO ULTRAVIOLET LIGHT, PETROLEUM HYDROCARBONS, SALTS AND ACIDIC AND ALKALINE SOLUTIONS. ALL PRIMARY LINERS SHALL BE 30-MIL FLEXIBLE PVC, 45-MIL LLDPE STRING REINFORCED OR 60-MIL HDPE LINERS. SECONDARY LINERS SHALL BE 30-MIL LLDPE STRING REINFORCED OR EQUIVALENT WITH A HYDRAULIC CONDUCTIVITY NO GREATER THAN 1 X 10-9 CM/SEC. LINER COMPATIBILITY SHALL MEET OR EXCEED THE EPA SW-846 METHOD 9090A OR SUBSEQUENT RELEVANT PUBLICATIONS.
10. LINER SEAMS SHALL BE MINIMIZED AND ORIENTED UP AND DOWN, NOT ACROSS, A SLOPE OF THE LEVEE. FACTORY WELDED SEAMS SHALL BE USED WHERE POSSIBLE.
11. EXPANSION WRINKLE SHALL BE INSTALLED INSIDE OF PIT CONTAINMENT FOR THERMAL EXPANSION / CONTRACTOR.
12. UNLESS DIFFERENTLY STATED IN THE CONSTRUCTION PLAN OF THE REGISTRATION PERMIT,THE OPERATOR SHALL ENSURE FIELD SEAMS IN GEOSYNTHETIC MATERIAL ARE THERMALLY SEAMED. PRIOR TO FIELD SEAMING, THE OPERATOR SHALL OVERLAP LINERS FOUR TO SIX INCHES. THE OPERATOR SHALL MINIMIZE THE NUMBER OF FIELD SEAMS AND CORNERS AND IRREGULARLY SHAPED AREAS. THERE SHALL BE NO HORIZONTAL SEAMS WITHIN FIVE FEET OF THE SLOPE'S TOE. QUALIFIED PERSONNEL SHALL PERFORM FIELD WELDING AND TESTING.
13. AT A POINT OF DISCHARGE INTO OR SUCTION FROM THE RECYCLING CONTAINMENT, THE OPERATOR SHALL INSURE THAT THE LINER IS PROTECTED FROM EXCESSIVE HYDROSTATIC FORCE OR MECHANICAL DAMAGE. EXTERNAL DISCHARGE OR SUCTION LINES SHALL NOT PENETRATE THE LINER.
14. THE OPERATOR SHALL POST AN UPRIGHT SIGN NO LESS THAN 12 INCHES BY 24 INCHES WITH LETTERING NOT LESS THAN TWO INCHES IN HEIGHT IN A CONSPICUOUS PLACE ON THE FENCE SURROUNDING THE CONTAINMENT. THE OPERATOR SHALL POST THE SIGN IN A MANNER AND LOCATION SUCH THAT A PERSON CAN EASILY READ THE LEGEND. THE SIGN SHALL PROVIDE THE FOLLOWING INFORMATION: THE OPERATOR'S NAME, THE LOCATION OF THE SITE BY QUARTER-QUARTER OR UNIT LETTER, SECTION, TOWNSHIP AND RANGE, AND EMERGENCY TELEPHONE NUMBERS.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT NEW MEXICO 811 (FORMERLY NEW MEXICO ONE CALL) A MINIMUM OF 48 HOURS BEFORE EXCAVATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL DESIGNATED UNDERGROUND UTILITIES. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
16. DURING CONSTRUCTION OF THE CONTAINMENT, THE CONTRACTOR WILL REPORT AND RESPOND TO ANY SPILLS OF HAZARDOUS MATERIALS SUCH AS GASOLINE, DIESEL, MOTOR OILS, SOLVENTS, CHEMICALS, TOXIC OR CORROSIVE SUBSTANCES, ETC. A SPILL IS DEFINED AS ANY RELEASE OF A CORROSIVE, HAZARDOUS, TOXIC OR RADIOACTIVE SUBSTANCE THAT MAY BE A THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT. REPORTS OF SPILLS WILL BE MADE IMMEDIATELY TO BOTH THE NEW MEXICO ENVIRONMENT DEPARTMENT EMERGENCY RESPONSE TEAM (505-827-9329 OR 866-428-6535). THE CONTRACTOR WILL BE RESPONSIBLE FOR REPORTING AND CLEANUP OF ANY SPILL ASSOCIATED WITH PROJECT CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR REPORTING ANY DISCOVERIES OF PAST SPILLS OR CURRENT SPILLS NOT ASSOCIATED WITH CONSTRUCTION.
17. CONTRACTOR MUST OBTAIN CLIENT PERMISSION BEFORE SALVAGING ANY ITEMS SPECIFIED FOR REMOVAL AND DISPOSAL AFTER COMPLETION OF CONSTRUCTION OF THE CONTAINMENT.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING DISPOSAL SITES THAT ARE ENVIRONMENTALLY SUITABLE FOR DISPOSAL OF ITEMS NOT SPECIFIED TO BE SALVAGED. THE CONTRACTOR IS EXPECTED TO ABIDE BY ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS IN OBTAINING THE NECESSARY PERMITS FROM ALL APPLICABLE AGENCIES AND/OR PRIVATE PROPERTY OWNERS. ALL COSTS ASSOCIATED WITH OBTAINING THESE PERMITS SHALL BE INCIDENTAL TO THE COMPLETION OF THE PROJECT AND NO DIRECT MEASUREMENT OR PAYMENT SHALL BE MADE THEREFORE. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH COPIES OF ALL PERTINENT INFORMATION, AGREEMENTS, AND PERMITS RELATED TO DISPOSAL SITES UTILIZED. BORROW MATERIAL, ROCK WASTE, AND VEGETATIVE DEBRIS SHALL NOT BE PLACED IN WETLANDS, ARROYOS, OR AREAS THAT MAY IMPACT THREATENED OR ENDANGERED SPECIES. ARCHEOLOGICAL AND ENVIRONMENTAL CLEARANCES MUST BE OBTAINED BEFORE DISPOSAL.
19. ALL MATERIALS SHALL BE APPROVED BY OXY CONSTRUCTION REPRESENTATIVES PRIOR TO PURCHASING AND SHALL BE DISCLOSED IN BID.
20. LINER INSTALLATION SHALL BE PERFORMED PER INDUSTRY BEST PRACTICES, STANDARDS AND OXY PROVIDED GUIDELINES.

KEYED NOTES

1. POND SUMP PLAN VIEW PER DETAIL 1, SHEET CS-501
2. LEAK DETECTION SYSTEM PER DETAILS 1, 2 AND 3, SHEET CS-501
3. 3' FREEBOARD DEPTH (ELEV. 3394.00')
4. ANCHOR TRENCH PER DETAIL 4, SHEET CS-501
5. CONTAINMENT FENCE WITH NETTING (BY OTHERS)
6. 6' CHAINLINK FENCE WITH BARBED WIRE PER DETAIL 6, SHEET CS-501
7. INSTALL 2-12" HDPE PIPE PER DETAIL 1, SHEET CS-502
8. INSTALL 1-18" CMP PIPE PER DETAIL 2, SHEET CS-502

RECYCLING CONTAINMENT A	
TOP OF BERM ELEVATION	3397.00 FT
HIGH WATER ELEVATION	3394.00 FT
BOTTOM OF POND ELEVATION	3380.00 FT
SUMP ELEVATION	3372.00 FT
TOTAL CONTAINMENT VOLUME	312,000 BBL
TOTAL FLUID VOLUME BELOW 3' FREEBOARD ELEVATION	250,000 BBL

RECYCLING CONTAINMENT B	
TOP OF BERM ELEVATION	3397.00 FT
HIGH WATER ELEVATION	3394.00 FT
BOTTOM OF POND ELEVATION	3380.00 FT
SUMP ELEVATION	3372.00 FT
TOTAL CONTAINMENT VOLUME	312,000 BBL
TOTAL FLUID VOLUME BELOW 3' FREEBOARD ELEVATION	250,000 BBL

ESTIMATED CUT/FILL QUANTITIES*		
CUT (Cu. Yd.)	FILL (Cu. Yd.)	NET (Cu. Yd.)
103,100.00**	20,800.00	82,300.00 (EXCESS)

*CUT AND FILL FACTORS NOT APPLIED. ALL QUANTITIES ARE "IN PLACE".
**CUT QUANTITY INCLUDES TOPSOIL.

NORTH

SCALE 1" = 40'
0' 20' 40' 80'

PETTIGREW & ASSOCIATES PA
ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

CLAUDIUS SANCHEZ CZYZEWSKA NEW MEXICO 22897 PROFESSIONAL ENGINEER
05/09/2017

PROJECT ENGINEER: Claudius Sanchez Czyzewska, PE
PROJECT DESIGNER: Juan C. Saenz, EIT
DRAWN BY: JCS

LEGEND

- CHAINLINK FENCE
- EXIST. GRADE 1.0' CONTOUR
- EXIST. GRADE 5.0' CONTOUR
- FINISHED GRADE 1.0' CONTOUR
- FINISHED GRADE 5.0' CONTOUR
- DRIVING SURFACE
- 3' FREEBOARD DEPTH
- CONTAINMENT FENCE
- ANCHOR TRENCH
- APPARENT LEASE PROPERTY

REVISIONS

No.	DATE	DESCRIPTION

SITE GRADING PLAN AND GENERAL NOTES

TURKEY TRACK RECYCLING CONTAINMENT
OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER: 2017.1064

SHEET: CS-101

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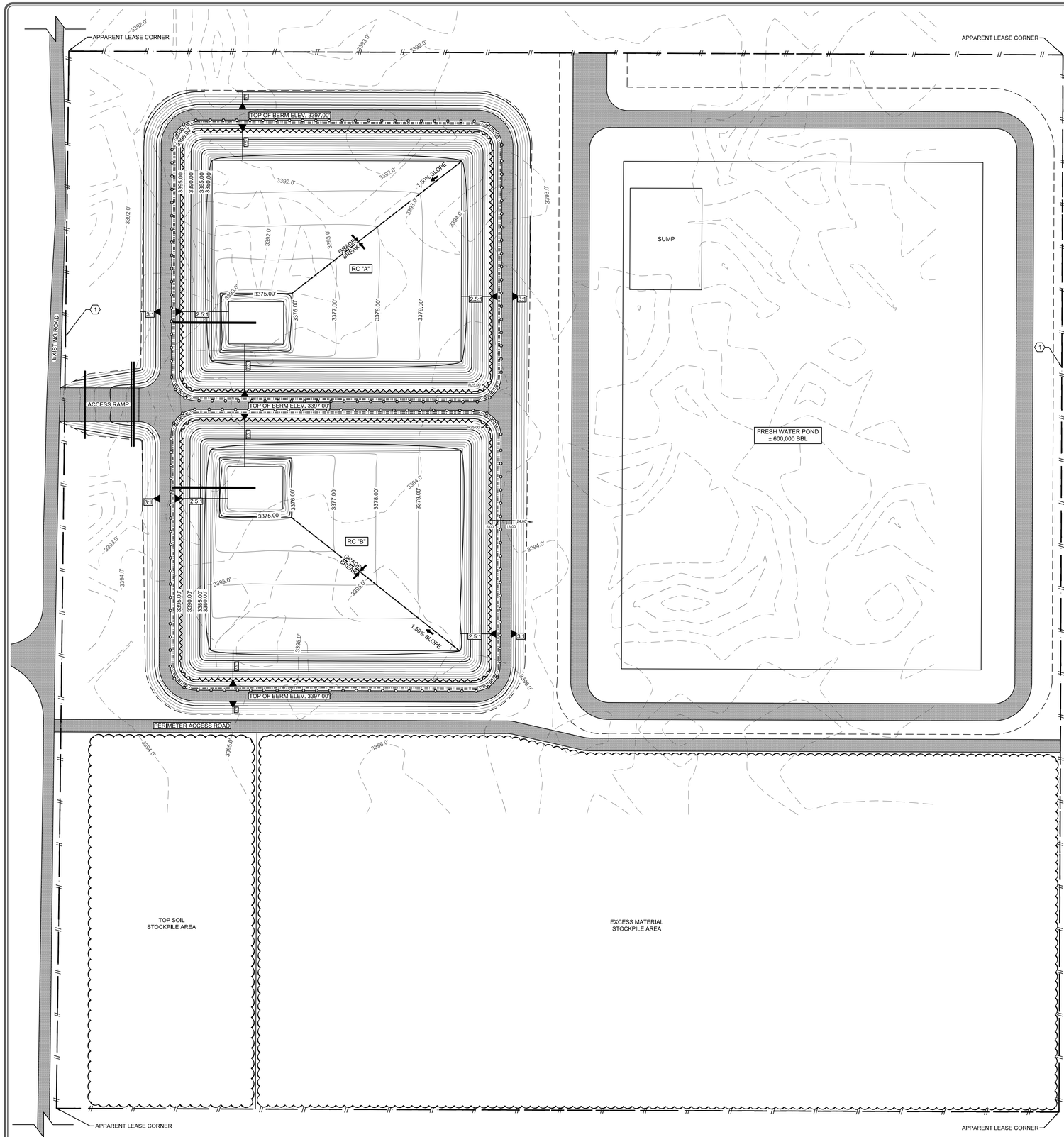

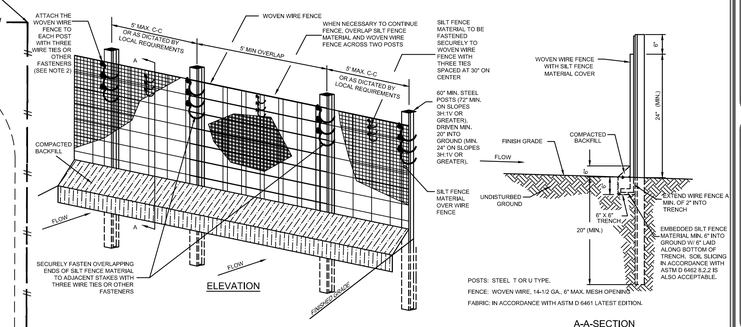

1. INSTALLATION SHALL COMPLY WITH ASTM D 6462 LATEST EDITION.
2. ATTACH THE WOVEN WIRE FENCE TO EACH POST AND THE GEOTEXTILE TO THE WOVEN WIRE FENCE (SPACED EVERY 30") WITH THREE WIRE TIES OR OTHER FASTENERS, ALL SPACED WITHIN THE TOP 8" OF THE FABRIC. ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1" VERTICALLY APART. ALSO, EACH TIE PLACED ON A POST SHOULD BE POSITIONED TO HANG ON A POST NIPPLE WHEN TIGHTENED TO PREVENT SAGGING.
3. WHEN TWO SECTIONS OF SILT FENCE MATERIAL ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED A MINIMUM OF 60" ACROSS TWO POSTS, AS SHOWN.
4. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE SWPPP. DEPTH OF ACCUMULATED SEDIMENTS MAY NOT EXCEED ONE-HALF THE HEIGHT OF THE FENCE. MAINTENANCE CLEANOUT MUST BE CONDUCTED REGULARLY TO PREVENT ACCUMULATED SEDIMENTS FROM REACHING ONE-HALF THE HEIGHT OF THE SILT FENCE MATERIAL ABOVE GRADE.
5. ALL SILT FENCE SHALL INCLUDE WIRE SUPPORT UNLESS THE STATIC SLICING EQUIPMENT IS UTILIZED TO INSTALL THE FENCE.
6. WRAP APPROXIMATELY 6" OF FABRIC AROUND THE END POSTS AND SECURE WITH 3 TIES.
7. COMPACT THE SOIL IMMEDIATELY NEXT TO THE SILT FENCE FABRIC WITH THE FRONT WHEEL OF THE TRACTOR, SKID STEER, OR ROLLER EXERTING AT LEAST 60 POUNDS PER SQ. INCH. COMPACT THE UPSTREAM SIDE FIRST. COMPACT EACH SIDE TWICE FOR A TOTAL OF FOUR TRIPS.
8. ADD POST CAPS AS NEEDED BASED ON SITE CONDITIONS AND APPLICABLE AGENCY REQUIREMENTS.

1 SILT FENCE DETAIL

SCALE: N.T.S.

KEYED NOTES

(1) INSTALL APPROXIMATELY 4,700 FT OF SILT FENCE PER DETAIL 1 ON THIS SHEET

SWPPP GENERAL NOTES

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP AND IMPLEMENT A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT (CGP) OF THE EPA. THE STORM WATER POLLUTION PREVENTION PLAN SHALL INCLUDE DEVELOPING, PERMITTING, INSTALLING AND MAINTAINING SWPPP BMP'S AS WELL AS PERMANENT SEEDING WHEN THE PROJECT IS COMPLETED.
2. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO OTHER PROPERTY BY CONSTRUCTING TEMPORARY EROSION CONTROL BERMS OR INSTALLING SILT FENCES AT THE PROPERTY LINES AS INDICATED ON THE APPROVED SWPPP.
3. THE CONTRACTOR SHALL MITIGATE EROSION OF TEMPORARY OR PERMANENT DIRT SWALES BY INSTALLING CHECK DAMS IN THE SWALES PERPENDICULAR TO THE DIRECTION OF FLOW, AND AT INTERVALS SPECIFIED ON THE SWPPP.
4. THE CONTRACTOR SHALL PREPARE AND MAINTAIN A COPY OF THE SWPPP ON-SITE AT ALL TIMES, AND SHALL COMPLY WITH THE REQUIREMENTS INDICATED ON THAT PLAN. COST IS INCIDENTAL TO CONSTRUCTION.
5. ALL DRAINAGE INFORMATION NEEDED TO COMPLETE THE NOTICE OF INTENT (NOI) ARE PROVIDED IN THIS PLAN.
6. BEST MANAGEMENT PRACTICES (BMPS) SHOWN ON TESCP ARE DETERMINED USING THE EQUATIONS SHON ON THIS SHEET AND OTHER HYDROLOGICAL MODELS AS SPECIFIED IN THE DEPARTMENT'S DRAINAGE MANUALS LATEST EDITION. BMPS CONTROL SEDIMENT SO THAT NO ADDITIONAL SEDIMENT RESULTING FORM CONSTRUCTION ACTIVITIES DISCHARGE TO WATERWAYS.
7. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST AND EROSION CONTROL REGULATIONS. THE CONTRACTOR SHALL PREPARE AND OBTAIN ANY NECESSARY DUST OR EROSION CONTROL PERMITS FROM REGULATORY AGENCIES.
8. THE CONTRACTOR SHALL PROMPTLY REMOVE ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY TO KEEP IT FROM WASHING OFF THE PROJECT SITE.

NORTH

SCALE 1" = 60'

0' 30' 60' 120'

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100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

CLAUDIUS SANCHEZ CZYZEWSKA NEW MEXICO 22897 PROFESSIONAL ENGINEER

05/09/2017

PROJECT ENGINEER: Claudius Sanchez Czyzewska, PE
PROJECT DESIGNER: Juan C. Saenz, EIT
DRAWN BY: JCS

LEGEND

- SILT FENCE
- EXIST. GRADE 1.0' CONTOUR
- EXIST. GRADE 5.0' CONTOUR
- FINISHED GRADE 1.0' CONTOUR
- FINISHED GRADE 5.0' CONTOUR
- DRIVING SURFACE
- 3' FREEBOARD DEPTH
- CONTAINMENT FENCE
- ANCHOR TRENCH

REVISIONS

No.	DATE	DESCRIPTION

SEDIMENT CONTROL AND EROSION PROTECTION PLAN

TURKEY TRACK RECYCLING CONTAINMENT OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER: 2017.1064

SHEET: CS-201

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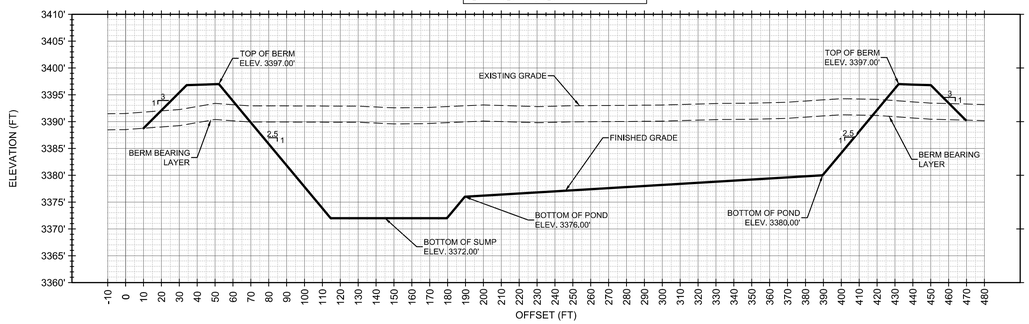
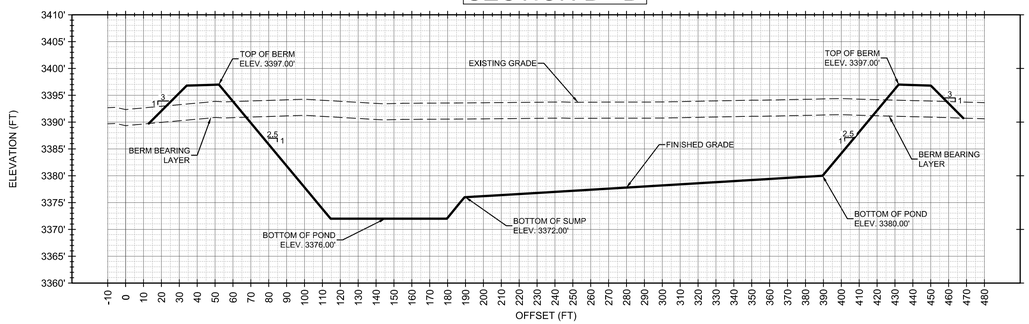
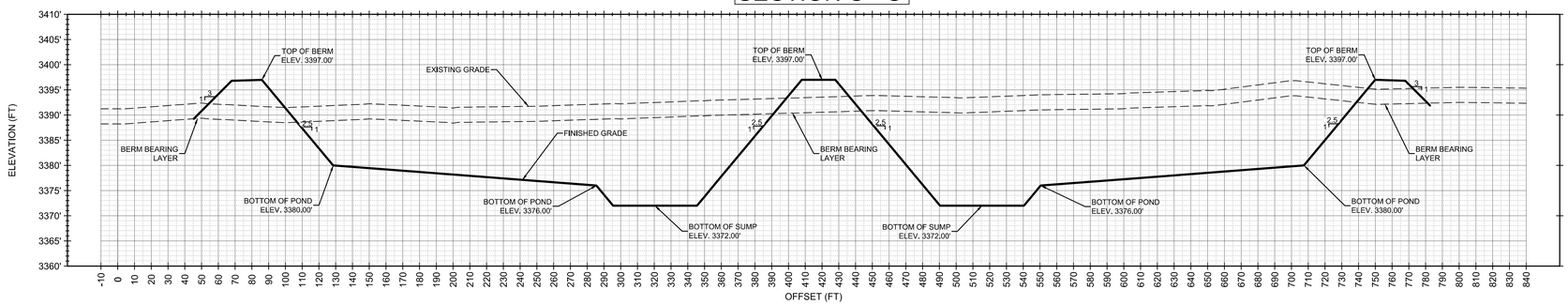
SECTION A - A'



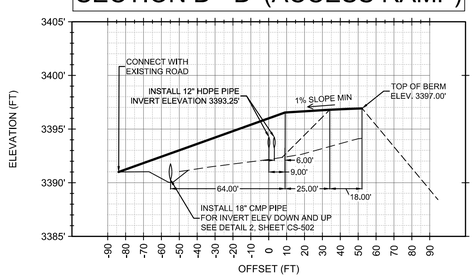
SECTION B - B'



SECTION C - C'



SECTION D - D' (ACCESS RAMP)



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ENGINEERING | SURVEYING | TESTING
DEFINING QUALITY SINCE 1965
100 E. Navajo Drive Suite 100 Hobbs New Mexico 88240
T 575 393 9827 F 575 393 1543
Pettigrew.us

CLAUDIUS SANCHEZ CZYZEWSKA
NEW MEXICO
22897
PROFESSIONAL ENGINEER

05/09/2017

PROJECT ENGINEER: Claudius Sanchez Czyzewska, PE
PROJECT DESIGNER: Juan C. Saenz, EIT
DRAWN BY: JCS

REVISIONS

No.	DATE	DESCRIPTION

SECTIONS

TURKEY TRACK
RECYCLING
CONTAINMENT
OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER:
2017.1064

SHEET:
CS-301

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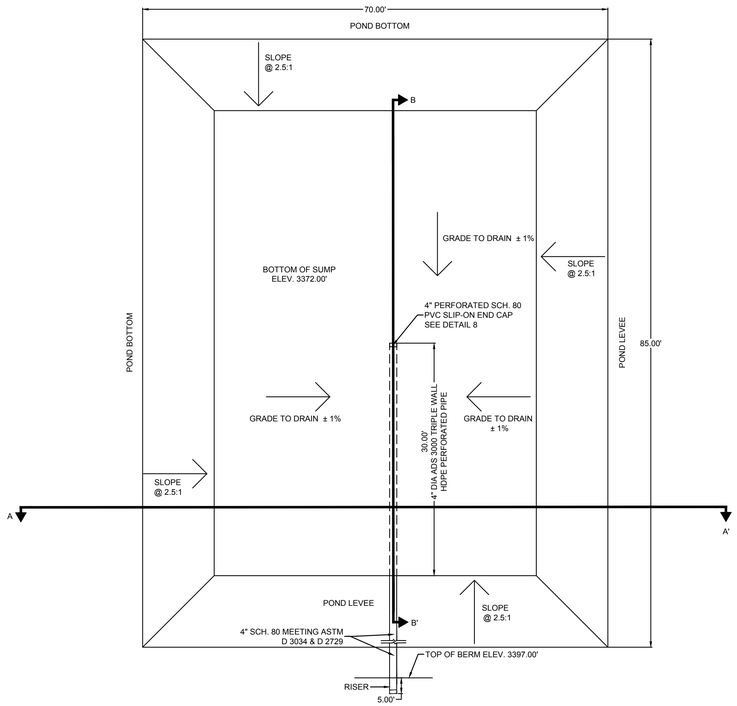
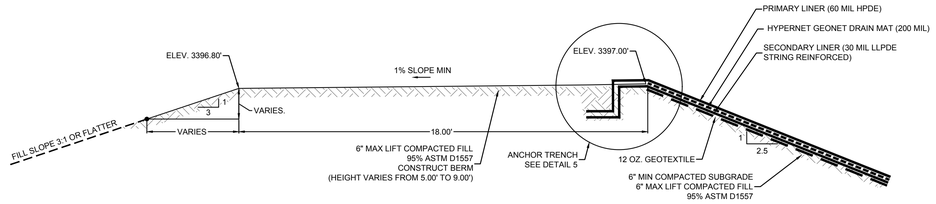
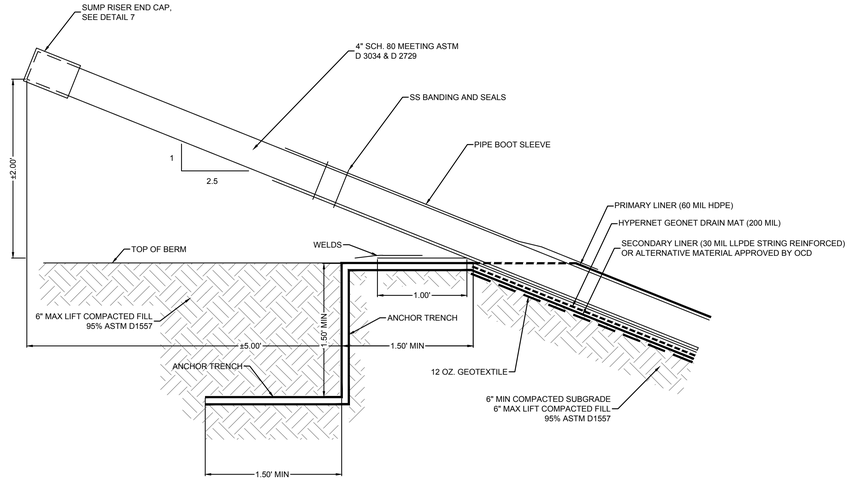


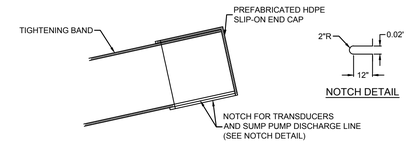
1 POND SUMP PLAN VIEW
SCALE: N.T.S.



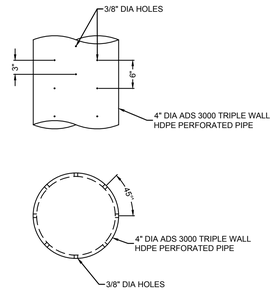
4 TYPICAL TOP OF BERM AND EDGE DETAIL
SCALE: N.T.S.



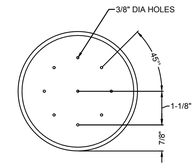
5 LEAK DETECTION SYSTEM
TYPICAL ANCHOR TRENCH AND RISER DETAIL
SCALE: N.T.S.



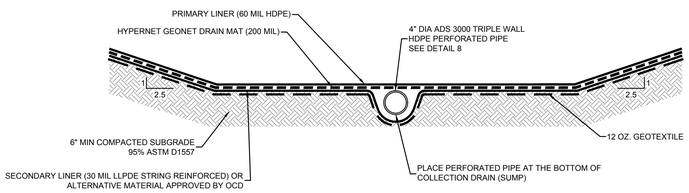
7 SUMP RISER END CAP
SCALE: N.T.S.



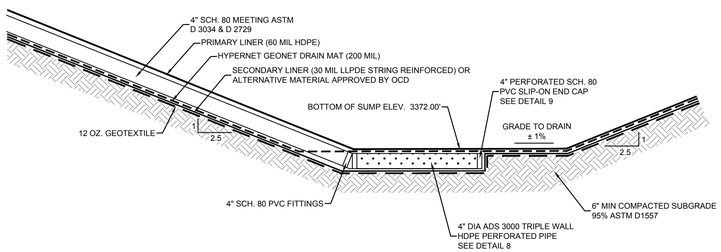
8 LEAK DETECTION SYSTEM
PIPE PERFORATION DETAIL
SCALE: N.T.S.



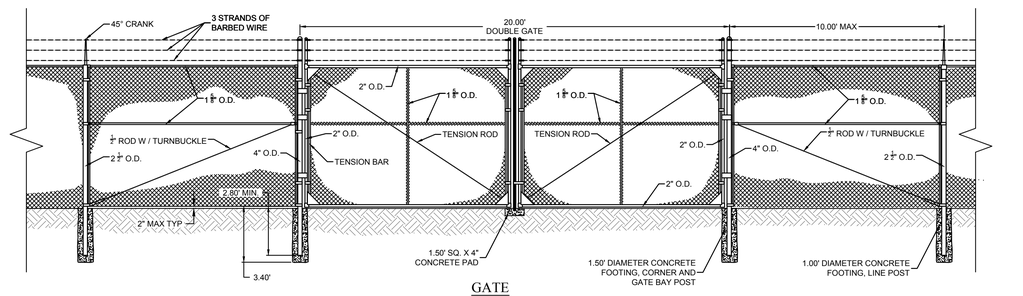
9 LEAK DETECTION SYSTEM
PERFORATED END CAP DETAIL
SCALE: N.T.S.



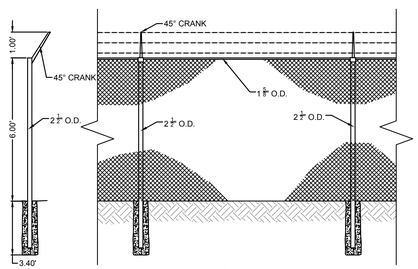
2 LEAK DETECTION SYSTEM
SECTION A - A'
SCALE: N.T.S.



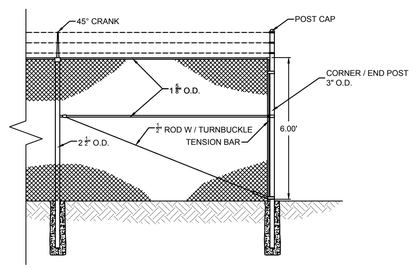
3 LEAK DETECTION SYSTEM
SECTION B - B'
SCALE: N.T.S.



GATE



UNREINFORCED SECTION



CORNER SECTION

6 6' CHAINLINK FENCE WITH BARBED WIRE DETAIL
SCALE: N.T.S.

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REVISIONS

No.	DATE	DESCRIPTION

DETAILS

TURKEY TRACK
RECYCLING
CONTAINMENT
OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER:
2017.1064

SHEET:
CS-501

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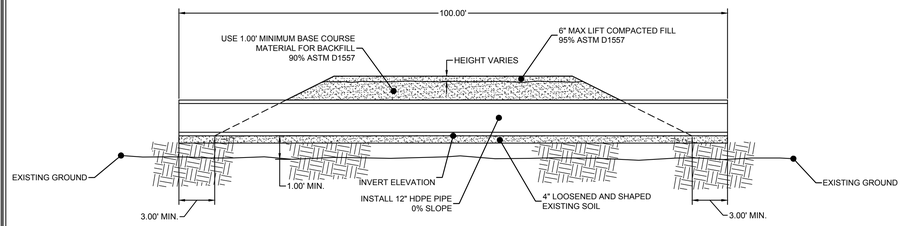
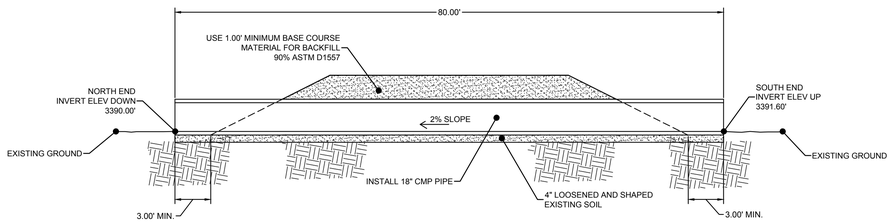


1 12" HDPE PIPE DETAIL

SCALE: N.T.S.



2 18" CMP PIPE DETAIL

SCALE: N.T.S.

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T 575 393 9827 F 575 393 1543
Pettigrew.us

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NEW MEXICO
22897
PROFESSIONAL ENGINEER

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TURKEY TRACK
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OXY U.S.A. INC.

EDDY COUNTY, NEW MEXICO

PROJECT NUMBER:
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SHEET:
CS-502